National Institute of Industrial Technology (INTI)
Argentine Republic

THE STUDY
ON
THE DIFFUSION PLAN FOR THE BUSINESS AND PRODUCTION MANAGEMENT TECHNOLOGY
FOR
SMALL AND MEDIUM ENTERPRISES
IN
THE ARGENTINE REPUBLIC

FINAL REPORT

MARCH 2010

JAPAN INTERNATIONAL COOPERATION AGENCY

JAPAN DEVELOPMENT SERVICE CO., LTD.

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JR
10-012

PREFACE

In response to a request from the Government of the Argentine Republic, the Government of Japan decided to conduct a study on "Diffusion Plan for the Business and Production Management Technology for Small and Medium Enterprises in the Argentine Republic" and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a study team headed by Mr. Tsuyoshi Kikuchi of Japan Development Service Co., LTD. between April, 2009 and March, 2010.

The team conducted a field survey and held discussions with the officials concerned of the Government of the Argentine Republic for formulating a recommendation on effective diffusion plan for business and production management technology for small and medium enterprises in the Argentine Republic. Upon returning to Japan, the team conducted further studies and prepared this final report.

I hope that this report will contribute to the promotion of Small and Medium-sized Enterprises Development of the Argentine Republic and to the enhancement of friendly relationship between two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of the Argentine Republic for their close cooperation extended to the study.

March 2010

Atsuo Kuroda,

Vice-President
Japan International Cooperation Agency

Mr. Atsuo Kuroda
Director
Japan International Cooperation Agency

March, 2010

LETTER OF TRANSMITTAL

We are pleased to submit the Final Report on the the Study on the Diffusion Plan for the Business and Production Management Technology for Small and Medium Enterprises in the Argentine Republi.

The Report compiles the final recommendations regarding the said Project based on the findings of the field survey initiated in April, 2009, draft recommendations based on such findings (introduction of hypotheses) and the reviewed results of the draft recommendations through the pilot project (verification of hypotheses). The Report puts forward a desirable extension system which, we hope, the INTI will strive to achieve in the coming years. The key features of the recommendations designed to assist the establishment of the proposed extension system are the introduction of a system to train support personnel (extension officers) who with their personal management expertise will help enterprises to solve their problems and a certification system for the qualification of extension officers. The recommendations on activities to assist the establishment of an extension system include the development and introduction of new management technologies, the creation of new local bases to support enterprises and the creation of a mechanism to promote collaboration between the INTI and other organizations.

The preparatory work to materialise some of the recommendations has already commenced under the leadership of the top management of the INTI. As it is quite unusual for any part of the recommendations to be implemented by a counterpart organization at the field survey stage, we believe that this vividly illustrates the truly high "potential for the self-sustained development" of the INTI.

It is our sincere hope that the INTI will exploit its full potential in the coming years to steadily realise the various recommendations made in the Report to firmly establish an extension system within the INTI to strengthen the competitiveness of SMEs in Argentina.

We would like to express our utmost gratitude to the JICA, JICA's Argentine Office, Ministry of Economy, Trade and Industry, Ministry of Foreign Affairs and the Embassy of Japan in Argentina for their kind guidance and assistance afforded to the Study Team throughout the study period. We would also like to express our heart-felt gratitude to the Instituto Nacional de Tecnología Inductrial (INTI), Subsecretaria de la Pequeña y Mediana Empresa y Desarrollo Regional (SEPYME), Ministry

of Foreign Relations, Ministry of Science, Technology and Innovative Production, provincial governments, industrial organizations, private enterprises, NGOs and international aid organizations operating in Argentina for their assistance for the Study.

Tsuyoshi KIKUCHI

Japan Development Service Co., Ltd.
Team Leader
JICA Study Team on the Diffusion Plan for the Business and Production Management Technology for Small and Medium Enterprises in the Argentine Republic


Target Areas
Panama
Venezuela
Guyana
Guiana
Colombia
Ecuador
Suriname
Peru
Brazil
Bolivia
Paraguay
Pacific Ocean
Chile
Uruguay
Argentina
Atlantic Ocean
BOLIVIA
PARAGUAY
BRAZIL
URUGUAY
CHILE
ARGENTINA
PACIFIC OCEAN
ATLANTIC OCEAN
Rafaela
SANTA FE
Córdoba
Rosario
ENTRE RIOS
Paraná
Concepción
CORDOBA
Mendoza
MENDOZA
Buenos Aires
La Plata
BUENOS AIRES
Mar del Plata
NEUQUEN
Neuquén
General Roca
Villa Regina
RIO NEGRO
PP Target Areas
ENTRE RIOS
BUENOS AIRES
NEUQUEN
RIO NEGRO
Node

The Study on the Diffusion Plan for the Business and Production Management Technology for Small and Medium Enterprises in the Argentine Republic (Final Report)

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ABBREVIATION

Abbreviation	English	Espanõl
ABC Analysis	(Selective Inventory Control)	-------
Adegro	-------	Agencia de Desarrollo de General Roca
ADIMRA	-------	Asociación de Industriales Metalúgicos de la Republica Argentina
AMP	Productivity Improvement Advisor	Asesor Mejorar Productividad
ATG	Management Technology Advisor	Asesor de Tecnoloía de Gestíon
B.A.	Buenos Aires	Buenos Aires
BDS	Business Development Service	-------
BID	Inter-American Development Bank	Banco Interamericano de Desarrollo
BPM	Good Manufacturing Practices	Buenas Prácticas de Manufacturas
CAFESG	-------	Comición Administradora para el Fondo Especial de SALTO GRANDE
CAIC	-------	Camara de Agricultura, Industria y Comercio
CdU	-------	Concepción del Uruguay
CECOM	-------	Centro Comercial, Industrial y de la Producción
CENTRO PyME	-------	Centro de Pequeña y Mediana Empresa
CIM	Computer-Integrated Manufacturing System	Sistema de Manufactura Integrada por Computadora
Codegu	-------	Corporation del Desarrollo de Gueleguaychú
C/P	Counterpart	Homólogo
CPM	Critical Pass Method	-------
CSP	(EU) Country Strategy Paper	-------
DF/R	Draft Final Report	Borrador del Informe Final (BI/F)
ER	-------	Entre Ríos (Province)
ERP	Enterprise Resource Planning	Planificación de Recursos Empresariales
EU	European Union	Unión Europea
5 S (Five S)	Five S (Seiri, Seiton, Seisou, Seiketsu and Shitsuke)	Cinco S (Seiri, Seiton, Seisou, Seiketsu and Shitsuke)
FMS	Flexible Manufacturing System	Sistema de Manufactuna Flexble
FOGAPyME	-------	Fondo de Garancía estatal PYME
FONTAR	Argentine Technology Fund	Fondo Tecnológico Argentina
FR	Final Report	Informe Final (I/F)
GDP	Gross Domestic Products	Producto Nacional Bruto
HACCP	Hazard Analysis and Critical Control Point	Análisis de Peligros y Puntos Críticos de Control
ICEI	-------	Instituto Cooperazione Economica Internationale
IC/R	Inception Report	Informe Inicial (I/I)
IE	Industrial Engineering	Ingeniería Industrial
INTA	National Institute of Agricultural Technology	Instituto Nacional de Tecnología Agropecuaria
INTI	National Institute of Industrial Technology	Instituto Nacional de Tecnología Industrial
ISO	International Organization for Standards	Organización Internacional de Normalización
IT	Information Technology	Tecnología de Informática
IT/R	Interim Report	Informe Intermedio (I/Int.)
JICA	Japan International Cooperation Agency	Agencia de Cooperación Internacional del Japón
JIT	Just-in-Time	-------

Abbreviation	English	Espanõl
KAIZEN	Continuous Improvement	-------
MdP	Mar del Plata	Mar del Plata
Mini-W/S	Mini-Workshop	Mini-Taller
M/M	Minutes of Meeting	-------
M/P	Master Plan	Plan Integral
MRP	Material Requirements Planning	Planificación de Requerimientos de Materiales
NODO	(node)	NODO
OJT	On-the-Job-Training	-------
PC	Personal Computer	Computadora Personal
PEAT	-------	Programa de Ensayos y Asistencia Técnica
PM	Project Management	Administración de Proyecto
PQCD	Productivity, Quality, Cost and Delivery	Productividad, Calidad, Costo y Entrega
PP	Pilot Project	Proyecto Piloto
PR	Public Relation	Relaciones Públicas
PR/R	Progress Report	Informe de Avance (I/A)
PyME	Small and Medium Enterprise	Pequeña y Mediana Empresa
QC	Quality Control	Control de Calidad
QCD	Quality, Cost and Delivery	Calidad, Costo y Entrega
SC	Steering Committee	Comité Directivo (CD)
SEPyME	(Sub-Secretariat of Small and Medium Enterprise and Regional Development)	Subsecretaria de la Pequeña y Mediana Empresa y Desarrollo Regional
SME	Small and Medium Enterprise	Pequeña y Mediana Empresa
SMED	Single Minute of Exchange of Die	-------
SV	(JICA) Senior Volunteer	(JICA) Voluntarios Senior
TOC	Theory of Constraints	-------
TPM	Total Productive Maintenance	-------
TPS	Toyota Production System	-------
TQM	Total Quality Management	-------
UCU	-------	Universidad de Concepción del Uruguay
UIA	-------	Union Industrial Argentina
UTN	-------	Universidad Tecnológica Nacional
W/S	Workshop	Taller

INTRODUCTION
OUTLINE OF THE STUDY

1. Objective of the Study

The objective of the Study (the Project goal) is to formulate a plan for the diffusion of business and production management technology in order to improve the competitiveness of small and medium enterprises (SMEs) in Argentina.

The outcomes that are anticipated from the Project are as follows:

(1) Current conditions and issues will be clarified regarding the setup for diffusion of business and production management technology for small and medium enterprises (SMEs) in Argentina.

(2) A systematic plan for construction of a system for diffusion of business and production management technology for SMEs centering on INTI will be proposed. (Verification via the Pilot Project)

(3) A roadmap for the self-sustaining and effective diffusion of business and production management technology for SMEs and improvement in the competitiveness of SMEs will be formulated.

2. Background of the Study

The Argentine Republic (hereinafter referred to as Argentina), boosted by the economic growth of its primary trade partner Brazil and so on, has emerged from the economic crisis of 2001 and is now displaying sound growth. Both exports and investment are up, GDP increased by approximately 9% for five consecutive years from 2003, and employment fell from 21.5% in 2002 to 8.7% in 2006 (the fourth quarter). In order to realize stable economic development and sustainable growth from now on within an environment of increasing trade liberalization, the major issues in industrial policy will be to boost exports and improve the competitiveness of SMEs particularly in the manufacturing sector.

Against such a background, JICA implemented the Study on Revitalization of SMEs in Argentina from September 2004 to March 2006, during which it was indicated that the enhancement of policies and measures for the promotion of SMEs is an extremely important issue for Argentina. In light of these study findings, and realizing that improvement of business and production management technology is needed to strengthen the competitiveness of SMEs, INTI (Instituto Nacional de Tecnología Industrial), which is one of the few agencies geared to supporting SMEs in Argentina, constructed the Argentina Industrial Productivity Improvement Support Network. INTI is currently extending business and production management technology to all manufacturing businesses and is developing a self-sustainable setup via this network. However, the operations of INTI are restricted by the fact that

INTI's own business and production management technology capacity is limited and there is a discrepancy in information between the INTI headquarters and provinces. In order to widely disseminate and pervade business and production management technology to SMEs primarily in the manufacturing sector, there is an urgent need to establish an implementation setup within INTI and, based on this, build up a diffusion setup that involves other government and private sector SME support agencies, industrial groups and universities, etc.

For this reason, INTI made a request to the Government of Japan concerning implementation of technical cooperation (development study) for construction of a setup for the efficient and effective diffusion of business and production management technology. In response to this, the government consigned JICA to implement a project formation study from February to March 2007, and this confirmed the validity of implementing this Study upon grasping the following factors : 1) Business opportunities for Argentinean SMEs are growing, thus making it a good time to implement the Study; 2) INTI is steadily establishing the setup for diffusing business and production management technology over its current scope of activity ; and 3) high needs are placed on INTI engineers to support a diffusion setup for business and production management technology. Based on these findings, a preliminary survey for the Study was implemented in June 2008, and the S/W was signed between INTI and JICA in September that year.

3. Study Schedule

The Study is scheduled to run from April 2009 to March 2010 with Study activities implemented according to the following schedule.

Stage 1: April 2009~July 2009)
Survey of current conditions and setting of the draft plan (assumptions) for effective diffusion of business and production management technology

Stage 2: August 2009 ~ December 2009)
Implementation of the Pilot Project (verification of the draft plan = assumptions)

Stage 3: January 2010 ~ March 2010
Formulation of a plan for the effective diffusion of business and production management technology and recommendation of a concrete implementation action plan

Fiscal 2009

Phase	Phase 1				Phase 2					Phase 3		
Month	4	5	6	7	8	9	10	11	12	1	2	3
Site survey	■■■■■■■■■■■■■■■■■■				■■■■■■■■■■■■■■■■■■■■■■■■					■■■		
Work in Japan	□□			□□	□					□□□□□		□□
Report	▲ IC/R			▲ PR/R				▲ IT/R		▲ DF/R	▲ F/R	

IC/R : Inception Report
PR/R : Progress Report
IT/R : Interim Report
DF/R : Draft Final Report
F/R : Final Report

4. Components of the Study

The scope of this development study covered 'support for SMEs via business and production management technology," and the following activities were mainly implemented based on the following components.

4.1 Survey of Current Conditions and Setting of the Draft PLAN (Assumptions) for Effective Diffusion of Business and Production Management Technology

Objectives : The objectives are to clarify the needs surrounding SMEs support in Argentina through analyzing the current conditions and issues of support for SMEs by Argentinean government agencies and private sector agencies and implementing a fact-finding survey of SMEs. Another objective is to clarify the role and functions of INTI in support for SMEs via management technology. Based on these results, a draft plan (assumptions) concerning the effective diffusion of business and production management technology nu INTI shall be compiled.

Main activities :
(1) Survey and analysis based on information, statistics and literature
(2) Analysis of current conditions and surey of support needs in SMEs
(3) Analysis of government related agencies and SME support functions
(4) Survey of current functions of support agencies concerning the improvement and diffusion of business and production management technology (analysis of SME support resources)
(5) Analysis of the roles, functions and current conditions of INTI regarding the diffusion of business and production management technology

(6) Setting of a draft plan (assumptions) concerning the diffusion of business and production management technology

(7) Compilation of the Pilot Project (PP) implementation plan (draft).

(8) Brief diagnostic surveys of PP candidate model enterprises and selection of the PP model enterprises

(9) Support for staging of the kickoff workshop (kickoff W/S)

4.2 Implementation of the Pilot Project (Verification of the Draft Plan = Assumptions)

Objective : The objective is to verify the efficacy of the assumptions which were set via the pilot project (PP). In particular, through conducting specific diagnosis and guidance of the PP enterprises utilizing management technology, the capacity of INTI AMPs will be assessed and the lessons obtained from the PP will be fed back to the INTI training plan and qualification certification system.

Main activities :

(1) Reconfirmation and correction of the draft PP implementation plan

(2) PP implementation (Buenos Aires, Entre Rios andNeuquén / Rio Negro)

- Implementation of applied theoretical training (3-day seminar in each area)
- PP model enterprise diagnosis and support activities
- Analysis of the capacity of INTI AMPs and identification of requirements for the certification system via the PP

(3) Evaluation of the PP and arrangement and analysis of the obtained lessons (information)

(4) Support for staging of the PP outputs presentation W/S (5 areas in total)

4.3 Formulation of a Plan for the Effective Diffusion of Business and Production Management Technology and Recommendation of a Concrete Implementation Action Plan

Objective : To propose a draft plan with the emphasais on feasibility based on the lessons obtained from the Pilot Project (PP).

Main activities :

(1) Formulation of a comprehensive draft plan for the diffusion of business and production management technology based on the PP lessons (= recommendations concerning the strategy for support of problem solving in SMEs)

(2) Formulation of the action plan including the roadmap (specific recommendations for realization of the strategy)

(3) Support for staging of a W/S geared to propagating the comprehensive draft plan and action plan for the diffusion of business and production management technology

5. Member List of the Study Team

The names and work duties of the Study Team members are as shown below.

Name	Responsible Work Area	Main Activities
Tsuyoshi KIKUCHI	Team Leader/SME Promotion	- Study supervision (survey and analysis of current conditions, PP, formulation of PP)
Seiji SUGIMOTO	Training Plan / Diffusion Plan Guidance (1)	- Deputy supervision of the Study - Supervision of the enterprise diagnosis surveys and PP - Formulation of the training plan / Construction of the certification system - Analysis of support resources (Buenos Aires) - Implementation of enterprise diagnoses / PP (Buenos Aires)
Masahiro HAMANO	Diffusion Plan Guidance (2)	(Neuquén / Villa Regina) - Analysis of support resources - Implementation of enterprise diagnoses / PP
Hideo SONODA	Diffusion Plan Guidance (3)	(Entre Rios) - Analysis of support resources - Implementation of enterprise diagnoses / PP
Shuichi TAKANO	Operational Coordinator / Pilot Project Administration	- Formulation of the PP implementation plan - PP administration (all target states)

6. Study Implementation Concept

In the Inception Report, nine basic principles for Study implementation were enunciated, and judging from the experience of the site survey, each of these is judged to be appropriate and valid. The following paragraphs describe the results of reviewing each item (principle).

(1) Respect for autonomy of the counterpart (C/P) side (respect of ownership)

The counterparts (C/P) can be considered on two levels. First is the executive level comprising the INTI department in charge of management technology (Programa de Ensayos y Asistencia Técnica), and second is the level of AMPs concerned with visiting and surveying enterprises. On both levels, autonomy regarding this project was confirmed. Managers in the responsible department have problem awareness about “What are we lacking and what must we learn?”

regarding the items proposed by the JICA Study Team. Also, the AMPs displayed a positive willingness to learn from the JICA Study Team exceeding expectations in all three Pilot Project areas (Buenos Aires Province, Entre Rios Province and Neuquén/Rio Negro Province). Accordingly, the Study Team was able to stick to the position of cooperator and supporter.

(2) Maintenance of cooperation and teamwork with the C/Ps during all stages

As was intimated above, the positive approach of the C/Ps to the Study exceeds expectations, and this is creating friendly a friendly working relationship between the JICA Study Team members and C/Ps on all levels (INTI management and AMP). This was an important condition for effectively transmitting technology and know-how from the JICA Study Team.

(3) Collaboration with government and private sector related agencies (participation of stakeholders)

In order to effectively support problem solving in local SMEs through the application of business and production management technology by INTI, it will be essential to have cooperation with the stakeholders in each area. In the recommendations (assumptions) described later, the importance of grasping SME needs through cooperation with related agencies and having external agencies participate in INTI qualification certification systems (committees) has been reaffirmed.

(4) Emphasis on feasibility

In Stage 1, effort was made to listen to the opinions and ideas of as many stakeholders as possible in order to formulate a feasible proposal. In particular, INTO officials on both the AMP level and executive level visited the three Pilot Project (PP) areas as well as Rosario and Rafaela where INTI (NODO) has previous experience, and conducted active information exchange with veteran and young AMPs. In the first stage, recommendations (assumptions) were set based on such site surveys, however, in the second stage, it is intended to conduct examination from the viewpoint of available resources (especially human and financial) and organizational factors for actualizing the recommendations, and to verify the recommendations (assumptions) with a view to compiling a feasible final proposal.

(5) Utilization of previous study findings (existing information and human resources) (improvement of Study efficiency)

In the first stage site surveys, the findings from the previous JICA development study, i.e. the study analysis and recommendations, were utilized at every opportunity. In particular, these findings frequently provided useful preliminary information when making visits to enterprises and conducting interviews with related persons. Moreover, understanding how technology is being utilized by C/Ps who took part in the previous Study proved extremely useful in examining the training system proposed in the Study and the method of advancing the Pilot Project in Stage 2, and thereby enabled the Study efficiency to be improved.

(6) Emphasis of survey and analysis of current conditions and transfer of technology based on OJT

Because analysis of the INTI organization and systems (implementation setup and implementation capacity) is extremely important for compiling the diffusion setup plan, in Stage 1 effort was made to understand the current organization and systems of INTI through not only studying materials but also through holding interviews and discussions with INTI executives and AMP. In Stage 2, due to the importance of nurturing human resources responsible for the organization and coordination functions of the diffusion setup, effort was made to transfer organization and system building and operation techniques while jointly conducting the planning work.

(7) Coordination with aid from other donors (synergy and supplementing effect)

The site survey in Stage 1 revealed that there are hardly any other donors conducting SME support (technical) of the type intended in this JICA development study. However, donors such as the Inter-American Development Bank (IDB) and EU are providing support to SMEs in the form of financial assistance and business environment building, and there is a strong possibility that complementary relations will be secured in the development study and future activities of INTI.

(8) Consideration for differences in thinking and values in the counterpart country

Since a number of INTI personnel have experience of training in Japan and many other human resources had contact with Japanese staff in previous studies and via JICA experts and senior volunteers, there is some understanding of Japanese thinking and values, and this is enabling efficient study work. Also, effort was made to compile a feasible plan through deepening understanding of Argentinean customs and values.

(9) Thorough safety management of the Study Team

During Stage 1, the utmost priority was given to safety management through adopting a comfortable transit plan and thoroughly maintaining close communications by mobile phones, etc. In Stage 2 (roughly four months from mid-August to mid-December), efforts were made to ensure safety in consideration of the long duration and frequent movement of people. In particular, the utmost attention was paid to information from JICA and the Japanese Embassy as well as advice and information from the C/Ps and other related officials to ensure that traffic accidents, theft and illness (influenza, dengue fever, etc.) would be prevented. As a result, it was possible to execute the work according to schedule without the occurrence of any mishaps.

7. Support for Staging of Workshops

During the Study period, support was provided for the following workshops (W/S) staged by INTI.

(1) Support for Staging of the Kick-Off Workshop

Support was provided for the staging of the Kickoff Workshop. In particular, the issues in diffusion of business and production management technology obtained in the surveys so far were clarified, and the contents were set with a view to widely informing about the PP implementation plan to be started from Stage 2 (second field survey).

Date	July 1, 2009, 08 :30~12 :00
Venue	INTI Miguelete Seminar Hall
Participants	INTI headquarters and INTI regional center employees SMEs in the PP target areas, SME support agencies, industrial groups, universities, JICA, etc. (approximately 80 persons)
Agenda	① JICA cooperation activities in Argentina (Mr. Furuya, Manager of JICA Argentina Office) ② Outline of the JICA/INTI cooperation project and PP (Mr. Pedro Brunetto/INTI) ③ Current conditions of SMEs in Argentina (report on the results of the first field survey) (Expert, Mr. Sugimoto/JICA Study Team) ④ SME diagnosis system in Japan (Mr. Kikuchi, JICA Study Team Leader)

(2) Staging of the Pilot Project (PP) Outputs Report Workshops

The workshops for reporting on the outputs of the Pilot project were staged. The effectiveness of INTI's "Support activities for SMEs via management technology" was widely advertised to SMEs, universities and other related support agencies.

Moreover, in addition to the workshops in the three provinces of Buenos Aires, Entre Rios and Neuquen that were decided in the SC of August 20, 2009, mini-workshops were also staged in two more areas at the strong request of INTI-Paraná and INTI-Mar Del Plata. Accordingly, a total of five workshops for presenting the PP outputs were held.

- Paraná (November 10, 2009)
- Mar del Plata (November 11, 2009)
- Neuquén (November 12, 2009)
- Concepción Del Uruguay (November 12, 2009)
- Buenos Aires (November 16, 2009)

Details of the mini-workshops are described in Chapter 2.

(3) Support for staging of workshop

The W/S was staged in Buenos Aires with a view to widely introducing the contents of the Draft Final Report to Argentinean SMEs and related support agencies and thereby sharing the importance of the compiled diffusion plan with related officials. An outline of the W/S is given below.

Programme	
13.30 h	- Reception
14.00 h 14:10 h	- Openning Address: Mr. Jorge Álvarez (Director Programa de Asistencia a Consumidores y a la Industria de Manufacturas) Mr. Juan C. Yamamoto (Vicepresidente JICA Argentina) Mr. Tsuyoshi KIKUCHI (Team Leader)
14:20 h	- Presentation of Summary of Proyecto “Estudio sobre el plan de difusión de tecnologías de gestión en las PyMES” : Mr. Ing. Rodolfo Foglia
14:50 h	Descanso
15:10 h	- Presentaction of Certification and Training System of ATG : Ing. Seiji Sugimoto (Experto JICA)
16:10 h	- Questiones and Answers
16:30 h	- Closing Remarks : Mr. Jorge Álvarez (Director Programa de Asistencia a Consumidores y a la Industria de Manufacturas)

CHAPTER 1
CURRENT CONDITIONS OF BUSINESS AND PRODUCTION MANAGEMENT TECHNOLOGY DIFFUSION IN ARGENTINA

1.1 Current Conditions of SMEs and Policy of Support for SMEs

1.1.1 Current Conditions of SMEs in Argentina (Analysis of Area-based Features and Macro Conditions)

Out of approximately one million SMEs in Argentina, the manufacturing sector accounts for 10%. These 100,000 or so manufacturing SMEs produce 46% of total industrial added value and employ 48% of people employed in the manufacturing sector; accordingly, they play an important role in the national economy. According to the definitions of SMEs[1)] by "Fundación Observatorio PyME," (foundation) which conducts ongoing investigation of the current conditions of SMEs, the current conditions of micro, small and medium enterprises in manufacturing are summed up as follows.

(1) Distribution according to

According to the obtained materials, micro, small and medium enterprises account for 99.5% of enterprises as shown in Table 1-1. Incidentally, when SMEs are divided into medium enterprises and small enterprises, the former accounts for 21.4% and latter for 78.6%[2)]

Table 1-1 Number of Enterprises by Size

	1994		2004	
	Number of enterprises	Ratio (%)	Number of enterprises	Ratio (%)
Micro enterprises	85,371	84.1	86,125	84.1
SMEs	15,633	15.4	15,771	15.4
Large enterprises	508	0.5	512	0.5
Total	101,511	100	102,408	100

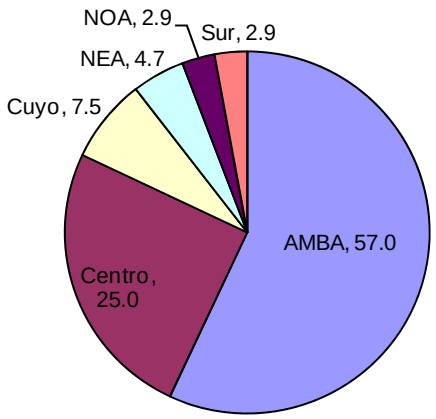
Source: Estimate by Fundación Observatorio PyME based on the National Economic Census

1) The criteria for small and medium manufacturing are determined by the number of employees: nine employees or less is a micro enterprise, 10~50 employees is a small enterprise, and 51~200 employees is a medium enterprise. The SEPyME definitions are different: the distinction between micro enterprises, small enterprises and medium enterprises is determined according to sales turnover in five industrial sectors. For example, in the manufacturing and mining sector, 1.25 million pesos or less represents a micro enterprise, 1.25~7.5 million pesos is a small enterprise, and 7.5~60 million pesos is a medium enterprise. The visit surveys of 62 enterprises by the Study Team here confirmed that these two types of classifications more or less correspond to reality.

2) According to the 2007 structural survey of small and medium manufacturing

(2) Distribution of manufacturing SMEs by area

As is shown in Figure 1-1, the majority of SMEs in the manufacturing sector are located in the Buenos Aires metropolitan area, followed by the Centro region. These two regions account for 82% of the total.

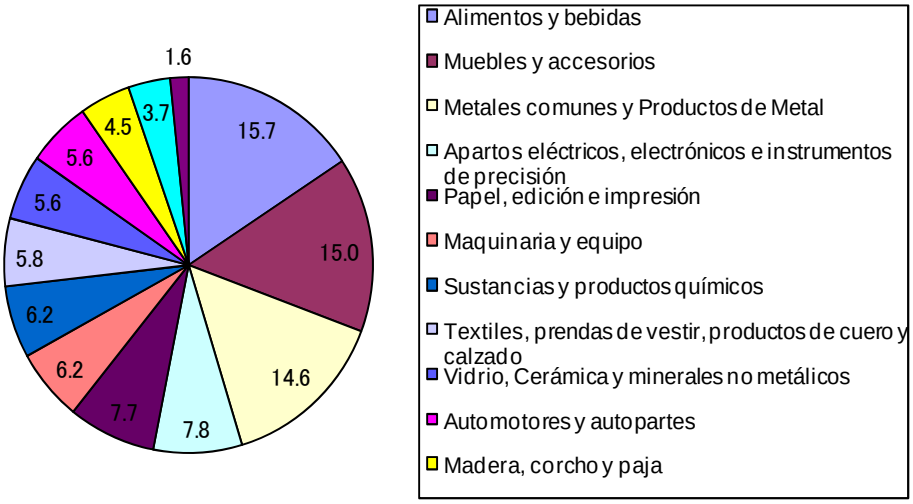


Source: Encuesta Estructual a PyME Industriales, 2007

Figure 1-1 Distribution of Manufacturing SMEs by Area (%)

(3) Distribution of manufacturing SMEs by sector

As is indicated in Figure 1-2, the distribution of manufacturing SMEs by sector is as follows: 15.7% food and beverages, 15.0% furniture and furnishings, and 14.6% general metals and metal products. The fourth most common sector is electric and electronic products and precision instruments, accounting for 7.8%, followed by paper manufacture, publishing and printing, accounting for 7.7%.



Source: Encuesta Estructual a PyME Industriales, 2007

Figure 1-2 Distribution of Manufacturing SMEs by Sector (%)

(4) Business condition of SMEs

After coming through the serious economic crisis of 2001, enterprises in the manufacturing sector started to experience growth from 2003 and business conditions displayed continual improvement up to 2007. During this period, GDP in Argentina recorded annual growth of 8.7% per year. However, entering 2008, the growth rate again slowed down due to the impact of the financial crisis that originated in the United States, and the effects of this appear to be worsening in 2009.

Upon surveying sales turnover for the past three years in the 62 enterprises visited, most enterprises responded that sales have increased. However, these responses were largely based on comparison between 2006 and 2008, and it should be noted that many companies in all sectors indicated a sales drop of 20~30% after the turn of the year.

(5) Business issues in SMEs

Based on interviews with UIA and so on, the most serious business issue facing SMEs was found to be lack of access to financial institutions. Not only do financial institutions refuse to deal with SMEs, but loans to SMEs by government financial agencies are also extremely limited. The next major issue is the heavy burden placed on enterprises by personnel expenses, arising out of policies geared to protecting workers.

1.1.2 Functions of Government Agencies

(1) Ministry of Industry and Turism (Ministerio de Industría y Turismo)

On 2 October 2009, the Ministry of Production (Ministerio de Produccion) was reorganized into the Ministry of Industry and Tourism (Ministerio de Industría y Turismo), and the Agriculture, Fisheries and Food Agency, which had been part of the Ministry of Production, was raised in status to the Ministry of Agriculture and Fisheries. In line with this, the Ministry of Industry was put in charge of the industrial sector and the tourism sector[3)]. Organizations related to the Ministry of Industry and Tourism, INTI are as indicated below (as of December 10, 2009).

3) At the time of the preliminary survey (June 2008), INTI was under the aegis of the Ministry of Economy and Production. In December 2008, the economic department of the said ministry was reorganized into the Ministry of Economy and Finance, while the Ministry of Production became an independent ministry in charge of industry, agriculture and tourism. As of April 2009 when the project started, INTI was under the Ministry of Production. This means that the ministry with jurisdiction over INTI has been reorganized and reformed three times over the past year.

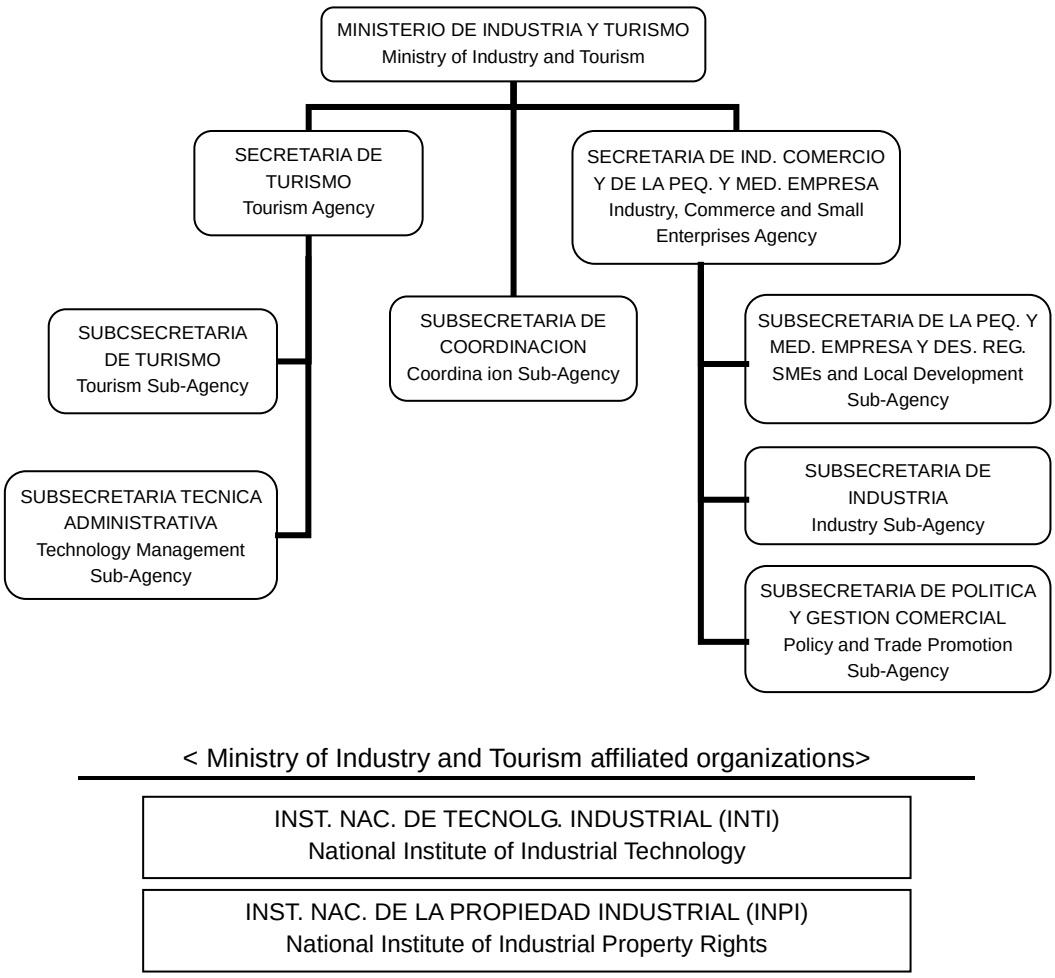


Figure 1-3 Organizations under the Aegis of the Ministry of Industry concerned with INTI

Looking at the organization of the Ministry of Industry, three agencies are positioned under the ministry, i.e. the Industry, Commerce and Medium Enterprise Agency (Sectretaría de Industría, Commercio y de la Pequeña y Mediana Empresa), the Tourism Agency (Sectretaría de Turismo) and the Coordination Sub-Agency (Subsecretaría de Coodinación). Of these, the Industry, Commerce and Medium Enterprise Agency (Sectretaría de Industría, Commercio y de la Pequeña y Mediana Empresa) has jurisdiction over SME policy related to INTI, and three sub-agencies are positioned under its aegis, i.e. the Medium Enterprises and Regional Development Sub-Agency (Subsecretaria de la Pequeña y Mediana Empresa y Desarrollo Regional=SEPyME), the Industry Sub-Agency (Subsectretaría de Industria) and the Policy and Trade Promotion Sub-Agency (Subsecretaria de Politica y Gestion Comercial). SEPyME (described later) has the deepest working relationship with the INTI department in charge of business and production management technology.

In addition, the Ministry of Industry has jurisdiction over INTI and the Instituto Nacional de la Propiedad Industrial=IPI, etc.

(2) National Institute of Industrial Technology (Instituto Nacional de Tecnologia Industrial =INTI)

INTI was established in 1957 as an independent state agency. As one of the major agencies in the national science and technology setup, INTI is under the jurisdiction of the Ministry of Industry.

INTI provides technical services to national agencies, private industry and social agencies. The scope of these technical services extends to technical cooperation, technical development, testing and analysis, product quality, verification, measurement and supervision, software technology and training. INTI also works as a certification agency for standards, technologies and quality to ensure that products and services supplied by Argentiean corporations comply with international quality standards. INTI has more than 1,800 staff involved with these duties and they are active in 24 states in Argentina.

The organization of INTI comprises more than 35 technology centers in each field (or sector) under the Director. These fields cover a wide range including paper and pulp, cereals and oils, chemicals, architecture, dairy products, electronics and information, energy, environment, software technology and development, fruit and vegetables, leather, meat, machines, civil engineering safety standards, packaging, physics and weaight and measures, plastic, rubber, fibers, timber and furniture, public health and technology for disabled people.

Each technology center has established a sector-separate committee composed of officials from government agencies, private organizations and universities, etc. Accordingly, INTI maintains wide lateral links with these agencies and organizations.

INTI also has regional centers which are equipped with laboratory facilities and provide technical services regarding the important fields in each area. These centers serve regional public agencies, private corporations, education agencies and social agencies, etc. Areas where INTI regional centers have been established include Concepción del Uruguay, Cordoba, Mar del Plata, Neuquén, Rafaela, Rosario, San Luis, Villa Rehina and so on, and there are plans to extend the areas served from now on. The underlined areas have NODO, which can be described as regional centers for diffusion of management technology. There is also a NODO in Buenos Aires (Centro Extension y Desarrollo), meaning that there are currently five NODO in the country.

INTI headquarters is composed of a vertical organization (line organization) and a horizontal organization (programs and projects). The vertical organization comprises general affairs, financial affairs, accounting and training departments, while the horizontal organization consists of programs and projects made up of personnel from each technical center. This Study is one of these programs.

(3) Commerce and Small Businesses Agency (Secretaria de Industria, Comercio y de la Pequeña y Mediana Empresa) (SEPyME)

SEPyME was inaugurated under the Ministry of Production, which was separated and made independent from the former Ministry of Economy and Production, in December 2008. In October 2009, the Ministry of Industry was renamed as the Ministry of Industry and Tourism, and SPEyME also fell under its jurisdiction. SEPyME is a policymaking agency in the field of SMEs. SME policy curently does not exist except for the following two laws. Ley25.300 is the revised version of Ley 24.467[4)].

① Ley 24.467 (coming into effect in March 1995: legislation concerning reinforcement of support for SMEs by INTA and INTI, etc.)

② Ley25.300 (coming into effect in September 2000: legislation regarding financial support. This pertains to establishment of a national development fund for SMEs (FONAPyME), guarantee fund for SMEs (FOGAPyME), and a network of regional agencies for production development, etc.)

As is indicated in Table 1-2, the definition of small and medium enterprises in Argentina is determined according to annual sales[5)] in each sector. The definitions were established in 2006, and they are due to be updated next year (2010) to take into account inflation and other factors (SEPyME).

Table 1-2 Definition of SMEs in Argentina (as of June 2009) (Unit: peso)

Sector Tamano	Agropecuario	Industria y Minería	Comercio	Servicios	Construcción
Microempresa	456,000	1,250,000	1,850,000	467,500	480,000
Pequeña Empresa	3,040,000	7,500,000	11,100,000	3,366,000	3,000,000
Mediana Empresa	18,240,000	60,000,000	88,800,000	22,400,000	24,000,000

According to the SEPyME, most of the SMEs belong to the service industry while around 10% are involved in manufacturing[6)]. SMEs account for approximately 50% of GNP and 70% of employment.

SEPyME has a network of regional Agencia (authorized by SEPyME[7)]), and through this it secures IDB support for SMEs and provides financial services to SMEs. There are currently 75

4) No new legislation or SME policies have been announced since the JICA preliminary survey in August 2008.
5) In Japan, SMEs are defined according to capital and number of employees.
6) See "Fundación ObservatorioPyme, Informe 2007/2008: Evolución reciente, situación actual y desafíos futuros de las PyME industriales."
7) Authorization of Agencia depends on the following conditions being in place: 1) being non-profit seeking, 2) being a semi-public semi-private organization, 3) having an office, and 4) having at least four personnel, etc.

Agencia throughout Argentina, and the number of instances of Agencia utilization amounts to 20,000.

Relations between INTI and Agencia range from very close to lax. Since SMEs have high needs for financial services and technical services, providing a combination of management technology services by INTI and financial services by SEPyME via the Agencia will complement activities on both sides.

(4) Ministry of Science and Technology (Ministerio de Ciencia, Technología e Innovación Productiva)

The Ministerio de Ciencia, Technología e Innovación Productiva is one of the administrative agencies that supports SMEs from the technical side. This ministry provides technical support services to SMEs under a unified program while receiving cooperation from the Inter-American Development Bank (IDB).

The program in question is known as FONTAR (Argentina national technology fund) and has been in existence for 13 years. The IDB has offered support from the start, and this support is renewed every four or five years. The FONTAR secretariat has a staff of 34 people working on the program; it targets 400 companies per year and monitors between 700~800 companies. It is currently operating on funding of US$170,000,000, consisting of US$120,000,000 from the IDB and US$50,000,000 from the government, for a period of five years from 2006 to 2011. The support it provides is aimed at technology development and new product development by SMEs, however, it doesn't provide soft support in the production management technology field and so on. In specific terms, it offers a 50% subsidy on investment by SMEs for introduction of modern equipment, new technologies and innovative machinery as well as establishment of product development departments.

The targeted enterprises include ① existing enterprises and ② agencies which provide services to the manufacturing industry, and the sector-separate centers of INTI have also received support under the program.

Application windows are installed in provincial governments throughout the country, while the FONTAR secretariat inside the Ministerio de Ciencia, Technología e Innovación Productiva also fills this role. In cases where applications cannot be reviewed in the FONTAR secretariat, they are referred to INTI or INTA. The amount of support provided varies from case to case, although grants are provided up to 600,000 pesos and financing for agencies aiming to install laboratories, etc. rises to 2,000,000 pesos (50% own financing).

Enterprises that receive support conduct self financing for four or five months and decisions on support are made if the validity of the investment is confirmed by a dispatched auditor. Although the scheme doesn't intend to exclude micro businesses, the fact that not many small businesses can withstand the pressure of self financing means that hardly any such enterprises receive support.

The IDB employs a consultant to implement an impact study once every four or five years. The study focuses on the following issues: ① Has support proved useful to the receiving enterprises, and ② Have supported products been of benefit to society (downstream impacts)?

1.1.3 Activities of Other Donors

Other donors providing support to SMEs in Argentina primarily include the IDB, EU and Italy. The World Bank has not included SME support in its latest support plan (2010~2012), and UNIDO has no plans in particular. There are hardly any other donors conducting similar assistance projects in the area of business and production management technology transfer. The following paragraphs describe the activities of each donor.

(1) Inter-American Development Bank (IDB)

Inter-American Development Bank (IDB) support for Argentina is directed towards three priority fields: ① Good governance, ② Economic competitiveness, and ③ Poverty reduction (the budget for support between 2004~2008 amounted to US$5 billion). Of these fields, the second one is related to support of SMEs, and the IDB currently implements the following program geared to boosting the competitiveness of SMEs. This comprises the following four components.

Technical support (grant aid)	Target fields include soft technologies such as product accreditation, ISO and production management technology. Grant aid has an upper limit of 90,000 pesos, basically used to cover consultancy fees. This program has developed a nationwide network which also includes the regional Agencia.
Cluster support	Rather than enterprises in the same sectors, this support targets groups (chains) of enterprises which cannot operate independently but need to be organized in order to raise added value. Groups that wish to receive support prepare and submit a cluster strategy plan. The amount of support is up to 500,000 pesos, and contents consist of grant aid for provision of machine equipment and laboratories (for product inspections, etc.) for joint use.
Support for new enterprises	Support is available even to micro or individual enterprises. Support is provided to cover consulting fees concerning procedures for expanding from individual enterprises to proper companies and procedures for receiving finance, etc.
Support for access to finance	A new aid plan is currently being prepared (according to an interview with the BID staff). It is planned for next year, however, implementation will be difficult. This is because banks demand collateral guarantees in the current harsh financial environment, however, the support provided under this program does not extend to collateral and guarantees.

The fund for the above four components is US$70,000,000, which consists of US$50,000,000 from the IDB and US$20,000,000 from the Government of Argentina. There are currently 150 or so enterprises receiving support under IDB programs. Some enterprises receive support under two or three components.

[Relevance to this project]

It is desirable for INTI personnel (AMPs) to actively take part in IDB programs. There is no problem for official agencies such as INTI to pay a consulting fee in such cases (according to an interview with the SEPyME official in charge of IDB programs).

(2) EU

The EU is advancing support in Argentina based on the Country Strategy Paper (CSP) 2007-2013. However, although support was scheduled to begin in 2007, it still hasn't started and discussions are currently in progress between the EU and Argentina (according to the SEPyME official).

According to the CSP, priority fields in the EU program are as follows:

① Strengthening of education and training systems in Argentina
② Improvement of economic competitiveness in Argentina
③ Strengthening of bilateral relations and mutual understanding between the EU and Argentina

Concerning the second item, the SME sector accounts for 70% of employment and 60% of productivity in Argentina, so the strengthening of economic competitiveness is closely linked to the strengthening of SMEs. Although the SME sector has great potential for further development, this is impeded by numerous structural factors. EU cooperation is geared to promoting the development of a friendly business environment and enhancement of competiveness, productivity and export capability among SMEs. Realizing this will also accelerate the building of an appropriate environment contributing to the further growth of trade and investment between the EU and Argentina. Moreover, development of the SME sector is regarded as extremely important from the viewpoints of economic growth and efficiency and also fairness.

EU cooperation is divided into three strands, i.e. macroeconomy, mesoeconomy and microeconomy. On the macroeconomic level, focus is directed towards the simplification of enterprise registration procedures, in particular mechanisms and organizational improvements for resolving commercial disputes.

On the mesoeconomic level, cooperation is aimed at strengthening the capacity of public agencies and private sector agencies (organizations) related to SMEs and promoting dialogue between public agencies and private sector agencies. Finally, on the microeconomic level, cooperation aims to

strengthen the productivity and competitiveness of SMEs through cost sharing of BDS (Business Development Services). BDS includes all sorts of non-financial services, for example, market survey, marketing technology, technology transfer mechanisms, business plan preparation and implementation, clustering and networking, export planning, entrepreneurial spirit and business management instructor training, development and training of entrepreneurial spirit and business capacity, and so on. Furthermore, this also includes employee training, enterprise and entrepreneurial spirit development with emphasis placed on ICT and business technology, startup and development of new businesses, and support for female entrepreneurs.

Planned assistance from the EU over seven years is €22.75 million, and the support is divided into two ongoing programs, i.e. 2007~2010 (€9.75 million) and 2011~2013 (€13 million).

[Relevance to this project]

Out of the three levels described above, EU cooperation in Argentina gives priority to the macroeconomic level. Meanwhile, this project focuses on the micro level in that it aims to support problem solving in SMEs using business and production management technology, and it also includes some meso level components concerning the INTI organization, setup and planning, collaboration between public agencies and private sector agencies and networking. However, there is no direct relevance to the EU cooperation on either of these levels. Needless to say, success of the EU cooperation will have a positive impact on this project, and no negative impacts can be considered.

(3) Italy

Italian assistance is directed towards three priority areas, i.e. ① Support for SMEs, ② Social and health sectors, and ③ Education. A project being implemented under support for SMEs targets Concepción del Uruguay, which is one of the target areas in the Pilot Project here. The implementing agency of this assistance is the private organization ICEI (Instituto Cooperazione Economica Internazionale) which is based in Milan.

ICEI collaborates with the Concepción del Uruguay municipal production department, chamber of industry and commerce (CECOM) and UTN (National Technology University) in implementing activities that will contribute to the development of industry in this area. It has signed an agreement with UTN to borrow classrooms for conducting human resources training.

Moreover, ICEI is continuing assistance activities that will contribute to the socioeconomic development of the local area based on the needs of local residents. However, local government offices do not respond even when local needs are voiced by citizens. ICEI is building close relations with various agencies with a view to changing the mentality of the local people. The ICEI office is located in the building of the Concepción del Uruguay chamber of industry and

commerce (CECOM) in this case, and it also has offices in Buenos Aires, Rosario (farmer support) and Boca (cooperation in tourism).

[Relevance to this project]

Since ICEI assistance targets residents, farmers and micro enterprises, these differ from the targets of this project. However, since ICEI has expressed an interest in the management technology of INTI, there is a possibility of building a cooperative relationship between ICEI and INTI with aid from UTN in the area of human resources development.

(4) World Bank

The World Bank approved the Country Partnership Strategy (2010-2012) with respect to Argentina in June 2009. The approved aid amounts to US$3.3 billion. Within this strategy, the World Bank places emphasis on the following three areas: ① Sustainable but fair growth, ② Social sector, and ③ Improvement of governance. The World Bank has also approved assistance items in seven more detailed areas with the Government of Argentina, although none of these items directly relate to SMEs. At the same time as this strategy, the World Bank also approved the Matanza-Riachuelo Basin Sustainable Development Project (US$840 million) and the Basic Protection Project (US$450million). The first of these is a project to improve water quality and preserve environment in the basin of Matanza-Riachuelo River (having a population of 3,500,000, of whom 1,200,000 are said to live below the poverty line). The second project proposes to support family allowances, employment and training insurance and it targets households containing unemployed people and many children. Neither of these projects has any relation to SMEs.

(5) UNIDO

UNIDO has no office in Argentina, but works out of its office in Uruguay. There has been no major support by UNIDO in Argentina over the past few years (according to Lic. Celia De Luca of SEPyME).[8)]

1.2 Current Conditions of SMEs Support via Business and Production Management Technology

In order to clarify the issues (bottlenecks) and support needs concerning business and production management technology, a total of 62 enterprises were visited and surveyed. The target areas were the three states of Buenos Aires, Entre Rios and Neuquén/Rio Negro, and around 20 enterprises were visited and surveyed in each area.

8) Looking at the UNIDO website, there have only been one or two projects worth between US$20,000~80,000 since 2006.

1.2.1 Support Needs of SMEs

Figure 1-4 shows the improvement themes of enterprises that were interviewed during the screening process for the Pilot Project. The problems faced by enterprises may be gathered from these contents. However, it should be noted that these themes are limited to items that can be resolved by management technologies; moreover, since the implementation period of the Pilot Project is limited to two months, only topics that can be resolved in a short time have been selected.

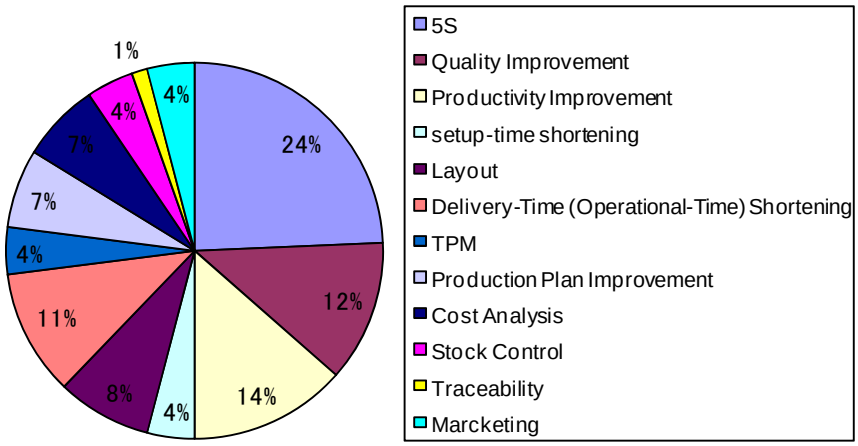


Figure 1-4 Improvement Themes in 62 Enterprises

The most common improvement theme here is 5S. This is the first theme that needs to be tackled when improving plants and, since efforts to improve productivity and quality cannot be started unless this is properly done first, it may be described as preparation for embarking on plant improvements. Productivity improvement accounts for 14%, however, layout improvement and shortening of retooling time may also be viewed as another area of productivity improvement. When these are included, productivity improvement accounts for 26% of improvement themes and becomes the area in highest need of improvement. This is followed by quality improvement, delivery time shortening and production planning.

Of particular note here are the themes of delivery time shortening and production planning. Delivery time shortening was a frequently raised topic among manufacturing enterprises in the fashion sectors of apparel and shoes, etc. In these sectors, since the delivery lead-time is three or four months (whether products be produced according to orders or market projection) and lots are usually produced in large sizes, many enterprises do not have production setups to rapidly respond to demand fluctuations or business waves. Numerous theories are available concerning production planning methods, however, these can hardly be utilized at all in the job production by order approach adopted by most SMEs; moreover, most SMEs are unable to utilize production planning by computer software because there are too many input conditions and revisions. There is a relatively high demand for practical methods of production planning.

(1) Buenos Aires / Mar del Plata

Buenos Aires NODO and Mar del Plata NODO conducted preliminary surveys of enterprises in the leather and shoes sector and food sector[9]. Although it is impossible to make sweeping generalizations about support needs in the manufacturing field in general from these findings, it is possible to understand needs in these two sectors. However, since the preliminary surveys aimed to identify themes[10] in enterprises that can be improved in two months in the Pilot Project, it should be noted that issues of marketing and financial affairs are not raised unless they are very serious. Table 1-3 shows the support needs of 10 leather and shoes enterprises in Buenos Aires.

Table 1-3 Support Needs in the Leather and Shoes Sector in Buenos Aires

No.	Major Products	Support Needs (Themes requiring improvement)
1	Sandals, casual shoes, boots	High missing parts rate, product nonconformity rate
2	Women's leather shoes, handbags, accessories	Switch to small lot short lead-time production, shortening of demand projection period in market production
3	Leather women's shoes and sandals	Shortening of retooling time, improvement of bottleneck processes
4	Sports shoes	Introduction of 5S, establishment of short lead-time production
5	Casual shoes, sports shoes	Establishment of short lead-time production, strengthening of competition
6	Women's sandals, sneakers, casual shoes	Establishment of 5S and production setup
7	Metal parts (toe ends, heels, soles) for safety boots	Production planning, lead-time shortening
8	Students' shoes, sports shoes	Reduction of opportunity losses and dead stock through lead-time shortening
9	Leather tanning	Layout improvement
10	Children's casual shoes, sandals	Workplace housekeeping based on introduction of 5S

The leather and shoes sector manufactures summer items, winter items and seasonal products and is thus prone to large demand fluctuations originating out of fashion changes. In order to respond to this, some companies produce to order, whereas other enterprises conduct market (speculative) production. Enterprises that conduct production to order frequently require customers to allow a delivery time of three months, and many of the enterprises conducting market production request the same time. In both cases, lead-times are too long to cope with seasonal fluctuations and both types of enterprise experience major opportunity losses due to short supplies. Moreover, in the case of market production, there is a high risk of dead stock arising due to mistaken projections. Through reducing lead times, it is possible to reduce opportunity losses and risk of dead stock[11].

Table 1-4 shows the support needs of 10 food manufacturing enterprises in Mar del Plata.

9) Based on a request from INTI
10) Mainly improvement themes in the production department
11) Similar support needs apply to enterprises manufacturing fashionable apparel.

Table 1-4 Support Needs in the Leather and Shoes Sector in Mar del Plata

No.	Major Products	Support Needs (Themes requiring improvement)
1	Empanada skin	Layout improvement, improvement of time between frozen storage and delivery
2	Herb tea	Reduction of manufacturing costs
3	Biscuits, dolce, cookies	Introduction of 5S, demarcation of work areas
4	Repacking of soup materials	Traceability, work improvement
5	Pasta	Shortening of retooling time, layout improvement of product store
6	Confectionery (Allfajores), ice cream	Review of marketing (products, prices, distribution channels, promotion)
7	Goat milk cheese	Introduction of 5S, review of retailing policy
8	Chicken and processed chicken	Improvement of delivery containers, line balancing
9	Canned tuna	Introduction of 5S
10	Local beer	Comparison of profitability between tank storage of intermediate products and storage of finished products

Since processes differ greatly depending on the products in question, support needs in the food sector are highly diverse and cannot be easily generalized. Since food hygiene problems are ever present in this sector, enterprises in need of 5S[12)], which are the basic management technology, numbered 3 out of 10, indicating a large disparity in production management level between the enterprises.

(2) Entre Rios (Concepción del Uruguay / Paraná)

Business owners in Entre Rios can broadly be divided into two types.

First is the type who strives to clearly understand issues and to respond to them (regardless of results), and second is the type of business owner who seeks to place all blame on external factors and does not consider a clear plan.

In the Pilot Project, in order to anticipate a certain degree of success when selecting target projects with the aim of verifying the assumptions, enterprises managed by the former type of business owner were selected. One of these, Lambert Co., lists and prioritizes its issues in the following manner (according to a written request):

a) Marketing and sales strategy
b) Motivation of employees
c) Estimation method for production costs
d) Quality control methods and development
e) Layout development in conventional plants

12) In the food sector, in addition to 5S, a further 2S (washing and sterilization) are required, thereby giving 7S.

f) Improvement of the panel manufacturing method
g) Freezer unit manufacturing process
h) Chassis manufacturing process

Diagnosis of the 10 pilot target enterprises (Concepción / Paraná) by the AMPs in Stage 1 revealed that enterprises are faced with the following issues (the figures show the percentage of companies that have the said issues).

Productivity	(100%)
Quality	(90%)
Cost	(80%)
Delivery time	(70%)
Marketing	(50%)
Human relations, motivation of employees	(100%)
Business strategy	(50%)

All enterprises recognize the need to improve productivity, which is the indicator of capability in the manufacturing sector. Concerning quality, almost all enterprises do not build-in quality during processes but rely on final inspections; as a result, they need to construct quality assurance systems in order to secure the satisfaction of customers.

With respect to cost, enterprises are not aware of actual costs and are thus unable to conduct profit management which entails analysis of deviations from standard costs and so on.

Moreover, even though many enterprises pay attention to maintaining communications through holding regular meetings between management and employees and so on, 100% of the enterprises surveyed pointed to an issue in the motivation of employees, and this matter was frequently raised in interviews with business owners. This shows that even if family members are utilized to fill managerial positions, it is still important to motivate employees to generate actual added value.

Concerning marketing, there are cases of enterprises closing down their sales departments and conducting sales solely through the internet, whereas in another interesting case, an enterprise which had no inquiries immediately following establishment was able to secure a continuous flow of orders after exhibiting its products at an exhibition in Las Vegas.

Turning to Paraná, no major differences were found between the eight enterprises here (including four PP enterprises) and the 12 enterprises (including six PP enterprises) in Concepción above.

(3) Neuquén / Rio Negro

In Neuquén, oil drilling by major corporations accounts for a large share of production, while agriculture (vegetables, fruits: apples, pears, berries, strawberries, etc.) is a major sector. Accordingly, the area is dependent on oil drilling and the manufacturing sector is not well developed. In the manufacturing field, petroleum-related maintenance (micro, small and medium enterprises) is a sector. In agriculture, the main activity is cultivation of apples and pears, however, there is little need for or awareness of business and production management technology in small jam and juice processing plants.

Industries in Rio Negro consist of agriculture, mining and tourism, while in Villa Regina, agriculture is the main sector mainly comprising fruit (apple and pear) farmers, fruit packers and small-scale juice and jam plants. The manufacturing sector in Villa Regina comprises small enterprises conducting agricultural machine repairs and manufacturing tractor attachments such as disinfectant spray pumps and wood chippers, etc. General Roca is a larger town than Villa Regina, and the manufacturing sector here has greater need for business and production management technologies. Manufacturing is at a low level in terms of both enterprises and products, and enterprises mainly sell products in Patagonia, where low awareness of control means there is a certain degree of tolerance towards nonconformities. There is a lack of awareness concerning quality control in the manufacturing sector. Processed product drawings show no tolerance information. Poor compatibility between assembly and maintenance leads to wasted man-hours and reduced performance, etc., however, there is no awareness of such problems. The local market is small, so there is need to raise the level of business and production management and to make advances into other areas. For details concerning support needs (improvement themes) in the visited enterprises, see “PP Model Enterprises Selection Sheet (Neuquén / Rio Negro)”.

1.2.2 Analysis of SME Support Resources

Relations (including potential) between agencies and INTI that possess resources which can be used for diffusing management technology shall be described in five areas (Buenos Aires City, Mar del Plata, Concepción del Uruguay / Paraná, Neuquén / and Rio Negro) in the three provinces where the Study was implemented (Buenos Aires, Entre Rios and Neuquén / Rio Negro).

Although each area has its own distinguishing characteristics, agencies that can be commonly found in each area are the state governments, industrial groups (UIA, ADMIRA local branches and local groups) and universities, etc. As resources, some cases are provided by international aid agencies (IBD, etc.) through such agencies.

(1) Buenos Aries

The UIA is the main economic organization targeting more than 10,000 manufacturing enterprises in Argentina. Not only does it target major makers, but also it supervises SMEs in the manufacturing sector. It has branches in each province and also according to each sector. Moreover, numerous trade associations belong to the UIA, giving it the following kind of major potential to diffuse management and production technology to SMEs.

① When INTI works to support problem solving among individual enterprises, the cost burden for enterprises is heavy, and there are obvious needs for consulting under financial support from the IDB and other donors. At this time, the front for donors on a superficial level consists of provincial governments but in reality this role is played by industrial associations consigned by the local governments. When cooperating with these industrial associations, smooth communications can be anticipated by working through the UIA.

② The UIA stages numerous seminars for enterprises. By employing INTI AMPs as lecturers in such seminars, opportunities for contact with SMEs will be born and this will lead to consulting.

③ When INTI intends to learn advanced management technologies, it is necessary to invite managers and engineers from major corporations to conduct practical training for the AMPs (depending on the topics). On such occasions, it is hoped that the UIA can act as the interface agency.

Thus the UIA has great potential regarding the diffusion of management technology, however, the INTI project official who accompanied the Team was making only his first visit, maybe indicating that relations between INTI and the UIA are inadequate.

ADIMRA is a nationwide industrial organization having some 24,000 metal processing enterprises as members. Concerning the diffusion of management technology in the metal processing sector, this has the same potential as described in ①~③ above. However, although it has conducted cooperation with INTI in regarding unique technologies, it has no record of cooperation in terms of management technology diffusion.

(2) Mar del Plata

In the interview with Cámara Argentina de Industriales del Pescado, a fish processing industry association in Argentina's largest fishing port of Mar del Plata, it was stressed that regulations on imported rival products and government subsidies for equipment renewal are needed ahead of improvements based on management technology. Accordingly, it was judged that enterprises in this sector are not placing great emphasis on management technology[13)].

13) The president's opinions were highly vocal, so it is possible that the organization's attitude could change if a

In an initiative geared to improving the management of timber processors in Mar del Plata since 2007, local production districts of the Buenos Aries provincial government treat SMEs as groups and conduct measures as part of a program for raising added value. Under this system, the provincial government subsidizes the cost of corporate diagnoses by 100% and the cost of business improvement by 50%. This policy has been implemented not only in Mar del Plata but with respect to corporate groups (industrial associations) in 35 cities throughout the province since 2004. The annual budget for the scheme is 5,000,000 pesos, and the amount per case is limited to 200,000 pesos. Last year, support was offered to 150 enterprises in five districts with cooperation from UNT (industrial university). 350 resource persons act as the consultants for this program. Support for enterprises in the timber processing sector in Mar del Plata has been consigned to INTI. Buenos Aries provincial government points out the following factors regarding management technology diffusion activities and their potential:

① The provincial government will continue to play a role as the sponsor of business technology by INTI[14].

② The provincial government implements seminars in cooperation with municipal governments and provides opportunities for INTI to come into contact with enterprises through requesting INTI to provide lecturers.

③ Through encouraging the provincial government to recruit personnel with ATG qualifications as resource persons (other than those from INTI), it is possible that this will promote the spread of ATG qualifications.

(3) Entre Rios (Concepción del Uruguay / Paraná)

Agencies currently active in diffusing business and production management technology to SMEs in Concepción can be classified into the following two types: ① related agencies that conduct technology diffusion activities based on funds, and ②) technology education agencies such as universities, etc. Diffusion activities are already being carried out based on lateral cooperative relations.

① A specific example of technology diffusion activities based on funds is a technology guidance pilot project geared to promoting the manufacturing industry based on funding from Italy and conducted as a joint venture between the ICEI, Concepción City Production Department, and Concepción Federation of Corporate Associations (CECOM). This project based on Italian financing was originally intended for three years, and a further extension has recently been decided. A successful example has been the manufacture of bio fuel made from used cooking oil, and the returns from this are allocated to children's' education.

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new president were appointed.

14) The provincial government has received requests for support from an agricultural machine maker in Nuevo Hulio and a furniture factory in San Martin.

Another example has been the dissemination of science and technology in Entre Rios by an organization known as CAFESG using funds allocated for the construction of Salto Grande Dam, and this entails the resolution of issues based on productivity improvement and marketing in the poultry, apiculture and forestry sectors, etc. Also, in an industrial estate in Gualeguaychú, an Agencia known as Codegu is conducting technology diffusion activities targeting enterprises on the estate. Concrete examples include support for business startups and training using funds from SEPyME.

② Turning to education agencies, UTN (National Technology University) accounts for 60% of bachelors in Argentina. Its teaching staff includes the manager and AMPs of the INTI Concepción branch. Many of the graduates of UTN work as technicians in enterprises. UTN has established an industrial organization course and handles practical themes. It can establish new courses pertaining to the technologies and techniques included in production technology and also has the potential to offer cooperation concerning the diffusion of software technology via development of new technologies required by enterprises; moreover, since there is room for ongoing negotiations, the local side has a lot of expectation. Also, as a review agency under the enterprise promotion law (Law No. 23877), UCU (Concepción University) acts as an interface for loaning SEPyME funds to SMEs, and it also disseminates technology in the areas of cost accounting and sales promotion, etc.

From the above paragraphs, it may be gathered that the existing technology diffusion mechanism is functioning actively. INTI needs to display initiative in the shape of planning ability and footwork in disseminating soft technologies within this mechanism. City production agencies and industrial organizations have the capacity to draw customers and they also realize the importance of technology diffusion. Since Paraná is also home to a regional branch of ADMIRA (Argentina metal industries association) and TN (National Technology University), it will be important to plan cooperation that incorporates these organizations.

(4) Neuquén

A local feature of SMEs support in Neuquén is that most support is directed towards the agricultural sector. Looking at the Neuquén INTI too, training and diagnostic guidance activities are mainly conducted based on HACCP, BPM (Argentinean health standards) and ISO9000 in the agricultural and food sectors, whereas activities in the production management field are limited to 5S training for enterprises but no diagnostic guidance.

Examples of support for SMEs by government-related agencies are CENTRO PyME, Unidad de Desarrollo Economico, Cipolletti Municipal, Municipal de Nuequen and Adegro CAIC, and activities are mainly conducted in the agricultural field. Activities geared to the industrial sector are conducted by CENTRO PyME and Adegro CAIC, however, these agencies have so far not

worked on production management in enterprises. In particular, CENTRO PyME possesses a network of 14 Agencia and has so far conducted seminar activities in agriculture. Lecturers are recruited via tieups with INTA and INTI and efforts are being made to realize organizational reinforcement with a view to supporting enterprise development in the industrial field, although there are still no specific plans in place. Adegro and CAIC jointly stage workshops related to HACCP and ISO, etc. in the food field.

Concerning universities, Universidad Nacional del Comahue has an "σ team" composed of 15 private sector engineers and academics who respond to inquiries from enterprises. In terms of contents, it mainly conducts ISO and HACCP training, etc. and deals with quality control in the area of production technology. The interviewee Rodirugeuz Lupo (professor of the engineering department) has human links with INTI and expressed an interest in the Study. The university has an engineering department and economics department and is manned with potentially capable human resources.

(5) Rio Negro (Villa Regina)

INTI-Villa Regina has conducted activities primarily based around agriculture, and it has assigned two personnel to small business support activities via business and production management technology for the past two years. Enterprises in the agricultural field are making requests concerning HACCP, ISO and BPM, however, activities are not conducted in this area. Hardly any guidance is received from neighboring Neuquén-INTI. Concerning business and production management technology, receiving support from Buenos Aires-NODO, AMPs travel to conduct lectures and diagnostic guidance around once per month.

Concerning government agencies, the Study Team had an interview with the social development section with the mayor in attendance, however, this office has no awareness of business and production management technology, and it conducts no planning or workshop activities geared to the nurturing of the industrial sector. The Italian Chamber of Industry and Commerce and the Villa Regina Chamber of Industry and Commerce are responsible for the only ongoing project, which is related to dried fruits and aims to improve the value of agricultural products, however, no progress has been made in this due to the absence of industrial policy and operating funds. The semi-public semi-private CREA stages lecture meetings in the agricultural field in spite of fund shortages.

There are two universities, i.e. Rio Negro University and Comauhe University, and their food processing departments are manned with people who possess knowledge of HACCP, etc., however, they have no people capable of handling business and production management.

1.2.3 Role and Current Conditions of INTI concerning Diffusion of Business and Production Management Technology

Survey was carried out on the roles and current conditions of INTI in each area, namely Buenos Aires Province (Buenos Aires metropolitan area and Mar del Plata), Entre Rios Province (Concepción del Uruguay and Paraná), Neuquén / Rio Negro Province, and Santa Fé Province (Rafaela and Rosario). Depending on the area, the contents of available services differ both quantitatively and qualitatively. Also, sectors differ according to the targets (customers) of services.

One point all the areas have in common is that apart from INTI there are no other agencies capable of supporting problem solving in enterprises in the area of production management technology. Concerning business management technology services, INTI can also provide these although the contents of services are limited (not as good as production management technology). Concerning business management technology, private sector consultants do exist albeit in limited numbers. Meanwhile, the number of private consultants who can provide production management technology services is extremely limited, so SMEs believe that INTI is the only trustworthy agency that can provide production management technology services[15].

(1) Buenos Aires

Buenos Aires NODO is directly involved in the Buenos Aires metropolitan area (Área Metropolitana del Buenos Aires = AMBA), however, in indirect terms its activities extend to support[16] in areas such as Mar del Plata and Villa Regina, etc. where management technology is not sufficiently diffused. It also implements theoretical training courses on management technology lasting for five days and targeting staff of regional NODO offices, and in doing so it plays an important role in nurturing AMPs in the country.

AMBA comprises Buenos Aires City (population 2,776,138) and 31 surrounding areas having a combined population of 12,129,819[17], which accounts for one –third of the total population of Argentina. In AMBA, there are almost 60,000 manufacturing SMEs, equivalent to 57% of the small and medium manufacturing sector in Argentina. Almost all industrial sectors can be found here apart from resource-based sectors such as oil drilling and wine making, etc.

SMEs targeted by Buenos Aires NODO belong to various sectors including metal processing, auto parts manufacturing, plastics and rubber, clothing and accessories, wood processing, packaging, services and regional government, etc.; however, in the food manufacturing, machine,

15) Seen from the JICA Study Team, the level of management technology services available from INTI (NODO) overall is extremely inadequate (both quanitatively and qualitatively) (at the start of the Study).
16) This includes OJT.
17) According to the 2001 Census

textiles, shoe manufacturing and commercial sectors, it has hardly any or no clients at all.

The management technologies frequently used to support problem solving among clients are as follows: 5S, SMED,7 tools of QC, process quality control, process analysis, motion study, production planning and control, and layout improvement.

This NODO has 6 AMPs, and Table 1-5 shows their respective experiences in management technology diffusion and their specialist fields.

Table-1-5 Experience and Specialist Fields of Buenos Aires NODO

AMP	Years Experience	Specialist Fields
Marcos Rodriguez	3 years	Production management (SMED, layout, time study, TPM, etc.)
Iván Gorra	5 years	Business diagnosis, production management (SMED, production planning, etc.), quality control
Martin Castellano	1 year	5S, SMED, 7 tools of QC, process analysis, etc.
Graciela Ramírez	3 years	Quality control (process quality control, 7 tools of QC), etc.
Claudina Angelino	4 years	Cost accounting, production management (production planning, layout, time study, etc.)
Mauricio Baraschi	0	(Majored in IE at university, entered NODO in May 2009)

Resource: Buenos Aires NODO

Judging from the interviews, the fields and management technologies that need to be strengthened by this NODO are as follows:

- Comprehensive diagnosis and guidance for business :

  Since individual management technologies are used as tools, the ability to conduct comprehensive business diagnosis and guidance is weak.

- Production management field :

  Improvements based on TOC, IT (MRP, ERP, etc.), production planning and control, and team work

- Cost control :

  Cost accounting, cost control, management accounting, revenue and expense control, etc.

- Marketing :

  Market survey, market segmentation, product strategy, sales promotion, distribution channels, price setting, etc.

- Personnel management :

  Recruitment, training, personnel evaluation, reward system, etc.

(2) Mar del Plata

The famous seaside resort of Mar del Plata is a tourist city of 541,733[18] located in Buenos Aires Province, and it has a thriving service sector including hotels, restaurants and casinos, etc. Other sectors include light industries such as textiles, food products and packaging, etc., and fisheries are also important.

INTI Mar del Plata has a short history as a management technology diffusion agency[19] (since 2004), however, actual activities only began when it provided services to seven timber processing companies in 2007. Activities were started under a scheme whereby Mar del Plata timber processors can receive 50% funding from the provincial government for consulting services.

Consulting here is conducted under the guidance of AMPs dispatched from Buenos Aires NODO, while the AMPs from Mar del Plata NODO accompany them as assistants[20]. The management technologies used by Mar del Plata NODO [21]are as follows: 5S, process management, production planning and control, layout improvement and cost accounting, etc.

This NODO has 5 AMPs, and Table 1-6 shows their respective experiences in management technology diffusion and their specialist fields.

Table 1-6 Experience and Specialist Fields of INTI - Mar del Plata

AMP	Years Experience	Specialist Fields
Aurora Zugarramurudi	10 years or more	Has a long career in economic engineering. Has published a number of joint essays with Maria concerning cost analysis in fisheries processing.
Emiliano Martínez	1 year	5S
Guillermo Carrizo	2 years	5S, production control, cost accounting
Guillermo Wyngaard	2 years	5S
María Amelia Parín	10 years or more	Has a long career in economic engineering.

Resource : INTI Mar del Plata

Leaving aside cost accounting and profit accounting, this NODO only has applied experience of management technologies in the timber processing sector, so it needs to gain experience in other fields and use different management technologies. However, since the AMPs here have high potential, provided that appropriate training opportunities are provided, there is ample possibility to widen the scope of problem solving support for enterprises and enhance the level of services.

18) According to the 2001 Census
19) Profit accounting consulting based on economic engineering has been conducted for more than 10 years.
20) 6 companies are clients under this scheme, while 1 more enterprise receives 100% funding. This project is due to end in July 2009.
21) OJT is also carried out for AMPs of Mar del Plata NODO.

(3) Concepción del Uruguay

Entre Rios Province is a backward province in Argentina, and the main industry here is agriculture. Main manufacturing sectors include timber processing, food and machine processing. In this environment, Entre Rios NODO started working on diffusion of soft technology based mainly on quality control under the guidance of Rafaela NODO six years ago, and it went independent four years ago. As a NODO, it is classed in the developing category. It counts around 100 enterprises as clients and conducts consulting for an average of 35 enterprises per month. Assuming its target fields of production management to be P (productivity), Q (quality), C (cost) and D (delivery), it has a certain degree of experience and confidence in 5S and Kaizen activities concerning productivity and delivery. The Study Team visited companies that have received guidance from this agency and confirmed improvements in some cases. On the other hand, concerning cost and quality, the AMPs consider their organization to be lagging. Almost all the AMPs are in their 30s and have a strong desire to improve in their work. They share information well and conduct good teamwork. On the other hand, their lack of experience means that even though they have theoretical understanding of issues, they have little record of proposing or improving real situations and thus lack confidence. In specific terms, they lack the ability to practice more advanced and diverse techniques moving beyond introductory 5S. For example, in the case of the device industry, since processes are a grey area, the AMPs cannot handle situations they have no experience in. Aware of this problem themselves, the AMPs are striving to improve things through standardizing diagnosis procedures and sharing successful case studies, however, there is a limit to this. Hopes are placed on headquarters in this respect. The AMPs themselves are likely to evolve in their own way, and the Pilot Project provided such an opportunity for this type of technology transfer. Concerning the way in which enterprises evaluate INTI, the following favorable response was heard in the Study: “It previously seemed to be a specialist technology research agency targeting major enterprises, however, after President Martinez clarified the principle of targeting small and medium enterprises, it has become more accessible to SMEs.”

(4) Paraná

Paraná is similar to Concepción in terms of industrial structure: the manufacturing sector is lagging, and the main industries are timber processing, food processing and metal processing. The issues faced by enterprises are also similar and primarily revolve around productivity improvement and cost control. The office here has worked as an extension agency since 1999, however, since only one member took part in the establishment of Concepción, the office cannot deal with 20~30 client enterprises and has to pass work onto other NODE in Rafaela, etc. Since Paraná is also the capital city of Entre Rios Province, it is hoped to use this project as an opportunity to increase staff and set up an independent NODE.

(5) Neuquén

The industrial structure mainly comprises oil drilling and agriculture by major enterprises. The last economic crisis forced many industries into bankruptcy, and the enterprises that survived are operating in extremely harsh conditions. Government departments are primarily interested in developing the agricultural sector. Municipal government officials have drawn up plans for an industrial estate and have just started to tackle the issue of nurturing industries. In the agricultural sector, safety and environmental concerns need to be addressed when conducting exports, etc. and it is necessary to conduct accreditations based on HACCP, etc. INTI has conducted diffusion and guidance activities in this sector since 2003~2004 and has made a contribution to the main agricultural sectors. Manufacturing accounts for a small share of production; management levels concerning productivity and quality are low among enterprises, and there is little awareness concerning business and production management. Only INTI has the capability to advertise the importance of business and production management technology and provide support to corporations.

Both public agencies and enterprises have little understanding of the contribution that business and production management can make to improving competitiveness. Enterprises believe that improving quality will lead to higher costs, while Patagonia is a new frontier (backward) area and there is little awareness of the QCD demanded by markets. The role of INTI will be important in enhancing the competitiveness of enterprises and enabling them to respond to needs of external markets in this area. Apart from INTI, no other organizations are providing concrete support to SMEs in the area of business and production management. A lot of expectation is placed on INTI to promote the improvement and diffusion of business and production management technology.

The INTI organization consists of three departments, that is two in the food business (analysis, etc.) and a enterprise diagnosis and guidance department. The most senior and experienced member, Carlos, leads a group of six people. In terms of human resources capacity, only Carlos has experience and activities can only be conducted in the food hygiene sector, however, nobody has any experience of production management. The members received training at INTI headquarters, however, since this was not comprehensive and was only limited to applied Kanban and Toyota system methods, etc., they lack fundamental knowledge. Moreover, since development utilizing headquarters training has only just begun, there are still no personnel capable of providing guidance. Also, since there is little prospect of inviting appropriate external instructors, there is no clear training plan and it is unclear as to when human resources capable of conducting diagnosis and guidance will be developed.

Table 1-7 Experience and Specialist Fields of INTI- Neuquén

AMP	Years Experience	Specialist Fields
Carlos Alberto Cittá	24 years	Majored in chemistry; has experience of working in a food enterprise. HACCP, ICO9000
Juan Manuel Rubino	2 years	Majored in electronic engineering. Currently supports ISO9001 enterprises. 5S training
Luciano Girolimini	1 year	Developed out of food processing, worked for 4 years in a pear wine company. Provides support and guidance for acquiring BPM in food-related enterprises

Resource : INTI Mar del Plata

1. Although a department for conducting guidance and diagnosis of enterprises exists, since there is no official department leader,, organizational functions including budget, etc. are not fulfilled. The de facto leader Carlo has no official authority or budget to work with.
2. It is possible to learn about business and production management technology in lectures and from books and materials, however, since staff have no opportunities to accumulate OJT experience, etc. as consultants, it is difficult to nurture human resources in this field. Expectations are directed to utilizing external lecturers and asking the INTI staff to conduct guidance, however, since it is not possible to formulate human resources development plans, there is no clear schedule for human resources training.
3. Information contained in diagnosis reports and records, etc. by other NODO with more experience is not shared. Due to weak human links, it is difficult to acquire knowledge and information.
4. Within the existing AMPs, two young members in particular played a central role in the Pilot Project (PP). Although their experience in the management technology field is shallow, they are considered to possess great potential. It is important to provide opportunities to experience actual workplaces based on a systematic human resources development plan.

(6) Rio Negro (Villa Regina)

Villa Regina is a city of around 30,000 people. Industrial structure here mainly consists of agriculture (fruit cultivation) and mining, however, other industries are limited. Being a largely agricultural region, needs among enterprises are largely directed towards food hygiene matters such as HACCP, etc. General Roca has a population of around 70,000 and comparatively more industries than Villa Regina. The city has no forward-thinking plans for developing industrial sectors. The enterprises that were visited have low management level and are small in scale; moreover, their customers, who are mainly located in Patagonia, do not make very high demands concerning product quality. In order for the area's main industries to expand into other areas, much expectation is placed on INTI to provide support in terms of product quality and management technology.

INTI Villa Regina officially commenced center activities in November 2009. In addition to the center manager, the center has two departments in charge of food analysis and business/production management technology respectively. There are three personnel, i.e. two members who transferred from the analysis department to the business and production management technology department last year and an IE expert.

Table 1-8 Experience and Specialist Fields of INTI- Villa Regina

AMP	Years Experience	Specialist Field
Adrián Alberto Pessoa	1 year	Food analysis (having graduated from the chemistry field) Center manager since November 2009
Esther Beatriz Camacho	1 year	Food analysis specializing in chemistry Received training in Buenos Aires
Antonio Susca	3 years	IE specialist with experience of diagnosis at numerous plants

Resource : INTI – Villa Regina

(7) Rafaela/Rosario

Rafaela INTI was established in 1997 and started management technology diffusion activities in 2004. Classroom study activities were mainly conducted in the first year, and other activities were added from the next year. Rafaela INTI currently has 42 employees including five AMPs (all senior), of whom one (Merman) is the Concordia of Entre Rios Province.

Currently, the INTI provides guidance in management technology in particular cost control methods to 22 enterprises in the metal processing sector. These enterprises were selected by the metal processing department of the local chamber of industry and commerce after Rafaela City Office submitted a support plan for the metal processing sector to the Ministry of Labor and obtained a budget from the ministry with the objective of sustaining and securing employment in the area. Rafaela INTI also supports the metal processing and dairy industries under financial support from the IDB. This support aims to help problem solving concerning productivity and quality improvement, energy saving, environmentally friendly production and waste treatment, etc. in two related sectors in Santa Fe. In this scheme, half the costs are funded by the IDB while the remaining half is borne by INTA (in the case of dairy products) or enterprises (in the case of the metal processing sector).

Rafaela INTI also conducts joint guidance with Rosario INTI in the agricultural machine manufacturing sector. This guidance was started in June 2008 and is scheduled to continue until October 2009. Rosario INTI is in charge of seven enterprises, while Rafaela is in charge of one, and the target theme is productivity improvement.

Related agencies include the city program development department, the commercial center (Centro Commercial), and the chamber of industry and commerce (belonging to the commercial center). Moreover, relations have recently been deepened with the national technology university and provincial technical high schools. When the local INTI offices find they lack the knowledge and experience to provide guidance to enterprises, they seek guidance from other INTI centers.

INTI Rosario was established in 1972 and currently has 39 employees working in three departments (surveying and machinery, management technology, food and environment). In addition, there are six extension staff, of which two belong to INTI headquarters but are managed by Rosario INTI.

As is also the case in Rafaela, the main sectors targeted by Rosario INTI are metal processing, food processing, wood furniture making and plastics, etc. reflecting the main industries in the local area. It especially conducts guidance for enterprises situated in the area containing a high concentration of agricultural machine makers. A features of this NODO is that ISO-related work accounts for between 30~40% of the total work load. However, since the department in INTI headquarters in charge of ISO affairs is the Sector-Separate Technology Center, this is not properly understood in the project.

1.2.4 Advance JICA Development Study and INTI Efforts

For around one and a half years from September 2004 to March 2006 JICA implemented the Study on Revitalization of SMEs in Argentina, and it made the following five recommendations in the Study report:

① Establishment of an INTI business and production management technology support department

② Training and enhancement of employees in the INTI business and production management technology support department

③ Establishment of a capability and experience certification system for SME advisors

④ Opening of INTI business and production management technology training courses

⑤ Formulation of a plan for construction of a business and production management technology diffusion system

Generally speaking, in the advance study it was recommended that the internal organization of INTI be prepared and that a diffusion setup involving external related agencies (central and provincial administrative agencies, industrial groups and universities, etc.) be established so that INTI can widely diffuse management technology to SMEs from now on.

In order to realize this, INTI established NODO in the INTI regional centers as bases for disseminating anagement technology, however, collaboration failed to develop smoothly between each NODO and also between INTI headquarters and the NODO. Rather, each NODO tends to implement its own independent activities, making it impossible for the overall INTI organization to function as a single entity. One reason for this situation may lie in the fact that the organizational relationship or division of duties between INTI headquarters and the regional centers (NODO) wasn't clearly specified.

Meanwhile, efforts to establish collaboration and cooperation with external agencies have been half-hearted and there has been no focal point for the establishment of a network with such agencies. As a result, the management technology diffusion setup based on INTI has generally failed to grow strong.

Three years after the recommendations were made (as of May 2009, at the start of this field survey), the state of progress is as described below.

(1) Establishment of an INTI business and production management technology support department

This recommendation originally included two alternatives, i.e. strengthening of INTI headquarters center or strengthening of the Rosario INTI center, and it wasn't decided which one would be selected at the end of the advance development study. After that, the headquarters center was raised in status to a department (Programa de Ensayos y Asistencia Técnica = PEAT) and human resources from the regional centers were utilized.

Following organizational reform in December 2009, the consumer and manufacturing support department (Programa de Asistencia a Consumidores y la Industria de Manufacturas) is responsible for providing business and production management technology support (see Chapter 3).

(2) Training and enhancement of employees in the INTI business and production management technology support department

INTI headquarters has so far implemented training on extremely basic production management technology targeting 40~50 diffusion personnel (facilitators) working in headquarters and the regional centers. Facilitators have the job of assisting the AMPs (productivity improvement advisors), and the training here aims to nurture facilitators into AMPs through subsequent OJT.

Five AMPs from Buenos Aires NODO worked as lecturers in the training which was composed of lessons (25 hours) and practical work (company visits). Visits were made to two companies. The training curriculum comprised KAIZEN, 5S, Kanban, quality, maintenance and enterprise diagnosis, etc., however, since there was no systematic arrangement of management technologies or practical workplace training, the trainees did not necessary acquire a high degree of understanding.

In particular, even though the enterprise diagnosis technique (100 check items and radar chart) left by the JICA Study Team was utilized within INTI, the evaluation regarding it was as follows: "As a technique for analyzing the issues and improvement themes of SMEs, it is not practical because it is time consuming and issues are not clearly set out."

Here, because the Study Team was able to practically transfer the important points of enterprise diagnosis and the approach to asking questions during diagnosis via the diagnosis techniques and enterprise diagnosis forms used in the PP, an attempt was made together with the AMPs to revise the training to "effective contents for future enterprise diagnosis and training."

(See Chapter 4 for the concrete training system proposed in the Study.)

(3) Establishment of a capability and experience certification system for SME advisors

In addition to the above training in Buenos Aires, the regional INTI centers also independently conduct production management technology diffusion activities and human resources development. Among these, the centers at Rosario, Cordoba and Buenos Aires in particular have built up relatively extensive experience. Meanwhile, the centers in other areas are also conducting production management technology diffusion activities and human resources development while building cooperative relations with other areas.

However, there are fluctuations between centers in terms of their diffusion activities and the capacity of diffusion personnel, and effort has been made to build a setup to realize unification and standardization. Assuming that a qualification certification system will be established in future, efforts have so far been made to prepare and examine human resources training manuals, qualification certification fields and certification methods (tests and skill checks, etc.), however, INTI was unable to independently produce concrete results until the Study. (See Chapter 4 for the concrete qualification certification system proposed in the Study).

(4) Opening of INTI business and production management technology training courses

Both INTI headquarters and the regional centers open training opportunities to external participants. However, prior to the Study here, apart from the INTI headquarters there were very few regional centers that could offer training opportunities in management technology to outside targets. Moreover, as is the case with INTI headquarters training, it is thought that the contents and frequency too were very limited, reflecting the scarcity of lecturers and the inability to provide training contents sufficiently able to respond to external needs[22)].

22) It is assumed that external needs exist. A manager from a corporation not targeted in the PP who took part in a W/S in a PP area said the following, "I always though you needed to travel to Buenos Aires in order to get this kind of training (applied training before the PP), so I am grateful to see it in the provinces." This would

The counterparts (diffusion personnel) who took part in the Study were individually limited in their management technologies, however, through experiencing the job of lecturers in the PP workshops and acquiring practical knowledge in the Pilot Project, the counterparts clearly expanded the range of training contents they can handle as lecturers (management technologies they can approach as improvement themes).

(5) Formulation of a plan for construction of a business and production management technology diffusion system

Prior to the Study, hardly any progress was made concerning this recommendation. The main reason for this was that INTI headquarters didn't have enough human resources capable of following it up. This is why so much is expected from the Study here.

seem to hint at the existence of needs for training in regional areas. Also, there are areas where interest in management technology is growing in both manufacturing and the service sector.

1.3 Setting of a Draft Plan (Assumptions) for the Effective Diffusion of Business and Production Management Technology

1.3.1 Setting of Assumptions

Based on the analysis and survey of current conditions described previously, a draft plan (assumptions) for the effective diffusion of business and production management technology was compiled. In Stage 2, the assumptions described in the following sections were verified via the Pilot Project (PP) and approved in the Steering Committee (SC) staged on June 24, 2009.

Also, the final draft recommendations concerning the training plan and qualification certification system which were verified in Stage 2 are described in Chapter 4.

Diffusion Plan for the Business and Production Management Technology
Small and Medium Enterprises in Argentina 'Recommendations'

Ever since its establishment in 1957, INTI has provided unique technology services contributing to the industrial development of Argentina. In recent years, amidst growing needs for greater international competitiveness, INTI has devoted greater energy into providing business and production management technology services to enterprises. Against this background, recommendations (assumptions) are here given for the "Desirable shape of INTI" as it aims to support problem solving based on business and production management technology in micro, small and medium enterprises.

① What is the mission of INTI (departments concerned with business and production management technology)?
② What principles should INTI follow in order to realize that mission?
③ What should be done based on those principles (specific action plan s based on each principle)?

Based on this, assumptions are proposed as follows.

1. The mission of INTI (departments concerned with business and production management technology)

The mission of INTI (PEAT) is as follows: "To contribute to the socioeconomic development of Argentina through supporting problem solving in micro, small and medium enterprises based on business and production management technology geared to fostering strong micro, small and medium enterprises."

(Explanation of terms and expressions)

- In this project, INTI is used to express the organization within INTI, i.e. Pograma de Ensayos y Asistencia Téchnica (PEAT), as opposed to "INTI overall."
- The term "Diffusion of business and production management technology" gives the impression that business and production management technology exists and is applied to enterprises before the actual problems of enterprises. In this case, since there is risk of management technology being used erroneously, in the mission statement for INTI (PEAT), it is more appropriate to use the following kind of expression: "To find solutions to problems in enterprises through utilizing appropriate problem solving management technologies alone or in combination."

- The currently used title of AMP (Asesor Mejorar Productividad) gives the impression of being limited to productivity; therefore a new term describing a management technology advisor who supports enterprises through business and management technology, i.e. ATG (Asesor de Tecnología de Gestión: ATG) is more desirable.
- The term "strong micro, small and medium enterprises" is a quote from the overall strategy for INTI described in *Plan Estratégico del INTI, Diciembre de 2008*.
- "Micro, small and medium enterprises" include organizations such as public authorities and industrial associations, etc.
- The term "based on business and management technology" distinguishes from efforts by INTI technical service departments in each sector to respond to enterprise needs by using unique technologies; while "supporting problem solving in micro, small and medium enterprises" is limited to activities based on business and management technology (it does not include fundraising issues of enterprises).
- "Supporting problem solving in micro, small and medium enterprises" infers that INTI does not actually solve problems but that it supports the autonomous efforts of enterprises.

2. INTI principles

INTI establishes the following kind of principles in order to "support problem solving in micro, small and medium enterprises."

Principle 1: INTI shall fulfill the following four functions:

① Survey function regarding the problems and management technology needs of micro, small and medium enterprises (PyME)

② Function of selecting and developing management technologies suited to the problems of PyME

③ Human resources development function for nurturing personnel to support problem solving by PyME

④ Function of implementing PyME problem solving support through management technology

Principle 2: Based on problem analysis in micro, small and medium enterprises, select the management technologies that INTI should tackle, and develop new training courses regarding technologies found to be effective when applied to PyME (trial introduction to enterprises).

Principle 3: Compile training plans based on the qualification requirements for PyME problem solving support staff (ATG) and conduct systematic human resources development that combines theoretical training with practical training. Concerning regional centers where not enough ATG are secured, give priority to implementation of Principle 3.

Principle 4: In order to realize the four functions described under Principle 1, strengthen collaboration with external agencies with a view to complementing the capacity of INTI.

Principle 5: The INTI headquarters and regional centers shall have a clear division of roles and conduct networked collaboration in order to realize the four functions described under Principle 1. Proposed roles are as given below:

	Planning	Implementation	Assessment
Function ①: Needs survey function	P	P & N	P
Function ②: Selection and development of management technologies	P	P	P
Function ③: Human resources development function	P	P & N	P
Function ④: PyME support function	P & N	N	P & N

P:PEAT / N: NODO

Principle 6: INTI headquarters shall be reinforced as the department possessing budget, instruction and command authority essential for the execution of Principles 1~4. (Examine the feasibility of switching to a line organization).

Figure 1-5 shows the interrelationships between the six above principles.

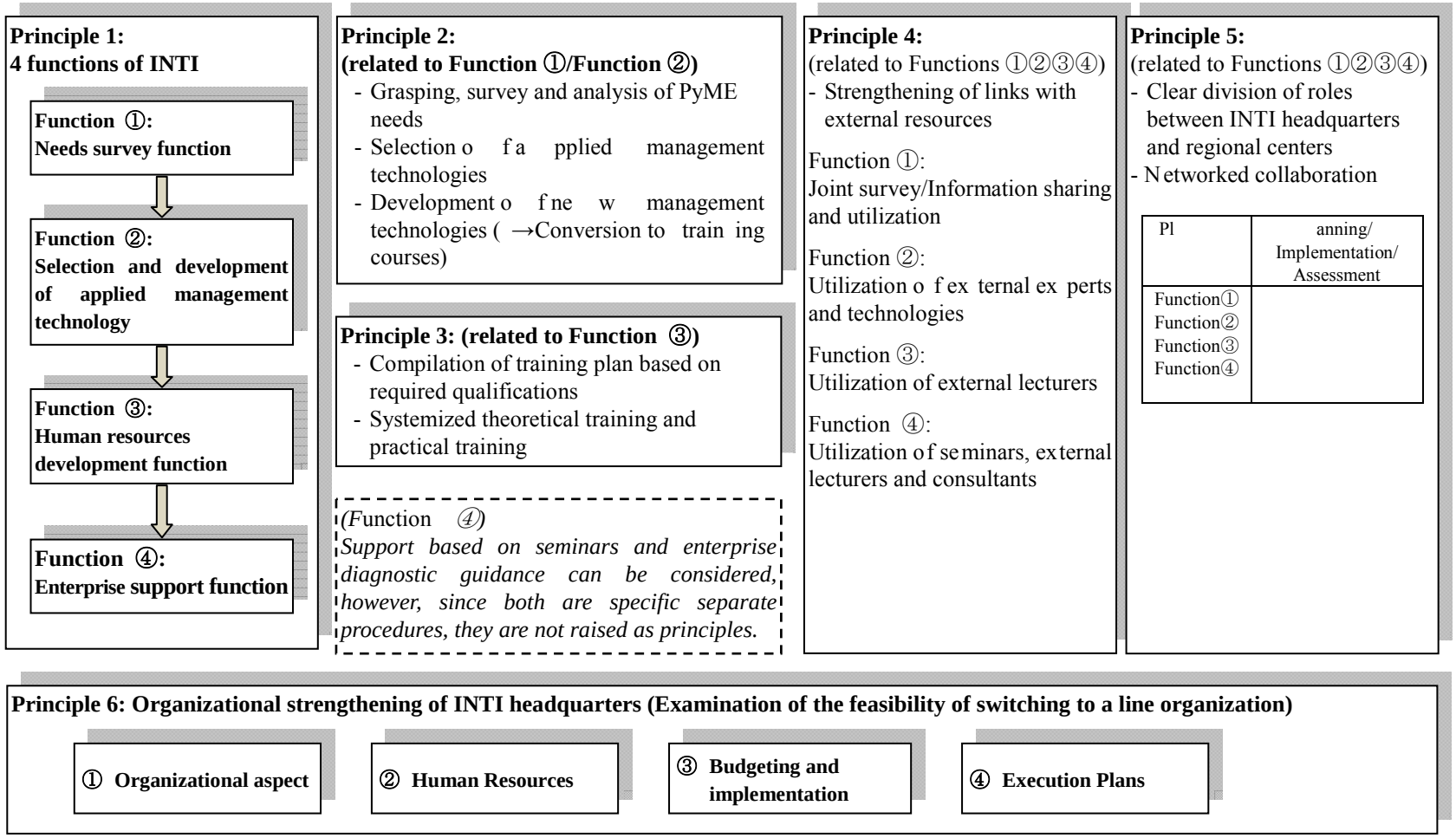


Figure 1-5 Interrelationships between 6 Principles

1.3.2 Formulation of the Pilot Project Implementation Plan

The draft implementation plan for the Pilot Project (PP) to be implemented in Stage 2 was prepared and consented to by the related officials. The PP implementation plan that was approved at the Steering Committee of June 24, 2009 is as follows.

[Pilot Project (PP) Implementation Plan]

Introduction

In this development study, a master plan (M/P) for diffusion of business and production management technology in INTI will be compiled with the aim of supporting SMEs in Argentina.

To ensure that the master plan (M/P) compild in Stage 3 is effective and feasible, the assumptions (= draft difusion plan) shown separately were presented.

1. Framework of the Pilot Project (PP)

1-1. Objective

Implement the PP on the following activities included in the assumptions (draft diffusion plan) in order to verify validity and feasibility. Also, conduct practical transfer of technology to the counterparts (C/Ps).

#1: Verification of an effective and systematic human resources development plan (=**Effectiveness of the theoretical training and practical training)**

#2: Support activities for problem solving at PyME (=**Verification of effectiveness of management technology)**

#3: Trial implementation of the INTI-AMP qualification accreditation system (=**Examination of the process for extracting and accrediting AMP requirements)**

1-2. Target areas :

The PP activities will be implemented in the following areas, however, participants in training will not be limited to NODO and AMPs from these areas only (Shaded parts = #1 theoretical training venue)

① Buenos Aires / Mar del Plata

② Entre Rios / Paraná

③ Neuquén / Rio Negro

1-3. Implementation period :

The PP implementation period shall be from September 2009 to mid-November 2009 (see CRONOGRAMA DEL PROYECTO PILOTO). However, since the issues confronted by model enterprises and the approaches to resolving them differr, it is possible that the time required (number of visits) for diagnosis and improvement implementation will differ between enterprises.

2. Pilot Project (PP) implementation setup

- The core implementing agency of the PP shall be INTI-NODO, with the JICA Team providing support.
- Especially in the problem solving support activities (#2) for enterprises in the latter part of the PP, care shall be taken to build a setup that will enhance the autonomy of the C/P so that the NODO AMPs can proactively implement diagnosis and improvement activities at enterprises.
- Concerning the INTI-AMP qualification accreditation system (#3), the JICA experts will take the initiative in ① identifying the conditions required of AMPs and ② proposing the AMP accreditation process throughout the PP period. Care shall be taken to ensure that human resources in INTI are utilized to the full in activities in the INTI diffusion and development program.

2-1. [Work Description of PP]

	Actividades de PP	Empresa	INTI- AMP	JICA Consultant
-	**REUNION INICIO** *Kick Off Meeting*	○	◎	○
Formación	**CAPACITACION TEORICA** *Theoretical Training*	△	○	◎
	CAPACITACION PRACTICA *On the Job Training*	-	○	◎
Implementación	**IMPLEMENTACION DE DIAGNOSTICO PREVIO.** *Implementation of Pre-Diagnosis*	-	○	◎
	SELECCION DE OBJETIVOS Y PROGRAMACION DE CRONOGRAMA PARA CADA EMPRESA. *Selection of subject and planning of schedule for each company*	◎	◎	◎
	IMPLEMENTACION DE DIAGNOSTICO DETALLADO Y ASESORAMIENTO SOBRE METHOD DE SOLUCION. *Implementation of Detailed Diagnosis and Advising of Solution Method.*	-	○→◎	◎→○
	PREPARACION DE INFORME DIARIO *Preparing Diagnosis Daily report*	-	◎	○
	IMPLEMENTACION *Implementation*	◎	○	△
	PREPARACION DE RECOMENDACIONES (INFORME FINAL) PARA EMPRESAS *Preparing Proposal (Final Report) for Enterprise*	-	◎	○
	PREPARACION DE INFORME DE ESTUDIOS PARA CADA CASO. *Preparing Case Study Report*	-	◎	△
	EVALUACION FINAL *Final Evaluation*	◎	◎	◎
	ORGANIZACION DE TALLERES (PRESENTACION LOS RESULTADOS DE PP) *Organization of W/S (Presentation on PP Results)*	○	◎	○

: Las Líneas Sombreadas son actividades concluidas en la 1ra etapa.
(These activities was done at 1st Stage.)

◎: Actores Responsables / Responsible Actors
○: Actores de Apoyo / Supporting Actors
△: Supervisores / Supervisors

3. Implementation contents

3-1. Kick Off Meeting (#0)

Targeting the INTI-AMPs, PP model enterprises, potential cooperating agencies and JICA experts, etc. (all parties related to the PP), give an outline explanation of the PP implementation plan (including schedule, etc.). In particular, reconfirm the objective of the PP model enterprise support activities (#2) and secure full understanding,

The problem solving suport activities for PyME (#2), which are a component of the PP activities, are not intended simply to improve problems at the PP model enterprises but rather to achieve the following multiple objectives (see 1-1):

① Transfer management technology to the PP model enterprises so that they can utilize it to make autonomous improvement (with INTI providing support)
② Through the PP, evaluate and enhance the management technology diffusion capacity of INTI staff. The PP incorporates OJT in mangement technology diffusion for the INTI staff.
③ Demonstrate that the management technology being applied to the PP model enterprises has general applicability and is valid in Argentina.

3-2. Verification of an Effective an Systematic Human Resources Development Plan (#1)

In order to compile a human resources development plan that is effective and systematic for the INTI AMPs, verify the effectiveness of the theoretical training and practical training.

Theoretical training (Capacitación Theorica)

To ensure that the themes of theoretical training are effective and practical for the INTI-AMPs, items with high general applicability shall be selected from the issues (improvement themes) faced by the PP model enterprises that were selected in Stage 1. Basically, the JICA experts will be lecturers, but the INTI-AMPs will take charge of some items.

This theoretical training lasting three days will be open to potential cooperating agencies and owners (or manufacturing managers) of PP model enterprises, and effort will be made to promote smooth PP implementation based on promoting the common understanding of related persons.

The scheduled dates of theoretical training are as follows.

Target Area	Implementation Date	Candidate Venue
BUENOS AIRES / MAR DEL PLATA	SEP/02/2009 (MIE) SEP/03/2009 (JUE) SEP/04/2009 (VIE)	INTI MIGUELETE (Buenos Aires)
ENTRE RIOS (CdU / Paraná)	SEP/07/2009 (MIE) SEP/08/2009 (JUE) SEP/09/2009 (VIE)	(CONCEPCION del U.)
NEUQUÉN / RIO NEGRO	SEP/09/2009 (MIE) SEP/10/2009 (JUE) SEP/11/2009 (VIE)	Centro PyME (NEUQUÉN)

Practical Training (Capacitación Practica)

Based on the themes raised in the theoretical training, improvement support activities (#2) will be implemented each week at 10 enterprises in the shape of practical training from September to mid-November 2009.

3-3. Problem Solving Support Activities for PyME (#2)

Through implementing support for resolving business and production management problems in the PP model enterprises (30 enterprises in total) selected in Stage 1, verify the effectiveness of management technology. Moreover, treating this as practical training for the INTI AMPs, conduct effective transfer of technology.

◆ **Procedure and Work Flow of Diagnosis**

Step	Number of Visits	Standard Time per Visit
Grasping of facts and information collection concerning the targets of improvement	1	6 hours
Data analysis and examination	1	3 hours
Examination, compilation and implementation of improvement plans	4	3 hours
Final evaluation and proposals (report and oral)	1	2 hours

Improvements are usually made according to the following procedure:

① Grasping of problems and setting of themes
② Clarification of objectives and setting of goals
③ Compilation of the implementation plan
④ Grasping of facts
⑤ Data analysis and examination
⑥ Compilation and evaluation of improvement plans
⑦ Implementation and follow-up

Items ① and ② were completed in the first visit in Stage 1, while ③ is deemed to have been finished in the second visit.

In Stage 2, it is scheduled to implement items ④~⑦, however, even if draft improvement plans are compiled it is possible that they may not be implemented during the PP period.

For example, assuming that a proposal for layout improvement is planned, since the PP period is the peak time for production (or due to financial considerations), it may not be possible to effect changes at once. However, in such a case, it should be understood that the PP should be evaluated according to whether or not the enterprise acquires the capacity to independently implement layout revisions.

3-4. Trial operation of the INTI-ATGs qualification accreditation system (#3) (= Identification of ATG conditions and examination of the accreditation process)

Throughout the PP implementation process, conduct examination on the following necessary conditions, definitions and accreditation method for the accreditation system.

① Identification of ATG qualification conditions
② Role (necessary capacity) and definition of ATGs
③ Qualification accreditation agency and accreditation scheme (accreditation process)

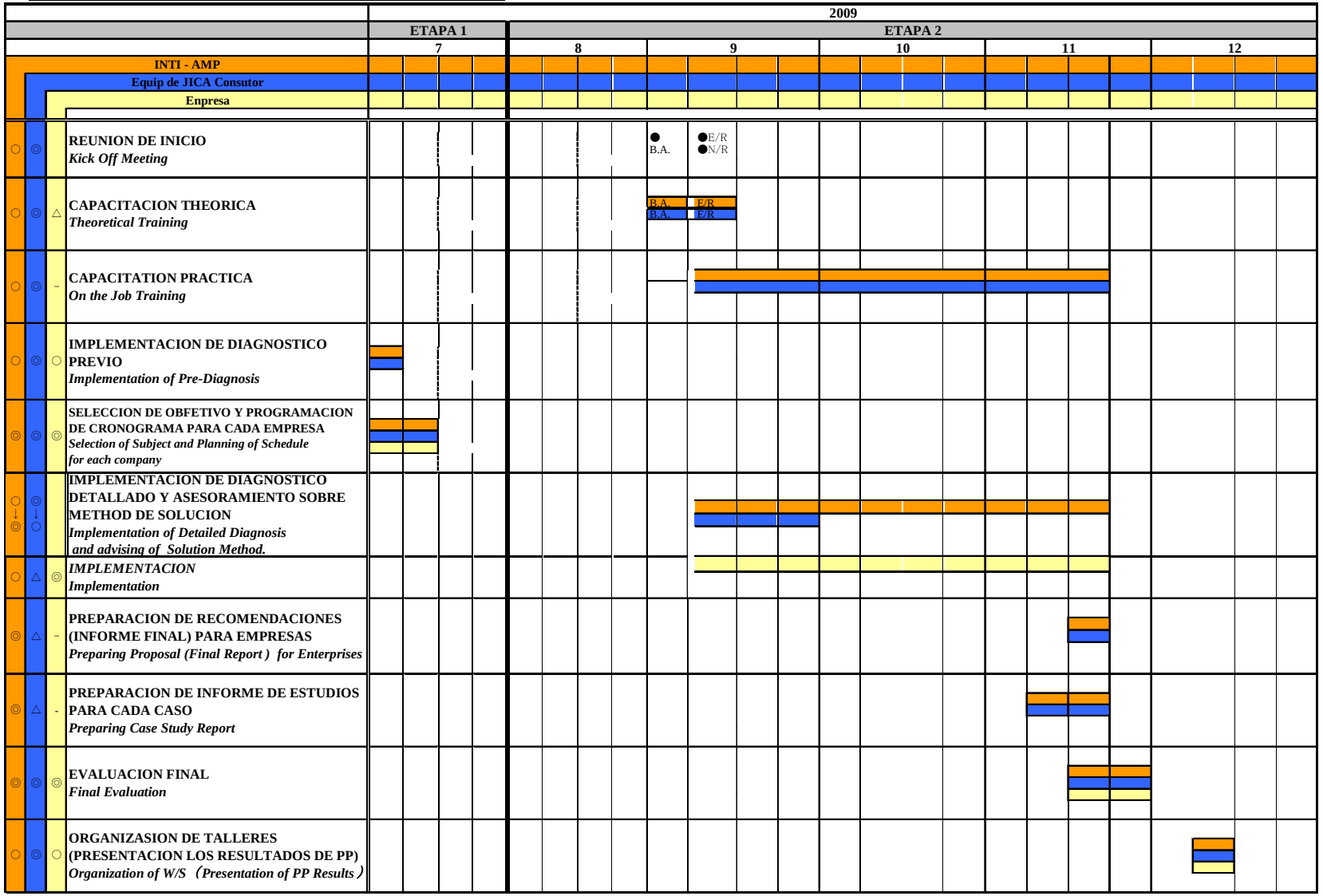
4. Evaluation

Evaluation Grid for Outputs of PP Implementation (Draft)

Evaluation Item	Evaluator			Evaluation	Remarks
	EMPRESA	INTI-AMP	JICA Experto	Bad 1 good 5	
1. General evaluation of the PP implementation plan					
① Was the selection of issues appropriate?				1 2 3 4 5	
② Was the selection of approach appropriate?				1 2 3 4 5	
③ Anticipated goals and/or outputs: level of attainment and future prospects				1 2 3 4 5	
2. Transfer of technology to the C/P					
① Was basic theory of business and production management technology transferred to the C/P?				1 2 3 4 5	
② Was the practical training in business and production management technology effective?				1 2 3 4 5	
③ Were diagnosis and improvement techniques for business and production management technology learned?				1 2 3 4 5	
3. Effectiveness of management technology					
① Are improvement effects concerning the issues specifically recognized?				1 2 3 4 5	
② (Even though clear outputs are not manifested during the period) Has the setup or foundations for resolving issues been established, and are there prospects for concrete outputs in the near future (1 year or less)?				1 2 3 4 5	
③ Is it likely the business and production management technology acquired during the PP will be utilized?				1 2 3 4 5	
4. Satisfaction of model enterprise managers					
① What is the level of satisfaction concerning the results of the PP?				1 2 3 4 5	
② Possibility of seeking advice from INTI in future				1 2 3 4 5	

Taking the above points into consideration, the draft Pilot Project schedule is as shown below.

Pilot Project schedule



1.3.3 Selection of Pilot Project Target Enterprises (PP Model Enterprises)

Evaluation and analysis of the PP candidate enterprises were carried out based on the visit surveys, and the PP model enterprises were selected upon taking human resources at the INTI provincial centers and related cooperating agencies into account. The Steering Committee was held on June 24, 2009 and the model enterprises were selected based on consensus among the members. The approved list of enterprises is as follows.

Table 1-9　PP Model Enterprises Selection Sheet (BUENOS AIRES / Mar del Plata)

No.	Nombre de la Empresa 会社名	Rubro 業種	Principales Productos 主要製品	Capital 資本金	Número de Empleados (Temporarie) 従業員数 (季節従業員)	Venta anual (Pesos) 年商 (Pesos)	Porcentaje de Exportación (%) 輸出比率(%)	Dirección 所在地	Posible Tema de Mejora (Tecnológia de Gestion de producción y gerenciamento) 想定される改善テーマ (経営・生産管理技術)	Calificación de la Evaluaciones								Resultado de Selección 選定結果
										¿La empresa pertence al rubro fuerte de la provincia? その州の有力な業種に属しているか	¿Cabe mejorar mucho en el área de la tecnológia de gestión y que alberga un gran potencial para manifestar impacto de las mejoras? 管理技術で改善の余地が大きく、成果が上がりそうか	¿La tecnología de gestión que debe ser mejorada es en cierto aplicable universalmente? 改善に使われる管理技術に汎用性があるか	¿El dueño o la directiva está predispuesto a mejorar la tecnológia de gestión y a cooperar al Proyecto Piloto? 経営者が管理技術の改善意欲を持つ、PPに協力的か	¿El personal de contraparte que trabajará con la empresa tiene las facultades necesarias para la ejecución del PP? PPの責任者は実質的権限を持つか	Nivel de Actividad Gremial 労働組合活動の活発さ	Acepta Publica el Resultado de Mejora continua 成果の情報公表に同意しているか	Total	
1	TACCA HNOS.	Accesorios para calzado	Punteras y plantillas para calazodo de seguridad.	$ 1,000,000	25	7,000,000	0%	Condor 205 / 51 Pompeya - CABA	Reducción de stocks. SMED. Reducción de tamaño de lote.	2	4	5	4	3	2	5	25	No seleccionada
2	PIANS SRL	Calzado	Saldalias de niño y de dama, Ballerinas	U$S 1.500.000	98	U$S 2.000.000	0%	Brasil 355 Avellaneda	Aplicación de 5'S'	3	4	5	2	2	4	4	24	No seleccionada
3	DE ASIA	Calzado	Calzado para dama de tiempo libre	$ 600,000	35	$ 5,000,000	25%	San Pedro 5377 Matadero - CABA	Calidad en proceso	3	4	5	3	4	5	5	29	Seleccionada
4	LANNOT	Calzado	Calzado carteras y accesorios		120	$ 27,000,000	15%	Av. Larrazabal 2450 Mataderos - CABA	Determinación y reducción de tiempos de producción	3	4	5	3	4	4	5	28	Seleccionada
5	INDUSTRIAS SUCRE	Calzado	Sandalia de dama escotados y botinetas		38		4%	B. de Irigoyen 650 Moron	Reducción de tiempos de preparación de los puestos de trabajo. Determinación de tiempos estándar. Control de Calidad	4	4	4	5	4	5	5	31	Seleccionada
6	PANOSS SRL	Calzado	Calzado de damas caballeros y niños	U$S 1.000.000	25	$ 2,000,000	0%	C. Pellegrini 3543 Ciudadela	Aplicación de 5'S'	4	5	5	4	3	4	5	30	Seleccionada
7	HEYDAY	Calzado	Calzado infantil	$ 20,000,000			5%	Yatay 845 Valentin Alsina	Reducción de los tiempos de proceso y de stocks. Clasificación de proveedores.	3	3	3	2	1	4	3	19	No seleccionada
8	MISADON	Curtiembre	Cueros	U$S 5.000.000		U$S9.000.000	25%	Sen. Quindimil 3450 Valentin Alsina	5'S' en almacén de Productos terminados	3	2	3	2	4	2	4	20	No seleccionada
9	CALZADOS FIVE	Calzado	Zapatillas deportivas/Urbanas	$ 1,000,000	26	$ 600,000	10%	Alte. Brown 3698 Lomas del Mirador	Reducción de tiempos de proceso para lograr reducir los tiempos de entrega y mejorar la competividad. Clasificación y negociación con aparadores externos.	3	4	3	5	3	5	5	28	Seleccionada
10	ARTESANIAS RS	Calzado	Calzado para bebes, niños y adolecentes	U$S450.000	18	$ 1,500,000	0%	San Pedro 1221 La Tablada	Aplicacón de 5'S'. Reducción de tiempo de entrega al cliente.	3	4	4	5	4	5	5	30	No seleccionada
11	POSTRES BALCARCE SA	Industria Alimenticia	Postres, alfajores, panificados	$4.000.000 (año 2002)	167	$1.500.0000	7%	Rivadavia 4264	-	2	1	1	1	1	1	2	9	NO
12	TAPAMAR SA	Industria Alimenticia	Tapas para empanadas pascualinas y pasteles.	$1.500.000	20	$2.000.000	0%	Int. Camusso 250	Lay Out / Logística	2	3	3	5	5	4	4	26	Seleccionada
13	TOLEDO SA	Industria Alimenticia	Pollo entero, pollo trozado y procesados	-	160	$180.000.000	20%	Ruta 88 Km 8,5	-	2	1	1	3	3	1	3	14	NO
14	ITAUPE SA	Industria Alimenticia	Queso semiduro natural, semiduro saborizado y san paulin	-	3	$430.000	0%	Avellaneda 4602	5S	2	2	4	2	2	5	5	22	NO
15	LABORATORIOS PHARMAMERICAN SRL	Industria Alimenticia	Infusiones de hierbas y frutas, tisanas fitoterápicas y suplementos dietarios	$1.500.000	29	$7.000.000	10%	Calle 3 esq 6 Parque Industrial Gral Savio Batan	Reducción de costos	3	3	4	5	5	4	5	29	Seleccionada
16	COPECA SA	Industria Alimenticia	Conservas de caballa, de atún y de sardina	-	75	-	0%	Lanzilota 762	5S	3	2	4	3	3	2	3	20	NO
17	OLITAS MR SRL	Industria Alimenticia	Galletitas crackers, dulces y rellenas	$2.500.000	7	$1.200.000	0%	12 de octubre 5120	5S	4	5	5	5	4	4	5	32	Seleccionada
18	DELPACK SRL	Industria Alimenticia	Pure Knorr, Mc Cain, otros	$1.000.000	10	$650.000	0%	Calle 2 entre 1 y 3 Parque Industrial	Trazabilidad / Trabajo manual	2	3	3	5	4	5	5	27	Seleccionada
19	MILTON SA	Industria Alimenticia	Cerveza en barril, cerveza en botella	U$S 1.000.000	12	$5.000.000	0%	12 de octubre 7749	-	2	1	1	5	5	5	5	24	NO
20	PILMAR SA	Industria Alimenticia	Fideos laminados	$1.600.000	35	$7.000.000	?	Rep de Cuba 186	5S / Distribución de stock de producto terminado	3	3	4	5	4	5	4	28	Seleccionada

Table 1-10 PP Model Enterprises Selection Sheet (ENTRE RIOS)

No.	Nombre de la Empresa 会社名	Rubro 業種	Principales Productos 主要製品	Capital 資本金	Número de Empleados (Temporario) 従業員数 (季節従業員)	Venta anual (Pesos) 年商 (Pesos)	Porcentaje de Exportación (%) 輸出比率 (%)	Dirección 所在地	Posible Tema de Mejora (Tecnológia de Gestion de producción y gerenciamento) 想定される改善テーマ (経営・生産管理技術)	Calificación de la Evaluaciones								Resultado de Sellección 選定結果
										¿La empresa pertenece al rubro fuerte de la provincia? その州の有力な業種に属しているか	¿Cabe mejorar mucho en el área de la tecnología de gestión y que alberga un gran potencial para manifestar impacto de las mejoras? 管理技術で改善の余地が大きく、成果が上がりそうか	¿La tecnología de gestión que debe ser mejorada es en cierto aplicable universalmente? 改善に使われる管理技術に汎用性があるか	¿El dueño o la directiva está predispuesto a mejorar la tecnología de gestión y a cooperar el Proyecto Piloto? 経営者が管理技術の改善意欲を持ち、PPに協力的か	¿El personal de contraparte que trabajará con la empresa tiene las facultades necesarias para la ejecución del PP? PPの責任者は実質的権限を持つか	Nivel de Actividad Gremial 労働組合活動の活発さ	Acepta Publica el Resultado de Mejora continua 成果の情報公表に同意しているか	Total	
1	Lambert Hermanos	Metalúrgico	Acoplados baranda volcables, semirremolques baranda volcables y térmicos	U$S 7000000	98	U$S 6000000	12%	Parque Industrial - Concepción del Uruguay	Control de calidad (品質管理)	4	4	5	5	5	4	5	32	Seleccionado
2	Berger S.A.	Caucho	Reconstrucción de neumáticos y bandas para recomposición de neumáticos	U$S 250000	34	4,500,000	0%	8 de junio entre 36 y 37 del Oeste Norte - Concepción del Uruguay	Redución de Falla en Recapado de Cuvierta (タイヤ張り合わせ工程の不良率削減)	4	4	4	5	5	5	5	32	Seleccionado
3	Industrias Plásticas RD	Fibra de vidrio - Accesorio Camiones	Deflectores para Mercedes Benz, Scania serie 4, Ford	U$S 1.500.000	24	$ 1.800.000	0%	Parque Industrial - Concepción del Uruguay	Mejora de Productividad (生産性向上)	3	5	5	5	5	5	5	33	Seleccionado
4	Coinar	Construcción	Obras públicas, hormigón y premoldeados	U$S 700.000	50	$10.000.000	0%	Concordia	Marketing	3	4	3	4	5	4	5	28	No seleccionado
5	Industrias Riehl	Metalúrgico	Carrocería	$1.000.000	8	$1.000.000	0%	San Salvador	5S	4	5	5	5	5	3	5	32	Seleccionado
6	Muebles del Litoral	Madera	Muebles de cocina y dormitorio de pino	U$S 2000000	69	$ 12,000,000	0%	Villa Elisa	Planificación de la producción, 5S, 8 muda, ingeniería industrial, control de calidad trabajo en equipo	3	4	4	5	2	5	3	26	No seleccionado
7	Bonnin Hermanos S. de H.	Avícola	Pollo refrigerado	U$S 25.000.000	305	$100.000.000	0%	Ruta Nac. 14 - Colón	TPM	5	4	4	4	5	4	5	31	No seleccionado
8	Kindcheff	Sillas playeras	Sillas reposeras	$3.300.000	10	$2.600.000	5%	Urdinarrain	Mejora de Layout (レイアウト改善)	4	5	5	5	5	5	5	34	Seleccionado
9	Bourlot	Metalúrgico	Implementos avícolas	$2.000.000	13	$2.000.000	3%	Urdinarrain		4	2	4	3	5	5	3	26	No seleccionado
10	San Sebastián S.R.L.	Madera	Machimbre, vigas multilaminadas y tablas cepilladas	$ 3,500,000	15	$ 3,000,000	0%	Parque industrial - Federación	Marketing, 5S, ingeniería industrial,	4	3	4	3	4	4	5	27	No seleccionado
11	Trozán S.R.L.	Madera	Madera cepillada, machimbre y flejes	U$S 700000	16	$ 2,000,000	0%	Parque industrial - Federación	Marketing, control de calidad, 5S, mantenimiento, ingeniería industrial,	4	3	4	3	3	4	5	26	No seleccionado
12	Don H Muebles	Madera	Muebles de cocina y sanitarios.	$ 545,000	4	$ 360,000	0%	Parque Industrial - Paraná	5S, lay out,	3	4	5	5	5	5	5	32	Seleccionado
13	Master Plast	Industrialización de polietileno	Bolsas impresas, láminas impresas y bobinas sin impresión	$ 2,136,000	15	$ 1,051,800	0%	Parque Industrial - Paraná	5S, 8 mudas, ingeniería industrial, lay out, control de calidad, trabajo en equipo	2	4	3	3	5	5	4	26	No seleccionado
14	Mec Plarts S.R.L.	Auto partes	Cilindros maestros	$ 3,000,000	30	$ 6,000,000	0%	República dominicana 342 - Paraná	5S, SMED, control de calidad, 8 mudas, ingeniería industrial TPM trabajo en equipo	3	4	5	5	5	4	5	31	No seleccionado
15	Elevadores Neumáticos	Metalmecánico	Elevadores neumáticos	$ 1,700,000	21	$ 8,000,000	88%	Vicente López y Planes 547 - Paraná	Mejora en Operaciones	2	4	5	5	5	5	5	31	Seleccionado
16	Film Plast Paraná S.A	Industrialización de polietileno	Láminas plásticas para envasado neumático y bolsas	$ 1,500,000	13	$ 1,800,000	0%	Ruta 12 y 18 - Colonia Avellaneda - Paraná	5S, SMED, lay out, 8 mudas, ingeniería industrial, control de calidad, análisis de costo marketing	2	5	4	3	3	4	5	26	No seleccionado
17	Santini Argentina S.A.	Metalúrgico	Lavadora, llenadora y tapadora de bidones de agua; saturadora y carbonatadoras; equipos de tratamiento de agua	$ 1,890,000	15	$ 1,080,000	20%	Robinson s/n - Parque ndustrial - Paraná	Mejora en Operacion de Armado , Control de Produccion Visual	4	4	5	5	5	5	5	33	Seleccionado
18	Schepens S.R.L.	Metalúrgico	Hornos rotativos para panadería	$ 2,000,000	11	$ 1,920,000	0%	María Grande - Paraná	5S Mejora Layout 8 Perdidas Mejora de Trabajo en Equipo	4	5	5	4	5	5	5	33	Seleccionado
19	Agua Nuestra	Alimenticio	Agua de mesa envasada en bidones de 20, 12 y 5 litros; soda y agua de mesa en botellas descartable	$ 1,000,000	29	$ 2,796,000	0%	Paraná	5S, TPM, Control de calidad, análisis de costo, marketing, trabajo en equipo, kaizen	2	3	3	5	5	5	5	28	No seleccionado
20	Metalúrgica Albace	Metalúrgico	Túnel de frío para industria avícola vacuna heladería.	$ 15,000,000	34	$ 13,000,000	1%	Colón	Systema de Control de Cost	4	5	5	5	5	5	5	34	Seleccionado

Table 1-11　PP Model Enterprises Selection Sheet (NEUQUÉN / RIO NEGRO)

No.	Nombre de la Empresa 会社名	Rubro 業種	Principales Productos 主要製品	Capital 資本金	Número de Empleados (Temporario) 従業員数 (季節従業員)	Venta anual (Pesos) 年商 (Pesos)	Porcentaje de Exportación (%) 輸出比率 (%)	Dirección 所在地	Posible Tema de Mejora (Tecnológia de Gestion de producción y gerenciamento) 想定される改善テーマ (経営・生産管理技術)	Calificación de la Evaluaciones								Resultado de Selección 選定結果
										¿La empresa pertenece al rubro fuerte de la provincia? その州の有力な業種に属しているか	¿Cabe mejorar mucho en el área de la tecnología de gestión y que alberga un gran potencial para manifestar impacto de las mejoras? 管理技術で改善の余地が大きく、成果が上がりそうか	¿La tecnología de gestión que debe ser mejorada es en cierto aplicable universalmente? 改善に使われる管理技術に汎用性があるか	¿El dueño o la directiva está predispuesto a mejorar la tecnología de gestión y a cooperar al Proyecto Piloto? 経営者が管理技術の改善意欲を持ち、PPに協力的か	¿El personal de contraparte que trabajará con la empresa tiene las facultades necesarias para la ejecución del PP? PPの責任者は実質的権限を持つか	Nivel de Actividad Gremial 労働組合活動の活発さ	Acepta Publica el Resultado de Mejora continua 成果の情報公表に同意しているか	Total	
1	RAUL ALLEMANNI	METAL MECANICA	Fabricación y Reparación de Cardans(機械部品のメンテナンス)	n.a.	19	$2,000,000	0%	NEUQUÉN	・ 5S ・ Layout	4	3	5	5	5	4	5	31	○
2	CODESIN S.A.	REPARACIONES (メンテナンス)	Servicios de mantenimiento y reparaciones (石油関連ポンプ修理)	2,000,000	70	$14,000,000	0%	NEUQUEN	・ Disminución de recramo de Reparación (修理部門のクレーム削減)	4	3	3	5	5	4	5	29	× No fue seleccionado por problema de distancia (改善現場が遠距離のため不選定)
3	FASINPAT	CERAMICOS (床材・壁材製造)	Pisos y Revestimentos Cerámicos (セラミックタイル製造)	n.a.	450	$36,000,000	0%	NEUQUEN	・ control calidad (disminución de scrap) (品質管理(不良対策)) ・ Programación de producción(生産計画) ・ Medida de prevencion de lina de producción (設備保全対策)	4	4	5	4	4	3	5	29	○
4	A PUNTO NATURAL Y EXPRESS	ALIMENTICIO	Papas, cebollas y zapallos a granel	n.a.	4	$180,000	0%	Ville Regina	・ Layout ・ Mejora de proceso (puest de trabajo) (作業改善)	3	3	4	4	5	5	5	29	○
5	TORNERIA ALLEMANNI DE Eduardo Allemanni	balanceo electronico de cardanes y toneriria (機械修理)	Tornería Fabricación, Alineación y Balanceo (旋盤加工、バランサー生産)	1,500,000	19	$2,900,000	0%	CIPOLLETTI	・ Confección de estandar de operación (作業標準作成) ・ Estudio de cost(原価計算)	4	3	5	4	2	4	5	27	○
6	ALPECO S.R.L.	Venta detalle de las partes metálicas (金属部品小売)	Piezas de Soldadura, Juntura y Válvulas (溶接部品、ジョイント、バルブ)	n.a.	5	$4,000,000	0%	NEUQUEN	・ 5S ・ Control de stock(在庫管理) ・ Entrenamiento de rutina(鍛訓練)	3	4	4	2	2	4	5	24	○
7	TEXTIL NEUQUEN	Indumentaria(衣類)	Confección de Camisas y Pantalones (ワイシャツ、ズボン)	US$3,000,000	70	$7,200,000	10%	NEUQUEN	・ Disminución en tiempo de entrega (acortamiento de tiempo de proceso) (納期短縮(リードタイム短縮))	2	5	4	2	3	4	4	24	○
8	SERVICIOS BUPRONEU S.A.	GLP	Propano, butano y gasolina		10	$3,500,000	0%	NEUQUEN	・ TPM	4	3	4	5	5	4	4	29	○
9	CAPEX S.A.	CENTRAL TERMICA	Generación de Energía Electrica (発電)		41	675MW	0%	NEUQUEN	sin tema de mejora / なし	2	2	4	3	2	3	2	18	×
10	CHACRA LA PIEDAD	FRUTICOLA (果実農園)	Frambuesas, Moras, Frutillas y Cerezas(ブラックベリー、モーラ、インディアンベリー)	n.a.	44 (30)	$300,000.00	Algunos fueron exportadas para EE.UU. en el pasado	NEUQUEN	sin tema de mejora / なし	3	1	1	5	5	5	3	23	×
11	MIEL RIO NEGRO	MIEL	Miel Fraccionada (蜂蜜瓶詰、販売)	US$1,000,000	5	1,440,000- 1 560 000	0%	Villa Regina	sin tema de mejora / なし	3	1	1	2	2	5	4	18	×
12	ALDO CALLIERI SA	ALIMENTICIO (食品製造)	Condimento (調味料)	2,000,000	21	$9,000,000.00	0%	GeneralRoca	・ 5S ・ Layout ・ Programacion de producción(生産計画)	2	4	4	5	4	5	5	29	○
13	Cabarcos Motores SRL	Mantenimiento (メンテナンス)	Mantenimiento de Motor de Automovil(自動車エンジンのメンテナンス)	800,000	32	$4,800,000.00	0%	GeneralRoca	・ Acortamiento de tiempo de proceso (生産リードタイムの短縮)	3	4	4	5	3	5	5	29	○
14	TEPUEL SRL (Unelen)	Indumentaria (衣類)	Pantaron , Campera , Estiro deportivo(ズボン、ジャンバー、スポーツ衣料)	3,500,000	70	$7,500,000.00	0%	Villa Regina	・ Programacion de Prodocción(生産計画) ・ aprovaciamiento de codigo de barra(POSデータの活用)	2	4	3	5	5	5	5	29	○
15	FABHER	Maquinaria Agricola (農業機械)	Tirituradora de Rama , Uña para Autoelevador , Mantenimiento(枝破砕機、フォークリフトアタチメント、メンテナンス)	2,000,000	5	$1,500,000.00	0%	Villa Regina	5S	2	3	5	3	4	4	5	26	×
16	TEOREMA S.R.L	Agrricultura , Embase y Embaraje , Venta (農業、パック、販売)	Pera Manzana , Duransno, Ciruela (なし、りんご、もも、すもも)	10,000,000	500-200	9,000,000US$	70%	Villa Regina	・ Incremento de productividad (mejora en proceso)(生産性向上(作業改善))	5	2	3	3	4	3	5	25	×
17	San Carlos Distribuciones	Venta de Alimineto por Major y Menor (食料品の卸、小売)	Alimentos(食料品)	4,000,000	8	$3,000,000.00	0%	Villa Regina	sin tema de mejora / なし	3	2	2	3	3	5	5	23	×

No.	Nombre de la Empresa 会社名	Rubro 業種	Principales Productos 主要製品	Capital 資本金	Número de Empleados (Temporario) 従業員数 (季節従業員)	Venta anual (Pesos) 年商 (Pesos)	Porcentaje de Exportación (%) 輸出比率 (%)	Dirección 所在地	Posible Tema de Mejora (Tecnológia de Gestion de producción y gerenciamento) 想定される改善テーマ (経営・生産管理技術)	Calificación de la Evaluaciones								Resultado de Sellección 選定結果
										¿La empresa pertenece al rubro fuerte de la provincia? その州の有力な業種に属しているか	¿Cabe mejorar mucho en el área de la tecnología de gestión y que alberga un gran potencial para manifestar impacto de las mejoras? 管理技術で改善の余地が大きく、成果が上がりそうか	¿La tecnología de gestión que debe ser mejorada es en cierto aplicable universalmente? 改善に使われている管理技術に汎用性があるか	¿El dueño o la directiva está predispuesto a mejorar la tecnología de gestión y a cooperar al Proyecto Piloto? 経営者が管理技術の改善意欲を持ち、PPに協力的か	¿El personal de contraparte que trabajará con la empresa tiene las faculades necesarias para la ejecución del PP? PPの責任者は実質的権限を持つか	Nivel de Actividad Gremial 労働組合活動の活発さ	Acepta Publica el Resultado de Mejora continua 成果の情報公表に同意しているか	Total	
18	METALURGICA RÍO NEGRO s r l	Maquinaria Agricol a (農業機械)	Selectora de Fruta, Linea de Embarque(果物選別、パッケージ・ライン)	US$500,000	32	$4,500,000.00	15%	General Roca	・ Control de calidad de parte / pieza(部品の品質管理)	2	2	2	4	3	5	5	23	×
19	Organización Comercial Don Tomas SRI (División Gráfica)	Imprenta , Publicacion de Aparato(印刷、機械製作)	Distintivo , Dispositivo de peagado de Distintivo(シール、シール貼り付け装置)	1,500,000	8	$2,700,000.00	0%	GeneralRoca	・ 5S ・ Control de calidad(品質管理)	2	2	3	3	2	5	5	22	×
20	Moldeados en caucho JM	Produccion Producto de Goma(ゴム製品加工)	Rodillo Guia, Sello (ローラガイド、シール)	800,000	14	$700,000.00	0%	GeneralRoca	・ solucional problema de revaba de piezas prensada(プレス製品のバリ対策)	2	3	2	2	3	5	5	22	×
21	PAZIMA S.A	Maquinaria Agricol a (農業機械)	Fumigadora , Cañeria para Riego (消毒噴霧器、灌漑配管部品)	5000000	25	$8,800,000.00	0%	Villa Regina	・ 5S ・ Cambio rappid(段取り改善) ・ programacion de produccion(生産計画)	2	2	4	2	3	3	5	21	×
22	CREDISUR	Muebles Venta Minorista(家具の塗装、小売)	Muebles(家具)		7	$700,000.00	0%	Villa Regina	sin tema de mejora / なし.	2	1	2	3	3	4	5	20	×

CHAPTER 2
PILOT PROJECT IMPLEMENTATION AND EVALUATION

2.1 Outline of the Pilot Project

In the second stage, the Pilot Project (PP) was implemented in three areas[23)] with the objective of verifying the effectiveness of the training system presented in the first stage. The PP is composed of the following three parts :

1. Applied theoretical training (3 days)
2. Diagnosis/Support of model enterprises (approximately 2 months)
3. Workshop (half a day)

The following paragraphs give an outline description of the PP.

2.1.1 Objective

The objectives of the PP are threefold:

1. To verify the effectiveness and problems of the draft training system presented in the Progress Report;
2. To improve the capacity of AMPs and facilitators of the NODO in the three target areas to support problem solving in enterprises via applied theoretical training and diagnosis and support of enterprises; and
3. To realize improvements in the model enterprises.

2.1.2 Applied Theoretical Training

Prior to the diagnosis and support of the model enterprises, training targeting the PP enterprises and AMPs, etc. was carried out for three days in each area on the management technologies expected to be used when approaching the improvement themes of model enterprises and basic management technologies such as IE, etc. This corresponded to the three days of applied theoretical training that was proposed in the Progress Report (as the introduction to the three months of practical training).

Other participants in this training included AMPs and facilitators of NODO and engineers of INTI technical centers not targeted by the PP, enterprises other than the PP enterprises, and universities, etc. The participants were able to select the themes they were interested in over the three days. The number of trainees from each area ranged from 30~70 depending on each geographical area and curriculum.

23)Three areas, i.e. Buenos Aires & Mar del Plata, Concepción del Uruguay & Paraná, Neuquén & Villa Regina.

The curriculums were decided based on the draft plans prepared by the JICA experts in charge of the PP in the three areas, and they also incorporated the wishes of each NODO. Furthermore, considering the points that came to light in the first stage surveys, i.e. 1) the AMPs and facilitators lack basic IE knowledge, 2) They have not learned simple methods for calculating the improvement effect, and 3) They have shaky cost control and cost accounting ability, the following were adopted as common contents in the curriculums in all three areas: IE basics, calculation of improvement effects, and cost accounting.

The training lectures were carried out by both the JICA experts and the AMPs. The AMPs were selected as lecturers because doing so gave them an opportunity to acquire deeper knowledge. In these cases, the JICA experts and AMPs held advance discussions and the lecture technology was transferred[24].

Table 2-1 outlines the contents of the training.

Table 2-1 Outline of the Applied Theoretical Training and its Evaluation

Location	Date	Average Number of Trainees	Training Evaluation by Trainees (Out of 5, mean scores)			
			Contents	Explanation Method	Enterprise Applicability	Mean
Buenos Aires	9/2～9/4	53.6	4.37	4.42	4.32	4.37
Concepción del Uruguay	9/7～9/9	40.1	4.59	4.42	4.60	4.57
Neuquén	9/9～9/11	39.9	4.30	4.24	4.31	4.28

2.1.3 Diagnosis and Support of Model Enterprises

Diagnosis and support were carried out for around two months between the end of the applied theoretical training described in 2.1.2 and November 13, targeting a total of 30 model enterprises[25] comprising 10 in each of the three areas. The diagnosis and support work was conducted in the following order:

① Confirmation of improvement themes and detailed problem analysis of improvement themes on the ground and as phenomena
② Analysis of causes of problems
③ Examination of improvement plans
④ Discussion of improvement plans with model enterprises
⑤ Checking of the progress of improvement plans
⑥ Evaluation of improvement effects

24) Due to the schedule requirements, the training for the Buenos Aires NODO was separately implemented over two and a half days.
25) Since two enterprises dropped out during the PP, the eventual number of targeted enterprises was 28.

Furthermore, where deemed necessary as a part of the guidance, training was sometimes implemented within enterprises and INTIs separately from the applied theoretical training described in 2.1.2.

Table 2-2 shows the PP implementation status in the three areas and six NODOs. The number of enterprise visits here indicates the number of visits made by the JICA Study Team experts but does not include the visits independently made by the INTI counterparts.

① was implemented as one day per company, while ②~⑥ were implemented for half a day each, and each model enterprise was visited around seven times for diagnosis and support[26]. Furthermore, in order to offer guidance on data acquisition by enterprises, the C/P groups in charge visited enterprises in between the JICA expert visits, and this contributed to the advancement of the improvement activities even though the PP implementation period was very short.[27].

Table 2-2 Pilot Project (PP) Implementation Conditions

Area			3 Areas Total / Mean	Buenos Aires	Concepción del Uruguay	Neuquen
				Mar del Plata	Parana	Villa Regina
Participating C/Ps			31	14	6+2***	9
JICA expert			3	Sugimoto	Sonoda	Hamano
Model enterprises			28	8*	10	10
Total number of visits			200	54(60)**	79	67
Average number of visits per enterprise			7 1	6 8	7 9	6 7
PP implementation evaluation items		Evaluator	Score			
Overall evaluation of the PP implementation plan	Was the selection of issues appropriate?	C/P	4 4	4 5	4 6	4 2
		Expert	4 4	4 6	4 4	4 3
	Was the selection of approaches appropriate?	C/P	4 3	4 3	4 6	4 1
		Expert	4 3	4 6	4 3	4 1
	Anticipated goals and/or outputs: level of achievement and future prospects	C/P	3 9	3 5	4 2	3 9
		Expert	3 8	3 6	4 2	3 5
Technology transfer to C/Ps	Was the basic theory of business and production management technology transferred to the C/Ps?	C/P	4 4	4 6	4 5	4 1
		Expert	4 2	4 5	4 4	3 6
	Was the practical training on business and production management technology effective?	C/P	4 3	4 0	4 7	4 2
		Expert	3 9	3 6	4 4	3 8
	Were diagnosis and improvement techniques for business and production management technology learned?	C/P	3 9	4 0	4 4	3 3
		Expert	3 9	4 6	4 3	2 9
Effectiveness of management technology	Are concrete improvement effects recognized with respect to issues?	C/P	3 9	3 6	4 4	3 7
		Expert	3 7	3 6	4 1	3 5
		Enterprises	4 2	4 0	4 4	4 2
	Was the setup or foundation for resolving issues established, and are concrete outputs likely to be realized in the near future?	C/P	4 3	4 0	4 8	4 0
		Expert	4 0	3 9	4 7	3 5
		Enterprises	4 5	4 1	4 8	4 6
	Is there any prospect of utilizing the business and production management technology learned during the PP?	C/P	4 4	4 3	4 8	4 2
		Enterprises	4 8	4 8	4 8	4 8
Satisfaction of enterprises	What is the level of satisfaction regarding the results of the PP?	Enterprises	4 6	4 6	4 9	4 4
	What is the likelihood of advice being sought from INTI in future?	Enterprises	4 7	4 6	4 5	4 9

Scores range from a minimum of 1 to a maximum of 5.

* Two enterprises dropped out of the PP midway due to a lack of cooperation.

** Figures in parentheses ( ) include the enterprises that dropped out midway.

*** 2 members are the Parana extension coordinator and the Rafaela AMP

26) Some enterprises had less visits than scheduled because they couldn't finish the survey and analysis tasks that had been assigned to them on time and visits had to be postponed.

27) Since it was forecast that the PP period would be too short, in some cases, in the first stage, the enterprises or INTI C/Ps were asked to collect data on set items by the second stage.

Concerning ② to ④, the JICA experts advanced improvements of enterprises with coaching techniques in mind with the objective of transferring technology to the C/Ps. In other words, rather than teaching answers from the start, first the opinions of the C/P in charge were sought, and in cases where opinions were thought to be inappropriate, advice was given with a view to rectifying the situation. Also, while the JICA experts took the initiative at the start when explaining to or persuading enterprises, care was taken to letting the C/Ps autonomously experience diagnosis and support work.

Concerning ⑤ and ⑥, due to the short term of the PP, the PP ended just as improvements had been initiated and it wasn't possible to fully evaluate the improvement effects (except in a few enterprises where the PP was implemented in advance). However, following completion of the Pilot Project, the responsible INTI AMPs either conducted follow-up evaluations of improvement effects and implemented ongoing guidance in almost all the enterprises.

2.1.4 Workshops

Workshops were staged with a view to summing up the PP. They were implemented with the following objectives:

- To give enterprises that achieved excellent outputs in the PP the opportunity to present those, and thereby induce model enterprises to take a more active involvement in the PP;
- To present certificates of commendation to model enterprises, and thereby to convey gratitude for participation in the PP; and
- To provide forums for presenting the outputs of support for resolution of problems in enterprises, and thereby to aid the dissemination and advertisement of support activities by NODO.

It was initially planned for just one workshop to be staged in Buenos Aires, however, hearing the strong requests of the INTI to implement similar workshops in the other PP areas of Concepción del Uruguay and Neuquén in light of the above objectives, JICA decided to implement workshops in all three areas. It was also subsequently decided by INTI to stage mini-workshops in the geographically remote areas of MdP and Paraná. Table 2-3 shows the outline of the workshops and mini-workshops implemented in the five areas.

Table 2-3 Outline of Pilot Project (PP) Workshops

Location	Date	Presenting Enterprises	Participants	Remarks
Paraná	November 10, 2009 18:00 – 22:00	4 enterprises	55	Mini - W/S
Mar del Plata	November 11, 2009 16:30 - 20:30	4 enterprises	45	Mini - W/S
Concepción	November 12, 2009 19:00 – 22:30	3 enterprises (Concepción) 1 enterprise (Paraná)	62	Presentations by 3 representative enterprises from Concepción and 1 from Paraná
Neuquén	November 12, 2009 08:30 - 17:00	6 enterprises (Neuquén) 3 enterprises (Villa Regina)	56	Neuquén / RioNegro
Buenos Aires	November 16, 2009 08:45 - 17:00	3 enterprises (Buenos Aires) 1 enterprise (Mar del Plata) 1 enterprise (Concepción) 1 enterprise (Villa Regina)	79	Presentations by 3 representative enterprises from Buenos Aires an 1 each from 3 other areas.

2.2 Details of Pilot Project Implementation in Each Area

2.2.1 BUENOS AIRES / MAR DEL PLATA

(1) Applied Theoretical Training

The results of the applied theoretical training implemented at Buenos Aires INTI from September 2 to 4 are as indicated in Table 2-4.

Table 2-4 Outline of Applied Theoretical Training (Buenos Aires)

Date		Curriculum	Lecturer	Trainees	Trainee Evaluation (out of 5, mean scores)			
Day	Time				Contents	Explanation Method	Enterprise Applicability	Mean
2	9:00-11:50	IE basics	MC	53	4.37	4.67	4.40	4.48
	11:50-12:50	Profit calculation of improvement effects	CA	53	4.28	4.38	4.34	4.33
	14:00-14:30	5S	MB	64	4.42	3.97	4.55	4.31
	14:30-15:00	7 areas of waste	SR	64	4.48	4.42	4.61	4.50
	15:00-16:30	TPM	MR	64	4.58	4.65	4.38	4.53
3	9:00-12:00	Delivery lead-time shortening	MR	32*	4.41	4.53	4.00	4.31
	13:30-16:30	How to compile production plans, how to conduct control	IG	68	4.50	4.77	4.45	4.57
4	9:00-12:00	Reduction of manufacturing costs	CA	55	4.05	4.05	3.74	3.95
	13:30-16:30	Structural gauging of improvement issues	GR	29*	4.22	4.33	4.44	4.33
			Mean	53.6	4.37	4.42	4.32	4.37

* The number of trainees was limited due to the circumstances of the training venue.

Lecturers: MC: Martín Castellano, CA: Claudina Angelino, MB: Mauricio Baraschi, SR: Santiago Rodríguez, MR: Marcos Rodríguez, IG: Ivan Gorra, GR: Graciela Ramirez

1) Curriculum

The feature of the training in Buenos Aires (B.A.) was that all the lectures were carried out by the AMPs and facilitators of B.A. NODO at the voluntary proposal of the NODO. All members including two new recruits were in charge of part of the curriculum. This NODO has strong teamwork and curriculum supervisors are chosen with a view to stimulating the strengths of each. The JICA experts and curriculum supervisors examined the lecture plans accoding to the syllabus.

Regarding the profit calculation of the improvement effects, the lecture supervisors in Concepción NODO gathered at B.A. NODO and spent half a day preparing a draft plan of case studies.

The JICA experts gave the following comments concerning the important points in lectures, points that were difficult to understand, and items that need to be supplemented in each training curriculum.

Profit Calculation of Improvement Effects

"Trainees asked the question "Will sales increase if the 5S are implemented,"however, the 5S are not directly connected to increased sales. The lecturer Claudina raised the case of an enterprise which needed to increase factory capacity by 20% in response to increasing sales, and pointed out that 20% of work space could be released by practising the 5S, thereby removing the need to increase capacity. When improving plants, no progress can be made unless management gives its approval. When giving such approval, managers regard increased sales and profits or reduced costs as important criteria. Such figures can be rough calculations. Claudina introduced the methods for roughly calculating such effects in advance."

Shorterning of Delivery Lead-time

"In order to beat other enterprises in competition, almost all people believe it is first necessary to reduce costs and the raise quality. Shortening of delivery lead-times decribed by the lecturer Marcos is the third most important factor. Lead-time here refers to the time from placing of an order by the customer to delivery of the products. There are cases where short lead-time can impart greater competitiveness than cheap product prices or high quality. Why do short lead-times lead to greater competitiveness? If the lead-time is long, customers need to compile long-term demand projections, however, the longer that projections become, the greater is the discrepancy between the projection and reality. This may often lead to enterprises running out of stock or being left with large numbers of unsold stock. For example, in the shoes industry, delivery lead-time is generally three months. What happens if an enterprise with a delivery lead-time of one week enters the industry? Many shoe sellers will place orders with this company because there is far lower risk of stock-outs or excessive stocks occurring. Products from China take 40 days to enter Argentina. However, in the case of Japanese products, not only is it 4 days from China but also labor costs are 30 times higher than in China. When it comes to competing with China, Japan is in a much harsher environment than Argentina. Therefore, Japanese makers strive to beat their Chinese competitors in tems of delivery lead-time. It is necesary to understand that delivery lead-time is just as important or maybe a more important competition factor than price and quality."

How to Compile and Control of Production Plans

"We just heard Ivan talk about how holding on to large stocks can hide other problems such as operators taking rests and machines breaking down. He explained how it is thus necessary to have production systems that can reduce stocks. Look at this another way: There is water (stock) over many rocks (problems); if the water level goes down, the rocks come to the surface. For example, let's say that an employee absentee rate of 11% was one of the rocks, and that it is necesary to reduce this to 4% in order to lower the water level. If the absentee rate can be reduced to 4%, a low level of stock becomes acceptable. The issue here concerns the comparison of the cost of holding onto stock corresponding to the disparity between the original water level and the lower water level, with the cost of reducing the absentee rate from 11% to 4%. In order to reduce the absentee rate, it takes money to create a more favorable work environment. This cost is easy to understand. Meanwhile, the cost of holding onto excessive costs requires calculation of numerous factors, for example, the interest on stock, the cost of occupying extra space, the cost of additional stock management, the costs of stock degradation and obsolescence and so on. Once an enterprise becomes used to holding onto excessive costs, employees and management stop realizing that these extra costs are being incurred. The cost of cutting or removing rocks is usually visible, however, the cost of maintaining a needlessly high water level is frequently invisible. However, implementing proper calculation usually shows that the cost of maintaining a needlessly high water level is many times higher than the cost of reducing rocks. This is because the cost of maintaining high water level (excessive stocks) is invisible. This is why Toyota considers excessive production and excessive stocks to be the most serious of all waste."

Reduction of Manufacturing Costs

"I presume that everybody here today runs their enterprises based on profit and loss statements. However, using profit and loss statements can be likened to driving backwards while watching the rear view mirror. That is because profit and loss statements do not show how profits change when sales change, they do not enable profits to be properly forecast when the NG rate falls by 2% and so on. On the other hand, if you know how to view the breakeven point, it becomes easy to forecast profits. Understanding the breakeven point gives a clearer view; it is like driving a car while looking out of the front window. The breakeven point can be easily calculated provided that one knows the ratio of variable costs and fixed costs to sales. Let us take the example of a plant that has improved its layout. If the effect of this is sought in tems of the impact on variable cost and the reduction of fixed cost, it becomes possible to calculate how the breakeven point changes. I have been involved in the corporate restructuring of four enterprises in Japan. On each occassion, the first thing we did was identify the breakeven point of the enterprise. Enterprises that are in the red have sales below the breakeven point, so efforts are first directed to lowering the breakeven point to enable profit to be generated with the curent sales. In such cases, various steps are taken with a view to reducing the variable cost ratio and fixed costs. Once these steps have bedded in, measures are taken to increase sales. Our lecturer Claudina today introduced various techniques for cost control, and I hope that you at least obtain a solid grounding regarding the breakeven point. If you are not sure about how to calculate or use the breakeven point, Claudina would be glad to carefully respond to your questions."

Structural Gauging of Improvement Problems

"The lecturers have repeatedly stated over the past two days how holding onto excessive stocks or work in progress is not healthy. Actually, stock problems are not the sole responsibility of the manufacturing departmrnt; they frequently arise out of problems in the departments just mentioned by Graciela. These are the marketing and manufacturing departments. When conducting production to stock, production is carried out based on demand projections. In such cases, the marketing department is extremely worried over stock-outs. So it tries to secure large stocks. The manufacturing department also tends to hold a large stock

because it doesn't like receiving complaints from marketing. In such cases, respnsibility for product stocks resides neither with the marketing department nor the manufacturing department and the situation becomes vague. The same thing occurs in cases of production to order. In these cases, the marketing department is most concerned over delivery delays. Since the manufacturing department receives complaints from marketing if delivery delays occur, it tries to avoid such situations through holding onto stocks of materials and work in progess. Are such stocks of materials and work in progress the responsibility of the manufascturing department alone? Out of its desire to secure orders, the marketing department often accepts orders with short lead-times without understanding the lead-time that is feasible for the manufacturing department. Part of the responsibility for excessive stocks resides with the marketing department as well as the manufacturing department. Problems such as these which straddle two or more departments are frequently very serious and hard to resolve for enterprises. Graciela mainly talked about techniques for analyzing problems, however, it is also important to organize teams for resolving problems. In such cases, it is necessary to organize a project team for resolving the problems. Members from related departments are selected to form the problem solving team. In the case of SMEs, since only the president is able to supervise the tackling of cross-departmental problems, the president should be the project team leader. The project team needs to fulfill at least three conditions: first, it should have clear goals. For example, if the challenge is to reduce NG rates, there should be a concrete goal of reducing from say 10% to 4%. Second, the term of the project team should be clearly delineated. It should not remain active indefinitely. If the set term is six months, it should only exist for six months. And thirdly, it is necesary to clearly decide in advance how many people, material resources and how much money should be devoted to project execution.

2) Trainees

The number of trainees ranged fro 29 to 68 and was 53.6 on average. Most of the trainees, 53%, came from enterprises, and 11% of those came from model enterprises. Participants from other than INTI NODOs and technical centers accounted for 28%, while the third largest group came from INTI technical centers. Figure 2-1 shows the breakdown of the aggregate number of trainees.

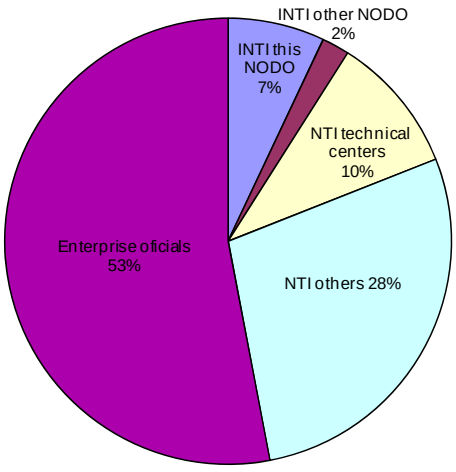


Figure 2-1 Breakdown of Applied Theoretical Training Participants

3) Evaluation by Trainees

There were nine training curriculums. The overall evaluation was 4.37 (out of 5), indicating a satisfactory result. The “7 areas of waste” and “5S” curriculums taught by the newly recruited facilitators also received high marks. The highest score was given in the curriculum on “How to compile and control production plans.” It is difficult to talk about this topic, however, high marks were given for the skillful explanation. Meanwhile, a low score was given to “Manufacturing cost reduction methods” in the evaluation for applicability to enterprises. These contents were not especially high level and were thought to be essential for enterprises. As has been pointed out by numerous AMPs, since many enterprises do not have an accurate grasp of product costs, guidance frequently focuses on cost accouting rather than cost control, meaning that trainees do not fully appreciate the need for cost reduction. This may partially explain why such a low evaluation was given here.

4) Lessons Learned

The C/Ps were entrusted with all the lectures during the three days of applied theoretical training, and from this the following lessons were learned:

a. In order to speak as lecturers, the C/Ps do not learn management technology in a passive manner but rather must learn it in an active manner in order to impart understanding to the people listening. In this respect, many C/Ps said they were later able to explain their curriculums with confidence at enterprises after teaching them in the training. This would indicate that the technique of teaching in order to learn is effective.

b. The aim of this training was to lecture on the application of theories with a high possibility of use in model enterprises, however, it was necessary for the planning side to give detailed guidance on the lecture contents in advance to the lecturers. Otherwise, the lecturers possessing little or no experience would have been unable to explain the situations in which to use management technology and the training would become textbook-oriented.

c. Rather than simply having the lecturer speak, asking questions and seeking the opinions of the trainees requires a higher level of presentation capability but is more effective for vitalizing the training and keeping the trainees interested.

d. There were disparities in the method used in lectures. Future prospective AMPs need to acquire techniques such as starting explanations from overall guidance, stressing important points with intonation and summing up contents together with the participatory lecture techniques described in e. Accordingly, it is preferable that the

trainees can learn about how to give lectures through playing the role of lecturers in this training. Training planners should teach future lecturers how to give easy to understand lectures.

(2) Diagnosis and Support of Model Enterprises

Diagnosis and support of enterprises started from 10 model enterprises, however, this became eight after two enterprises dropped out during the PP. The following table outlines the contents of implementation.

1) Outline of Diagnosis and Support of Model Enterprises

Enterprise	Sector	Main Products	Employees	Annual Business	Improvement Theme	Management technology used in Improvement	C/P in charge	Number of Visits		Improvement Evaluation
								Experts only	C/Ps only	
De Asia	Shoe manufacturing	Women's shoes	35	5,000,000	NG reduction	7 tools of QC	Martín C	8	6	Creation of a work manual upon reviewing the processes generating NGs Training implemented in the enterprise and at subcontractors Test run to see how many NGs would be produced on the reviewed sewing process
Lannot	Shoe manufacturing	Women's shoes	120	27,000 00	Lead-time shortening	Process analysis, Work analysis	Iván G	9	6	Review of the mode of ordering materials, progress control for eliminating stagnating processes, thorough control of subcontractors, etc Test run of 4 lots Lead-time shortened from 22 days to 12-14 days
Industrias Sucre	Shoe manufacturing	Women's shoes	38	?	Resolution of bottleneck processes	Process analysis, Work analysis, Combined work analysis	Graciela	8	6	Review of work and inclusion of a preparation staff member on the bottleneck cutting process, followed by a test run The results were good On the second bottleneck process, i e the assembly preparation process, it is scheduled to conduct crew work analysis and test revised operating conditions for the die press
Calazados Five	Shoe manufacturing	Young people's shoes	26	600,000	Lead-time shortening	Process analysis, Work analysis	Marcos R	6	6	Downsizing of production lots and outsourced quantities, etc Also, the number of manufactured models was halved through implementing ABC analysis Effect in terms of lead-time cannot be judged yet because production quantities are still too small
Tapamar	Food manufacturing	Empanada pastry	20	2,000,000	Logistics and layout improvements	Process analysis, QC techniques, flow diagrams	Guillermo W	8	5	Through implementing day-before receipt of orders and set-time loading, shipping work has been greatly improved A layout improvement plan has been compiled assuming the introduction of new machinery It appears that traffic lines can be reduced by 40% Layout revisions are scheduled for implementation within the year
Laboratoros Farmamericc an	Food manufacturing	Herb tea	29	7,000,000	Manufacturing cost reduction	Process analysis, Work analysis, 7 tools of QC, Statistics	Gullermo C	5	5	Analysis of raw material yields showed that 70~80% of reduced yield is caused by excessive weight Inefficient work methods were also improved
Olitas Mr	Food manufacturing	Crackers	7	1,200,000	5S	5S	Alberto	5	5	The enterprise has implemented as far as the 3S and has realized major improvements in housekeeping and cleaning The enterprise has made the preparations required for acquiring BPM
Delpack	Food processing	Repacked puree	10	650,000	Improvement of manual work and traceability	Work analysis, Excel programming	Emiliano	6	4	Greatly improved improvement proposals were made based on analysis of manual work, however, the order involving this work was cancelled due to the circumstances of the customer Excel calculation software was installed, thereby enabling traceability work time to be reduced from half a day to 5 minutes
Panoss*	Shoe manufacturing	Young people's shoes	25	2,000,000	5S		Claudina A	5	4	Implementation was inadequate during the first stage and despite four cautions to improve, the enterprise didn't change its ways Accordingly, the PP was discontinued
Pilamar*	Food manufacturing	Pasta	35	7,000,000	Warehouse 5S and shortening of die exchange time		Gullermo C	1	1	Management displayed a positive attitude at the start, however, it only permitted an extremely limited investigation during the survey stage, and responsible employees demonstrated an adverse reaction Accordingly, the PP was discontinued

*Panoss Co. and Pilmar Co. dropped out from the PP before the end because sufficient cooperation was not forthcoming.

2) Features of Model Enterprise Diagnosis and Support

One of the features of the PP in Buenos Aires (B.A.) and Mar del Plata (MdP) was that the model enterprises were selected from a specific sector. In B.A, the enterprises were selected from the shoe manufacturing inustry, while in MdP they were taken from the food manufacturing sector. Therefore, while problems that are common to each sector are revealed, there are enterprises that have adopted differring management techniques and it is easy to gauge the cause and effect relationship between techniques and improvement effect [28].

In B.A. NODO and Mdp NODO, the enterprise visits were made by the C/P in charge accompanied by between one and three AMPs. Moreover, in B.A, since the model enterprises belonged to the shoe manufacturing sector, one or two members from the INTI leather technology center usually accompanied the visits. They gave precious opinions for improving situations of poor quality and also conducted peeling tests at the adhesive center with a view to ascertaining the causes of peeling soles.

The B.A and MdP NODOs conducted the enterprise visits for one week each with a view to facilitating the transfer of the JICA experts. In weeks where the experts couldn't go, the experts, C/Ps in charge and model enterprises held discussions in advance, assignments were given to the enterprises and the C/Ps went to the enterprises to offer guidance on the implementation of these. In the weeks when the experts could go, they visited the same enterprises every two or three days and the enterprises didn't have enough time to complete their assignments between the visits.

3) Evaluation of Diagnosis and Support at Model Enterprises

During the PP period, experts visited each model enterprise 6.8 times on average. The number of visits ranges from nine to five, and the enterprises that were visited on the fewest occasions either had relatively minor improvement themes or were unable to complete their assignments between visits.

The PP evaluation results of the model enterprises, C/Ps and experts are summed up in Table 2-2 and the results according to each enterprise are shown in Annex-7.

a. Improvement Evaluation of Model Enterprises

The rate of progress of improvements in model enterprises differs according to the PP period, the contents of problem analysis and improvement proposals, the motivation of

28) For example, in the shoe manufacturing industry, some enterprises conduct production to order while others conduct production to stock, and there are still others that conduct production to stock in the first half of the season and production to order in the second half.

enterprises, the timing of seasonal fluctuations in production and so on. Generally speaking, the PP implementation period was too short and there were numerous cases where improvement plans either couldn't be implemented or couldn't be evaluated because they were still in progress. Also, four of the model enterprises in Buenos Aires were shoe making companies in which production is subject to large seasonal fluctuations, and it was difficult to implement the analysis of current conditions and the improvement plans at the appropriate time. At busy times, it was difficult to execute the new improvement plans, while during the quiet times, the enterprises were unable to try the improvements on real production activities.

However, almost all the model enterprises responded in the evaluations that they clearly understood the method of advancement and thinking of the improvements and understood that improvements cannot be effected without entering actual production lines.

b. Evaluation of the Current Conditions and Improvement of the C/Ps Enterprise Support Capacity

- There is still room for improvement regarding the capacity to set improvement tasks, however, once the direction of improvement was settled, the ability to analyze causes using appropriate analysis methods was enhanced.
- The ability to devise improvement plans and to express them in sentences, tables and figures was enhanced via the PP.
- The ability to persuade enterprise managers was improved, however, the ability to persuade enterprises to execute improvement plans while connecting them to areas of interest (increased profits, increased sales, reduced costs, etc.) for managers was generally inadequate (although it varied between each member). In particular, the ability to persuade people while giving figures was insufficient.

c. Evaluation of practical training

Some of the points that came out of the C/P evaluations of the practical training were as follows:

- Through participating in initial diagnosis aimed at determining the improvement themes for enterprises, it was found in some cases that problems were actually larger than initially indicated in the improvement themes.
- It was found that rather than setting total improvement themes it is important to narrow them down. When improvement effects were achieved in narrowed down themes, enterprises showed greater trust in the C/P side and it became easier to approach subsequent improvement themes.

- Even though the same management techniques were adopted with respect to the same type of enterprises, some enterprises experienced a positive effect whereas others showed no improvement. The PP showed just how important the motivation of managers is to the success of improvements.
- The C/Ps learned how to persuade managers. They learned that managers are not persuaded by theoretical explanations alone. It was found that it is better to use figures in order to make a persuasive case.
- Until now enterprises have tended to stick to specific improvement methods for dealing with a certain problem, however, through the PP they learned that it is OK to use different methods when a certain approach doesn't work.
- Whereas the C/Ps previously persisted with diagnosis work even when clients were not interested in implementing improvements, in the PP they learned the importance of curtailing efforts in such cases.
- The C/Ps learned how to apply theories learned from books in real situations.
- Whereas the C/Ps were not confident enough to visit enterprises and conduct diagnoses by themselves before, they gained such confidence via the PP.

According to the PP evaluation sheets compiled for each enterprise at the end of the PP, the C/Ps did not give a very high rating concerning the item "Was the management technology practical training effective?" Three reasons can be pointed to for this. First, the experts did not serve as lecturers in the three-day training; second, coaching techniques were adopted and decisive responses were deferred in favor of general hints; and third, although the C/Ps said that they understand and had used various management technologies in the prior interviews, it sometimes turned out that their understanding was insufficient and they really needed additional theoretical training.

4) Lessons Learned from the Implementation of Diagnosis and Support of Model Enterprises

a. When conducting technology transfer by OJT, it is better to select improvement themes rather than individual management technologies. The ability to support problem solving in enterprises depends not on what management technologies are used but on what problems are resolved. There are few problems that can be resolved by individual management technologies alone. Many AMPs recommend using management technologies, however, their ability to appropriately apply the right management technology to specific problems is weak[29)].

29) A similar observation was made by a number of AMPs in the opinions exchange meeting held following the end of the PP.

b. There are five essential themes concerning production management, i.e. 5S, productivity improvement, quality improvement, cost reduction, and delivery lead-time shortening, and it is best to learn how to use individual management technologies according to each one.

c. For example, even when offering improvement support to a model enterprise free of charge, it is desirable to impart some kind of improvement to the enterprise as a reward for cooperation with the OJT and also to enhance the effect of OJT for trainees.

d. Two months is not long enough for OJT to be effective. At least three months is required, and it is desirable to select one improvement theme per model enterprise.

e. When conducting OJT in enterprises, since there are limits to the acceptance capacity of enterprises and the scope of trainer supervision, the training should be limited to no more than five trainees.

f. In addition to OJT on the ground in enterprises, it is extremely important for trainers after they return to INTI to analyze current conditions and discuss improvement plans while the memory is still fresh. Since the PP term here was very short and congested, hardly any time could be devoted to such activity[30)].

g. In order to improve the problem solving capacity of trainees, it is important to conduct training via eyes ears, mouth and hands. Eyes refer to observing the workplace; ears refer to holding discussions with the enterprise side; mouth refers to giving explanations to and persuading the enterprise side; and hands refers to the preparation of diagnosis daily reports and execution of assignments (for example, problem solving).

h. In order to motivate managers to execute improvement plans, it is often not enough to persuade using only orthodox theory. It is necessary to acquire more effective powers of persuasion such as giving easy to understand explanations, displaying the improved situation after execution and so on.

i. Rather than directly giving correct answers, the trainers need to show direction, give hints and organize tasks in order to encourage the trainees to think for themselves. In other words, the trainers need to acquire coaching techniques.

(3) Workshops

Workshops with the aim of summing up the PP were held in B.A. NODO and INTI Mal del Plata. The following table gives an outline of them.

30) Using spare time made available by the cancellation of some enterprise visits, discussions were held with the C/Ps five times. Also, two interviews were held with the PEAT Director to discuss the training system and

Table 2-5 Outline of Workshops (Buenos Aires and Mar del Plata)

Location	Buenos Aires	Mar del Plata
Date	November 16 (Monday), 2009	November 11 (Wednesday), 2009
Venue	INTI Headquarters Seminar Room	Hotel Costa Galana
Participants	71	45
Agenda	8:45 Reception 9:10 Greetings (Pedro Brunetto, PEAT director, Kyoka Noguchi, JICA Office Manager) 10:00 Outline of the PP (Rodlfo Foglia, Leader of PEAT, Marcos Rodríguez, Leader of B.A. NODO) 10:45 Results presentation from 3 PP enterprises (Lannot, De Asia, Industrias Sucre) B.A.NODO jurisdiction) 12:30 Presentation of a letter of appreciation to the PP enterprises 13:30 Outline explanation of PP in provincial NODO and presentation of results by representative enterprises (Pharmamerican, Berger, Aldo) 16:00 Lead-time shortening for better competitiveness (Sugimoto) 16:50 Close	16:30 Reception 17:00 Greetings (Lic. Beatriz Martinez, Gerente General del INTI) 17:10 Outline of the PP (Guilleromo C. Center Manager) 17:20 Results presentation from 4 PP enterprises (Tapamar, DelPack, Olitas, Pharmamerican) 19:40 Presentation of a letter of appreciation to the PP enterprises 19:50 Support for problem solving in SMEs (Sugimoto) 20:30 Close

the action plan, etc. included in the recommendations.

2.2.2 CONCEPCION DEL URUGUAY and PARANÁ

(1) Applied Theoretical Training

The results of the applied theoretical training implemented at INTI-Concepción del Uruguay (hereinafer referred to as Concepción) from September 7 to 9 are as indicated in Table 2-6.

Table 2-6 Outline of Applied Theoretical Training (Concepción)

Date			Curriculum	Lecturer	Trainees	Trainee Evaluation (out of 5, mean scores)			
Day		Time				Contents	Explanation Method	Enterprise Applicability	Mean
9	7	9:00-12:00	Overall view of production management	HS	42	4.67	4.61	4.44	4.57
		13:30-15:00	Issues faced by ER SMEs	AS,SF	42	4.68	4.68	4.56	4.64
		15:00-16:00	The desirable appearance of INTI AMPs	AS,SF	40	4.44	4.56	4.31	4.44
		16:00-17:00	IE introduction	HS	40	4.65	4.60	4.50	4.58
9	8	9:00-10:30	5S	RT	38	4.64	4.76	4.88	4.76
		10:30-12:00	KAIZEN	AA	38	4.33	4.45	4.67	4.48
		13:30-15:00	Evaluation of investment effects	CG	39	4.85	4.77	4.73	4.78
		15:00-15-45	Cost control	HS	39	4.58	4.58	4.74	4.63
		15:45-16:30	Cost reduction	HS	39	4.54	4.50	4.75	4.60
9	9	9:00-10-40	Quality control in SMEs	EG	42	4.61	4.17	4.57	4.45
		10:40-12:00	TQM	HS	42	4.35	4.17	4.59	4.37
		13:30-15:00	Maintenance	EG	40	4.50	4.41	4.36	4.42
		15:00-16:30	7 areas of waste	AS,SF	40	4.91	4.87	4.70	4.83
		16:30-18:00	TPM introduction	HS	40	4.44	4.50	4.53	4.49
				Mean	40.07	4.59	4.42	4.60	4.57

Lecturers: AS: Angelina Schmidt, AA: Andres Alaluf, RT: Romina Torales, CG: Claudio Gradizuela, SF: Sebastian Faure, EG: Edgardo Gamero, HS: Hideo Sonoda (JICA expert)
Hereinafter, the above abbreviations will be used when refering to the AMPs.

1) Curriculum

The design of courses in the three-day seminar was carried out based on the following policy.

- Make use of the assets (training modules) that are currently held by INTI as far as possible. Also, utilize AMPs as lecturers in order to provide them with opportunities to learn and grow.
- Concerning technologies and techniques which need to be transferred but for which teaching materials are not available, the experts should prepare teaching materials and serve as lecturers.
- Give a bird's-eye view of the production management technologies that have been transferred so far from various viewpoints, and give guidelines to the INTI AMPs on how to resolve problems using the techniques of production management technologies (first day morning).

- Devote the final day to TQM and TPM, which are regarded as the comprehensive summarization of production management technologies in Japan. Also, concerning JIT, which is the remaining representative technology, utilizing the existing module, add the '7 areas of waste' which are the starting point for this. Concerning TQM and TPM too, give learning and presentation opportunities to the AMPs through utilizing existing modules (qualty control and maintenance in SMEs).
- Analyze information obtained through the enterprise diagnoses implemented in the first stage, and thereby clarify the current conditions and problems facing SMEs in Argentina. Then confirm the direction of countermeasures for implementation in the second stage. Also, let the AMPs think about and present their intentions on how they want to contribute to SMEs in Argentina through diffusing business and production management technologies (first day, afternoon).
- In addition to the 5S and KAIZEN, which are the infrastructure of production management technology, also include IE. Since the 5S and KAIZEN have already been transferred and are starting to produce results, the AMPs should serve as lecturers (5S and KAIZEN on the morning of the second day, and IE on the afternoon of the first day).

The evaluation by the trainees will be described later, however, the response to the above principles was favorable.

- For example, the existing module on the '7 areas of waste' received almost a perfect score of 4.91 for content, and it was found that the other modules currently held by INTI are also effective.
- All the AMPS served as lecturers for themes in which they could display their own strengths. Being given opportunities to make presentations in the seminar gave added motivation to their learning, and the resulting vigorous presentations on the 7 areas of waste and 5S, etc. earned high scores in the evaluation.
- Through giving a bird's-eye view of poduction management technologies at the outset, the trainees were able to build a renewed picture of correlations between technologies and techniques. For example, it was shown that SMED (single minute exchange of die) is not a special isolated technology but should rather be viewed as an application package of IE multiple-activity analysis specifically suited to die exchange.
- Lively discusions were carried out with the trainees concerning analysis of the problems that confront Argentinean SMEs and the direction that should be taken by AMPs based on the problems that came to light in the first stage and the expectations of the AMPs.

- Concerning TQM, preparations were made to introduce the overall picture and concept as well as the 7 tools of QC and the QC story in the introduction, and also to explain a quality function deployment module comprising QC process charts and design quality improvment frequently utilized in the Pilot Project, however, most of these contents had to be omitted due to the lack of time. It was decided to transfer the omitted part to the INTI AMPs in a mini-seminar at a later date. The effectiveness of QC process charts was demonstrated in the PP activities.
- Concerning TPM, only conceptual explanation could be given. In the PP too, no enterprises implemented this, however, it is still thought that the need will arise in future and steps to deal with this will be required.

Regarding the curriculum, it was possible to transfer theoretical know-how on a wide range of production management technologies in this seminar. Bearing in mind the danger of trying to fit in too much in such a short time of three days, it is thought that various techniques and their possibilities were systematically introduced concerning production management technology overall.

Although the trainees may not understand or remember the detailed contents of each technique, it is anticipated that they have at least learned what tools are available in each area and which techniques can be used in certain cituations.

Concerning the detailed contents of techniques, it is anticipated that the trainees will conduct more autonomous learning based on this seminar and learn how to apply techniques to real situations as they gain experience.

2) Participation by Trainees

There were 48 trainees in total.
INTI provided 15 of the trainees or 32% of the total, with six coming from Concepción and nine coming from other INTI. Trainees from enterprises numbered 22 or 46% of the total; in particular, 16 trainees or 33% came from eight enterprises targeted in the PP (10 enterprises were targeted in all). Almost all of these enterprises were represented by presidents or joint owners, some of which participated in all the courses.

Through having PP participants including top management from enterprises take part in the seminar, technical understanding could be deepened as the second stage was advanced and the Project was able to progress at a faster rate.

Among the general enterprises that took part, some were on the original list of 20 but were not selected for the PP. Enterprises that weren’t even selected among the 20 Study targets

because they are not Argentinean-owned also took part.

The three NGO participants came from CAFESG. In Concepción, CAFESG has started a similar project to the JICA undertaking, indicating that outputs of the JICA project have started to be deployed horizontally.

The four participants from universities (UTN-Concepción and UTN-Paraná) and the one member from the provincial production agency visited in order to survey collaboration with regional related agencies in the first stage.

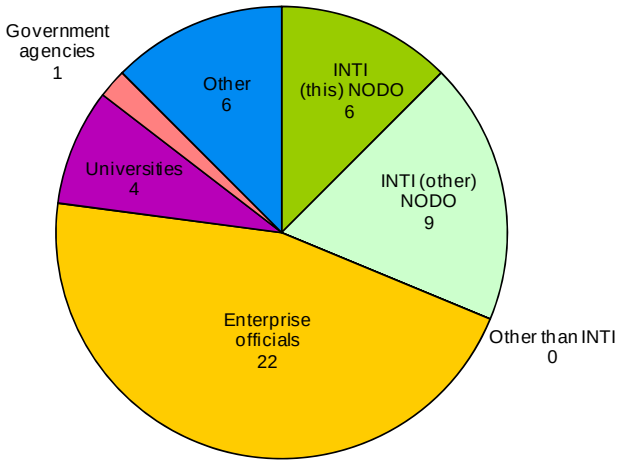


Figure 2-2 Brakdown of Participants in the Applied Theoretical Training

3) As can be gathered from the evaluation by the trainees shown in Table 2-6, the overall score for all 14 courses was 4.57, indicating that the seminar achieved a satisfactory level for the trainees. In particular, high scores of 4.59 and 4.60 were given for Contents and Applicability to enterprises, respectively. There was some slight variation in the scores, but there was no significant difference in quality between the courses.

High scores (4.70 or more) for Contents were obtained in the courses on Method for evaluating improvement effect and 7 areas of waste.

In terms of Explanation method, high scores were given for the 5S, Method for evaluating improvement effect and 7 areas of waste, and these reflect the positive response of the trainees to the motivation and vigor of the AMPs who were in charge of these courses.

In terms of Enterprise applicability, high scores were given for the 5S, Method for evaluating improvement effect, Cost control, Cost reduction and 7 areas of waste. This indicates that the needs of enterprises to pursue fine-tuned cost control (based on the experience of the enterprise diagnoses) were channeled into high expectations regarding the seminar courses, and that the seminar was able to respond to such expectations.

4) Lessons Learned

- The role of provincial NODO:

  This was the first time that Concepción independently staged a seminar. In this sense it was highly significant, and some of the participants commented that they previously thought that such seminars could only be held in Buenois Aires. For the INTI AMPs too, the high number of participants from distant places mainly in the north showed the high level of needs for training in provincial areas. The INTI in Concepción has seven AMPs (one of which is currently on maternity leave) and much is expected from it as a center for responding to such needs. It is hoped that it utilizes the experience gained here to fulfill such a role in future.

- Importance of basic knowledge:

  This seminar covered both applied knowledge and basic knowledge, and the effects of doing so were great. One AMP used a technique (multiple-activity analysis) he had just learned in the enterprise diagnosis seminar to propose a solution to botlenecks, so this proposal would not have been possible without the seminar. Concerning stock control, even though it is a basic field and enterprise needs are very high, INTI had no module for it until now. It is necesary to comprehensively reinforce this kind of basic knowledge.

- Autonomous development potential of AMPs:

  This seminar succeeded in indicating the framework of production management technology and preparing teaching materials coveroing a wide scope. The AMPs are currently putting those into direct application, however, it is anticiptaed that they will link this to auonomous development through adding their own experiences and improvements following the technology transfer.

- Enlightenment of enterprises:

  There was a lot of participation by enterprises at the seminar in Concepción. Particularly in the case of the PP target enterprises, managers and owners deepened their understanding through participating in the seminar, and doing so facilitated joint work with the AMPs. An enterprise manager who heard the AMP presentation on 5S kicked off a 5S campaign in this own workplace. Concerning support services via the INTI management technology, it will be necesary to continue implementing broad enlightenment activities with respect to enterprises from now on.

- Collaboration with related enterprises:

  So far information exchange has been conducted with UTN and UNER. They too are interested in Japan's three great production technologies, i.e. TQM, TPM and JIT (TPS) and have requested cooperation in staging seminars and so on. Although it couldn't be introduced during this seminar, HS separately prepared materials on the themes of interest to related agencies such as TPM individual improvements and quality functional deployment, etc. It is anticipated that links with such agencies including utilization of these materials will be strengthened in future with a view to generating synergies.

(2) Diagnosis and Support of Model Enterprises (Concepción del Uruguay / Paraná)

The following paragraphs describe the outline, features, evaluation and lessons of the model enterprises diagnosis and support activities.

1) Outline of Diagnosis and Support of Model Enterprises

Enterprise	Sector	Main Products	Employees	Annual Business	Improvement Theme	Management technology used in Improvement	C/P in charge	Number of Visits		Improvement Evaluation
								Experts only	C/Ps only	
Lambert Hermanos	Machine processing	Truck trailers	98	6MUSD	Establishment of a company-wide quality assurance setup	7 tools of QC, QC process drawings	CG	4	2	One of the biggest enterprises in the PP, it is cumbersome but is steadily building its quality assurance setup
Berger S R L	Rubber	Recycled tires	34	250KUSD	1 Improvement of equipment operating rates, 2 Reduction of the vulcanization process NG rate, 3 Manualization of polishing process work, 4 Human resources education	IE (Line balance, Crew motion analysis, SMED, Layout), 7 tools of QC, QC process charts	RT	4	3	Work was simultaneously implemented on 4 themes, and dramatic effects were achieved in all of them in a short time The employees were quick to learn technologies and the president also displayed rapid growth This was an excellent enterprise in the PP
Industrias Plásticas RD	Resin processing	Truck deflectors	24	$1 8M	Productivity improvement and lead-time reduction through total review of processes	5S, IE（Line balance, Crew motion analysis, Layout）	CG	4	5	Since the vice president displayed leadership, his unique technology and the PP management technology generated synergy resulting in increased production capacity
Industrias Riehl	Machine processing	Vehicle loading platforms	8	$13M	Productivity improvement in metal processing processes	IE（Line balance, Crew motion analysis, Layout）	AA	4	3	In this micro enterprise, the president fought a lone battle, and improvements took longer to materialize than in other companies
Kindscheff	Metal processing	Leisure products (beach chairs)	10	$2 6M	5S, productivity improvement	5S, IE（Line balance, Crew motion analysis, Layout）	AS	4	3	Productivity in the assembly process was increased by applying IE on a foundation of the 5S, but the evaluation score was 4 in comparison with other enterprises
Metalúrgica Albace	Machine processing	Freezer tunnels	34	$15M	5S, cost control, process quality improvement	5S, Calculation of variable costs, 7 tools of QC, QC process charts	AS	4	3	Starting from zero, the corporate culture was transformed thanks to widespread participation by all employees in 5S, cost control system, and quality improvement
Don H Muebles	Timber processing	Kitchen furniture	4	$360K	Assembly process productivity improvement	IE（Line balance, Crew motion analysis, Layout）	SF	5	4	In this micro enterprise, the president fought a lone battle, and improvements took longer to materialize than in other companies
Elevadores Neumáticos	Machine processing	Elevators	21	$8M	1 Reduction of market NGs, 2 Visualization of production plans, 3 Productivity improvement	IE (Line balance, Crew motion analysis, SMED, Layout), 7 tools of QC, QC process charts	EG	5	4	The vice president took the initiative in fighting market quality NGs Effects were also achieved in terms of process visualization and productivity improvement This was another excellent PP enterprise
Santini Argentinean S A	Machine processing	Beverage fillers	15	$1 1M	1. Visualization of production plans, shortening of lead-time, 2 Process quality improvement	Production planning (Gant, CPM, PC software development), QC process charts	EG	5	4	Results were achieved in a short time through the teamwork of the vice president and engineers (German) They aim to connect these results to stock control in the future
Schepens S R L	Machine processing	Industrial ovens	11	$1 9M	1 Review of company-wide organization, 2 5S, 3 Productivity improvement through resolution of bottlenecks	5S, IE（Line balance, Crew motion analysis, Layout）	SF	5	4	The entire enterprise organization was reviewed and divisions of responsibility were clarified Productivity was increased through combining IE techniques with proprietary technologies

2) Features of Model Enterprise Diagnosis and Support

* Group composition and arrangement of supervisors by district:

Concepción currently has seven AMPs, six of whom are actually active. The group composition changed following the start of the PP. Griselda Burquet (GB), who had participated from the beginning, took maternity leave from the second stage. EG entered the company and participated in the PP midway through the first stage, while RT returned from maternity leave from the second stage.

As a result, six members supervised the work in three districts as follows:

AS, AA : 3 enterprises (Kindsheff Solcito, Riel, Albace) in the suburbs of Concepción

RT, CG : 3 enterprises (Lambert, Industrias Plasticos, Berger) in the neighborhood of Concepción INTI

EG,SF : 4 enterprises (Don H, Santini, Schepens, Elevadores Neumaticos) in Paraná City

Rather than adhering to the assignments of each AMP in the first stage, through fixing the assignments according to the above transfers, it was possible to provide fine-tuned support to the enterprises and to foster healthy competition within the team.

* Enthusiasm of AMPs

The experts returned to Japan at the end of the first stage, however, they left with the hope that the AMPs will continue to offer support to the enterprises.

Responding to this anticipation, the Concepción AMPs visited enterprises on average three times between the return home of the experts and the start of the second stage in an effort to identify issues and gauge current conditions. As an example following the start of the PP, RT visited Berger Co. and explained cause and effect diagrams. After she left upon giving some examples, the company employees applied the principles to problems in their company's vulcanization process and analyzed causes themselves. As a result, the enterprise was able to ascertain the real cause (temperature) of the problems based on its own effort. In another case, an enterprise succeeded in shortening die change times based on hints given by the expert, and there were numerous other successful examples.

In Paraná, EG and SF visited enterprises with a view to offering guidance on preparing presentation materials. As a result of such devoted efforts by the AMPs, all the

enterprises were able to complete their themes within the PP period without dropping out, and a number of others were able to tackle other themes.

* Problem solving approach and task achievement approach

In Concepción, the AMPs share a triangular hierarchical model that demonstrates the structure of production technology systems. The 5S, KAIZEN and IE are entry points and also provide the tools for solving issues in enterprises. While placing the three great Japanese production technologies of TQM, TPM and JIT at the pinnacle, the AMPs constantly examine the relationship between the P (productivity), Q (quality) and D (delivery) issues faced by ER enterprises and the techniques for resolving them, and they view the 5S not as the goal but as a means of removing noise and clarifying the issues.

The following table shows the relationship between the issues faced by the PP target enterprises and the techniques adopted with respect to them.

Table 2-7 Improvement Themes and Applied Techniques

Theme	Technique	Berg	In.Pl	Lam	Kind	Albac	Riel	DonH	Elev	Sant	Sche
Strategy	BSC (Balanced Score Card)		○	-							
	Human resources development	○		-	-						○
	5S	*	○	*	○	○			*		○
Productivity/ IE	Process analysis	○	○	○	○	○	○	○	○	○	○
	Time research	○	○	*	○	○	○	○	○	○	○
	Multiple-activity analysis	○			○		○	○			
	Line balancing	○			○			○			○
	Layout	○	○		○		○		○		○
	SMED	○									
Delivery lead-time/D	Production planning	○	○			○			○	○	
	Stock control		○		○	○	○			○	○
Quality/ TQM	QC process charts	○		○		○			○	○	
	7 tools of QC	○		○		○			○		
Cost	Parts table expansion					○		○	○	○	
	Actual raw materials and labor costs		*	*		○		○		○	
note		10	7	3	7	9	5	6	7	6	7

○ :Implemented
* : Implemented in the past
\- : Requested but not responded to here

All the Concepción AMPs say that, through trying the task achievement approach and problem solving approach in the PP, they gained the confidence to support enterprises in achieving goals and solving problems. The coordinator AS started enterprise diagnosis and support in 2006 but was always nervous and unsure about performing the work. However, through utilizing the task achievement approach and problem solving approach acquired in the PP, she gained confidence and she likens this to acquiring bright lights for the first time when driving along a nighttime road.

3) Evaluation of Diagnosis and Support at Model Enterprises

a. Evaluation of Improvement in Model Enterprises

The mean scores given in the evaluation by the AMPs and 10 enterprises are indicated below.

The AMPs and enterprises give a positive evaluation under all items. Concerning the level of achievement and improvement effect, the overall evaluation is somewhat low because the PP period was too short for all the enterprises to realize outputs. Even so, the themes were completed during the PP period with overall dramatic improvement effects. (The enterprises completed 1.8 themes on average and 2.2 themes if the 5S are included).

The enterprises have a strong sense of satisfaction in the PP. (Satisfaction regarding the PP was scored as 4.9, and prospects for outputs and technology utilization were both 4.8).

Table 2-8 Evaluation of the Model Enterprises Diagnosis /Support PP

Evaluation Item		Evaluator		
		Enterprises	INTI-AMP	JICA experts
1.	Overall evaluation of the PP implementation plan:			
	① Was the selection of issues appropriate?		4.6	4.4
	② Was the selection of approaches appropriate?		4.6	4.3
	③ Anticipated goals and/or outputs: level of achievement and future prospects		4.2	4.2
2.	Technology transfer to C/Ps:			
	① Was the basic theory of business and production management technology transferred to the C/Ps?		4.5	4.4
	② Was the practical training on business and production management technology effective?		4.7	4.4
	③ Were diagnosis and improvement techniques for business and production management technology learned?		4.4	4.3
3.	Effectiveness of management technology:			
	① Are concrete improvement effects recognized with respect to issues?	4.4	4.4	4.1
	② (Although no clear outputs appeared during the PP period) Was the setup or foundation for resolving issues established, and are concrete outputs likely to be realized in the near future (within a year and so on)?	4.8	4.8	4.7
	③ Is there any prospect of utilizing the business and production management technology learned during the PP?	4.8	4.8	
4.	Level of satisfaction of model enterprise owners:			
	① What is the level of satisfaction regarding the results of the PP?	4.9		
	② What is the likelihood of advice being sought from INTI in future?	4.5		

b. Evaluation of the Current Conditions and Improvement of the C/Ps' Enterprise Support Capacity

* Enterprise support capacity of the C/Ps

The capacity of the AMPs improved over time.

Two factors were instrumental in this: first, rather than seeking to gain short-term outputs during the PP period, the activities were geared to tackling the intrinsic problems which confront enterprises in Argentina; and second, through defining the systems for problem solving and the approach to that in the PP design stage, the AMPs were given bird's-eye views indicating the whereabouts of problems and their relation with the tools for resolving them.

The AMPs acquired a new weapon that gave them courage in facing up to the intrinsic problems which face enterprises. The AMPs displayed startling growth even after experiencing only some minor successes.

* Division of roles

In the case of Concepción, problems remained concerning the status of people in charge of each major field.

The work here was conducted by teams of two members each, however, since the division of roles tended to become fixed, some members gradually displayed less initiative in conducting diagnosis and support at the enterprises under their charge.

Since the level of growth of AMPs varies according to their level of involvement, when it comes to designing training geared to giving qualifications in the future, it will be better to clarify the specific roles and required outputs of AMPs from the start.

c. Evaluation of practical training

* Qualitative changes brought about by the PP

Through acquiring IE techniques, the problem solving approach and the task achievement approach in addition to the originally planned 5S and KAIZEN, the quality of diagnosis and support activities was altered. As a result, all the AMPS agree that they have found the confidence to face up to specific challenges in enterprises from now on.

* Horizontal extension in CAFESG and Venezuela

The effectiveness of new approaches was demonstrated during the process of this Project. As a result, it has been found that AMPs are using the techniques taught by JICA to INTI in projects by CAFESG (a foundation that conducts public funding assistance in Entre Rios Province) and so on, thereby corroborating the effectiveness of this training as practical education.

4) Lessons Learned from the Implementation of Diagnosis and Support of Model Enterprises

* Autonomous sustainability

Sustainability of the Project is guaranteed by the functioning of the mechanism for technical dissemination and expanded reproduction, and it is thought that this is being realized from the following cases.

In the PP activities here, moving down the hierarchy from the experts to the AMPs to the enterprises, technology was transferred in more concrete fashion and with bigger impact the closer the activities were conducted to actual workplaces.

* Potential for autonomous growth

In the PP in Concepción, the basic approaches to transferring technology with the AMPs were coaching and empowerment. The AMPs fully understood these techniques and adopted them when conducting guidance in enterprises themselves.

On being asked about the ideal combination of dies, machines and products by Berger Co., RT mentioned a calculation formula learned from experience at a dairy products company, and the enterprise took this, improved on it and used it to resolve its own problems.

EG aggregated results in parts expansion charts while respecting the autonomy of enterprises regarding operating time, etc. in production processes, and this encouraged the enterprises to vigorously compile basic data. He commented that, “I was only observing from the background; the company started to operate autonomously as a result of its own efforts.”

True to the advice of the experts that the enterprise is the player and the AMP is the coach, the AMPs put this into actual effect.

* Leadership of management and human resources development

Not one of the enterprises dropped out and all of them were able to obtain satisfactory results from the PP, however, there was some disparity in the improvement effect between enterprises. The reasons for this were twofold: 1) Leadership of management, and 2) Level of core human resources development.

In enterprises such as Elevadore Co., Santini Co. and Berger Co., where top management displayed active initiative, dramatic improvements were observed in a short time.

Furthermore, whereas enterprises which possess capable staff for promoting the above activities upon satisfying the above conditions generated good results, the enterprises which couldn’t secure the core human resources struggled to realize quick improvements. Having said that, in Riel Co. and Don H Co., the presidents are currently fighting a lone battle.

* Potential for synergy with proprietary technologies

It was not possible to conduct technology transfer of TPM in ER Province in the PP, however, preventive maintenance is a needed technology in Argentina. Out of five visits made to enterprises experiencing bottleneck processes, machines were found to be broken down on two occasions.

There are some enterprises such as Kindscheff which took the opportunity of breakdowns to register all equipment in a ledger and keep maintenance records.

Since INTI has a proprietary technology department, it should be possible to realize development of even more sophisticated techniques realizing a synergy effect between management technologies such as PM analysis and proprietary technologies.

(3) Workshops, etc.

1) Mini-workshop (November 10)

In Paraná, the four enterprises which participated in the PP staged presentations at a mini-workshop.

The presenters held a lively exchange of opinions with the participants from other enterprises and groups. The vigorous presentations overall were prepared with the support of the AMPs. e

The mini-workshop in Paraná was not included in the original plans. Accordingly, it was staged as a voluntary event largely thanks to the superhuman efforts of Ruben Armando Rousset (RAR), the extension officer in Paraná, who collected funds to cover the costs of renting the venue, printing materials and buying coffee and snacks. RAR also advertised the event to participants.

The opinions of the AMPs were divided when it came to selecting a representative from the four enterprises in Paraná, however, Elevadores Neumaticos Co., which was eventually chosen, presented an example of high-level quality improvement that wouldn’t have been out of place at the national assembly of Japan quality month. The mini-W/S was also covered by the local mass media; prior to the day the W/S was held the JICA Study Team leader and JICA experts were interviewed by the local TV station and these interviews were aired at a later date.

2) Workshop (November 12)

Presentations were then carried out in Concepción by three companies comprising one enterprise from Paraná (selected out of the four enterprises there), one from the suburbs of Concepción (selected from three) and one from remote areas such as Colon and San Salvador (selected from three).

The keynote addresses at the start of the W/S were given by the Concepción center manager and JICA Study Team leader. In the presentations, active information exchange including questions and answers was carried out among all the enterprises which took part in the PP, and all the AMPs also gave comments.

The president (female) of Berger Co., who was selected as the representative for Entre Rios, had only just succeeded her father, who had recently passed away in an accident, and she was not confident about dealing with the experienced employees in her company. However, she displayed remarkable growth during the PP and was able to give a presentation with the confidence of a proven owner.

3) Lecture for technical consultants (October 27, evening)

At the request of the engineers association of Paraná, a lecture was given for the technical consultants on the topic of "Dissemination of production management technology under technical cooperation." Within this, a presentation lasting two and a half hours was given on the systems of production management technology and the essential concept of diffusion. At this time, the activities were covered by the local X-mas TV station, and a report introducing this JICA program was aired on local TV on November 9. It was also later posted on the station's home page. In this nine-minute report, interviews were held with RAR, the director of the engineers association and the JICA expert.

(4) Lecture at a symposium at the National Technical University School of Business Management (November 13)

The Study Team was invited to the Continuous Improvement Symposium held for two days at UTN, and a lecture on the project approach of JICA and results of the PP Activities was given to 80 students on the evening of November 13 under the heading "On diagnosing 10 enterprises in Entre Rios Province."

2.2.3 NEUQUEN and VILLA REGINA

(1) Applied Theoretical Training (Neuquén / Villa Regina)

The results of the applied theoretical training implemented at Centro-PyME from September 9 to 11 are as indicated in Table 2-9.

Table 2-9 Outline of Applied Theoretical Training (Neuquén)

Date			Curriculum	Lecturer	Trainees	Trainee Evaluation (out of 5, mean scores)			
Month	Day	Time				Contents	Explanation Method	Enterprise Applicability	Mean
9	9	10:00-12:00	Current conditions of visited enterprises	M.H	38	4.53	4.53	4.29	4.45
		13:00-16:00	5S	LG:	36	4.50	4.30	4.71	4.50
9	10	9:00-12:00	Basics of IE	M.H	40	4.46	4.48	4.33	4.42
		13:00-16:00	Cost control	M.H	40	4.05	4.00	4.30	4.12
9	11	9:00-12:00	7 tools of QC	JR	50	4.36	4.28	4.37	4.34
		13:00-14:00	Profit calculation of improvement effects	CA	41	3.85	3.80	4.05	3.90
		14:00-16:00	Stock control	MH	35	4.38	4.29	4.11	4.26
			Mean		39.9	4.30	4.24	4.31	4.28

* The number of trainees was limited due to the circumstances of the training venue.
Lecturers: JM:Juan Manuel Rubino, LG:Luciano Girolimini, CA: Claudina Angelino, MH:Masahiro Hamano (JICA expert)

1) Curriculum

The training in Neuquén / Villa Regina was carried out by the facilitators and JICA experts upon examining the themes based on the results of the previous enterpise visits by the JICA expert.

The members in Neuquén and Regina have hardly any experience of diagnosis and support of enterprises, and two lecturers includng the facilitator who was dispatched to Japan for training lectured on the 5S and 7 tools of QC. The C/Ps who served as lecturers in the training had no prior diagnostic experience, however, through having to prepare curriculums as lecturers, they were placed in a position of having to earnestly learn theory in a new area. The two lecturers examined the contents and made additions and corrections during the preceding two days, and they were very cooperative in participating in the teamwork.

“Estimation of the improvement effect” was aimed at imparting to the C/Ps the capacity to estimate increases in profit and sales and reductions in cost, etc. necessary for encouraging business owners to execute improvement plans, and the AMPs from Buenos Aires NODO were the lecturers for this course.

TQM was added to the curriculum, but this wasn’t covered because there too were many

questions to cover in the available time. This subject was covered individually at the enterpises which required it during the PP implementation stage.

2) Lecturers

The enterprises that were visited previously participated in the seminar, and it turned out to be very lively with lots of questions. Since production management is not very deep rooted in this area, there were numerous elementary questions from the CPs and they were very interested in the topic. The trainees are indicated in the following figure.

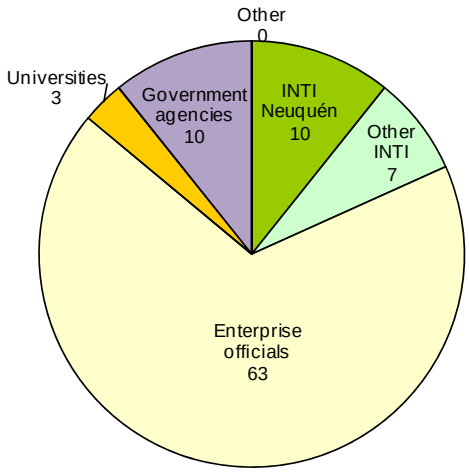


Figure 2-3 Breakdown of Participants in the Applied Theoretical Training

3) Evaluation by Trainees

As is indicated in Table 2-9 above, the participants displayed a high level of satisfaction in almost all the themes. Since many of the participants had no prior knowledge of product management technology and had never had the opportunity to receive seminar training, they displayed a very high degree of interest in the seminar.

In particular, presenting the survey findings in a module entitled “Current conditions of the visited enterprises” helped raise the level of awareness of the participants.

Moreover, the lectures handled by the C/Ps on the 5S (Luciano G) and 7 tools of QC (Juan M) comprised easy to understand words, case studies and interesting presentations rather than the conventional difficult theories and expressions, etc.

4) Lessons Learned

- Some of the enterprise owners thought that expecting participants to attend seminars three days in a row was too harsh. There are many micro enterprises, and many

presidents attended the seminar. It is necessary to examine the schedule based on the contents and purpose of the seminar.

- The participants seemed to understand the contents of the seminar, however, some CPs and PP enterprises lacked understanding about actually utilizing them in enterprises. Actual case studies were interjected into the seminar here, however, in order for such knowledge to stick, it is ultimately necessary to practice it in the workplace via real experiences.

- For nurturing C/Ps, theoretical training alone is not enough, indeed practical training should involve more than simply accompanying to workplaces. Rather, time should be provided to enable the trainees to themselves collect and analyze data and prepare improvement plans.

- In view of this observation, it is necessary to examine ways of combining theoretical training with guidance in the workplace (OJT). When conducting education for new recruits, it may be effective to let trainees visit workplaces and grasp the overall picture on the ground and so on before giving them theoretical training.

- Since the enterprises were also not used to implementing improvement, they took time to process homework assignments in the initial phase of improvement activities. Accordingly, this point needs to be taken into consideration when compiling training plans. For example, where necessary, time should be secured to enable the C/Ps to conduct preliminary training (mini-training) at enterprises on management technologies (analysis tools) used in the initial stage of improvement, and to enable the trainers to conduct training for the enterprise owners on an ad hoc basis.

(2) Diagnosis and Support of Model Enterprises (Neuquén / Villa Regina)

The following paragraphs describe the outline, features, evaluation and lessons of the model enterprises diagnosis and support activities.

1) Outline of Diagnosis and Support of Model Enterprises

Enterprise	Sector	Main Products	Employees	Annual Business	Improvement Theme	Management technology used in Improvement	C/P in charge	Number of Visits		Improvement Evaluation
								Experts only	Experts only	
Raul Allemanni	Machine repairs	Maintenance of machine parts	19	2,000,000	・ 5S ・ Work instructions ・ Cost accounting	5S Work analysis Gantt charts Cost accounting (breakeven point)	Luciano G. Juan M.	6	0	Evaluation was obtained ・ Through implementing 5S and tidying up unnecessary objects in the plant, work areas were rearranged (separation of welding), thereby enabling line improvements ・ Improvement in control of tools ・ Site instruction of work schedules and improvement of lead-time ・ Improvement in efficiency of cost estimation ・ The enterprise intends to continue requesting support from INTI
Fasinpat	Ceramics	Ceramic tile manufacturing	450	5,500,000	・ Quality control (NG countermeasures) ・ Repairs	Histograms TPM	Luciano G. Juan M. Carorina A.	6	4	Evaluation was obtained but results were not forthcoming ・ Control through data due to the lack of management ・ The business is run by the labor union but the chain of command is unclear and the results of diagnosis and guidance were inadequate
A Punto Natural y Express	Foods	Vegetable processing	4	180,000	・ Layout improvement (traffic line review) ・ Work improvement	Work analysis Motion analysis Cost accounting	Luciano G. Juan M. Nataria S.	7	0	The improvement effect was large and a high evaluation score was obtained ・ Labor and work improvements (movement of heavy objects), improvement of peeling work, work efficiency (time shortening of approximately 30%) ・ Rearrangement of workplaces, full improvement of the potato oxidation prevention process ・ The enterprise learned how to grasp costs ・ The enterprise intends to continue requesting support from INTI
Torneria Allemanni de Eduardo Allemanni	Machine repairs	Maintenance of machine parts	19	2,900,000	・ Preparation of work standards ・ Cost accounting	Work analysis Cost accounting	Laura T. Luciano G. Juan M.	6	4	Evaluation was obtained ・ Improvement in work efficiency ・ Standardization of work ・ The enterprise learned how to calculate the estimate cost
Alpeco SRL	Metal parts retailing	(welded parts, joints, valves)	5	4,000,000	・ 5S ・ Stock control ・ Discipline training	5S Stock control	Luciano G. Juan M.	5	2	Effects were minor ・ Improvement in work efficiency through warehouse housekeeping ・ Improvement in stock control (stock-outs, excess stocks)
Neuquén Textil	Textiles (Sewing)	(Shirts, trousers)	70	600,000	・ Increase of productivity ・ Delivery lead-time shortening	Process analysis line balance Parts, critical path	Luciano G. Juan M.	9	2	Some effects of improvement were observed but work is still in progress ・ Improvement in productivity ・ Ability to produce small lots
Servicios Buproneu SA	Oil refining	From C1 to C5, Gasoline production	10	-	Problems and improvement themes in distilled products	TPM Histograms	Luciano G. Juan M.	4	2	Evaluation was conducted through analyzing data ・ The enterprise couldn't be visited for around 20 days due to periodic inspection of the plant ・ Since the plant is totally automated and plant monitoring and repairs are outsourced, it was not subject to TPM ・ Analysis of nonconforming products through analysis of distillation results
Aldo Callieri SA	Food manufacturing and retailing	Condiments, cooking ingredients	21	200,000	5S, layout, work improvement	5S Stock control Work analysis Time study	Antonio S. Luciano G. Juan M	7	4	The improvement effect was large and a high evaluation was obtained ・ Reduction of stocks and improvement in warehouse control efficiency ・ Improvement in productivity through work improvement ・ Improvement of the work environment ・ The enterprise intends to continue requesting support from INTI
Cabarcos Motores SRL	Maintenance	Car engine maintenance	32	800,000	Production lead-time shortening	5S Process analysis Pareto diagrams Gantt charts Critical path Scheduling	Ester C. Adrian P Antonio S. Luciano G. Juan M	8	3	The improvement effect was large and a high evaluation was obtained ・ Improvement in productivity ・ Control standardization and improvement of the control setup ・ Improvement of production planning ・ The enterprise intends to continue requesting support from INTI
Tepuel SRL (Unelen)	Textiles	Trousers, coats, sportswear	70	3,500,000	Production planning, utilization of POS data	Process flow POS information analysis	Adrian P Antonio S. Luciano G. Juan M	9	2	The improvement effect was large and a high evaluation was obtained ・ Improvement in grasping of stocks through utilization of POS ・ Improvement in production control (small lot production) ・ The enterprise intends to continue requesting support from INTI

2) Features of Diagnosis and Support in Model Enterprises

The enterprises targeted in Neuquén and Villa Regina covered a wide range of sectors including foods, textiles and machine maintenance, etc. Many of the targeted enterprises are micro enterprises with a low level of management. Many of them either have no or not enough middle managers, and only a few of them record and utilize data. Almost all of the enterprises approached the PP with a positive and enthusiastic attitude.

Since the C/Ps have little enterprise experience and have never worked in manufacturing environments, they were frequently unable to adequately grasp current conditions and problems or compile specific proposals.

Because of the schedule, since half a day was spent on one enterprise at a time, there were few opportunities to witness actual data collection and proposal implementation situations. This was inadequate as practical training for the C/Ps. It is not possible to conduct adequate diagnosis and support when working on 10 enterprises in approximately two months. It is far too short a time to prepare reports and give workshop presentations after just five or six enterprise visits.

3) Evaluation of Diagnosis and Support at Model Enterprises

Evaluation item 2 (Did you learn diagnosis and support techniques for business and production management technology?) earned a low score from both the C/Ps and experts. This indicates that there wasn't enough time to carry out effective transfer of technology.

The highest scores were given by the enterprises, followed next by the C/Ps and then the experts. This is thought to be because it was relatively easy for effects to be realized at the enterprises that were receiving management technology diagnosis and support for the first time.

The evaluations of the model enterprises diagnosis and support PP by the enterprises, C/Ps and experts are as indicated below.

Table 2-10 Evaluation of the Model Enterprise Diagnosis and Support PP

Evaluation Item		Evaluator		
		Enterprise	INTI-AMP	JICA Expert
1.	Overall evaluation concerning the PP implementation plan:			
	① Was the selection of issues appropriate?		4.2	4.3
	② Was the selection of approaches appropriate?		4.1	4.1
	③ Anticipated goals and/or outputs: level of achievement and future prospects		3.9	3.5
2.	Technology transfer to C/Ps:			
	① Was the basic theory of business and production management technology transferred to the C/Ps?		4.1	3.6
	② Was the practical training on business and production management technology effective?		4.2	3.8
	③ Were diagnosis and improvement techniques for business and production management technology learned?		3.3	2.9
3.	Effectiveness of management technology:			
	① Are concrete improvement effects recognized with respect to issues?	4.2	3.7	3.5
	② (Although no clear outputs appeared during the PP period) Was the setup or foundation for resolving issues established, and are concrete outputs likely to be realized in the near future (within a year and so on)?	4.6	4	3.5
	③ Is there any prospect of utilizing the business and production management technology learned during the PP?	4.8	4.2	
4.	Level of satisfaction of model enterprise owners:			
	① What is the level of satisfaction regarding the results of the PP?	4.4		
	② What is the likelihood of advice being sought from INTI in future?	4.9		

The maximum score in the evaluation is 5

a. Evaluation of practical training

- The C/Ps mde some progress during the PP, however, they still lack the capacity to autonomously respond to the needs of enterprises.
- There was not enough time or resources to guide the C/Ps or allow the C/Ps to take autonomous actions. As a result, the technology transfer was limited.
- Almost all the enterprises taking part in the PP were dealing with management technology for the first time. However, effects greater than anticipated were obtained in those enterprises where the president was enthusiastic. Some enterprises remodeled existing equipment or installed new facilities and displayed steady progress on each visit.
- The enterprises were initially suspicious about the bottom-up approach (proposal of improvements from the workplace) including 5S, however, they were surprised to see how many useful proposals were generated and how employees were motivated under such a system.

4) Lessons Learned from the Implementation of Diagnosis and Support of Model Enterprises

a. Since diagnosis and support (including report and workshop preparations) were carried out at 10 enterprises in two months, the technology transfer for the C/Ps was insufficient.

b. From the viewpoint of C/P education, there wasn't enough time to conduct data collection and observe current conditions, etc. Requests were made to the enterprises, but it was necessary to arrange more time for the C/Ps to visit workplaces.

c. It is necessary to set time for examining the diagnosed conditions during the PP.

d. During the collection of data and examination of themes in enterprises, new items requiring investigation usually appear. It is best to let the C/Ps deal with such issues themselves, however, instructions on how to handle new items were issued here due to the lack of time. It is necessary to give C/Ps the opportunity to think for themselves.

e. C/Ps who have hardly any experience of IE and production management in enterprises need to undergo both diagnosis practical training and OJT.

(3) PP Outputs Presentation Workshop

The workshop was staged in the conference room of Centro-Pyme in Neuquén. Nine of the ten enterprises which participated in the PP took part.

The C/Ps and enterprises jointly prepared the presentation contents on PowerPoint and gave easy to understand explanations of the improvement results. The participating enterprises gave the following feedback ohe workshop (W/S):

- Through watching the presentations, we discovered that there are various improvement tools other than those in our own organization. We want to pursue further improvements with new tools.
- At least three or four months are required to conduct guidance.
- All the participating enterprises expressed a desire to continue the guidance (in order to realize this, a research group was established to continue the INTI activities).

The following figure shows the composition of the W/S participants.

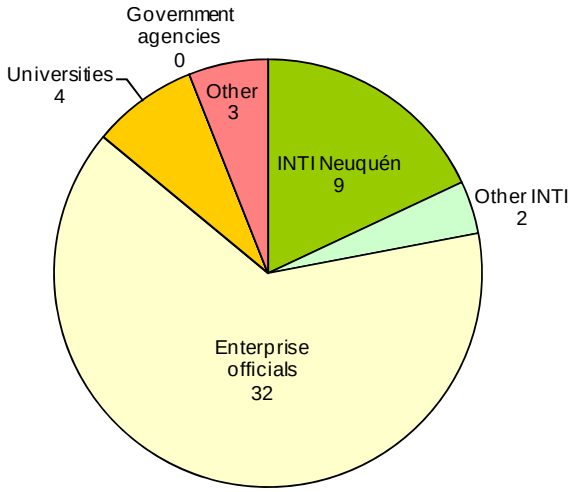


Figure 2-4 W/S Participants

(4) Proposal and Agreement on Launch of the Research Group

All 10 enterprises voiced the desire to continue the PP diagnosis and support and said that the exchange with other enterprises during the W/S was useful. They also proposed a research group that can contribute to the future activities of INTI. It was proposed that Adrian P. of Villa Regina will act as secretary and the president of Cabarcos Co. will be the chairperson of the group.

Proposed contents:

① Members will be enterprises who desire to take part.
② The chairperson will be elected from the enterprises, and the first one will be the president of Cabarcos Co.
③ INTI will be the secretariat and the secretary will be Adrian P.(Villa Regina).
④ Workshops will be periodically staged.
⑤ Contents and purpose of the research group:
   1. Information exchange and interchange of participating enterprises
   2. Introduction of technologies adopted by enterprises
   3. Information provision from INTI
   4. Introduction of new technologies
⑥ The plan of the research group and an invitation to participate will be sent from INTI to enterprises in the near future.

CHAPTER 3
STRATEGY (DRAFT) FOR SUPPORTING RESOLUTION OF PROBLEMS IN SMALL AND MEDIUM ENTERPRISES
(= DRAFT MASTER PLAN FOR DIFFUSION OF BUSINESS AND PRODUCTION MANAGEMENT TECHNOLOGY)

3.1 Lessons and Issues from the Pilot Project (PP)

In the Progress Report (PR/R), the 'Mission' and Six 'Policies' (provisional) of the INTI department in charge of management technology (hereinafter refered to as the INTI headquarters) were decribed, followed by a part of the 'Specific recommendations' (Action Plan).

Table 3-1 Outline of Recommendations (Assumptions) in Stage 1

Item	Recommendations (Assumptions) in Stage 1
Mission	"To contribute to the socioeconomic development of Argentina through supporting problem solving in micro, small and medium enterprises based on business and production management technology geared to fostering strong micro, small and medium enterprises."
Policies	Policy 1: INTI shall clarify the following necessary functions: ① Needs survey function ② Technology selection and development function ③ Human resources development function ④ Micro, small and medium enterprises support function Policy 2: Needs survey and technology selection and development Policy 3: Implementation of systematic human resources development Policy 4: Strengthening of links with external resources Policy 5: Division of roles between INTI headquarters and regional centers Policy 6: Organizational strengthening of INTI headquarters as the department in charge of management technology

The Pilot Project that was implemented from September to the middle of November 2009 was conducted with the aims of transferring technology to the C/Ps and verifying the above assumptions. The lessons learned in the PP will be fed back to the Draft Master Plan for Diffusion of Business and Production Management Technology and fully utilized to ensure that the said plan is feasible. The following paragraphs describe the important lessons that were learned from the PP.

3.1.1 Appropriateness of the INTI Mission and Policy concerning Support for Problem Solving in SMEs

① INTI Mission and Policies
② Strategies for realizing the Policies (strategies for realizing the actual functions)
③ Necessary organization for executing the Strategies (the desirable shape of the organization)
④ Concrete activities (draft A/P) based on the Strategies

(1) Mission of INTI headquarters

This Mission is in compliance with the primary INTI policy of "fostering strong micro, small and medium enterprises"[31] and represents the desirable shape of INTI as a public agency.

Apart from INTI, there are almost no other official agencies which provide management technology and other technical services to private sector enterprises. Moreover, in the W/S for presenting the outputs of the Pilot Project, it was confirmed that SMEs desire even greater services from INTI. In reality, in all the PP target areas, requests (contracts) for ongoing support have been acquired from the PP target enterprises.

Similarly, support agencies (including administrative agencies) which conduct support services for SMEs also highly regard the specialist know-how that INTI possesses in management technology, and they strongly desire SMEs support utilizing the latent capability of INTI. In Entre Rios Province, following completion of the first stage, the Concepción del Uruguay NODO started consulting services for 30 SMEs based on funding from CAFESG. This reiterates the validity of this Mission.

Moreover, the expressions "diffusion of management technology" and "support of problem solving in enterprises" focus attention on "management technology" and "problems faced by enterprises" respectively. From the experience of the PP, it was confirmed that the latter expression is more pertinent for carrying out support of enterprises.

(2) Necessary Functions of INTI

In the assumptions that were set in the first stage, Policy 1 was proposed as follows: "INTI shall clarify the following necessary functions in order to realize its Mission."

① Needs survey function
② Technology selection and development function
③ Human resources development function
④ Micro, small and medium enterprises

31) From "Plan Estratégico del INTI, Diciembre de 2008"

In the following paragraphs, the necessary functions of INTI shall be reconfirmed through verifying the validity of Policies 2 through 6.

i) Policy 2: Needs survey function and technology selection and development function (Functions ① and ②)

When implementing enterprise support services, it is essential to grasp the support needs of the enterprises, however, it wasn't possible to confirm the needs survey activities of INTI (NODO) either in the first field survey or the second stage (PP). Some AMPs are unsure about how far their know-how is effective for resolving the issues of enterprises. This arises from the fact that it is difficult to learn and acquire high priority management technologies suited to actual needs without accurately gauging the issues that exist in enterprises.

So far new technologies have been introduced according to the interests of the AMPs, and the selection of technologies for introduction or acquisition was determined according to individual activities. In order to carry this out on an organized basis, as is proposed in the said policy, it is necessary to select management technologies based on needs survey and to develop and diffuse new management technologies within INTI.

Moreover, in the PP, themes were selected and improvement and guidance activities were implemented in consideration of the limited time, however, enterprise needs include a number of management technologies that have not yet been diffused within INTI. In view of this situation, a setup for surveying enterprise needs and developing new management technologies is proposed. (For details, see 4.1 Recommendations concerning Needs Survey and Selection and Development of New Technologies).

ii) Policy 3: Implementation of systematic human resources development (Function ③)

INTI is currently faced with a qualitative and quantitative shortage of human resources capacity for supporting problem solving in micro, small and medium enterprises via management technologies. So far INTI has strived to develop human resources, however, contents of the conventional human resources development programs have lacked systematic knowledge and theory in relation to management technology; moreover, since past programs haven't included practical training (OJT), trainees never had the opportunity to actually apply and learn from the acquired knowledge.

The PP consisted of three days of training (applied theoretical training) and approximately two months of practical training, thereby enabling human resources to be developed from both the theoretical and practical sides. The applied theoretical training was designed to systematically impart management technology knowledge and theory, and it had a positive

impact not only or the participating INTI support personnel but also the owners and plant managers of the PP target enterprises. Moreover, in the practical training based on OJT, the AMPs experienced certainly acquiring management technologies and techniques via the PP, and they were able to reaffirm the effectiveness and importance of that. (For details, see Chapter 2 “Pilot Project Implementation and Evaluation”).

iii) Policy 4: Strengthening of links with external resources (complementing functions ①~④)

It is important for INTI to complement its capacity for realizing the said four functions through collaborating with external agencies, however, it is clear that both the INTI regional centers (NODO) and INTI headquarters lack awareness of the resources possessed by these external agencies and have little interest in the merits that can be gained from collaborating with them.

In reality, various supports were obtained through collaborating with external agencies in implementation of the PP (for example, attraction of participants to the W/S and provision of venues, etc.). It was also found that, in addition to external support agencies, private sector enterprises also have useful human resources who have a strong grounding in management technology. Moreover, the fact that officials from external agencies are members of the Certification Committee within the certification system currently being built highlights the importance and validity of this policy.

Notable among the lessons learned from the PP is the need to strategically implement planned enterprise support activities through “strengthening collaboration with agencies which possess financial resources.” Many enterprises want to continue receiving support services following the end of the PP, however, they are frequently unable to do so due to funding difficulties. It may be possible to cover service expenses through forming enterprise support utilizing the support schemes implemented by provincial governments and other donors, etc.

INTI sets the minimum consulting fee per enterprise at around AR$2,100/month (= AR$528/day), however, in reality prices vary depending on the center and enterprise concerned. There have been contracts with some enterprises where the fee was far lower than this. Moreover, in the equipment support scheme implemented in Mar del Plata, enterprises (industrial associations) and the provincial government bore 50% respectively. Moreover, CAFESG provides full subsidization.

It is extremely important for realizing INTI policies to develop planned and strategic enterprise support schemes (or projects) through strengthening links with such external agencies, especially agencies which possess financial resources.

iv) Others (Policies 5 and 6)

In the first stage assumptions, Policy 5 “Clarification of the division of roles between INTI headquarters and regional centers” and Policy 6 “Organizational strengthening of INTI headquarters as the department in charge of management technology” were proposed. From the second stage, organizational reform incorporating these proposals has already been commenced. For details, see Section 3.3.1 Organizational Reform of INTI.

3.1.2 Issues and Lessons concerning Training Systems

As was mentioned earlier, the need for systematic human resources development functions was reaffirmed in the PP. The notable lessons learned from the theoretical training and practical training in the PP are indicated below. These were fed back to the training plan and the plan was reviewed according to necessity.

- In the applied theoretical training, curriculums that enable knowledge to be systematically organized are needed. (⇒Introduction of the 3-module system)
- When implementing theoretical training, since working as W/S lecturers is highly effective for acquiring knowledge, this will be an essential step in future training too.
  ⇒Introduction of a system whereby trainees serve as lecturers in applied theoretical training)
- Since enterprises are not used to implementing improvement activities, they sometimes take a long time to finish homework in the initial stage of improvement activities. They also need to compile practical training plans with a view to realizing improvement effects.
  (⇒Reflection in the overall 3-month OJT plan)
- In the PP, due to the time limitations, enterprise visits were implemented as daylong activities (morning and afternoon), however, in order to realize more effective practical training, it is effective to secure time for reviewing the diagnosis and support activities (organizing the management tools) on the ground.
  (⇒Introduction of a system for half-day enterprise diagnosis and half-day review in the office)
- The importance of daily diagnosis reports in implementing enterprise diagnosis and improvement activities was reaffirmed by the AMPs.
  (⇒Thorough practice of the diagnosis daily report system in practical training)

3.1.3 Issues and Lessons concerning Qualification Systems

Upon analyzing the capacity of the AMPs via the PP, it was revealed that they greatly lack in guidance experience on the ground (practical training experience). Meanwhile, the AMPs who have acquired a certain degree of capability, even if only in specific fields, tend to have relatively extensive guidance experience in the workplace. The following paragraphs describe the important points that came to light in the PP concerning the ATG qualification requirements and qualification system.

- The ATGs need to acquire a broad range of theory and knowledge through structured theoretical training.
- Many of the AMPs are capable of implementing analysis when the collection of data is completed in enterprise analysis, however, they are unable to give specific instructions to enterprises concerning what kind of data to collect. Since this is something that cannot be learned in textbooks, in the ATG qualification process, "Workplace experience for a certain number of years" has been made a qualification test condition in addition to "Theoretical training."
- The points that require improvement are deduced by subtracting current conditions from the theory (the desirable shape of enterprises), however, this 'desirable shape of enterprises' also differs according to the sector and product. Even if understanding is acquired in a theoretical sense, the ability to observe and grasp the current conditions of enterprises can only be acquired through practical experiences. The training system proposed in Section 3.1.2 also naturally gives consideration to this point, however, in the ATG qualification examination, it has been decided to assess "Practical capability" including skills of observation through combining written test with an oral test.
- In the W/S that were implemented at the end of the PP too, the importance of securing reliability in the technical support capability of the INTI AMPs was reconfirmed. It was decided to thoroughly enforce procedures geared to building a certification scheme compliant with ISO17024 to ensure that the ATG qualifications are reliable and beneficial to the public.

[Box-1] 'Practical capability' = Efforts for securing 'Quality'

Usually, Argentinean society recognizes graduates of law universities as 'lawyers' and graduates of medical schools as 'doctors,' i.e. graduating such institutions ensures social 'qualifications.'

Similarly, when students graduate from technical universities, they acquire the title of 'Ingeniero (-ra).' Compared to the Japanese qualifications systems, for example, the SME diagnostician system, in which people with real work experience have an overwhelming advantage, there is a major disparity in the practical capability, i.e. quality, of each individual.

INTI hopes to deeply understand the importance of learning practical capability in routine enterprise support activities, to compile training plans for acquiring this, and to establish qualification systems that are underpinned by reliability.

This is a pioneering initiative in Argentinean society. The ATG Qualification Committee, which comprises related persons and key figures from universities and so on, highly regards this effort to secure practical capability, i.e. quality = reliability.

3.2 Strategy of Support for Problem Solving in SMEs

Bearing in mind the aforementioned lessons from the PP, a master plan (draft) for implementing support of SMEs through management technologies by INTI will be proposed. Considering that internal organizational reform is already taking place in INTI, the said proposal will basically comprise the following contents.

① INTI Mission and Policies
② Strategies for realizing the Policies (strategies for realizing the actual functions)
③ Necessary organization for executing the Strategies (the desirable shape of the organization)
④ Concrete activities (draft A/P) based on the Strategies

This section describes the above ②, i.e. Strategies for realizing the Policies (strategies for realizing the actual functions).

Master Plan (Draft) for Support of SMEs through Management Technologies

1. INTI Mission and Policy

The mission of INTI (PEAT) is as follows: "To contribute to the socioeconomic development of Argentina through supporting problem solving in micro, small and medium enterprises based on business and production management technology geared to fostering strong micro, small and medium enterprises."

2. The INTI Policy shall be to carry out the following functions in balanced fashion in order to realize this Mission.

Function ① Survey function regarding the problems and management technology needs of micro, small and medium enterprises (PyME)
Function ② Function of selecting and developing management technologies suited to the problems of PyME
Function ③ Human resources development function for nurturing personnel to support problem solving by PyME
Function ④ Function of implementing PyME problem solving support through management technology

3. It is proposed that INTI implement individual concrete activities based on the following strategies in order to fulfill the above four functions.

Strategy 1: Build a setup which can introduce new management technologies and apply them to enterprises.
Strategy 2: Carry out the planned development of support personnel who have strong grounding in theory and practical experience.
Strategy 3: Implement a qualification system for support personnel based on public qualifications.
Strategy 4: In order to widely extend support activities for problem solving in PyME, carry out the organized and planned expansion of support centers and strengthening of links with external agencies (in particular support sponsors).

Strategy 1: Build a setup which can introduce new management technologies and apply them to enterprises.

Establish a Management Technology Development Committee and Working Groups inside INTI in order to work on selecting new management technologies based on the needs of micro, small and medium enterprises and introducing them to enterprises on a trial basis. Through opening new training courses on the management technologies deemed to be effective, build a setup for disseminating the said technologies within INTI.

Strategy 2: Carry out the planned development of support personnel who have strong grounding in theory and practical experience.

Compile a training plan based on the required qualifications of PyME problem solving support staff (ATG), and carry out structured and practical human resources development which combines theoretical training with practical training. For the planned implementation of this training, secure the necessary lecturers and participating private enterprises, and give priority to the utilization of the trained ATGs in the necessary areas, at the necessary times and in the required numbers.

Strategy 3: Implement a qualification system for support personnel based on public qualifications in the future.

Considering the possibility that the qualification system (ATG qualification system) recognized by INTI will be applied to external human resources development in the future, secure credibility and higher public benefit through conferring ATG qualifications based on a certification scheme that complies with ISO17024[32)].

Based on this, establish a Qualification Committee which appropriately and fairly represents the interests of stakeholders, and have this committee examine and approve all the necessary decisions.

Strategy 4: In order to widely extend support activities for problem solving in PyME, carry out the organized and planned expansion of support centers and strengthening of links with external agencies (in particular support sponsors).

Also in the areas where problem solving support activities for micro, small and medium enterprises are not implemented (areas having no NODO), compile regional extension plans and implement planned activities to establish new NODO with a view to quantitatively expanding support. Also, through carrying out the planned strengthening of links with external agencies (in particular sponsor agencies capable of providing financial support), increase the opportunities for supporting enterprises.

32) International standard for agencies which certify the qualifications of individuals who satisfy certain conditions

3.3 Organization for Executing the Strategy

The previous section (3.1) touched on the appropriateness of the INTI Mission and Policy bearing in mind the lessons learned from the Study and Pilot Project. Moreover, in Section3.2, the strategies for realizing the policy (strategies for fulfilling the necesary functions) were described. This section describes the necesary organization for realizing these strategies.

① INTI Mission and Policies
② Strategies for realizing the Policies (strategies for realizing the actual functions)
③ Necessary organization for executing the Strategies
④ Concrete activities (draft A/P) based on the Strategies

3.3.1 Organizational Reform of INTI

In the Progress Report that was approved in the Steering Committee of August 20, 2009, the importance of strengthening the organization of INTI headquarters as the department possesing the budget and command authority essential for the execution of policies was pointed out. As one approach, it was proposed that the PEAT, which is currently the program supervising department (horizontal department), should be reorganized along vertical lines.

In December 2009, INTI underwent reorganization including the aforementioned contents proposed by the JICA Study Team and the new setup was officially announced.

INTI Headquarters prior to the December 2009 reorganization had the following programs:

- Programa de Desarrollo (Energías Renovables)
- Test and technical suppoort program (Programa de Ensayos y Asistancia Técnica)
- Programa de Estado (Unidad de Administraciones Especiales, Desarrollo de Proyecto C/ el Eatado)
- Programa de Fortalecimiento de Centro
- Programa de Metrología, Calidad y Certificación

This development study (The Study on the Diffusion Plan for the Business and Production Management Technology for Small and Medium Enterprises in the Argentina Republic) is positioned as one of the four projects that make up the Test and Technical Suppoort Program (Programa de Ensayos y Asistancia Técnica).

In tems of posts, the organization is headed by the Director followed by the Vice Director, and under them are the Gerente General, Gerente and Directors. Before the organizational reform, the head

(general manager) of this study project was the Gerente in charge of the Test and Technical Suppoort Program (Programa de Ensayos y Asistancia Técnica = PEAT). The heads of INTI regional centers are Directors, and the heads of NODO are Coordinators.

In terms of heirarchy, Gerente are followed by INTI regional center Directors and NODO Coordinators. AMPs[33)], who are NODO staff, are recruited under the Directors of INTI regional centers and headquarters has no direct authority over AMPs. Accordingly, Programa de Ensayos y Asistancia Técnica=PEAT) has difficulty giving direct commands to NODO despite having a close working relationship. This makes it difficult to advance the organization, standardization and planning of management technology for all NODOs according to the expectations of headquarters.

Moreover, because AMPs function within programs, the roles and status of AMPs following the realization of program objectives have been unclear.

Figure 3-1 shows the organization chart prior to the reorganization of December 2009.

33) The number of AMPs differs according to the INTI regional center. At the regional centers targeted for pilot project implementation here, the number ranges from two to seven.

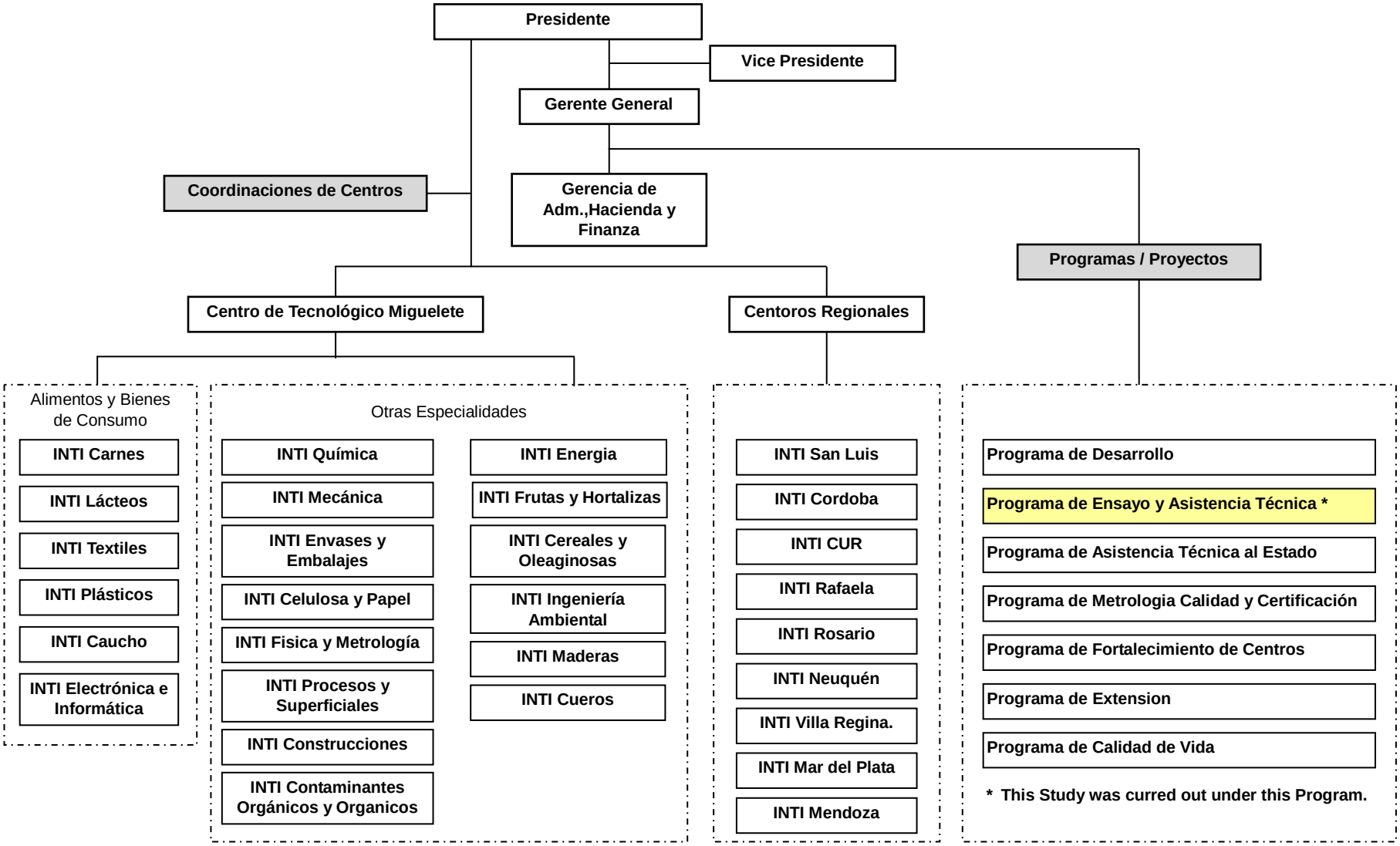


Figure 3-1 Organizational Chart of INTI (Before Reorganization)

Under the new organization announced in Decmeber 2009, the Strategy Headquarters came to formulate the long-term strategy of INTI and to adopt responsibility for resolving urgent and important issues, while the operation headquarters assumed the role of implementing the activities planned by the Strategy Planning Department.

PEAT (Programme Ensayos y Asistence Technica), which had conventionally functioned as a program, was realigned as a headquarters, and it was annoucned that it would be succeeded by the Consumer and Manufacturing Support Department (Programa de Asistencia a Cosumidores y a la Industria Manufactura) in the above Strategy Headquarters.

Under the Strategy Headquarters, the following five departments ware Organized. And they commenced activities as Programmes until the Diet officially recognizes them as departments.

- National Technology Strengthening Department (Programma de fortalecimiento Tecnologico del Estado)
- Social and Regional Promotion Department (Programma de Extension Social y Teritorial)
- Consumer and Manufacturing Support Department (Programma de Assistancia a Consumidores y ala Industria Manufactura)
- Service and Environmental Department (Programma de Industrial de servicio y Ambiente)
- International Cooperation Support Department (Programma de Asistencia Cooperación Internacionál)

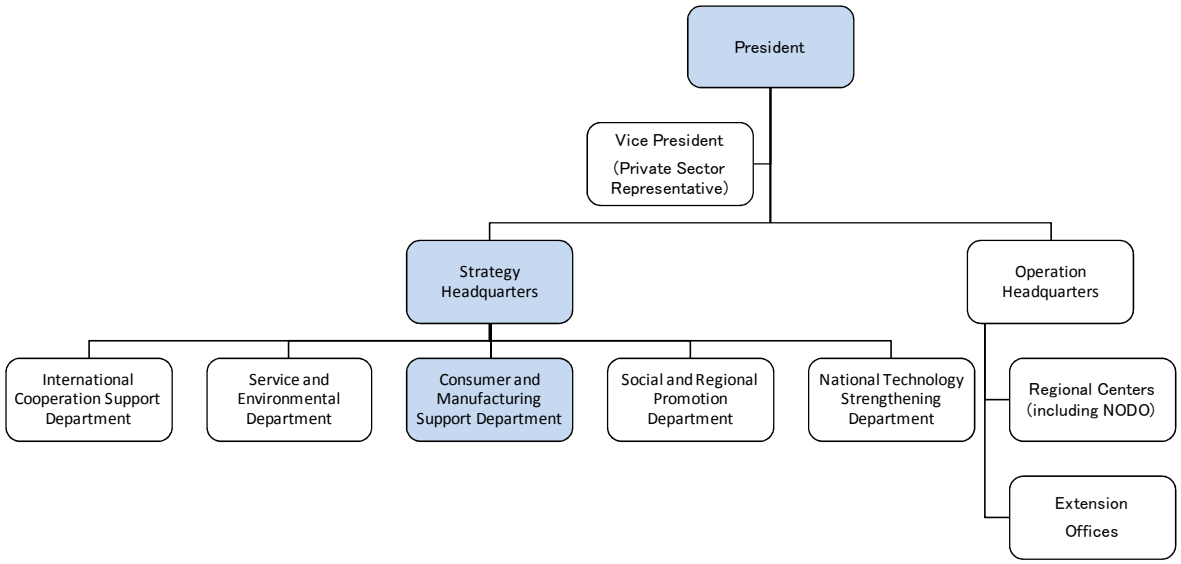


Figure 3-2　Outline of the New INTI Organization (December, 2009)

Since the Consumer and Manufacturing Support Department under the Strategy Headquarters will be in charge of strategies concerning enterprise support services based on unique technologies and provision of enterprise support services via management technologies, it should be possible to conduct more effective support activities for enterprises. Meanwhile, the existing NODO will belong to the Operation Headquarters, and it is forecast that the currently implemented routine enterprise support diffusion activities will be implemented not by the Strategy Headquarters but by the NODO (under the Operation Headquarters).

In future, it will be important to clarify the scope and term of work under the Strategy Headquarters (or the Manufacturing Support Department) and coordinate it with the work implemented by the regional centers and NODO.

3.3.2 Capacity Development Program for Supporting Problem Solving in SMEs

In line with this reorganization, since the various subordinate parts will be oficially recognized as departments such as the Consumer and Manufacturing Support Department, it will be necessary to follow the prescribed procedures including national diet approval. During the period until official approval is given, activities for realizing the INTI strategies will be commenced as the Capacity Development Program for Supporting Problem Solving in SMEs, and it is proposed that the following three projects be deployed under this:

- Suppot Personnel and ATG Qualification Project
- Diffusion and Development Promotion Project
- New Management Technologies Development Project

Figure 3-3 shows the proposed Capacity Development Program for Supporting Problem Solving in SMEs.

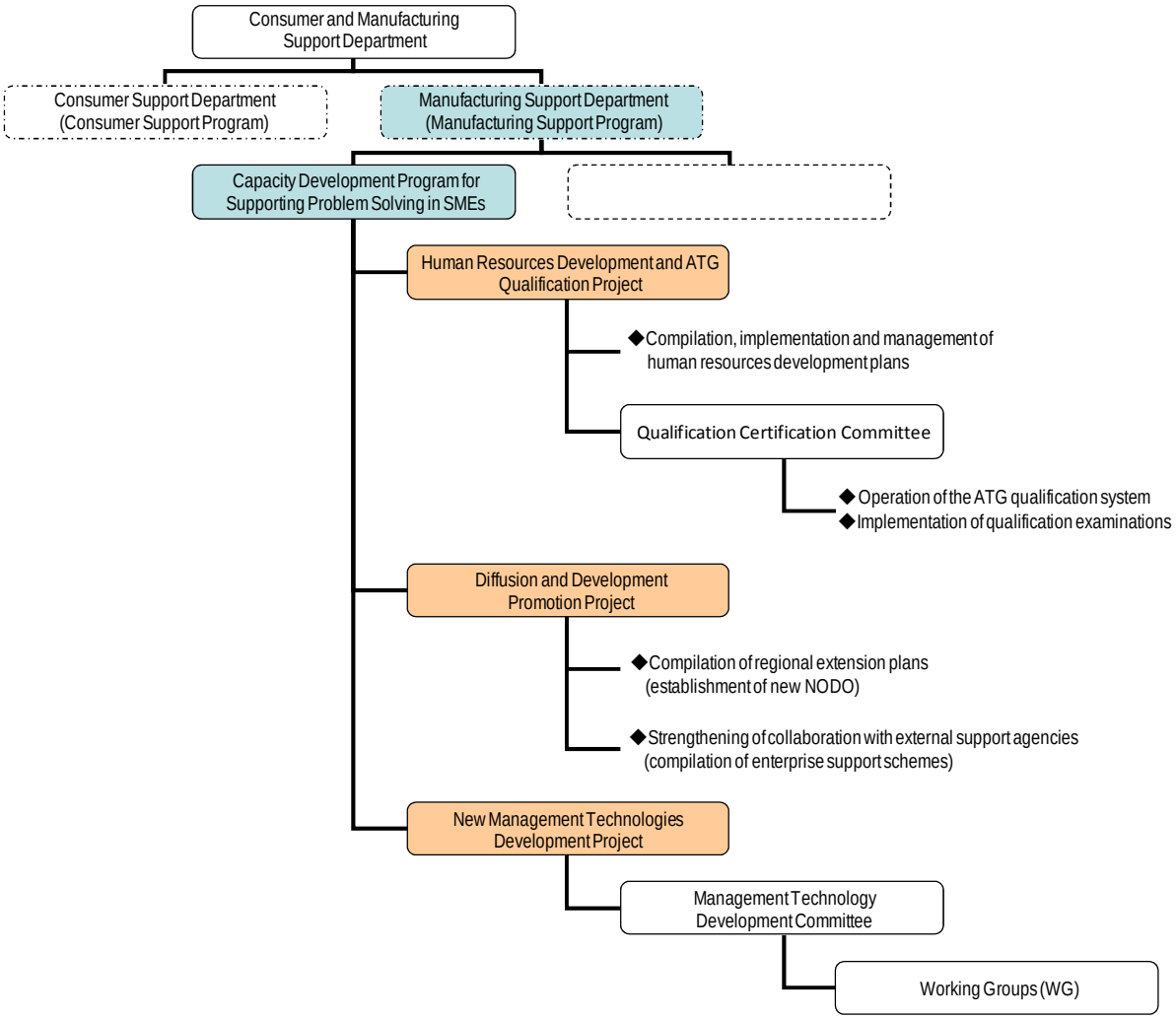


Figure 3-3 Capacity Development Program for Supporting Problem Solving in SMEs (Draft)

(1) Human Resources Development and ATG Qualification Project:

This project shall have the following two objectives

① Compilation, implementation and management of support personnel development plans concerning all ATG nurturing in INTI

② Establishment of the ATG qualification system and implementation of qualification examinations

The implementation term shall be three years, during which time (at least) the Strategy Headquarters shall have jurisdiction over this program. At the end of this period, the program will be shifted to the setup which enables the most effective and efficient human resources development and qualification through transferring activities to the existing INTI qualification department or training department and so on.

In particular, among the requirements to certification agencies, ISO17024 raises the following principle: “The certification agency must not offer or provide training unless it can guarantee that the training is not related to the evaluation or certification of test candidates and does not interfere with confidentiality and impartiality.” (See 4.3 for details). Therefore, when applying the ATG certification system beyond INTI and attempting to secure the reliability and public benefit of said system under ISO17024, it is necessary to clearly separate decision-making authority (decision makers) regarding the human resources development (training) department and qualification certification department.

Concerning establishment of the ATG qualification system, a Qualification Certification Committee shall be established to appropriately and fairly represent the interests of stakeholders according to ISO17024. The credibility and public benefit of this ATG qualification will be secured through requiring that all decisions concerning the qualification scheme are approved by this committee.

Concrete activities will include the planning, implementation and operation of theoretical training and applied theoretical training, compilation of ATG qualification examination problems, implementation of the examination, grading of tests, implementation of the procedures required for ISO17024 acquisition and so on.

(2) Diffusion and Development Promotion Project

This project shall have the following two objectives:

① In areas where NODO are not yet established, diffuse enterprise support services through the INTI management technologies and establish new NODO.

② Strengthen collaboration with external support agencies (especially agencies including international aid agencies which possess funds for activities or projet budgets) and form enterprise support schemes.

Two years is envisaged as the project period (the time required until a new NODO is established in an area). Following completion of the project (after the new NODO have been established), the new NODO will implement the usual enterprise support activities under the jurisdiction of the new Operation Headquarters.

Concerning the formation of enterprise support schemes through strengthening of collaboration with external agencies, it is estimated that two or three years will be needed to prepare for a single support scheme, and it shall be intended to develop one project a year through simultaneously conducting the ongoing development of collaboration agencies and implementation of preparations for multiple projects.

Concrete activities will include the compilation, implementation, operation and coordination of difusion and development plans for establishment of new NODO (local extension plans), survey of external support agencies, exchange of opinions with such agencies, unearthing of support schemes, formation of projects and so on.

(3) New Management Technologies Development Project:

The objective of this project shall be to select and develop new management technologies which don't exist in INTI based on the needs of enterprises.

The length of projects for developing new management technologies differs according to the technology concerned, but assuming that one or two years is needed, the newly developed technologies will be stated in manuals for diffusion inside INTI and reflected in support personnel development plans (training plans).

A Management Technology Development Committee composed of external experts and INTI resources shall be established, and this shall examine and approve any technical decisions that need to be made. Working Groups (WG) shall be established under this committee to implement "trial introduction" work geared to measuring the effectiveness and impact of new management technologies.

These projects are summarized in the manner shown in Table 3-2 Summary of Capacity Development Program for Supporting Problem Solving in SMEs.

Moreover, in Chapter 4 (Concrete Recommendations (Draft) for Realizing the Strategy of Support for Problem Solving in SMEs), specific procedures are described for implementing each activity.

Bearing in mind the above points, an overall image of the Strategy concerning support for problem solving in SMEs is indicated in Figure 3-4.

Table 3-2 Summary of Capacity Development Program for Supporting Problem Solving in SMEs

	PROJECT	OBJECT / GOAL	PERIOD	INDICATOR	ACTIVITY
Capacity Development Program for Supporting Problem Solving in SMEs	Project for Human Resource Development Plan and ATG Certification System.	Human Resource Development	3 years	Number of Trained ATG	• Management of "Training of ATG" • Total Planning of Training Courses. (Selection of Trainees and Trainers, Preparation of Text, etc.) • Preparation, Planning and Administration of Theoretical Training • Preparation of On the Job Training (OJT), (Selection of Model enterprises) • Management of On the Job Training (OJT) (Including, Seminar) • Final Evaluation, etc.
		Formulation and Implementation of "ATG Certification System"	3 years	Number of Certified ATG	• Management of "ATG Certification System" • Implementation of Relevant procedures(ISO17024,etc.) • Implementation of Examination of Certification of ATG • Announcement of Results and Certificate of ATG
	Technology Diffusion and Development Project.	Establishment of New-NODO. (Regional Development)	New NODO / 2-3years	Number of Established NEW NODO	• Preparation and Planning of "Technology Diffusion and Development Plan". • Implementation of PR Seminars (PR, / Announcement of Good Results) • Coordination with NODO
		Strengthening of collaboration with external agencies with Financial Resources and Formulation of Assistance Project.	New project[34] / 1 year	Number of Developed new project	• Collaboration and Negotiation with Relative Organizations(State Government, Industrial Organization etc.) • Research of External Fund and Formulation of Assistance-Project
	Development Project of "New Management Technology"	Development of "New Management Technology"	One technology / 1 year	Number of developed New Management Technology	• Study on Current Situation of Small and Medium Enterprises (SMEs) • Needs Survey • Operation and Steering of "Comité de Desarrollo de Técnología Gestión" • Follow-up and Support for Working Gourp(WG) • Development and Selection of "New Management Technologies"

Concrete implementation procedures (draft) for each activity are described in Chapter 4: Concrete Recommendations (Draft) for Realizing the Strategy concerning Support for Problem Solving in SMEs.

Figure 3-4 shows the overall image of the Strategy concerning Support for Problem Solving in SMEs.

34) Each project will be prepared for 2-3years

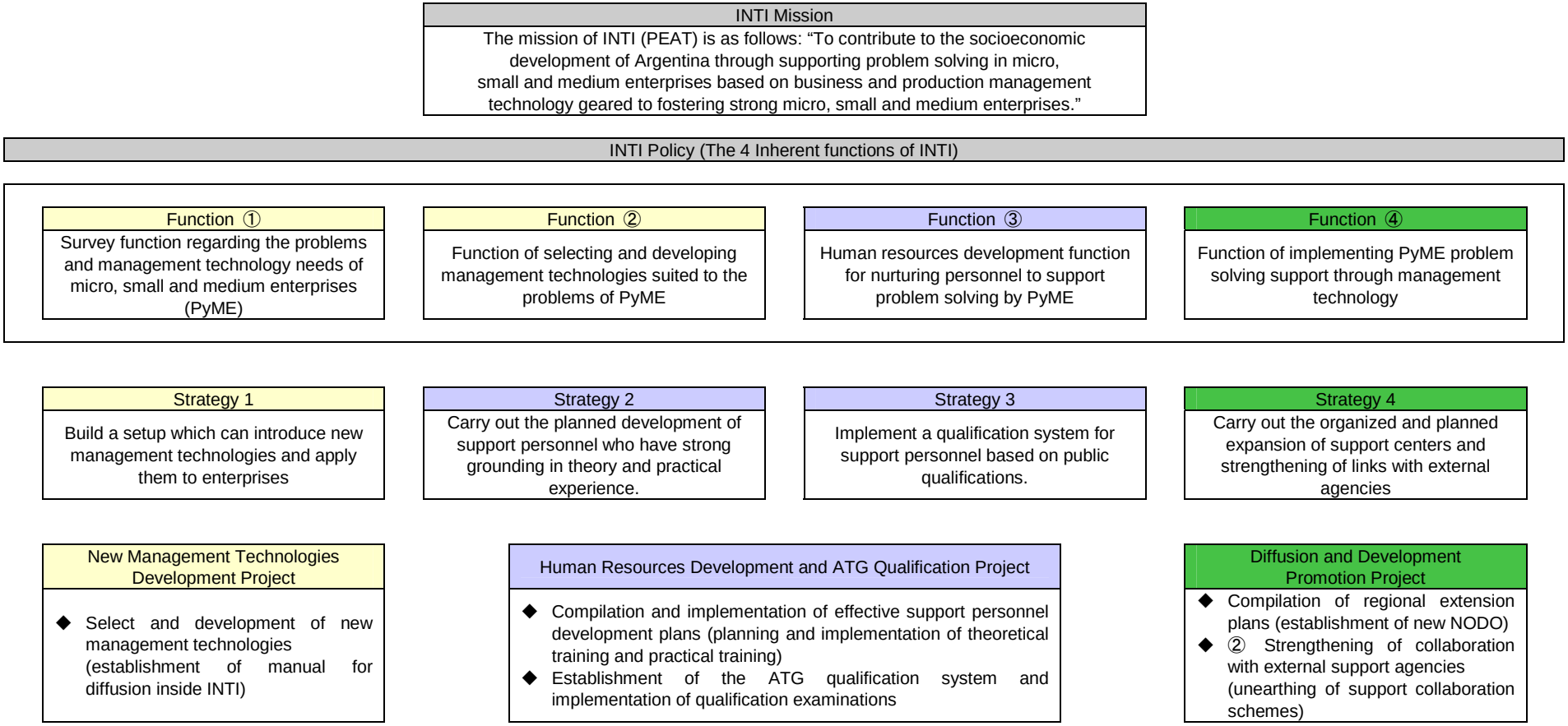


Figure 3-4 Strategy for Support of Problem Solving in SMEs

3.3.3 Realization of the NODO Organization

In addition to he organizational recommendations concerning the INTI Strategy Headquarters, the following contents are recommended concerning the organization of existing NODO.

Although the term 'NODO' is frequently used inside INTI, confusion arises from the fact that this is not a legally or officially defined title. It is thus proposed that the definition of NODO be established and that it be treated as an official title with equal status to the test and research sections of regional centers, etc. (The same thing can be said of the AMP title too, and similarly it has been proposed that this definition be clarified and a new title be introduced. As a result, it has been decided to adopt ATG as an official qualification).

For example, the following definitions are recommended for NODO (which could also be renamed as, for example, 'Enterprise Support Centers'), and it is also recommended that the NODO, which have tended to be somewhat belittled so far, be recognized as official organizations.

Table 3-3 Definitions of NODO (Draft)

	Definition of NODO (or a separate title)
Period until the ATG qualification system is established	Subordinate organization of a regional center possessing one or more enterprise support staff member in specific business and production management fields and not receiving support from other NODO[35] (or a part of such organization)
After the birth of qualified ATGs	Subordinate organization of a regional center assigned with at least one qualified ATG and providing enterprise support services through management technologies (or a part of such organization).

Also, the subordinate organizations currently in the NODO preparatory phase have a different definition as quasi-NODO (or a separate title).

E.g.) Quasi-NODO: Subordinate organization of a regional center assigned with at least one staff member who has received 3 months of OJT and providing enterprise support services through management technologies.

35) The NODO in Buenos Aires is an exception because it is not regarded as a 'subordinate organization' of a regional center.

CHAPTER 4
CONCRETE RECOMMENDATIONS (DRAFT) FOR REALIZING THE STRATEGY OF SUPPORT FOR PROBLEM SOLVING IN SMES
(= DRAFT ACTION PLAN FOR DIFFUSION OF BUSINESS AND PRODUCTION MANAGEMENT TECHNOLOGY)

① INTI Mission and Policies
② Strategies for realizing the Policies
③ Necessary organization for executing the Strategies
④ **Concrete activities (draft A/P) based on the Strategies**

(1) Strengthening International Competitiveness and the Effectiveness of Business and Production Management Technology in SMEs in Argentina

Following the economic crisis of 2001, Argentina enjoyed sound economic growth with a GDP rate of increase of 8.7% per annum from 2003 to 2007, and business conditions for SMEs also displayed good recovery during this period. However, the financial crisis that originated in the United States in 2008 has had a profound impact on Argentina's SMEs and is causing serious problems such as deceleration of growth and reduction of sales.

Currently, the most commonly voiced support need among SMEs is financial support, however, financial supports for SMEs are inadequate, for example, SMEs are basically excluded from receiving bank loans. In view of these conditions, it is necessary to provide multi-faceted support for SMEs in the areas of business and production management, marketing and human resources management.

In particular, for SMEs which have to secure profits amidst economic recession and dwindling sales, elimination of waste is an extremely important business issue but one which can be started without making a major investment outlay. Moreover, the improvement issues in which significant improvements were realized during the Pilot project (PP), i.e. Delivery lead-time shortening via small lot production, Reduction of manufacturing costs through cost accounting, Production planning and Stock management, are the issues that require the most urgent attention from Argentinean SMEs in the present recession.

It is business and production management technology which makes it possible to tackle the important issues in SMEs, and depending on how improvement issues are set, it becomes possible to conduct multi-faceted analysis of problems and provide expansive support for enterprises (support in collaboration with unique technologies, etc.). In this way, in order to strengthen the international competitiveness of SMEs in Argentina, the establishment and

strengthening of the support setup for SMEs will be extremely important and effective.

(2) Role of INTI in Enterprise Support via Business and Production Management Technology

INTI occupies an important position within the National Science and Technology System[36], and it provides services to the production sector with the purpose of developing and transferring technologies in the industrial field. In particular, INTI is the only public agency at present that is capable of providing services in the business and production management technology field. Moreover, according to information garnered from directors of SMEs, administrative agencies and industrial groups targeted in the Study, there are also extremely few private sector consultants who are able to provide such services.

Moreover, being a public agency, INTI actively provides services to micro, small and medium enterprises which private sector consultants are unwilling to assist because of their poor ability to pay. Accordingly, INTI enjoys the high esteem and trust of the government and private sector SMEs, and it is increasingly anticipated that INTI will play a central role in the SMEs support system using management technologies from now on.

In order to strengthen and expand this SMEs support system based on business and production management technology centering on INTI, the JICA development study here made the following five concrete recommendations:

4.1 Recommendations concerning Needs Survey and Selection and Development of New Technologies

Promote development of new technologies based on enterprise needs via establishment of an expert committee involving external officials and utilization of working groups.

4.2 Recommendations concerning the INTI Training Systems:

Introduce a systematic and practical training system that includes theoretical training, applied theoretical training and OJT with the objective of nurturing enterprise support personnel who have both solid theory and practical skills.

4.3 Recommendations concerning the ATG Qualification System:

In place of the current vague skill evaluation criteria for support personnel (AMPs), build a trustworthy qualification certification system (ATG certification system) based on qualification requirements and examinations.

36) In addition to INTI, this system also comprises the National Council for Science and Technical Research (CONCET), the National Institute for Agricultural Technology (INTA), the National Commission of Atomic Energy (CNEA), universities and other agencies.

4.4 Recommendations concerning expansion of Enterprise Support Activities through Establishment of the New NODO (Provincial Expansion Plan):

Through carrying out the planned establishment of new management technology diffusion bases (NODO), promote the regional extension of enterprise support activities via management technology.

4.5 Recommendations concerning Strengthening of Collaboration with External Agencies:

Through collaborating with external agencies, in particular through strengthening ties with agencies that possess financial resources, promote the unearthing of support schemes and formation of projects.

4.1 Recommendations concerning Needs Survey and Selection and Development of New Technologies

4.1.1 Current Conditions and Problems of Enterprise Support via Management Technologies

(1) Limits of Existing Management Technologies

INTI currently provides management technology services[37)] to local micro, small and medium enterprises through the AMPs who are assigned to the regional centers (NODO). The basic management technologies, in particular 5S, SMED and layout improvement, etc., which were introduced in the previous JICA development study, are the main components of management technology know-how possessed by the existing AMPs, however, it cannot be said that adequate support measures are provided for the issues faced by enterprises.

The following three causes can be considered for this problem:

① The AMPs lack the capacity to apply management technologies and provide guidance to enterprises.

② The expert know-how needed to respond to issues in enterprises is only held by a few limited individuals in INTI; moreover, since this know-how is not of an adequate level, it is not established as management technology.

③ It is difficult to handle the issues faced by enterprises using only the management technologies possessed by INTI.

37) Strictly speaking, management technologies should be distinguished from management techniques, however, for the purposes of these recommendations, unless otherwise specified, management technologies shall be assumed to also include management techniques.

Concerning the above capacity of AMPs (①) above, recommendations are given in Section 4.2, while the following paragraphs focus on points ② and ③.

The visit surveys of provincial enterprises revealed that many enterprises cannot implement stock control because they don't know how to fully utilize their own computers, and even if enterprises desire to conduct environmentally friendly improvement in productivity, they cannot realize this relying solely on the management technology in INTI. These problems arise from the fact that INTI does not have the setup to introduce, apply and develop new important management technologies.

(2) Necessity for Selection of management Technologies Suited to Needs and Development of New Technologies

There is clearly a need for new management technologies not currently possessed by INTI, however, it would require massive effort, time and cost to introduce all of these. Rather than academically covering all management technologies, it is important to select (choose) those management technologies which have a high degree of urgency or priority for SMEs at the present time. This selection of management technologies is only possible when based on the support needs of SMEs, and it is sometimes necessary to also develop new management technologies. The newly selected technologies will be introduced on a trial basis at specific NODO, etc. and will be extended to the rest of INTI (other NODO) only after the effect has been confirmed.

4.1.2 Desirable Shape concerning the Selection and Development of Management Technologies in INTI

Therefore, in order to resolve the problems confronting INTI's enterprise support services, it is necessary to establish the following kind of setup for introducing and developing new management technologies:

① Implementation of survey of enterprise support needs (unearthing of issues)
② Establishment of a Management Technology Development Committee (provisional title)
③ Selection of new management technologies
④ Trial introduction (Pilot Installation: PI) of new management technologies
⇒(Establishment of working groups)
⑤ Diffusion of new management technologies within INTI
⇒Reflection in training curriculums (theoretical training/3-month OJT)

The flow of management technology selection and development is as follows.

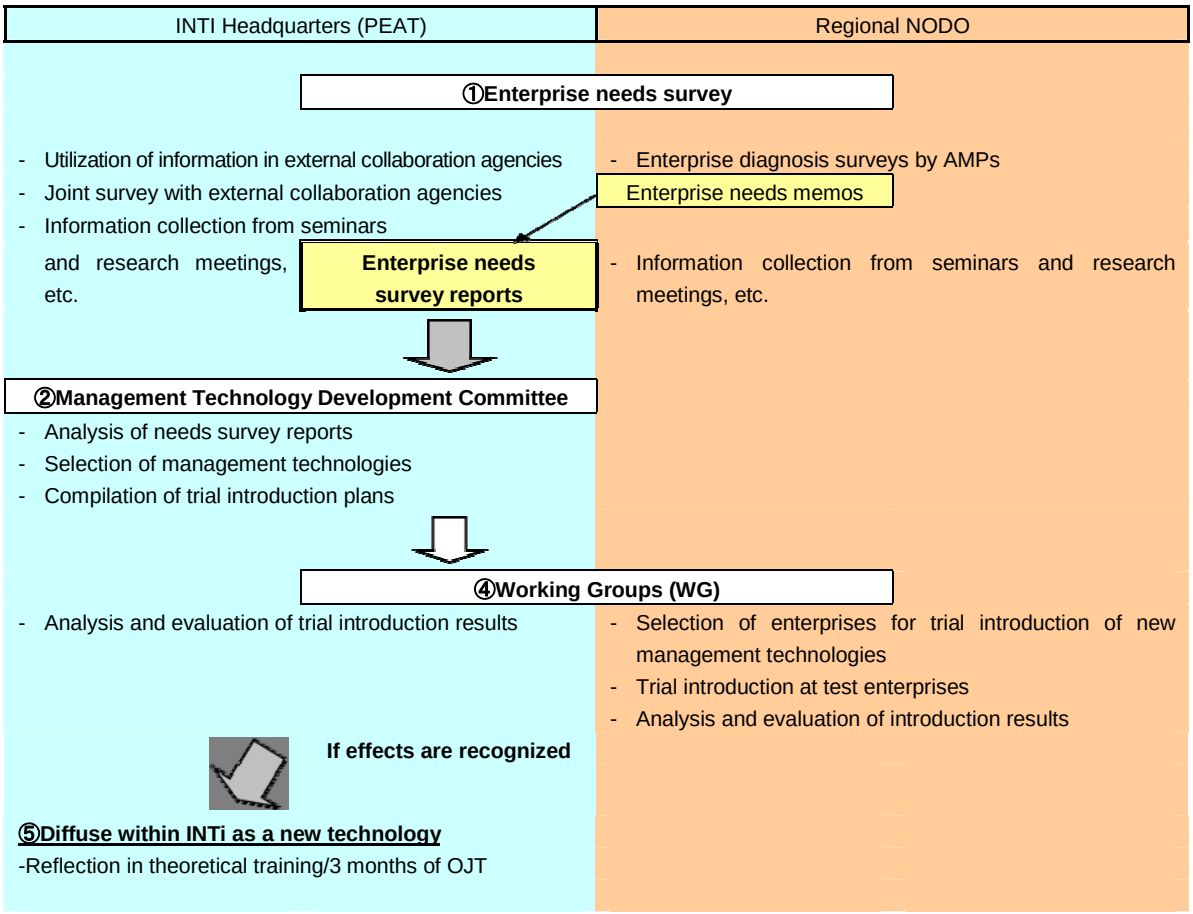


Figure 4-1 The Flow of Management Technology Selection and Development

4.1.3 Concrete Activities for Selection and Development of Management Technologies

(1) Implementation of survey of enterprise support needs (unearthing of issues)

The unearthing of issues and survey of support needs in enterprises can be implemented by the following two methods:

- Independent survey by INTI
- Survey based on collaboration with external agencies

1) Independent survey by INTI

INTI has already conducted enterprise support in various areas. In addition to centrally managing and analyzing in Consumer and Manufacturing Support Department (Programma de Assistancia a Consumidores y ala Industria Manufactura) the enterprise support needs gathered through past diagnosis and support in enterprises, the regional network of NODO will be utilized to continue identifying support needs and issues in enterprises.

① Information sharing and analysis through needs survey reports

Each NODO will record the information collected from the ATG enterprise visits in Needs Survey Memos (provisional name) and submit them to Consumer and Manufacturing Support Department (Programma de Assistancia a Consumidores y ala Industria Manufactura) every quarter. The Department will then compile a Needs Survey Report based on the survey findings once a year (around September) and reflect the findings in the next activities plan and budget measures.

② Enterprise survey by support personnel (ATGs)

Each regional center (NODO) will survey the issues and management technology needs of enterprises via visits, interviews and analyses by the ATGs. Not only will the ATGs in charge view conditions from the viewpoint of their own area or technology of specialty, but they will need to survey conditions from a broad viewpoint based on knowledge of the structure of management technologies. The collected information will be submitted to Consumer and Manufacturing Support Department (Programma de Assistancia a Consumidores y ala Industria Manufactura) in the abovementioned Needs Survey Memos.

③ Survey and analysis via specialized journals, literature and internet

Obtain information on new needs and management technologies through specialized journals and literature on economics and industry both inside and outside Argentina, or alternatively through academic society journals, research papers and the internet. Consumer and Manufacturing Support Department (Programma de Assistancia a Consumidores y ala Industria Manufactura) will appoint experts from members of the Management Technology Development Committee (provisional name) to implement these surveys.

④ Questionnaire survey of participants in INTI training seminars

In the training seminars staged by INTI (including regional centers), questionnaire forms will be handed out to participants in order to survey the problems and improvement themes held by micro, small and medium enterprises and wishes regarding management technologies. The survey results obtained on the regional level (NODO) will be included in the abovementioned quarterly Needs Survey Memos and reported from the NODO to headquarters.

⑤ Information collection from participants in training and seminars staged by industrial associations and local governments

Go out to training and seminars staged by industrial associations and local

governments and collect information on the new problems and improvement themes confronted by micro, small and medium enterprises from the contents of lectures and the words and opinions of participants. The survey results obtained on the regional level (NODO) will be included in the abovementioned quarterly Needs Survey Memos and reported to headquarters.

Based on the centrally acquired information as well as the Needs Survey Memos submitted quarterly by the regional centers, Consumer and Manufacturing Support Department (Programma de Assistancia a Consumidores y ala Industria Manufactura) will prepare an Enterprise Needs Survey Report and present it to the Management Technology Development Committee (provisional name, described later).

2) Survey based on collaboration with external agencies

In addition to the above independent surveys, INTI will obtain the cooperation of external agncies for implementing wider and deeper surveys. It can either implement these in a joint effort with specific agencies, or it can utilize the surveys and data analysis that are periodically implemented by specific agencies.

① Utilization of government statistical data

Utilize the macroeconomic surveys and industrial census implemented by the government (central government and provincial governments) to analyze the problems of SMEs from the macro viewpoint. Also, the INTI headquarters will assign personnel and secure opportunities to hold meetings (at least twice a year) for exchanging opinions with central government and provincial government agencies in particular departments in charge of micro, small and medium enterprises.

② Information collection from agencies implementing assistance programs

Receive information from the micro, small and medium enterprise support programs of international aid agencies such as the Inter-American Development Bank (IDB), and share the needs concerning the problems and management technologies of micro, small and medium enterprises. INTI headquarters shall assign staff and secure opportunities (at least once a year) to exchange opinions with international aid agencies.

③ Survey of industrial associations

With cooperation from industrial groups (UIA, ADIMRA, etc.), conduct joint surveys through collecting information via interviews with industry representatives or survey forms concerning current conditions and problems in industry in particular problems and needs concerning management technologies. INTI headquarters will assign staff

(including human resources from regional NODO where necessary) to implement at least one such joint survey per year (by September).

④ Exchange of Opinions and Information by the Regional Micro, Small and Medium Enterprise Support Liaison Committees

On the regional level, the NODO will take the initiative in staging Regional Micro, mall and Medium Enterprise Support Liaison Committees with local collaboration agencies (local governments, local branches of industrial associations, local private entities, universities, research institutes and NGOs), and these will exchange information and opinions on the current conditions, problems and needs facing micro, small and medium enterprises. The minutes of these committee meetings will always be reported to Consumer and Manufacturing Support Department (Programma de Assistancia a Consumidores y ala Industria Manufactura) and reflected in its annual Needs Survey Report.

(2) Establishment of the Management Technology Development Committee (provisional name)

The Management Technology Development Committee (provisional name) will be established as the organization for selecting and developing the management technologies that need to be tackled by INTI. Established within Consumer and Manufacturing Support Department (Programma de Assistancia a Consumidores y ala Industria Manufactura), this committee will have technical and specialist responsibility as an advisory group for developing management technologies. Concrete activities will be as follows:

① Compilation of enterprise needs survey plans (annual plans)

② Analysis of current conditions and problems of micro, small and medium enterprises (based on enterprise needs survey reports)

③ Analysis of management technology needs (based on enterprise needs survey reports)

④ Compilation of plans for the selection and trial introduction of management technologies responding to needs

⑤ Appointment of members of working groups (WG) for implementing the trial introduction of selected management technologies

⑥ Analysis, evaluation and feedback of the results of trial introduction

⑦ Preparation of written recommendations for the ATG training plan aimed at diffusing the new management technologies deemed to be effective within INTI

Committee composition: (members will be selected from personnel with practical work experience)

Chairperson	:	Selected from among the committee members
Member	:	SEPyME
Member	:	BA Department of Production (Santa Fe Department of Production)
Member	:	UIA
Member	:	ADIMRA
Member	:	Universities (BA University, UTN, etc.)
Member	:	INTI enterprise support personnel (ATG) (considering distribution between different fields and areas)

In addition, specific industrial associations will be asked to participate as observers as the need arises.

(3) Establishment of Working Groups (WG)

In order to verify the effectiveness of the management technologies selected in the abovementioned Management Technology Development Committee, the technologies will be introduced on a trial basis (PI) to enterprises. These trial implementation activities will be implemented by the working groups (WG) appointed by the committee at specific enterprises selected in NODO areas.

When implementing these trial introduction activities, in cases where huamn resources capable of providing guidance in the selected technologies donot exist in INTI, external experts will be utilized.

A typical pattern when implementing trial introduction of management technologies is described below.

- Trial implementation of selected new management technology: (E.g.) ERP (Enterprise Resource Planning)[38)]

① Recruitment of cooperating enterprises:
- Recruit cooperating enterprises through utilizing industrial associations such as UIA and ADIMRA, etc.

② Selection of trial introduction (PI) enterprises:
- When selecting enterprises, form a PI team composed of the WG main supervisor (1 member: external lecturer) + WG INTI-AMP (1 or 2 members).
- The WG (PI team) conducts a simple diagnosis and detailed diagnosis at the enterprises and matches the issues (improvement themes) held by the enterprises with the solution possibilities based on the new management technologies.
- Select a number (around 5) of enterprises which have high potential for resolving problems based on the selected new management technologies (E.g: ERP).

③ Implementation of trial introduction (PI) by the WG:
- At the PI target enterprises, implement the enterprise diagnosis and improvement proposal utilizing the new management technologies, thereby surveying the effectiveness of the technologies.
- The PI period shall be 3~6 months in consideration of the time required for effects to be manifested.

38) ERP: The abbreviation for enterprise resource planning, this business technique is geared to comprehensively managing corporations and implementing efficient management from the viewpoint of making effective use of resources.

- All enterprise diagnosis and improvement proposal activities will be implemented free of charge.
- At the end of the PI period, measure and evaluate the improvement effect in all the enterprises.

④ Manual preparation and reflection in training courses

- Concerning the new management technologies that were confirmed to be effective during the PI period, the WG (PI team) will prepare a manual describing the technology utilization methods.
- This manual will be shared with each NODO and also incorporated into future training plans and OJT with a view to diffusing the new management technologies within INTI.

(4) Division of Roles between Headquarters and Regional Centers

The Management Technology Survey, Selection and Development Plan (provisional name) is composed of the Survey Plan for Issues and Management Technology Needs in SMEs and management Technology Selection and Development Plan. The division of roles of the strategy headquarters (enterprise support development program) and regional centers (NODO) concerning rhe compilation, implementation and evaluation of plans is as shown in the following table.

Moreover, when strategy headquarters (enterprise support development program) utilizes human resources of the regional centers (NODO) for the selection and development of these new management technologies, it is essential that strategy headquarters (enterprise support development program) bears the opportunity losses of participating AMPs (ATGs) and their daily allowances, accommodation and travel expenses, etc.

	Strategy headquarters (enterprise support development program)	Regional Centers (NODO)
Planning	○ Compilation of the SME Survey Plan (every year) ○ Establishment of the Management Technology Development Committee	○ Submission of the draft survey plan (including budget request) (End of every previous year)
Implementation	○ Utilization of survey results by central administrative agencies ○ Survey implementation based on cooperation with industrial associations ○ Selection and research and development of management technologies in the Management Technology Development Committee ○ Establishment of Working Group (WG) Selection of enterprises for trial introduction of new technologies	○ Implementation of enterprise visit surveys and compilation of needs survey memos. ○ Participation in the WG. Trial introduction of new technologies by specific NODO
Evaluation	○ Implementation of comprehensive evaluation and reporting of evaluation results to the Management Technology Development Committee ○ Evaluation of the results of new technology selection and trial introduction ○ Recommendations concerning diffusion (human resources development) of the developed new technologies (theoretical training/OJT feedback for 3 months)	○ Compilation o the Report of Introduction Results (including evaluation)

4.2 Recommendations Concerning the INTI Training Systems

4.2.1 Condition of AMP Training

Talks with the AMPs revealed that trainees do not highly rate the 5-day training courses implemented by INTI headquarters (Buenos Aires NODO) before the start of this development survey. The following opinions were common: “Only touches on piecemeal management technology,” “Not useful for enterprise guidance,” and “Similar to review of theory learned at university.”

On the other hand, the AMPs highly rate the JICA training in Japan. In particular, most were of the view that practical learning in actual enterprises was far more useful than theoretical training in the classroom. Also, many of the AMPs in Rosario said that they had learned a lot from experts and SVs through the years.

Almost all members said that OJT (On-the-Job-Training), where new members accompany AMPs in enterprises, is essential for learning how to apply theory to actual situations. However, OJT does not show what management technologies to apply, and to what level, in a planned and systematic manner. Moreover, since OJT is conducted through closely linked NODO and human networks, there is little room for involvement by the INTI headquarters.

4.2.2 Training Problems

(1) New Management Technologies

INTI has no setup for developing new management technologies and introducing them into its organization. The management technologies (5S, Kanban, single tooling, layout improvement, Kaizen, 7 tools of QC), which were introduced in the previous JICA development study, are frequently used for disseminating INTI, however, INTI does not possess the functions for researching, developing and applying other important management technologies. For example, in the production management field, IT is not a unique technology but rather an important tool of management technology. As a familiar instance, even though most enterprises find no use in using computers for inventory control, INTI possesses no personnel capable of providing guidance in this area and no curriculums for training such human resources. As a slightly more advanced example, there are no human resources capable of providing guidance on introducing MRP, MRP-II and ERP, which are utilized by many advanced manufacturing enterprises, and moreover no research is carried out on these areas.

(2) Selection of Appropriate Management Technologies

The management technologies that should be applied based on the problem analysis in enterprises are not always selected. Among the AMPs interviewed, some attempt to simply apply management technologies which they can offer guidance in themselves, rather than grasping the problems of enterprises and selecting improvement themes based on urgency and importance. Also, in the opinions exchange meeting with the AMPs who participated in the PP, a number of AMPs said that improvements sometimes fail to progress due to stubborn adherence to the introduction of specific management technologies. This is not the purpose of management technology diffusion. The goal must be to "support problem solving by enterprises based on management technology." It is first necessary to recognize the problems of enterprises and then to apply appropriate management technologies for resolving them. For this reason, against a background of wide ranging knowledge of not only production management but also marketing, distribution, financial affairs management and personnel management, etc., it is necessary to have the analytical capacity to recognize the true problems faced by enterprises. The capability of staff to structurally recognize the problems faced by enterprises is generally low. This is not the purpose of management technology diffusion. The goal must be to "support problem solving by enterprises based on management technology." It is first necessary to recognize the problems of enterprises and then to apply appropriate management technologies for resolving them. For this reason, against a background of wide ranging knowledge of not only production management but also marketing, distribution, financial affairs management and personnel management, etc., it is necessary to have the analytical capacity to recognize the true problems faced by enterprises. The capability of staff to structurally recognize the problems faced by enterprises is generally low, and there is not enough ability to combine management technologies according to problems.

(3) Fluctuation in the Level and Scope of Management Technologies between NODO

There are large fluctuations in the scope and level of management technologies that can be applied to problems in enterprises by NODO. For example, INTI Neuquén has high capacity to provide guidance on ISO 9001, HACCP and BPM to food enterprises, however, its ability to implement consulting on productivity improvement and marketing using management technologies is almost zero[39)]. Rosario NODO, which is said to be advanced, has high consulting capacity concerning production management, however, it cannot conduct guidance in the marketing and cost control fields. There is thus great fluctuation in the fields that each NODO can support enterprises in. There are also large disparities in the individual guidance capacity of personnel, ranging from, for example, understanding of 5S theory to the ability to provide guidance on introduction under current conditions.

39) Support capability has subsequently been improved via the PP.

(4) Unclear Required Capacity Level of AMPs

The required capacity levels of AMPs are not specified (even though this issue is being examined in INTI headquarters). Therefore, new recruits of six months and veterans of 15 years or more are similarly described as AMP, even though they have totally different capacity. This situation is leading to the following problems:

- Since there are no clear specifications concerning the required knowledge, experience and ability of AMPs, training needs indicating what has to be learned and to what level cannot be clarified.
- Because AMP can refer to a wide range of ability levels, the title of AMP has lost some of its credibility.

(5) Planned Development of AMPs

The planned development of AMPs is not carried out. Development of AMPs starts from the definition of targets and clarification of what management technologies to teach and to what level. After that, training which effectively combines classroom learning with OJT should be implemented on a planned basis. Assuming that training needs are the gap that exists between the current conditions of AMPs and the goals described in (7), effective training cannot be implemented if the desired goals are unclear. Furthermore, actual OJT is based on the assumption that appropriate clients exist. A prerequisite for OJT implementation is the existence of clients who want to apply the management technologies that need to be taught to new recruits, however, creation of such opportunities is more or less left to chance. Moreover, OJT utilizing such opportunities is only implemented between NODO that have close links. Accordingly, current AMP training in many respects is not implemented in a planned and systematic manner.

(6) Training System

The relationship between theoretical training and OJT is weak. The 5-day theoretical training conducted at Miguelete only touches on management technology and does not give trainees the capacity to conduct guidance in enterprises. Efficient development of human resources can be conducted through combining classroom theory with OJT, however, both components are currently conducted disparately.

(7) Theoretical Training

The theoretical training only introduces fragmented management technologies. INTI support for problem solving in enterprises currently focuses on the production management field. Irrespective of whether or not support fields are widened in future, the area covered by existing theoretical training is limited to specific technologies in production management. Even looking at just this production management field, this theoretical training is not enough for the AMPs to acquire the necessary support capacity. They also need to acquire understanding of peripheral fields such as

business strategy, marketing/sales, personnel management, financial accounting and IT, etc. as well as to give advice necessary for consulting, etc[40]. Furthermore, concerning the production management field, in which the central theme is management technology, the central targets are PQCD, i.e. productivity, quality, cost and delivery, and management technologies correspond to each goal. However, the curriculum for theoretical training includes specialized high-level management technologies such as the Kanban[41] system and Kaizen, etc. Accordingly, rather than dealing with standard improvement procedures, Kaizen (improvement), which refers to bottom-up ongoing improvement, is introduced in a manner lacking consistency. Meanwhile, basic techniques such as work improvement, standard work, production scheduling and load planning, etc., which are essential for supporting improvement in SMEs, are omitted from curriculums.

(8) Efficiency and Effectiveness of OJT

OJT based on field trips by veteran AMPs is neither efficient nor effective. Veteran AMPs visit NODO and implement OJT for new recruits while conducting consulting services. On first appearances, this appears to be the simultaneous advancement of client expansion and OJT, however, three problems exist. First, when guidance contracts finish and veteran AMPs stop going to clients, it is difficult for the trainee AMPs to uncover improvement themes and see these through to contract renewals and guidance with existing clients. Even if contracts are renewed, if guidance is provided based on incomplete management techniques, there is a risk that the reputation of INTI will be adversely affected. Secondly, implementation of effective and efficient OJT is conditional on appropriate clients and pertinent improvement themes being in place, however, in the current situation clients and techniques are selected by chance and it is not possible to conduct OJT in planned fashion. The third problem concerns the time used when veteran AMPs (who have high time value) travel to and forth between their base NODO and the NODO where they are needed.

(9) Training Materials

Training materials are not available. PowerPoint resources and documents created in each NODO are used as training materials, however, taking the example of 5S, materials made by each AMP are used but there are no standard INTI materials[42]. Considering that standard texts will be needed for the qualification system described in 4.3, it will be necessary to have INTI certified textbooks for each curriculum.

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40) Reference Material 1 and 2 show the required capacity and training subjects of AMPs and their counterparts in Japan, i.e. SME diagnosticians.

41) Kanban system merely refers to the information system whereby later processes give production orders or orders to move work in progress to prior processes; it is inappropriate to use the Kanban system name to describe the Toyota production management system. If only the kanban system were introduced, factories would fall into major confusion. Here, it is more appropriate to use the more common term of Toyota Production System (TPS).

42) There are moves to create PEAT texts, however, so far the texts used in each NODO have only been collected and no progress has been made on organizing and editing them.

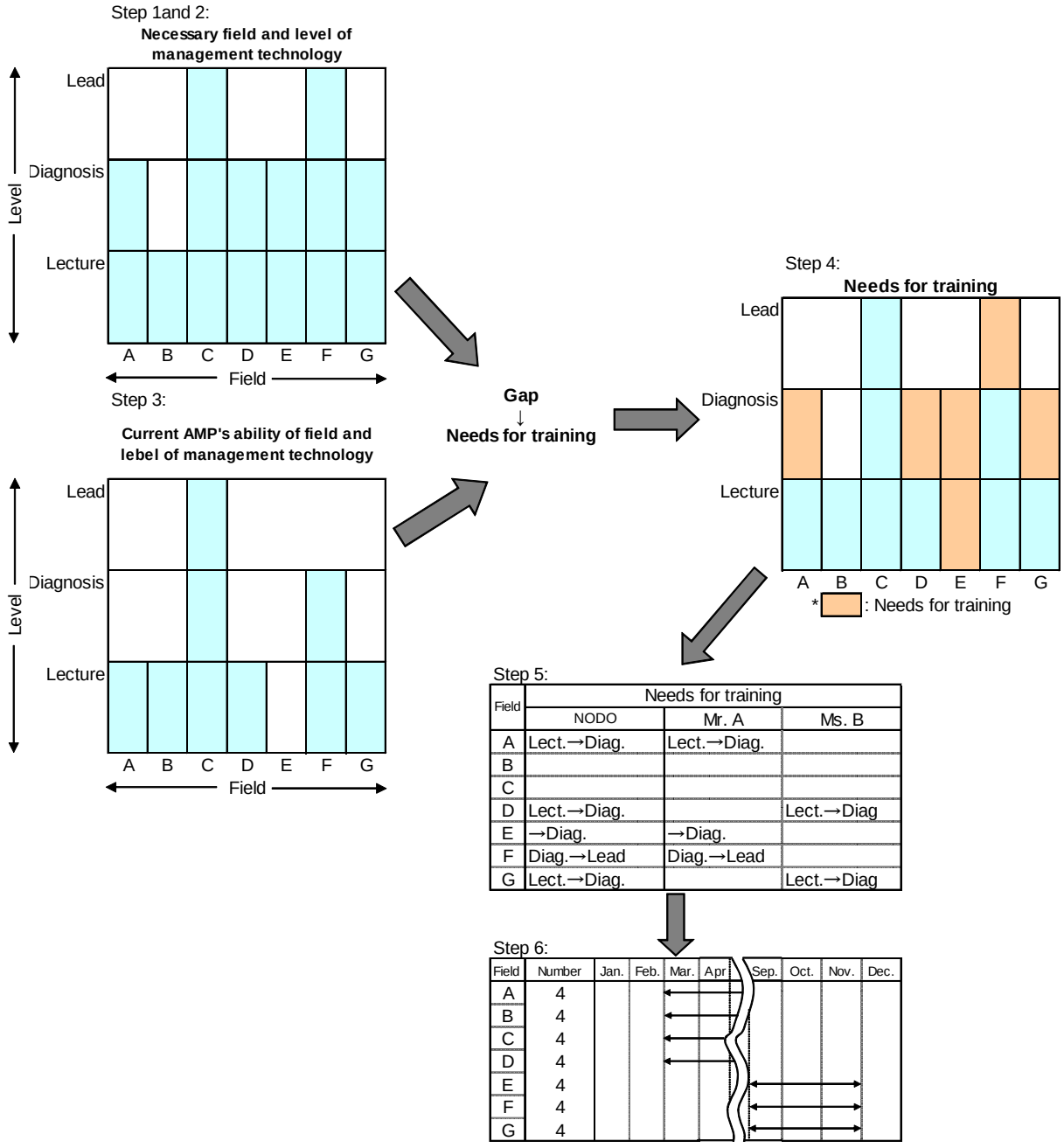
4.2.3 The Desirable Shape of the INTI Training System

The desirable shape of the training system is constructed from the following nine steps (see Figure 4-2).

(1) Clarification of fields where management technologies and management techniques[43)] are needed
(2) Clarification of the required level of management technologies and management techniques
(3) Inventory of management technologies and management techniques that can be used by NODO (AMPs)
(4) Clarification of the gap (fields and levels) between required management technologies and management techniques and the management technologies and management techniques that can be used by AMPs
(5) Formulation of the plan of training needs for filling the gap (Who is targeted, what management technology and management techniques should be taught, and to what level?)
(6) Formulation of the training implementation plan (Who will conduct training, when, where and how?)
(7) Implementation of training
(8) Evaluation of training and training participants
(9) Follow-up of training

Important points to consider in each of the above steps are as follows.

43) Management technologies refer to items discerned according to the management target, i.e. production management and cost management, etc., whereas management techniques refer to the individual techniques that comprise management technologies. In other words, management techniques are a component element of management technologies.



Field	Needs for training		
	NODO	Mr. A	Ms. B
A	Lect.→Diag.	Lect.→Diag.	
B			
C			
D	Lect.→Diag.		Lect.→Diag
E	→Diag.	→Diag.	
F	Diag.→Lead	Diag.→Lead	
G	Lect.→Diag.		Lect.→Diag

Field	Number	Jan.	Feb.	Mar.	Apr	Sep.	Oct.	Nov.	Dec.
A	4								
B	4								
C	4								
D	4								
E	4								
F	4								
G	4								

Figure 4-2 Training Plan Formulation Procedure

(1) Clarification of fields where management technologies and management techniques are needed

Table 4-1[44)] shows the example of the cost accounting and economic engineering fields. INTI envisages the management technology fields of primarily production management followed by marketing, cost accounting and personnel and labor management; however, since each field includes various techniques, it will be necessary to carefully examine which techniques are required from the needs in targeted micro, small and medium enterprises.

44) This shows the techniques thought to be necessary judging from interviews with 60 micro, small and medium enterprises by the JICA Study Team.

Table 4-1 System of Production Management Techniques and Cost Accounting & Economic Engineering Techniques

Field		
Product Management	Industrial engineering	5S
		Visual management
		Process study
		Multiple-acitvity analysis
		Time study
		Ratio-delay study
		Work sampling
		Standard time
		Layout improvement
		Line balancing
		Production scheduling
		Man-hour loading
		Dispatching
		Production control
		TPS
		SMED
		TOC
		Product management by IT
		Approach to improve productivity
	Quality control	QC 7 tools
		Process capabilty
		TQM
		QC circle
		QC process chart
		ISO 9001
		ISO 22000
		HACCP
		BPM
	Material management & Out-sourcing	ABC analysis
		Periodical ordering system
		Fixed order quantity system
		Management of outside manufacturer
	Equipment management	PM
		TPM
Cost management & Ecomonic engineering	Cost accounting	Process costing
		Job order costing
		Direct costing
	Cost analysis	Variance analysis
		Standard costing
	Break-even point analysis	
	Economic efficientcy analysis	Special cost studies
		Evaluation of advantage
		Evaluation of profitability of investment

Incidentally, other fields that haven't been envisaged by INTI or will become important in the future are: IT application to management technology[45] and environmental conservation-type production systems. Moreover, considering that many local governments conduct entrepreneur support training, there is need for training in elementary management technologies such as new business plan formulation, business registration and marketing[46].

(2) Clarification of the required level of management technologies and management techniques

When using management technologies to support the resolution of enterprises' problems[47], the following three levels can be considered according to the level of involvement of the problem:

Level 1: Conduct lectures in seminars and training.

Level 2: Conduct a short-term concentrated enterprise survey, analyze problems, compile improvement recommendations, and convey these to the enterprise in the form of a written diagnosis report or verbally.

Level 3: Based on an improvement (guidance) plan pertaining to the themes agreed with the client, conduct relatively long-term (usually six months or more) guidance on implementing improvements.

If Level 1 is assumed to be training, Level 2 to be diagnosis, and Level 3 to be support, the level of consulting difficulty generally increases in the order of training < diagnosis <support. This point was also confirmed in the interviews with AMPs.

Accordingly, it is necessary for INTI to list the applied levels[48] of management technologies and management techniques separately for INTI overall and for each NODO.

45) For example: FMS (flexible manufacturing system), CIM (computer-integrated manufacturing system), MRP (material requirements planning), ERP (enterprise resource planning) and POP (point of production), etc.

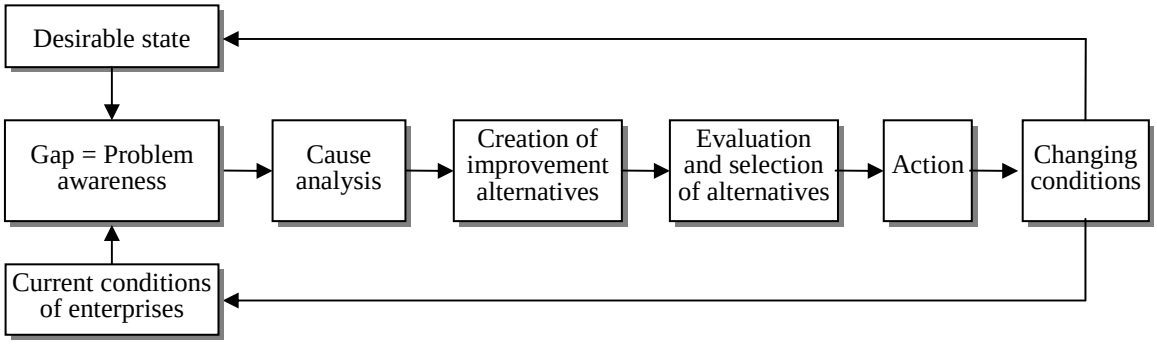
46) INTI's unique characteristics can be realized through combining with unique technologies (product manufacturing methods). The jam prototype plant that was established jointly by INTI and Cipolletti City can teach how to make jam, however, unless it also teaches how to sell the jam products, it is unlikely to attract trainees from people aspiring to do farming as a sideline business. In order to support entrepreneurship, it is necessary to teach both the product making technology (unique technology) and management technology including the sales method.

47) Problems are divided into two types – 1) problems that have become manifested, and 2) problems that are likely to appear from now on. Problems here refer to both types.

48) The diagnosis level and support level can be combined to derive the applied level.

[Box-2] Difference between Management Technology Theory and Practical Improvement

The difference between management technology theory and practical improvement is far greater than generally imagined. Based on the improvement activity model below, the differences in each area are as described in the following paragraphs.



① Problems are gauged as the gap between the desirable state and the current conditions. Theory only generally expresses the desirable state, however, the desirable state in reality differs according to the scale of the industry and enterprises. Accordingly, rather than being a theory, the desirable state is based on the diverse criteria of numerous experienced people.

② Gauging of the current conditions of enterprises is not simply written down in texts, but entails practice of site observations, interviews, data collection and insight. Theory alone does not enable current conditions to be gauged without the ability to appropriately judge which data to collect and how.

③ Many management technologies are techniques for analyzing the factors that cause problems. Theory helps with analyzing problems and causes if appropriate data collection is carried out.

④ When creating improvement plans, useful guidelines and theories such as the principle of motion economy are available, however, creative ability based on theory is required.

⑤ In order to evaluate and select alternatives, the conditions surrounding enterprises (restricted spaces, manpower shortages, insufficient equipment, insufficient time, lack of funds, etc.) must be considered, and it is also necessary to have presentation and persuasion capacity to sell plans to business owners. Such skills cannot be learned through theory alone.

In this way, much of the ability to support problem solving in enterprises is based on implicit understanding and there is a major difference between theory and reality. In establishing a training system, techniques which impart ample practical capacity must be planned.

(3) Inventory of management technologies and management techniques that can be used by NODO (AMPs)

Concerning each AMP and facilitator, it is necessary to survey who can use what management techniques and to what level through using a management technology inventory sheet like that shown in Table 4-2. In Table 4-2, the level of management technique use is divided into two, i.e. training only and training and consulting. The management techniques of individual AMPs can be aggregated to show the management techniques available to NODO. In the example shown in Table 4-2, two AMPs at Buenos Aires NODO can apply 5S up to consulting, while one member can only perform training in this field.

Moreover, based on the list presented by INTI, the overall number of AMPs in INTI is 51, however, because the definition of an AMP is unclear, this figure includes people with scarce experience. (See Annex-4: List of AMPS by INTI Center (NODO)).

(4) Clarification of the gap (fields and levels) between required management technologies and management techniques and the management technologies and management techniques that can be used by AMPs

Training needs may be expressed as the disparity between the necessary fields and levels of management technologies and management techniques clarified in Step 1 and 2 and the fields and levels of management technologies and management techniques that can be used by current AMPs clarified in Step 3. In Table 4-3, the “Necessity” column shows Step 1 and Step 2, while the “Current” column shows Step 3. The “Needs” column identifies the fields and levels found to be inadequate upon comparing the fields and levels of management technology defined in the “Necessity” column and the possible fields and levels of existing AMPS defined in the “Current” column.

Table 4-3 indicates that Buenos Aires NODO needs four AMPs with the ability to conduct consulting in 5S. Compared to this, only two existing members can conduct consulting and one can conduct training on this topic. The difference between the two denotes the training needs and can be expressed by the following formula.

Training needs = ●●●● - ●●○ = ●●

Table 4-2 Management Technology Inventory Sheet

Field			Buenos Aires NODO					Rosario NODO				
			Tatal	Mr.A	Mr.B	Mr.C	Mr.D	Tatal	Mr E	Ms.F	Ms.G	
Product Management	Industrial engineering	5S	●●○	●	●	○		●●○	●	○	○	
		Visual management	○○	○		○		○○	○	○		
		Process study	●●○	●	○		●	●	●			
		Multiple-acitvity analysis	●○	●			○	○	○			
		Time study	○	○				○	○			
		Ratio-delay study	●		●							
		Work sampling	○	○				○	○			
		Standard time	●	●				●○	●		○	
		Layout improvement	●●○	●	●	○		●○	●	○		
		Line balancing	●○	○		●		●○○	○	●	○	
		Production scheduling	○○	○			○	○	○			
		Man-hour loading	●○	●	○			●	●			
		Dispatching	○○	○			○	○	○			
		Production control	○	○				○	○			
		TPS	●○	●	○			●○	●		○	
		SMED	●●○	●	●	○		○○	○	○		
		TOC	○○	○	○			○	○			
		Product management by IT	○	○				○	○			
		Approach to improvement in productivity	●●○	●	●	○		●○	●	○		
	Quality control	QC 7 tools	●●○	●	●	○		●○○	●	○	○	
		Process capabilty	○	○				○			○	
		TQM	○	○				●○	●	○		
		QC circle	○○	○	○			○	○			
		QC process chart	●○		○		●	●○	○		●	
		ISO 9001	●○○	○	○		●	●○	○		●	
		ISO 22000	○				○	●			●	
		HACCP	○				○	○			○	
		BPM	●				●	●○		○	●	
	Material management & Out-sourcing	ABC analysis	●○	●		○		●●○	●	●	○	
		Periodical ordering system	○○		○	○		○	○			
		Fixed order quantity system	○○		○	○		○	○			
		Management of outside manufacturer	○				○	○		○		
	Equipment management	PM	○○	○	○			○	○			
		TPM	○	○				○	○			
Cost management & Ecomonic engineering	Cost accounting	Process costing	●○○	○		○	●	●○		●	○	
		Job order costing	●○○	○		○	●	●		●		
		Direct costing	●●○	○	●		●	●○	○	●		
	Cost analysis	Variance analysis	●○	○			●	●		●		
		Standard costing	●○	○			●	●		●		
	Break-even point analysis		●●●○	●	●	○	●					
	Economic efficientcy analysis	Special cost studies	○				○	○		○		
		Evaluation of advantage	●○○	○	○		●	○		○		
		Evaluation of profitability of investment	●○	○			●	○		○		
Marke ing	market research											

Ability rating ●: lecture & consulting ○: lecture

Table 4-3 List of Training Needs in Each NODO

Field			Buenos Aires NODO		
			Necessit	current	needs
Product Management	Industrial engineering	5S	●●●●	●●○	●●
		Visual management	●○○	○○	●
		Process study	●●●	●●○	●
		Multiple-acitvity analysis	●●○	●○	●
		Time study	●●	○	●●
		Ratio-delay study	●○	●	○
		Work sampling	●○○	○	○
		Standard time	●○	●	○
		Layout improvement	●●●	●●○	●
		Line balancing	●●	●○	●
		Production scheduling	●○	○○	●
		Man-hour loading	●○	●○	
		Dispatching	●○	○○	●
		Production control	●○	○	●
		TPS	●○	●○	
		SMED	●●○	●●○	
		TOC	●○	○○	●
		Product management by IT	○	○	
		Approach to improvement in productivity	●●●○	●●○	●
	Quality control	QC 7 tools	●●○	●●○	
		Process capabilty	○○	○	○
		TQM	●	○	●
		QC circle	○○	○○	
		QC process chart	●○	●○	
		ISO 9001	●○○	●○○	
		ISO 22000	●○	○	●
		HACCP	●	○	●
		BPM	●○	●	○
	Material management & Out-sourcing	ABC analysis	●●●	●○	●●
		Periodical ordering system	●○	○○	●
		Fixed order quantity system	●○	○○	●
		Management of outside manufacturer	●○	○	●
	Equipment management	PM	●○	○○	●
		TPM	●	○	●
Cost management & Ecomonic engineering	Cost accounting	Process costing	●●○	●○○	●
		Job order costing	●●○	●○○	●
		Direct costing	●●○	●●○	
	Cost analysis	Variance analysis	●●○	●○	●
		Standard costing	●○○	●○	○
	Break-even point analysis		●●●○	●●●○	
	Economic efficientcy analysis	Special cost studies	●○	○	●
		Evaluation of advantage	●●○	●○○	●
		Evaluation of profitability of investment	●○○	●○	○
Marketing	market research				

This shows the NODO Training Needs provisionally compiled by INTI headquarters and the JICA Study Team in Stage 1[49]. These were derived from inventories of capability implemented by the AMPs based on their own declarations. Since it was found through the PP that these self evaluations are not objective evaluations of capacity, they are not stated here.

(5) Formulation of the plan of training needs for filling the gap (Who is targeted, what management technology and management techniques should be taught, and to what level?)

The training needs sought in Table 4-3 were identified for each NODO. The next step is to apply the training needs at each NODO to the existing AMPs and facilitators. In cases where the

49) Each NODO prepared a Management Technology Inventory Sheet , while INTI headquarters provisionally estimated the techniques and level of techniques that should be held by each, and treated the difference as the training needs.

training is beyond the fields of expertise of present staff or where there are not enough staff to conduct the training, recruitment of new personnel will be considered.

Table 4-4 shows the training needs in terms of what management techniques need to be taught and to what level for each individual member. Arrowed sections indicate the existence of training needs. For example, concerning 5S, Ms. C needs to raise capacity from the training level to the consulting level, while Ms. D needs to improve from having no knowledge to the consulting level. In this case, it is concluded that Ms. C requires OJT, while Ms. D requires both theoretical training and OJT.

Table 4-4 List of Individual Training Needs

Field			Buenos Aires NODO						
			Necessit	current	needs	Mr. A	Mr. B	Ms. C	Ms. D
Product Management	Industrial engineering	5S	●●●●	●●○	●●	●	●	○→●	→●
		Visual management	●○○	○○	●	○→●	○	○	
		Process study	●●●	●●○	●	●	○→●		●
		Multiple-acitvity analysis	●●○	●○	●	●			○→●
		Time study	●●	○	●●	○→●		→●	
		Ratio-delay study	●○	●	○		●	→○	
		Work sampling	●○○	○	●○	○→●	→○		
		Standard time	●○	●	○	●	→○		
		Layout improvement	●●●	●●○	●	●	●	○	
		Line balancing	●●	●○	●	○→●		●	
		Production scheduling	●○	○○	●	○→●			○
		Man-hour loading	●○	●○		●	○		
		Dispatching	●○	○○	●	○→●			○
		Production control	●○	○	●	○→●			
		TPS	●○	●○		●	○		
		SMED	●●○	●●○		●	●	○	
		TOC	●○	○○	●	○	○→●		
		Product management by IT	○	○		○			
		Approach to improvement in productivity	●●●○	●●○	●	●	●	○→●	→○

(6) Formulation of the training implementation plan (Who will conduct training, when, where and how?)

Training consists of classroom theoretical training and practical training on the ground. OJT conducted in actual enterprises. The theoretical training is divided into two further streams, i.e. essential theory required irrespective of the field of specialty, and specialist theory according to each field. As for the practical training, this is divided into applied theoretical training, in which trainees act as lecturers while learning the practical method of training, and OJT carried out in enterprises (see Figure 4-3). Trainees only need to choose one of the fields raised in specialist theory; they do not need to learn all fields. The specialist theory fields are related to the ATG qualification system described in 4.3; for example, in order to become an ATG in the production management field, it is necessary to sit the specialist theory course in production management, and in order to become an ATG in marketing, it is necessary to take marketing/sales.

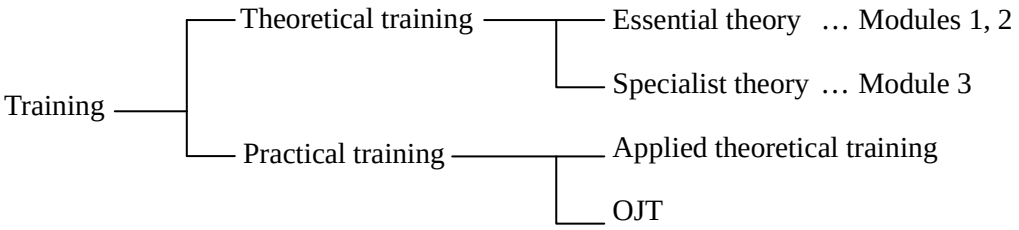


Figure 4-3 Structure of Training

1) Theoretical Training

a. Composition of Theoretical Training

Theoretical training is composed of three modules as shown in Table 4-5. The training period in each module is five days (30 hours), and simple tests are given at the end of training to confirm the level of learning.

Table 4-5 Outline of Theoretical Training

Module		Subject	Contents
1.	Basics of production management	Plant diagnosis	Plant diagnosis procedures and attention points
		5S	Derived by taking the initial letters of the Japanese words for ordering, tidying, cleaning, hygiene and discipline, which are the prerequisites for plant improvement
		IE basics	Industrial engineering deals with the basics of production management technologies for efficiently designing human and machine work and resolving problems in productivity.
		Visible control	Technique whereby operators and managers can immediately visually understand work progress and production conditions (whether work is normal or abnormal), etc.
		Process analysis	Survey and analysis technique in which the process for making products out of raw materials, the work of operators and movement processes are systematically expressed by diagram and symbols. Diagrams and symbols basically show five types of process, i.e. processing, carrying, storage, retention, and inspection.
		Work study	Technique whereby work primarily conducted by operators is finely analyzed, researched and measured with a view to establishing the optimum work methods.
		Layout	Activity whereby buildings, equipment and devices are arranged so that carrying, treatment and transfer can be rationally carried out.
		SMED	Die change refers to the chain of events from preliminary preparation of materials, machines, jigs, tools and drawings, etc. to the stable production of conforming products, when switching over from one product to another. SMED refers to improvements geared to enabling die change to be performed in less than 10 minutes.
		7 wastes	TPS (Toyota Production System), emphasizing elimination of waste and reduction of costs, targets 7 areas of waste. These are: ① Waste of making too much, ② Carrying waste, ③ Processing waste, ④ Stock waste, ⑤ NG production waste, and concerning work, ⑥ Motion waste, and ⑦ Waiting waste.
		Kaizen	Kaizen refers to cumulative and ongoing improvement activities from the ground. The feature of Kaizen is that it doesn't require large investment to realize improvement.
		Quality control and 7 tools of QC	The basics of quality control, and how to use the analysis techniques that are frequently used in quality improvement (control charts, pareto diagrams, cause and effect diagrams, check sheets, histograms, scatter diagrams, stratification)

Module		Subject	Contents
2.	General business theory	Enterprise diagnosis/Support	Procedure for identifying and supporting improvement of the overall important problems facing enterprises from the viewpoints of strengths, weaknesses, opportunities and threats.
		Business strategy	Measures from the long-term viewpoint in which top management makes decisions in consideration of the business environment. In functional terms, this is divided into development strategy, production strategy and sales strategy, however, in project terms, it also includes customer strategy and competition strategy.
		Marketing/Sales	Marketing refers to activities for adapting enterprise activities to customer needs and activities for creating customer needs. Sale refers to the selling of products to customers and clients based on the premise of marketing.
		Personnel affairs / Human resources development	Recruitment, assignment, treatment and development of human resources, etc.
		Financial affairs / Cost control	Financial affairs refer to the procurement and operation of funds, while cost control refers to the accurate and timely gauging of costs and activities for maintaining or reducing costs.
3.	Specialist theory	Production field	Multiple-activity analysis, Operation analysis, Work sampling, Standard time, Line balancing, Man-hour loading, production scheduling and control, TPS, MRP/ERP, TOC, QC circle activities, QC expansion plans, ISO 9001, HACCP, BPM
		Marketing/Sales	Marketing process, Marketing environment, Consumer product market, Industrial product market, Service marketing, Market survey, Segmentation, targeting, Positioning, Product life cycle, Product development, Sales channels, Supply chain, Logistics, Sales promotion, Price policy, Retail technology
		Personnel affairs / Human resources development	Advertisement, Recruitment, Assignment, Evaluation, promotion, Skill/Technology development, Welfare, Labor relations
		Financial affairs/Cost control	Financial statement analysis, Fund management, Profit control, Cost control, ABC control, Investment profit calculation

* The contents of specialist theory illustrate items only.

b. Theoretical Training Lecturers

There is no problem with INTI AMPs acting as lecturers in the production fields of Module 1 and Module 3. However, concerning Module 2 and the non-production fields of Module 3, it is likely to be difficult to find suitable lecturers from among the current AMPs[50]. In this case, it will be necessary to invite external lecturers from universities and private consulting firms, etc. in order to implement the training.

c. Implementation of Theoretical Training

For the theoretical training composed of three modules, it is necessary to implement each module at least once per year. The number of trainees per session is not restricted as in the case of practical training. Considering the transfer of 20~30 trainees, securing of venues and dispatch of lecturers, the schedule and venues shown in Table 4-6 are realistic.

50) INTI has human resources who are capable of serving as lecturers in the marketing and financial affairs/cost control specialist fields. In both these fields, the realistic approach is for AMPs and external lecturers to to teach lessons as teams and to transfer all lessons to the AMPs alone at an early stage.

Table 4-6 Theoretical Training Schedule

Module	Venue	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1. Production management basics	B.A. or Rosario		▬		
2. General business theory	B.A.		▬		
3. Specialist theory	B.A. or Rosario			▬	

* Specialist theory can be started from the production field and gradually expanded to other fields from there. For example, the following schedule could be adopted: 2010: Production, 2011: Marketing/Sales and Financial affairs/Cost control, and 2012: Personnel affairs/Human resources development.

Theoretical training will not be limited to INTI employees only, but it will be opened to outside participation and appropriate training fees[51)] will be collected.

2) Practical Training

a. Outline of Practical Training

As is indicated in Table 4-7, practical training is composed of applied theoretical training and OJT.

Table 4-7 Practical Training

Type of Training	Period	Aims	Outline
Applied theoretical training	1 week	Through having trainees teach, promote deeper understanding of management technologies and impart easy to understand presentation techniques.	Have the trainees conduct advance self-study on the management technologies likely to be used in improving the subject enterprises, and then make them give lecturers to other trainees and enterprises, etc. in 3 days of applied theoretical training.
OJT (diagnosis and support activities)	13 weeks	Impart workplace observation ability, hearing capacity, cause analysis capacity, improvement plan compilation, ability to explain to and persuade owners, report preparation skills and so on.	Through diagnosis, grasp problems and set improvement themes. Using appropriate management technologies, conduct problem cause analysis and submit improvement plans. Encourage owners, etc. to implement the proposed improvements and provide the necessary support in implementation.

In one practical training session, two or three trainers divide responsibilities according to each enterprise, and no more than five trainees take part. With respect to five model enterprises, in real terms 1 weeks are used to carry out diagnosis, applied theoretical training and problem solving support.

51) Since it will be difficult for enterprise officials to participate in all five days of training, it may be a good idea to let trainees decide the courses they want to sit in half-day units and to collect training fees in half-day units too.

b. Practical Training Procedure

The practical training is not implemented continuously for 14 weeks, but rather three breaks are interjected. This has been done in order to give opportunities for the trainees to perform self-study, to provide time for evaluating the results of improvement at enterprises, and in consideration of the convenience of trainees who cannot continuously participate in the training.

As is indicated in Table 4-8, the practical training is divided into five stages, and the outline of each stage is as follows.

Table 4-8 Practical Training Stages

№	Stage	Period	Outline
1	Plant diagnosis	2 weeks	Brief siagnosis of 10 enterprises (half a day poer enterprise), detailed diagnosis of 5 selected enterprises (1 day per enterprise). Decide the improvmeent themes with officials of the 5 enterprises.
	(Return home)	(2 weeks)	The trainees return to their workplaces and perform self-study on the management technologies they expect to use in the enterprises under their charge, and they also prepare to speak as lecturers in the next 3-eday seminar. When questions arise, the trainees ask their trainers by e-mail, etc.
2	Applied theoretical training	1 week	Spend 2 days preparing for the training, and in the remaining 3 days, trainees act as seminar lecturers for the 10 candidate enterprises including the target enterprises.
3	Cause analysis, improvement plan compilation	5 weeks	Compile the problem analysis and improvement plans for the enterprises. During this period, the trainees visit enterprises in the morning and return to NODO to hold discussions and prepare materials in the afternoon.
	(Return home)	(1 week)	The trainees return to their workplaces.
4	Support of improvement activities	4 weeks	Guidance on implementing the improvement plans. During this period, the trainees visit enterprises in the morning and return to NODO to hold discussions and prepare materials in the afternoon.
	(Return home)	(1 weeks)	The trainees return to their workplaces. (Following the training, conduct dissemination to clients with a view to learning how to give seminars to enterprises and conduct diagnosis and support).
5	Closing	2 weeks	Measure the results of diagnosis and support and standardize the improvement work and processes. Compile the final report. Prepare for and implement the results presentations meeting.During this period, the trainees visit enterprises in the morning and hold discussions and prepare materials in the afternoon.

* The trainees shall be required to prepare diagnosis daily reports not only for the enterprises under their charge but all the enterprises they visit, and to submit these to their trainers without delay.

Table 4-9 shows the practical training schedule in bar chart form.

Table 4-9 Practical Training Schedule

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Plant diagnosis	■	■																
Applied theoretical training					■													
Cause analysis, improvement plan formulation						■	■	■	■	■		■	■	■	■			
Improvement activi ies support																	■	■
Closing			▒	▒							▒					▒		
Regional centers																		

c. Lecturers and Training Locations

The trainers who conduct the practical training will initially be selected from AMPs who have at least three years of enterprise diagnosis and support experience[52)], and they will be put in charge of model enterprises which have improvement themes in their fields of specialty. From three years in the future (2012), the qualified ATGs described in Section 4.3 will become the trainers for practical training.

In a single practical training session, two or three trainers will share work between five model enterprises. Trainers should conduct training while paying attention to the following points:

① When trainers visit enterprises, guide the trainees so that they express what they see, where problems exist and what steps should be taken.
② Have the trainees compile enterprise diagnosis daily reports and, based on these, discuss what kind of improvements should be promoted, what should be done next, and what are the important points to look at and consider, etc.
③ As the OJT progresses, have the trainees come forward and give advice to the enterprise.
④ Where the need exists, the trainers shall use the afternoons of enterprise visit days to conduct mini-training for the trainees.

The training locations will be decided upon giving priority to areas possessing NODO with plentiful qualified lecturers, areas which are easy for trainees to gather, and areas where there are numerous potential model enterprises. For the immediate future, it is appropriate to start the practical training out of Buenos Aires NODO and Rosario NODO.

52) In cases where appropriate trainers don't have the time or, depending on the improvement theme, AMPs with two or more years of experience can be recognied as trainers.

d. Trainees

The number of trainees per training session should be limited to no more than five. This is because the scope of guidance by trainers is limited and enterprises can only accept a certain number of trainees[53].

It will be desirable to subscribe trainees from other than INTI personnel in the future (from around 2011), however, priority will be given to INTI employees in the immediate future. This is because it is first necessary to raise the enterprise support capacity of INTI employees to the standard level.

When selecting trainees from INTI employees, following the procedure below:

① Select trainees while giving priority to the NODO which have high training needs.
② Discuss potential trainees with the center managers or leaders in each NODO concerned.
③ Upon confirming the intentions of the selected candidates, require submission of essays to confirm their goals and wishes, and review these.
④ Decide the trainees based on the review findings and letters of recommendation from superiors (center managers or NODO leaders).

e. Model Enterprises

Five model enterprises are needed in each practical training session, however, in order to avoid bias in the improvement themes and sectors, etc., around 10 candidate enterprises will be chosen ahead of the practical training. In Stage 1 of the practical training (plant diagnosis), the trainer takes the trainees and conducts brief diagnosis of the candidate enterprises with a view to deciding the model enterprises and their improvmeent themes. Attention is paid to the following points when selecting the model enterprises. Moreover, even if enterprises are not selected as model enterpirses here, those enterprises having interesting improvement themes will be given priority when the models for the next practical training session are selected.

Attention points when selecting the model enterprises:

① The sectors and sizes of model enterprises are dispersed.[54]
② In practical training in the production field, in addition to the 5S (1 enterprise), quality improvement, productivity improvement, lead-time shortening and cost reduction should be targeted as compulsory improvement themes.

53) In the PP, in small enterprises, it was found that not everyone could fit into the interview rooms if there were six members including the trainer.
54) This is so that the trainees can learn that it is necessary to consider differences in management methods depending on the sector and size of the client in enterprise support activities.

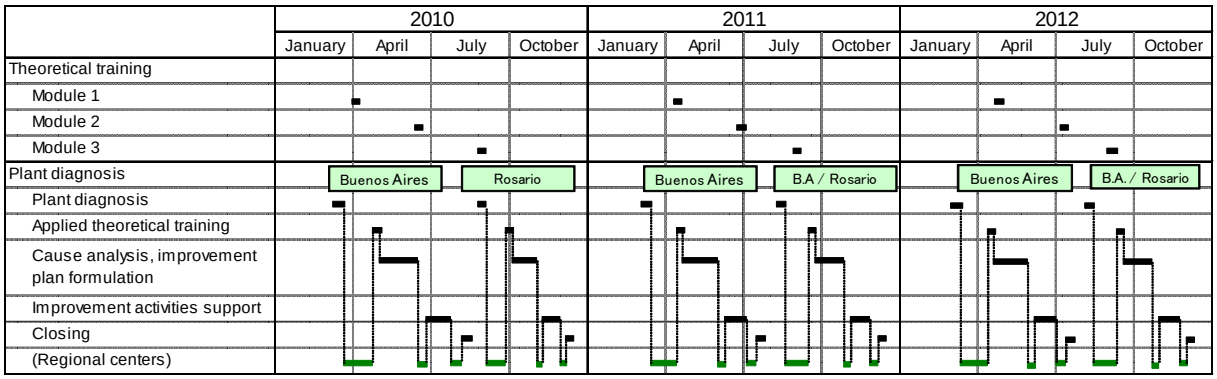
③ Select improvement themes so that it is possible for the improvement results to manifest and be evaluated within the period from diagnosis to closing (21 days).

④ Conduct the support activities free of charge for the model enterprises, and present letters of appreciation at the end of the training or at the closing presentation ceremony.

3) Training Implementation Schedule

Table 4-10 shows the training implementation schedule for three years in the case where theoretical training is conducted once in three modules and practical training is conducted 1~2 times in two locations.

Table 4-10 Training Implementation Schedule



In addition, although the practical training is conducted at various model enterprises using a number of management technologies, it in no way negates the practical training uniquely conducted by each NODO on individual management technologies. Table 4-11 shows the differences between the practical training performed by each NODO and the practical training planned by INTI headquarters.

Table 4-11 Differences in Practical Training Between INTI Headquarters and Each NODO

	Practical Training Planned by Headquarters	Practical Training at Each NODO
Training location	NODO consigned to implement training by headquarters	Each NODO
Term	As a rule 3 months	The consultant contract term signed with the target enterprise
Training themes	Between 4~6 basic management technologies are selected in a planned manner.	According to the improvement themes based on contracts with enterprises
Trainers	Veteran AMPs and external lecturers consigned to implement training by headquarters	Veteran AMPs in the same NODO
Trainees	Assembled from NODO throughout the country according to training plans	New recruits and other personnel with no experience of the target management technology in the same NODO
Enterprises	Selected by solicitation to receive free guidance with the practical training	Enterprise guidance is conducted at cost based on a contract with INTI.
ATG test qualifications	Upon evaluating class records during the practical training, trainees who achieve a certain level of results are qualified to sit ATG tests if they fulfill other required conditions.	This does not constitute the qualification to sit ATG tests.

(7) Implementation of Training

Assuming that AMP training is an exclusive item of the Capacity Development Program for Supporting Problem Solving in SMEs (3.3.2), the training costs entailed should be covered by this project budget. Otherwise, since human resources development costs are similar to investment that doesn't immediately lead to higher revenue, some regional center managers may hesitate to provide trainers and trainees. In order to prevent such a situation, it is desirable to adopt the following kind of budget system and command chain:

① In the Capacity Development Program for Supporting Problem Solving in SMEs, allocate an independent training budget and give each NODO the authority to instruct[55)] AMPs and facilitators to receive training.

② Include the following expenses in the training budget.

- Trainer opportunity losses (internal transaction cost) [56)]
- Travel and accommodation expenses in cases where trainers need to make trips for training

55) In cases where it is forecast that regional center managers will put up strong resistance if the management technology diffusion project managers give the AMPs greater authority to instruct than the regional managers, it is desirable to provisionally establish a proviso stating "Consent shall be required from the center manager for implementing training at or out of NODO."

56) The trainer opportunity losses refer to the consulting revenue that the NODO could have received if the trainer had performed consulting work at enterprises rather than manage the training. Since this is difficult to calculate, it is better to decide as a uniform amount based on the consultant fees obtained from enterprises. Opportunity losses will also arise from the trainees, however, the amount will be less than that from trainers and it shouldn't be necessary to compensate them.

- Employment costs when trainers need to be invited from outside of INTI
- Travel expenses to and from clients (vehicle fuel costs) [57)]
- Travel expenses (there and back) and accommodation expenses when traveling to NODO where training is implemented[58)]

③ Procure around five notebook PCs for use by trainees when preparing diagnosis daily reports, etc., and lend these to the NODO implementing the training as required.

Based on the above assumptions, Table 4-12 shows the costs estimated as necessary for implementing the theoretical training and practical training.

In the case where the above training is implemented with a view to conferring ATG qualifications, the training cost for nurturing one ATG will be approximately 42,000 pesos (approximately 35,000 pesos when internal transaction costs not spent externally are excluded). In the case where theoretical training up to Module 1 is implemented once each and practical training is implemented two times in a year, the necessary training cost will be approximately 480,000 pesos (approximately 400,000 pesos when internal transaction costs not spent externally are excluded).

Assuming the organization proposed in the previous chapter, it is appropriate for an organization belonging to the Strategy Headquarters to handle the planning and operation of this training. Specific NODO must be relied on to provide lecturers and the training venue, however, the training cannot be carried out with adequate eficiency if the overall training of company support personnel for INTI is entrusted to individual NODO. The training costs can be included in the NODO budget, however, for the reasons given below, the training budget should be held by the Strategy Headquarters and the actual costs should be processed as internal transactions between the Strategy Headquarters and the NODO implementing the training.

① The Strategy Headquarters is responsible for the systematic management of the theoretical training and practical training, so it is appropriate in organizational terms for the Headquarters to handle the operating expense budget. The command process would become too complicated if the Strategy Headquarters had to give orders for the NODO to secure the training budget.

② If the NODO implementing the training were made responsible for the training budget, since it has no way of knowing how much the budget should contain and how often it should be compiled, this would be impossible.

57) Since seeking the cost of fuel for each vehicle is very complicated, it is better to establish a uniform daily rate of 50 pesos or so.

58) The NODO implementing training should secure convenient condominiums or hotels on long-term at discount prices.

Moreover, since the NODO(s) implementing the training would have larger budgets than counterparts, it would be difficult to compare actual costs between NODO.

Table 4-12 Training Budget

(Unit: ARS$)

Training	Subject	Cost Item	Unit ($)	Quantity	Amount ($)	Remarks
Theoretical training (assuming 20 trainees per session)	Trainer costs	Opportunity loss	528 /day	11 days	5,808	Assuming 11 days for internal lecturers
		Daily allowance	250 /day	2	500	Assuming 2 members for 1 day each
		Travel expenses	1,000 /trip	2 trips	2,000	Assuming 2 members and 1 trip each
		Fee	1,000 /day	4 days	4,000	Module 2 uses 4 external lecturers
		(Subtotal)			12,308	
	Trainee costs	Daily allowance	250 /day	270 days	67,500	Out of the 20 participants, 18 are expected from other than the NODO implementing the training.
		Travel expenses	1,000 /trip	18 trips	18,000	Out of the 20 participants, it is assumed 6 will travel long distances. 3 times for Modules 1-3
		Travel expenses	200 /trip	36 trips	7,200	Out of the 20 participants, it is assumed 12 will travel by bus from within a 500km radius. 3 times for Modules 1-3
		(Subtotal)			92,700	
	Miscellaneous costs				10,501	10% of the total trainer costs and trainee costs is assumed.
	Total				115,509	$109,701 excluding internal transaction costs
	Training cost per trainee				5,775	Assuming participation from Module 1 to 3. $10,425 excluding internal transaction costs
Practical training (assuming 5 trainees per session)	Trainer costs	Opportunity loss	528 /day	70 days	36,960	It is assumed that all trainers will come from the NODO conducting the training.
	Trainee costs	Daily allowance	250 /day	440 days	110,000	Out of the5 trainees, 4 are expected from other than the NODO implementing the training.
		Travel expenses	1,000 /trip	6 trips	6,000	Out of the 5 trainees, it is assumed 2 will travel long distances. 4 trips are assumed
		Travel expenses	200 /trip	12 trips	2,400	Out of the 5trainees, it is assumed 3 will travel by bus from within a 500km radius. 4 trips are assumed.
		(Subtotal)			118,400	
	Vehicle costs	Rental fee	250 /day	35 days	8,750	Out of 70 days, it is assumed that vehicles will be leased from outside operators for half a day on 35 days.
		Fuel costs	50 /day	35 days	1,750	Out of 70 days, it is assumed that NODO vehicles will be leased for half a day on 35 days
		(Subtotal)			10,500	
	Miscellaneous costs				16,586	10% of the total trainer costs and trainee costs is assumed.
	Total				182,446	$145,486 excluding internal transaction costs
	Training cost per trainee				36,489	$29,097 excluding internal transaction costs

In addition, a single cost of $20,000 will arise for loaning 5 note PCs to the trainees during the training.

(8) Evaluation of training and training participants

Here, explanation is given on the evaluation of training by the trainees and evaluation of trainees by the trainers. The former will be used to review the training courses, while the latter will be used determine whether or not trainees have learned how to apply management technologies in specific fields to enterprises through taking part in the training. One of the conditions for recognizing ATG qualifications as described in 4.3 will be that trainees receive a rating at or above a certain level.

1) Evaluation of training

Evaluation of training needs to be carried out immediately following the training and after a certain amount of time (1 year) has elapsed after the training. Evaluation immediately after training mainly focuses on the training method (period, themes, techniques, etc.), whereas evaluation after a certain amount of time is intended to determine whether or not the training contents have filled actual needs and have been useful. Based on both types of evaluation, the contents and methods of training should be examined and findings should be used to substantially improve future training programs.

Table 4-13 shows a sample evaluation sheet for theoretical training, while Table 4-14 shows a sample evaluation sheet for OJT. Meanwhile, Table 4-15 shows a sample evaluation sheet for assessing the effect of training after some time has elapsed.

Table 4-13 Theoretical Training Evaluation Sheet

Field			Lecture						
			Conduct	Understanding					Points difficult to understand
				good ◄				► bad	
Product Management	Industrial engineering	5S	✓	⑤	4	3	2	1	
		Visual management	✓	5	④	3	2	1	
		Process study	✓	5	④	3	2	1	
		Multiple-acitvity analysis	✓	5	4	③	2	1	In the case of multiple workers
		Time study	✓	5	④	3	2	1	
		Ratio-delay study	✓	5	④	3	2	1	
		Work sampling	✓	5	4	③	2	1	Determination of number of observation
		Standard time		5	4	3	2	1	
		Layout improvement		5	4	3	2	1	
		Line balancing		5	4	3	2	1	
		Production scheduling		5	4	3	2	1	
		Man-hour loading		5	4	3	2	1	
		Dispatching		5	4	3	2	1	
		Production control		5	4	3	2	1	
		TPS	✓	5	4	3	②	1	Merit of one piece manufacturing
		SMED		5	4	3	2	1	
		TOC		5	4	3	2	1	
		Product management by IT		5	4	3	2	1	
		Approach to improvement in productivity	✓	5	④	3	2	1	

Table 4-14 Practical Training Evaluation Sheet

Field			OJT					
			Conduct	Usage (useful ⟷ not useful)				Prblems
				5	4	3	2	1	
Product Management	Industrial engineering	5S	✓	⑤	4	3	2	1	
		Visual management	✓	5	4	③	2	1	
		Process study	✓	5	④	3	2	1	
		Multiple-acitvity analysis	✓	5	④	3	2	1	
		Time study	✓	5	4	3	2	1	
		Ratio-delay study	✓	5	4	3	2	①	
		Work sampling	✓	5	4	3	②	1	Number of sampling is not enough.
		Standard time		5	4	3	2	1	
		Layout improvement		5	4	3	2	1	
		Line balancing		5	4	3	2	1	
		Production scheduling		5	4	3	2	1	
		Man-hour loading		5	4	3	2	1	
		Dispatching		5	4	3	2	1	
		Production control		5	4	3	2	1	
		TPS	✓	5	4	3	2	①	Applicable condition is not enough.
		SMED		5	4	3	2	1	
		TOC		5	4	3	2	1	
		Product management by IT		5	4	3	2	1	
		Approach to improvement in productivity	✓	⑤	4	3	2	1	

Table 4-15 Training Effect Evaluation Sheet

Field			Situation of usage techniques in advisory work					
			About techniques trained in OJT (useful ⟷ not useful)					About techniques not to be trained in OJT (Please describe techniques which you was not
Major division	Minor division	Techniqiue trained in OJT	5	4	3	2	1	
Product managemen	Industrial engineering	5S	5	④	3	2	1	Theory of Constraints
		Process study	⑤	4	3	2	1	Visiual management
		Layout improvement	⑤	4	3	2	1	
			5	4	3	2	1	
			5	4	3	2	1	
	Quality control	QC 7 tools	⑤	4	3	2	1	Taguchi method
		QC process chart	5	4	3	2	①	
		ISO 9001	5	4	3	2	①	

2) Evaluation of training participants

Trainers evaluate the training participants via OJT. Table 4-16 shows a sample format used in such evaluation. Trainees who gain a certain rating or higher are deemed to have completed OJT in specific fields, and thereby to have fulfilled one of the conditions for AJT qualification described in 4.3.

Table 4-16 Trainee Evaluation Sheet

Evaluation item	Visitig date (M/D)											
	8/4	8/5	8/6	8/7	8/8	8/11	8/12		11/2	11/3	Total	Av.
1. Having a careful observation of job site.	3	2	2	3	4	3	3		4	5	38	2.9
2. Intending to ge to the root cause instead of phenomenon.	4	3	2	3	4	5	4		4	4	43	3.3
3. Selecting appropriate techniques for the real problem.	4	5	3	4	5	4	4		4	3	46	3.5
4. Making consideration to client's situation at applying management technolgies.	3	4	3	4	4	5	4		5	4	39	3.0
5. Appropriate explaning to or persuading the president or managers to improve.	2	3	3	3	3	2	3		3	4	32	2.5
Total	16	17	13	17	20	19	18		20	20	198	15.2

score: 5: excellent ⟷ 1:bad

(9) Follow-up of training

An elder system shall be introduced whereby trainees who complete three months of practical training shall mail daily diagnosis reports compiled at clients to trainers and receive advice from the trainers where needed for a period of 6~12 months.

4.3 Recommendations Concerning the ATG Qualification System

Here, the following five points necessary for building a qualification system for ATGs, etc. are described.

① Qualification requirements for ATGs, etc.
② Qualification certification agency and accreditation method
③ Renewal of qualifications
④ Coordination with the AMP title
⑤ Preparation for official qualifications

The stated contents concerning these recommendations reflect the items that were provisionally decided on November 19, 2009 in the third meeting of the ATG Qualification System Preparation Committee, which was established following recommendation by the JICA Study Team. Moreover, this committee conducts detailed examination of the qualification system based around the ATG qualification system proposal that was previously proposed as an assumption by the JICA Study Team.

4.3.1 Qualification Requirements for ATG

(1) Certification Criteria [59)]

The ATG qualification is conferred to persons who are deemed capable of independently conducting diagnoses of specific sectors or general diagnoses of corporations and to support problem solving using business and production management technology.

The Expert ATG is a qualification conferred to persons who are deemed capable of independently conducting corporate diagnosis/support in one of four specialist fields, i.e. production management, marketing/sales, personnel/human resources development, and financial affairs/cost control. The General ATG is a qualification conferred to persons who are capable of independently conducting corporate diagnosis/support in two or more specialist fields.

Table 4-17 shows the certification criteria and scope of work of Expert ATGs and General ATGs.

59) Certification criteria are raised here because it is necessary to specify clear criteria when applying for ISO17024; moreover, if the sitting of certain training is stated as a qualification for sitting the ATG examination within the certification criteria, this may lead to difficulty in the review. Accordingly, under (2) Operating Criteria, completion of a certain degree of training is stated as a qualification for sitting the examination.

Table 4-17 Definition of Two Types of Support Personnel

Rank	Definition	Possible Support Field and Conditions
Expert ATG	Persons who are deemed to possess the capacity to independently conduct corporate diagnosis/support in one of four specialist fields, i.e. production management, marketing/sales, personnel/human resources development, and financial affairs/cost control	He/she shall conduct diagnosis / support activities unaided in the specialist field where qualifications are recognized, and compile improvement plans in fields where the improvement approach is decided.
General ATG	Persons who are deemed to possess the capacity to independently conduct corporate diagnosis/support in two or more specialist fields.	In addition to the support field where he/she is an expert ATG, taking the lead in preliminary surveys for enterprises diagnoses, he/shall shall decide the necessary improvement fields and approaches for enterprises and compile improvement plans.

(2) Operating Criteria

As is shown in Figure 4-4, approval of ATG qualifications is carried out when persons who fill the conditions required to sit the ATG examination pass the said examination. The operating criteria are explained separately according to the examination condition acquisition procedure and examination procedure.

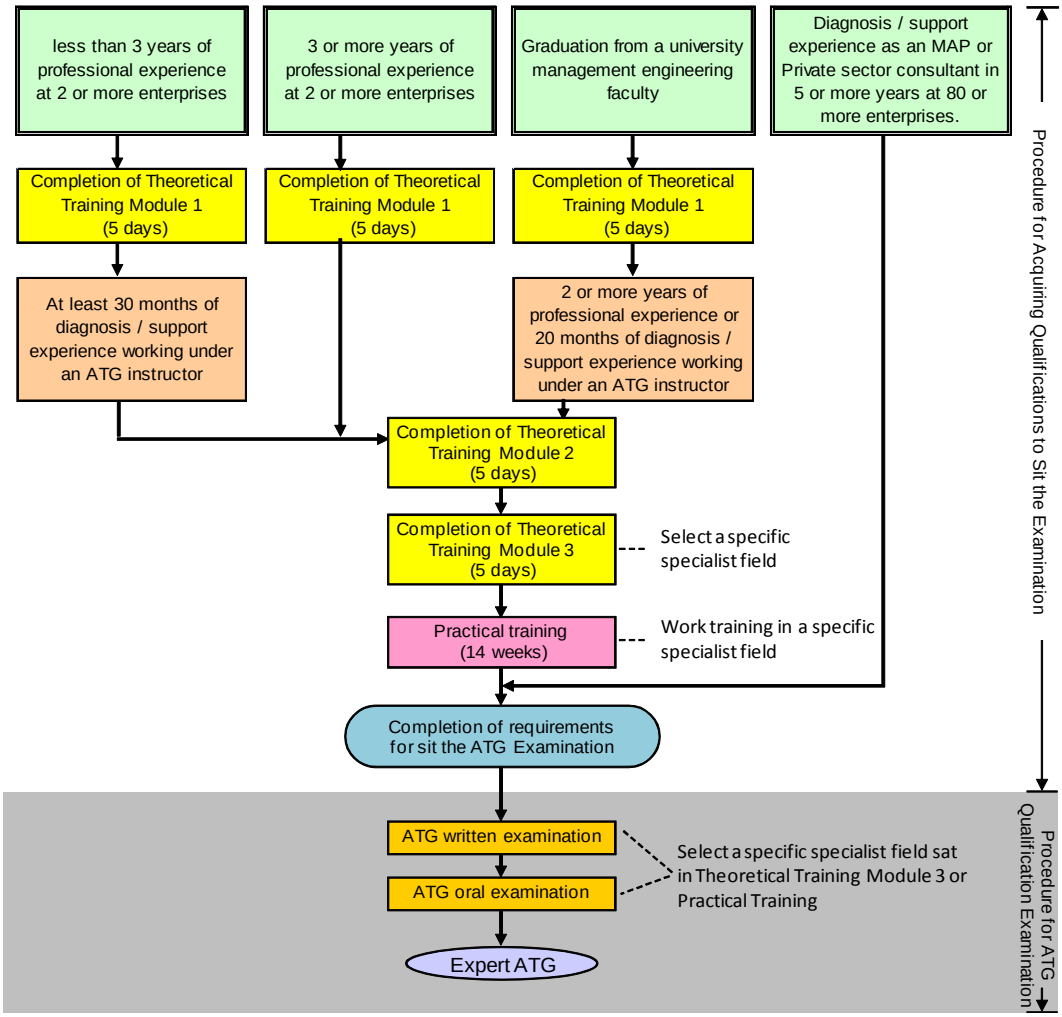


Figure 4-4 Procedure for Becoming an Expert ATG

<Procedure for Acquiring Qualifications to Sit the Examination >

As is shown in Figure 4-4, there are four entry points to becoming an expert ATG. One of these is to graduate from a management engineering faculty, and the other three are 1) less than three years of work experience, 2) or at least three years of work experience, or 3) 80 months of consulting experience. Leaving aside candidates with consulting experience, candidates that fill either of the remaining three descriptions need to complete theoretical training modules 1 to 3, while candidates possessing no work experience need to acquire a certain degree of work experience while taking Modules 1 and 2. Following that, if he/she sits 14 weeks of practical training and then gains at least 20 months of diagnosis / support experience working under an ATG instructor at two or more enterprises, he/she will be qualified to take the ATG examination. Candidates who have 80 months or more consulting experience can immediately sit the ATG examination without taking theoretical training or practical training or fulfilling any other practical experience requirements. This bypass course is a special case[60] designed to make it easier for existing AMPs and private sector consultants to take the ATG examination without sitting any additional training, however, it should be reviewed in the future.

In cases where a person already possesses ATG qualifications in a certain specialist field, if he/she completes theoretical training Module 3 and practical training in a separate specialty, he/she will meet the conditions for sitting the ATG examination in another specialist field.

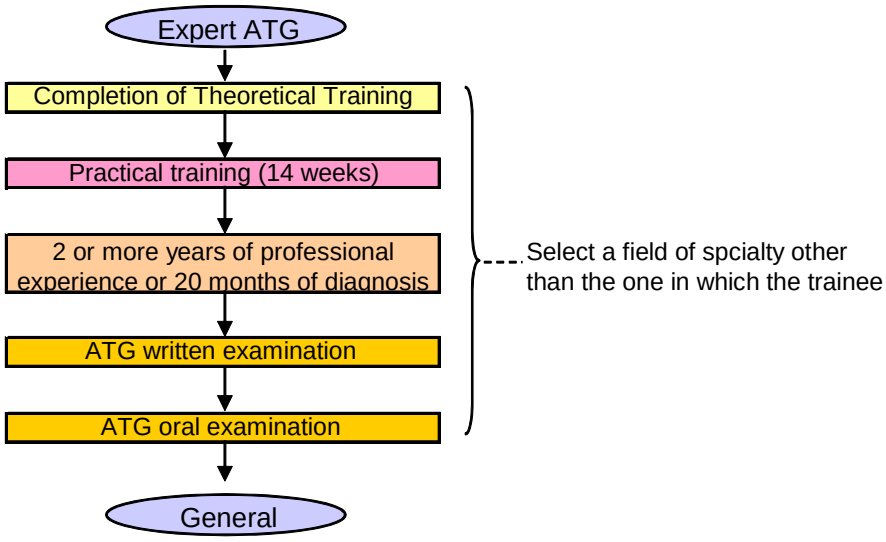


Figure 4-5 Procedure for Becoming a General ATG

Table 4-18 shows definitions and means of proof of academic history and practical experience.

60) It is desirable for trainers in theoretical training and practical training to be qualified ATGs, however, the bypass course is regarded as a special case for creating qualified ATGs as quickly as possible following the launch of the ATG qualification system.

Table 4-18 Definitions and Methods of Proof of Academic Background, Work Experience and ATG Examinations

Item	Definition	Means of Proof
Work experience of less than 3 years at 2 or more enterprises	Work experience refers to experience in management technology or manufacturing work. This applies to persons with experience of up to 3 years at 2 or more enterprises. Management technology here refers to production management, marketing / sales, personnel affairs / human resources development, and financial affairs / cost control.	Based on self declarations (about the contents of work, etc.), the qualification review committee confirms facts by checking with enterprises.
Work experience of 3 years or more	Work experience refers to experience in management technology or manufacturing work.	Based on self declarations (about the names of enterprises and contents of work, etc.), the qualification review committee confirms facts by checking with enterprises.
Graduation from a university management engineering department	This does not include persons who have learned management engineering or corresponding courses at other departments.	University completion certificate
Diagnosis / support experience as an AMP at 10 or more enterprises	Diagnosis / support is related to management technology and refers to the achievement of a certain degree of outputs in diagnosis / guidance.	Based on self declarations (about the names of clients, used management technology and outputs, etc.), the qualification review committee confirms facts by checking with clients.
Theoretical training Module 1	The candidate has sat the 5-day practical training Module 1 course hosted by INTI and has achieved a certain level of results in the final examination.	Certificate of training
Theoretical training Module 2	The candidate has sat the 5-day practical training Module 2 course hosted by INTI and has achieved a certain level of results in the final examination.	Certificate of training
Theoretical training Module 3	The candidate has sat the 5-day practical training Module 3 course hosted by INTI and has achieved a certain level of results in the final examination.	Certificate of training
Diagnosis / guidance experience of at least 30 months combined at 4 or more enterprises under the guidance of an ATG	30 months combined refers to 30 months sought as the product of the number of clients multiplied by the number of visited months, assuming 1 month to be cases where at least 2 visits for diagnosis /guidance are made to be same client.	Proof of diagnosis /guidance from the ATG
Diagnosis / guidance experience of at least 20 months combined at 4 or more enterprises under the guidance of an ATG	20 months combined refers to 20 months sought as the product of the number of clients multiplied by the number of visited months, assuming 1 month to be cases where at least 2 visits for diagnosis /guidance are made to be same client.	Proof of diagnosis /guidance from the ATG
Practical training	The candidate sits 14 weeks of practical training in management technology hosted by INTI and receives a certain evaluation or higher from the trainer.	Certificate of training
ATG written examination	Problems and case studies are given from the essential fields in theoretical study (Modules 1 and 2) and the field of specialty (Module 3 contents).	Pass criteria shall be a total score of 70% or higher in the essential field, specialist field and case studies, and 50% or higher in each field.
ATG oral examination	Candidates have to submit a essay on a case study of diagnosis / support in the field of specialty in advance, and the oral test is conducted based on this essay.	Pass criteria shall be a total score of 70% or higher for contents of response (based on the essay), expression and persuasiveness, and 50% or higher in each field.

<ATG Qualification Examination>

The ATG qualification examination will comprise a written examination and an oral examination. Persons passing the written examination will undergo the oral examination, and persons passing the oral examination will receive the ATG qualification.

The ATG qualification system will initially be launched for expert ATGs in the production management field, however, preparations for theoretical training and practical training in other specialist fields will be completed by 2011 in order to pave the way for people to acquire ATG qualifications in other specialties and general ATG qualifications.

4.3.2 Qualification Certification Agency and Accreditation Method

ATG qualifications are accredited by a qualification certification committee. In order for such qualifications to be officially recognized[61], the said committee must be an authoritative agency both inside and outside INTI. The procedure for doing so is described in the following six steps:

Step 1: Establishment of an ATG qualification certification committee
Step 2: Examination and foundation building for the qualification system by the ATG qualification preparatory committee
Step 3: Selection of qualification authorizers
Step 4: Compilation of the qualification accreditation test
Step 5: Implementation of tests for eligible persons (AMPs)
Step 6: Conferment of qualifications and titles on successful candidates

Step 1: Establishment of an ATG qualification certification committee

The ATG qualification certification committee (hereinafter referred to as the certification committee) has the role of examining and establishing the framework of the qualification system. In order to ensure an official qualification system that will be recognized by third parties, it is desirable to include the following members (including representatives from external parties other than INTI) on the certification committee[62]:

- INTI program department manager: 1
- INTI project leader: 1
- INTI veteran AMPs: (preferably possessing expertise in all fields) 3~5
- INTI accreditation system manager: 1
- SEPyME representative: 1
- Buenos Aires provincial government regional promotion department representative: 1

61) Even after the ATG becomes an official qualification, it is assumed that the committee will function as the certification committee.
62) In the actual certification committee, members are chosen almost exactly as recommended.

- UIA SME department manager: 1
- ADIMRA representative: 1
- Academic experts (university): 2
- JICA experts: 3

Step 2: Examination and foundation building for the qualification system by the ATG qualification certification committee

Based on these recommendations concerning the qualification system, hold a meeting of the certification committee to examine and build the foundations for the qualification system. Where necessary, prepare a system proposal upon examining the recommendations in a small working group, refer the findings to the certification committee and obtain approval.

Step 3: Selection of qualification certifiers

The certification committee selects the reviewers who will certify qualifications. It is desirable to select two certifiers from each of the production management, cost control, marketing and personnel and labor management fields. [63)]

Conditions for qualification certifiers shall be as follows:

- Candidates should have abundant theoretical and work experience in expert fields.
- Candidates should be able to make impartial evaluations without prejudice.
- Candidates should have a strong sense of confidentiality.
- Certification committee members can become qualification authorizers.
- Belonging to INTI is not a factor for consideration.

Step 4: Compilation of the qualification certification test

Qualification certification is conducted as a series of theoretical examinations and oral examinations in each field.[64)] For this reason, the qualification certifiers prepare examination questions and marking criteria. The main points of examinations are as follows.

Written examination

In the written examination, set a total of four problems, i.e. one each for theoretical training modules 1 and 2, specialist theory Module 3 and a case study, and allow 3~5 hours of examination time. The pass criteria shall be a total score of 70% or higher, and the score for each problem shall be 50% or higher.

63) Two certifiers are selected from each field in order to avoid bias by a single certifier. However, if there is a lack of resources in a certain specialist field, supplementation by certifiers from similar fields is provisionally permitted.

64) In the case of general ATG qualifications, theoretical examinations and oral examinations will be conducted in multiple fields.

Oral examination

Require candidates who pass the written examination to submit essays, which will act as the basis for oral questioning by the reviewers. Essays should be based on problem solving support experiences of the candidates in enterprises. The pass criteria shall be a total score of 70% or higher for the contents of response (based on the essay), expression and persuasiveness, and 50% or higher in each field.

When candidates fail in the oral examination, they will need to start from the written examination when they make a renewed challenge.

Step 5: Implementation of examinations for eligible persons (AMPs)

Implement examinations once per year. Following the theoretical examination, since time is needed for marking and essay preparation, it is desirable to leave a gap of 1~2 months between the theoretical and oral examinations. Since it is imagined that only AMPs will be eligible to take the examinations, it may be a good idea to implement the ATG qualification examinations on AMPs on a trial basis.

Step 6: Conferment of qualifications and titles on successful candidates

Issue an ATG qualification certificate to successful candidates and enter candidates' names in a register. Persons who receive the qualification certificate can insert the title on business cards and reports, etc. Expert ATGs should state their expert field after the title (for example, "ATG (Production Management)"), while general ATGs should state "General ATG."

4.3.3 Renewal of Qualifications

Qualified ATGs should receive refresher training (1 day) or submit an essay in order to renew their qualifications once every three years. This is necessary in order to encourage ATGs to periodically learn new management technologies and stay aware of changes in the business environment.

4.3.4 Coordination with the AMP Title

Qualified AMPs (or private sector consultants) can sit tests to become qualified ATGs providing that they have experienced supporting problem solving in enterprises for a combined period of at least 80 months. However, since it would be confusing to display both the AMP and ATG qualifications in tandem, it may be desirable to abandon the AMP title one or two years after the first ATG qualification test has been implemented.

4.3.5 Preparation for Official Qualifications

In order to open ATG qualifications to not only INTI employees but also external resource persons, it is necessary to establish at least the following four conditions:

① Ensure recognition by third parties about where the authority for granting qualifications derives from (securing of traceability of qualifications)
② Make it easier for external persons (not employees of INTI) to be eligible for examinations.
③ Make it easier to sit ATG examinations from outside of INTI.
④ Numerous qualified ATGs from outside of INTI are born and are active as consultants.

These four conditions are described below.

(1) Securing of traceability of qualifications

Calibration work by INTI has legal backing and is conducted based on the sole authority of INTI. Accordingly, it will be difficult to secure a legal basis for the ATG qualifications. This is because qualifications for consultants working in the private sector are not suitable for definition by law. However, effort needs to be made to give qualifications official status. For this reason, responsibility for ATG qualifications lies with the certification committee, and it will be indispensible to include non-INTI members on the committee in order to guarantee its authority. Also, when denoting the ATG qualification title, it will be necessary to utilize the authority of INTI by using statements such as “INTI Certified Qualification: General ATG.”

ISO 17024 is an international standard conferred to agencies that accredit qualifications on individuals who meet certain conditions. In other words, persons who are accredited by an agency established and run according to ISO 17024 shall be deemed to satisfy the accreditation scheme requirements. Therefore, the ATG qualifications shall be given almost official status through being conferred in compliance with ISO 17024. This ISO requires the existence of an accreditation agency, accreditation scheme committee[65)] and testers that satisfy certain conditions. Reference Material 3 states the main conditions.

(2) Participation in theoretical training and practical training

Candidates from the private sector should have little problem taking part in the five-day theoretical training course, however, it may be very difficult for them to take three months off to participate in practical training[66)]. In such cases, two solutions are available: first is to recognize

65) The first certification committee was held on July 8, 2009, and it confirmed the following items: ① conferment of ISO 17024 status on the ATG qualification, ②composition of the committee members, ③ establishment of a working group, and ④ the future schedule. The committee held its second meeting on August 24 and third meeting on November 19.
66) In order to widely attract trainees, it is desirable to either make the applied theoretical training and practical

the practical training conducted by each NODO in enterprise support activities (for example, a combined total of three months training at five enterprises over three years) as equivalent to three months of training. The second solution is to view persons with a certain degree of private sector consulting experience as eligible to receive ATG examinations. This is why Figure 4-4 indicates that diagnosis / support experience of 80 months or more enables the candidate to sit the ATG examination.

(3) Sitting of ATG examinations

Considering convenience for candidates, it is desirable to implement the theoretical examinations at major cities throughout the country, for example, Buenos Aires, Rosario and Cordoba. As for the oral examination, since the number of candidates will be pared down, considering the convenience of the test inspectors, implementation only in Buenos Aires will be desirable.

(4) Birth and activities of private sector ATGs

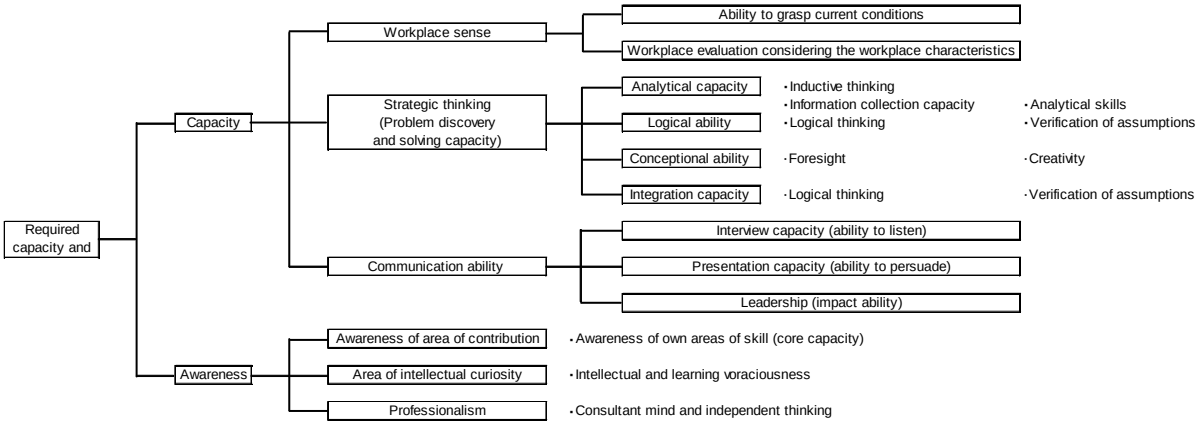
If well-known private sector consultants can be encouraged to acquire ATG qualifications, their reputation can be utilized to boost the authority of the qualification.[67)]

Moreover, when central and local governments and donors use management technology consultants to implement support activities in enterprises, it will be necessary to encourage them to give priority to qualified ATGs when recruiting.

training free or charge only a very small amount.

67) An authoritative QC award in Japan is the Deming Prize, which has now achieved worldwide renown. However, when this award was first inaugurated, it was strategically awarded to well-known corporations for the first few years in order to raise its status. In other words, the reputations of famous corporations were utilized to give authority to the Deming Prize.

Reference Material 1. Basic Capacity Required of SME Diagnosticians in Japan



Reference Material 2. Theoretical Training Required of SME Diagnosticians

Subject	Aim and Contents	Unit	Contents	Time
1. Business strategy	Acquire the ability to give pertinent guidance, support and advice on compilation of management strategy and management plans and management for executing such plans.	Formation of management strategy	Learn the management strategy formulation process by cases.	24
		Compilation of management plans	Learn the medium to long-term management planning process via simulation.	12
		Attribute management	Understand the necessary management for executing strategy (attribute management, plan progress control, risk management).	6
2. Marketing and sales management	Acquire the ability to give pertinent guidance, support and advice on compilation of marketing strategy and sales and marketing management for realizing marketing strategy.	Marketing strategy (distribution) and sales management	Understand the basic process of marketing strategy compilation. (Distribution)	18
		Logistics	Learn logistics strategy.	6
		Marketing strategy （Manufacturing） Sales management	Understand the basic process of marketing strategy formulation and advancement of sales management based on marketing strategy. (Manufacturing)	12
		Product development strategy	Understand the product development process in marketing strategy compilation.	6
3. Human resources management	Acquire the ability to give pertinent guidance, support and advice on discovering problems concerning people and organizations and concrete measures for that purpose.	Advancement of organization diagnosis	Learn the thinking for rearranging and rebuilding the human resources management system for verifying organization and promoting strategy.	12
		Human resources management planning	Understand the thinking for rebuilding human resources management systems upon understanding the nature of problems in people and organizations.	12
4. Finance and accounting	Acquire the ability to give pertinent guidance, support and advice on evaluating financial conditions and solving issues identified in financial analysis.	Advancement of financial analysis	Learn basic financial evaluation and analysis techniques and financial improvement proposal formulation skills.	18
5. Production management	Discover problems relating to production management for attaining organizational targets, and acquire the ability to offer guidance, support and advice on directions for resolving such problems.	Advancement of plant diagnosis and control, and QC problem solving	Understand the relationship between the basic process of plant diagnosis and management values and the workplace, and learn current condition analysis and problem discovery skills based on QC techniques.	6
		Advancement of production management system and current conditions analysis	Systematically understand production management and learn current condition analysis and problem discovery skills based on IE techniques.	18
		Production strategy thinking	Understand the basic framework of production strategy formulation and understand control and improvement points in each production mode.	6
		Manufacturing system control and improvement	Understand the steps of manufacturing system improvement and learn the skills to give guidance, support and advice.	6
		Management system control and improvement	Understand the steps of management system improvement and learn the skills to give guidance, support and advice.	6
6. Outlet management	Through compiling the store concept and planning the layout, etc. of stores based on that, acquire the ability to offer pertinent guidance, support and advice on store facilities.	Outlet facilities management	Based on the store concept, prepare store layout, etc. and compile a renewal plan which includes investment profitability.	6

Subject	Aim and Contents	Unit	Contents	Time
7. IT	Discover issues in the promotion of IT for resolving management issues, and acquire the ability to offer pertinent guidance, support and advice on concrete measures for resolving such issues.	Advancement of IT support (distribution)	Deploy management issues into IT issues, and learn the skills needed for IT planning and proposal requesting to vendors, etc.	12
		Advancement of IT support (manufacturing)		18
8. Advice ability	Participate in the company problem discovery and problem solving process, gain trust and acquire the ability to offer pertinent guidance, support and advice.	Consultant thinking method	Understand thinking and skills.	12
		Consultant communication skills	Learn interview skills and presentation skills.	12
		Consulting process	Learn the consulting process and professionalism as a management consultant.	12

Reference Material 3. Qualifications Corresponding to ISO 17024

In establishing an ATG qualification system which corresponds to ISO 17024, it is necessary to satisfy a number of conditions. Among these, the items that should be carefully discussed in the certification scheme committee (working group) are described below.

1. Certification Agency

   - The policies, procedures and operation thereof of the certification agency (INTI) must be fair and impartial with respect to all test candidates, and they must conform to all applicable rules and legal requirements (ISO 17024 section 4.1.1, hereinafter the same).
   - The certification agency must have an organizational structure that imparts confidence to stakeholders regarding its work capacity, fairness and sincerity (4.2.1)
   - The certification agency must not offer or provide training unless it can guarantee that the training is not related to the evaluation or certification of test candidates and does not interfere with confidentiality and impartiality[68] (4.2.5).
   - The criteria used to evaluate the competence of test candidates must be prescribed by the certification agency according to ISO 17024 or other related documents (4.3.4).

2. Organization and Operating Structure

   The certification agency must have an organization and operating structure (PEAT is assumed) to secure fairness, and this must be documented (4.2.2).

3. Certification Scheme Committee

   The certification agency must establish a certification scheme committee.[69] This committee must not be dominated by specific stakeholders, and it must properly and fairly represent the interests of all parties who have a significant association with the accreditation scheme (4.2.3).

4. Test Personnel

   The test personnel must satisfy the applicable competence criteria and any other requirements of the accreditation agency based on related documents (5.2.1). In cases where there is risk of clash of interests by test personnel in the testing of candidates, steps must be taken to ensure that the confidentiality and fairness of the tests is guaranteed[70] (5.2.2).

68) In reality, since INTI has to implement a large proportion of the training, it will be important to build a setup in which it can be explained to third parties that training is not related to the evaluation or certification of test candidates and that confidentiality and impartiality are upheld.

69) Prospective members include INTI, SEPyME, Buenos Aires Regional Promotion Department, UIA, ADIMRA, universities (UTN), and JICA specialists.

70) Concenring this point, similar caution to that for the training described in Note 29 is needed.

4.4 Expansion of Enterprise Support Activities through Establishment of the New NODO (Provincial Expansion Plan)

4.4.1 Regional extension of INTI[71)]

Regional extension activities refer to diffusion activities for conducting enterprise support via business and production management technologies with respect to regions (areas) where support activities for micro, small and medium enterprises by NODO are not currently implemented. It is intended to expand the enterprise support activities with a view to establishing new NODO in the future.

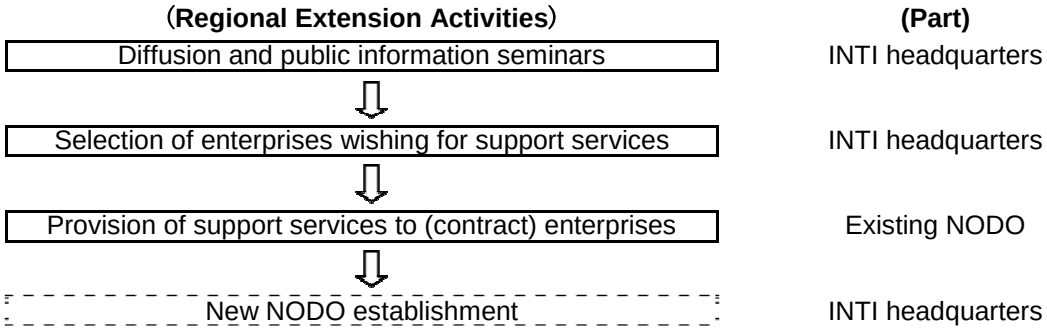
Regional extension activities in the broad sense have two meanings, i.e. the qualitative expansion and quantitative expansion of support for micro, small and medium enterprises. The first of these refers to widening the scope of support by NODO from production management technologies to other fields such as marketing and business strategy, while the latter one refers to the geographical expansion of support activities. Here, regional extension activities are dealt with from the latter viewpoint. In other words, it refers to diffusion activities geared to conducting enterprise support via business and production management technologies with a view to establishing new NODO in regions (areas) where support activities for micro, small and medium enterprises by NODO are not currently implemented.

Incidentally, qualitative expansion is indirectly touched on in the sections on the training system.

4.4.2 Current Conditions and Issues of INTI Regional Extension

INTI established NODO in the major cities of Argentina in 2004 and since then has implemented support for micro, small and medium enterprises. The enterprise support activities via business and production management technology currently being implemented by the NODO are highly regarded by enterprises. INTI intends to conduct a vigorous program of regional extension via diffusion and PR seminars in order to provide similar services to new areas which don't have NODO. Currently, these regional extension activities can be summarized into the following flows.

71) This includes cooperation activities with new NODO by existing NODO under the initiative of INTI headquarters.



(1) Manpower shortages and importance of advance planning and coordination

As was mentioned above, regional extension activities consist of the selection of new areas for implementing diffusion and public information activities by INTI headquarters (PEAT). Particularly in public information seminars, PEAT officials make field trips, search for private enterprises with cooperation from administrative agencies and industrial associations in the new areas, and stage public information seminars.

Whereas INTI headquarters takes the initiative in conducting these public information activities, cooperation and support must be obtained from existing NODO when responding to the enterprises which show an interest in INTI services in the seminars. In new areas which don't have NODO, since there are naturally almost no people with experience of offering management technology guidance, cooperation is usually requested from the closest NODO to the area in question.

It is clear that cooperation from existing NODO is essential for providing enterprise support services in new areas, however, the existing NODO already implement services in their own areas and do not have the manpower to cooperate in other areas.

Considering this shortage of manpower, the securing of personnel with experience of enterprise support via management technologies is an issue which confronts the entire INTI including the existing NODO.

In order to address this manpower shortage, in addition to developing new human resources via theoretical training and OJT, it is extremely important to conduct advance planning and coordination of regional extension to ensure the efficient utilization of NODO until human resources well versed in management technology are trained.

When implementing advance planning, it is essential to plan the target areas, timing and length of extension activities and to fully coordinate with the existing NODO which will conduct follow-up in the new areas.

(2) Absence of Advance Communication by INTI Headquarters

However, because regional extension activities by INTI headquarters are advanced without advanced communication with the existing NODO, confusion occurs in the follow-up phase following diffusion and public information seminars. Each NODO has an annual plan and support activities schedule, and there are cases where they cannot respond to unexpected requests from INTI headquarters for follow-up in new areas. Either INTI headquarters isn't giving advance notification to the existing NODO of its policy and annual plans for regional extension including new NODO establishment, or it is too slow in compiling and informing of plans. Even if diffusion and public information activities are successful in new areas, INTI will lose credibility among the enterprises in such areas if it cannot secure the human resources to implement actual support activities.

Visits to NODO reveal the following kind of complaint: "Not enough information is provided from headquarters to the provinces; moreover, headquarters provides hardly any feedback to the reports that are periodically submitted by the NODO." People even doubt whether the NODO reports are actually read by INTI headquarters, Moreover, even though each NODO compiles an annual plan of activities and sends it to INTI headquarters, the responsible staff at headquarters give no response, so the annual plans and activity policies of headquarters concerning regional extension activities are not adequately conveyed to the NODO (or they are conveyed too late).

4.4.3 Concrete Proposals concerning INTI Regional Extension Activities

(1) System Building for Diffusion Activities in New Areas

Diffusion activities for supporting enterprises in new areas are built around the four pillars of, 1) Advance planning, 2) Diffusion and public information activities, 3) Initial diagnosis and demonstration (trial introduction of management technologies), and 4) Establishment of new NODO (full-scale introduction of management technologies). The implementation procedure of activities and division of roles between INTI headquarters and NODO are clarified below.

	Activities	INTI Headquarters	INTI Regional Centers (Existing NODO)	Remarks
Preliminry Planning	Decision of the regional extension policy	• Support needs survey • Enquiries to existing NODO	• Agreement for coopera ion and support by the NODO manager in charge of follow-up	
	⇩			
	Selection and decision of new target areas	• Collaboration with local governments, industrial associations and other local agencies		
	⇩			
	Creation of detailed diffusion support plans Detailed agreement	• Creation of detailed diffusion support plans (Roadmap preparation)	• Participation in detailed diffusion support planning • Decision of follow-up personnel (M/M counting, etc.)	
	⇩			
	Budget measures	• Securing of budget of the regional extension plan (Budget measures for cooperating NODO)		Including opportunity losses of the supporting NODO
	⇩			
	Securing of human resources for the new NODO	• Development and securing of support personnel (provision of training opportunities)		
Diffusion and Public Information	Collaboration with industrial associations or local authorities (Attraction of people to the seminar)	• Dispatch of diffusion and public information officers	• Dispatch of follow-up AMPs	
	⇩			
	Staging of diffusion and public informa ion seminar	• Dispatch of diffusion and public information officers (Seminar management)	• Dispatch of follow-up AMPs (In charge of seminar lecturers)	Utilize past successful cases, etc.
Initial Diagnosis and Trial Introduction	Initial Diagnosis Trial introduction of management technologies ・ Detailed diagnosis ・ Selec ion of improvement themes and techniques ・ Compilation of improvement schedule ・ Improvement proposals and guidance ・ Completion evaluation	• Budget execu ion for NODO (Internal transaction between headquarters and NODO) • Operation control of initial diagnosis activities (Schedule control, etc.)	• Start of NODO support activities (From initial diagnosis to results reporting) • Enterprise diagnosis and improvement proposal activities by AMPs	Assume 3 months
	⇩			
	Staging of the outputs presentation seminar	• Seminar participant attraction and planning • Operation control by headquarters officers	• Presentation guidance by AMPs • Seminar lecturers	For PR of INTI
New NODO Establishment	Establishment of new NODO (Extension Unit)	• Assignment of support personnel • Operation support	Support the new NODO where necessary	
	⇩			
	Start of enterprise support activities	• Operation support by headquarters for the first year	Support the new NODO where necessary	Start of enterprise support by the new NODO

It will take around two years (18~24 months) from the advance planning to the establishment of new NODO. During this time, the systematic training of AMPs essential for the new NODO will also be implemented.

1) Advance Planning

- Decision of the regional extension policy:

  When disseminating enterprise support services in new areas, two cases can be considered: 1) Cases where requests are made by local agencies, and 2) Cases where INTI headquarters strategically selects areas.

  In either case, INTI headquarters dispatches diffusion and public information officers to make contact with local administrative agencies (provincial government or municipal authorities), industrial groups, local universities and NGOs and to grasp and confirm the support needs and management technology needs of local micro, small and medium enterprises. INTI headquarters compiles its policy of regional extension based on the findings of the needs survey. At this time, it shall conduct ample preliminary coordination and reach agreement on cooperation and support with the NOSO manager or NODO center manager requesting the support.

- Selection and decision of new target areas:

  Decide the area in which to extend enterprise support services via management technologies, establish close communications with the collaborating agencies in that area, and share the regional extension plan compiled in INTI.

- Creation of detailed diffusion support plans:

  Once the target area has been decided, INTI headquarters prepares the Detailed Diffusion Support Plan for that area. This plan shall state the support process, the timing and length of trial support activities, the target sector(s) and geographical limitations (if there are any), and it shall also include a detailed roadmap. Moreover, the existing NODO which will cooperate in the future (NOD which consented to the regional extension policy), will participate in formulation of the detailed plan and coordinate the schedule and M/M of the AMPs conducting follow-up.

- Budget measures:

  INTI headquarters will take the necessary budget measures based on the detailed diffusion support plan.

Moreover, when utilizing human resources of the existing NODO, INTI headquarters will bear all necessary expenses (budget measures) including daily allowances, accommodation costs, travel allowances and opportunity losses of the AMPs.

2) Diffusion and Public Information Activities

- Staging or joint staging of diffusion and public information seminars with related agencies:

  Out of the enterprises recommended by collaborating industrial associations or local authorities, recruit enterprises to conduct the trial introduction of management technologies and stage seminars as part of the diffusion and public information activities.

  With cooperation from local related agencies, decide on seminar implementation and select the date, venue, cooperating agency, contents and expected participants, etc.

- Dispatched lecturers or officers:

  Diffusion and public information officers from INTI headquarters, officials of regional centers (NODO) expected to offer follow-up (center managers, NODO coordinators or AMPs), and sometimes owners of enterprises possessing successful experiences

- Staging of diffusion and public information seminar:

  (Contents)

  - Outline of INTI, in particular the management technology diffusion department and its activities
  - Concrete examples of enterprise support through introduction of management technologies
  - Questions and answers

  (Targets)

  Local administrative agencies (provincial government or municipal authorities), representative industrial groups in the area (regional branches of UIA and ADIMRA, etc.), micro, small and medium enterprises, BDS providers, universities and technical colleges, NGOs, international aid agencies, etc.

3) Initial Diagnosis and Demonstration (Trial Introduction of Management Technologies)

- Out of the enterprises that showed an interest in the public information seminar, select enterprises to implement initial diagnosis.
- Implement initial diagnosis and detailed diagnosis at the selected enterprises, provisionally set the improvement themes, and select the enterprises (5~8) for implementation of the demonstration (trial introduction of management technologies).
- Based on agreement between the enterprises and INTI, conduct the trial introduction of management technologies according to the improvement themes. Conduct trial introduction over 3~6 months according to the following procedure:
  - Detailed diagnosis (reconfirmation and reexamination of draft improvement themes set in the initial diagnosis)
  - Organizing of problems held by enterprises (prioritizing)
  - Selection of improvement themes and techniques
  - Confirmation (agreement) of the guidance contents (including achievement goals) and compilation of schedule
  - Improvement proposals and guidance
  - Completion evaluation

  Through compiling advice on future measures into the final report for the enterprises, secure future clients for INTI support services.

  * When implementing these initial diagnosis and demonstration activities, INTI headquarters will assume all responsibility for operation, while the existing NODO in question will implement cooperation and support for the technical aspects of activities.

- Evaluation of outputs (Stage an outputs presentation seminar for demonstrating the effectiveness of management technologies to local micro, small and medium enterprises, and thereby raise the interest of enterprises in management technologies→ Prelude to full-scale introduction)

4) Start of Support Activities through Establishment of New NODO (Full-scale introduction of management technologies)

Through the above process, the new NODO (or Extension Unit) will be established, support personnel (AMPs/ATGs) will be assigned, and support activities for local micro, small and medium enterprises via management technologies will be started in earnest.

The supper personnel must either be trained or newly recruited in advance of the new NODO establishment or they must be secured from an existing NODO. If the support personnel have only shallow experience, INTI will need to take steps such as giving them priority for taking part in training. Moreover, for at least one year after the establishment of the new NODO, headquarters should offer full-scale operating support and existing NODO should provide technical support according to the need.

4.5 Recommendations concerning Strengthening of Collaboration with External Agencies

4.5.1 Necessity and Potential for Collaboration

INTI is currently pursuing the policy of vigorously promoting support activities for micro, small and medium enterprises based on use of management technologies. However, its capacity for implementing those activities is limited[72]. For INTI, from the viewpoint of supplementing that capacity, it is desirable to support micro, small and medium enterprises through collaborating with external agencies which possess resources.[73]

The areas in which collaboration is possible cover all four functions of INTI, i.e. ① Needs survey function, ② Technology selection and development function, ③ Human resources development function, and ④ Enterprise support function. However, almost all the SME support agencies (official agencies) other than INTI have no management technology know-how, so INTI is the only official agency capable of implementing enterprise support via this field.

Also, the level of management technology services provided by BDS providers (private sector consultants) is low; indeed, Buenos Aires provincial government and PP enterprises have especially expressed dissatisfaction over the quality of services. Buenos Aires provincial government officers in charge of SME support within support schemes have expressed a desire to register private sector consultants, and to establish the ATG certification system in INTI so that it can confer ATG qualifications on such consultants. If the number of existing AMPS can be bolstered with more such qualified ATGs, possibilities for conducting collaboration with BDS providers will expand within future SME support activities based on INTI.

Recommendations concerning each function are described in sections 4.1 through 4.4, and collaboration is described within those. (See Table 4-19).

72) In this report, capacity refers to human, financial, organizational, informational and technical capacity.
73) In the report, ‘collaboration’ and ‘collaboration and cooperation’ refer to supporting local SMEs based on mutual agreement and shall include agreements and consignment contracts, etc.

This section focuses on collaboration regarding Function ④, in particular collaboration with agencies which possess financial resources, with respect to micro, small and medium enterprises.

Table 4-19 The Inherent Functions of INTI and Associated Recommendations

Contents of Collaboration	Associated Recommendations (Chapter and Section)
i) Survey of micro, small and medium enterprises and needs survey (complementing Function ①)	4.1
ii) Selection and development of new technologies (complementing Function ②)	
iii) Human resources development (complementing Function ③)	4.2 / 4.3
iv) Expansion of enterprise support activities (complementing Function ④)	4.4
	4.5

4.5.2 Current Conditions of Collaboration

(1) Actual State of SME Supporting Agencies with Financial Resources

Even if micro, small and medium enterprises understand the necessity for technical guidance, they are rarely able to afford the technology fees. Agencies which support micro, small and medium enterprises and have financial resources are local governments (provincial governments and city offices), international agencies such as the Inter-American Development Bank (IDB), foundations and NGOs, etc. When micro, small and medium enterprises receive technical guidance from third parties, these agencies subsidize the costs partially or in full. (Box-3 shows a number of cases).

[Box-3] Example of Support Programs for Micro, Small and Medium Enterprises (including those already implemented and those in planning)

In terms of SME support programs on the national level, SEPyME has a network of 75 regional Agencia through which it provides financial services (paying of interest) to SMEs[74]. Meanwhile, the Ministry of Science and Technology (Ministerio de Ciencia, Technología e Innovación Productiva) plans to implement cluster support with assistance from the Inter-American Development Bank (IDB). (When a coordinator is assigned for 1 year, a consulting fee of 150,000 pesos is paid to the cluster group).

As for SME support programs on the local level, Buenos Aires (BA) Province has an SME support scheme in which it utilizes registered consultants under its own budget. INTI BA has also been involved with this. Also, INTI Rafaela has an industrial promotion program (including metals and dairy enterprise promotion, energy saving, environmental preservation and waste treatment) covering a wide area of Santa Fé which it advances under an aid program of the IDB, while Entre Ríos Province has a technology guidance program targeting SMEs (when individual SMEs receive assistance, INTI conducts guidance on technology and procedural aspects) under discussion with the IDB. Furthermore, INTI Concepción del Uruguay is conducting work consigned by CAFESG (a local promotion foundation) (technology guidance for 33 SMEs in eastern Entre Ríos Province).

74) This is financial support, however, the effect can be enhanced through also providing technology guidance, and INTI should discuss this with SEPyME in future.

Only a limited number of provincial agencies carry out SME promotion using their own funds such as the case of CAFESG (Comisión Administradora para el Fond Especial de SALTO GRANDE) in Box-3. Most cases involve the provision of funds from the central government (SEPyME and Ministry of Science and Technology) or international aid agencies (Argentina is the largest recipient of SME aid from the IDB) via local governments. In either case, there is potential for INTI to expand its SME support activities in the future through collaborating with such agencies which possess financial resources. However, the actual state of potential collaboration agencies is not fully grasped[75].

[Box-4] Example of SME Support under CAFESG

INTI Concepción del Uruguay is currently providing guidance using management technology to 33 SMEs in the east of the province under consignment from the NGO CAFESG in Entre Ríos Province. This is an example of collaboration which INTI should vigorously pursue from now on. The contract period or this service is one year from July this year, and the project contents are as follows:

① Selection of target enterprises for support: Initial diagnosis was carried out at 40 candidate enterprises, and 33 of these were selected as support targets based on predetermined selection criteria.
② Implementation of training: Targeting these enterprises, one-day seminars were implemented at three locations (August-September) based on the themes of 5S, 7 wastes, and cost control, chosen as techniques with general applicability to enterprises.
③ Implementation of detailed diagnosis of target enterprises
④ Selection of improvement themes and selection of management technologies and techniques
⑤ Setting of one-year targets and preparation of execution plans
⑥ Implementation of guidance: Themes or applied technologies may be revised according to the state of progress or changes in conditions
⑦ Training based on OJT: During the guidance period, train two staff members of CAFESG as future SME support personnel.
⑧ Evaluation of outputs and staging of a presentation seminar: At the end, evaluate the outputs and stage a seminar to present case studies.

A noteworthy point is that INTI Concepción del Uruguay is applying almost the same method as the JICA support for INTI here in implementing the work consigned by CAFESG.

(2) Expansion of Work based on Collaboration with External Agencies

Through collaborating with such agencies, INTI can expand its operations (customer development) and eventually boost its revenue. However, looking at past examples of collaboration, apart from a limited number of cases, most have come about unexpectedly rather than being the result of positive approach by the INTI side. So far, INTI has not shown strong inclination to expand operations through collaboration and it hasn't made enough of a positive effort.

75) This may be gauged when visits are made with INTI staff to the agencies concerned with SME support.

(3) Expansion of Operations through Project Proposal

Paragraph (2) above refers to expansion of operations through participation in existing schemes and programs, however, there are further possibilities for INTI to expand work through independently compiling projects and selling those to agencies which have financial resources. For example, if the INTI management technology departments (regional centers = NODO) collaborate with the INTI technology centers, it will be possible to propose technology services which combine both software and hardware to industries and enterprises. This is the strength of INTI, however, INTI makes hardly any effort to utilize this and expand operations through independently planning and proposing collaboration projects.

4.5.3 Countermeasures

INTI headquarters and regional centers (NODO) should combine and build a system for collaborating with external agencies in order to expand support activities to local micro, small and medium enterprises while paying attention to the following two points. This system should incorporate the following two concepts:

- INTI (both headquarters and NODO) should actively participate in SME schemes implemented by overseas agencies and groups which possess financial resources, with a view to expanding operations (developing new customers) and cooperating in the effective implementation of these support schemes.
- INTI (both headquarters and NODO) should formulate its own collaboration projects and propose them to external agencies and groups which possess financial resources, in such a way that INTI cooperates and both sides obtain merits.

4.5.4 Concrete Recommendations for Collaboration

Collaboration with external agencies should be advanced under the close communications setup of INTI headquarters and INTI regional centers. The roles that should be fulfilled by INTI headquarters and the regional centers are as follows.

(1) Activities on the INTI headquarters level

① Survey the actual state of central level agencies (including international aid agencies) which possess financial resources and support regional SMEs. In particular, confirm the mechanism and procedure by which funds flow to SMEs.

② Confirm or examine the possibilities and approaches to INTI collaboration and the relationship between INTI headquarters and INTI regional centers.

Concerning ① and ② above, compile a database and carry out data reconfirmation and renewal at least once per year.

③ INTI formulates its own collaboration projects and proposes them to external agencies in such a way that INTI cooperates and both sides obtain merits. (Box-5 describes a possible project based on collaboration).

④ Concerning schemes and projects that have so far been implemented by other agencies, or projects have been independently proposed by INTI, discuss and reach an agreement on contents of collaboration between INTI (headquarters and regional centers) and other agencies.

⑤ INTI headquarters communicates the agreed contents to the INTI regional centers concerned, entrusts implementation to the regional centers, and provides rearguard support to the regional centers according to necessity.

⑥ INTI headquarters analyzes and evaluates the contents of collaboration implementation reports received from the INTI regional centers at the end of each business year, and it feeds back its findings into the next year's collaboration activities.

[Box-5] Ideas for Collaboration Projects

As collaboration projects proposed by INTI, the following kinds of diagnosis and support are possible. Possible counterpart agencies are, on the central level, government agencies, international aid agencies, industrial associations which have regional branches, and on the regional level, provincial governments and city offices, branch agencies and groups, regional industrial associations and NGOs, etc.[76)]

① Diagnosis of specific industries: Make proposals targeting key industries in specific areas, for example, the abovementioned diagnosis and support in the timber processing industry in Mar del Plata consigned by BA Province to Buenos Aires NODO, and the joint guidance on production improvement and similar project formulation in the agricultural machine sector in Santa Fé by INTI Rosario and INTI Rafaela. (Make such proposals to provincial governments and industrial associations).

② Cluster diagnosis: The Ministry of Science and Technology (Ministerio de Ciencia, Technología e Innovación Productiva) implements cluster support with assistance from the Inter-American Development Bank (IDB). In this scheme, when a coordinator is assigned for 1 year, a consulting fee of 150,000 pesos is paid to the cluster group. INTI could serve as the coordinator through combining its hard technologies with its soft. (Make such proposals to the Ministry of Science and Technology FONTAR secretariat, industrial associations and specific industrial clusters).

③ Industrial estate diagnosis: Similar to the cluster diagnosis, INTI combines hard and soft technologies to provide diagnosis and support services to specific industrial estates. (Make such proposals to industrial associations and specific industrial estates).

④ Entrepreneur support diagnosis: Support program in which the IDB covers 60% of costs for special technology holders implementing (or planning to implement) support for strengthening competitiveness of SMEs. Propose support from the aspect of management technology. (Make such proposals to the responsible department in SEPyME).

⑤ Productivity improvement/Quality improvement diagnosis: Through implementing enterprise diagnosis for industries struggling to improve productivity or quality levels, it is possible to further develop into guidance. (Make such proposals to UIA, ADIMRA, timber industry, food industry or export enterprise groups, etc.).

76) INTI headquarters, working through its technology centers and its management technology departments, should prepare PR pamphlets and have AMPs distribute these in an effort to find more customers. Moroever, it should conduct similar PR activities via its homepage.

⑥ Support of financial support schemes from the management technology aspect: SEPyME has a network of 75 regional Agencia through which it provides financial services (paying of interest) to SMEs. If experts are recruited to conduct procedures, it also bears those costs. When providing financial support, it should be possible to produce a greater effect through combining with reliable enterprise diagnosis. (Make such proposals to the SEPyME department in charge of Agencia).

⑦ Support of FONTAR programs from the management technology aspect: FONTAR (Argentina National Technology Fund), which is under the Ministry of Science and Technology and receives support from the IDB[77], supports technology development projects and new product developments by providing 50% of investment costs. It provides support for the purchase of modern equipment, new technologies and new types of machinery for SMEs as well as the establishment of product development departments inside SMEs. Presently, production management technologies are not targeted for support, however, if they were made a target, this could enhance the effectiveness of FONTAR support. (Make such proposals to the Ministry of Science and Technology FONTAR secretariat).

(2) Activities on the Level of Regional Centers

i) Collaboration with regional support agencies which have central headquarters

① As a rule INTI headquarters investigates agencies which have headquarters on the central level, however, INTI regional centers can also survey the activities (concerning support for SMEs, etc.) of the branches of such agencies while maintaining close communications with INTI headquarters. (At the same time build a database. Do this according to the established methods of INTI headquarters).

② INTI regional centers re-ascertain their links with the branch offices of such agencies in line with the agreements made on the level of INTI headquarters.

③ INTI regional centers hold detailed discussions with the said agencies on the contents of collaboration (including proposed projects) and reach final agreements on those contents. (Except in cases where INTI headquarters reaches agreements on detailed collaboration with regional centers).

④ INTI regional centers prepare collaboration implementation plans based on the agreements with the said agencies.

⑤ INTI regional centers implement SME support activities (diagnosis and support) according to the collaboration implementation plans.

⑥ INTI regional centers compile the results of implementation into reports for submission to the counterpart agencies on completion of projects.

⑦ INTI regional centers report the results of collaboration to INTI headquarters at the end of each business year.

77) Funding will comprise US$17,000 (US$12,000 provided by the IDB and US$5,000 by the government) over five years from 2006 to 2011.

ii) Collaboration with Regional Unique Agencies

① INTI regional centers survey the activities of regional agencies and groups which carry out support for SMEs based on their own budgets. (The INTI regional centers can also build and annual update databases in line with the database construction guidelines of headquarters. However, whenever updates or revisions arise, communicate them to headquarters to ensure that both sides share the same information on the same agencies).

② INTI regional centers confirm or examine the possibilities for and approaches to collaboration with each agency.

Concerning ① and ②, carry out reconfirmation surveys or examination at least once per year.

③ INTI regional centers compile unique projects based on the assumption of consignment to INTI, and propose these to potential collaborating agencies. (See Box-5 for some ideas for project proposals).

④ INTI regional centers hold discussions with the said agencies on the contents of collaboration (including proposed projects) and reach agreements on those contents.

⑤ INTI regional centers implement SME support activities (diagnosis and support) according to the collaboration implementation plans.

⑥ INTI regional centers compile the results of implementation into reports for submission to the counterpart agencies on completion of projects.

⑦ INTI regional centers report the results of collaboration (including collaboration cases by regional centers not working through INTI headquarters) to INTI headquarters at the end of each business year.

⑧ INTI regional centers conduct their own evaluations on the implementation results and reflect the findings in future collaboration projects.

4.6 Necessary Budget and Roadmap for Actualization of the Action Plan

4.6.1 Necessary Budget for Actualization of Action Plans

Out of the five recommendations, the necessary budget is proposed concerning 1) Theoretical training and practical training, 2) New technology development and 3) New NODO establishment. The budgets for the qualification certification system and collaboration with external agencies are not shown here because they can be accommodated in the ordinay INTI budget.

(1) Budget for Theoretical Training and Practical Training

Table 4-20 Budget for Theoretical Training and Practical Training

(Unit: ARS$)

Training	Subject	Cost Item	Unit ($)	Quantity	Amount ($)	Remarks
Theoretical training (assuming 20 trainees per session)	Trainer costs	Opportunity loss	528 /day	11 days	5,808	Assuming 11 days for internal lecturers
		Daily allowance	250 /day	2	500	Assuming 2 members for 1 day each
		Travel expenses	1,000 /trip	2 trips	2,000	Assuming 2 members and 1 trip each
		Fee	1,000 /day	4 days	4,000	Module 2 uses 4 external lecturers
		(Subtotal)			12,308	
	Trainee costs	Daily allowance	250 /day	270 days	67,500	Out of the 20 participants, 18 are expected from other than the NODO implementing the training.
		Travel expenses	1,000 /trip	18 trips	18,000	Out of the 20 participants, it is assumed 6 will travel long distances. 3 times for Modules 1-3
		Travel expenses	200 /trip	36 trips	7,200	Out of the 20 participants, it is assumed 12 will travel by bus from within a 500km radius. 3 times for Modules 1-3
		(Subtotal)			92,700	
	Miscellaneous costs				10,501	10% of the total trainer costs and trainee costs is assumed.
	Total				115,509	$109,701 excluding internal transaction costs
	Training cost per trainee				5,775	Assuming participation from Module 1 to 3. $10,425 excluding internal transaction costs
Practical training (assuming 5 trainees per session)	Trainer costs	Opportunity loss	528 /day	70 days	36,960	It is assumed that all trainers will come from the NODO conducting the training.
	Trainee costs	Daily allowance	250 /day	440 days	110,000	Out of the5 trainees, 4 are expected from other than the NODO implementing the training.
		Travel expenses	1,000 /trip	6 trips	6,000	Out of the 5 trainees, it is assumed 2 will travel long distances. 4 trips are assumed
		Travel expenses	200 /trip	12 trips	2,400	Out of the 5trainees, it is assumed 3 will travel by bus from within a 500km radius. 4 trips are assumed.
		(Subtotal)			118,400	
	Vehicle costs	Rental fee	250 /day	35 days	8,750	Out of 70 days, it is assumed that vehicles will be leased from outside operators for half a day on 35 days.
		Fuel costs	50 /day	35 days	1,750	Out of 70 days, it is assumed that NODO vehicles will be leased for half a day on 35 days
		(Subtotal)			10,500	
	Miscellaneous costs				16,586	10% of the total trainer costs and trainee costs is assumed.
	Total				182,446	$145,486 excluding internal transaction costs
	Training cost per trainee				36,489	$29,097 excluding internal transaction costs

In addition, a single cost of $20,000 will arise for loaning 5 note PCs to the trainees during the training.

(2) Budget for New Technology Development

Table 4-21 Annual Budget for New Technology Development

(Unit: ARS$)

Item	Cost Item	Unit Rate	Quantity	Cost ($)	Remarks
Committee	Committee costs	528/day	1 day, 2 members, 2 times	2,112	Hold 2 times per year. Composed of 7~8 members including 2 members from the regions.
	Daily allowance	250/day	1 day, 2 members, 2 times	1,000	
	Travel expenses	1,000/trip	1 member, 2 times	2,000	
	Miscellaneous costs (10%)			511	
	Subtotal			5,623	
W/G	Fees	2,000/day	1 member x 2 days (2 times)	4,000	Hold 2 times per year. 3 W/G members: 1 external expert, 2 AMPs (including 1 from the regions)
	Opportunity costs	528/day	2 members x 2 days (2 times)	2,112	
	Daily allowance	250/day	2 members x 2 days (2 times)	1,000	
	Travel expenses	200/trip	1 member x 2 times	400	
	Miscellaneous costs (10%)			711	
	Subtotal			8,223	
New technology learning	Fees	2,000/day	1 day (1 time)	2,000	Guidance (1 day training: theory and site observation) by an external expert (W/G member), participation by 10 AMPs (including 2 W/G members and 5 members from the regions)
	Opportunity costs	528/day	10 members x 1 day	5,280	
	Daily allowance	250/day	10 members x 1 day	2,500	
	Travel expenses	200/trip	5 members x 1 time	1,000	
	Miscellaneous costs (10%)			1,070	
	Subtotal			11,858	
Trial introduction	Fees	2,000/day	1 member x 1 day x 2 times	4,000	Operated by 3 W/G members (1 external expert, 2 AMPs, including 1 from the regions). Introduced destinations: 5 enterprises (BA) Introduction period: 3 months (12 weeks) 1 enterprise 1 visit per 2 weeks, Total 30 days
	Opportunity costs	528/day	2 members x 30 days	31,680	
	Daily allowance	250/day	2 members x 30 days	15,000	
	Travel expenses	200/trip	1 member x 6 times	1,200	
	Miscellaneous costs (10%)			519	
	Subtotal			57,068	
	Total			77,711	

(3) Budget for New NODO Establishment

Table 4-22 Budget for Establishing 1 NODO in 2 Years (Plan)

(Unit: ARS$)

Item		Cost Item	Unit Rate	Quantity	Cost ($)	Remarks
Advance planning		Daily allowance	250/day	6 days	1,500	1 headquarters officer, 2 site visits (3 days per visit)
		Travel expenses	1000/trip	2 times	2,000	
		Miscellaneous costs (10%)			350	
		Subtotal			3,850	
Diffusion and PR	Headquarters staff	Daily allowance	250/day	4 days	1,000	1 headquarters officer, 2 site visits (2days per visit) Accompany 1 AMP from a neighboring NODO
		Travel expenses	1000/trip	2 times	2,000	
		Miscellaneous costs (10%)			300	
		Subtotal			3,300	
	Neighboring AMPs	Opportunity costs	528/day	4 days	2,112	
		Daily allowance	250/day	4 days	1,000	
		Travel expenses	200/trip	2 times	400	
		Miscellaneous costs (10%)			351	
		Subtotal			3,863	
Initial diagnosis and trial introduction (Demonstration Project)		Opportunity costs	528/day	30 days	15,840	DP 6 months (24 weeks in total) DP targets: 5 enterprises 1 AMP from a neighboring NODO, 1 visit per month, 5 days per visit (6 visits per enterprise) OJT for new NODO staff
		Daily allowance	250/day	30 days	7,500	
		Travel expenses	200/trip	6 trips	1,200	
		Miscellaneous costs (10%)			4,908	
		Subtotal			29,448	
		Total			40,461	

4.6.2 Roadmap

The implementation period for the proposed three projects (out of five recommendations) was set at three years starting from July 2009 as mentioned earlier.

The recommended items and their contents including activities are described in the following pages.

Moreover, Figure 4-6 shows an image of the SMEs support system via business and production management centering on INTI.

Main Recommendations of Master Plan	Action Plan Recommendations	Activities	2009		2010				2011				2012			
			July	October	January	April	July	October	January	April	July	October	January	April	July	October
1.Project for INTI Human Resource Development Plan and ATG Certification System	1.1. INTI training system	Theoretical training				BA. BA.	Rosario			BA. BA.	Rosario					
		Module 1														
		Module 2														
		Module 3														
		Practical training				Buenos Aires	Rosario			Buenos Aires	B.A & Rosario			Buenos Aires	B.A. & Rosario	
		Plant diagnosis														
		Applied theoretical training														
		Cause analysis / Improvement plan compilation														
		Improvement activities support														
		Closing														
		(Regional centers)														
	1.2. ATG qualification system	Establishment of the Qualification Certification Committee	▼													
		Examination of qualification system														
		Construction of the certification system		▲												
		Selection of qualification review members			△											
		Implementation and operation														
		Compilation of qualification examination														
		Examination implementation					▲									
		Conferring of qualifications to successful candidates					▲									
2. Diffusion and Development Projec	2.1 Expansion of enterprise support activities through establishment of new NODO (Regional extension plan)	Advance planning														
		Decision of regional extension policy														
		Selection of new target areas				△										
		Compilation of detailed diffusion support plans														
		Detailed agreement					△				▲				△	
		Budget measures						△				▲				△
		Securing of human resources for new NODO														
		Diffusion and public information														
		Preparation of the diffusion and public information seminar														
		Implementation of the diffusion and public information seminar														
		Initial diagnosis and trial introduction														
		Initial diagnosis														
		Trial introduction														
		Completion evaluation														
		Staging of the outputs presentation seminar														
		New NODO establishment														
		Follow-up after establishment														
	2.2 Formation of support schemes through strengthening of collaboration with external agencies	Strengthening of collaboration with external agencies														
		Survey of collaboration possibilities														
		Database creation														
		Unearthing of new projects														
		Preparation for project proposals														
		Project formation														
3. Development Project of "New Mana	3.1 Selectionand development of new management technologies which don't exist in INTI	Enterprise needs survey														
		Establishment of Management Technology Development Committee				▲										
		Selection of new management technologies					▲									
		Learning of new management technologies														
		Establishment of working groups (WG)				▲										
		Trial introduction of new management technologies														
		Evaluation and analysis														
		Manual preparation														

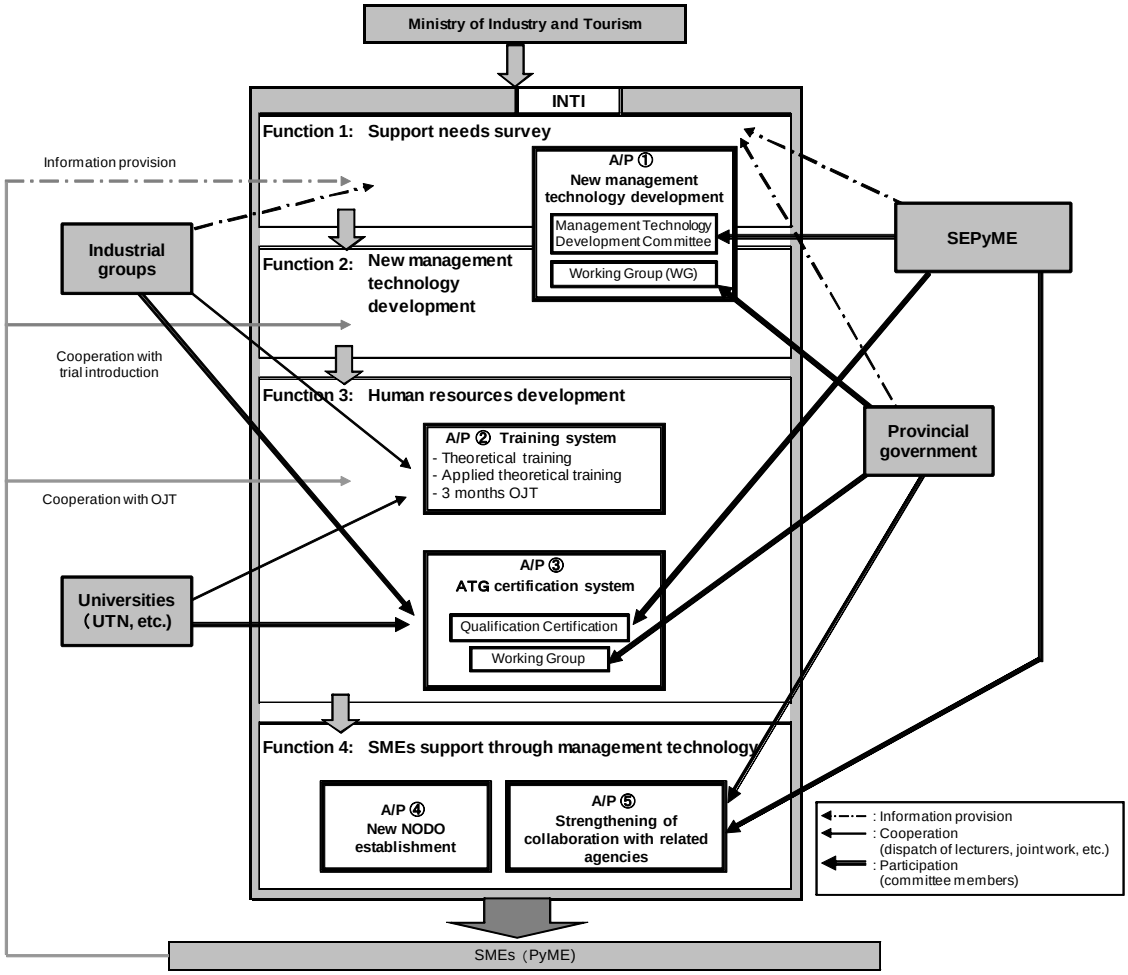


Figure 4-6 Image of the SMEs Support System via Business and Production Management Centering on INTI

4.7 Future Issues

The areas in which INTI will struggle to independently make progress regarding construction of the management technology diffusion (support for problem solving in micro, small and medium enterprises) setup are described below.

Issues are classified into short-term items and long-term items. Short-term issues refer to themes that should be raised immediately during 2010, while long-term issues refer to “themes which will take time to resolve” and which denote the Study Team proposals that need to be implemented by INTI on a phased basis. Since it will be difficult for INTI to respond to these issues unaided du to its lack of experience, it will need to seek cooperation and support from collaborating resources in Argentina and international agencies (donors), etc.

4.7.1 Short-Term Follow-up Issues

(1) Support until operation of the ATG qualification system gets on track

Through certifying that support personnel have attained enterprise problem solving capacity of a certain level, this qualification system aims to raise the level of support personnel and the quality of support services. This corresponds to the SE diagnostician system in Japan. INTI has no experience of establishing and operating such a qualification system concerning management technology, and since it is not scheduled to actually start until 2010, it remains a theme with strong support demands.

(2) Support until operation of the training system gets on track

As was explained in Section4.2, when replacing the conventional piecemeal and unstructured training plans with a structured training system which gives priority to planned and practical training, it will be necessary to provide support from the operating side.

4.7.2 Long-term Issues

(1) Support for implementation of trainers' training

As was pointed out in Section 4.2, practical training is indispensible for developing ATGs. Since practical training is compiled around OJT, unlike seminars, it is not possible for one trainer to teach large numbers of trainees; rather it is necessary to adopt coaching methods. In order to quickly nurture support personnel with strong practical skills, it is essential to develop as many human resources as possible who can become trainers in practical training. For this purpose, apart from the training described in Section 4.2, it is necessary to implement trainers' training.

(2) Standardization of training systems for support personnel

In order to establish the training systems described in Section 4.2 and the ATG qualification system described in 4.3, it is necessary to prepare standard texts and trainer's manuals. Moreover, considering the large size of Argentina, it will also be necessary to introduce e-learning. It is essential to create teaching materials for these training and ATG qualification systems, and it will be necessary to support this.

(3) Support for introduction of new management technologies

Concerning management technologies which are new to INTI support personnel and NODO, and management technologies with which personnel have little knowledge or experience, it is necessary to transfer technology to the INTI support personnel. Such management technologies include the following:

- IT production control and sales control applied technologies (MRP, MRP II, ERP, etc.)
- Resource-saving production control
- TPM
- Cell production systems
- Production plans and production control
- Management technologies concerned with marketing (marketing processes, marketing environment, consumer goods market, production goods market, service marketing, market survey, market segmentation, market targeting, market positioning, product life cycle, product development, distribution channel policy, supply chain, logistics, sales promotion, price policy, retail technology, etc.)
- Personnel affairs / Human resources development (recruitment, assignment, personnel valuation, wages, promotion, capacity development, welfare, labor relations, etc.)
- Financial affairs / Cost control (business analysis, capital control, profit control, cost control, fund control, control accounting, etc.)
- Business strategy
- Business general diagnosis and support

Moreover, support for introducing these new management technologies can be partially complemented through introducing and utilizing senior volunteers (SV).

APPENDICES

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Annex-1 : Scope of Works (S/W) (2008/9/16)

SCOPE OF WORK
FOR
THE STUDY
ON
THE DIFFUSION PLAN FOR THE BUSINESS AND PRODUCTION MANAGEMENT TECHNOLOGY FOR SMALL AND MEDIUM ENTERPRISES
IN
THE ARGENTINE REPUBLIC
AGREED UPON BETWEEN
NATIONAL INSTITUTE OF INDUSTRIAL TECHNOLOGY
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

Buenos Aires, September 16th, 2008

Mr. Toshiaki Furuya
Resident Representant
JICA Argentine Office
Japan International Cooperation Agency
(JICA)

Mr. Enrique Mario Martínez
President
National Institute of Industrial Technology
(INTI)
Argentine Republic

I. INTRODUCTION

In response to the request of the Government of the Argentine Republic (hereinafter referred to as "Argentina"), the Government of Japan decided to conduct the Study on the Diffusion Plan for the Business and Production Management Technology for Small and Medium Enterprises in the Argentine Republic (former request title: the Study for the Improvement of the Soft Technology Diffusion in the Argentine Republic), hereinafter referred to as "the Study", in accordance with the relevant laws and regulations in force in Japan.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programs of the Government of Japan, will undertake the Study in close cooperation with authorities concerned of the Government of Argentina.

The present document sets forth the Scope of Work with regard to the Study. In case of any differences in interpretation between English and Spanish version, the English one shall prevail.

II. OBJECTIVE OF THE STUDY

The objective of the Study is to formulate and recommend the strategic diffusion plan for the business and production management technology in order to improve the competitiveness of Small and Medium Enterprises (hereinafter referred to as "SME") in Argentina.

III. STUDY AREA

The Study covers all the provinces of Argentina and the pilot project shall be carried out in the Provinces of Neuquen/Rio Negro, Entre Rios and Buenos Aires.

IV. SCOPE OF THE STUDY

In order to achieve the objective mentioned above, the Scope of Work for the Study shall cover the following items:

1. Current status of SME and diffusion of the business and production management technology in Argentina
   - (1) Current status of SME and Government policy for SME development in Argentina
     - (a) Review of the results of the Study on Revitalization of SME in Argentina
     - (b) Current situation and problems (bottleneck) of SME in the context of competitiveness and productivity in Argentina
     - (c) Government policy and administrative structure for SME development in Argentina
     - (d) Needs for SME development in Argentina
   - (2) Current status of the diffusion and development of the business and production management technology for SME development in Argentina
     - (a) Review of the implementation of the SME support programs in the business and production management technology area in Argentina
     - (b) System and organizations of the diffusion and development of the business and production management technology area in Argentina

(c) Current situation of organizations and private companies (public/private organizations and companies including BDS providers) engaged in the diffusion and development of the business and production management technology for SME in Argentina

(3) Current status and role of the National Institute of Industrial Technology (hereinafter referred to as "INTI") for the diffusion and development of the business and production management technology in Argentina
(a) Role of INTI based upon the characteristic of industrial structure of provinces in Argentina
(b) Position and role of INTI for the diffusion and development of the business and production management technology
(c) Organizational and operational system on INTI for the diffusion and development of the business and production management technology (information sharing, personnel interchange, collaborative interaction, etc.)
(d) Current problems (bottleneck) of INTI for diffusing the business and production management technology

2. Development of the comprehensive plan for the effective diffusion of the business and production management technology
(1) Elaboration on the proposal of the organization, system and implementation plan
(a) Formulation of evaluation criteria and system for Productivity Improvement Advisor (hereinafter referred to as "AMP")
(b) Formulation of systematic training for AMP
(c) Consideration on the organization, system and functions of INTI Head Office and INTI local centers for the diffusion of the business and production management technology
(d) Development of short- and medium term plan on organizational and human resource development for the diffusion of the business and production management technology
(e) Collection of the cases and formulation of information sharing mechanism of the diffusion of the business and production management technology

(2) Development of implementation plan of the diffusion of the business and production management technology in the provinces in Argentina
(a) Consideration on the necessary criteria of the organization and human resource in the public/private institutions and companies to cooperate with
(b) Development of detailed plan (allocation of the personnel, training, activity and budget) for collaboration of institutions and companies to cooperate with

(3) Development of the utilization plan of human resources
(a) Points of concern when upgrading the evaluation system to the certification system of AMP
(b) Points of other concern for utilization of AMP for SME development

(4) Implementation of the pilot project for the purpose of establishing the diffusion system the business and production management technology for SME development in Argentina

3. Recommendations and proposals of action plan for the formulation of the comprehensive diffusion system of the business and production management technology for SME development in Argentina
(1) Recommendations and proposals on the formulation of a comprehensive diffusion system of the business and production management technology
(2) Development of a detailed action plan based upon the recommendations and proposals as mentioned above

V. SCHEDULE OF THE STUDY

.The Study will be carried out in accordance with the tentative schedule as attached in the Appendix. The schedule is tentative and subject to modification when both parties agree upon any necessity that may arise during the course of the Study.

VI. REPORTS

JICA shall prepare and submit following reports in both English and Spanish to the Government of Argentina.

1. Inception Report:

Twenty (20) copies will be submitted at the commencement of the first work period in Argentina. This report will contain the schedule and methodology of the Study.

2. Progress Report:

Twenty (20) copies will be submitted four (4) months after the commencement of the Study. This report will summarize the findings of the first work period in Argentina.

3. Interim Report:

Twenty (20) copies will be submitted ten (10) months after the commencement of the Study. This report will summarize the findings of the second work period in Argentina.

4. Draft Final Report:

Twenty (20) copies will be submitted at the end of the last work period in Argentina. The Government of Argentina shall submit its comments within one (1) month after the receipt of the Draft Final Report.

5. Final Report:

Twenty (20) copies will be submitted within one (1) month after the receipt of the comments on the Draft Final Report.

VII. UNDERTAKINGS OF THE GOVERNMENT OF ARGENTINA

The Government of Argentina shall accord privileges, exemptions, and other benefits to the JICA Study Team (hereinafter referred to as "the Team"), in accordance with the Agreement on Technical Cooperation between the Government of Japan and the Government of Argentina signed in Tokyo on October 11, 1979.

1. To facilitate the smooth implementation of the Study, the Government of Argentina shall take the following necessary measures;

(1) To permit the members of the Team to enter, leave and sojourn in Argentina for the duration of their assignments therein and exempt them from foreign registration requirements and consular fees
(2) To exempt the members of the Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Team for their services in connection with the implementation of the Study
(3) To provide necessary facilities to the Team for the remittance as well as utilization of the funds introduced into Argentina from Japan in connection with the implementation of the study

2. The Government of Argentina shall bear claims, if any arises, against the members of the Team resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the members of the Team.

3. INTI shall act as the counterpart agency to the Team and also as the coordinating body with other relevant organizations for the smooth implementation of the Study, on behalf of the Government of Argentina.

4. INTI shall, at its own expense, provide the Team with the following, in cooperation with other organizations concerned;

(1) Security-related information on as well as measures to ensure the safety of the Team
(2) Information and support in obtaining medical service
(3) Available data and information related to the Study
(4) Counterpart personnel
(5) Suitable office space with necessary office equipment and facilities
(6) Credentials or identification cards

VIII. OTHERS

JICA and INTI shall consult with each other in respect of any matter that may arise from or in connection with the Study.

APPENDIX

TENTATIVE SCHEDULE OF THE STUDY

Order of Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Work in Argentina		■■■■■■■■■■			■■■■■■■■■■■■■■■■■					■■■■■■■■■■■■■■■■■					■■■			
Work in Japan	□□			□□					□□					□□			□□	
Report		◆		◆						◆					◆			◆
		IC/R		PR/R						IT/R					DF/R			F/R

IC/R: Inception Report
PR/R: Progress Report
IT/R: Interim Report
DF/R: Draft Final Report
F/R: Final Report

Annex-2 : Minutes of Meeting (M/M) / (2010/2/19)

MINUTES OF MEETING
FOR
THE STEERING COMMITTEE
FOR
THE STUDY ON THE DIFFUSION PLAN FOR THE BUSINESS AND PRODUCTION MANAGEMENT TECHNOLOGY
FOR
SMALL AND MEDIUM ENTERPRISES
IN
THE ARGENTINE REPUBLIC

AGREED UPON BETWEEN

NATIONAL INSTITUTE OF INDUSTRIAL TECHNOLOGY (INTI)
AND
JICA STUDY TEAM

BUENOS AIRES
19th February 2010

Mr. José Jorge Alvarez
Director of Program of Assistance for Consumers and Manufacturing Industries,
National Institute of Industrial Technology

Mr. Tsuyoshi Kikuchi
Team Leader / SME Promotion
JICA Study Team

I. Introduction

In accordance with the Inception Report on the *Study on the Diffusion Plan for the Business and Production Management Technology for Small and Medium Enterprises in the Argentine Republic* of which contents were accepted by the Steering Committee held at INTI headquarters in Buenos Aires on 15th April 2009, the JICA Study team conducted field surveys with counterparts of INTI for three months (from mid April to mid July) and implemented Pilot Project for two months and a half (from early September to mid November) . Based on the results of these activities and a series of discussions between INTI and the JICA Study team on the recommendations included in Interim Report which was prepared after the Pilot Project, the JICA Study team has prepared the Draft Final Report including *Draft Master Plan and Draft Action Plan for Diffusion of Business and Production Management Technology* for approval of the Steering Committee on 19th February 2010.

1. **Agenda for the Meeting**

(1) Approval of the Draft Final Report

2. Proceedings:

The Steering Committee was called to order at 13:30 and chaired by Mr. José Jorge Alvarez, Director of Assistance for Consumers and Manufacturing Industries of INTI.

All participants of both sides of Argentina and Japan were introduced. (The names of the participants are listed on the last page of this Minutes.)

After the objective of today's Steering Committee was explained to the participants, the following contents of the Draft Final Report were briefed, discussed and approved.

(1) Approval of the Draft Final Report.

The Director briefed the participants on the Draft Final Report which includes the following contents ;

Prologue Outline of the Study

Chapter 1 Current Status of the Diffusion of Business and Production Management Technology in Argentina

Chapter 2 Pilot Project Implementation and Evaluation

Chapter 3 Strategy (Draft) for Supporting Resolution of Problems in Small and Medium Enterprises (Draft Master Plan for the Diffusion of Business and Production Management Technology)

3.1 Lessons and Issues from the Pilot Pr oject (PP) concerning Organizational Reform of INTI

3.2 Strategy of Support for Problem Solving in SMEs
3.3 Organization for Executing the Strategy

Chapter 4 Concrete Recommendations (Draft) for Realizing the Effective Support to solve problems of SMEs.
(Draft Action Plan for Diffusion of Business and Production Management Technology)
4.1 Recommendations concerning Needs Survey and Selection and Development of New Technologies
4.2 Recommendations concerning the INTI Training Systems
4.3 INTI Qualification System (ATG System)
4.4 Expansion of Enterprise Support Activities through Establishment of the New NODO (Provincial Expansion Plan)
4.5 Recommendations concerning Strengthening of Collaboration with External Institutions
4.6 Necessary Budget and Roadmap for Implementing the Action Plan
4.7 Future Issues

The JICA Study team added that the period of Practical Training was amended from 21 weeks to 18 weeks.
After questions and answers were made among the participants, the contents of the Draft Final Report was basically approved.

The JICA Study team asked all the participants who may have comments and/or correction to the Report to contact the JICA Study team by the 24th February, and the participants agreed.

The Steering Committee was closed with INTI Assistance for Consumers and Manufacturing Industries Director's extending his sincere gratitude for all participants' contribution and collaboration.

Prticipants List of the meeting for Steering Committee on 19th of Feburary 2010.

Name	Organization / Department	Signature
ANGELINA SCHMIDT	CENTRO INTI - CONCEPCION DEL URUGUAY	
NADINA CAZAUX	INTI - CONCEPCIÓN del URUGUAY	
GUILLERMO CARRIZO	INTI - MAR DEL PLATA	
LÓPEZ ROBERTO	INTI - EXTENSION y DESARROLLO	
Rodolfo Foglia.	INTI - ACIM	
[illegible] Graciela	PACI - INTI	
Suarez, María Eugenia	PA, LI - INTI	
Rodriguez Marcos	INTI - extension y Desarrollo	
WYNGAARD, GUILLERMO	INTI - MAR DEL PLATA	
Yukiko Mizuno	JICA H.Q.	
Juan Carlos YAMAMOTO	JICA - Argentina	
Mitsunori NISHIMOTO	JICA H.Q.	
Tayeshi Kikuchi	JICA Study Team	
Seiji Sugimoto	JICA Study team	
Shuichi TAKANO	JICA Study Team	
JOSE JORGE ALVAREZ	INTI_ACIM	

Annex-3 : List of Parties Concerned in the Recipient Country

[Authorities of Argentina]

Ministerio de Relaciones Exteriores, Comercio Internacional y Cuito :

Ministro Jorge O. A. Biga (Director de Cooperación Bilateral)
Lic. Andrea De Fornasari (Dirección General de Cooperación Internacional)

Ministerio de Producción

Subsecretaria de la Pequeña y Mediana Empresa y Desarrollo Regional (SEPyME):
Lic. Celia de Luca (Directora Nacional de Programas y Proyectos)
Lic. Andres E. Elgarrista (Jefe de Gabinete)
Lic. Maria Bidart (Dirección Nacional de Programas y Proyectos)
Lic. Liliana Faigenbaum (Directora Nacional de Desarrollo Regional Sectoral y Cmmercio Exterior)

Ministerio de la Producción, Provincia de Buenos Aires

Provincial de Promoción de la Competitividad, la Innovación y los Servivios :
Lic. Juan Aqustin Debandi (Director)
Lic. Gonzalo A. Soler (Coodinador Programa SME)

Instituto Nacional de Tecnología Industrial (INTI) :

Ing. Enrique Mario Martinez (Presidente del INTI)

Unidad de Cooperación Técnica y Económica Subprograma de Vinculaciones Internacionales
Dra. Alejandra Kern (Coordinadora)
Lic. María Eugenia Suárez
Lic. Ana Clara Vallejo

Programa de Asistencia a Consumidores y ala Industria Manufactura
Ing. José Jorge Álvarez (Director de Programa)

Programa de Ensayos y Asistencia Técnica
Ing. Pedro Carlos Brunetto (Gerente)
Ing. Rodolfo H. Foglia (Responsable de Proyecto s de gestion en MipyMES)
Ing. Lanzillota Eduardo

Extensión y Desarrollo: NODO-Buenos Aires
Centro de Investigación y Dasarrollo de Métodos y Técnicas para Enterprises Industriales
Ing. Roberto Edgardo Lopez (Director)

Ing. Marcoz Rodríguez
Sr. Iván Pablo Gorra
Sr. Angel Martin Castellano
Ing. Claudina Angelino
Tec. Santiago Rodoriguez

Organismo de Certificación
Ing. Karina Bisciotti (Directora)

INTI Neuquén (Centro Regional Patagonia)
Ing. Ángel Casabona (Director)
Ing. Carlos Albertto Cittá (Coordinador, Gestión de la Calidad)
Lic. Juan Manuel Rubino (Consultor Técnico, Gestión de la Calidad)
Lic. Luciano Giroliomini (Consultor Técnico, Gestión de la Calidad)

INTI Mar del Plata
Ing.Guillermo Carrizo
Ing. Guillermo Wyngaard
Ing. Emiliano Martínez
Sr. Alberto Lopez

INTI Villa Regina
Tec.Esther Camacho
Ing. Antonio Susca
Lic. Adrián Pessoa

INTI Concepción del Uruguay (Centro Regional Mesopotamia)
Ing. Nadina Cazaux (Directora)
Lic. Angelina María Schmidt (Coordinadora)
Cr. Sebastián Faure (Asistencia Técnica y Desarrollo)
Lic.Claudio Gradizuela
Ing.Romina Torales
Lic. Griselda Burquet
Ing. Edgardo Gamero

INTI Mesopotamia
Ing. Ruben Armando Rousset (Subregional)

INTI Rafaela (Centro Regional de Rafaela)

Ing. Diego Laorden (Director)

Ing. Omar Gasparotti (Proyectos Especiales)

Lic. Natalia Aniboli (Asistencia Enterprises Gestión en Tecnologías Blandas)

Ing. Melia Gaspoz (Asistencia Enterprises Gestión en Tecnologías Blandas)

Ing. Marcos Allassia (Asistencia Enterprises)

Ing. Hideo Fukui (Voluntario Senior de JICA, Gestión Tecnologías Blandas)

INTI Rosario (Centro Regional de Rosario)

Lic. Walter Aquino (Director)

Ing. Raúl José Castaño (Coordinador)

Ing. Rodolfo Santanbrosio (Coordinador de Unidad Técnica)

Ing. Gabriel Gorostarzu (Jefe de Sección, Verificaciones y Certificatciones)

Ing. Hisayuki Aoi (Voluntario Senior de JICA)

Asociación de Industriales Metalúgicos de la Republica Argentina

Lic. Juan Carfagna (Presidente Comisión de Tecnología y Formación)

Ing. Saturnino A. Castaño (Director)

Ing. Julio Bermant (Director, Departmento de Tecnologia y fromación)

Unión Industrial Argentina (UIA)

Ing. Fernando Sánchez Checa (Jefe Departamentp PYMI)

Agencia de Ciencia, Technología e Innovación de Entre Ríos

Ing. Jorge Amado Gerard (Director)

Asociación de Industriales Metalúrgicos de Entre Rios (adimer)

Cr. Ariel R. Neiff (Institucional)

Corporatción del Desarrollo de Gualeguaychú (CODEGU)

Cr. Roque Ricardo Diaz (Presidente)

Lic. Juan Carlos Quinteros (Coordinador Dpto. Pymes)

Comisión Administradora para el Fondo Especial de SALTO GRANDE (CAFESG)

Cr. Hugo A. Ballay (Presidente del Directorio)

Ing. Jorge A. Gerald (Coordinador de Desarrollo Regional)

Colegio de Ingenleros Especialistas de Entre Rios (CIEER)

Ing. Alberto Alcain (Presidente)

Consejo Empresario de Entre Ríos (CEER)

Sr. Gabriel Bourdín (Presidente)
Sr. Fernando Caviglia (Gerente)

Universidad Technologica Nacional (Facultad Regional Concepción del Uruguay)

Sr. Mario Jorge Acuña (Secretario de Extensión Universidad)
Sr. Juan Carlos Ansaldi (Decano)

Universidad de Concepción del Uruguay

Lic. Leonardo Ruhl (Secretario de Producción y Vinculación Tecnológica)
Dr. Roberto Luis Perinotto (Rector)

Univesidad Tecnología Nacional (Facultad Regional Paraná)

Ing. Gustavo N.Romero (Secretario de Gestión Universitaria Unidad de Vinculación Tecnológica)

Municipalidad, Concepción del Uruguay

Lic. Oscar Alfredo Colombo (Director, Producción y Parque Industrial)

Municipalidad de Paraná

Ing. Julio C. Luján (Presidente, Organismo para la Producción y el Empleo)

Centro Comercial, Industrial y de la Produccion

Lic. Román Tófalo (Presidente)

Municipalidad de Rafaela

Lic. Germán Burcher (Secretario de Desarrollo, Innovación y Relaciones Internacionales)
Lic. Alejandra Mahieu (Area Internacionalización Secretatia de Desarrollo, Innovación y Relaciones Internacionales)

Centro Comercial e Industrial de Rafaela y La Región

Lic. Benjamin Albrecht (Director General)

Agencia de Desarrollo e Innovación (ACDICAR)

Programa de Competitividad Territorial Región Centro Provincia Santa Fe

Sr. Pablo Costamagna (Director de Proyecto)
Sr. Marcelo Ortenzi (Coordinador Técnico)

Fundación CIDETER

Ing. Mariá Isabel Borghi (Gerente)

Cluster TICs Rosario

Lic. Oscar Niss (Presidente)

Agencia de Desarrollo de General Roca (ADEGRO)

Ing. Carlos H. Levin (Presidente)
Lic. Rosana A. Leves (Area Capacitación ADEGRO)
Cr. Flavio M. Domenicucci (Area Financiamiento ADEGRO)

Camara de Agricultura, Industria y Comercio de General Roca (CAIC)

Mr. Nestor R. Huesa (Gerente)

Centro de Promoción y Desarrollo para la Pequeña y Mediana Empresa (Centro PyME Neuquén)

Ing. Fawndo Lopez Raggi (Director)

Municipalidad de Neuquén

Mg.Gabriela Tedeschi Lano(a Intendencia)

[International Organizations and Donors from Other Countries]

Banco Interamericano de Desarrollo

Lic. Gabriel Casaburi (Especialista Senior Sector Privado)

[BID Programa]

Agencia: Nacional de Promocion Científica y Tecnológica

Lic. Carlos Leon (Fontar)

Programa de Acceso al Crédito y Competitividad para MIPyME-BID (SEPyME)

Lic. Daniel Enriquez (Coordinador Técnico)
Lic. Marcos Gerber (Coordinador General)

Instituto Cooperazione Economica Internationale (ICEI)

Lic. A.Franco Borelli (Director)

Lic.Tiziana Forte (Directora de Proyecto)

[Private Companies in Argentina]

[Buenos Aires / Mar del Plata]

ARTESANIAS RS / CALZADOS FIVE / COPECA SA / DE ASIA / DELPACK SRL / HEYDAY / INDUSTRIAS SUCRE / ITAUPE SA / LABORATORIOS PHARMAMERICAN SRL / LANNOT / MILTON SA / MISADON / OLITAS MR SRL / PANOSS SRL / PIANS SRL / PILMAR SA / POSTRES BALCARCE SA / TACCA HNOS. / TAPAMAR SA / TOLEDO SA /

[Entre Ríos]

Agua Nuestra / Berger S.A. / Bonnin Hermanos S. de H. /Bourlot / Coinar / Don H Muebles / Elevadores Neumáticos / Film Plast Paraná S.A / Industrias Plásticas RD / Industrias Riehl /Kindcheff / Lambert Hermanos / Master Plast / Mec Plarts S.R.L. / Metalúrgica Albace / Muebles del Litoral / Santini Argentina S.A. / Schepens S.R.L. / San Sebastián S.R.L. / Trozán S.R.L. /

[Neuquén / Rio Negro]

ALDO CALLIERI SA / ALPECO S.R.L. / A PUNTO NATURAL Y EXPRESS / Cabarcos Motores SRL / CAPEX S.A. / CHACRA LA PIEDAD / CODESIN S.A. /CREDISUR / FABHER / FASINPAT / METALURGICA RÍO NEGRO SRL / MIEL RIO NEGRO / Moldeados en caucho JM /Organización Comercial Don Tomas SRl (División Gráfica) / PAZIMA S.A / RAUL ALLEMANNI / SERVICIOS BUPRONEU S.A. / San Carlos Distribuciones / TEPUEL SRL (Unelen) / TEOREMA S.R.L / TEXTIL NEUQUEN / TORNERIA ALLEMANNI DE Eduardo Allemanni /

[Authorities of Japan]

Embajada del Japón :

Mr. Tomomi YAMAZAKI (Consejero)
Mr. Masashi NAGANO (Segundo Secretario)
Mr. Mnabu BABA (Segundo Secretario)

Agencia de cooperación Internacional del Japón Oficina en Argentina:

Mr. Toshiaki FURUYA (Representante Residente)
Mr. Juan Carlos YAMAMOTO (Vice-Representante Residente)
Mr. Katsuto KIDA (Asistente Representante Residente)
Mr. Fernando SATO

Organización Japonesa para el Formento del Comercio Exterior (JETRO):

Mr. Takahiro SHIDARA (Director General)

[Others]

Argentina Kenshuu Center (AOTS)

Dr. José María Kokubu Munzón (Director Ejectivo)

Ing. Roberto Degiovannini (Director General)

Toyota Argentina S.A.

Lic.. Hideshi MINEO (Director Manager, Purchasing Department)

Annex-4 : List of AMPS by INTI Center (NODO)

Regional Center / **NODO**	Number of AMPs
Buenos Aires (NODO)	**7**
Rosario (NODO)	**9**
Rafaela (NODO)	**5**
Cordoba (NODO)	**2**
Concepción del Uruguay (NODO)	**7**
Mar del Plata	5
Neuquén	6
Villa Regina	3
San Martin los Andes	2
Mendoza	3
San Luis	2
Paraná	1
Total	**52**

(Source: Prepared by INTI based on declarations by each center)

Annex-5 : Enterprise Outline Survey Sheet

Encuesta del perfil empresarial

1. Fecha de estudio : (día) de (mes) de (año) Encuestador:
2. Nombre de la empresa :
3. Dirección : TEL:FAX: e-mail:
4. Rubro :
5. Categoría comercial : ☐Ensamblaje ☐Procesamiento de components ☐Procesamiento y ensamblaje ☐Otros ( )
6. Presidente :
7. Encuestado :
8. Fecha de fundación : Fundado en _____; _____ años operando
9. Capital social : (Sistema capital: sistema %)
10. Cifra de negocios : (2008)/tendencia en los últimos 3 años:☐en aumento ☐igual ☐en reducción
11. Número de empleados : empleados (Directos: /técnicos: /Admin.:)
12. Número de plantas :
13. Principales productos :

No.	Principales productos	Porcentaje	Observaciones
1		%	
2		%	
3		%	

14. Destinos de venta : Nacional: %, directo/indirecto, área de venta exterior: % (destino de exportación:)
15. Principales clients : ① : %, ② : %, ③ : %
16. Sistema de producción : ☐Producción anticipada, ☐pedidos anticipados, ☐a pedido
17. Características de producción : ☐Varios productos en pequeños lotes, ☐Producción masiva de pocas variedades
18. Disposición en planta : ☐lineal, ☐semi-lineal, ☐tipo shop
19. Sistema laboral : Área de producción Turnos (__ horas/turno), días de descanso: ___
20. Horario laboral : ___horas/semana, (promedio de horas extras:__ horas/día)
21. Organización : ☐Jerárquica, ☐No jerárquica, ☐flexible (De ser posible, adjuntar organigrama)
22. Equipos e instalaciones : De ser posible, adjuntar la lista de equipos e instalaciones

No.	Equipos es instalaciones	País productos	Personal de mantenimiento (en caso de tercerizar: servicio nacional o exterior)
1			
2			
3			
4			
5			

23. Materiales : ☐ Material:_____ (___TM/año), ☐ Material:_____ (___TM/año)
24. Origen de los materiales : Nacional ____ %, exterior ____ % (país de origen:_____)
25. Procesamiento tercerizado : Proceso_____
26. Variación estacional : Mes de máxima producción____, Mes de mínima producción ___, Producción del mes mínimo en función del mes máximo (100)
27. Tasa de variación (costos de materiales + de procesamiento tercerizado/cifra de negocios): %
28. Certificación de calidad : ☐ ISO (año de obtención),(Certificado de ISO obtenido No.)/ ☐ Ninguno
29. Seguridad ambiental : Cuenta con normas de seguridad laboral ☐Cuenta con un sistema de gestión ambiental
30. Capacitación del personal : ☐ Sólo OJT ☐ OJT+Off-JT ☐ Capacitación de operadores con múltiples habilidades ☐Programa de desarrollo de capacidades
31. Actividad gremial : ☐activa alta X activa baja ☐nula.

Annex-6 : Business and Production Management Technology Simple Diagnosis Form

Tecnología de gestión empresarial y de producción Encuesta de diagnóstico rápido

Fecha de diagnóstico:

Empresa:

	Áreas (Aspectos)	Fortalezas	Principales problemas, causas y medidas
Ventas	Marketing		
	Expansión de mercado		
	Desarrollo de productos		
Gestión de producción	Calidad		
	Productividad		
	Gestión de costos		
	Plazos de entrega y de producción		
	Gestión de existencias (materias primas, productos semielaborados, productos terminados)		
	Planificación de producción		
Asuntos financieros	Financiación		
Asuntos laborales	Capacitación de recursos humanos		
	Evaluación de recursos humanos		
Gestión empresarial			
Observaciones :			

Annex-7 : PP Evaluation Tables by Enterprise

<BUENOS AIRES / MAR DEL PLATA>

Model Enterprise			De Asia			Lannot			Industrias Sucre			Calzadoz Five			Tapamar			Laboratrios Pharmamercan			Olitas			DelPack			Panoss			Pilmar		
Evaluation Item			Evaluator			Evaluator			Evaluator			Evaluator			Evaluator			Evaluator			Evaluator			Evaluator			Evaluator			Evaluator		
			Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert
1.	Overall evaluation of he PP implementation plan:																															
	①	Was the selection of issues appropriate?		5	5		5	5		5	4		3	4		5	5		4	4		4	5		5	5					4.5	4.6
	②	Was the selection of approaches appropriate?		5	5		4	5		5	5		3	4		5	4		3	4		4	5		5	5					4.3	4.6
	③	Anticipated goals and/or outputs: level of achievement and future prospects		4	3		3	4		3	3		3	3		4	5		3	3		4	4		4	4					3.5	3.6
2.	Technology transfer to C/Ps:																															
	①	Was the basic theory of business and production management technology transferred to the C/Ps?		5	5		4	4		4	4		5	4		5	5		4	5		5	4		5	5					4.6	4.5
	②	Was the prac ical training on business and production management technology effective?		3	4		3	3		4	3		5	4		5	4		5	4		4	3		3	4					4.0	3.6
	③	Were diagnosis and improvement techniques for business and produc ion management technology learned?		5	5		4	4		3	4		4	4		4	5		4	5		4	5		4	5					4.0	4.6
3.	Effectiveness of management technology:																															
	①	Are concrete improvement effects recognized with respect to issues?	5	4	3	3	3	3	4	3	3	4	3	3	5	5	5	2	2	3	4	4	4	5	5	5				4.0	3.6	3.6
	②	(Although no clear outputs appeared during the PP period) Was he setup or foundation for resolving issues established, and are concrete outputs likely to be realized in the near future (within a year and so on)?	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	5	4	4	4	4	4	4	4	4				4.1	4.0	3 9
	③	Is here any prospect of u ilizing the business and produc ion management technology learned during the PP?	5	5		4	4		4	4		5	4		5	3		5	4		5	5		5	5					4.8	4.3	
4.	Level of satisfaction of model enterprise owners:																															
	①	What is he level of sa isfaction regarding the results of the PP?	5			5			4			5			4			4			5			5						4.6		
	②	What is he likelihood of advice being sought from INTI in future?	5			5			4			5			5			4			4			5						4.6		

*El PP en Panoss y Pilmar se suspendió antes de concluir por no haberse conseguido cooperación por parte de las empresas.

<CONCEPCIÓN DEL URUGUAY / PARANÁ>

Model Enterprise			Berger			Ind. Pla.			Lamber			Kindschef			Albace			Riel			Don H			Elevador.			San ini			Schep		
Evaluation Item			Evaluator			Evaluator			Evaluator			Evaluator			Evaluator			Evaluator			Evaluator			Evaluator			Evaluator			Evaluator		
			Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert
1.	Overall evalua ion of the PP implementa ion plan:																															
	①	Was the selection of issues appropriate?		5	5		4	4		5	5		4	3		5	5		4	4		5	4		5	5		4	4		5	5
	②	Was the selection of approaches appropriate?		5	5		4	4		5	5		4	3		5	5		4	4		5	4		5	5		4	4		5	4
	③	Anticipated goals and/or outputs: level of achievement and future prospects		5	5		4	4		4	4		3	3		4	4		3	3		4	4		5	5		5	5		5	5
2.	Technology transfer to C/Ps:																															
	①	Was the basic theory of business and production management technology transferred to the C/Ps?		5	5		4	4		4	4		4	4		5	5		4	4		4	4		5	5		5	4		5	5
	②	Was the prac ical training on business and production management technology effective?		5	5		5	4		5	4		4	4		5	4		4	4		4	4		5	5		5	5		5	5
	③	Were diagnosis and improvement techniques for business and produc ion management technology learned?		5	5		5	4		5	4		3	3		4	5		3	3		4	4		5	5		5	5		5	5
3.	Effec iveness of management technology:																															
	①	Are concrete improvement effects recognized with respect to issues?	5	5	5	5	5	4	4	4	4	4	4	3	5	4	4	4	3	3	4	4	4	4	5	5	5	5	5	4	5	4
	②	(Although no clear outputs appeared during the PP period) Was he setup or foundation for resolving issues established, and are concrete outputs likely to be realized in the near future (within a year and so on)?	5	5	5	5	5	5	5	5	5	5	4	4	5	5	5	5	4	4	4	5	4	5	5	5	5	5	5	4	5	5
	③	Is here any prospect of u ilizing the business and produc ion management technology learned during the PP?	5	5		5	5		5	5		5	4		5	5		5	4		4	5		5	5		4	5		5	5	
4.	Level of satisfaction of model enterprise owners:																															
	①	What is he level of sa isfaction regarding the results of the PP?	5			5			5			5			5			5			4			5			5			5		
	②	What is he likelihood of advice being sought from INTI in future?	4			5			5			4			5			4			5			4			5			4		

<NEUQUEN / Villa Regina>

Model Enterprise			Bpuronou			Textil Neuquén			Fasinpat			Callieri			Allemanni Raul			Natural Express			Alpeco			Uneren			Cabarcos			Allemanni Edward		
Evaluation Item			Evaluator			Evaluator			Evaluator			Evaluator			Evaluator			Evaluator			Evaluator			Evaluator			Evaluator			Evaluator		
			Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert	Enterprises	INTI-AMP	JICA expert
1.	Overall evalua ion of the PP implementa ion plan:																															
	①	Was the selection of issues appropriate?		2	2		3	4		5	5		5	5		4	4		5	5		5	5		5	5		4	4		4	4
	②	Was the selection of approaches appropriate?		3	3		4	4		4	4		5	5		4	4		5	5		4	4		4	4		4	4		4	4
	③	Anticipated goals and/or outputs: level of achievement and future prospects		2	2		4	3		2	2		5	5		5	4		5	5		2	2		5	5		4	3		5	4
2.	Technology transfer to C/Ps:																						2									
	①	Was the basic theory of business and production management technology transferred to he C/Ps?		4	3		5	5		3	3		5	5		5	4		4	4		2	2		4	4		5	3		4	3
	②	Was the practical training on business and production management technology effective?		3	3		4	4		4	3		5	5		5	4		5	5		2	2		4	4		5	4		5	4
	③	Were diagnosis and improvement techniques for business and production management technology learned?		3	3		3	3		4	3		3	3		4	4		4	4		3			3	3		3	3		3	3
3.	Effec iveness of management technology:																															
	①	Are concrete improvement effects recognized with respect to issues?	4	3	2	3	4	4	3	2	2	5	5	5	4	4	4	5	5	5	5	2	2	4	5	4	5	3	3	4	4	4
	②	(Although no clear outputs appeared during the PP period) Was the setup or founda ion for resolving issues established, and are concrete outputs likely to be realized in the near future (within a year and so on)?	4	3	2	5	4	3	4	3	2	4	5	4	4	4	4	5	5	5	5	3	2	5	5	5	5	4	4	5	4	4
	③	Is there any prospect of utilizing he business and production management technology learned during the PP?	5	4		5	3		5	3		5	5		5	5		4	4		5	3		5	5		5	5		4	5	
4.	Level of satisfaction of model enterprise owners:																															
	①	What is the level of satisfaction regarding the results of the PP?	4			3			4			5			4			5			5			5			5			4		
	②	What is the likelihood of advice being sought from INTI in future?	5			4			5			5			5			5			5			5			5			5		

Annex-8 : W/S Photographs

(July 1, 2009 : INTI MIGUELETE)

<table>
<tr><td> 
</td><td>  </td></tr>
<tr><td>Opening address (Mr. Pedro Carlos Brunetto)
(Mr. Furuya: Manager of JICA Argentina Office)</td><td>View of the seminar</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Mr. Kikuchi (Team Leader)</td><td>Mr. Sugimoto (Expert)</td></tr>
</table>

November, 2009

(November 10, 2009: Paraná / UTN-Paraná)

(November 11, 2009: Mar del Plata / Hotel Costa Garana)

(November 12, 2009: Concepción del Uruguay / UNER: Entre Rios University)

(November 12, 2009: Neuqén / Centro-PyMe Neuquén)

(November 16, 2009: Buenos Aires / INTI MIGUELETE)

Annex-9 : W/S Pamphlet (Training of ATG)

FORMARSE PARA ASESORAR

CONTENIDOS

La capacitación se divide en la capacitación teórica en las aulas y capacitación práctica en las empresas. La capacitación teórica consta de teorías fundamentales que comprenden a todas las especialidades (Módulo 1 y 2), y teorías de especialidades (Módulo 3). La capacitación práctica comprende la implementación de la capacitación teórica (Módulos 1, 2 y 3) en las empresas (OJT – Object Job Training).

Los módulos constan de los siguientes temas:

	MÓDULOS	TEMAS
1	Introducción a la gestión de producción	Diagnóstico de plantas
		5S
		Introducción a la ingeniería industrial (II)
		Gestión visual
		Análisis del proceso
		Estudio de la labor
		Lay-out
		SMED
		7 muda
		Kaizen
		Gestión de calidad y siete herramientas de análisis
2	Teoría general de gestión empresarial	Diagnóstico y asistencia a las empresas
		Estrategia de la gestión empresarial
		Comercialización/ventas
		Gestión laboral y desarrollo de recursos humanos
		Finanzas y gestión de costos
3	Teorías de especialidades	Producción
		Comercialización/ventas
		Gestión laboral y desarrollo de recursos humanos
		Finanzas y gestión de costos

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FORMARSE PARA ASESORAR

Instituto Nacional de Tecnología Industrial
INTI

JICA

Formación de Asesores en Tecnologías de Gestión

Programa de Asistencia a Consumidores y a la Industria de Manufacturas

OBJETIVO

Formar asesores en Tecnologías de Gestión con las capacidades necesarias para seleccionar e implementar herramientas de gestión que propendan a mejorar la eficiencia de las Pequeñas y Medianas Empresas.

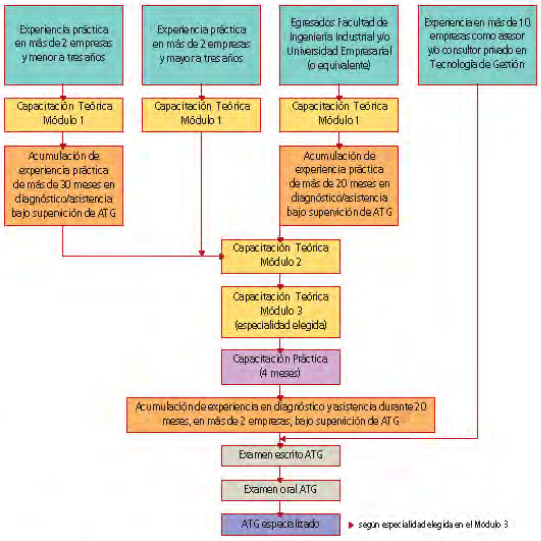
FORMACIÓN

La formación propuesta permitirá que los participantes adquieran:

- **Conocimiento de las Tecnologías de Gestión más utilizadas para el mejoramiento de la eficiencia de las empresas.**
- **Capacidad de analizar las causas de problemas reales presentados, seleccionando y utilizando las Tecnologías de Gestión más apropiadas para generar propuestas de mejoras.**
- **Habilidad para motivar a los empresarios en la implementación de las propuestas y asistirlos técnicamente.**
- **Respaldo teórico y la experiencia práctica para lograr la certificación como asesores en Tecnología de Gestión.**

CAMINO A RECORRER

Pasos para obtener el certificado de Asesor en Tecnología de Gestión (ATG) según las habilidades acreditables de los aspirantes:



La especialización de ATG será certificada en una primera etapa por el Organismo de Certificación INTI según Norma ISO 17024, quien contará con la asistencia del Comité Asesor para la Certificación, integrado por las siguientes Instituciones:

- **INSTITUTO NACIONAL DE TECNOLOGÍA INDUSTRIAL (INTI)**
- **SUBSECRETARÍA DE LA PEQUEÑA Y MEDIANA EMPRESA Y DESARROLLO REGIONAL (SEPyME)**
- **MINISTERIO DE LA PRODUCCIÓN DE LA PROVINCIA DE BUENOS AIRES (MPGBA)**
- **UNION INDUSTRIAL ARGENTINA (UIA)**
- **ASOCIACIÓN DE INDUSTRIALES METALÚRGICOS DE LA REPÚBLICA ARGENTINA (ADIMRA)**
- **JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**