BACKGROUND

OF THE ENHANCEMENT

OF INFO-COMMUNICATIONS ACCESS

IN RURAL COMMUNITIES

PART I   BACKGROUND OF THE ENHANCEMENT OF INFO-COMMUNICATIONS ACCESS IN RURAL COMMUNITIES

CHAPTER 1   OBJECTIVES OF THE STUDY AND COMPOSITION OF THE FINAL REPORT

1.1   Background of the Study

Alleviation of the digital divide is one of the key national policy of Malaysia as stipulated in the on-going 8th Malaysia Plan for 2001-2005 period and Vision 2020 as well.

To meet this national policy, various Ministries, aid organizations and other concerned entities launched the projects to serve the enhancement of the rural info-communications access, including Economic Planning Unit (EPU), Ministry of Rural Development (MORD), Ministry of Education (MOE) and Ministry of Energy, Communication and Multimedia (MECM) as well as United Nations Development Plan (UNDP).

MECM as the responsible ministry for development and dissemination of IT technology and multimedia throughout the country including the rural areas, initiated the Rural Internet Program (RIP) in order to provide Internet access to the rural communities. As the first step, MECM launched the first stage RIP in 2000 by establishing 14 pilot Rural Internet Centers (RIC). Implementation and operation for the first stage RIP depended on the tentative framework which relied on the full cooperation of various "sponsor" companies for providing Internet access, telecommunication infrastructure, equipment including personal computer, space for RIC, IT training, local homepage, maintenance and repair of the equipment, etc.

After the trial operation of the first stage RIP, MECM now intends to launch full-scale RIP and asked the cooperation of JICA to work out an optimum action plan for the full-scale development. JICA accepted the request and the Study on Enhancement of Info-Communications Access in the Rural Communities in Malaysia (the Study) and scope of the Study was agreed upon by Malaysian and Japanese sides on October 2001. Accordingly, the Study started at the end of January 2002.

1.2   Objectives of the Study

1.2.1   Objectives

As stipulated in the Scope of Work for the Study, the objectives of the Study are:

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i)   Formulate an Action Plan for the enhancement of the info-communications access in the rural communities in Malaysia, in particular for the implementation of RIP and thereby bridge the digital divide between the urban and rural areas, and

ii) Carry out the technology transfer in the field of the enhancement of info-communications access in rural communities to counterpart personnel and the people concerned in the course of the Study through the workshops, seminar training in Japan as well as the joint implementation of the model RIC projects.

1.2.2   Study Area

The Study area covers the whole of Malaysia.

1.3   Composition of the Final Report

The Final Report comprises 5 PARTS as follows. PART 1 describes the background and necessity of the Study. PART 2 explains the framework of the recommended Action Plan for the implementation of the Rural Internet Program (RIP). PART 3 describes the outline and achievements of the model projects which were implemented to verify the appropriateness of RIP framework and get feedback to working out the details of the rural internet centers which are the major components of RIP. PART IV presents the contents of the Action Plan and recommendations thereof. PART V presents the methodologies for technology transfer and the achievements thereof.

- PART 1   INTRODUCTION AND BACKGROUND

- PART 2   FRAMEWORK FOR THE ACTION PLAN

- PART 3   IMPLEMENTATION OF THE MODEL PROJECTS

- PART 4   RECOMMENDED ACTION PLAN

- PART 5   TECHNOLOGY TRANSFER

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CHAPTER 2   WORK SCHEDULE AND PLAN OF OPERATION FOR THE STUDY

2.1   Plan of Operation for the Study Works

2.1.1   Work Phase and Work Flow

The Study has been carried out in four (4) phases;

- Phase I   : Study on Basic Conditions

- Phase II   : Preparation of Interim Action Plan

- Phase III   : Planning and Support for the Implementation of Model Projects

- Phase IV   : Preparation of Final Action Plan

Phase I covers the agreement of the contents and schedule of the Study, basic data collection, demand survey and preparation of draft plan for the three model projects.

Phase II covers the preparation of the Interim Action Plan and the initiation of the implementation of the model projects.

Phase III covers the implementation of the model projects and their interim evaluation.

Phase IV covers the evaluation of the model projects, finalization of the Action Plan and holding the seminar to present the overall achievements of the Study.

The total Study period extends over about 14 months as shown in Figure I.2.1.

2.1.2   Phase I: Study on Basic Conditions

Phase I has been carried out in 2 work periods in Japan and 2 work periods in Malaysia, namely;

- Preparatory Work in Japan: Preparation of Inception Report

- First Work in Malaysia : Presentation of Inception Report & Data Collection

- Preparatory Work for Second Year in Japan: Analysis of Demand Survey Results in Japan

- Second Work in Malaysia: Preparation of Draft Plan for Model Projects

2.1.3   Phase II: Preparation of Interim Action Plan

Phase II has been carried out in a work period in Japan and a work period in Malaysia, namely;

- First Work in Japan: Preparation of Interim Action Plan

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- Third Work in Malaysia :Presentation of Interim Action Plan

2.1.4 Phase III: Planning and Support for the Implementation of Model Projects

Phase III has been carried out in 3 work periods in Malaysia, namely;

- Third Work in Malaysia :Planning and Support for the Implementation of Model Projects

- Fourth Work in Malaysia: Interim Evaluation of Model Projects

- Fifth Work in Malaysia: Narrowing-down of Draft Action Plan Measures

2.1.5 Phase IV: Preparation of Final Action Plan

Phase IV has been carried out in 2 work periods in Japan and a work period in Malaysia, namely;

- Second Work in Japan: Evaluation of Model Projects

- Sixth Work in Malaysia: Presentation of Draft Final Report and Seminar

- Third Work in Japan: Preparation of Final Report

2.2 Work Schedule and Reports

2.2.1 Work schedule

The Study has been carried out as shown in Figure I.2.2.

2.2.2 Reports

The reports prepared in English have been submitted to the Government of Malaysia as follows.

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Reports	Timing of Submission	Number of Copies
1. Inception Report	At the beginning of the first work period in Malaysia/ At the beginning of Phase I (February 2002)	20 copies
2. Progress Report	At the end of the second work period in Malaysia / At the end of Phase I (June 2002)	20 copies
3. Interim Report	At the beginning of the third - fifth work period in Malaysia / At the end of Phase II (August 2002)	20 copies
4. Draft Final Report	At the beginning of the 6th work period in Malaysia / At the last Work in Malaysia (December 2002)	20 copies
5. Final Report	At the end of the third work period in Japan / At the end of the whole Study (March 2003)	30 copies

2.3 Organization for the Implementation of the Study

2.3.1 Overall Organization

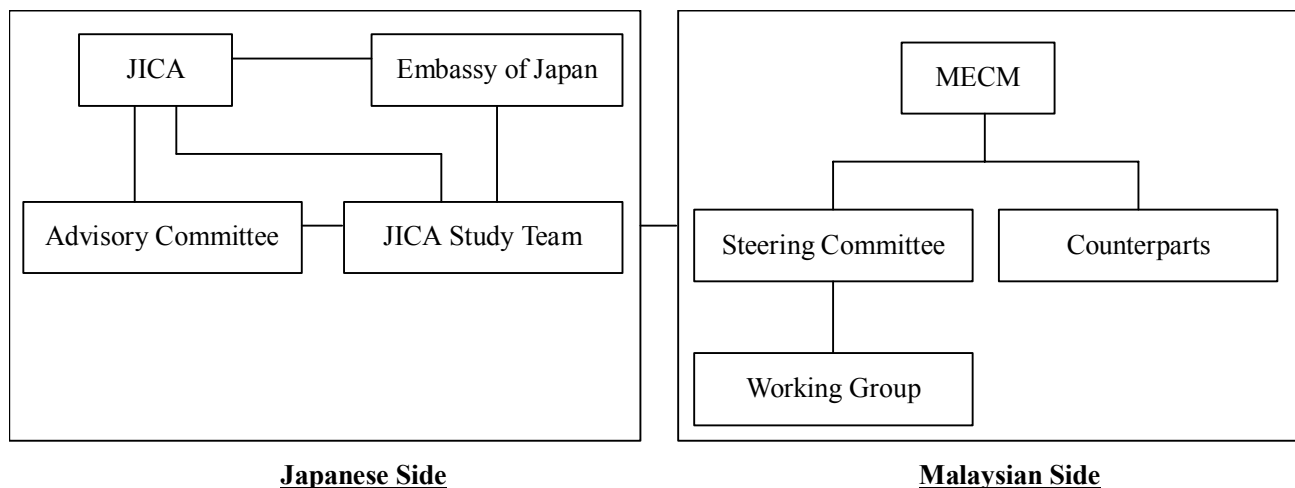An overall organization for the implementation of the Study is shown below.

Japanese Side   **Malaysian Side**

Figure I.2.3: Overall Organization

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2.3.2 Implementation Organization of the Malaysian Side

(1) Formation of Steering Committee

Considering that both policy issues and physical planning as well as the implementation of the 3 model projects had been involved in the implementation of the JICA Study (the Study), there are both Steering Committee (SC) and Working Group (WG).

    (a) Function of SC

- To steer the overall implementation of the Study.

- To handle the policy issues.

- To coordinate with the other concerned ministries/organizations and aid organizations.

    (b) Composition of SC

- Chairperson: Secretary General of the Ministry of Energy, Communications and Multimedia (MECM).

- Members: Representatives of

  - MECM

  - Economic Planning Unit

  - Ministry of Rural Development

  - Ministry of Education

  - Department of Statistics

  - National Institute for Public Administration

  - POS Malaysia

  - Representatives of the State Governments of Selangor, Sabah and Sarawak

All members are at the level of the Directors of the Departments/organizations.

(2) Formation of Working Group

    (a) Function of WG

- To cooperate and support the Study Team for daily execution of the Study works.

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(b)   Composition of WG

- Leader: Chief Counterpart of MECM

- Members:

  - Representatives of the SC member organizations. Position of the members may be at the level of the Managers or Experts.

  - Representatives of District Offices

  - Representatives of the organizations who are cooperating with the on-going RIC projects.

  - Representatives of the RIC Committees of the model projects.

(3)   Assignment of Counterparts

The following counterparts/sub counterparts were assigned by the Malaysian side. Terms of reference of their assignments were given.

Ministry/Organization	Status/Speciality	Working Style/Function
MECM	Chief	Full-time
MECM	Vice Chief	Full-time
MECM	Counterpart	Full-time
SC/WG member organizations	Liaison officer	Part-time
RIC Committees of the 3 model Projects	Sub counterparts	Full-time during the implementation period of the model projects

(a)   Counterparts from MECM

- Chief counterpart: 1 person of head of Communications and Multimedia Division of MECM

- Counterparts: 6 persons from MECM

(b)   Other counterparts

- One each from the organizations concerned with the Study.

(c)   Sub counterparts

- One each from the RIC Committees for the model projects.

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2.3.3   Implementation Organization of the Japanese Side

The Study has been carried out by the Study Team with advices of the Advisory Committee and the Embassy of Japan.

The Study Team consists of ten members as listed below.

	Experts	Name
1	Team Leader/Regional Information Expert	Masatoshi Akagawa
2	Policy/Institution/Public Service Expert	Hirofumi Takahashi/ Hori Nobuki
3	Information System Expert	Mitsuyasu Yanagisawa
4	Social Development /Community Participation Expert	Masahiro Ibayashi
5	IT Needs Specialist	Seiji Kikuchi
6	IT Specialist 1(Communication /Network Technology)	Yoshihiro Daikoku
7	IT Specialist 2(Web/Contents Development)	Naoto Osada/ Kiyotaka Nakabayashi
8	IT Specialist 3(Web/Communication Technology)	Kenichi Tanaka
9	Economist/Financial Analyst	Ali Nawaz Memon
10	Coordinator/Web/Communication Technology Expert	Yasunori Kohge

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CHAPTER 3   CURRENT CONDITIONS OF INFO-COMMUNICATIONS ACCESS ENHANCEMENT

3.1   Socio-Economic Conditions in Malaysia

The Eighth Malaysia Plan (2001-2005) provides an excellent view of the past, present and planned achievements of Malaysia. "Declaration" at the front part of the Plan sets the tone and puts emphasis on technology.

"OUR NATION, MALAYSIA, being dedicated to achieving a greater unity of all her peoples; to maintaining a democratic way of life; to creating a just society in which the wealth of the nation shall be equitably shared; to ensuring a liberal approach to her rich and diverse cultural traditions; to building a progressive society which shall be oriented to modern science and technology".

Malaysia had a total population of 23.27 million in 2000. It had grown by 2.4% per year during the 1995- 2000 period. It is expected to grow by 2.3% per year to 26.04 million in 2005. Details are shown in Table I.3.1 Population Size and Age Structure, 1995-2005.

GNP has increased from RM 212 billion in 1995 to RM 311 billion in 2000. It has grown at high rate of 7.9% per year. Per capita income has grown from RM 10,190 to RM 13,359 (about US$ 3516 equivalent) at about 5.6% per year.

Total amount of the public sector development expenditure during the 1995-2000 amounted to RM 222.9 billion. It is expected to increase to RM 253.4 billion. Out of this, Federal Government allocation is RM 110 billion. State Governments, Local Authorities and Statutory Bodies account for 34 billion. The balance of about RM 109 billion is attributed to non-financial public enterprises according to the Plan. It may be noted that budget allocation of RM 10 million for the Rural Internet Program is very small and equals a small fraction of 1% of total 8th Plan allocation.

In 2000, merchandise exports amounted to about RM 373 billion while imports amounted to 293 billion showing a surplus of about 79 billion.

After taking service account and transfers into consideration, the current account showed a surplus of 31 billion. After taking capital account, there was an overall balance of –4 billion.

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The Central Bank reserves increased from RM 64 billion in 1995 to 114 billion in 2000 that equaled 4.5 months of retained imports. Details are shown in Table I.3.3 Balance of Payments, 1995-2005.

Incidence of poverty for Malaysian citizens was 8.7% in 1995. It decreased to 6.1% in 1997, but increased again to 7.5% in 1999. During 1999, 3.4% of the urban population suffered from poverty while the corresponding percentage was much larger at 12.4% in rural areas. Total households suffering from poverty were 0.351 million in 1999. Out of that 0.264 million were in rural areas. Details are shown in Table I.3.4 Incidence of Poverty and Number of poor households, 1995, 1997 and 1999.

3.2 Review of the Government Policy and Legal Framework for Info-Communications Access Enhancement in Malaysia

3.2.1 Review of Government Policy

(1) Background

The Malaysian Government has fostered remarkable economic development by attracting foreign firms that have provided investments, technology transfer and management know-how since the 1980s.

The country's economy has changed from fundamentally low-level natural resources-based to become manufacturing-centric industrialized. As a result, Malaysia has been one of the conspicuous "Factories in the World", especially in consumer electronics and computer-related equipment in late the 1990s.

During the past several decades, advanced developing countries have first progressed from economies based on agriculture and natural resources to labor intensive light industries based economies, and in the next phase, to capital and technology intensive heavy industries- based economies in early 1990s.

Since the mid 1990s, developed countries have been eagerly shifting into high value-added IT and software economies.

(2) Vision 2020

In Malaysia, since 1996, the Government, under the ambitious "Vision 2020", has been making every effort to strengthen ICT (information and communication technologies)

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industries, mainly by the well-known national project "Multimedia Super Corridor (MSC) in order to catch up with the most advanced countries by 2020".

The objective of the Government Plan is to position Malaysia as a competitive knowledge-based economy and, especially to realise the goal "expanding ICT infrastructure into rural areas to bridge the digital divide and enable all citizens to have equitable access to knowledge and information".

To attain the economic level of the most advanced countries in 2020, it is necessary for Malaysia to develop the whole country in the balanced way, that is, the strategic positioned ICT industries and the highly growing Metropolitan Areas leading the development of other industries and rural areas.

The knowledge-based economy requires "new skills, competencies, broadband connections for advanced applications and network infrastructure to enable Malaysians to benefit fully from rapid technological developments", both in advanced areas and less advanced ones, such as rural regions.

(3)   National Policies for IT Technologies

Directions of social and economic policies published by the Malaysian Government are summarized in the following table.
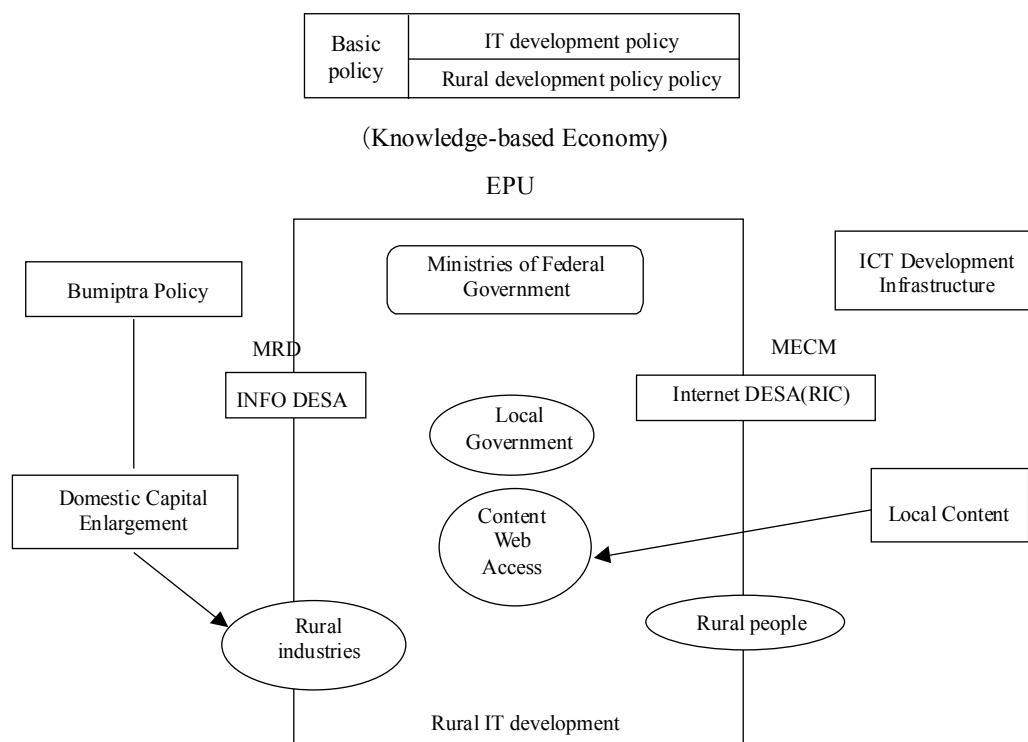
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Outlines of Major Policy Objectives Based on Long and Mid Terms National Plans

Eighth Malaysia Plan (2001-2005)	National Vision Policy	Outline Perspective Plan (2001-2010)
1) Sustaining stable economy 2) Eliminating poverty and reconstructing societies 3) Growing by productivity improvement 4) Improving quality of life 5) Solving social issues 6) Strengthening competitiveness in major economic areas 7) Enlarging the use of IT technologies 8) Promoting human resources development 9) Strengthening moral and ethical values	1) Constructing a strong nation state by maintenance of unity and nationalistic education 2) Eliminating poverty and discrimination by race and region 3) Sustaining high growth by strengthening macro-economic policy 4) Improving international competitiveness 5) Shifting to "a knowledge-based economy" 6) Enhancing human resources capabilities, productivity and knowledge 7) Maintaining long-term growth by sustainable environment development	1) Malaysian economy becoming a "knowledge-based economy" 2) Internal growth by domestic investments and utilization by foreign direct investment (FDI) in strategic areas 3) Promoting dynamism in agriculture, manufacturing and service industries, etc, knowledge-basis 4) Improving revenue and quality of life in rural areas, natives in Sabah/Savawak and the lowest 30% income group 5) Promotion of Bumiputra participating in advanced areas and increasing domestic capital ratio to 30% by 2010

Source: Eighth Malaysian Plan (2001-2005)
                 National Vision Policy
                 Out line Perspective Plan (2001-2010)

Rural development of IT technologies in Malaysia has been advancing due to the national policy targets established by the "Eighth Malaysian Plan 2001-2005", the "National Vision Policy" and the "Outline Perspective Plan (OPP) 2001-2010".   Those include IT policies that Malaysian economy should be strategically shifted to a "knowledge – based economy" by utilizing ICT technologies and rural development policies of creating a united and integrated Malaysia state (one Brags Malaysia), by decreasing the race and/or regional discrimination, promoting competitive policies and increasing domestic capitals.

As is shown in the following figure, the "Basic concept of rural IT development in Malaysia", the flow of "policies", "plans" and "programs" in the federal and local governments are closely related.

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Source: JICA Study Team

Figure I.3.1: Concept of Rural IT Development in Malaysia "Bangsa Malaysia"

(4)   Framework for Industry Development (FID)

Penetration targets in C&M industries set by "FID 2002-2006"

The MCMC published "Framework for Industry Development: FID (2001-2005)" at the end of 2001, to provide a five-year rolling plan for the development of the communications and multimedia industries in Malaysia.

FID has introduced various clear targets to achieve the following National Policy Objectives set out in the CMA（1998）.

- Upgrading network capabilities
- Improving service quality and choice of service
- Building capacity
- Managing resources efficiently
- Regulating efficiently

The commission made the first review of the FID and published "FID 2002-2006" in June 2002.   The key priority is "to focus on the development of Malaysia as a global

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hub for communications and multimedia services". New FID stresses the following attributes to realize an effective converged regulatory framework;

- availability of high quality services at reasonable prices

- infrastructure to suit all sectors of society

- adequate financial resources to nurture growth

- proliferation of knowledge, skills and entrepreneur ship

- ability to attract international and multimedia traffic to compete at home and abroad, and

- offer a wide array of content and application services.

The FID introduced a new set of penetration targets for communication infrastructure as benchmarks for 2007 in the following table.

New Penetration Targets (%) Set by the "FID 2002-2006"

	2001	2007
Fixed Telephone lines	20	30
Fixed lines in rural areas (including public payphones)	-	25
Mobile telephone lines (2G, 2.5G, 3G)	31	60
Internet dial-up subscribers	9	30
Set-top box (satellite broadcasting and cable TV services)	3	35
Free to air TV and radio (for domestic use)	97	99
IMT 2000 (3G mobile telephone services)		
・ Population coverage	-	50
・ Subscribers	-	30
Digital cable TV (DTTB)		
・ Household coverage	-	99
・ Subscribers	-	35
Broadband		
・ Population coverage	-	80
・ Subscribers	-	50

Source : Framework for Industry Development 2002-2006, MECM

MCMC's intention by publishing the FID is to provide the strategic planning and investment incentives to the communications and multimedia industries in Malaysia. However, MCMC is flexible in applying the above-mentioned targets, not applying each benchmark strictly, but managing them altogether.

3.2.2 Legal Framework

To establish a favorable environment to promote the knowledge-based economy, the Government has enacted several important ICT related laws, including the Communications and Multimedia Act 1998.

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Those laws have created a basic legal framework to develop ICT industries by introducing a competitive telecommunications market and an effective system to promote the knowledge-based economy.

Major Laws Enacted to Achieve a Knowledge-Based Economy in Malaysia

Law	Major contents
Communications and Multimedia Act (CMA) 1998 (Act588)	The objectives of the law - To promote the national policy objective for communications and multimedia industries - To establish the licensing and regulation framework to attain such objectives - To set up of the Malaysian Communications and Multimedia Communication (MCMC) and stipulate its powers and functions
Malaysian Communications and Multimedia Communication Act 1998 (Act589)	The powers and functions of MCMC - To advise the MECM Minister on all matters concerning the national policy objectives for communications and multimedia (C&M) activities - To implement and enforce the provisions of CMA - To regulate all matters related to C&M activities not provided for in C&M laws
Digital Signature Act 1997 (Act562)	The objectives of the law - To make provisions for, and - To regulate the use of digital signatures, and - To provide for matters connected therewith
Computer Crimes Act 1997 (Act563)	The objectives of the law - To provide for offences relating to the misuse of computers
Telemedicine Act 1997 (Act564)	The objectives of the law - To provide for the regulation and control of the practice of telemedicine, and - For matters connected therewith

Source: Communications and Multimedia Act (CMA) 1998 (Act588)
           Malaysian Communications and Multimedia Communication Act 1998 (Act589)
           Digital Signature Act 1997 (Act562)
           Computer Crimes Act 1997 (Act563)
           Telemedicine Act 1997 (Act564)

Malaysia has completed a legal and regulatory system for the IT age much sooner than not only the neighboring countries and but before even the developed ones. Based on the new Communications and Multimedia Act (CMA), telecommunications regulation and broadcasting have been integrated and the independent regulatory commission, "Malaysian Communications and Multimedia Commission: MCMC" was set up, separated from the "Ministry of Energy, Communications and Multimedia: MECM" in 1998 under the auspice of the Minister of MECM.

As a contrast, the Thai Government enacted the new and long-awaited Telecommunications Law in October 2001, but could not set up the independent telecommunication and broadcasting regulatory commission, because of political obstacles.

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3.3   Organizations for Info-Communications Access and Their Roles

3.3.1   Organizations and Roles of Concerned Ministries

Major Government Departments and Ministries responsible for the Information communication access enhancement in rural communications are described in the following table.

Organizations related to Info-Communications Access

Organization	Policy objectives
Economic Planning Unit (EPU)	- To plan and formulate policies and strategies for the development of infrastructure - To ensure the provision of adequate and high quality infrastructure facilities
Malaysian Administrative Modernization and Management Planning Unit (MAMPU)	- To improve public sector productivity and effectiveness by using IT and multimedia technologies - To strengthen democracy and citizen access to government services
Ministry of Rural Development (MRD)	- To uplift the quality of life of the rural people through infrastructure development, rural industry, creation of growth centers and regional development
Ministry of Education (MOE)	- To enhance the creativity and judgement of Malaysian students - To improve IT literacy and skills, including Internet utilization - To improve the quality of education itself
National Institute of Public Administration (INTAN)	- To provide quality training for all categories of civil servants at both the Federal and State level - To provide consultancy services to the public sector in the fields of training and management
Department of Statistics (DOS)	- To collect, compile and disseminate a wide range of macro and socio-economic data and statistics, needed for national development planning and administration
Pos Malaysia (POS)	The sole licensed operator of Postal Services in Malaysia In addition to mail services and corporate mail management, Pos Malaysia provides agency services on behalf of public and private organizations. (Pos is the biggest service center, providing more than 90 agency services.) Pos's post offices throughout the country might become IT and Internet services centers, offering Information retrieval, reservation, e-Commerce and e-Government, to rural areas.

Source : Information Malaysia 2002 Yearbook, Berita Publishing Sdn. Bhd. 2002

Those Government organizations have been eagerly promoting the improvement of regional economies and the quality of life in rural areas, in each jurisdiction.

IT development programs are now being planned and promoted by the Ministry of Energy, Communications and Multimedia (MECM), the Ministry of Rural Development (MRD) and the Ministry of Education (MOE) as itemized below.

- Rural Internet Program

- Info-Desa

- e-Bario

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- Smart Schools

- Computer Laboratory

- Mobile Internet Project

- The e–Learning for Life

Programs such as INTERNET DESA (RIC) of MECM and Info-Desa of MRD are focusing on the development of local content by taking MSC flagship applications into consideration as models and to deploy the networks linking various Webs, centers and users.

By contributing post office spaces throughout the country to the RIC Project, Pos Malaysia is providing various types of agency services (mainly bill payments and remittances) to public and private sectors, as follows;

Major Clients of Agency Services Provided by Pos Malaysia

| Industry	Major clients
Water supply	Many local governments providing water supply services
Bank	National and private banks
Telecommunications	Telecom Malaysia, new competitive carriers
Local government	Many cities and towns (various remittances)
TV channel	Cable companies
Education	MOE, higher education institutions

Source: Pos Malaysia

3.3.2 Organization and Role of MECM

The mission of MECM is to develop and formulate strategic and innovative policies, a self-regulating framework and establish a vibrant, effective and efficient management support systems in communications and multimedia (C&M).

The major powers and functions of the Ministry are the following;

- to formulate and implement the national policy objectives on C&M industries

- to plan and develop C&M strategies

- to establish the licensing and regulatory framework for C&M industries

- to formulate and implement the national policy on safety, security protection, integrity and reliability of network and application services

- to promote the development of capabilities and skills for C&M industries

- to license the network facilities, network services, application services and content application services

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- to formulate the national policies on spectrum utilization and assignment, universal service provision, computerization, protection, security and integrity of information.
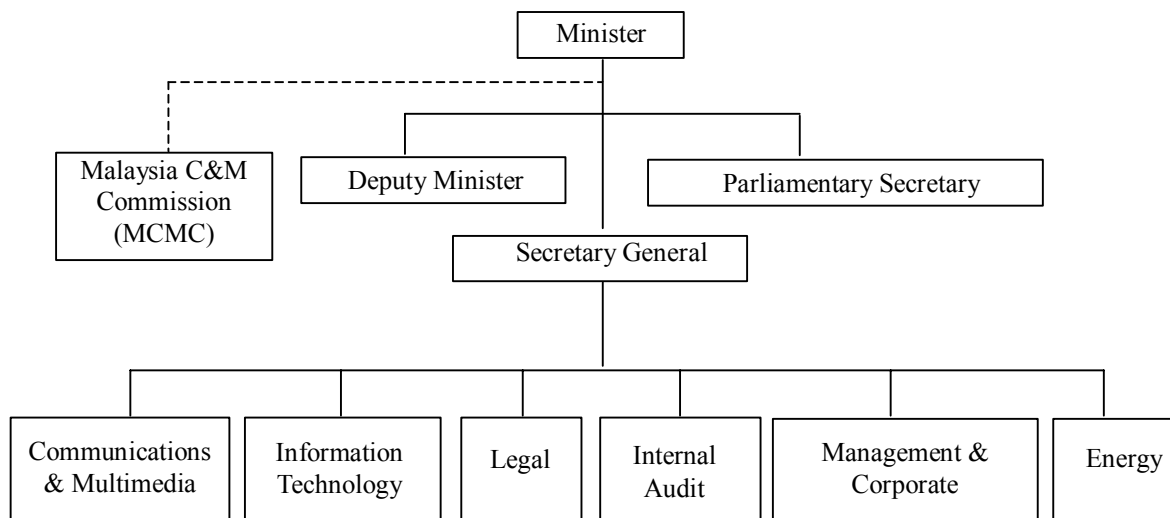
Source: Ministry of Energy, Communications and Multimedia, Malaysia, MECM

Figure I.3.2: Organizational Structure of MECM

The budget of MECM is made up of the Management Budget (the operations of the Ministry) and the Development Budget (the promotion of controlled industries).

The Budget of MECM in 2000   (million RM)

Management Budget	104.98
Development Budget	223.36
Total	328.34

Note: The development budget of C&M was 1.034 million RM.
         Most of the development budget was assigned to
         the Sabah Electricity SDN Bhd.
Source: MECM Annual Report 2000

In the Ministry, the Communications and Multimedia Division (CMD), which is counterpart division for the Study, is responsible for the policy and strategic planning of C&M industries.

The major functions and activities of CMD are as follows;

- Policy planning – market liberalization, consumer rights control, licensing and regulatory, competition and tariff

- Strategic planning – preparation of short, medium and long term planning for the development of C&M industries, preparation of guidelines for R&D planning

- Implementation coordination – evaluation of objectives and achievements, coordination and monitoring of the development of C&M industries

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- Industry relations – establishments of guidelines, approaches and monitoring of consumer and industry forums, establishments of inter-governmental relations and networking

The Organization of CMD

Content Unit	To plan and implement policy and programs for promoting C&M industries
Infrastructure and Access Unit	To plan, implement and monitor related projects, rules and regulations to ensure equal economical access to C&M services throughout the country
Electronic Application Unit	To plan and implement ICT policy and programs including ICT adoption in the local community
International Relations Unit	To plan and implement strategic activities to strengthen the competitive advantage of C&M industries
Appeal Tribunal Unit	To handle any disputes between the regulator and the service providers
Licensing and Regulatory Division	To facilitate the activities on the migration of licenses from the old regime to the existing, to regulate the 3G implementation, spectrum management, implementation of USO projects and the handle issue on the exclusive rights of ASTRO

Source: Communications and Multimedia Division, MCMC

The Electronic Application Unit is responsible for ICT penetrations as follows;

- to create a robust application environment for end users

- to promote a high level of consumer confidence in services provided by the industries

- to ensure information and network reliability

- to promote the development of capabilities and skills in C&M industries, and

- to promote a society in which information-based services will be the basis for continuing enhancements of the working environment and the quality of life

### 3.3.3   Organization and Role of MCMC

Malaysian Communication and Multimedia Commission (MCMC), set up in 1998, is responsible for the regulation of the C&M industries.

The primary goal of the MCMC is to implement and promote the Government's national policy objectives for the C&M sector and oversee the new regulatory framework for the converging telecommunications, broadcasting and computer industries.

The major powers and functions of MCMC are as follows;

- to advise the Minister on all matters concerning the national policy objectives for C&M activities

- to implement and enforce the provisions of the C&M laws

- to regulate all matters relating to C&M activities not provided for in the C&M laws

- to consider and recommend changes to the C&M laws

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- to supervise and monitor C&M activities

- to encourage and promote the development of the C&M industries

- to encourage and promote self-regulation in the C&M industries
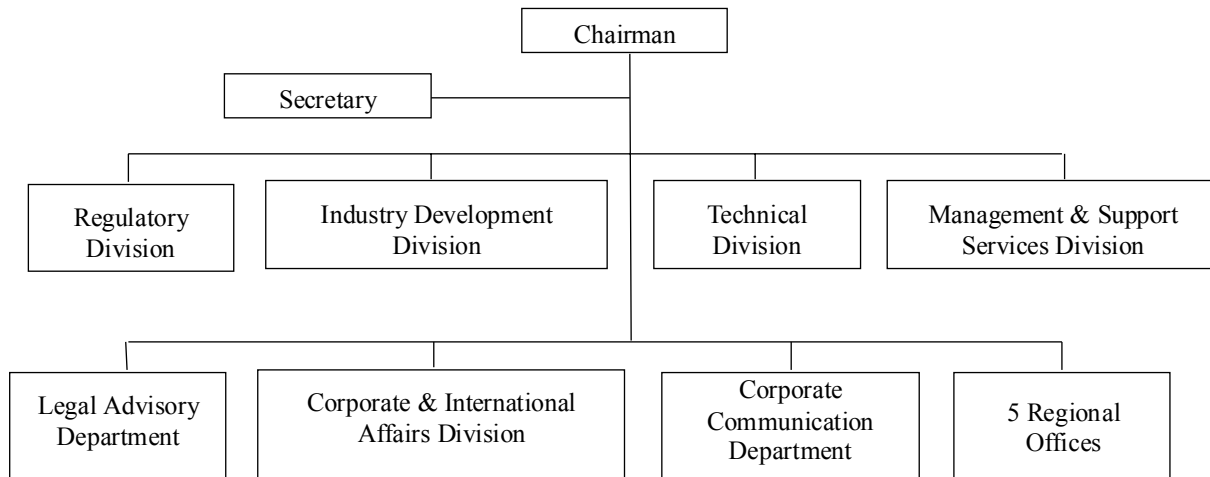
Source: MCMC

Figure I.3.3: The Organization of MCMC

According to the CMA of 1998, the Minister in charge of the MECM is responsible for policy-making for the C&M industries and the Commission (MCMC) is charged with the regulations of the industries.

The Minister may also give policy directions to the Commission from time to time and also modify, vary or revoke such directions from time to time.   The Minister may grant individual licensees, acting on the recommendations of the MCMC.

The CMA gives the MECM Minister strong powers in the policy-making and regulatory functions including licensing and the Commission has been supervised by the Minister (not the Ministry supporting the Minister).

The Commission is responsible for the routine and/or detailed regulatory matters and activities for C&M industries and, it seems, has actually much more power and more functions for C&M markets than the Ministry.

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3.4   Current Condition and Future Plans for the IT Development and Services

3.4.1   IT-related Services

(1)   Background

The Malaysian Government has mid-term objectives of becoming united, democratic, free, generous, economically fair, affluent and reliable in order to transform itself into an advanced, developed nation by 2020. Through "The Outline Perspective Plan (OPP)" for 2001-2010 and "The Eighth Malaysia Plan" for 2001-2005, it is now pursuing a "knowledge – based economy", using broad IT technologies and an "equitable society" by eliminating poverty and discrimination by race or region.

(2)   Progress

With such comprehensive strategic national goals, what developments have the Malaysian communications and multimedia industries made?

According to the MCMC (Malaysia Communications and Multimedia Commission), the Malaysian communication and multimedia industries had, as of end 2001, 4.71 million fixed telephone lines, 7.48 million mobile telephone lines (including prepaid users: 58%) and 2.12 million dial-up Internet subscribers (number of Internet users: 6.36 million – on average one Internet subscriber has 3 Internet users).   Especially, mobile telephones and the Internet have been developing significantly.

Progress of Malaysian Communication and Multimedia Industries (end year)

	1997	1998	1999	2000	2001
Population (thousand)	21,700	22,200	22,700	23,300	23,800
Number of Fixed lines (thousand)	4,250	4,370	4,420	4,630	4,710
Teledensity (%)	19.6	19.7	19.5	19.9	19.8
Number of mobile lines (thousand)	2,460	2,150	2,720	5,120	7,480
Teledensity (%)	11.4	9.7	12.0	22.0	31.4
Total teledensity (%)	31.0	29.4	31.5	41.9	50.2
Number of dial-up Internet subscribers (thousand)	210	410	670	1,660	2,120
Teledensity (%)	0.9	1.8	2.9	7.1	8.9

Note: 1. Total teledensity = fixed teledensity + mobile one
        2. Ratio of residential telephones in fixed lines (2001): 72%
        3. Rates of digital lines in mobile telephones (2001): 96%
Source: MCMC

Other Asian countries have experienced a similar rapid growth in mobile telephone services, because of very strong competition (services and rates), increasing prepaid subscribers and the difficulties to construct fixed lines, especially in rural areas.

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Projecting based on the experiences of the Western countries and Japan, mobile telephones would grow rapidly to 50-60% in the teledensity (penetration rates). Therefore, in Malaysia such fast development might also continue for several years.

Recently, mobile carriers have been providing SMS (short message services), which are convenient mobile e-mail services and mobile Internet on an "always-on" basis (by packet switching). Therefore IT utilization might change drastically and fundamentally with mobile Internet penetrations.

In developed countries, voice communications and low speed data communications of less than 64 kbps are now shifting from fixed telephones to mobile telephones, where fixed telephones might diminishes if not providing broadband services, (high-speed Internet access) by DSL on current copper cable and/or FTTH (fiber-to-the home) on fiber access lines. Probably, the Kuala Lumpur Metropolitan Area and major large cities such as Pulau Pinang, Johor, Selangor would experience the same situations soon.

(3)   Licensed Carriers

The "Communications and Multimedia Act of 1998:CMA1998" has introduced a licensing system (Individual Licenses and Class Licenses) to telecommunication carriers and broadcasters. The next table shows the list of major carriers, providers and broadcasters and competitors in the Malaysian telecommunications markets.

Major Licensed Carriers by Service Type in Malaysia (MCMC statistics)

Type	Number of license	Major carriers
Domestic network operators	7	TM(00.12), Maxis(Jun. 1999), Celcom(Nov. 1999), DiGi(Jun. 1999), TT dotCom(Apr. 1999)
International network operators	5	TM, Maxis, Celcom, DiGi, TT dotCom
Cellular/Personal Communications	8	TM, Maxis, Celcom, DiGi, Mobikom(Jan. 2000), Time Wireless(Apr. 1999)
Paging services	30	EFT(-), MEPS(-)
Trunk Radio Systems	17	TM, CT(Nov. 1999), CMRS Trunk Radio(Sep. 1999)
Long-distance network data services	55	Celcom, Digi
Value-added services	19	
ISP	7	TM, Maxis, Celcom, Digi, TT dotCom
Public phone/ fax services	4	TM, citifon(Jan. 2000), SEA Telecommuni-cations (Mar. 2000)
Private telecommunications networks	3	Communications and Satellite Services (Aug.1999), Malaysia Airports(Mar. 2000)
Radio broadcasting	12	Radio Rediffusion(Feb. 2000), Measat Radio (Mar. 2000)
TV broadcasting	8	Metropolitan TV(Feb. 2000)

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Source: MECM

New competitors with full fixed and mobile licenses, so far, mostly have only developed business operations in mobile networks and very limited fixed services install fiber access lines to large business users.

The Government has already issued IMT 2000 Next Generation (3G) Mobile licenses to Telekom Malaysia and Maxis and has the intention of giving one more 3G license. Therefore, the current 5 mobile carriers competing system would be restructured into 3 competing carriers in the near future.

In Malaysia, cable TV industries have mostly been replaced by the development of satellite broadband services. Digital cable TV services would be introduced in 2005 and might compete with telecommunication carriers in telephone and broadband services.

The Government introduced "call-by-call selection" in January 2000 and is now planning to implement "pre-selection" (equal access). But TM claimed competitors should be required to contribute to up grade switches and the latter plan has not been introduced yet.

In the past, Internet access services had only been provided by telecommunication carriers. Since the Government allowed Internet licenses to other providers beginning in 2000, Internet service markets in Malaysia have been developing smoothly. Also, the Government has decided not to regulate Internet content.

Foreign companies can initially obtain up to a 61% interest in individual licensed carriers、but must decrease such interests to a maximum of 49% within 5 years. (Foreign firms are prohibited from owning Malaysian broadcasters.) Foreign investors are allowed to own 100% of class-licensed carriers.

(4)   Calling Rates

TM, pressured by the Government revised telephone rates in March 2002. The most recent previous rate increase was in June 1996. Major reason for the revision is rate-rebalancing, based on costs, because in the past basic monthly rates and local call rates have been cross-subsidized by the profits of long-distance and international services. The key points of the revisions are as follows;

i)   Long-distance call rates – up to 56% decrease

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ii)   International call rates – up to 60% decrease

iii) Basic monthly rates and local call rate – moderate increase

Major Rate Revisions in March 2002

a: Basic monthly rate   (RM/month)

	Before the revision		After the revision	
	Business	Residential	Business	Residential
Peninsula				
>500ELC	35.00	20.00	45.00	22.00
<500ELC	20.00	13.00	20.00	13.00
Sabah/Sarawak				
>500ELC	30.00	20.00	40.00	22.00
<500ELC	20.00	13.00	20.00	13.00

Note : ELC means switched access lines

b: Local call rates

Before the revision	After the revision
Initial 3 minutes – 9 sen	Initial 2 minutes – 8 sen
Additional each minute - 3 sen	Additional each minute - 4 sen

c: STD long-distance call rates   (second/unit rate)

	Before the revision (13 sen)		After the revision (10 sen)	
	ordinary rate	discounted rate	ordinary rate	discounted rate
-50km	60	90	50	60
50-150km	20	40	20	40
150-550km	7.5	15	7	14
550km-	4	8	7	14

d: Public payphone

	Before the revision	After the revision
Local call	Each 3 minute – 10 sen	Each 2 minutes – 10 sen
Long distance call	The same as STD	Long-distance call rate

Source: MCMC

Based on such rate revisions, basic business monthly rates have been increased about 30% and residential increased 10%.   The rate for a local 2-minute call is unchanged, however the rate per additional minute increases from 3 sen to 4 sen.   The total TM revenue would be almost unchanged with the March revision.

MCMC now decides fixed telephone rates as "industry-wide rates" applied to all carriers, but the commission has deregulated mobile rates in 1999.

(5)   Service to Rural Areas

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One of the priorities is to improve the teledensity in the rural areas (now between 1 and 10%) and introduced "Universal Service Obligations: USO" to promote telephone penetration in rural and remote areas.   Under this program, TM contributes RM225 million and 4 major competitors RM 80 million in total to USO per year and TM obtain the total amount.   Using this fund, TM now is deploying CDMA based WLL (wireless local loop) services in rural areas, for about 100 thousand customers in 2002.   TM already signed an agreement amounting to 550 million RM in August 2001 to construct the CDMA 2000 network for 720 thousand WLL lines in 3 years.   In rural areas, WLL is considered to be more efficient solution than copper cable.

3.4.2   Internet Use

Malaysia has been experiencing rapid expansion in IT related environment in late 1990s.   As shown in Table I.3.5, Internet users have increased from 192,000 persons or 0.9% of the population of Malaysia in 1996 to 4.9 million or 21.4% of population in 2000.   Internet dial up subscriber has also increased from 0.3% of the population in 1996 to 7.1% of the population in 2000.

Internet users are characterized as young (close to half of users are age between 16 to 25 years), educated (74% has post high school diploma), and relatively high income (73% has income of RM 1,000 or higher) as shown in the table below.

Malaysia Internet User Profile

Age	- 45% are between 16-25 years old - 34% are between 26-35 years old - 15% are above 35 years old
Gender	- 74% are male - 26% are female
Education	- 60% hold vocational/technical or associate diploma & bachelor's degree - 14% hold post graduate degrees or professional certificates
Occupation	- 31% are working in professional or management positions - 14% are working in a technical field - 7% are entrepreneurs - 27% are fulltime students
Marital Status	- 34% are married - 66% are single
Personal Income	- 27% earn < RM 1,000 - 46% earn RM 1,001 to 3,000 - 27% earn > RM 3,000

Source: Pikom 2000/2001

Despite the expansion of IT related environment in Malaysia as a whole, discrepancy in the IT related infrastructure between the urban area and the rural area still exists.   Telephone lines and Internet subscribers tend to be concentrated in urban areas.   Three most urbanized states (Kuala Lumpur, Selangor, and Pulau Pinang) with population share of 26% has 51% of Internet

subscribers and 40% of telephone lines. Rural states (Perlis, Kelantan, Kedah), on the other hand, has population share of 15%, but internet subscribers and telephone lines are limited to 8% share and 9% share, respectively (Table I.3.6). Despite the expansion of telephone line in the rural area, IT related infrastructure is still limited in the rural area. GIS Maps in Figures I.3.4 and I.3.5 also illustrates the difference of Internet penetration rate and fixed line penetration rate among states.

Share of the Internet

State	Population Share (%)	Internet Subscriber (2001)			Fixed Line (2001)		
		Number	Share by State (%)	Penetration (%)	Number	Share by State (%)	Penetration (%)
Malaysia	-	2,115,000	100	9	4,628,000	100	32
Urban States	**26**	1,076,535	**51**	57	1,865,084	**40**	103
Rural States	**15**	171,315	**8**	15	398,008	**9**	66

Note: Urban State is defined as three most urbanized state (Kuala Lumpur, Selangor, and Pulau Pinang)
              Rural State is defined as three least urbanized state (Perlis, Kelantan, Kedah)
Source: Statistics Department, MCMC

As shown below, Internet penetration rate has clear positive relationship with income level which is closely related with the urbanization rate. Namely, Kuala Lumpur which is mostly urbanized has the highest figure while rural dominating states including Trengganu, Kelantan and Pahang have the much lower figures which indicates lower penetration rate for the rural area.

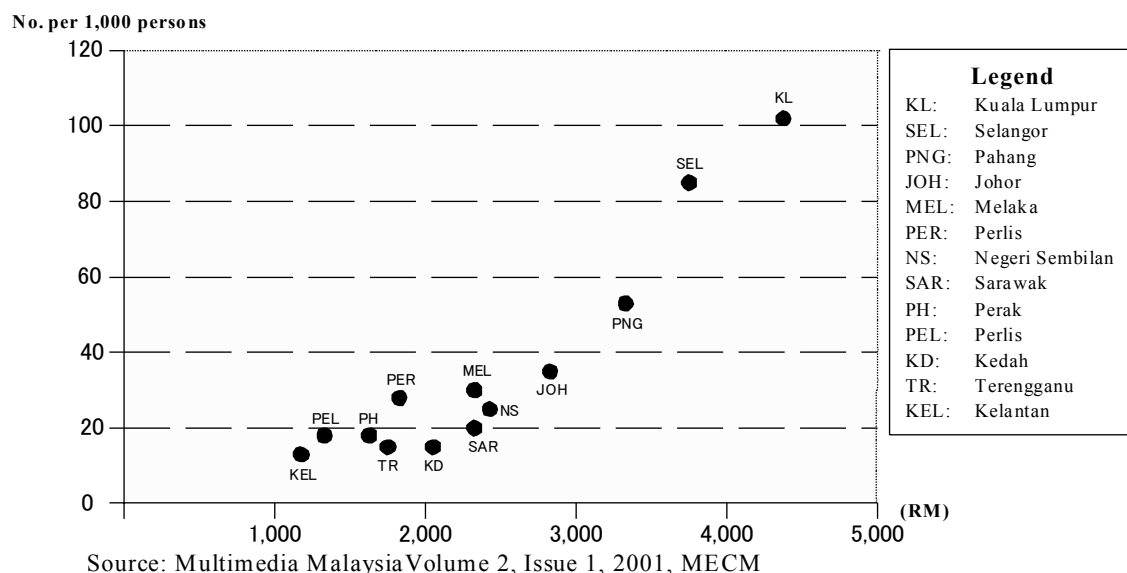Source: Multimedia Malaysia Volume 2, Issue 1, 2001, MECM

Figure I.3.6 : Internet Penetration and Income Level by State in Malaysia, 2000

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3.5   Current Conditions of Info-Communications Access and Needs in Rural Communities

3.5.1   Objective of Demand Survey

The demand survey has been carried out by the Study Team.   The objectives of the demand survey are summarized as follows.

- To understand the current situation of rural communities in terms of IT literacy, info-communications access and awareness and usage of Rural Internet Centers (RICs).

- To analyze the demand for info-communication access in rural communities and the need for RICs.

A baseline survey was conducted in order to understand the current situation in rural communities in respect of IT literacy, info-communications access and awareness and usage of RICs.   Information collected in the baseline survey is referred to in the analysis of the demand for info-communications access in rural communities and taken into account when the technical level of PC training and RIC services is considered.   In the demand analyses, willingness of people to learn how to use PC and the Internet, present means and the demand for info-communications access and requests for RIC operation and services are thoroughly analyzed to make full use of RICs for enhancing info-communications access in rural communities.

Furthermore, the demand survey is expected to become part of an educational campaign for RICs.   It is used for introducing the significance and usefulness of RICs to local communities and motivating people to participate in the activities.   Furthermore, it would also be helpful in finding key personnel, i.e. persons skilled in IT, Internet lovers, local entrepreneur etc., for active and effective RIC operation in the future.

3.5.2   Survey Items

Based on the objectives mentioned above, information on IT literacy, info-communications access in rural communities and current usage of RICs are mainly collected in the baseline part of the survey.   Attributes of respondents, including age, gender, profession and household income, is also collected for further analyses.   This information as well as willingness of people and requests for RIC services and operations is thoroughly examined in the demand analysis to find the actual needs for info-communication access in rural communities and used to develop a new RIC scheme.

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Specific survey items are described in the following chart.

Survey Items in the Demand Survey

Baseline Survey	
・IT literacy	Possession of PC, Usage of PC, PC skill, Contract with ISP, Internet use, e-mail use, Language literacy（Malay, Chinese, Tamil, English, other ethnic language）
・Current situation of info-communications access	Information currently accessed and exchanged by rural communities (telephone, TV, radio, newspaper, magazine, etc.)
・Awareness and usage of RICs	Recognition of RICs, Number of users, Purpose (Web browsing, e-mail, chat etc.), Attributes of users（age, profession, PC skill, etc.）
・Local Web information	Local Web site, Personnel launching Web site, etc.
Demand Analyses	
・Willingness of people	Willingness to use PC, Internet and RIC, Willingness to pay for PC and Internet, Willingness to participate in RIC activities
・Info-communication needs	Type and speed of info-communication line, ISP service
・Internet needs	Needs for Web contents, etc.
・Requests for RICs	Services, Equipment, Instructor, Operating hour, etc.
Others	
・Attributes of respondents	Gender, Age, Profession, Possession of credit card etc.

3.5.3   Method of Survey

A demand survey has been conducted through questionnaire and interview surveys covering an area of 14 existing RIC sites and 2 newly established RIC sites.   For 3 model project sites, consisting of 1 existing RIC in Sungai Air Tawar in Selangor State and 2 newly established RICs in Bau in Sarawak State and Kota Marudu in Sabah State, in-depth surveys have been carried out by increasing the size of the questionnaire sample and by implementing intensive interviews.

As described in the previous section, survey items include usage of PC, PC skill, willingness of people to use PC/Internet and so on.   As this information is personal rather than household or family, the demand survey has been targeted at individual people.   At the same time, household information reflecting the respondent's background has also been collected.   This includes information such as having a telephone, TV, radio and PC in their home, distance from home to a post office, supply of electricity and household income.

The size of the questionnaire sample was set as at least 100 respondents in each of 13 non-model project sites and 300 respondents in the 3 model project sites.   Effective questionnaire answers exceeding these requirements were collected and analyzed.   Random sampling was applied to reflect the appropriate distribution of respondents with respect to

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attributes such as age, gender and profession. Distribution and collection of the questionnaires was entrusted to a Malaysian consultant firm, which carried out the survey in close cooperation with the existing RIC committees, post office masters and teachers in the communities.

An interview survey has been carried out to supplement the questionnaire survey. In-depth questions were asked in a semi-structured manner to confirm the result of the questionnaire and to obtain more detailed information, which could not be obtained by the questionnaire survey.

3.5.4   Attributes of Respondents

- **Gender:**   The proportion of males and females is about half of the total number of respondents respectively.

	%	Number of respondents
MALE	53.5	1,201
FEMALE	46.3	1,040
NO ANSWER	0.2	3
TOTAL	100.0	2,244

- **Age:**   Age brackets of 13 to18, 19 to 29, 30 to39, 40 to 49 and over 50 years old are distributed relatively equally while the age bracket from 6 to 12 makes up a relatively smaller proportion.

	%	Number of respondents
6-12 YEARS	4.4	99
13-18 YEARS	18.7	419
19-29 YEARS	22.9	513
30-39 YEARS	20.1	450
40-49 YEARS	19.1	429
ABOVE 50 YEARS	14.7	330
NO ANSWER	0.1	4
TOTAL	100.0	2,244

- **Profession:** Although office workers and students make up a relatively large proportion, other professional categories are adequately represented.

	%	Number of respondents
FARMER	7.5	169
OFFICE WORKER	18.4	414
ENTREPRENEUR	2.2	49
SELF-EMPLOYED	9.6	215
STUDENT	28.1	630
HOUSEWIFE	10.0	224
UNEMPLOYED	3.9	88
WORKING FOR OTHER PEOPLE	8.7	195
OTHERS	11.5	257
NO ANSWER	0.1	3
TOTAL	100.0	2,244

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- **Household income:**

  About 50% of households have a monthly income of less than RM 1,000 (≒ JPY32,000[1]).   The percentage of households with low income is rather high in Kota Marudu, Merbok and Ajil, compared to other areas.   More than 40% of households in these areas have a monthly income of less than RM 500 (≒ JPY16,000).
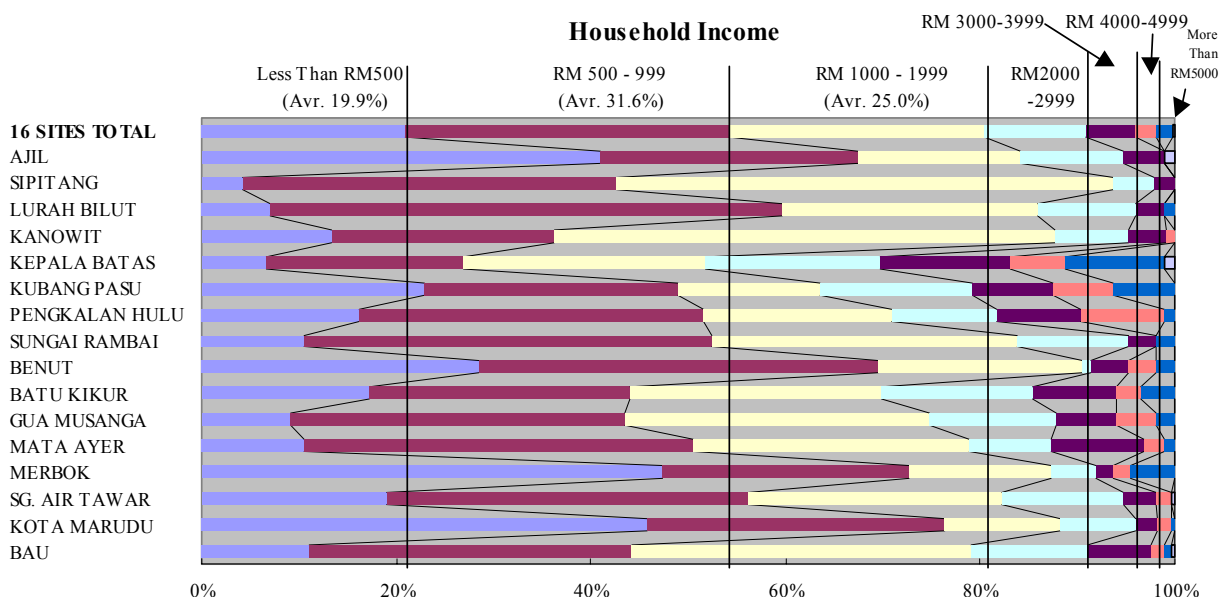

Figure I.3.7 : Household Income of Respondents

3.5.5   Demand for Public PC Facility and Training

According to the Demand Survey carried out in the first phase of the study, about 35% of the people in rural Malaysia possess PCs in their homes. The two major reasons for not possessing a PC at home given in the survey were "Do not have enough money" (59%) and "Do not know how to use a PC" (18%). The survey revealed that 76% of people who do not possess PC at home plan to purchase one, even though only 52% of them show a willingness to pay enough to purchase a PC[2].

A high degree of positive correlation is observed in the relationship between household income and possession of a PC at home. Among people whose household income is over RM 3,000 (≒ JPY96,000) per month, more than 60% possess a PC at home. On the other hand, only 27% of the people who have a household income less than RM 500 (≒JPY16,000) per month possess

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[1] RM 1 ≒JPY32

[2] It is assumed that the minimum price for a second hand PC in good condition in Malaysia is RM 1,000

  (≒JPY32,000)

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a PC at home. This indicates that financial constraint is one of the biggest obstacles for possessing a home PC in rural Malaysia.
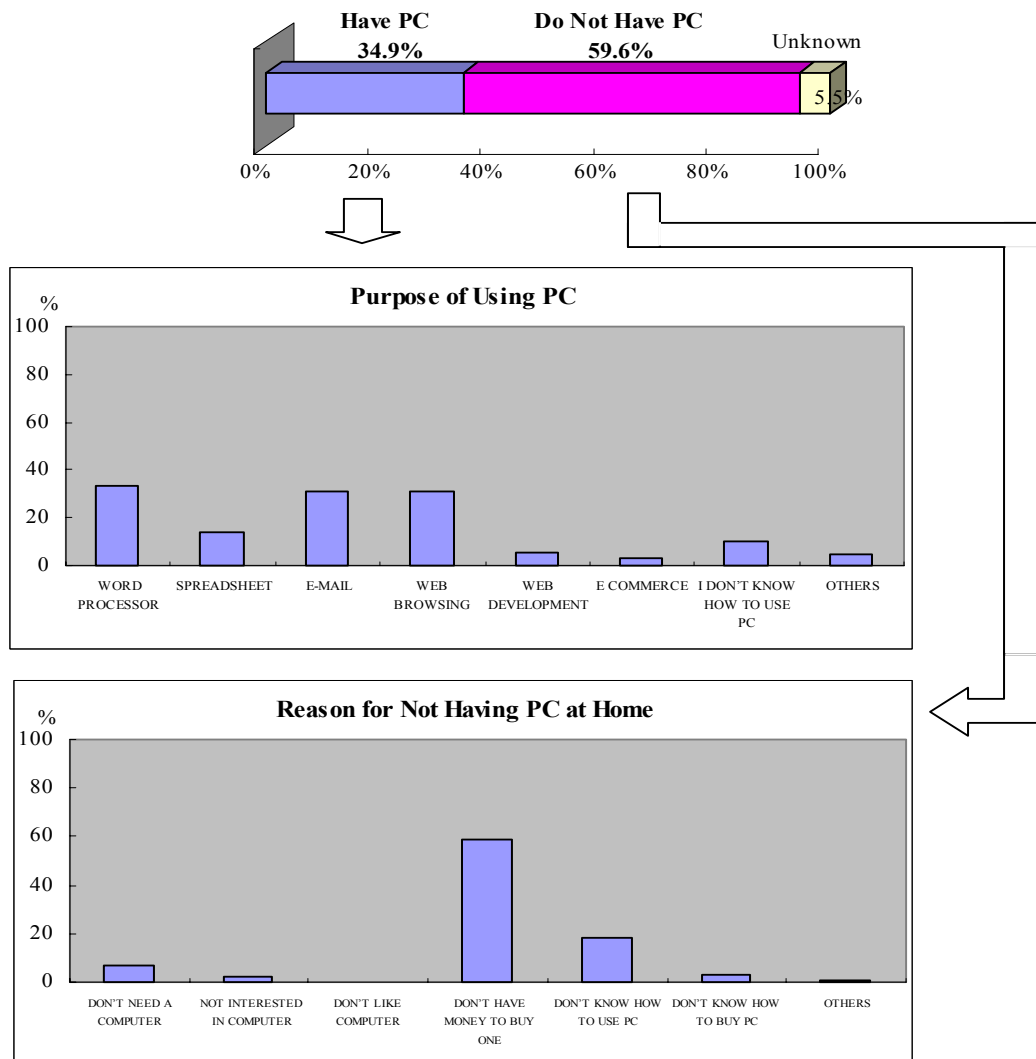

Figure I.3.8 : Possession and Reasons for not Having PC at Home

With respect to PC use, 58% of people answered that they have used a PC. Stratified by age groups, the figure among teens and people in their 20's is around 70%, while the figure for people over 50 years of age remains around 40%. "Do not have PC at home" and "Do not know how to use PC" appear as the two major reasons for people not having used a PC. It is noteworthy that "Do not know how to use PC" is the largest obstacle for the people over 50 years of age for not using PCs.

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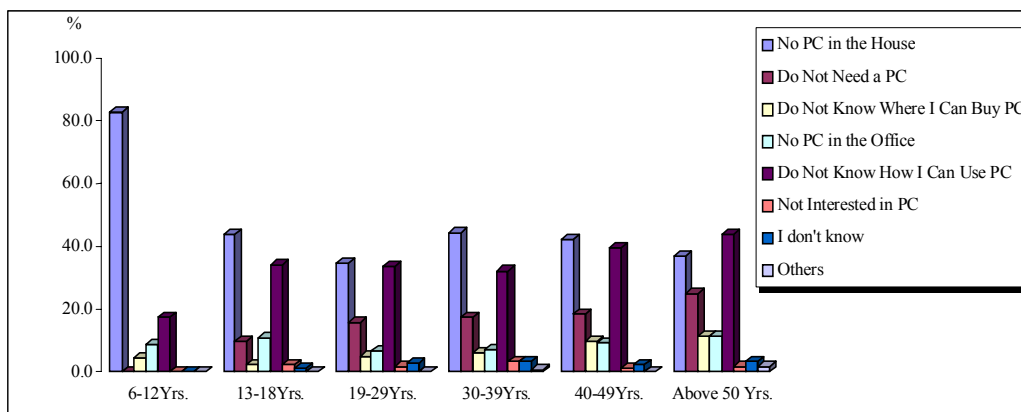
Figure I.3.9 : Reasons for not Having Used PC

These outcomes indicate that creating opportunities for rural people to use PCs freely, by providing public PC facilities for instance, as well as providing PC education or training would have a positive influence on PC use among people in the rural community. Moreover, PC education or training would be effective for the senior age group as well.

People in the rural community also show a strong interest in learning how to use PCs. According to the Demand Survey, about 65% of the people who have never used a PC show a willingness to learn how to use one. PC education and training will be effective as there is a strong willingness to learn how to use PCs among rural people.

3.5.6   Demand for Local Information

By looking at information needs among people who have not used the Internet, which consists of 67% of the rural people, a demand for accessing "Local Information" becomes noticeable. According to the Demand Survey, people in the rural community feel that they have limited access to "Local Information" which would be useful for their daily life even though they usually access information through media tools such as TV, radio and newspapers. Local information includes current events and activities in their community, policies and services provided by the local government, medical services available in the area and so on. People currently access this information by going to public offices or simply asking to their neighbors.
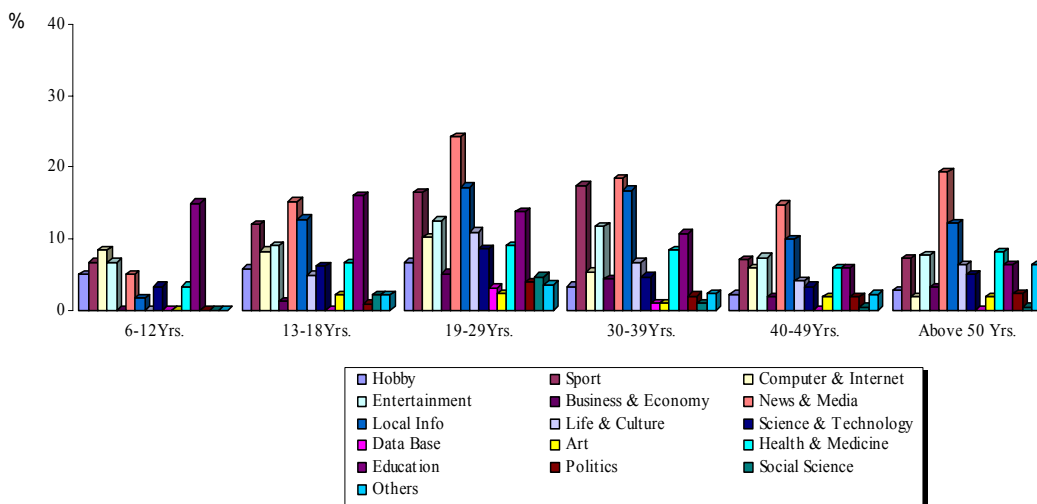
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Figure I.3.10 : Demand for Web Contents by Age Group
(Among People Who Have not Used PCs)

The Internet is a promising interactive info-communication tool for rural people. It can be used for accessing useful information as well as sending messages and disseminating information to both inside and outside of the community. However, only 32% of people in the rural community have used the Internet according to the Demand Survey. Through the Internet, the young people access Web sites relating to "Education" and "Entertainment" for acquiring information that cannot be obtained from other media such as TV, radio and newspapers. Middle aged and senior people use the Internet as a tool to access information in which they have a particular interest. In consequence, the Internet is currently used by a limited amount of rural people only for accessing information, which cannot be obtained by other media tools. In this sense, info-communication is one-way rather than interactive at this moment.

Establishing local community web sites will be helpful for people to access local information. Information on current events and activities in their community can be provided by local community groups including JKKK, PTA, farmer's association, and women's association etc. Local government and medical institutions can provide information regarding government policies and services as well as medical service available in the community through the web site.

The community web site is expected to contribute not only for improving access of rural people to useful local information but also for enhancing interactive info-communication in the community. Community groups, public offices, and local institutions can use it for disseminating information to the local people. At the same time, it helps rural people to send their messages, inquiries, and requests to community groups and public offices. This kind of interactive info-communication in the community will support rural people to participate in community activities and, consequently, promote community activities itself.

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3.5.7 Request for RIC Operation and Service

For RIC operation, "Add more computers", "Instructor" and "Open on Saturday and Sunday" appear as the three major requests, according to the Demand Survey. By age group, "Add more computers" is the highest request among people under 39 years of age, while "Instructor" is the highest among the people over 40 years of age.
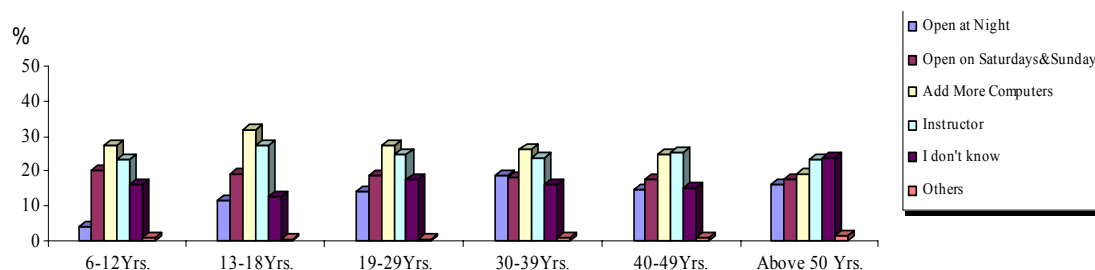

Figure I.3.11 : Request for RIC Operation by Age Group

For RIC services, providing "Public Information" appears as the highest among almost all age groups except those under 12 years of age, for whom the demand for "Local Mail Magazine" is slightly higher than that for "Public Information".
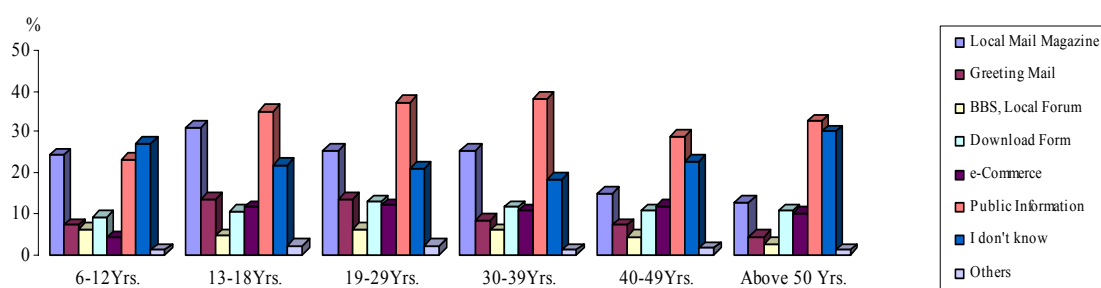

Figure I.3.12 : Request for RIC Services by Age Group

The Demand Survey revealed that people think public information, including policies and services of local government, medical services available in the community, current events etc., would be helpful for their day to day life if this is provided through RICs. Although local government such as District Offices and medical institutions possess this information and are publicizing them to the people, the means of publicity are limited. RICs are expected to help in increasing publicity of these types of information to the local people because these are, in most cases, located in post offices which more than 90% of people in the rural communities visit at least once a month for sending and receiving mail and paying their utility bills. The accessibility of rural people to public information would be significantly enhanced if they were able to access this information through RICs when they visit their post offices.

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People also show an interest in receiving services such as "Local Mail Magazine", "Download Form", "E-commerce" and "Greeting Mail" through RICs, although the priority varies between age groups. For the over 50 years age group, the answer "I do not know" makes up 30% and ranks second following "Public Information". It would be worthwhile gaining an understanding of the importance of developing the interest of older people in RICs, if the project is targeted at this age group.

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CHAPTER 4   EFFORTS MADE FOR INFO-COMMUNICATIONS ACCESS ENHANCEMENT

4.1   On-going Projects for Info-Communications Access Enhancement in the Rural Communities

With a rural population of about 40% of the total population of 23 million, Malaysia is very concerned that it will not be adding the digital divide to the already visible rural-urban chasm. In order to address these concerns, Malaysia ha   started many projects aimed at bridging the digital divide. According to one source, more than 1000 government projects with various degrees of ICT content are underway. RIC is one of those projects. This section provides background and a status report for six other selected projects that have been initiated. These are:

Features of on-going Projects for Info-Communications Access Enhancement

Project	Implementation Agency	Target Group	Target Area	Internet Connection	Web Page	IT Training	Charge
Info-Desa	MRD	All	Rural		×		Pay
E-Bario	UNIMAS	All	Rural		×		Free
Smart School	MOE	Student	Urban/Rural		×		Free
Computer Laboratory	MOE	Student	Rural		×		Free
Mobile Internet	MIMOS, UNDP	Student	Rural	×	×		Free
E-learning for life	UNDP, MOE, and Coca Cola	All	Semi-Urban				Pay
Rural Internet Program	MECM	All	Semi-Urban			×	Free
Universal Service Provision	MECM	All	Rural		×	×	Free

Key: : Service provided continuously.   × : Service not provided".

4.1.1   Program Info-Desa

(1)   Introduction

Program Info-Desa is one of the information and communication technology projects instituted by the Ministry of Rural Development (MRD). It consists of 2 main programmes, namely Medan Info-Desa (MID) and Web Info-Desa (WID). MID is a physical entity equipped with ICT infrastructure and provision of hardware and software, located in rural. It aims to function as a training and interaction Center for the rural community.

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(2)   Important features

A One Stop Center for learning computer, learning Internet, typing service, printing, printing invitation cards, etc.

- It is a self contained computer learning and social Center;

- Community Ownership where the community has the maintenance responsibility;

- District Level Training Center where trainees are brought in from other villages within the district. The local community is paid for training the outsiders designated by the MRD;

- A separate building with communication and social interaction facilities; it has several rooms for social activities;

Info-Desa's main target covers the rural and the underserved communities. This project was embarked on in the year 2000. In the Eighth Malaysia Plan, seventy (70) Info-Desa projects have been planned. The allocation granted for this programme is only RM2.4 million. It is expected that the same shall be implemented in at least 31 villages by the year 2003.

(3)   Selection Criteria

Selection criteria for villages/areas are:

- must have one distinguished Gerakan Desa Wawasan village (GDW) award;

- preference shall be given to rural areas, which have adequate telecommunication utilities;

- village, which has won other awards either within the district, state or national level;

- only one village to be selected as a "MID Village" in each district;

- the village must be populated with at least 1000 people.

(4)   Physical facilities

Physical facilities provided to all MIDs are as follows:

- Existing building or premise provided by the village, which would be renovated by MRD to suit the purpose of operating ICT

- Furniture

- ICT appliances and tools

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Personal Computer	-	20 units
Laser Printer	-	1 unit
Colour Printer	-	1 unit
Server	-	1 unit
1 AVR (Automatic Voltage Regulator)	-	20 units
Software	-	20 units
Local Area Network		

(5)   Training Activities

Training activities consist of:

- Training of Trainer on computer literacy and Internet;

- Training of Trainer for data entry and updating Info-Desa Information System;

- computer installation, maintenance and repair training;

- Training of Trainer on preparation of Info-Desa Website;

- ICT Entrepreneurship training;

- Introduction to Multimedia.

(6)   Other monetary facilities

Every MID shall receive a one off monetary fund worth RM 5,000.00 which is credited to the respective MID account to cover payments for phone line /ISDN deposits, electricity deposits, mobilization costs and etc.

(7)   Implementation Mechanism

At the Ministry level two Committees have been formed to oversees and monitor the operation of this project, namely Program Info-Desa Steering Committee and the Program Info-Desa Technical Committee. The Chief Information Officer (CIO) chairs the Program Info-Desa Steering Committee and the respective members consist of relevant local organizations. The role and responsibilities of the Program Info-Desa Steering Committee are to plan the whole operation of Info-Desa, which covers the followings:

- to consults State Government, District Office and JKKK for the chosen areas/villages on the implementation and management of MID project.

- to set up content development policies that exhibits local contents of Malaysia, to supply and built necessary ICT infrastructures ;

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- to plan, develop and implement training packages;

- to monitor MID for at least a year after its set up;

- to deliver and surrender MID to MID Management Board;

- to plan entrepreneurship activities based on ICT.

A MID Management Board shall be set up in every MID village and the respective District Officer will chair this body and the members consist of local population. This Management Board shall then elect a manager to handle all activities pertaining to the respective MID.

The responsibilities of MID Management Board include:

- to determine and steer the direction of the respective MID;

- to manage and handle the respective MID;

- to ensure that all matters pertaining to the financial and/or accounts of the respective MID shall be carried out in line with normal accounting practices;

- to plan MID development activities;

- to conduct monthly meetings;

- to prepare and submit monthly reports on financial accounts to KPLB;

- to ensure the priorities of Literasi Komputer Desa INFRA courses;

- to present reports on the above said courses to INFRA

(8)   Status of Implementation

Six pilot projects were selected one each in Perlis, Kedah, Selengor, Johor, Sarawak and Sabah. Implementation was completed in January 2001. Seven more were selected for implementation in 2001. They are located in Sarawak, Kedah, Pahang, Melaka, P.Pinang, N. Sembilan, and Perak. Apart from the above listed, 15 more villages have been identified for further MID implementation for the period of 2002 to 2003.

(9)   An Example of a typical Info-Desa Project

It is a prosperous village of about 1550 persons. InfoDesa is located in a large prefabricated type of building with separate rooms for computers, maintenance, offices, meetings etc. The manager, secretary, accountant and three of the six trainers/ teachers were present.

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The computer club has 422 members. Seems like someone from every family is a member.

There are 12 computers. The Center is open seven days a week from 8 am to midnight. One of the six teachers or one of the manager is always present. The main focus is on group training. Group lessons are scheduled one or more times every day.

User charges are as follows:

- Membership fee, RM 5 per year

- Course Fee (18 hours) for non-members RM 100

- Course Fee for members RM 2 Per hour

- Computer usage RM 2 (members get 1.5 hours while non-members get one hour)

- Printing for members RM 0.5 to 1.5/ page depending on type

- Printing for non-members RM 0.5 to 2/ page

Because of the shortage of computers, only members are authorized to use the Center.

Another 8 computers are expected shortly.

The Center and the trainers share revenue from user charges and MRD payments for training. 85% goes to the trainers while 15% is retained by the Center. The Center's share is used to pay electricity, water, cleaning etc.

The teachers are able to earn an average of about RM 200 per month/ teacher.

(10)   Future prospects of Info-Desa

There are now seven InfoDesa, and this number will increase by about 20-25 centers each year between 2003-2005, totaling about 70 by 2005, the final year of the Eighth Malaysia Plan. (On average there will be five centers per state and a minimum of two.)

The number of Info-Desa newly installed in the Ninth Plan (2006-2010) would be determined, based on the progress during the Eighth Plan period. Basically, each rural district would have at least one Info-Desa. In the rural districts that cover wide areas, 2-3 centers would be set-up. More than 140 rural districts have been established to govern rural areas throughout the country.

Note : The definition of "rural areas"

         The population is less than 10,000, including peripheral areas.

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Areas outside of local authorities.

The population living in rural areas is about 8.3 million

As Info-Desa will be installed in various areas with different geographical conditions, the following alternative approaches for connection with nodes will be considered and selected depending on the actual situation.

- Near telephone nodes – fixed access lines

- Far from telephone nodes – fixed wireless access

- Far from nodes and only connectable by satellite – satellite

In Selangor State, a pilot project using broadband (512 kb/s) by satellite is being implemented.
If successful, such a program could be applied to other centers.

4.1.2   e-Bario Project

(1)   Introduction

The project was undertaken based on the Government of Malaysia's aggressive adoption of ICTs for national development and the underdeveloped infrastructure, and scattered population of the Nation's largest state, Sarawak, on the island of Borneo. It has as its rationale the delivery of equal access to ICTs for those remote and marginalized communities that characterize rural life in Sarawak, and that contain more than half of the State's population. Many such communities are not served by roads and only have access to meagre telecommunication services if any at all. The objectives were to demonstrate that access to ICTs, specifically the Internet, could precipitate significant improvements in the lives of such communities.

The E-Bario was initiated by Universiti Malaysia Sarawak (UNIMAS) to promote ICT awareness and usage.

Even though, this is a relatively small project. It has received large capital and manpower input for such a remote and less developed area. It has been studied in depth with the objective of demonstrating ICT usage for potential replication in most remote and backward areas.

The project's approach was to conduct a pilot tele-Center implementation within one remote community. The remote highland community of Bario in northern Sarawak was selected. It has a population of around 1,000 people and is the traditional Center of the

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Kelabit ethnic group of Borneo, which consists of around 5,000 people. Baseline studies were conducted in order to understand the conditions of life in the chosen community and computers were progressively introduced, beginning with the school. A community teleCenter was established with the intention of providing community access to computers and to the Internet. It is also intended to provide the school with access to the Internet.

The project has shown the following results and impacts:

Within the target community of Bario:

- A computer laboratory with 10 computers has been established at the junior-secondary school.

- An IT Literacy Program is in operation in conjunction with a local company.

- A community tele-Center has been established with four computers.

Internet access is to be provided by the national telecommunications carrier, Telekom Malaysia, who has installed satellite dishes and VSAT equipment for the connections to the teleCenter and the school.

The community has been sensitized to the capability of technology and an agenda for development activity based on improved and technology-driven information delivery has been agreed.

The principal findings of the project are:

- There is considerable potential for improving quality of life within remote rural communities in Sarawak by providing them with ICTs and Internet access, even though such communities may have no experience or knowledge of such technology.

- Access to ICTs in the form of community tele-Centers offers a practical means of realising that potential.

- Teachers and pupils in the rural schools experience little difficulty in adopting ICTs in teaching and learning.

- ICT-based material for teaching and learning in schools needs to be carefully designed so that it does not inhibit learning and so that it is capable of out-performing traditional methods.

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- Remote rural communities are starved of information and are hungry for new information from any source that relates directly to their daily needs for their livelihood and cultural sustenance.

- The application of ICT-based development efforts at community levels implies new skills and approaches from a variety of professions, some of which challenge traditional practices in several disciplines.

- Public advocacy of the potential for ICT induced human development in rural communities appears to be readily capable of influencing politicians and government planners toward consideration of the wider implications for rural development.

- Successful implementations of rural ICTs within contexts similar to that of the project remain challenging and highly experimental, involving new methods of working, flexible approaches, institutional adaptability, co-ordination of multiple agencies, aggressive focusing on targets, balancing of multiple viewpoints and skilful management of relationships.

(2) Fulfillment of Objectives

The following table lists the project activities that were proposed and their status at the end of the project period.

Project Activities

Activity	Status at October 2002
Select the research site.	Completed
Perform the social survey.	Completed
Present the results of the survey.	Completed
Identify suitable components of the telecommunications link.	Completed
Obtain equipment.	Completed
Commission the equipment on site.	Computer laboratory installed in the school. Telecenter established Internet equipment installed and connected
Train teachers in computer use	Completed
Train pupils in computer use	Completed for about 300 students
Obtain appropriate software for teaching and learning	Completed
Introduce computerised learning methods into the school curricula	Completed
Establish a tele-Center for use by the local community	A temporary center followed by a permanent center has been established
Train local users in the use of the computers and the internet	About 30 businessmen, civil servants, town guides and local adults have been trained
Co-ordinate appropriate information suppliers in support of community affairs	Completed

The following comments relate to the objectives as they were stated at the commencement of the research and a reflection on them at the end of the project period.

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Project progress was slower than expected in providing access to the Internet. However, more was achieved with regard to policy advocacy than was anticipated. These two factors are inter-related. Following the selection of Bario as the research site and during the base-line survey period, the nature of the research became known to government agencies involved with the infusion of ICTs into Malaysian life. Specifically, the National Information Technology Council, of which the then Vice-Chancellor of UNIMAS was a member (as well as an active champion for this project), established a sub-committee, the Strategic Thrust Implementation Committee (STIC), under the Deputy Prime Minister. At this stage, the research project became known as e-Bario and it began to attract wider interest nation-wide.

Another consequence was that additional funding became available to the project. Projects under STIC Task Forces were able to apply for Government funds under a program named the Demonstrator Application Grants Scheme (DAGS), and the project was encouraged to apply for such a grant, and was awarded one. Additional funds allowed for a more ambitious programme. National level interest drew the attention of senior members of government (the project was discussed at cabinet level), increasing the probability of their long term commitment to the Bario teleCenter, and UNIMAS, as the implementing institution, benefited from the recognition.

In summary, it is fair to say that some objectives that were expected to be achieved were not achieved in the assigned time scale. However, other outcomes that emerged unexpectedly, namely the national attention and subsequent nation-wide focus on rural ICTs are seen as positive developments for other communities that more than compensate for the slippage in the time scale in Bario.

(3)   Project Design and Implementation

It may be noted that this project went through step by step approach. The timetable of the project activities was briefly as follows:

May to November 1999
> Project permissions obtained
> Team familiarisation
> Community consultations
> Focus group sessions
> Data gathering
> Community interviews
> Steering Committee formation
> Outcome mapping methodology initiation
> Baseline socio-economic survey in the community
> Pilot studies for attitudes and awareness studies in the secondary school
> Survey on attitudes and awareness of computers in the secondary school.

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November 1999 to May 2000
    Computer laboratory in Bario secondary school
    Tele-Center location and set up
    Negotiations with Telekom Malaysia for connectivity
May 2000 to May 2001
    Information requirements Symposium
    Research and development agenda defined
    Further equipment provided
    Local project officers employed

During June 2001 and October 2002, the following was achieved:

- Install VSAT

- Provide Internet access

- Install electricity generation (diesel generator and solar panel)

- Training of teachers, and community members

- Provide wireless connection to primary school which is about 300 meters further away

- Provide wireless connection to medical center for use of the doctor

Formal opening ceremony of ICT at the school was on 15th February 2002. Telecenter was formally opened on 2 September 2002.

- It may be noted that a large and highly inter-disciplinary research team has participated in this project. It included researchers with backgrounds in Information Systems, Anthropology, Social Science, Cognitive Science, Education, Electrical Engineering and others.

Project implementation was characterised by the following factors:

- As academics, the research team had other duties, including teaching, which meant they could work on the project only part time.

- Project activity occurred in bursts, in that dealings with the Bario community were mostly conducted during visits that were only possible during breaks between semesters or at public holidays.

- Bario's isolation and the unreliability of transportation presented severe logistical challenges. On some occasions it took three days to get to Bario from Kuching and equipment could only be transported by charter aircraft, that were rarely available.

- Communications with the research site were non-existent at the beginning of the project and only improved marginally during the project.

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- A useful partnership was created with a local computer company, Comserv Multech Sdn. Bhd., who implemented an IT Literacy Programme at the school in Bario. A local resident was employed and trained by Comserv to do the training.

- One member of the research team from UNIMAS, a qualified anthropologist, is a Kelabit and a member of the Bario community and has a particular interest in gender issues. A women's group was formed to represent women's information needs.

Capacity building occurred for the institution, the researchers and the project beneficiaries.

(4)   Project Management

As the project had funding support from the Government of Malaysia, project leadership and financial control was assigned the UNIMAS management.

(5)   Impact

The project's impact has been felt at several levels:

Community resources in Bario have been mobilised towards achieving the project's goals. Individuals are continuing to participate in project implementation. The community Project Steering Committee continues to oversee progress and nearly all the influential members of the community are aware of the aims and potential of the project. The indication is that a momentum has been established which will continue provided that appropriate institutional support and resources are available to sustain it. Outside Bario, the wider Kelabit community has also been alerted to the progress and potential of the project. Consisting generally of more educated individuals, the Kelabit Diaspora is a latent resource whose contribution to development in Bario is expected to be mobilised to considerable effect when an adequate connection capacity is achieved.

The research team and the Institution have become aware of the potential for rural development through the deployment of ICTs and the model of tele-Center operation that seems capable of accomplishing it. The University has announced plans to establish a research Center on rural ICTs.

The project has served to sensitise the State Government toward the potential for ICT-induced rural development, especially insofar as it has pointed to the importance of ICTs to isolated communities that are denied other forms of infrastructure.

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The Government of Malaysia is paying increasing attention to rural development. MIMOS Berhad, the organisation that administers the National IT Council and the Demonstrator Application Grants Scheme (DAGS) fund, is actively encouraging expansion of the project into other rural locations in Sarawak. It has provided assistance in the development of a proposal for a further RM3 million for the deployment of rural ICTs based on the Bario model.

The research team organised a two-day symposium in Kuching Sarawak on rural development with ICTs in conjunction with its partner IDRC projects and other Malaysian agencies.

A further impact on the development is the methodological development that is being conducted with the IDRC partner projects under PANTLEG. This work is continuing separately from this project as it has its own IDRC funding.

(6)   Budget

A total of about RM 800,000 including about RM 200,000 for VSAT has been spent. The large expense is explained by:

- research nature of the project;

- high cost of VSAT at about RM 200,000;

- high cost of transportation of everything—fuel, personnel, equipment

- initial non-availability of electricity

(7)   Sustainability

Sustainability is largely assured for some years because:

- operating budget is available through 2006;

- there is a high sense of community participation;

- there are some user charges particularly for internet;

- there is wide interest in the project at Sarawak, at the national and international level.

(8)   Future Replication

In the near future, some long houses may be connected to the tele-Center through wireless connectivity. The research team at UNIMAS indicated that the research results might have some beneficial implications for about 200 schools in Sarawak.

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4.1.3 Smart School

(1) Introduction

Multimedia Super Corridor (MSC) is meant to develop Malaysia into a regional and international technology and telecommunications hub in 2020. The MSC will propel the transfer of technology and become the test bed for R&D in high-tech industries. Because the need for knowledgable workers for the high-tech industries of the MSC, Smart Schools was adopted as one of the flagship applications.

The flagship will support the government's plans to obtain the status of a developed nation by the year 2020 and to gain a competitive edge with other developed countries in the global economy.

(2) Objectives

Apart from the role of education to fulfill national development goals and aspirations, the project also meant to address various educational needs as stated below:

- To prepare school leavers for the Information Age

- To bring about a systemic change in education, from an exam-dominated culture to a thinking and creative knowledge culture

- To re-emphasize science and technology education with a focus on creativity and innovation

- To equip students with IT competence

- To inculcate Malaysian values among the students and produce a generation of caring, peace-loving and environmentally concerned citizens

The majority of schools (Level B) will implement technology supported learning by utilising a computer lab. Others will also have computers in individual classrooms. Students will use the facility to access information, use software application for various purposes and work on available courseware in the four subjects.

Curriculum will be implemented for Form 1 and Form 4 for the 4 subjects ; Bahasa Melayu, English Language, Mathematics and Science. It is basically based on KBSM (The Integrated Curriculum for Secondary Schools) in terms of emphases on knowledge, values and thinking skills. However, the added emphases in smart schools are IT competency and globalisation. Students are also expected to be proficient in an

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international language such as English. Students must also be able to build networks with students from other countries and collaborate in areas of mutual interest. In so doing, it is hoped that this could be the foundation for collaboration in economic and social fields when they are adults.

(3)   Program Content

The program content is as follows:

- Number of model schools is 87.

- Advanced schools where about 6 computers are installed in each class room plus two labs with about 30 computers each (Level A): 9 schools;

- Moderately advanced schools where about 4 computers are installed in about 15 class rooms plus a laboratory (Level B+): 2 schools;

- Other schools where computers are installed in laboratories only (Level B): 79 schools

- In each case, varying numbers of computers are also installed in the school office, offices of the headmaster and his senior assistant, library, and teacher's room.

- Model schools in rural area are all level B i.e. computers are installed in the laboratory only.

- The project consists of hardware, IT infrastructure, software (contents), and teaching/learning methods, and training for teachers.

- Project period is three years (2000 - 2002).

This project is implemented under the cooperation of MOE and MDC (Multimedia Development Corporation). More information can be obtained on web at

http://www.ppk.kpm.my/smartschool/

(4)   Learning Strategies

Self-Accessed: Able to access information from various sources (books, journals, TV, networking, etc.) independent of the teacher

Self-Paced: The student is able to learn at his own pace without being held back by slower students or having to deal with material beyond his capability

Self-Directed: The student is allowed to explore topics of interest without being tied down to a rigid curriculum

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(5)   Curriculum Focus

Curriculum to be taught in schools is standardised and developed centrally. Obviously, to develop a generation of inventors and innovators requires a very open, student-led curriculum, but because of various logistical constraints, this cannot be implemented at this early stage.

Briefly, the curriculum contains the following elements:

- Knowledge acquisition

- Values inculcation towards the development of a good person

- Analytical thinking and the ability to make decisions and solve problems

- Creativity and the ability to generate new and innovative ideas

- Proficiency in an international language, networking skills and a global outlook

- IT competence

New curricular emphases are channeled through 4 subject areas, i.e Science, Mathematics, Bahasa Malaysia and English. The emphases are:

- Knowledge acquisition

- Analytical, creative thinking and the ability to make decisions and solve problems

- IT competency

- Proficiency in an international language

- Inculcation of values towards the development of a good person.

(6)   Core Competencies and a Multidisciplinary Emphasis

Smart school emphases of thinking, creativity, IT competence and globalisation are built into the four subject areas. This is the core knowledge and competencies that have to be mastered by each and every child before s/he leaves school.

However, the curriculum makes a proviso that the student, once he has mastered the core competencies, is in fact encouraged to crossover into other disciplines, when pursuing a particular line of enquiry. In the long term, a multidisciplinary approach is favoured, and the freedom to bridge disciplines. One way this can be realised in the short term is not so much in day-to-day teacher-led activities, but in project work (extension activities) that may consume the better part of the school year.

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There is a movement towards criterion-based school level assessment and use of various methods to arrive at a more complete and meaningful picture of a student's abilities. In the long term, a student's performance in school level assessment will be combined with a centrally administered examination for the final performance report.

(7)   Computer- based Activities

    i)   Several activities are planned. These include:

Utilising Software Applications

- Data analysis using spreadsheets such as MS Excel and Lotus

- Report writing using MS Word

- Class presentations using MS Power Point

    ii)   Communication

- E-mail

- Forum with other schools

- Chat groups

    iii)   Courseware and Educational Games

- Interactive software to learn a new topic

- Educational games

    iv)   Research (information access)

- Web-sites e.g. google.com

(8)   Role of Management Staff

The role of the management staff is to bring about systemic change in the school culture from an examination dominated culture to a thinking culture. The principal and his/her administration team are also expected to implement training so as to bring about the professional development of teachers to enable them to integrate IT into teaching-learning. In addition, they are expected to manage IT facilities in school including maintenance, sharing of resources, time tabling, etc.

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(9) Teacher Training

Selected teachers teaching the smart school program are given a 14 week in service training course by the Teachers Training Division. The training is aimed at enhancing the practice of teachers to undertake their role as facilitators and guides. On their return to their own schools, these teachers provide IT training to the rest of the school teachers as needed. The titles of the training modules are:

- Teacher Training Curriculum for Smart Schools
- Guide Book on the Implementation of Smart School Teacher Training
- Assessment and Evaluation
- Critical and Creative Thinking
- Study Skills
- Facilitating Skills

(10) Community Involvement

Smart schools encourage the involvement of various stakeholders in the education of the young. These can be parents and members of the community as well as business organisations that want a say in the type of employees that graduate from the school system.

The Ministry of Education lauds efforts by these parties to get involved in helping schools wishing to turn 'smart'. The government will only be able to provide technology to schools in stages. It will take the government a long time to turn all Malaysian schools into smart schools. Schools are therefore encouraged to turn 'smart' on their own initiative.

(11) Sources of Contribution

Sponsorship and aid can be sought from various sources within the community. These include private sector participation, parents, community and user charges. However, in practice, with some individual exceptions, financing has been provided 100% by the Federal Government through the Ministry of Education.

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(12)   An Example of a Smart School Project

It is an elementary school for girls. Total number of students is about 500. This school became an operational Smart School in 2000. The children have been exposed to IT at school for about 18 months.

The school population is mixed in terms of economic background. There are children from low income, middle income and higher income groups. They represent all ethnic backgrounds.

The students start first grade at age seven. There are 6 grades.

Students from higher income groups usually have some access to and knowledge of computer before entering grade 1. Others do not.

At the school, the first semester is devoted to the learning of reading and arithmetic. They are introduced to IT in the second semester. They start with holding and using a mouse and keyboard. According to the headmistress of the school, all students (regardless of their previous exposure to IT), reach comparable levels of IT competence.

This is a type "A" school with 6 computers in each class room and 30 plus in each of the two laboratories. In all, there are about 300 computers.

The headmistress is a chemistry teacher by training. She has been a headmistress since 1992. She received 3 weeks of IT training with emphasis on email, EXCEL and WORD. The regular teachers have received 14 weeks of IT training plus short-term courses.

 During the visit, it was noted that:

- The facilities, atmosphere, and cleanliness were comparable to the best government schools in USA

- Students (of grade 5 and 6) were able to carry out the tasks requested by the JICA team such as connecting to the Internet, doing a web search using google.com, finding material on assigned topic (Potomac Elementary School, Virginia, USA), finding their own school's web page etc.

- Students demonstrated math home work using a computer

- Students were able to explain the results of the tasks assigned by the JICA visitor in English. In this case, obviously some students were better in the English language and verbalization technique than others.

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- A Visit to the school library indicated that book borrowing records were kept by computer. A random search indicted that a particular student had borrowed about 15 books during the first two weeks of October 2002.

- School administration has computerized the recording of student and teacher attendance, assignment of relief teachers in case of absence of any teacher, school accounting etc.

The principal indicated that:

- Level of knowledge of the English language is a critical factor in terms of how fast a student benefits from IT. Accordingly, more and more emphasis is being placed on the learning of English.

- Ability to type is another critical factor. Learning typing on a keyboard starts in the second semester.

- Students who do not have access to a computer and the Internet at home are permitted to use school facilities after normal school hours in order to complete homework and to do the necessary practice.

- The school has about 300 computers. However, there is only one full time maintenance person. More were needed. The Ministry of Education official who accompanied the JICA visitor agreed and indicated that more budget for maintenance is planned in future.

- Major maintenance is outsourced. The annual budget for maintenance equals about 10% of equipment and software cost.

(13) Future Prospects of Smart School project

MOE plans to upgrade all Level B schools to Level A within one year.

MOE had initially the following targets for information and communication technologies (ICT) in education.

- ICT technologies should be introduced to all 10,000 public schools by 2005.

- All schools should become Smart School by 2010. (that is, each teacher will have one note PC, one PC for every 5 students and one LCD monitor for every 5 classrooms)

The ministry is now considering accelerating the upgrading of all schools to Smart Schools by 2005 rather than 2010, in addition to providing Internet to all schools, if the budget is available.

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4.1.4   Computer Laboratory Project

(1)   Introduction

This is a very large nation wide program aiming at introducing computer literacy to all students in Malaysia by year 2005. It is planned and financed by the Economic Planning Unit (EPU) and implemented by the Ministry of Education. The Development, Privatization and Supply Division (BPPB) is managing the program.

(2)   Objective

The objective of the project is to promote IT infrastructure in primary, secondary and high schools especially in rural areas to eliminate the digital divide between urban and rural areas.

(3)   Basic Models

Depending on the number of students in a school, three basic models have been established. For 150 to 399 students, one computer laboratory with 10 computers will be constructed and equipped. One computer teacher will also be provided. He/she will be additional to the existing number of teachers in the school. For schools with 379 to 799 students, one laboratory with 20 computers and two computer teachers will be provided. For 800 or more students, 40 computers with two laboratories and 3 teachers will be provided.

(4)   Program Implementation

All the schools around the country are expected to receive a "Computer Laboratory" by 2005 in three phases. Only very small schools with a small number of students (say 30 students or less) may be left out.

Phase I which was initiated in year 2000:

- Number of model schools is 2400 nation wide.

- Number of schools in different regions is as follows;

    - North West (Kedah, Perlis, Pinang): 50% of 500 schools

    - Central West (Selangor, Perak): 70% of 500 schools

    - South West (Johor): 24% of 500 schools

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-     Sabah: 200 schools

-     Sarawak: 200 schools

As expected, there have been some contracting difficulties with such a large project spread throughout 2,400 different locations. However, most of these laboratories have been completed. With few exceptions, laboratory buildings have been completed in the remaining locations. They are still awaiting electricity, computers or other remaining materials.

Based on Phase I experience, Phase II has been initiated. Under Phase II, an additional 2000 schools are being provided with a computer laboratory. Both Phase I and Phase II schools totaling about 4400 schools are expected to be fully operational by the end of 2003.

The Ministry is already gearing up for Phase III which will cover all remaining schools which have not been covered by either Smart School or Computer Lab programs. This means that an additional 4000 or more will be provided with computer labs in order to cover a total of about 9000. The exception will be "really small schools" with a student population which is too small to justify provision of a laboratory.

Phase III is expected to be initiated by June 2003 and is expected to be completed by the end of 2005.

(5)   Difference Between a Computer Lab and a Smart School

A Computer Lab project is different from a Smart School Project in several ways:

- it is a very large project which already covers about 4400 schools as compared to about 87 currently covered under Smart Schools;

- it covers a computer laboratory only as compared to a "computerised school concept particularly under Level A of Smart Schools". For example, Computer Lab does not provide for "computerized school administration". While some computer facilities for administration already exist in a large number of schools, those are not integrated as a part of this project;

- Even though both programs are managed by MOE, different software is being produced for the Computer Lab;

- Computer Lab emphasis is on computer literacy rather than teaching of four subjects (English, Math, Science and Malay) as under Smart School. Teaching of subjects will be developed in subsequent phases;

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It is recognized that the "Smart School approach" is more comprehensive. However, it is difficult to replicate it all over the country. Computer Lab is the immediate answer. However, in the long run, all schools will become "Smart Schools".

(6)   Example of a Computer Lab Project

Three Computer Lab schools were visited: SK Damansara Utara in Kuala Lumpur, SK Taman Tun Dr. Ismail (1) in Kuala Lumpur, and SMK Kinarut in Kota Kinabalu in Sabah.

Laboratory buildings have been completed in all three schools. Equipment has been installed in the first two but not in the third. SMK Kinarut in Kota Kinabalu in Sabah does not have computers as yet.

SK Damansara Utara and SK Taman Tun Dr. Ismail (1) in Kuala Lumpur are in a comparable position. Both have about 1100 students. Both have only one lab rather than two as mentioned under the original model. The former has 40 computers but the later has only 20.

It may be noted that in both cases:

- The lab was started very recently--in May 2002 and in October 2002.
- There is no Internet access as yet.
- They are still awaiting software from MOE.
- The school has another computer lab provided by parents through PTA. That software is being used to teach the students in former. In the other school, Word, Excel, and Power Point is being taught.
- There is a two year warranty on equipment through the supplier.
- Extra teachers as mentioned under the concept have not been provided. Existing teachers have been trained to take over the computer lab duties.
- Each student is receiving about one hour of computer education per week.

It is recognized that the program is being implemented in over 4000 schools almost at the same time. Logistic problems are being experienced. However, they are being solved.

In both cases, teachers have noted a very positive change in students. They are eager to learn IT.

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(7)   Implications of Computer Lab project

In order for Malaysia to reach developed country status by 2020, MOE is now implementing its "Education Development Plan 2001-2010" (published in September 2001) and promoting to ensure a 12-year education opportunity (access, equity and quality) to all people by 2010.

Within the Development Plan, the use of ICT in education areas is now promoted to provide computers and Internet connections to all schools by 2005, to strengthen ICT literacy and skills of students and to enlarge ICT based curriculum.

So, the Computer Lab project would become much more important to rapidly penetrate ICT infrastructure, literacy and applications, not only for urban areas, but also for rural people.

4.1.5   Mobile Internet Project

(1)   Introduction

This project is aimed at introducing computer literacy and ICT to rural schools, which may not have telecommunication facilities or even electricity. It is financed by UNDP and implemented by the Malaysia Institute of Microelectronics Systems (MIMOS).

The MIU project is seen as a bridge between Smart Schools (as mentioned above) and Non-smart Schools.

(2)   Project Approach and Content

There are twenty model schools in this project, which were selected by some criteria such as average income (lower than RM 1,000) and less access to IT projects by the government.

The MIU project owns a large bus with 20 PCs and Internet infrastructure, and the bus goes to rural schools to have IT classes. In addition, 12 minibuses have been introduced so far. The investment for each bus is about RM 250,000 with 12 PCs and one server. These buses are run by MIMOS (1 bus), Intel Co., Ltd. (5 buses), City of Kuala Lumpur (1 bus), and the National Library (5 buses).

A MIU bus is bought and altered at a cost of RM 600,000 donated by UNDP and private companies. There are PCs, one server, TV monitors, Screens, and uninterrupted power

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supply (UPS) in the bus. O&M cost is paid by MIMOS and other operating groups mentioned above.

(3)   Implementation Options

There are three options for the implementation of an MIU project.

- No.1 option is for the villages without electricity or an IT infrastructure. In this case, they have virtual Internet training through the server and UPS.

- No.2 option is for the villages with electricity and an IT infrastructure. In this case, they have training with the real Internet.

- No.3 option is providing one-way Internet by the ASTRO satellite, which can provide the same IT environment anywhere.

So far, 17,000 people in total had training through MIU.

There is a pilot project in Tunjang village in Kedah, which is a program for home-stay students and consists of establishing a web site for tourism promotion by the students.

4.1.6   The e-Learning for Life

(1)   Introduction

The ELFL project is a tripartite project initiative involving the UNDP/APDIP, the Ministry of Education of Malaysia, and the Coca Cola Corporation.

The central concept of this pilot initiative is the transformation of the school into a community "hub" for life-long e-learning as a way of extending ICT access to communities-at-large. Students, teachers, and community members will all share the ICT facility and infrastructure of the school.

The main components of the project include awareness raising and community development, capacity building through the training-of-trainers (teachers, students, parents, and community members), development of community and extra-curricular content for posting on school and community websites and portals and provision of necessary hardware and software.

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(2)   Training

This project proposes to train teachers to teach computer literacy courses as well as apply ICT as a teaching tool. It is also to train students on the use of computer-based information systems for learning and for their own personal growth through knowledge creation and application.

Websites and portals will be developed under this project and they will be designed in a way that is visually pleasing and fun to use. It is proposed that each school creates its own website and that the websites of all schools be linked to a central School Portal. The Portal, for example, would provide links to existing educational websites hosted or approved by the Ministry where students can learn more about environmental concerns, development issues, their communities, the job market, career opportunities, and so forth. The Portal would also allow students from selected schools to communicate with one another for information and knowledge sharing, as well as for peer support. The database can also provide locally relevant information such as best agricultural practices, soil and crop classification, family health, education, and so forth.

The Headmistress/master, School and Community e-learning Committees, computer clubs, Parent Teacher Associations, and other community organizations all have important roles to play in contributing to the sustainability.

(3)   Implementation Arrangements

It is proposed by UNDP that the project operate on a Build-Operate-Transfer (BOT) model. UNDP will implement it. After an initial demonstration period of operation and training, not exceeding 18 months, it is proposed that ownership of the school/community ICT hub be transferred to the Schools Division of the Ministry. The Ministry, as with any other school assets and properties, would provide ongoing financial support to each of the selected schools, through the State Educational Department or other conventional channels, to cover operational and maintenance costs, and thereby ensure long-term sustainability.

Where feasible, participating schools would be expected to partially recover their operational expenses through user fees charged to community members.

(4)   Location

The project will initially be implemented in at least six 'hub' secondary schools based on the following criteria:

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- Indication of interest and ability of the school and community to engage in ICT activity, including security measures;

- Commitment of the school and community members, as well as the PTA, to take on the operation and maintenance of the facility at the end of the project period;

- Commitment of teachers and trainers to impart ICT training to students and the community;

- Commitment or interest from community associations to support the project;

- Indication of interest from the community to furthering their awareness, understanding, and knowledge of ICT;

- Indication of interest from the community in the use of ICT as a tool to improve the social, including educational, or economic aspects of their lives, those of their children and the community at large.

- Location in semi-urban or semi-rural areas with basic infrastructure; and,

- Availability of a dedicated room large enough to house 20 PCs with 5KW uninterrupted power and telephone lines for Internet connection and proper furnishing.

Each school will be provided with about RM100,000 worth of ICT systems. The primary beneficiaries of the project are students and teachers within the selected schools. The project will provide useful benchmarking information for them to evaluate the implementation of the government smart school and other projects.

4.1.7 Universal Service Provision

(1) Introduction

Universal Service Provision (USP) is implemented under government funding by MECM for enhancement of telephone line penetration in rural and remote areas. The objectives of this project are to provide basic communications infrastructure, including normal telephone, public telephone, complete with Internet access facility.

This project consists of three major items of Internet access facility. These are:

- Simple local area network (LAN) with desktop computer set and peripherals

- Data and voice communications system

- Power supply system.

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(2) Project Component

The project covers about 750 locations comprised of 60 village libraries, 148 village clinics for tele-health and 542 schools. The village libraries are open to all rural people, but only the doctor can utilize the village clinic facilities, while the facilities in schools are available to students only.

The components are listed below.

  i) School

- Two (2) normal telephone lines,
- One (1) public telephone line,
- One LAN line with 64 kbps Internet access,
- Three (3) PCs with Internet

 ii) Rural Library and Clinic

- One (1) normal telephone line,
- Two (2) public telephone line, and
- One LAN line with 64 kbps Internet access,
- Two (2) PCs with Internet

Those facilities will be installed in 2003.

4.2 Performance and Problems of the On-going Pilot Rural Internet Program

This section addresses the framework of the Pilot Rural Internet Program, its performance and problems. First, the concept of the rural Internet program originally formulated by MECM is shown in the framework of a pilot rural Internet program. Second, what activities are carried out and what problems are identified in the real world are viewed in the performance and problems of the Pilot Rural Internet Program. In the latter discussion, the Study Team focuses on how RICs became stagnant.

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4.2.1   Framework for Rural Internet Program

(1)   Overview

MECM introduced the Rural Internet Program (RIP) on March 2000 to make the digital divide between urban areas and rural areas as small as possible. The RIC Pilot Project was implemented in every state in Peninsular, Sabah and Sarawak. All pilot RICs are located at the Post Offices. During the Phase 1, 14 RICs had been established. The locations are shown in the Location Map.

Implementation of Phase 1 was carried out by donations received from various agencies such as Pos Malaysia who prepared the place, Telekom Malaysia having donated 2 internet access lines, INTEL having donated 2 computers, Maxis having donated 2 printers, Medan Sedunia Digital having donated the web page, INTAN having provided the training, Microsoft having donated basic Windows Software. Gabungan Komputer Nasional Malaysia (MNCC) also were involved in the project pre-planning.

MECM did not have any budget in the Phase 1. MECM only relied on the above donations. Therefore, many PCs have not been repaired after the PCs broke down.

(2)   Objective

The objective of this program is to make the digital divide between urban areas and rural areas as small as possible. This program gives a higher priority to the rural areas and the areas where it is hard to access the Internet. The main target group is not students but adults. The main cores of this program are :

- Infrastructure Development

- Continuous Training, and

- Encouragement on local contents development

(3)   Infrastructure

Infrastructure facilities prepared at Rural Internet Centres include 2 telecommunications lines for Internet access, 2 computers (PC), and 2 printers.

(4)   Web page

Every RIC was encouraged to have their own web pages. The web pages would provide information on the local community such as the history of the area, social activity,

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economic activity, small entrepreneur, tourism areas, public facilities etc. to promote the communities through the Internet

Moreover, one Rural Portal was also specially built to promote this Rural Internet Centre. The purpose of this Portal was to prepare information as well as provide several facilities to the users. Among the facilities prepared were :

- Link all Rural Web Page for every RIC including the RIC develop in the future.

- Using the application of electronic government (e-government)

- Using free e-mail

- Using e-mail direct to the government agencies

- Information covering public facilities, health, financial, communication, education, public service, women etc.

(5)   Training

INTAN trained the committee members. Training contents for this project included an introduction to the computer, the way to send and receive e-mail as well as how to browse the Internet. The Rural Internet Center Committee Members and those who were interested in a position as the Trainer were requested to continuously give training to the local communities continuously.

(6)   The RIC Committee

To support the RIC activities, the RIC Committee members were appointed by the community. The Chairman was selected from the Headmasters of Schools, Head of Village and District Officers. Every committee member would represent their own sectors such as the post office, educational institution, agricultural sectors , women's society, entrepreneurs, NGO, religious groups, youth, social, students and health. Duties for this committee were as follows :

- Responsible on the Rural Internet Centre

- Publicity for local community

- Responsible on the training for local community

- To gather contents as an input for Web page

- To update the Rural Web Page information, and

- To report on the monthly usage to MECM

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(7)   Rural Internet Program at Pilot Stage

The idea of the programme is to provide lots of opportunities for people in rural areas, but issues to solve have been identified in practice of RIP at pilot stage as shown in the following section. Underlying causes in the issues are that the RIP was started without any budget and that the organizations for implementing RIP was not well organized.

4.2.2   Past Performance and Identified Problems

The current situations of the 14 existing RICs are summarized below. The table below is obtained through interview with RIC committee members at all RICs.

Current Situation of RICs

No.	Area	Number of Usable PCs	Web Contents	Person in charge of O&M	Number of Committee Meeting	Promotion	Training	Average Users/day When in operation
1	Sg. Air Tawar	2	Existing	Postmaster	2	None	By INTAN	8
2	Kanowit	1	Existing	None	1	None	None	10
3	Kubang Pasu	0	Not existing	Postmaster	1	None	By INTAN	8
4	Kepala Batas	0	Existing	Postmaster	1	None	None	4
5	Batu Kikir	0	Existing	Postmaster	1	None	By INTAN	4
6	Sg. Rambai	0	Not existing	Postmaster	1	None	None	8
7	Lurah Bilut	1	Not existing (preparing)	Postmaster	3	None	None	8
8	Mata Ayer	0	Not existing	Postmaster	2	None	By INTAN	10
9	Pengkalan Hulu	0	Not existing	Postmaster	1	None	By INTAN	10
10	Sipitang	2	Existing	Postmaster	1	None	None	10
11	Gua Musang	0	Not existing	Postmaster	1	None	None	4
12	Benut	0	Not existing (preparing)	Postmaster	2	Poster	None	10
13	Merbok	2 (not on-line)	Not existing	Postmaster	2	Poster	None	20
14	Ajil	0	Not existing (preparing)	Postmaster	10	Leaflets	None	10

Based on the information obtained from the committee members, the problems were identified through analyzing the interview results. The performance and problems are reviewed from eight aspects: equipment, web page, operation and maintenance (O&M), committee, promotion, training, users, and others.

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(1) Equipment

(a) Current Status of PCs

Two computers with two fixed telephone lines were installed at all RICs when the RICs were established. The maximum transmission rate of Internet access is 56 kbps using a fixed telephone line. However, most of the PCs have troubles at present. In addition, they have not been repaired. Total number of installed PCs at all RICs is 28, but 22 PCs are now unusable.

(b) Troubles with PCs

The first trouble with PCs was observed a month after launching at an RIC. After that, other RICs also met troubles within 6 months of launching.

Most of the unusable PCs have at least one of the following problems.

- modem was broken down by lightning

- files were infected by a virus

- the power of the PC cannot be switched on

- the operating system was deleted on purpose by users

(c) Environment around PCs

The environment inside the building is not friendly to the computers in some RICs. This may be the main reason of that the power of the PCs cannot be switched on. The following are the examples showing an unfriendly environment resulting in troubles.

- The wall of buildings is made of hollow blocks, so PCs are exposed to water drops when it is raining.

- Dust is accumulated on the table and the outlet of extension code, so a mouse and other devices are damaged.

- High room temperature causes the PCs' trouble

Building of POS is made of hollow blocks.

(d) Other equipment

A previous study by a Malaysian consultant pointed out that mouse trouble sometimes occurred. Printers in all RICs have not met any physical troubles so far,

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but printers are not usable because of lack of printer inks and papers.

(2)   Web Page

(a)   Existing Web Page

Only five RICs have their own web pages. The web pages were made up of seven themes; education, JKKK committee, religion, rural industry, tourism attraction, background and a message from the state assemblyman. The Malaysian consultants selected the themes and then the materials were collected by the committee in accordance with these themes.

(b)   Collecting information

Eight RICs committees have collected the information for their web sites, but their web pages at three RICs have not been opened to the public. In the first phase of RIC project, a private company was supposed to provide free service for creating web pages for all the RICs. However, the company ran short of budget to complete web pages for all RICs.

The rest of the RICs have not collected any information for creating web pages. Some committee members at the RICs said the fact that web pages were not given to the RICs caused a lowering of motivation for collecting the information. However, it simply implies that these committees were not active. As mentioned above, three RICs did collect the information even though they did not have any web pages opening to the public.

(c)   Update

Web pages for five RICs were created while the private company had budget, but the company did not inform the committee of the access password to the web server for updating their web pages. However, the RIC committees could not have updated web pages if the password had been given. It is because the RIC committees did not know how to operate the software for creating web pages and updating them.

(3)   Operation and Maintenance (O&M)

(a)   Person in charge of O&M

Postmasters are in charge of O&M. They are switching the PCs on and off, and are

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the first to notice the troubles of PCs. They also report the troubles to POS Malaysia head office in KL. However, O&M is a burden for them because they are very busy working on their regular occupation. They do not have time to take care of both PCs and users.

(b)   Repair

Some broken computers have not been returned from POS Malaysia and the consultant company to the RIC for budget reasons. In addition, MECM only requested POS Malaysia and the company to repair, but it did not clarify the responsibility of repair and the demarcation of the works between those parties.

(c)   Security

Passwords were stolen at 5 RICs, and the passwords have been used outside of the RICs. The Internet provision service for the RICs is still continually charged although these RICs cannot access the Internet any more. At an RIC site, a tremendous bill of RM 17,000 was charged.

A keyboard and a mouse were also stolen from one RIC where PCs were already broke down.

(d)   Responsibility

It is not clear who is supposed to take the responsibility of repairing PCs. When PCs were broken down, some PCs were sent to the head office of POS Malaysia and some were sent to the Malaysian consultant company. The staff of MECM was also dispatched to repair PCs at the site.

(e)   Budget

Since MECM did not have any budget in the pilot RIP, many PCs and modems were not repaired. Insufficient budget also meant that paper and printer inks for printers also had not been re-supplied.

(4)   RIC Committee

RIC committee members were appointed in accordance with criteria proposed by MECM at a meeting with the state POS and an elected representative, such as a state assemblyman. At a few RIC sites, state assemblymen were very influential to RIC. It is a kind of top-down appointment method.

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RIC committees were established at almost all sites, but they have not been active. Most committees may not have understood the significance and role of the RIC committee. It has been learned that eight RIC committees held only a single meeting, the one when the RIC was established. Only three RIC committees worked for publicity besides mouth-to-mouth advertising. The committees became even more inactive after the PCs broke down.

Postmasters are in charge of overseeing the RIC at 13 locations in the role of committee members, but they were too busy with their occupation to take care of computers. In fact, no one took care of computers. It leads to the trouble with the computers.

(5)   Promotion

(a)   Publicity

Many RIC committees have not had any activities for promotion. The committee members only introduced the RIC in the meetings of other organizations. They only expect to employ mouth-to-mouth advertising.

(b)   Methods of Publicity

The activities for promotion are restricted by the budget at RICs. Only a few RIC committees had other methods of publicity other than mouth-to-mouth advertising. Other methods of publicity are distributing leaflets, and putting the poster on the wall in the post office.

(6)   Training

INTAN carried out a basic training on how to use PCs, e-mail and web browsers for committee members at five RICs. There has not been any training for the other RICs, although they have been told that INTAN will come to train them. No training for residents by committees have been held at any RICs, even where INTAN carried out a training. Therefore, most residents of the communities were not taught the most basic rudiments of the PCs and Internet.

(7)   Users Profile

Average number of users per day varied from four persons at Kepala Batas, Batu Kikir, and Sipitang to 20 persons at Merbok. Most users at all RICs were students, and adults seldom visited RICs. At the three RICs where the number of users is small, even mouth-to-mouth advertising might not have worked.

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Most of the users are students. Among them, some browsed the images of pornography, chatted with their friends noisily, and played a game with VCD. Some browsed information from Internet for their school work. However, RICs had been free cyber cafes for students to enjoy entertainment. It is because they cannot use the Internet for entertainment at schools where PCs are installed.

Few adults visited RICs. Many adults in the RIC area did not know how to operate a PC. This might be one of the reasons that the number of adults visiting RICs is small. The fact that all existing RICs are mostly open during working hours also resulting in the small number of adult users.

(8)　　Other Matters

(a)　　Service hours

The current service hours of RICs overlap with the working hours for adults, which hindered them from visiting RICs. There is a demand to extend the service hours of RICs after 5 pm in weekdays as well as to include Saturday and Sunday. However, postmasters have no power to open at the demanded time. In the current system of POS Malaysia, it is necessary for postmasters to get the approval from their superior for opening the post office beyond business hours.

(b)　　Location

Four RIC committees prefer moving RICs to other places, to enable the RIC to be open after 5 p.m. weekdays and on weekends in addition to 8 am to 5 p.m. weekdays.

On the other hand, a few committees acknowledged that the POS location is the most suitable for the community.

4.2.3   Problem Structure

A variety of problems identified in existing RICs became obstacles to the work of the RICs. The following figure in the next page shows the problem trees illustrating the relationship among the identified problems.
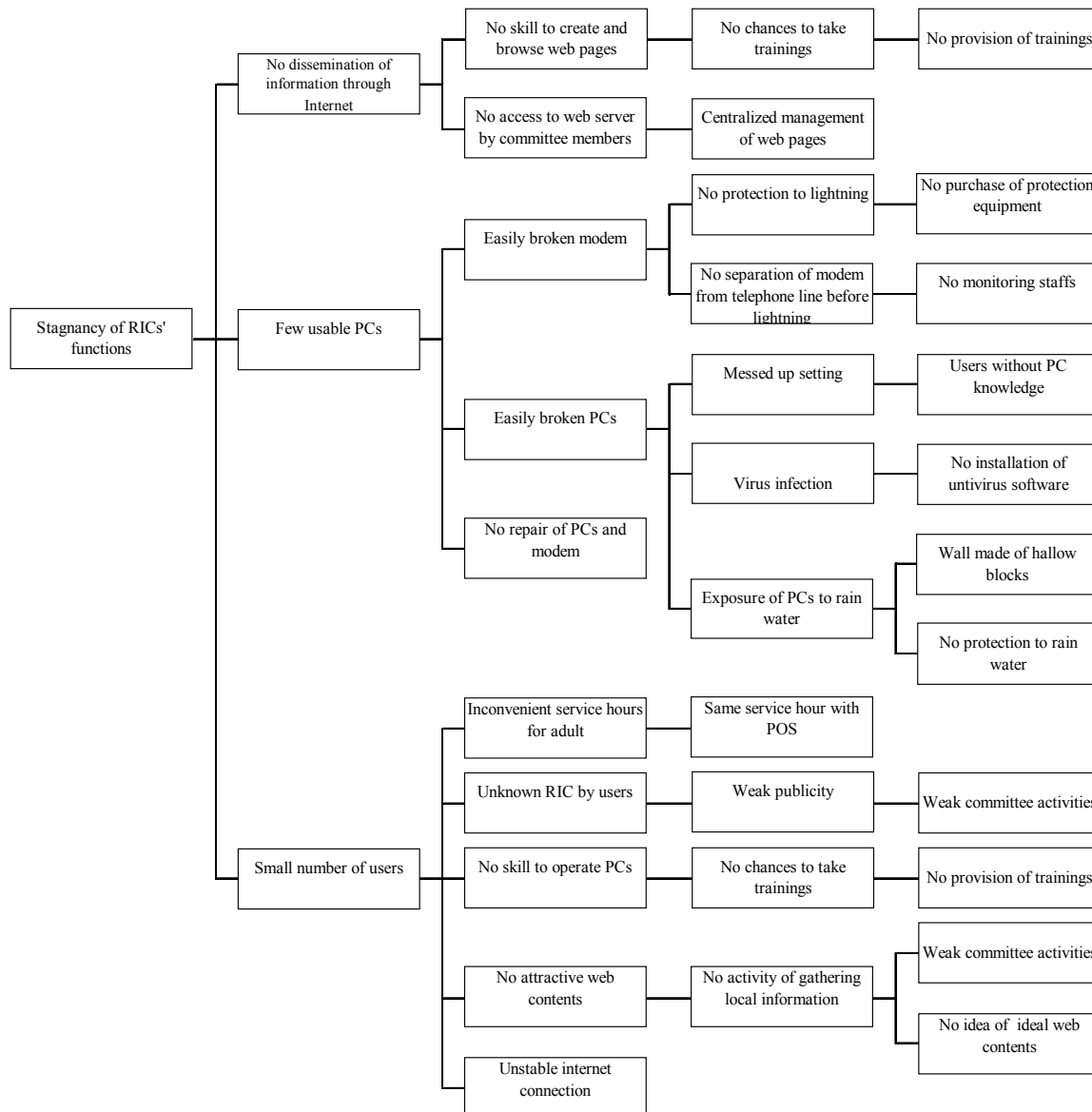
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Stagnancy of RICs' functions

- No dissemination of information through Internet
  - No skill to create and browse web pages
    - No chances to take trainings
      - No provision of trainings
  - No access to web server by committee members
    - Centralized management of web pages
- Few usable PCs
  - Easily broken modem
    - No protection to lightning
      - No purchase of protection equipment
    - No separation of modem from telephone line before lightning
      - No monitoring staffs
  - Easily broken PCs
    - Messed up setting
      - Users without PC knowledge
    - Virus infection
      - No installation of untivirus software
    - Exposure of PCs to rain water
      - Wall made of hallow blocks
      - No protection to rain water
  - No repair of PCs and modem
- Small number of users
  - Inconvenient service hours for adult
    - Same service hour with POS
  - Unknown RIC by users
    - Weak publicity
      - Weak committee activities
  - No skill to operate PCs
    - No chances to take trainings
      - No provision of trainings
  - No attractive web contents
    - No activity of gathering local information
      - Weak committee activities
      - No idea of ideal web contents
  - Unstable internet connection

Figure I.4.1: Problem Tree for Existing RIC

Among the problems, an inadequate number of useable PCs was the most. Equipping usable PCs is fundamental to carrying out RIC activities such as web page building, training, etc. Since most RICs only had unusable PCs that were not planned to be repaired, the RIC did not function as expected.

The figure below shows the process to the stagnancy of an RIC. As mentioned above, PCs broke down by one of three ways: inappropriate environment for PCs, lightning, and lack of user's knowledge. After the PCs broke down, they were transported to POS Malaysia Head Office or MECM. However, the PCs could not be repaired due to lack of budget. At POS and MECM, the broken PCs have only been waiting for repair without returning to the RICs. As a result, there are no usable PCs at the RICs. It naturally resulted in the fact that no body could access the RICs.

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After that, the committee activities and creating web pages became passive. This situation is confirmed by the fact that most of the committee answered that no activities could be encouraged without PCs. To make matters worse, equipment such as a mouse and a keyboard were stolen after committee activity became more passive.
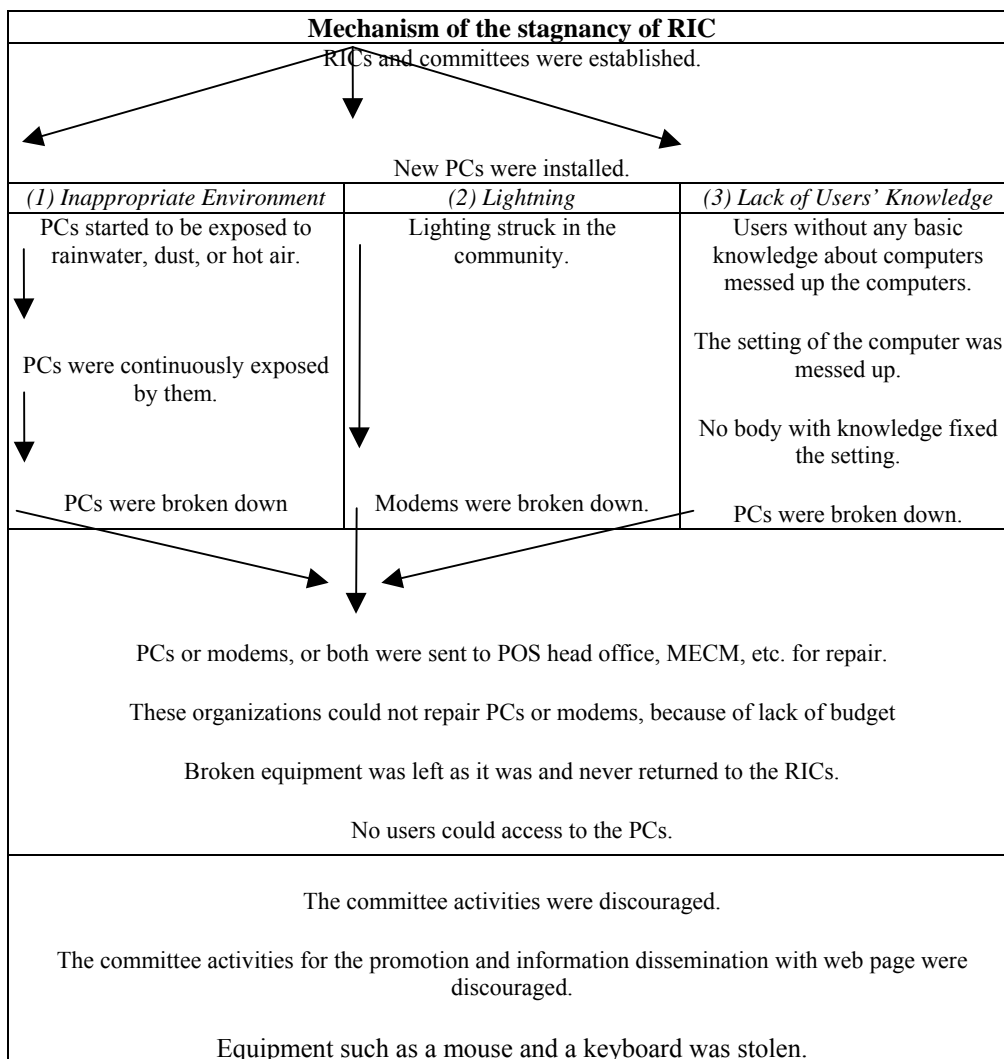
Mechanism of the stagnancy of RIC		
RICs and committees were established.		
New PCs were installed.		
(1) Inappropriate Environment	*(2) Lightning*	*(3) Lack of Users' Knowledge*
PCs started to be exposed to rainwater, dust, or hot air.	Lighting struck in the community.	Users without any basic knowledge about computers messed up the computers.
PCs were continuously exposed by them.		The setting of the computer was messed up.
		No body with knowledge fixed the setting.
PCs were broken down	Modems were broken down.	PCs were broken down.
PCs or modems, or both were sent to POS head office, MECM, etc. for repair.		
These organizations could not repair PCs or modems, because of lack of budget		
Broken equipment was left as it was and never returned to the RICs.		
No users could access to the PCs.		
The committee activities were discouraged.		
The committee activities for the promotion and information dissemination with web page were discouraged.		
Equipment such as a mouse and a keyboard was stolen.		

Figure I.4.2 : Mechanism of the Stagnancy of an RIC

To improve RICs, countermeasures are to be prepared at each stage in the figure. The committees should make an effort to prevent the trouble from worsening and to cope with troubles at initial stage as much as possible. MECM should make an effort to budget for repair in case the committees cannot handle the trouble.

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CHAPTER 5 EXPERIENCES OF ADVANCED COUNTRIES FOR INFO-COMMUNICATIONS ACCESS ENHANCEMENT

5.1 Experience in Japan

Regional informatization can be viewed as the process of "Revitalization of regions and creation of affluent lives by utilizing the information communication systems".   Certain roles and functions of the three main actors, including residents, regional industries and administrations, come into focus for facilitating the process.

Regional industries provide telecommunication infrastructure related to the Internet, mobile telephone and broadcasting facilities, as well as provide corporate, market and commodities information. Public Administrators are required to enhance their services by using info-communication systems. Residents are expected to join the process by sending out and exchanging information regarding their regional activities and opinions.   These roles of the three main actors are described in the diagram below.
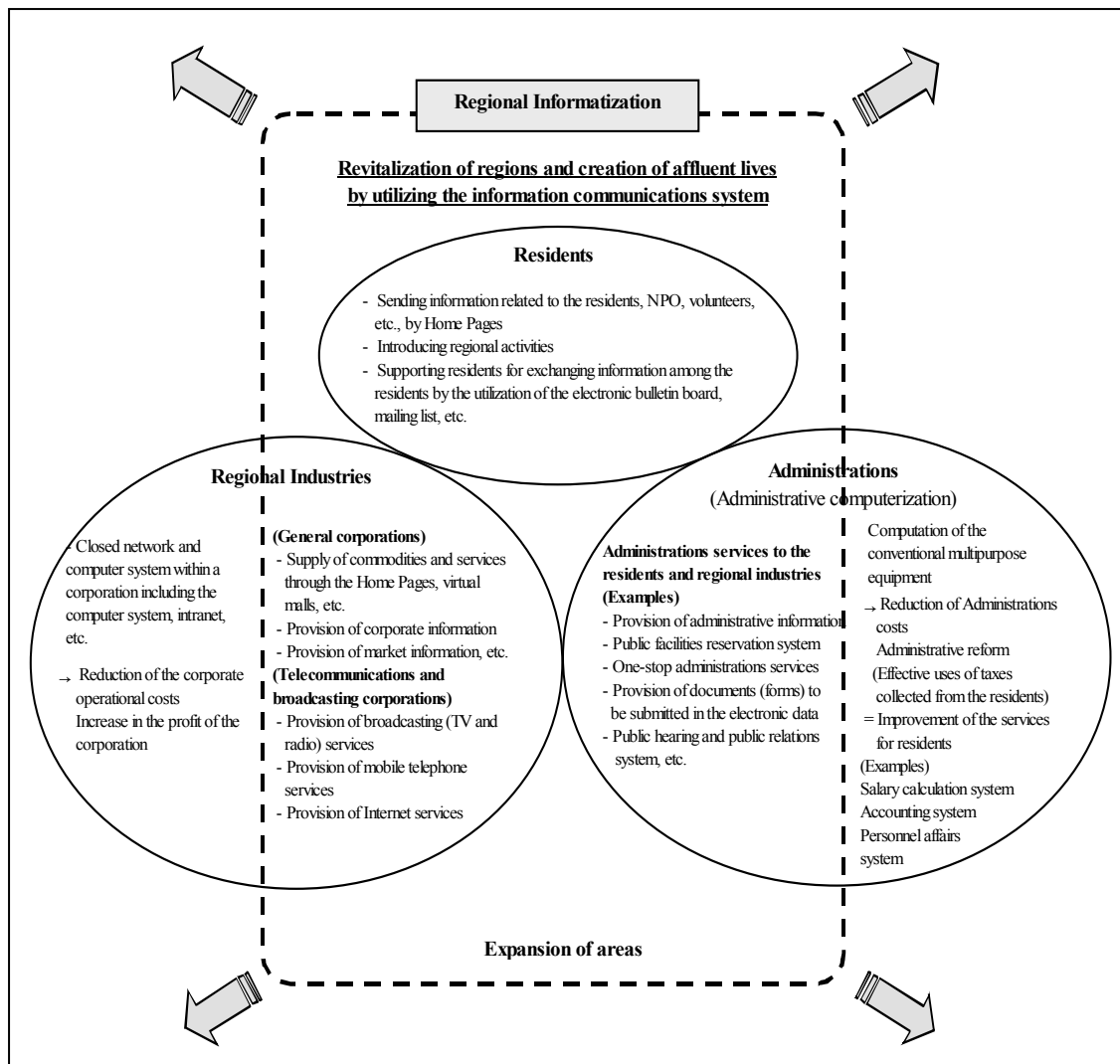
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Figure I.5.1 : Concept of the Regional Informatization

Source: "Vision for Regional Informatization in the Next Generation", May 1999, Telecommunications Council of Japan

For facilitating the process, policy supports for the three following areas are also encouraged, which include supports for expansion of area, fostering residential leaders and reflection of regional uniqueness or constraints affecting the regional informatization.

RIP (Rural Internet Program) is one of the implementation programs for facilitating regional informatization in rural areas of Malaysia. Establishment of Rural Internet Centers (RICs) is the activity for supporting expansion of the RIP in an area. However, supports for fostering residential leader and reflection of regional uniqueness or constraints affecting the regional informatization are not adequately incorporated in the program.

This section firstly looks at the experience of Japan, focusing on the activities for fostering residential leaders and reflection of regional uniqueness through web page design, training, management, etc. Then, how those activities can be applied to Malaysia is discussed.

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The table below shows a summary of the experience by program/project in Japan. The training to senior people in "Tamagawa Bridge" and "Sendai Senior Net Club" are eye-catching. In the web design, the cooperation with other civic groups in "Tamagawa Bridge" and making use of event information in public facilities provide useful lessons for RIC activity. The next sub section addresses more information for each program/project carried out in Japan for regional informatization.

Program/Project	Location	Administrator	Main Features
Tamagawa Bridge	Tokyo	Volunteer	-Training to senior citizens as well as the young -Making the use of other civic groups in web page design
Sendai Senior Net Club	Miyagi	Volunteer	-Training for senior citizens -Training for the pupils and housewives by the seniors trained in the program
Takasu Town Local Village Office	Hokkaido	Municipality	-Greeting mail -Event information -Forum
Mitaka City Lifelong Education	Tokyo	Municipality	-E-reservation -Lifelong education
Takasu Multimedia Consortium	Gifu	NPO	-Distribution of e-mail address to all villagers -Event information
Shift Up Kasuga	Hyogo	NPO	-Distribution of animation -Installation of camera for bedridden persons

5.1.1 Tamagawa Bridge

(1) Background

The Tama River runs through the south edge of Tokyo. Along the left bank of the downstream end of the river, the area of "Tamagawa" is located. The volunteers of this area prepared the web pages for activating local activities and trained the people in the area without distinction of age and gender.

(a) Birth of Tamagawa Bridge

There was a community exchange event named "Bridge Setagaya" in 1998.   The event aimed to promote mutual understanding among community-based organizations, the business sector, and public sector in Setagaya Ward, Tokyo. The event ran over a period of one month and active discussions were held throughout the period.

After the event, some of the executive committee members of the event tried to introduce and disseminate the outcomes of the event by using the Internet.   Then they worked voluntarily and developed the web site named "Tamagawa Bridge". This web site has shifted its objective from an introduction of the event to a

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provision of a continuous place/forum for "bridging" throughout the area.

(b)   Sharing the web site with Bridge Setagaya

Bridge Setagaya has become not only an annual event but also a subject of regular discussion through sub-executive committees.   As it became a continuous activity, Bridge Setagaya developed its own web site for their regular activities, such as discussions of the sub-executive committees.

After development of the Bridge Setagaya web site, the web site of Tamagawa Bridge came to concentrate on providing information and a place/forum for the community. On the other hand, the primary purpose of the Bridge Setagaya web site became the organizing and publicizing of its actual event.   These two web sites gradually came to share their responsibilities.

(2)   Activities

(a)   Development of the web site

Through developing the web site, the members of "Tamagawa Bridge" became aware of the usefulness of the Internet as a communication tool within their community.   They developed a web page named "100 sceneries of Setagaya", which introduced beautiful landscapes in the area, and a web site of a virtual meeting room to facilitate a discussion on it.   The community based organization named "Link the House", which is a networking/communication organization among community planning organizations, was born from the place/forum of Tamagawa Bridge.   They provide information via the Internet and also by fax to members who can not access the Internet.

(b)   Involvement of other citizen's groups

Upon expanding their web site, they came to know various organizations in the Setagaya Ward that provide useful information to the community through the Internet.

For example, there is a web site called "Computer Grandma's Group" which is an aged people's circle that aims to utilize the Internet for communicating with society and the community. They are learning how to use PCs from volunteer trainers, mainly younger people, and enjoy using PCs and the Internet including those who have physical difficulty.

There is also a web site called "Oheso Connection" which provides useful

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information for pregnant women. *Oheso* means navel (belly-button) in Japanese, so this name is a reference to the connection between mothers and their infant via the umbilical cord, whilst actually meaning the cyber linkage of the expectant mothers via the web site.

(c) Holding of PC training

Tamagawa Bridge started an activity called "Tama Paso", which means Tamagawa Personal Computer Playing circle. This activity aims to communicate and foster relationships between aged and younger generations or people with handicaps and fully-abled people through training and using PCs, by referring to the activities of the Computer Grandma's Group. Trainers are retirees of ICT-related companies. A PC training room in a secondary school nearby is opened to the public on weekends.

(3) Lessons

Since a community consists of a variety of people, informatization should not be exclusively for the young people who are currently able to utilize info-communication technology. "Tamagawa Bridge" successfully involved a variety of people and benefited them through PC training for senior people together with information exchange between people and regional organizations.

5.1.2 Sendai Senior Net Club

(1) Background

Currently, young people are dominant in the use of info-communication technology including the Internet. As a result, the digital divide between the young and the old becomes significant. For reducing the divide, three parties, including the Ministry of Posts and Telecommunications in Japan, the City Government of Sendai and the Citizen Group of Senior Net Sendai, organized training for old people. The training targeted to people over 60 years so that they will be able to use the Internet.

The first PC training was held at the post office in 1997. Since the training was highly appreciated by the trainees, more than 600 people applied for the training in the following year, which was originally limited to 140 people. The office of NTT Tohoku, one of the private telecommunication companies, offered cooperation and renovated some of their offices for classrooms so that these can accommodate 340 people for PC training. As of 2001, about 1,200 people have completed the training offered by the Club.

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(2)   Activities

An Internet skills training course for those over the age of 60 started at the Sendai Central Post Office in February 1998. Trainees learn basic skills for operation of PC, e-mail, and Internet browsing for three hours per day over four days.

A new course on post card was opened using software on a CD-ROM for printing postcards provided by Microsoft in 1998. Trainees learn basic PC skills and how to create post cards with a PC for three hours per day over two days.

Both courses require that trainees attend every day during the course. Most of the trainees completed the course successfully. Now the Club has 60 graduates teaching the basic skills to pupils and housewives. Some are dispatched to elementary schools and PTA (Parent-Teachers Association) to teach basic PC skills that they learned from the Club.

(3)   Lessons

Activity of the Sendai Senior Net Club was supported by several public and private organizations.   It successfully created opportunities for old people not only to use the Internet but also to participate in society based on their PC skills acquired from the training. Some graduates are dispatched to elementary schools and teach what they learned from the training.

This example indicates the effectiveness of cooperation between public and private organizations for reducing the digital divide between generations. It also shows that senior people are able to participate in PC training not only as trainees but also as teachers once they acquire adequate PC skills.

5.1.3   Takasu Town, Hokkaido, Japan

(1)   Overview

Takasu Town is located in Hokkaido, in the northern part of Japan and has been experiencing depopulation.   The population reached 10,685 people in 1961, which was the peak in the trend, it went down to about 7,400 people in 2000.

The town's uniqueness is expressed with a word of "Melody". There are some civil structures expressing this feature of the town.   The concert hall called "Melody Hall" and the bridge called "Melody Bridge" constructed in 1980 are some of those. Melody Bridge has handrail installed with a glockenspiel, which weaves a melody of Japanese folk songs.

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The top page of the town's web site is very simple. There are only two large icons in the middle of the page. One is the icon of "Melody Hall". Once the icon is clicked, then the coming events are shown. The other icon is for greeting mail. Since the town has the beautiful natural scenery with mountains, the photo of the scenery is processed as greeting mail, which looks like a picture post card.

Forum is another feature of the web page. The residents, as well as the former residents, utilize this function and discuss the various issues of the town.

(2)   Lessons

The case of Takasu Town is notable in that a local government of rural depopulated village created a homepage and effectively used it for revitalization of the town.   They used three simple info-communication tools such as Event Information, Greeting Mail and Forum.

5.1.4   Mitaka City, Tokyo, Japan

(1)   Overview

As society is aging, lifelong education for adults becomes popular in Japan. Many municipalities are supporting lifelong education programs such as learning foreign languages, playing musical instruments, learning arts, sports, etc.

The lifelong education center in Mitaka City is one of them. Mitaka City is located 15km west of the central part of Tokyo with a population of 150,000.   The city has its own lifelong education center, and the center has its own homepage.

The homepage has several functions to support their lifelong education activities, which consists of introduction seminars, on-going club activities, upcoming events, facility reservation and information regarding available trainers in some fields.

The facility reservation system was very popular after it was installed on the homepage. When people wanted to use facilities managed by the municipality, they had to go to the city hall or its branch offices for a reservation. After the system was installed on the homepage, people were able to reserve these facilities from their home anytime of the day through the Internet. This function is especially handy for the people who live far from city hall or its branch offices.

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(2)   Lessons

Since Malaysia also put an emphasis on education for citizens, the contents for life long education will be appealing. A facility reservation system on the homepage is especially effective when both PCs and the Internet are widely used by the people in the region and the use of facilities is competitive.

5.1.5   Takasu Multimedia Consortium

(1)   Background

Takasu Village in Gifu Prefecture is located about 400 km west of Tokyo with a population of about 3,700. As of 1996, the village had only 20 Internet users. Takasu Consortium was established in August 1996, to revitalize the village by increasing the Internet users to 3,700 in 2000.

The activity by the consortium started with preparing a homepage for the village. The consortium aimed at an enhancement of the culture and social activities in the village by smoothly disseminating information around the area. This consortium is a private body, and six promoters have born the operation cost. The prefecture office of Gifu and the village office have cooperated bearing the cost for promotion.

(2)   Activities

   (a)   Preparation of a homepage

   This consortium began with preparing homepages for the village in 1996. After that, the consortium has cooperated with the promoters of local events and prepared the homepage for the events. For example, the consortium prepared a homepage showing the record of every runner in a local marathon.

   (b)   Free Provision of E-Mail Addresses

   Free provision of e-mail addresses to all village people is a very unique feature of this consortium. This service started in 2000, and the target group of the service is expanding from the village people to their relatives living in other municipalities. All village people and their relatives now have e-mail addresses with a domain name of "@takasu.or.jp". This domain name shows the identity of the village.

   (c)   Free Provision of Server Space

   The consortium also has free service of server space. One MB is provided for

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each person free of charge. Moreover, for business use and personal use with over 1MB, the consortium collected a user charge. The URL of the space begins with "http://www.tasuku.or.jp/".

(d)   Other Activities

Besides the above activities, the consortium holds training for beginners It also provides mailing lists for the classmates, schoolmates, colleagues in the same company, etc. in the village.

(3)   Lesson

Takasu Multimedia Consortium is a successful case of informatization of village through the initiative of a private consortium. It used various info-communication tools including provision of free e-mail accounts, and free server space for villagers. Free provision of e-mail accounts by the consortium is the same system as free mail services such as widely known "yahoo mail" and "hotmail". The domain name of the consortium helped to build up identity of the village and its uniqueness.

5.1.6 Shift Up Kasuga

(1)   Background

The town of Kasuga in Hyogo Prefecture is located about 500 km west of Tokyo. The town is one of the areas experiencing depopulation like some other towns in Japan, where young people are moving out and the economy is stagnant.

Shift Up Kasuga, a Non Profit Organization, was established in September 2001, to revitalize the town by introducing the Internet. "Shift Up" is an English word coined in Japanese and means changing the gear from low to high while driving a car. The founder wishes that the town is to be revitalized step by step as cars accelerate by changing the gears.

(2)   Activities

(a)   "Mimamori i Camera"

The majority of the population in the town is old people and some of them are bedridden. The family member, who had bedridden people, were worried to leave them alone at home, whenever they went out.

Shift Up Kasuga started a unique service to mitigate the anxiety for those

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families. They visited their homes and installed cameras in the room where bedridden people are lying. The camera periodically takes pictures of them and sends it to the web server automatically. The family members can download the pictures on a mobile phone with a web browsing function and confirm the safety of bedridden people even when they are out of the home.

The users bear the cost for installation of camera and user charge, about RM1,200 for installation and about RM20 monthly user charges.

(b)   Broadcasting Station "Inaka TV"

Shift Up Kasuga opened a web site named "Inaka TV". The web site is providing pictures and animation of the natural scenery and harvesting. In addition, e-commerce is also introduced for selling farm products via their homepages.

This site aims to change the urban/rural relationship, especially the one between producers and consumers. It is very difficult for consumers in urban areas to know who the producers of the farm products are. Safety of food is an increasing concern in many countries. People in urban area want to know who the producers are and where the products were produced. By e-commerce through this homepage, people are able to know about the products and producers, and confirm safety and quality before buying them.

(3)   Lessons

Application of info-communications technology to caring for bedridden senior citizens is one example of advanced applications of info-communication technology in the field of health/medical care. However, since it requires a high standard of safety and security, the system becomes costly in many cases.

The distribution of animated pictures can provide the feeling of reality in the case of "Inaka TV". However, it takes a long time to download animation data via a normal telephone line with an access speed of 56kbps. Higher speed and stability are required for providing these info-communication services.

5.2   Experience in Other Advanced Countries

Among the experience in other advanced countries, experience in the U.S.A is the most eminent in respect of infrastructure and cooperation among community, government and

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private organizations. The U.S.A introduced the high-speed info-communications network even to rural communities, in many cases, in partnership with the municipality office, local telephone company, educational institution, and so on. The main features of noteworthy projects in the U.S.A are summarized as follows.

Project	Location	Administration	Main Features
Blacksburg Electronic Village	Blacksburg, Virginia	NPO	-LAN -High speed internet connection -Project monitoring and evaluation -Cooperation with other governmental and educational bodies
e-Tropolis Evanston	Evanston, Illinois	NPO	-LAN -High speed internet connection -Development of training module -Cooperation with other governmental and educational bodies
Keystone Community Network	Lock Haven, Pennsylvania	Keystone Community Network, Inc. (Private Company)	-variety of training courses -Free phone technical support for internet connection -56kbps internet provider service -seeking a grant-

5.2.1 Blacksburg Electronic Village, USA   (http://www.bev.net)

(1)   Background

The concept of Blacksburg Electronic Village (BEV) dates back to 1991. At that time, the Virginia Institute of Technology in Blacksburg, Virginia, already had campus wide network. The institute desired that faculty, staff, and students could access the network from their homes by extending the network over the town. The Municipality of Blacksburg and the local telephone company supported this idea. The plan was consequently developed to involve all citizens in the town so that the project would be more effective and benefit a wider range of people.

(2)   Activities

Three parties manage BEV, the Municipality of Blacksburg, Bell Atlantic, a private telephone company, and the Virginia Institute of Technology. Through the network built by the project, the Municipality promoted adult education in the town. Bell Atlantic provided infrastructure for the network. The Virginia Institute of Technology managed the project and monitored and evaluated the results.

The main activities are the improvement of the infrastructure along with technology advancement, the interconnection among all the schools of the town by network, and the evaluation of the project by the above three parties.

The effect of the BEV is that more than 87 % of the town residents come to use the network and about 60% of them enjoy broadband access.

(3)   Lessons

BEV originated from the educational network in the Virginia Institute of Technology and developed into a town wide network in cooperation with a private company and local government. BEV improved the project by monitoring, evaluation and feedback activities in the project.

Involvement of an educational institution and creating monitoring, evaluation and feedback systems would be worth considering for improvement of regional informatization projects.

5.2.2   e-Tropolis Evanston, USA (http://www.epl.org/community/technopolis/index.html)

(1)   Background

In 1997, an informal group, composed of representatives from the city of Evanston, Northwestern University, local school districts, the Chamber of Commerce and some others, started to evaluate the feasibility of connecting every home and business to a broadband communication network with fiber optic cable. The group confirmed the feasibility and set a goal to install a fiber optic network connection to every house and business entity by the year 2000.

(2)   Activities

   (a)   Educational training

   Educational training of Evanston's citizens to become a part of an online city is an integral part of e-Tropolis Evanston. The e-Tropolis Education and Training Access Committee has identified professional educators and trainers in the Evanston area who are interested in developing training modules for the e-Tropolis project and offering one-on-one assistance. The e-Tropolis effort also will help small Evanston businesses that want to participate in e-commerce.

   (b)   E-Tropolis electric city

   E-Tropolis electric city provides convenient info-communication access to Evanston citizens. This includes electronic commerce for its businesses, access to public school information, i.e. home work pages, city services, i.e. paying parking tickets, information on community organizations, local issues, i.e. expressing

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personal opinions, and closer links to the community's intellectual resources, i.e. library catalogs.

(3)   Lessons

Educational training to the citizens plays an important role for informatization project even in advanced countries. Enhancing user's skill and knowledge is crucial for deriving successful results even in projects carried out in already advanced info-communications circumstances. Cooperation with professional educators and trainers makes the project more effective.

Informatization projects need the cooperation from other organizations not only for building community wide networks but also for providing useful information for users. Library catalog were very helpful, as observed in the e-Tropolis project, but library catalog should be computerized in advance.

5.2.3   Keystone Community Network (KC Net), USA (http://www.kcnet.org)

(1)   Background

Keystone Community Network, Inc. (KC Net) was established in 1995 as a grassroots, non-profit corporation providing Internet access and Internet-related education. As Internet is extended to the community, KC Net is committed to enhance educational opportunities for the community and contribute to activate the economy of the area. Now KC Net puts an emphasis on education for senior citizens.

(2)   Activities

KC Net is one of the Internet Service Providers, currently providing 56kbps Internet access in the community with free phone technical support. It also provides serves for homepage design including frame pages, hit counters, graphic design and so on.

The Community Technology Center of KC Net offers training PC courses and Internet use for all ages in the community. The following table shows the classes offered by KC Net. Besides the courses in the table, it also offers special courses such as how to use a digital camera, photo manipulation, MS Word and Excel, Music Composition, Power Point, Public Speaking, and Genealogy. About 300 people per month attend the classes.

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Course	Content	Tuition
New Member Orientation	-introduction to KC net, the Internet, and email.	Free
Beginner Courses	-how to turn on PC -desktop and mouse control -how to use the browsers, other functions -HTML	US$25 (US$20) / 6weeks
Intermediate Courses	-how to use scandisk and defrag -file extensions such as .gif, .txt, etc. - install and uninstall applications	US$15 (US$12) / 6weeks
Advanced Users Group	- course covers a wide rage of topics such as downloading a free utility, a desktop calendar	US$2 (Free) /session

Note: ( ) stands for the price for KC members

(3)   Lessons

KC Net has a variety of training courses. Besides four standard courses, there are nine optional courses focusing on the operation of software such as MS Word, MS Excel, and Power Point. For considering training courses, this sequential and topic based curriculum can be referred to for attracting more people and reflecting their demand.

5.3   Possible Applications to Malaysia

Possible applications to Malaysia are divided into three categories: infrastructure, local homepages, and training. As shown in the table below, most of the experiences for local homepages and training in Japan are applicable to Malaysia. On the other hand, the experience in the U.S.A gives another insight for informatization process in respect to info-communications infrastructure development.

	JAPAN						USA		
	Tamagawa Bridge	Sendai Seniror Net Club	Takasu Town Local Village Office	Mitaka City Life Long Education	Takasu Multimedia Consortiium	Shift Up Kasuga	Blacksburg Electronic Village	e-Tropolis Evanston	Keystone Community Network
Infrastructure/ Network							○	○	
Web Page	○		○	○	○	○			
Training	○	○							○
Community Activation					○	○			
Organization	V	V	N	M	N	N	N	N	P

○: The sign ○ signifies the service/activity is provided.

M: Municipality, N: Non Profit Organization, P: Private Sector, V: Volunteer

(1)   Info-communications Infrastructure

(a)   High-speed Internet Connection

Technological advancement enables the introduction of high-speed Internet connections. Experience observed in the U.S.A shows that more functions could be expected in the Internet under a broadband environment. In Blacksburg and Evanston, there is a community wide network connecting universities, town offices, high schools, merchants, city libraries, etc. The web page of the towns contains abundant information and can be accessed with a high-speed network facility.

Distributing animation data is also a fruit of a high-speed network. To add the reality in homepage design as seen in "Shift Up Kasuga", animation is more effective than a still picture or image. To access the animation through the Internet, however, it is necessary to introduce a high-speed access system.

(b)   Utilization of other equipment

Equipment other than a PC helps to enhance the contents of homepages. The system of "Mimamori i camera" can be applied to some other fields of medical and health care. However, introducing the system is costly and requires the technological advancement and a prevalence of mobile phone with Internet browsing function into the rural areas in Malaysia.

(2)   Local Homepages

(a)   Involve other groups

For designing a local homepage, it is efficient to make use of the existing network of other citizen groups and integrate their information. Once an RIC succeeds in finding a variety of citizen groups and cooperating with them as seen in the experience of "Tamagawa Bridge", the RIC will be able to obtain a wide range of topics and enrich its homepage, which will attract more people to be involved.

(b)   Greeting mail

Greeting mail as seen in Takasu town, Hokkaido, can be applied if the community has some local unique features such as natural beauty, historic sites, cultural activity and so on. Any illustration or sketches may be substituted for photographs in greeting mail. However, it is sometime difficult for PC beginners to newly create and update greeting mail because greeting mail requires some advanced

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skills of homepage design.

(c)   E-Reservation

Where an RIC is located in the district office, e-reservation is an effective tool to manage the reservation of facilities owned by the district. The households having PCs can access e-reservation page and check the availability of the facilities that they want to use. The further the house is located from the district office, the more effective e-reservation is. However, it is a premise that the use of the facilities is competitive.

(d)   Event information

What kind of events will be held and have been held is useful information to be contained in local homepage. In Takasu town, Hokkaido, event information at a music hall is introduced. Information regarding training courses is also very attractive information for the people who are interested in PC use. The lecture notes can be uploaded for the trainee who could not join the courses. An RIC needs to frequently update the information.

(e)   Forum

Forums provide a place for free discussion by users. Unlike Takasu Town, Hokkaido, there are uncountable forums in web sites. Even inside the company Intranet, forums are introduced to widely gather opinions. For applying a forum to an RIC, the administrator of a forum should be selected and he or she has to monitor the opinions as to whether the opinions would not harm someone's reputations or privacy.

(3)   Training

As seen in the example of "Tamagawa Bridge" and "Sendai Senior Net Club", the individuals, who were trained in the programs organized by the community, in turn, train other residents.   At first, some communities may not have the human resources for trainers. Like the example of Sendai, trainers from PC companies can be dispatched.

The example of "KC net" shows the diversity of the courses. It is important for the beginners to receive an introduction to PCs and the Internet. However, there are lots of things to learn even after mastering how to use PCs and the Internet. For the time being, the RIC training courses focus on the introduction to PC and the Internet. In the next step, the training course should be diversified for intermediate and advanced users.

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(4)   Community Activation

Local news is disseminated to inform of local events, products, scenery, etc. in "Takasu Multimedia Consortium" and "Shift Up Kasuga". Both Takasu and Kasuga are located in deep rural areas of Japan and have a high share of the old in their population, so these towns try to attract urban people and the young to their towns. Along with the effort, the towns introduce their assets through Internet, which urban people cannot enjoy and the young in the towns have not noticed.

(5)   Organization

Volunteers organize "Tamagawa Bridge" and "Sendai Senior Net Club". Members in organizations have not been appointed, but they have volunteered to be involved to the regional informatization project. At the establishment of an RIC committee in Malaysia, the committee should seek widely for volunteers and keeping appointment to a minimum.

Monitoring and evaluation helps to improve the project by learning of both failures and successes of the project. In Blacksburg, the project has been successfully improved through monitoring and evaluation. An RIC should monitor and evaluate the users' benefit, PC troubles, etc. RICs can obtain useful lessons for future activities.

It is recommended that the communities have some identity or uniqueness. As seen in the experience Takasu Village in Gifu Prefecture, creating a unique domain name is one of the ways of showing identity. RICs are expected to define their identities and show the identities by all means through the Internet.

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