

# Smart Community: The Malaysian Perspective

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## ABSTRACT

*Countries globally are becoming information literate. Future communities should be able to create, distribute, and access information or manage knowledge using current information and communication technologies. Communities such as these are known as smart communities. The question is: Can such a smart community to bridge the digital divide be built in Malaysia? This paper discusses about knowledge management, the smart community projects both globally and locally, Malaysia's readiness for a smart community, and suggests a model for smart communities in Malaysia. The paper will very briefly talk about the Smart Communities International Network (SCIN) and compares initiatives made by the SCIN partners.*

## Keywords

*Knowledge, digital divide, knowledge management, smart community*

## 1.0 INTRODUCTION

Knowledge has been recognized as an important asset and productivity factor besides labour, capital and land. With this fact, the Malaysian government is steering the country to shift from being a manufacturing or industrial-based to being a knowledge-based country. The ability to marshal and deploy knowledge across any institution, be it the government, business organizations and society, can act as an organizational advantage that can usher the country into becoming a developed country as envisaged by our Prime Minister's vision of 2020 that is to develop a values-based Knowledge Society, modeled on its own culture and combined values.

To accelerate the realm of Vision 2020, the Malaysian government has drafted a path defined through seven areas of applications currently being developed in the Multimedia Super Corridor (MSC) by international and domestic companies. These applications are known as the Flagship Applications and they comprise of e-Government, multipurpose card, smart schools, telehealth, research and development cluster, e-business and technopreneur development. The objectives of these applications among others are to increase Malaysian productivity and competitiveness by creating the environment/infrastructure for electronic activities that includes businesses, governance and healthcare. This achievement if accomplished successfully can reduce the

digital divide among the communities in Malaysia and steer her people into building a Smart Community.

Smart Community with the vision of the future will explore new information and communication technology (ICT) inventions and innovations that will create jobs and economic growth as well as improve the overall quality of life. The government has already started the process of developing a knowledge-economy or k-economy master plan. The master plan will be a coherent and comprehensive set of strategies for Malaysia and Malaysians to undertake, to enable smooth migration from the current economy to a knowledge-economy as well as knowledge-society/k-society. (Hizamnuddin, 2001).

In this paper we presented a reviewed work on Smart Community and the developments that Malaysia has undergone to achieve a knowledge-society that will lead to transformation into a Smart Community. This work is a part of the on-going research on knowledge management at the Faculty of Computer Science and Information Systems, UTM. The rest of the paper will be organized as follows: Section 2 discusses about the occurrence of the digital divide and its relation to knowledge management. Section 3 briefly explains Smart Community and the projects involved while Section 4 looks into the Malaysian activities and her achievements in reaching the goal of Smart Communities. Lastly Section 5 wraps up by calling upon all Malaysians to work hard in order to make Malaysia's goal a reality.

## 2.0 DIGITAL DIVIDE AND KNOWLEDGE MANAGEMENT

Today we are witnessing the transformation of the world into the 21<sup>st</sup> century, from an industrial society of the past to an information society. An information society promises basic change in all aspects of human existence, including knowledge dissemination, social interaction, economic and business practices, political engagement, media, education, health, leisure and entertainment. However the development and the distribution of ICT usage is uneven among the community and the factors that cause it among others are:

- i. Network infrastructure
- ii. Socio-economy of the community
- iii. Geographical dispersion
- iv. Politics / governance
- v. Human factors such as attitudinal, generational and physical disabilities

This circumstances lead to the phenomenon that is known as the “digital divide”. The phrase "digital divide" has been applied to the gap that exists in the global community, or in general, between countries with ready access to the tools of ICT, and the knowledge that they provide access to, and those without such access or skills (Cullen, 2001). Nevertheless this gap needs to be infused so as to achieve the ultimate goal of being an information society that can pilot the nation to a k-society.

Besides human resource development, ICT access plays a vital role in narrowing the gap of the digital divide. The greater the access a population has to information, the more knowledgeable they will become. Wong stated that the youths of Malaysia are currently having the best access to ICT, as there are standardized school syllabus, computer clubs, cyber centers and smart schools (Wong, 2001). In addition, higher institutions in Malaysia are offering many ICT courses and are equipped with the infrastructure for Internet access (Hizamudin, 2001). The usage of ICT should not be targeted only for the needs of the professionals. Instead it should also reach out to other parts of the smaller community for example housewives and senior citizens, so that their potential can be tapped and contribute towards the economic growth of the nation along with traditional factors of production – land, labor and capital. Due to this, knowledge has become a prerequisite, and a major overhaul of mindsets is necessary, along with a major re-education of what constitutes data, information and knowledge.

Knowledge is a fundamental resource and it is defined as what happens at the moment in time when information becomes valuable to the individual seeking it (Davenport and Prusak, 2002). Therefore knowledge need to be captured, developed, utilized and shared. An effective knowledge management (KM) system must be able to capture knowledge and store as well as access it and continually enhance it for ongoing use by individuals that are seeking for answers. Due to this, KM as a discipline has gained enormous interest in its usability for protecting intellectual assets from decay and for seeking opportunity to enhance decisions, products or services. The role of knowledge management is to bring up the levels of literacy, education and awareness of human rights and most importantly digital-rights in the role as fellow villagers of the global community (Ghosh and Mitra, 2002).

Collaborating and sharing knowledge among the individuals of a group can mold them into becoming a part of a smart community. A smart community is a community that has the vision of the future that involves the use of ICT in new and innovative ways to give its residents, institutions and region as a whole, the benefits offered by ICT. As a tool, ICT can transform the community, solve its problems, and transform the way individuals and organizations live, work, learn, shop, and manage their affairs. Supported with an effective

knowledge-based content, this will pave a dynamic growth in the community and in return make it an attractive and competitive location to live, to invest, and unwrap new businesses. With this vision, the gap that once existed in the digital divide will be narrowed and eventually diminished.

### 3.0 SMART COMMUNITY PROJECT

In less than a decade, we have witnessed the Internet progressing from a mere tool used mainly by researchers and university academics into a global communications medium. All walks of society have embraced the network infrastructure and it is fast becoming the leading communications carrier of the future, expanding communications to include the business and financial sectors as well.

This technological shift has brought communities either locally or globally closer, bridging the ‘divide’ or distance barrier in communication. As a response to this change, many communities are introducing or encouraging ‘smart services’ as what is presently shaped or spawned from the introduction of the Multimedia Super Corridor (MSC) back in 1998 (Bernama, 2003; Goh, 2000; Harris, 1998). These communities are often described as ‘smart’ or ‘virtual’ communities or societies. In some parts of the globe like the United States and Singapore, it is also known as intelligent or creative communities. What then is a Smart Community? Although it has been defined in the previous section, we will attempt to give a definition of a Smart Community based on our background study of the subject. A Smart Community as we envision, is a community that consciously embraces the use of ICT, forming alliances between members of the local government, business, education, healthcare institutions and the general public to transform the community in significant and positive ways.

Communities and countries around the globe are preparing to enter the 21<sup>st</sup> century by creating and transforming their regions into smart communities. In Malaysia, we gear into this new era through Vision 2020 and to help us realize this vision we created the MSC. MSC houses two of the world’s first smart cities: Putrajaya and Cyberjaya, soon to be joined by Subang Jaya which is also within the corridor. Other initiatives worldwide can be seen in countries like Canada – The Smart Communities Program; Eindhoven, Netherlands – Kenniswijk (Smart City Project); Stockholm, Sweden – Kista E-Democracy Project; Okinawa, Japan – Multimedia Island; Ennis, Ireland – Information Age Town; United States – California Smart Communities Program; Costa Rica – Little Intelligent Communities (INCOS); Parthenay, France – Digital Town; Victoria, Australia – VCNET and Singapore – Intelligent Island. (Kervern et al, 1999; Eger, 2003; Tsuchihashi, 2003).

These are just a few examples of existing smart communities that are proliferating the globe. As it is, communities worldwide are responding to the needs of their citizens by discovering new ways of using ICT as a propelling force to change the inner workings of their societies and economies. According to Deans, Smart Communities attempt to improve their citizen's lifestyles through increased interaction and collaboration by fully utilizing their telecommunications infrastructure. He adds that Smart Communities are also striving to become economically competitive in the global networked economy, and promote commerce as a result of an advanced telecommunications infrastructure investment (Deans, 2003). Again, the Smart Community concept implies the transformation from a traditional community. Transformation is complex and far beyond enhancing a single element of the community (such as providing access to city information electronically), essentially requiring creativity and comprehensiveness (planning).

Building a smart community does not usually consist of one or two projects. Rather, the outcome of a smart community strategy and action plan is made up of one or more sets of related projects that are linked through:

- i. An overall goal and vision for the community;
- ii. A common economic and social objectives that are specific to the community's needs and opportunities; and
- iii. A strategy for realizing those objectives.

Malaysia already has a vision in place. The MSC is a jump-start point for actualizing Vision 2020. The pinnacle of these initiations would be for Malaysia to transform into a knowledge-based society.

services will be produced and delivered across the globe.

- iii. An island of excellence with multimedia-specific capabilities, technologies, infrastructure, policies and systems for competitive advantage.
- iv. A test bed for invention, research and other groundbreaking multimedia development of seven multimedia applications.
- v. A global community living on the leading-edge of the information society.
- vi. A world of smart homes, smart cities, smart schools, smart cards and smart partnerships.

At present, we at the Faculty of Computer Science and Information Systems, UTM are embarking on a research about smart communities called Technopreneurship M-Business Knowledge Management System. The question to be tackled in this research is: Can a smart community / communities be built to help us bridge the digital divide among communities in Malaysia? In this research work we believe that having the required technologies is not enough to develop a smart community application. Instead, it must be supported by a well-managed knowledge-based system so that the system can be successfully deployed and used by the community. Here as depicted in Figure 1, we propose a KM model for a smart community.

Figure 1 shows KMS models between Communities A and B linked via a global interface such as the Internet. Each community offers e-services for business, health, government and academia. To maintain secure transactions, security mechanisms are put into place.

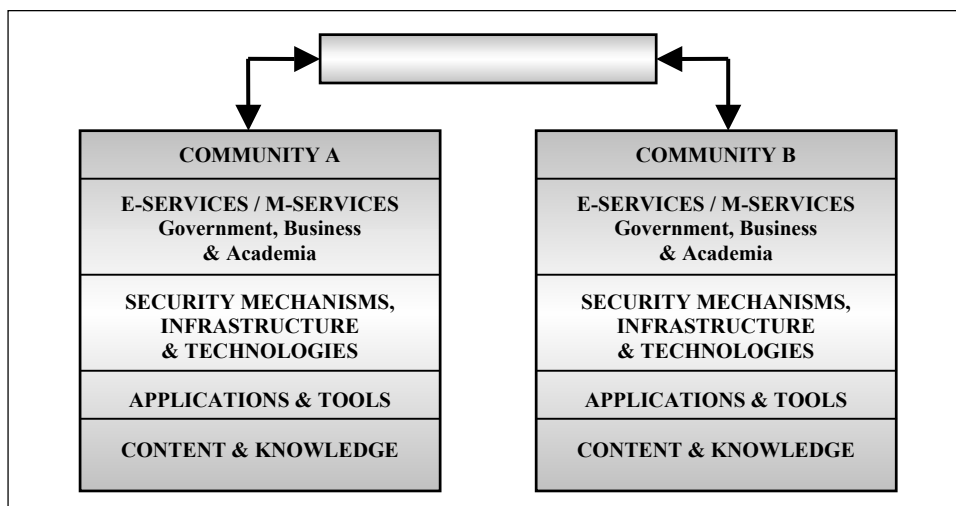


Figure 1: Smart Community Model

The MSC sets to deliver a number of services through investment, business, R&D, and li (Harris, 1998; Mahathir, 1998):

- i. A vehicle for attracting world-class technology-led companies to Malaysia.
- ii. A multimedia utopia offering a productive, intelligent environment within which goods and

actions are made possible by the e provided using the appropriate KMS applications and tools. The services rendered are knowledge shared either within or among these communities can be viewed as content for the smart community model. The following subsections detail out each activity or process.

### 3.1 Infrastructure and Technologies

The key requirement to a successful smart community development is the ability to create, distribute and access information. Interconnections between schools, libraries, medical care, government and businesses can direct to the sharing and collaborating of information among communities. Consequently it is justifiable to quote that network; wired or wireless, is the prerequisite for connectivity and interactivity in order for the community to gain access to global information and knowledge systems. For this reason it is important to ensure that all communities have a high-speed, high bandwidth access to wholly contribute to the knowledge-based economy. Multimedia information such as text, images, voice, and video can be digitized, generated, stored, transmitted and received with a higher speed through broadband network and it should be accessible to everyone and from anywhere.

Most network infrastructures in existence are initially based on a wired mode using coaxial and fiber cables. Laying down cables for new developments are comparatively easy and economically sustainable but nevertheless there are instances where it is not economically feasible and impractical to use cable from end to end in a network. For urban business areas where buildings and developed residential housing estates already exist, it is an expensive undertaking to trench and install new cables. Furthermore the whole task can be cumbersome for remote areas and sparsely populated regions even though it may be a new development. For these cases wireless communication technology can be a solution whereby it can extend services beyond the reach of fiber and cable to industrial parks, suburbs and new developments. Wireless network is environment friendly and can be set rapidly without having to trench throughout a community.

Today, broadband technology that encompasses all evolving high-speed digital technologies can provide communities with integrated access to voice, high-speed data, video-on-demand, and interactive delivery services. This has become a fundamental component of the communications revolution. Fully evolved broadband will virtually eliminate geographic distance as an obstacle to acquiring information, and dramatically reduce the time it takes to access information. In other words, broadband technology will support the functioning of the smart community as well as bringing benefits to businesses, government and the community.

Network operators have an important role to play in facilitating the digitization of content. The builder of any high-speed, high-bandwidth access network should adhere to an open network philosophy. In this role, network operators must help to develop standards and tools for content creation, storage, distribution and other activities such as electronic commerce and user authentication.

### 3.2 Tools and Applications of KMS

As mentioned before a Smart Community can be molded from a group of individuals that collaborates and shares knowledge. This effort can be further realized through the use of ICT and KM tools and applications. The processes or best practices of a smart community will be documented or coded and kept in web-enabled portals or repositories. The knowledge will be disseminated via an enterprise knowledge management system via applications comprising of self-guided learning tools and job-aided databases. Technologies required to support this effort may be e-learning tools, workflow software, knowledge repositories, best-practiced databases, knowledge engineering, imaging technologies, search engines, and news-feeds (Allee, 1997).

### 3.3 Security

The embracement of the internetworking in ICT has led to the development of applications with multiple functions such as in Healthcare, Banking, Education, E-Commerce and E-Governance. In addition, wireless technology has broadened access and facilitated in the sharing and collaborating of knowledge among the community from virtually anywhere in the network. However, the setback is that the open nature of the Internet and lack of central administration can make the network vulnerable to wiretapping and tampering. Consequently, users of electronic services need to ensure that their transactions cannot be forged, altered or intercepted. Here the establishment of trust is paramount. People need to be able to enter into binding commitments and they need to be confident that their personal privacy is respected. Businesses are concerned about the economic risk due to compromised security. In view of these matters users, enterprises and network operators are seeking security mechanisms for protection of their intellectual and monetary assets.

The security goals in ICT are essentially the same as for all networked system, which are confidentiality, integrity, availability and reliability (Pfleeger, 1997; Sherman, 1992). Confidentiality addresses the certainty that the information is protected from unauthorized access. Integrity ensures that the information stored on a computer system is correct. Reliability on the other hand, addresses how a user can rely upon the integrity of the data, no matter what was sent or received. Meanwhile, availability ensures that computer systems are not only ready to use by the user when needed, but are also able to communicate with authorized users.

There are several mechanisms that can be employed to implement security goals and the most popular technique is cryptography. Together with message digest techniques, several other security applications have been developed, for example digital signature and time stamping. In the wired network, a layer of security

functionality, for example Secure Socket Layer (SSL), and Secure Electronic Transaction (SET) has been added to the transport layer to ensure that the data transmitted are secure. Virtual Private Network (VPN) is another protocol that is currently being used by organizations in getting connected with their partners and clients. Besides security applications, other security tools may be required to deter unauthorized intrusions such as intrusion detection and firewall tools.

Security management needs to be look upon seriously when building a secure electronic infrastructure either wired or wireless. Policies that include security standards and guidelines need to be drawn, implemented and monitored among users and organizations. Interactions among organizations that use different security standards will not enhance the security of the overall system. A situation where one organization may implement the highest level of security control, which includes security policy and mechanisms, while another may only implement the minimal security controls, can lead to new security vulnerabilities in the organizations.

The Government must play their role and involve in providing the security infrastructure and setting standards for trust services as well as drawing up cyber laws. In many cases, there will be a need for this seal of trust and security to be portable and this facility can be offered by smart cards.

### **3.3.1 Digital Signatures**

There is a growing need for a means of identifying people and authenticating transaction in the virtual environment. Signature is a means of demonstrating commitment, understanding, authority and a host of other values. Digital signatures extend this concept into the electronic world. The usage of digital signature is for authenticating users, providing confidentiality and integrity of messages, and support non-repudiation. Digital signatures can be combined with digital certificates to establish a hierarchy of trust via third parties (Mohd Azaini et al, 2000). This helps parties involved in electronic transactions to trust each other, even though they may never have met.

### **3.3.2 Digital Time Stamp**

Digital timestamping recording or cryptographic chaining is an authentication system that complements digital signature. It does not require the use of any key but instead employs digital hashing. In this scheme, the contents of a document are authenticated by a time-date stamp, that causes the document to be factually and logically secured. The scheme makes patents copyright and intellectual properties disputes irrefutable (Mazleena et al., 1998).

## **4.0 MALAYSIAN SCENARIO TOWARDS SMART COMMUNITY**

Smart Communities integrate information and communications technology (ICT) into all aspects of life such as economic, social and cultural development. By way of example, smart community projects may be designed to provide new and improved network-based services and applications for:

- i. The administration of municipal government and delivery of services to the public (e.g. social services)
- ii. Business and economic development
- iii. Tourism development
- iv. Access to information, e.g. community activities and programs
- v. Learning, training and education
- vi. Preservation of cultural heritage.
- vii. Development of the arts
- viii. Eliminating unequal access by citizens to the Internet.

Basically, Malaysia has the fundamental ingredients required to become a Smart Community. Malaysia is exactly on track with Vision 2020 and the creation of the MSC to kickoff the project plan as envisioned.

To strategize the country's goal of entering the information age, seven flagships have been initially introduced with the MSC's first inception. These are: (i) e-government, (ii) smart schools, (iii) telemedicine/telehealth, (iv) multipurpose card, (v) R&D clusters, (vi) worldwide manufacturing web, and (vii) borderless marketing. In the second phase of the MSC's implementation, e-business and technopreneurship development was added to replace worldwide manufacturing web and borderless marketing (MAMPU, 2003; Othman, 1997).

The Multimedia Development Corporation (MDC) has been entrusted with the responsibility of coordinating the overall implementation of these flagship applications. Seven lead agencies have been identified to spearhead the implementation of each flagship applications. These agencies are the Malaysian Administrative Modernization and Management Planning Unit or MAMPU (electronic government), Ministry of Education (smart school), Ministry of Health (telemedicine), Bank Negara (multipurpose card), Ministry of Science, Technology and Environment (R&D cluster), Ministry of International Trade and Industry (worldwide manufacturing web), and MDC (borderless marketing) (MAMPU, 2003). As a strategy to further assist, support and show commitment in the MSC's setup, a framework has been desgined. The components of this framework are (i) Telecommunications (ii) Bill of Guarantees (iii) Cyberlaws, and (iv) Physical and Infrastructural Environment. Further details can be viewed from the website about the MSC at <http://www.msc.com.my/mdc/msc/creating.asp>

The MSC project is into its second phase of development, a bit behind schedule because of the economic downturn

but definitely on track. New ideas have spawned into real projects and some real life applications of the smart services promised to the nation are already in use. This section will discuss about the smart services that are already available locally. Present services can be seen in the administrative/governance, commerce/business, education / academic and health sectors. Some examples will be given here.

It is suffice to say that several scattered communities in Malaysia can be labeled as smart communities. Malaysians are connected, that is Internet is readily available wherever telephone lines are available. Our major telecommunications provider, Telekom Malaysia has upgraded its services and expanded its accessibility range far into the rural backdrops of the country. However, coverage does not equate to being connected because to be connected one also need to have sufficient hardware and software. In view of this, the government has introduced several options for Malaysians to acquire a computer for their own home such as purchasing computers through partial withdrawal of EPF. Let us take a look at several existing online services rendered to the Malaysian public either in localities or as a whole. Most of these can be found in the commerce or business sectors. Other physical infrastructure such as technology parks and incubators also contribute to the leapfrogging of Malaysia into the new era. Besides the main technology park of the MSC located at Bukit Jalil, other similar parks have been setup namely Johore Technology Park located in the south and Kulim HiTech Park located in the north of the peninsular. With these two parks, activities related to ICT implementation have mushroomed not only within the MSC but also from the north downwards and from the south upwards.

#### 4.1 E-Governance (EG)

In this regard five EG pilot projects were launched encompassing three categories of applications namely: intra-agency, inter-agency and Government to citizen/business service applications. The Eighth Malaysia Plan reports that at the state level, several state governments developed ICT infrastructures, systems, and applications in response to their respective ICT needs. This includes the creation of telecommunications infrastructure networks such as Penang-Net, Sarawak-Net and Johor Information Infrastructure (RM8, 2001b). Some local government authorities also embarked on their own ICT projects such as the Ipoh Virtual City project by the Ipoh City Hall in Perak and the SJ2005 project by the Subang Jaya Municipal Council in Selangor (NITC, 2002).

The SJ2005 was initiated because it is in the MSC, and we do not yet have a 'matured' live-in community in Putrajaya and Cyberjaya for the Government to evaluate and study the social, education, political, economic and technological impact of ICT on a smart community. The main objectives of the SJ2005 initiatives are (NITC, 2002):

- i. To build a knowledge-based community
- ii. To evolve good, effective, accountable, transparent, caring governance framework
- iii. To promote e-business and e-commerce for new wealth creation
- iv. To forge social cohesiveness and enrich life through inter-networked society
- v. To enhance internet access and connectivity
- vi. To promote relevant skills to learn, adapt and use internet
- vii. To ensure smart partnerships between tri-sectors, that is the Government, private and communities.

Already in operation is the Ipoh Virtual City project where business can be conducted electronically, 24-hours a day, 7-days a week, without the involvement of a city council employee (Bhaskaran, 2000; Jessy, 2000). Ipoh residents can pay for their bills, rentals, assessment rates and parking summonses online by using either ATM or credit cards and communicate with the city council via special kiosks, the Internet or interactive telephony systems, anywhere and anytime even from another city located in Europe. The project is divided into three phases: (i) an interactive voice recording (IVR) telephony system, Internet connection to various departments and five kiosks to enable people to link up with the council (March 2000); (ii) automate core businesses and services (September 2001 – end 2002); (iii) development of a Smart Community (2003). With these implementations underway, the state next targets are the districts of Taiping and Larut (Ashraf, 2001; Lim, 2001).

#### 4.2 E-Banking and Retail

Even before the smart card was launched, Malaysians are able to pay bills online. Bank Simpanan Nasional enables us to pay our utility bills at any one of its teller machines. Online banking is also extended by banks such as HSBC and Citibank where transactions related to banking (deposits, credit card payment, car, and housing loan repayment) can be performed at any of its outlet 24 hours a day. The Malaysian Electronic Payment System (MEPS), a consortium of bankcard companies, has further extended online banking through its *e-cash* card, a new payment multipurpose card. It is purported that using the card's e-purse facility, holders would be able to pay toll fares, bus fares and other transport-related transactions (Leong, 2002). Already, at participating shopping outlets and any business outlets that recognize the *e-cash* card such as Metrojaya, payment can be done with the use of MEPS *e-cash* card. During the payment transaction, the cashier will dial-up the associated bank followed by the keying of the PIN number by the customer. The total amount spent will be keyed-in and automatically deducted from the customer's account.

#### 4.3 E-Learning

Learning can be viewed from different perspective. E-learning can be viewed as online learning or virtual

learning via computers where there are no specific classrooms or meeting periods. It can be also that of human aided machine learning where learning is from telephony systems or videoconferencing. In Malaysia universities are deeply researching this area either in the deploying technologies involved or the content management of such systems. Universiti Sains Malaysia is a pioneer in distance learning via video-conferencing. Other universities like Univesiti Teknologi Malaysia are conducting e-learning sessions using e-learning packages such as WebCT. So far in Malaysia, e-learning has not fully taken over the traditional method of teaching but acts as a buffer or supporting mechanism to conventional lectures. Private and/or virtual universities such as Universiti Tun Abdul Razak is also actively researching and using e-learning packages which they develop in-house.

E-learning is also emerging as a lifelong learning tool in several organizations and communities. In communities such as Sarawak such projects as e-Bario serves also to bridge the digital divide for the Bario region and the rest of Sarawak and the world (Bala, P. and Songan, P., 2002; RM8, 2001a).

#### **4.4 E-Entertainment**

The e-village located at Dengkil, Selangor was planned to be like a Hollywood in terms of film production, but stressing on multimedia based and computer animated productions. The focus for this project was to develop high value creative content to meet the demands of Internet users, filmgoers, television audiences, computer games enthusiasts and educationalists (Smart, 2000). Regretfully, this project was closed down due to cash flow problems (NST, 2002). ASTRO, a local private television station, is offering e-services to the community. Their movie-on-demand service can be requested by subscribers either through the telephone or the Internet. Charges will be added to the subscriber's monthly bills. MEASAT, the owner of ASTRO provides Malaysia with a technologically advanced communications system and the inherent ability to support the development of multimedia technology and applications, all while providing information, education and entertainment to subscribers.

#### **4.5 MyKad**

The word 'My' signifies Malaysia's Internet address as well as 'My' meaning personal ownership while the word 'Kad' is an acronym of 'Kad Akuan Diri' or translated as 'Personal Identification Card' as well as 'Kad Aplikasi Digital' or Digital Application Card. In its initial launching, the first government multiapplication smartcard in the world, MyKad not only provides national identity but also driver's license, health, immigration and e-cash information (UNISYS, 2003). Some smartcard services related to banking and retail

have been covered in the relevant subsections prior to this.

The usage of MyKad is made more secure through the launching of its Public Key Infrastructure (PKI) feature. PKI is a digital signature for secure online communications and transactions using cryptography and digital certificate technology. This digital signature will act as a legal proof that one has carried out an online transaction. (Fazli, 2003; Pooparajah, 2003). MyKad will eventually replace the plastic card-based National Identification Card.

#### **4.6 E-Services**

It is the government's vision that eServices will become a preferred Public Service Portal. The objective of this project is to enhance service access to the public through multiple electronic delivery channels such as KIOSK, Interactive Voice Response (IVR)/telephone, and Internet service via personal computers. Already in operation in selected locations in the Klang Valley, having centers in Petaling Jaya in Selangor Padang Jawa in Klang and Wangsa Maju in Kuala Lumpur; these kiosks serves as a one-stop window for obtaining information and performs payment transactions at any delivery channels. Users can make enquiries and pay bills online for Telekom, Tenaga Nasional, Royal Malaysian Police and Road Transport Department. Further details can be viewed from its official website at <http://www.eservices.com.my/eservices/english/common/>

#### **4.7 E-Procurement**

Two modules under this new electronic sales channel—central contract and direct purchase—are already fully functional and are being used by the government in its procurement exercises.

By the end of March 2003, when quotation procurement modules go live, suppliers are able to obtain tender documents and submit bids and quotations online. Details about this service can be obtained from <http://www.eperolehan.com.my/>

#### **4.8 Researches**

The above are several available services as an outcome of the projects planned under the Vision 2020 and creation of the MSC. Many other areas are under research and development waiting to unleash its service to the Malaysian public. I am sure that this is just a tip of the iceberg of the possible e-services that can be generated from future properly planned and managed research. Researches include but are not limited to areas such as education, health and economic growth.

#### 4.9 Smart Communities International Network

To expand the smart community to go global, Malaysia has gone into collaboration with several partners in launching the Smart Communities International Network (SCIN) on March 3 of this year. SCIN responds to the rapid global proliferation of Smart Community projects. A Dutch initiative, SCIN seeks to actively promote and support international exchange and co-operation, leading up to bi- and multilateral agreements, joint research and development activities as well as international business and investment opportunities for the private sector. The other SCIN partners are Canada, the Netherlands and Sweden. For 2003, the founding partners of SCIN have selected three areas that will serve as focus areas of business development and best practice exchange. These areas are:

- Mobile Services
- Security
- Video Communication

As an individual entity, each partner country has embarked on their own efforts to create smart communities within their own country. Malaysia, as has been discussed earlier in this section has made a jumpstart through the creation of the MSC and several “information highways or corridors” in the northern and southern parts of the peninsular; and also through other digital bridging efforts such as the e-Bario project in Sarawak. We further tried to collect information about the early initiatives made by each partner country, compare them and tabulate their accomplished efforts as in Table 1. However, this table only reflects the initiatives from data that we are able to gather at the time of writing. As the research continues, more information will be gathered, and Table 1 will be further updated.

#### 5.0 CONCLUSION

For the smart community project in Malaysia to succeed, it should be carefully planned and guided as what have been done in the creation of the MSC. The future needs of the community have to be incorporated into these plans and plans should evolve with the continuously evolving needs and desires of the community it serves. Content must be generated on-goingly to enable generation of revenue opportunities.

At this point, Malaysians are fortunate, as the government has laid the master plan for creation of the MSC. Hence plans and guidelines for smart communities will definitely be aligned and in focus with existing plans for the MSC. We only need to make sure that we Malaysians work hard towards supporting and making this national goal a reality. Its success will not only benefit the country but the citizens at large as it will generate new economic growth and stability.

We believe that if our community fails to become a smart community in the next decade, it will be a community

with serious handicaps. It will lack the ability and capacity to participate fully in the global economy that has the potential of improving everyone’s living standards and quality of life.

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Table 1. Comparison of Initiatives Among SCIN Partners

	CANADA (Ottawa)	SWEDEN <sup>1</sup> (Stockholm)	NETHERLANDS (Eindhoven)	MALAYSIA <sup>2</sup>
Network Infrastructure	Broadband Wireless	Broadband Wireless, Fiber	Broadband	Broadband Fiber
Education	KnowledgeLink <ul style="list-style-type: none"> <li>• Range of on-line education services and hands-on computer orientation.</li> </ul>		E-Campus <ul style="list-style-type: none"> <li>• Learning via Internet.</li> </ul> PSV <ul style="list-style-type: none"> <li>• Soccer training, interviews broadcasted live on the Internet.</li> </ul>	Learning via Internet. E-Bario
Business Services	BusinessLink <ul style="list-style-type: none"> <li>• Business services and employment and career planning.</li> </ul>		Kadoline <ul style="list-style-type: none"> <li>• Ordering gifts from Internet.</li> </ul> Ontdeknet <ul style="list-style-type: none"> <li>• Knowledge gathering</li> </ul>	Ordering flowers online
Entertainment			Muzikantenweb <ul style="list-style-type: none"> <li>• Online presentation for music.</li> </ul> Verenigingswereld <ul style="list-style-type: none"> <li>• Active online community software.</li> </ul> VlinderTV <ul style="list-style-type: none"> <li>• TV shows on local inhabitants broadcasted on the internet.</li> </ul>	ASTRO <ul style="list-style-type: none"> <li>• Pay-Per-View</li> </ul>
Health Services	WellnetLink <ul style="list-style-type: none"> <li>• Access to health and social services</li> </ul>		Heartspoint <ul style="list-style-type: none"> <li>• Online thrombosis self-care.</li> </ul> Kleurjeleven.nl <ul style="list-style-type: none"> <li>• Internet courses for handling depression.</li> </ul> LeefstijlTV <ul style="list-style-type: none"> <li>• Health and safe life styles</li> </ul> TV Internet	Hospital Selayang <ul style="list-style-type: none"> <li>• E-Health (Electronic medical record)</li> </ul>
Others	CityLink, <ul style="list-style-type: none"> <li>• Offering residents access to city services and information</li> </ul>		Marieke <ul style="list-style-type: none"> <li>• Desktop assistant. Rits tele.com</li> <li>• Phone calls over the Internet</li> </ul> I-meel <ul style="list-style-type: none"> <li>• Simplified e-mail system</li> </ul> WotsDis <ul style="list-style-type: none"> <li>• Send &amp; watch video over the Internet</li> </ul> I-Disk <ul style="list-style-type: none"> <li>• Personal Internet disk space</li> </ul>	E-services MyKad

Notes: <sup>1</sup>Data not available

<sup>2</sup>Not limited to MSC but scattered e-communities in Malaysia