

3 Details of Action Plans

Strategic Goal 1: Upgrading of Supporting Industries for the Machinery Industry

1-1 Establishment of SME Industrial Technology Center

Overall goal

To improve the international competitiveness of the machinery industry and its supporting industries as part of strategic efforts to strengthen the automotive industry, which is a major industry in KwaZulu-Natal Province, thereby to reinforce the foundation of industrial and economic development.

Project description

< Objectives and outline >

To reinforce international competitiveness of the automobile and automotive parts industries, it is essential to establish a production and distribution system on the parts and components supplier side, which is integrated with the automobile assembly system. This action plan proposes the establishment of an Industrial Technology Center to disseminate three key technology elements to develop the integrated production chain, i.e., production management technology, process technology, and production technology.

The center will disseminate information related to and required for upgrading of capabilities in the areas of management and production technology, particularly those required to be acquired by supporting industries supplying goods and services to the machinery sector in South Africa. In the initial stage, production management and process technologies will be emphasized to meet the immediate needs. Also, various production techniques, which are widely used in industrialized countries but have not been adopted by South African companies, need to be disseminated quickly. The detailed content of information dissemination should be designed flexibly according to the needs of the companies and of the times.

Dissemination of information should preferably be conducted in the form of field (shop floor) guidance, rather than lectures. Thus, the center will primarily provide field guidance service, plus some educational functions where a classroom venue is appropriate.

In the initial stage, the center will serve companies engaged in production of automotive parts in order to meet their urgent needs. Then, the scope of service will gradually be expanded to other industries and companies that require these key technology

capabilities.

< Background of the project >

Competitiveness of the automotive industry cannot be maintained by assembly manufacturers alone. Rather, it has to be supported by competitiveness in the broad supplier base, including parts suppliers, engineering service companies, and raw materials suppliers. Competitiveness in each tier of the industry adds up to the competitiveness of the automotive industry.

Today, the largest challenge for the automotive parts industry is to develop and maintain an efficient production chain with other participants in the automotive industry. Production and engineering processes for automotive parts must be integrated and operated as if they were internal shops of an assembly plant.

Automobile assemblers operating in KwaZulu-Natal Province are currently working to strengthen international supply capacities for the purpose of establishing its position as a production base to serve both domestic and export markets under each company's global strategy. Within the state or the country, they therefore try to procure parts and components that have internationally acceptable quality and other features. In selecting local suppliers, they require suppliers to improve the reliability of their production process in terms of quality and efficiency. In fact, they have been providing technical assistance for first-tier suppliers and have high levels of reliability. However, to improve reliability further, they must extend efforts to second-tier suppliers by upgrading their production management and process technologies.

The action plan will target, for the time being, second-tier suppliers primarily making automotive parts (12 companies), first-tier suppliers that are local SMEs (10), and manufacturers occasionally making small or medium-sized automotive parts (30).

The following existing programs are similar to the program contemplated by the action plan:

- 1) Work Place Challenge program;
- 2) MAC program; and
- 3) AIDC's program.

The Work Place Challenge program consists of the KZN Benchmarking Club that compares production efficiency, cost, production management, other key data of member companies with those of foreign companies and calculates and indexes the differences to determine the positioning of each company in a global context. The benchmark indices

can then be used as improvement targets. While each company is expected to make their own efforts to improve its benchmark indices, most companies select and hire experienced consultants for advice and guidance. In KwaZulu-Natal Province, six companies (mainly large and midsize companies) participate in the benchmarking club and DTI provides grant funds to cover two-thirds of expenses incurred by them. Most companies who participate in the program conduct improvement activities (e.g., productivity improvement and cost reduction activities) with full participation of employees and have produced significant results. It should be noted, however, that the program is not concerned with production management and problem solving techniques, and the consultants who are being used do not have experience in these fields.

The MAC program features field guidance and consultation for individual companies and is implemented by sending an industrial advisor from DUMAC upon request. A large number of companies, mostly small enterprises and microenterprises, participate in the program. The program covers a variety of fields according to each company's request, which are generally classified as follows:

- Quality assurance system
- Financial access
- Marketing
- Productivity improvement
- Human resource development

The program is also covered by DTI's subsidiary program which bears some expenses incurred by participating companies. Many companies highly rate the consultation service provided by industrial advisors and the program has attracted a large number of participants. Nevertheless, the program is concerned with operation and management of small enterprises and does not provide guidance by setting specific targets, as contemplated in the action plan. Also, knowledge and experience of industrial advisors is limited and will not likely provide advice and consultation at the levels of management and technology demanded by the automotive parts industry.

Finally, AIDC provides technical consultation service for companies in the automobile and automotive parts industries. The program has started very recently and it is premature to evaluate its achievement now. Nevertheless, it is pointed out that the program's technical advisors do not have sufficient knowledge and experience to teach high levels of production management and process technologies to the automotive industry. Also, the program's consultation fee is expensive and only large enterprises can afford to pay it. AIDC is located in Pretoria and not easily accessible by companies operating in

other areas, although AIDC is required to provide field service. Then, AIDC's program does not specify a time period for goal achievement and does not meet the needs of many companies that often demand quick results. Note that AIDC has engaged Japanese engineers for improvement of service quality, with the cooperation of the Japanese government.

< Requirements >

- 1) Technology transfer by a Japanese engineer with expertise and experience in production management and process technologies is essential for the success of the program. Also, training of local advisors by the Japanese consultant is critical for continuation of the program.
- 2) Dissemination of technology information by focusing on field diagnosis and guidance; provided that the use of a workshop to teach basic knowledge and follow-up consultation as well as computer-based distant education on basic lecture are recommended. As discussed below, SMEs cannot afford to send workers to training and it is also very difficult for managers to learn new techniques. (In the plastics industry, seminars and workshops can rarely draw a large number of participants, and they are usually held after work.) Thus, it is desirable to consider the use of field guidance and distance education.
- 3) Setting of service charges in consideration of affordability of SMEs
- 4) Maximum use of the Skill Development Fund to allow SMEs to receive reimbursement for training fees (workshop, etc.), field guidance and consultation charges as far as possible by designing a program module according to the fund's guideline, to thereby minimize financial burdens on participating companies
- 5) Participation in trade associations (NAAMSA and NAACAM) and Metro Durban (Municipality) to promote the Metro Durban Auto Cluster development program
- 6) Establishment of a guidance target including a specific time schedule in order to meet the urgent needs for improvement of international competitiveness

< Other important considerations >

- 1) To improve the financial viability of the center, the minimum required set of equipment and personnel should be assigned to the center for operation and management. (For the purpose of disseminating production technology required by the automotive parts industry, the center may be established for a limited period of time [a "sunset entity"].)
- 2) Local advisors should be trained to ensure continuous transfer of technology. In this connection, retired managers and engineers may be used until next-generation

advisors are trained (it takes time to train qualified and competent advisors).

- 3) The center will initially give priority to the machinery industry (particularly the automobile and automotive parts industries). Its activities can be subsequently expanded to other industries because:
 - The broad concept of production management is applicable to other key industries in KwaZulu-Natal Province (textiles, sewing, etc.).
 - In fact, product management is a critical tool to remain viable in a business environment where international competitiveness is demanded, regardless of company size. In the future, therefore, an educational course focusing on small enterprises should be considered.
- 4) It is desirable that the center be enabled to perform the following functions as part of the applicable action programs:
 - The technical assistance function in its “Incubation Center”
 - The certification function through a “Skill Certification System”
 - “Collection and Dissemination of Latest Technical Information”
 - “Open-type Testing and Research Facilities for Improvement of Development Capabilities”

< Plan content and feasibility >

In consideration of the background, key success factors and other relevant matters, it is proposed to establish and expand the center in the following three steps.

- 1) To establish the center with the initial function of promoting dissemination of technology information through field guidance (based on factory diagnosis and consultation). The center will also have an organization to provide management and technology consultation service for the incubation center.
- 2) To establish workshop type training courses (lecture style). At this stage, training equipment will be equipped.
- 3) To add the functions related to support for improvement of production techniques, including collection and dissemination of technology information, a skill level examination certification system, and provision of research facilities and equipment for upgrading of technological development capabilities.

Service content, equipment, space requirements for each step are summarized in Table III-3-1. Also, a typical content of a workshop type training course to be offered in the second step is shown in Table III-3-2.

Table III-3-1 Functions and Resource Requirements of the Production Technology Center by Step

Step 1			
Startup with the field guidance and consultation function			
Major functions	Manpower		Facility and equipment
• Management consultation	3 senior advisors *1)		Office space
• Technical guidance	2 advisors (including manager)		(including consultation rooms) 250m ²
	2 assistant advisors		Office machinery
	2 secretaries		
Annual revenues (R million)	Annual costs (R million)		
Consultation fee	1.4	Director labor	1.2
(18 cases, @R75,000/30MD)		Office	0.1
		Administration and other	1.3
		Total	2.6
		*1) Senior advisors will be assigned under assistance by an outside organization and their costs are not included.	
Step 2			
Addition of the following training courses (lecture and practical training) *2)			
Major functions	Manpower		Facility and equipment (R million)
• Production management course	In addition to the above		Audiovisual equipment 1.0
• Die and mold technology course	2 assistant advisors		Equipment for the die and mold technology course 32.5
• Plastics production technology course	(lecture will be organized by advisors and assistant advisors will be responsible for preparation)		Equipment for the plastics production technology course 2.4
			Equipment for common use and office machinery 2.5
			Testing equipment and measuring instruments 1.2
			Building (720m ²) 8.1
			Total 47.7
Annual revenues (R million)	Annual costs (R million)		
Tuition for training courses	2.2	Director labor	0.3
(18 courses, 20 persons/course, @R6,000/person-course)		Equipment maintenance/repair	2.0
		Administration and other	0.3
		Total	2.6

Table III-3-1 Functions and Resource Requirements of the Production Technology Center by Step

Step 3				
Addition of the following functions related to dissemination of production technology				
Major functions		Manpower		Equipment
1) Collection and dissemination of technical information		Staff listed above		No addition required
2) Certification of skills		Staff listed above		Equipment for training courses will be used
3) Open-type testing and research facilities and equipment		Staff listed above		(Not decided) Required equipment will be selected through technical guidance.
Annual revenues (R million)		Annual costs (R million)		
Skill certification fees	0.12	Additional	0	
(120 cases, @R1,000/person-course)				

(Notes)

- *1) Personnel will be assigned by an outside organization as part of support
 - *2) Limited to three fields that are strongly required in KZN, namely production management, die and mold making, and plastics production technology. For "welding," existing training organizations can be used. For "machining," the corporate apprenticeship programs will be used. "Casting," "forging," "electroplating" and "heat treatment" are not included due to small demand in KZN.
- Prices at the end of 2001; R 9.50/US\$

Table III-3-2 Conceptual Design of Training Courses at the Production Management Center

Production management course	
* To teach the fundamentals of production management for the purpose of supplementing field guidance.	
* Eligibility: A person having a bachelor's degree or equivalent	
* 90 hours in lecture and 30 hours in practical training	
(1) Production management	
1) Fundamentals	5) Cost reduction techniques and key points
2) Field improvement techniques and key points	6) Factory diagnosis system and procedures
3) Process and motion analysis and method	7) Field lecture
4) Raw material/purchase/procurement management	
(2) Financial management	
1) Mechanism of corporate accounting	4) Understanding of the financial status
2) Analysis of financial statement	5) Revenue planning
3) Management analysis	6) Return on capital investment and repayment capability
(3) Simulation training	
Metalworking technology course	
* Eligibility: Die/mold engineers and technicians (different courses), teaching applicable technologies and skills	
* For die/mold engineers, 100-hour course; and for die/mold technicians, 80 hours.	
<u>Training course for die/mold engineers</u>	
(1) Molding technology	
1) Types of molding	4) Molding processes
2) Molding mechanisms	5) Molding materials
3) Molding mechanics	6) Testing of metallic materials
(2) Molding machine	
1) Types and specifications	3) Operation systems
2) Functions and characteristics	4) Automation
(3) Die/mold technology	
1) Types of dies and molds	3) Die and mold design and making
2) Constructions of dies and molds	
(4) Practical skills	
1) Die and mold designing and drafting	2) Trial molding
<u>Training course for die/mold technicians</u>	
(1) Molding technology	
1) Types of molding	3) Molding materials
2) Molding mechanisms	
(2) Machining	
1) Machining	2) Hand finishing
(3) Die and mold manufacture and measurement	
(4) Practical skills	
1) Die and mold making	2) Setting and trial molding

Table III-3-2 Conceptual Design of Training Courses at the Production Management Center

Plastics production technology course

* To teach basic and applied molding technologies, which are applicable to field operation, to technicians engaged in plastics molding operation.

* To offer three courses, professional basics, professional I, and professional II

Professional basics course

To teach basic technologies and skills that are widely used, to persons who are engaged in molding work all the time or for less than 6 months, and those who are engaged in other operation and are required to learn about molding.

- (1) Basic molding techniques (injection molding, blow molding, and other methods)
- (2) Fundamentals of molding machines and auxiliary equipment (basic construction of molding machine, operation, safety check and daily inspection, construction and operation of auxiliary equipment)
- (3) Fundamentals of resin materials (general knowledge on plastics, physical properties and moldability of general resin materials)
- (4) Fundamentals of dies and molds (construction, handling, repair, storage and management)
- (5) Fundamentals of molding conditions
- (6) Fundamentals of defect control measures (defect control measures for general resin molding and ordinary molding products)

Professional I course

To improve and enhance molding technologies and skills of persons who have a few year experience in molding operation or who are engaged in other operation and are required to learn advanced knowledge and experience in molding.

- (1) Applied molding techniques (types and characteristics, multi-color/multi-material molding, mixed-color/multi-layer molding, double-layer molding, and deep drawing double layer molding)
- (2) Applied knowledge on molding machines and auxiliary equipment (types and characteristics of ordinary molding machines, machine control, program-controlled molding, molding systems, maintenance of molding machines)
- (3) Applied knowledge on resin materials (high performance resin materials, their physical properties and molding methods, additives and fillers, thermoplastic elastomer)
- (4) Applied knowledge on dies and molds (construction of special metal, maintenance of dies and molds, overhauling, repair and modification)
- (5) Applied knowledge on molding conditions
- (6) Applied knowledge on defect control measures (defect control measures for high performance resin molding and precision molding products)

Professional II course

To teach advanced molding technologies and skills and combination/interface with other technologies and skills to persons who have been engaged in molding operation for 7 - 10 years or who intend to become a supervisor or a manager in a molding shop.

- (1) Advanced molding techniques (types and characteristics of special molding techniques, lens/laser disk molding, plasma molding, ceramic molding, super precision molding)
- (2) Advanced study on molding machines and auxiliary equipment (construction of special molding machines, molding systems, applied maintenance of molding machines)
- (3) Advanced study on resin materials (super high performance materials, their physical properties and moldability, and composite materials)
- (4) *Advanced study on dies and molds (modification for productivity improvement and defect control)*
- (5) Advanced study on molding conditions
- (6) Advanced study on defect control (defect control measures for super high performance resin molding, special products, and super precision molding products)

As seen in Table III-3-1, revenues barely cover direct labor costs in the first step due to a small number of companies to receive service. To minimize administration and other costs, the use of another organization including its staff and offices should be considered.

In the second step, major financial requirements will be incurred for equipment acquisition and maintenance. On the other hand, labor and other costs will not increase much, while revenues will grow rapidly to contribute to improvement of the financial aspect of the undertaking.

User charges and consultation fees should preferably be set as high as possible if the cash flow situation is to be improved in order to attain project feasibility. At the same time, however, in consideration of the fact that the fees would become relatively heavy financial burdens on the user SMEs, efforts should be made to reduce the burdens by designing a program module for field diagnosis and guidance according to the guideline set by the Skill Development Fund so that clients are eligible for cost reimbursement.

Organizational setup for implementation

In consideration of the small revenue and the low profitability expected in the initial phase, the implementation body should preferably be an existing organization related to program implementation, in order to minimize additional space and staff requirements.

It is therefore recommended to appoint CSIR as the implementation body, as well as AIDC in Pretoria. This way, AIDC and CSIR will be able to work together to secure the services of and train field consultants. In this connection, the center should not be required to become financially independent in its early stage. As seen in the programs operated by AIDC and CSIR, high service charges will discourage participants and revenues will be adversely affected. The primary purpose of managing the center as part AIDC and CSIR is to save administration and other indirect costs by dividing them among the three organizations. It is therefore important to have an agreement on management policy with AIDC and CSIR.

It is also important to obtain the participation of related industries and companies in the stage of deciding the center's management policy. For this purpose, a steering committee needs to be organized by inviting trade associations, individual companies and related organizations, as done in the case of AIDC and DUMAC. At present, Durban Metro is developing a business plan, jointly with the automotive industry, to promote development of auto clusters in the area and is making efforts for its implementation. As the center's successful management will hinge much on concerted efforts of the related industries, efforts should be made to secure their participation.

Finally, to secure government backup from industrial policy perspective, strong cooperation by DTI and DEDT should be actively sought.

Expected economic effects

Economic effects would be obtained through prevention of the deterioration of the local automobile and automotive parts industries and increases in production , including increased procurement of locally made parts and components.

The direct benefit from the action plan, in relation to the increase in local procurement (deterioration due to a “without the plan” case is not considered), can be estimated as follows, if the local content rises from 48% to 60%:

- Increase in the value of parts production (annually): R215 million
- Increase in value added (annually): R37 million
- Increased employment (annually, as compared to the original figure): 330 – 400 persons

(Note that the above figures are based on the value of local procurement by automobile assemblers operating in KwaZulu-Natal Province. However, actual benefits will not be limited to the province.)

1-2 Provision of an Open-type Testing and Research Center for Supporting Improvement of Automotive Parts Development Capabilities

Overall goal

To accomplish the following goals by improving development capabilities of automotive parts suppliers:

- Increase in the variety of parts and components that can be locally procured by automobile assemblers;
- Improvement of development capabilities of the automotive industry as a whole; and
- Improvement of competitiveness of the automotive parts industry in the aftermarket

Project description

< Objectives and outline >

The testing and research facility will provide equipment and instruments that must be used by but are not owned by automotive parts suppliers, to conduct testing and research activities for product improvement and other purposes. Its service will be provided at the following three levels:

- 1) Collection of information on testing and research equipment owned by public testing laboratories and research institutes, as well as universities and large corporations, which can be made available to suppliers, and to provide information to them upon request
- 2) Ownership by the Center of equipment and instruments that are not available in the above facilities, and to provide access to them upon request; and
- 3) Purchase of the latest production machinery and equipment that are widely used in the automotive parts industry, to learn their functions and applications, and to make them available to suppliers upon request.

In the future the Center is expected to provide shop space with equipment for the local manufacturers to undertake R&D, particularly in cooperation with public institutes or universities, or with manufacturers in other sectors. The Center may also support their efforts at coordination to formulate joint R&D projects.

< Background of the project >

Automotive suppliers in South Africa, particularly domestic companies, do not have product development capabilities. For OE suppliers, models produced in the country are designed in other countries and specifications for parts and components are furnished to suppliers, who have no choice but make them in accordance with specifications and do not need to develop parts on their own. Similarly, RE suppliers do not have the opportunity to develop parts because they primarily make spare parts for foreign automakers according to the specifications of the latter, and ship them to the aftermarket. However, local development of parts will also be required for their market development with unique designs and functions.

According to the results of the interviews of local suppliers, made as part of the present study, 43% of suppliers in the metal stamping sector and 20% of those in other metalworking sectors already have been required by their customers to strengthen technological development capabilities. The percentage is higher for the stamping sector where manufacturers specialized in production of automotive parts account for a higher percentage than other sectors do.

Customer's requirements	Metal Stamping		Other Metalworking	
	Number of responses	% of total companies responded	Number of responses	% of total companies responded
Technological capabilities of development	10	43.4	4	20.0

Toyota SA is already considering local development of parts and components for the next model, which will be introduced in a few years, in order to better reflect the local market preferences and thus replace parts developed outside the country. In this case, the automobile assembler will rely on foreign suppliers that have product development capabilities in the initial stage. Subsequently, however, it will require local suppliers to participate in joint development efforts, largely by modification of original parts. In fact, suppliers serving the spare parts market are required to an even greater extent to have technological development capabilities in order to gain market share by differentiating their products from others.

Naturally, technological development capabilities expected for local suppliers will at the outset be confined to specific fields, such as productivity improvement, quality

stabilization, performance improvement, and conversion to economical materials, rather than product development. Testing equipment will be largely used in this stage.

Suppliers that are required to upgrade technological development capabilities will be first-tier suppliers specialized in production of automotive parts (28 companies) and the needs for development research will emerge in the next two years.

In the future, the next tier of suppliers will be required by customers to work on evaluation of changes in strength caused change in the raw material or shape of a part, improvement of work efficiency by modification of working conditions, cost reduction, and improvement of workmanship. As a result, they will have to use testing equipment more frequently. This will occur 3-4 years later, at latest, as first-tier suppliers start development research and are required to make partial modification of original parts. The second round of the technological upgrading demand will cover the following companies:

- Second- tier suppliers specialized in production of automotive parts 12
- Manufacturers occasionally providing metalworking service
for production of automotive parts on a contract basis 7 or more

At present, there is no organization that makes testing equipment available to outside users. CSIR in Pretoria conducts joint development projects with various companies, but it is far from Durban and not easily accessible for SMEs.

< Requirements >

- 1) As stated in "Background," the development research needs will be limited in nature and scope during the initial stage. Thus, priority should be given to the use of available equipment owned by laboratories and other organizations. Also, the R&D needs will largely depend on when automobile assemblers start local development of parts and to what extent. Thus, requirements for the open-type testing and research facility should be considered as local development activities are formally launched.
- 2) The facility should not limit its function to the provision of testing and research equipment, but should be able to provide guidance and training for equipment operation upon request of users. This means, in addition to general guidance for users who operate equipment at the facility, additional guidance should be provided to promote use of more sophisticated equipment by teaching advanced techniques and methods.
- 3) Provision of the latest production machinery and equipment can be used to help suppliers to check applicability to their own production facilities and learn operation

prior to purchase, in addition to giving them an opportunity to learn about the latest equipment and its application.

< Other important considerations >

Having the center own advanced equipment and make it available to SMEs is not feasible because of the small number of potential users. Nevertheless, it is imperative to develop the technological development capabilities of SMEs if the entire industry is to upgrade its technological base. Thus, this should be approached as part of industrial policy and the program should be designed accordingly.

< Plan content and feasibility >

In consideration of the above background, key success factors, and other relevant items, the center's function should be strengthened in the following three steps.

- 1) To create a system that collects information on testing and R&D equipment owned by laboratories, research institutes and universities, and on their availability for public use, and to provide this information to individual companies upon request. In South Africa, a large number of networks have been created to establish this type of collaboration in sharing resources, and the networked system can easily be established.
- 2) To purchase equipment not available in the laboratories and other organizations and install it in the center for use by SMEs upon request. It is important to plan this step on the basis of the result of the first step, i.e., actual use of available equipment by SMEs. Based on information as to which equipment has been used in the first step and how often each piece of equipment has been used, as well as actual availability and accessibility of equipment at each facility, the center should select the equipment that is to be purchased. Also, the user needs identified through technical consultation and guidance at the center should be reflected in the equipment procurement plan.
- 3) To introduce advanced production machinery and equipment, which may be widely used in the automotive parts industry, to the center. The center staff learns their functions and operations, teaches them to user companies upon request and make them available for their use.

As the service needs are expected to emerge a few years later, the first step should be implemented in the initial stage and required activities can be handled by the center's staff as planned.

However, the center cannot earn much revenue from information service alone. Instead, it should offer the comprehensive information service in combination with “collection and publication of technology information” (see the previous section), which will be provided on a subscription basis to secure a stable revenue source.

Then, in the second step, when equipment is purchased, the center will collect a user charge but it is difficult to cover equipment costs by the user charge alone. In this connection, it is important to realize that this type of service serves the public interest in the sense that it helps SMEs to improve competitiveness in keeping with the movement toward globalization, and to establish their position in a harsh business environment where they have to compete with large companies that enjoy economy of scale. Information access and critical mass are key words to gain international competitiveness but are a difficult challenge for even a large company, and SMEs must join hands in their efforts to achieve these goals. At the same time, the magnitude of efforts is so large that public support is essential until collaborative efforts reach critical mass and can compete with multinationals. Thus, it is recommended to provide public financial assistance in relation to this service (as well as other services that are related to improvement of information access and promotion of collaborative efforts among SMEs).

The user charge should be limited to an amount that can cover equipment maintenance costs as well as a portion of labor costs, while the equipment purchase cost should be financed from government budgets, and administration and other costs (including the rest of labor costs) should be covered by revenues from other functions.

In addition, the center will offer testing, analysis and R&D-related services on a contract basis in order to earn additional revenues.

In the future, the center will be able to help joint R&D projects of local companies and public organizations (including companies in different fields) by providing a laboratory space and equipment, while providing technical advice on joint projects, including general arrangements.

Organizational setup for implementation

The SME Industrial Technology Center should be an implementation body for this action plan. In addition, collaboration with existing research institutes and similar organizations and private enterprises is crucial, while the research facility will be managed according to management rules for the SME Industrial Technology Center.

Expected economic effects

Increase in local procurement (including product types) and production of spare parts, accompanied by increased value added for the automotive industry, together with growth of employment opportunities and exports

Accurate estimation of direct benefits is difficult. If annual sales of leading automotive parts suppliers (40 first-tier and second-tier suppliers) grow 5% as a result of the action plan, R160 million will be added to R3,150 million. The sales growth can be converted to 250 – 300 employees per year.

1-3 Dissemination of Information for Equipment Modernization and Upgrading for SMEs

Overall goal

To help raise technology levels of SMEs and improve international competitiveness.

Project description

< Objectives and outline >

The project is designed to provide supporting industries in the machinery sector with information on the latest production machinery and equipment through computer networks.

A technology information network will be established by mobilizing the following organizations and companies as information sources to help SMEs keep abreast of equipment information that is not accessible to them: CSIR, SABS, NPI, universities, NAAMSA, NAACAM and their member companies, associations of industrial machinery and equipment distributors and vendors and their member companies, and foreign companies in related industries and fields.

Also, the technology information network will be linked to Web sites of related industries and companies for promotion and advertisement purposes.

< Background of the project >

Many SMEs that belong to supporting industries for the machinery sector use obsolete machinery and equipment, which often prevent them from meeting quality or precision requirements of the machinery industry.

In KwaZulu-Natal Province, there are 40 suppliers primarily engaged in production of automotive parts, one half of which (large enterprises and foreign companies) has introduced relatively new equipment. On the other hand, the rest of the suppliers are mostly using old, second-hand equipment. Then, equipment conditions are worse among other manufacturers not specialized in automotive parts and metalworking shops.

In South Africa, industries have difficulty in securing skilled workers partly due to the historical background that neglected worker education and training for the bulk of population and partly due to a high rate of HIV infection. Under these circumstances, it is imperative to introduce new equipment in order to reduce dependence on manual work. This is particularly important when high levels of quality and precision are required.

The results of the questionnaire survey of suppliers conducted under the study support the above analysis and observation are summarized as follows (see Annex 2 for details).

	Metal Stamping		Other Metalworking	
	Number of responses	% of total companies responded	Number of responses	% of total companies responded
High defect or rejection	0	0.0	1	8.3
Inefficiency	7	31.8	5	41.7
Difficulty in maintenance	4	18.2	3	25.0
Others	1	4.5	3	25.0
No problem	13	59.0	7	58.3

More than 30% of metal stamping shops recognize that their machinery is inefficient, and over 40% among other metalworking companies do so. They are reluctant to new investment or do not realize the need for new machinery because of inaccessibility to information on latest technology.

At the same time, nearly 60% of companies in both sectors think that there is no problem with their machinery and equipment, suggesting a lack of concern about quality and precision. (Incidentally, 60% is also a percentage of manufacturers not specialized in automotive parts among the survey population.)

< Requirements >

Information provided by the project should be always updated by obtaining full cooperation of the information sources.

< Other important considerations >

In the future, the information network can be evolved into an SME regional information center by adding the following information:

- 1) Processing, production management, process technology, new materials, and pollution control;
- 2) Relevant research and study results, and case histories on technical guidance;
- 3) Needs and seeds (needs and seeds for technology, products and other innovation in the related industries as well as different fields); and
- 4) Software (business application programs for productivity improvement).

< Plan content and feasibility >

The plan calls for collection of information on the latest production machinery, testing equipment and measuring instruments from various media and Web sites and compilation of it into a database. The center will create its own Web site and allow subscribers to access and use the data.

The plan also will involve recruiting the following organizations and companies as information sources to ensure periodical renewal of information published on the Web site: CSIR, SABS, NPI, universities, NAAMSA, NAACAM and their member companies, trade associations related to industrial machinery and member companies, and foreign companies in the related industries.

These activities will be conducted by staff of the SME Industrial Technology Center.

It is difficult to secure sufficient revenues from information service alone. Instead, the center should offer the comprehensive information service in combination with "collection and publication of technology information," which will be provided on a subscription basis to secure a stable revenue source.

Furthermore, it is possible to earn advertisement revenues from companies in the industrial machinery and related industries. This can be accomplished by allowing the Web advertisement to be made by establishing hyperlinks from the center's Web site to advertisers who put ads and pay advertisement charges.

To recruit and keep advertisers, the center is expected to collect and provide "fresh" and "useful" information all the time. This will work as strong incentive for the center to make continuous efforts to improve information service in terms of both quality and quantity.

It should be noted that potential users (subscribers) of this information service are not limited to companies in KwaZulu-Natal Province, so that information sources and Web advertisement advertisers should be selected and recruited to serve a broad user base in and outside the province.

Yet, financial assistance by the government should not be neglected because this type of service serves the public interest in the sense that it helps SMEs to improve competitiveness in the context of the challenges of globalization and establish their position in the harsh business environment where they have to compete with large companies that enjoy scales of economy. However, SMEs lag large companies in terms of information access. Ideally, they should cooperate in collection and accumulation of information to compensate for the shortage of resources, but it is very difficult to establish such cooperation by relying on their initiatives. Instead, a trade organization or a public organization should assume a leadership role in encouraging and inducing SMEs to start cooperative activities by providing resources that are not readily available to them. Thus,

it is recommended to provide public financial assistance in relation to this service, in addition to arranging for substantial cost bearing by user companies.

Organizational setup for Implementation

The service should be operated by the SME Industrial Technology Center. However, if the regional information center function is expanded under “One-Stop Shop Type SME Support Center” (Action plan 3-2; as discussed below), the system should be integrated with the function.

The service needs to be operated under active participation of related industries and companies and the operation method contemplated for the SME Industrial Technology Center should be applied to this action plan.

1-4 Use of the Unused Portion of Corporate Apprenticeship Program for Public Training Purposes

Overall goal

To promote human resource development of SMEs for the purpose of improving management and technology levels and international competitiveness.

Project description

< Objectives and outline >

Various companies operate an apprenticeship program to train their employees, but there are often vacancies in some programs because of the small number of new employees. The project will prepare a system, which is designed to provide training employees of SMEs by using vacancies in the apprenticeship program, with cooperation of relevant enterprises, thereby to provide them with an opportunity to receive systematic vocational training.

To initiate the project, companies that have an apprenticeship program and those wishing to send their employees to participate in such program will be invited to form an ad-hoc organization to arrange use of vacancies in the program. Then, vacancy information will be obtained from members to arrange, through the intermediation process, apprenticeship training for those who wish to use them.

< Background of the project >

Employee education at SMEs is primarily conducted in the form of on-the-job training. In reality, however, there are shortages of instructors who can provide effective OJT and many SMEs do not provide OJT more than minimum required work instructions. As a result, most employees at SMEs do not have the opportunity to receive systematic training to acquire diverse, useful skills. In turn, when SMEs attempt to improve operations for the purpose of improving competitiveness, employees are unable to understand and respond to such attempt, making it difficult to achieve the objective.

The following summarizes results of enterprise survey on human resource development, in the current study.

	Metal Stamping		Other Metalworking	
	Number of responses	% of total companies responded	Number of responses	% of total companies responded
(Problems in infrastructure)				
♦ Worker training	10	31.8	9	60.0
(Problems in HRD)				
♦ Development staff	3	13.6	7	43.7
♦ Engineers	1	4.5	1	6.3
♦ Foreman's level	5	22.7	6	37.5
♦ Worker's level	5	22.7	12	75.0
♦ Others	3	13.6	2	12.5
♦ No problem	10	45.5	9	56.3

Approximately 30% of companies in the stamping sector and 60% in other metalworking sectors cite problems related to workers' training. HRD problems are primarily concerned with field workers and their foremen. At the same time, companies in other metalworking sectors show strong interest in development staff.

On the other hand, mid-sized and large enterprises have their own apprenticeship programs to provide continuous education and training for employees. Most programs supported by an established curriculum, experienced instructors, and appropriate facilities and equipment. However, these programs are intended for their own employees and are often conducted under capacity when the number of new employees is smaller. The project is designed to monitor vacancies in apprenticeship programs and make them available to SME employees who do not have training opportunities.

When SMEs cannot send their employees to training for a long period of time, the project will provide unemployed youths with the opportunity, followed by job placement service.

Potential users of this service are SMEs related to the automobile and automotive parts industries. Among the companies covered by the present study, 130 are potential users, excluding 20 large (midsize) and foreign suppliers. The proposed educational system is

considered to be an effective means for SMEs that cannot afford to have their own employee training systems.

< Requirements >

- 1) The gist of the project is to make a training program in a private enterprise available to other companies and is based on the premise that a new education and training system under the framework of NQF, which is under preparation by MERSETA (for details see II-5.4), currently under development, will kick off and authorize the flexible training program. As the project is certified under MERSETA, trainees who have completed the program are publicly recognized to possess standard skills and the project can partially be financed by the refund of the Skill Development Levy.
- 2) As for skills, an official system to evaluate and certificate them on an objective basis is required, including a certification system (see 1-6 "Development of the Skill Certification System").

< Other important considerations >

For this training program, the government should not be directly involved as the implementation body. Also, not all the apprenticeship programs are necessarily based on a uniform curriculum and equipment. Rather it is important to have an agreement between each company that makes its apprenticeship program available to outside trainees and SMEs that wish to use it. The action plan contains various activities that facilitate the implementation of the agreement.

< Plan content and feasibility >

The council on operation of the system should be organized by representatives of DoL, DEDT, the secretariat of MERSETA, Durban Metro Automotive Cluster Initiative and will conduct the following activities:

- 1) To study the current state of apprenticeship programs operated by companies, including program operation, vacancy, content of the curriculum and equipment, and interest in the proposed program (intent to participate);
- 2) To disseminate information obtained from the above study to SMEs and conduct *questionnaire surveys to ascertain their needs and thereby determine the desirable content of the program;*
- 3) To prepare resource materials to be made by companies that provide the apprenticeship programs for outside users, a standard form of agreement between the providing company and the user company, and general rules for resolution of

disputes;

- 4) To study availability of the apprenticeship programs and demand from potential users on a scheduled date each year, on the basis of their annual plans, and provide vacancy information to potential users and information on the user needs to the providing companies, then to accept applications from potential users and transfer them to the providing companies; and
- 5) To invite users at large on its publication, if any vacancy exists after offering to potential users.

Note that feasibility should be verified at each step before proceeding to the subsequent step.

Companies providing apprenticeship programs for outside users can apply for reimbursement of the Skill Development Levy that it has paid, and costs incurred by the program less the reimbursement of the levy will be paid by each user company.

The council will be managed using budget allocations from DoL and DEDT. For the activities in 1), 2) and 3) above, however, contributions should be made from NSF (National Skill Fund) on the basis of the Skill Development Levy.

Organizational setup for implementation

The council on operation of the special apprenticeship program organized by representatives of DoL, DEDT, the secretariat of MERSETA, Durban Metro Automotive Cluster Initiative will be responsible for the above activities. DoL will serve as the core member.

Expected economic effects

Major benefits include productivity improvement, quality improvement, and cost reduction through the improvement of the skills of employees, especially of field workers, *thereby contributing to improvement of competitiveness of SMEs. However, quantitative estimation of these benefits is very difficult.*

Furthermore, possession of higher skills will encourage workers in the future to start their own business. At present, many workers (particularly black workers) continue to work as unskilled laborers due to the lack of training and have few opportunities to start on their own. *The training program using the existing apprenticeship programs will therefore make a contribution in this regard.*

1-5 Development of the “E-Learning System” for Vocational Training Using Computer Networks

Overall goal

To develop human resources of SMEs and upgrade their management and technology levels, thereby to improve their international competitiveness.

Project description

< Objectives and outline >

The objective is to build an “e-learning system” for vocational training using computer networks for the purpose of providing systematic vocational education and training for company employees or other persons.

In 1-4 “Use of the Unused Portion of Corporate Apprenticeship Program for Public Training Purposes,” SME employees are assumed to receive vocational training under the apprenticeship program for a long period of time. In reality, however, it is difficult for most SMEs (particularly small enterprises and microenterprises) to send their employees to outside training for a long period of time, unless they are very understanding about employee education and training and/or can afford to bear such costs. Public security problems in the country make it difficult for workers to go to a training school after work hours.

The proposed system allows workers to receive systematic vocational education and training in the course of or after everyday work without leaving the workplace. Each company participating in the program will provide computers, space and time for employees, who receive education and training at their own pace and can obtain skill certification after completion.

Actual training will be entrusted to an outside organization (i.e., a company operating its own apprenticeship program, such as Technikon) to be responsible for operation of the e-learning system.

The system will not be limited to KwaZulu-Natal Province and will cover the entire country.

< Background of the project >

SMEs usually rely on OJT as the means of employee education and training. In reality, however, there are shortages of instructors who can provide effective OJT, and for many SMEs, OJT means mere work instructions. As a result, most employees at SMEs

do not have the opportunity to receive systematic training to acquire useful, diverse skills. In turn, when SMEs attempt to improve operations for the purpose of improving competitiveness, employees are unable to understand and respond to such attempt, making it difficult to achieve the purpose.

In addition adult basic education and training (ABET) becomes a significant burden for large corporations.

In South Africa, deterioration of public security makes it more difficult to provide vocational training. If employees go to a vocational training facility after work, they have a great risk related to security. It is therefore desirable to establish a distant education system to allow workers to receive training at their own workplace. This way, they can spend a short period of time everyday.

It is known that there is nationwide need for vocational education and training. Also, the e-learning system is generalized in nature and hence applicable to all industries.

Assuming the e-learning system covers companies under the MERSETA system, potential users are estimated to be around 45,000. If 20% of them use the system, the user population will amount to 9,000.

Potential users are estimated as follows. 255,000 persons are employed in the automobile-related industries (see II-3). On the other hand, the total number of employees estimated by MERSETA is 507,000 (II-5). The former includes 175,000 workers in the automobile sales sector. The latter includes 180,000 persons in automobile sales, 255,000 in metalworking, and 32,000 in plastics processing. From these figures, the number of employees in the automobile and automotive parts industries is estimated to be over 70,000. If those in the metalworking and plastics processing industries are added, total employment in the automobile related industries exceeds 300,000 persons. To estimate employment for vocational education and training purposes, the latter figure (300,000) seems to be appropriate, regardless of recognition of individual companies on importance of employee education. Then, eligible workers are estimated to be 15% of total¹ and amount to 45,000 persons.

And once the system is established, the user base will likely expand beyond the MERSETA system. The formal, non-agricultural, private sector in the country is estimated to have approximately 4.7 million employees. If employment in the public and agricultural sectors (2.6 million) is added, the total number of employees in the formal

¹ The average length of service is 20 years including three years as the eligible period for vocational education and training.

sector reaches 7.3 million (Ntsika Annual Review 2000). Assuming that 15% are potential users, of which 10% actually use the e-learning system, approximately 110,000 users are expected.

< Requirements >

The key success factors in 1-4 above are applicable to this plan, namely:

- 1) The project should ensure that employees can use the results of the e-learning system not only in their own company, but also in other workplaces. For this purpose, it will be closely linked to a new education and training system (MERSETA), currently under development. As the project is certified under MERSETA, trainees who have completed the program are publicly recognized as possessing standard skills and the project can partially be financed by the Training Fund.
- 2) As for skills, an official system to evaluate and certificate them on an objective basis is required, including a certification system (see 1-6 "Development of the Skill Certification System").

< Plan content and feasibility >

A conceptual view of the system is shown in Figure III-3-1. The following functions are required .

(1) Establishment of the curriculum standard

A curriculum complying with NQF (National Qualification Framework) will be established. SETA in each sector is developing a draft curriculum, while MERSETA is responsible for the metal and engineering industries.

(2) Development and management of the curriculum, course materials and software

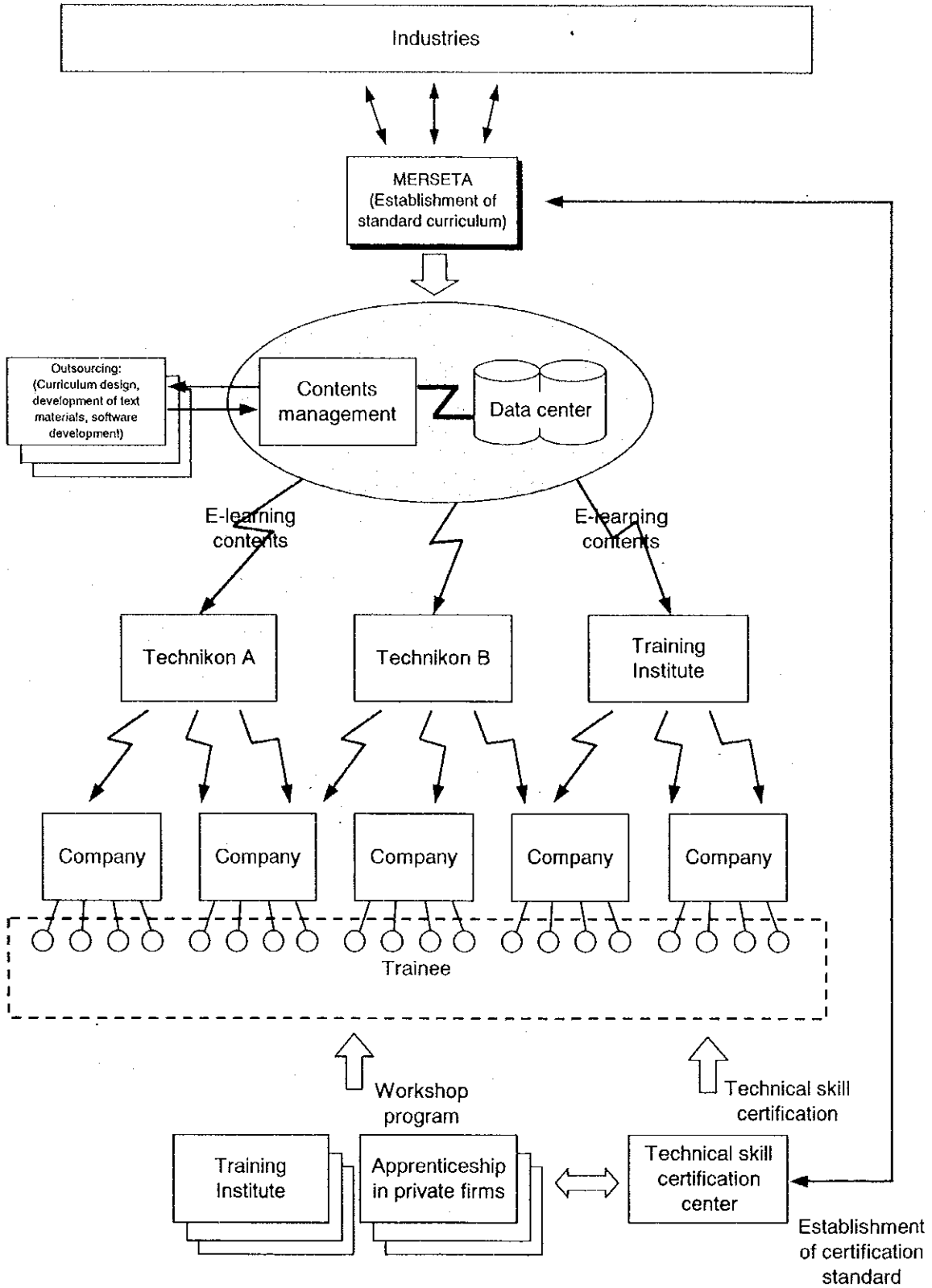
They constitute the core of the e-learning system and represents the e-learning content in compliance with MERSETA's curriculum standard. Development work will be contracted to an independent consultant, together with maintenance and upgrading.

The e-learning content so developed will be distributed via the data center to an outside training organization that will be responsible for operation and management of actual training courses.

(3) Training organization

The content management center will contract operation and management of actual training courses to a training organization that will provide training using the e-learning content distributed by the center. The training organization will be primarily

Figure III-3-1 Concept of E-learning System for Vocational Training



responsible for monitoring and management of each student and his progress, data storage and management, and communication with students, including questions and answers.

(4) Practical training organizations

The training organization will contract for practical training with to various organizations, such as public and private training organizations, Technikon, and private enterprises (such as those operating their own apprenticeship programs) that have equipment that can be used for training and are capable of providing practical training for students.

(5) Skill certification organizations

The skill certification entity will examine and certify skills of persons who have completed the e-learning training course and will issue a certificate those South Africans who has passed the examination (see 1-6).

Companies participating in this program will sign an e-learning agreement with the training organization in (3) and will receive the e-learning content distributed from it, and employees will receive training using the company's facility. Upon completion of the training course, the company will send employees who have completed it to the skill certification organization for the certification test.

To estimate the total cost to build the entire e-learning system, system specifications need to be defined in detail.

For reference, cost estimation for two projects to build similar e-learning systems in other countries is shown below.

- Case 1
 - Data center (large data server, etc.) US\$50 million
 - Content creation and development center (server and other hardware components, and software for content creation) US\$20 million
 - Content development US\$50 million

- Case 2
 - Content creation and development center US\$25 million

In addition, education and training for the PDI group is the highest policy objective in the country and financial assistance by the government is essential for the program. The fund will be established for system buildup, on the basis of contributions from the government and private enterprises. System operation and maintenance costs will be covered by the reimbursement of the Skill Development Levy and user fees paid by companies.

Organizational setup for implementation

A council will be organized by representatives of DoL, DTI and the secretariat of MERSETA to finalize the plan. Initial costs required for preparation will be financed from the National Skill Fund. Then, contributions by the government and private enterprises will be pledged to establish a special fund.

The curriculum will be developed under the leadership of MERSETA. System development and operation will be entrusted to an outside organization, such as a university or Technikon.

1-6 Development of the Skill Certification System

Overall goal

To develop human resources of SMEs and upgrade their management and technology levels, thereby to improve their international competitiveness.

Project description

< Objectives and outline >

The objective is to certify workers' skills according to a specific standard and issue a certification. This will provide incentive for workers to learn various skills and establish the confidence of industry in vocational training. The action plan aims to build infrastructure for the certification system, including the establishment of certification methods and standards, and the securing of equipment required for skill certification and examiners.

The certification system will cover skills related to the metal and engineering industries. In the first stage, skills related to plastics molding, machining, and die and mold making (skills related to manufacture of stamping dies and plastics molds) will be certified.

< Background of the project >

As stated in 1-4, in the country, there is the shortage of skilled workers in the manufacturing sector, partly due to a high HIV infection rate. SMEs cannot spend much time to train workers. In response to the situation, MERSETA is now preparing for introduction of a unified certification system for the metal and machinery industries, under which any person who has completed an accredited education and training program will be able to receive a certificate that is recognized throughout the country.

To ensure that the certification system grows steadily by gaining industry's confidence, however, it is demonstrated to the industries concerned that workers who have passed the certification test are capable of performing their work by applying a required level of a skill for which they are certified. MERSETA is currently establishing education and training standards, which allow standardization of training courses and their content. The action plan will establish certification standards that comply with the MERSETA standards and meet requirements set forth therein. The certification standards will then be used as the basis of evaluation and rating of each skill.

As pointed out in 1-5, "Background," assuming that potential users of employee education and training services under MERSETA are estimated to be 45,000 (throughout the country), 20% of which are expected to receive training and 40% of trainees will receive the certification test, 3,600 persons per year will use the skill certification system, and over 700 persons in KwaZulu-Natal Province (20% of the total).

< Requirements >

- 1) Ideally, skill certification is conducted for all operations that require specific skills. However, it is proposed to start with the three fields where the needs for skill certification are the greatest. For the fields that have been selected, certification standards and other details should be reviewed and updated regularly according to the advancement of production technology and evolution of production systems.
- 2) Uniform skill certification standards and details should be established for application throughout the country. A national certification committee will be organized for the purpose and will work together with MERSETA to develop and update uniform standards.
- 3) Examiners are expected to have expertise and experience in their respective fields. To secure qualified examiners, cooperation of companies in related industries will be sought.

< Other important considerations >

If required equipment is available at other laboratories, research institutes, universities, Technikon and other companies, its temporary use will be negotiated for a fixed period for the skill certification test.

< Plan content and feasibility >

The action plan will contain the following activities related to the institutional setup for the skill certification system.

(1) Organization of the central skill certification committee

The committee will be organized by experts in relevant fields as recommended by industries, educational institutions and research organizations. It will make written and practical skill test problems and scoring standards.

(2) Appointment of local examiners

Local examiners will be appointed from advisors of the Industrial Technology Center, engineers and technicians with specific expertise and experience and working for companies. They will be responsible for administration and supervision of the practical skill test, as well as scoring.

(3) Securing of equipment for the certification test

Training equipment of the Industrial Technology Center will be used. If not sufficient, equipment owned by other laboratories, research institutes, universities, Technikon and other companies will be used.

Assuming that 700 persons take the certification test per year in KwaZulu-Natal Province and the certification fee is R700 per person, annual revenues of R490, 000 can be expected.

For the entire country, 3,600 persons and the total certification fee of R2.5 million are expected. In the initial stage, preparation of test formats and problems and development of scoring standards will be carried out using financing from the National Skill Fund.

Organizational setup for implementation

DoL, DTI and MERSETA will promote implementation of the skill certification program. For local implementation, it is desirable that the SME Industrial Technology Center (discussed in 1-1) will conduct the certification program concurrently with its own activities in order to secure examiners and use equipment efficiently.

Expected economic effects

Industrial workers with practical skills will grow in number, thereby improving shop floor management (e.g., problem solving) and will contribute to improvement of competitiveness of related industries. However, quantitative benefits are difficult to estimate.

1-7 Development and Web Publication of the Database on Qualified SMEs

Overall goal

To increase market access for automotive parts suppliers in order to promote expansion of production capacity and reinforce international competitiveness.

Project description

< Objectives and outline >

The objective is to build a database containing automotive suppliers who are qualified under specific criteria and publish it on a Web site that can be accessed by potential customers for search.

Qualification will be based on certification under ISO9000 or comparable quality system standards, certification or awards by automakers such as an excellent supplier award (e.g., QS1, VD6).

The database will store vital data on each supplier that allow a potential customer to evaluate it accurately, including human resources, production machinery and equipment, and reputation or rating by existing customers. It will also be hyperlinked to the supplier's Web site for advertisement purposes.

< Background of the project >

Because of the small size of the domestic market, automotive parts manufacturers in the country cannot enjoy economies of scale compared to counterparts operating in large markets. Moreover, seven automobile assemblers are operating in the country, making a variety of models. As a result, it is difficult for suppliers to make sufficient profits from production of parts for a specific model of a specific company because the quantities of production is limited. They have to look for other customers, including other OEM contracts in and outside the country.

The following table summarizes the production status of large foreign parts suppliers.

	Basic Types (a1)	Variations (a2)	Annual Volume (b)	Daily Rate (c)	Average number of days per year required for production of one variation (b/(a1 +a2))/c
Product (A)	10	110	630,000	2,680	2.0 days
Product (B)	11	80	370,000	1,580	2.6 days
Product (C)	9	38	860,000	3,660	5.0 days
Product (D)	13	26	265,000	1,130	6.0 days

As seen in the table, these large suppliers are engaged in small-lot, large-variety production, as evidenced from the fact that the average number of days per year required for one variation is 6 at maximum. A majority of parts can be produced within two days to meet annual requirements. Naturally, it is desirable to increase the lot size per variation in order to improve production efficiency for suppliers, but this has to wait until market conditions enable a reduction in the number of models. Meanwhile, suppliers have to learn more efficient production methods so as to raise productivity in the small-lot, large-variety production system, and utilize the time saved by efficient production. For this purpose, it is important to increase access to new customers.

On the other hand, automakers and specialized parts manufacturers intend to promote localization of parts but are facing difficulty in finding quality manufacturers. As a result, both automakers and first-tier suppliers procure parts widely in terms of geographical location and do not have accurate information on suppliers.

Thus, the database and Web information publishing are designed to meet the needs of both sides. At the same time, selected publications will provide incentive for suppliers to make efforts to become qualified for the database.

At present, most automakers evaluate and rate their suppliers by methods that include awards and certification. However, certification by an automaker, while being recognized by the company or its group companies, is not used to find new customers.

While the award system and qualification or certification of multinational automakers are essentially recognition of quality by a single company, if the company is highly reputed internationally its recognition or certification is highly valued within the industry.

< Requirements >

- 1) A database is useless unless its existence is known to potential customers. Effective promotion or advertisement to make the database known to potential customers is the key to success of this action plan.
- 2) The database should be large enough (in terms of the number of suppliers registered) to provide a wide choice for potential customers. It should therefore accept a variety of qualifications and certifications, ranging from ISO to private certification by an automobile assembler or supplier. In other words, it should contain the list of suppliers qualified under a variety of standards, credibility of which should be judged by potential customers who use the database. At the same time, the database should not be limited to suppliers in KwaZulu-Natal Province. Suppliers throughout the country should be invited to register so far as they meet a certain level of standard. This will maximize a choice for potential customers.
- 3) Basically, the database should be managed by registration fees and advertisement charges. At the same time, public support may be required to maximize market access for as many SMEs as possible. However, if the acceptable range of registration is expanded, there is a higher risk of including suppliers that have a small chance of having business opportunity. This will make database management difficult. On the other hand, if the acceptance range is narrowed, a large number of suppliers are deprived of access to potential customers. (As for the need for public support for SMEs in gaining market access, see III-2.)

< Other important considerations >

At present, DEDT is building an SME database for KwaZulu-Natal Province. This database can be effectively utilized in combination with the database proposed under this action plan and the regional information center scheme. In the future, the proposed database should preferably be operated with the regional SME information center plan as an integrated system.

< Plan content and feasibility >

Activities required for implementation of this action plan are summarized as follows.

(1) Establishment of the promotion committee

The promotion committee will be organized by automakers and suppliers. Its core member will be the Durban Metro Automotive Cluster Initiative. NAACAM and NAAMSA will participate for nationwide deployment of the program. Once the nation-

level promotion committee is established, management of the KwaZulu-Natal Province committee will be transferred.

(2) Establishment of the Web site and the database

The Automotive Components Suppliers Page will be created as part of an existing Web site of a related organization (such as Durban Metro Automotive Cluster Initiative) and will solicit registration on the database. Then, the database will be built and linked to the home page with a search function.

(3) Promotion to automakers and suppliers, links to popular search engines and related Web sites, and solicitation of advertisers on Web site ads

Once a target number of suppliers are registered, the "Automotive Components Suppliers" page is promoted to automakers and first-tier suppliers in and outside the country, and advertisers on Web site ads are solicited. Promotion should not start while registration is still small because the database cannot gain credibility as a good information source. In that case, solicitation for registration should be expanded to nationwide.

Promotion should be repeated a few times at a certain interval.

In KwaZulu-Natal Province, potential registrants are 28 leading first-tier suppliers and around six second-tier suppliers (one half of 12 companies), totaling around 20. If the coverage is expanded nationwide, registration of 100 – 120 companies can be expected.

Costs required for the establishment of the database, and creation, updating and maintenance of the Web page are not very high and are estimated as follows:

- Initial preparation, database building, and installation of the Web page: 0.75M/M
- Annual operation and maintenance cost: 0.6M/M

However, if this action plan is managed by the government, its expandability will be limited because of difficulty in updating or other reasons. While the initial cost, including the cost for the establishment of the database, will require financial assistance from the government, the program should be managed by membership fees from suppliers who are registered in the database and revenues from Web page ads. Then, government support should be utilized for promotional activities to encourage use of the database service by foreign companies by utilizing the government's investment promotion campaign.

Organizational setup for implementation

The action plan should be implemented under the leadership of Durban Metro Automotive Cluster Initiative and under participation of NAACAM and NAAMSA. For nationwide deployment, NAACAM and NAAMSA are expected to assume joint leadership.

Expected economic effects

The following effects are expected, but they are difficult to quantify.

Direct benefits

- 1) Increase in local production of automotive parts due to increased orders from domestic customers
- 2) Increase in automotive parts exports due to increased orders from foreign customers

Indirect benefits

Improved competitiveness of automobile parts manufacturers as well as the automotive industry as a whole

Strategic Goal 2: Promotion of PDI Enterprises

2-1 Incubator for PDI Enterprises (or PDI Business Cooperatives)

Overall goal

Equal distribution of benefits from sustainable growth of industry

< Objectives and outline >

To provide proposed PDI enterprises (or PDI business cooperatives) or new PDI enterprises with a workspace and/or PC and other business machinery at a low cost, and provide comprehensive support required for smooth business startup and operation, including financial management, accounting, business consultation, and technical assistance.

The action plan design calls for construction of an incubator facility to provide the above support and assistance and develop an official support system, while facilitating collective operation of PDI enterprises in the incubator facility in the areas of physical distribution, sales and marketing.

< Background of the project >

PDI enterprises often lack knowledge and experience in all aspects of business administration, including basic business skills ranging from financial management to accounting, management techniques, technology, and sales and marketing. Also, they face difficulty in finding an adequate space for conducting business activities and are physically inaccessible to potential customers, not to mention the lack of financial access.

Although support programs are provided by focusing on various fields (see II-5), most of them do not meet the needs of PDI enterprises that require comprehensive support. They may provide a partial solution but problems remain in other areas.

Some programs are designed to provide comprehensive support contemplated under this plan, called mentorship programs, that are provided by private foundations. A typical one is operated by Khula, Thuso Mentorship Program. It is designed to encourage the use of Khula Credit Guarantee Scheme and provides SMEs that apply for commercial loans with pre-loan support (preparation of a business plan and advice service) and post-loan support (follow-up). Khula organizes a mentor network consisting of individuals and organizations with expertise and experience, and it appoints a mentor from them and assigns him to a SME upon request.

While these programs receive good reputation for their effectiveness and comprehensive support, they are relatively expensive to operate because customized support is provided for an individual company.

The incubator proposed here is designed to build upon the advantages of the mentorship program, while maintaining cost effectiveness by collecting recipient enterprises in an incubator facility.

However, it is very difficult to estimate the number of PDI enterprises that can be eligible for the incubator program because there is no statistical data on PDI enterprises, not to mention data on the number of SMEs. Instead, an attempt was made to make rough estimates using the following data.

1) The number of closed corporations registered

	1993	1994	1995	1996	1997	1998	1999	2000
KwaZulu-Natal	4,364	5,754	7,643	8,032	8,418	8,700	8,572	9,378
Total South Africa	27,950	39,170	52,408	61,884	68,067	73,114	69,304	78,730

Closed corporations are mainly used for establishment of SMEs (especially small enterprises) and their registration data somewhat represent the number of small enterprises established each year. At the same time, however, their ownership seems to be dominated by the white group. Registration of closed corporations has been growing rapidly since 1995, from around 4,000 per year to 8,500. The annual increase of 4,500 corporations is clearly associated with the policy change in 1995, but the data do not tell the percentages of manufacturers and PDI enterprises.

2) Number of companies that applied for the Khula Credit Guarantee Scheme (2000)

Amount of application (R million)	Number of enterprises				
	Total	Black	Colored	White	Asian
181.9	818	307	58	373	80

(Source) Ntsika, "State of Small Business in South Africa, Annual Review 2000."

These data are useful for estimation of potential beneficiaries of the action plan, because companies that apply for credit guarantee appear to have a common background (a

desired to expand their business, etc.) with those that will apply for the incubator program. Unfortunately, however, there are no data on the number of applicants in KwaZulu-Natal Province. As judged from the fact that closed corporations registered in KwaZulu-Natal Province, as a percentage of national registration, declined gradually from 15% to 12% in 2000, a similar trend can be assumed for the number of applicants for the credit guarantee program. By applying the same rate of decline as that for registration of closed corporations, the number of enterprises that applied for the Khula Credit Guarantee Scheme in 2000 is estimated to be around 50. Of total, companies in manufacturing, construction, commerce or business service are assumed to account for approximately 70%². 20% of them are then assumed to be potential users of the incubator program, so that seven companies will apply for the program per year. Assuming that each company operates in the incubator facility for five years, approximately 35 units will be required to accommodate them.

< Requirements >

Hardware support, such as provision of a workspace, does not guarantee the success of a business. Rather, it is important to build up and operate a comprehensive support system. However, initial demand for the incubator program will not be high and the support system focusing on the incubator program will be cost effective. As seen in the ongoing mentorship programs, it is imperative to develop a mechanism to use individuals and organizations with expertise and experience.

< Other important considerations >

- 1) It is recommended to examine the feasibility of use of existing industrial estates for the purpose of minimizing the initial cost to provide the incubator facility, provided that such use should not be considered on a commercial basis and should give priority to promotion of PDI enterprises, the primary objective of the action plan.
- 2) Potential demand for the incubator program was estimated by applying the recent trend in the establishment of closed corporations. As new business startups are expected to increase at an accelerated pace, the estimated capacity will not likely meet growing demand. At the same time, experience from similar projects in various countries indicates that most companies using the incubation facility remain after the agreed incubation period, preventing acceptance of new companies. This means that the action plan should envisage such situation by assuming that a new incubator facility will be constructed to accommodate new companies while the

² Companies in these sectors (formal sector) account for 71% of the total number of enterprises (1999).

original facility will be operated as an industrial estate.

< Plan content and feasibility >

A general outline of the plan is as follows.

- (1) Construction of the incubator facility (4,500m²)
 - 35 workspace units
 - Operation and management of a facility (including consultation rooms)
 - Construction cost: R60 million

- (2) Establishment of a comprehensive support system
 - To operate consulting service in cooperation of the SME Industrial Technology Center, DUMAC, and the One-Stop Shop SME Support Center.

Organizational setup for implementation

The action plan should be implemented under the leadership of local government. Participation of IDC, Ithala Corporation and other organizations should be encouraged.

Expected economic effects

When the incubator facility is fully occupied, economic activities worth R137 million will be conducted each year, equivalent to employment opportunities for 770 persons (assuming that each company in the facility earn annual sales of R3.9 million and employs 22 persons on the average).

Strategic Goal 3: Improvement of the Supporting Environment for SMEs

3-1 Establishment of the One-stop Shop Type SME Support Center

Overall goal

To promoting growth of SMEs with an ultimate goal of invigorating the economy and promoting job creation.

Project description

< Objectives and outline >

The objective is to make diverse SME support programs readily accessible to recipients and facilitate their use. Hence, the project will establish a center that combines related organizations for one-stop shopping service, to thereby promote active use of SME promotion programs.

As discussed above, problems facing SMEs in KwaZulu-Natal Province differ in characteristics from those in South Africa as a whole, so that promotion policies and programs should be established and implemented by defining their target group (industries, geographical areas or other attributes of SMEs) and objective.

In this context, the action plan is designed to address the need to provide support for business startup by black entrepreneurs and operation of black enterprises by establishing a special service desk, in addition to service covering general SME promotion.

< Background of the project >

At present, diverse services are provided in this area by a number of government organizations, technical support organizations, private organizations, NGOs, foreign donor organizations, and private enterprises. However, information on these services is not available from a single source. As a result, SMEs that seek public support cannot easily obtain appropriate information that meets their urgent needs.

In fact, the current SME policy mandates that the function be provided by the SMME Desk (Directorate of SMME Development) established in each province. In reality, however, it also serves as a policymaking and coordination organization, in addition to the technical guidance and support function. Furthermore, it emphasizes support for SMEs owned by members of the PDI group, while its responsibility lies in promotion of SMEs as a whole.

In addition, LBSCs provide information and consulting service for PDI enterprises, but do not have a general picture of support programs, as pointed out above.

< Requirements >

Active involvement of organizations related to SME promotion (particularly departments of the central government) is essential. Because advisors working at the center are expected to be familiar with policies and programs implemented by various organizations, including eligibility requirements and application procedures, they have to be staff members of respective departments or other organizations. Also, they have to learn similar programs that are provided by other organizations in order to ensure seamless service. This means that advisors must be appointed from among senior staff members who have sufficient knowledge and experience.

Geographically, the support center function should work to meet the needs in regional cities in addition to major metropolitan areas.

< Other important consideration >

- 1) Coordination with LBSC functions is required. LBSCs serve as a permanent consultation desk to meet the local needs and refers some cases, when appropriate, to the provincial government's DEDT. This relationship is also applied to the center.
- 2) At present, LBSCs receive many questions that are simple in nature but are difficult to respond to, such as a request to introduce a customer or an inquiry on a profitable business. Thus, the center's service should not be confined to introduction of the currently available programs, but it should classify and analyze questions and requests in order to identify opportunities for new programs.

< Plan content and feasibility >

- 1) To establish an information and consultation desk for SMEs (SME Support Center), preferably within the DEDT because it plays a central role in SME promotion at the state level.
- 2) To appoint SME advisors in each department and organization responsible for SME promotion. The advisors should be senior personnel who have sufficient knowledge and experience in programs implemented by the department or organization they belong to and who can provide appropriate advice on use of such programs by SMEs.
- 3) To send the SME advisors to the center on a rotational basis to provide person-to-person consultation service.
- 4) To meet needs in rural regions by holding limited-period consultation service sessions in regional cities and other areas where a large number of SMEs are operating.

- 5) To record and analyze questions and inquiries made by SMEs, their responses and advice given, and results, in order to ensure that they can be used as the basis of developing and updating promotion programs.

As the advisors will be sent by departments and other government organizations, direct costs incurred in relation to operation and management of the SME support center are as follows:

- Establishment and maintenance of the office for the support center
- Transportation and communication including temporary consultation service in regional cities

Organizational setup for implementation

DEDT should take leadership in the startup and operation of the support center and DTI, DoL, DPW and other organizations will appoint and send advisors.

3-2 Development of the Information-related SME Support Function

Overall goal

To invigorate the economy and promote employment through development of SMEs.

Project description

< Objectives and outline >

The objective is to establish an information center to collect and publish information related to SME promotion, focusing on improvement of competitiveness, and development of new businesses and markets. An information system will be developed and operated to serve as the nucleus of the regional SME information center to collect, compile, update and publish information useful for SME promotion purposes, including the following:

- 1) Technical information including processing, production management, process technology, new materials, and environmental preservation;
- 2) Results of relevant research and study, and case histories on technical guidance and consultation;
- 3) Information on the business needs and seeds (including technologies and products in various industries); and
- 4) Software information (business application programs).

< Background of the project >

Today, a large amount of valuable information can be obtained on the Internet, which can also be used to transmit and publish information to the outside world. Yet, SMEs do not fully benefit from this powerful information infrastructure because a single company cannot afford to collect and analyze information.

In fact, Ntsika has started operation of the BRAIN (Business Referral and Information Network) program to serve as an information collection and dissemination function for SMEs. The network is designed to allow access to other information sources useful for SMEs, in addition to information provided by BRAIN. In particular, BRAIN publishes information for LBSCs, for distribution in their service areas.

However, the SME element of the BRAIN program primarily emphasizes promotion of PDI enterprises and fails to pay much attention to the industrial development perspectives - improvement of competitiveness of SMEs and market development, which

are the main focus of this action plan.

< Plan content and feasibility >

The action plan proposes the creation of an information center function focusing on business and market development for SMEs. It will essentially be developed as a Web-based center to collect and publish the following information for the purposes defined below:

- 1) To collect the latest technical information from various sources, including processing, production management, process technology, new materials, and environmental preservation, and publish it for use by SMEs for the purpose of narrowing the information divide;
- 2) To obtain the results of research and study as well as case histories on technical guidance and consultation from research institutes and technical guidance organizations, and publish them to keep SMEs abreast of technology trends and business opportunities;
- 3) To encourage the exchange of information, on the business needs and seeds (including technologies and products in various industries), between SMEs and related organizations so as to provide opportunities for market development, business planning, and partnership with other companies in and outside the industry; and
- 4) To collect and provide software information (business application programs) to help improve business productivity and efficiency.

In addition, information related to equipment modernization and upgrading will be collected and provided by the Web information center.

The center will earn revenues by collecting subscription fees for the information service. In addition, revenues from Web site ads by companies and organizations in the industrial machinery and related industries are expected by establishing the links from the Web site of the information center to those of advertising companies and organizations. Advertisers will be recruited nationwide.

The information center function will not be operated on a purely commercial basis, and public support will be secured by using the Web sites of the One-Stop Shop Type SME Support Center and the SME Industrial Technology Center. Public support is justified from the standpoint of assisting SMEs in collective information gathering in order to compensate for the information divide facing SMES in comparison to large corporations.

Organizational setup for Implementation

The content will be designed and updated under the leadership of the related industries. Similarly, trade organizations or the Industrial Technology Center will take the lead in organizing information sources. For the automotive industry, Durban Automotive Cluster Initiative should preferably lead the development of the content. The Web site of the One-Stop Shop Type SME Support Center will be used as the portal for the information service.