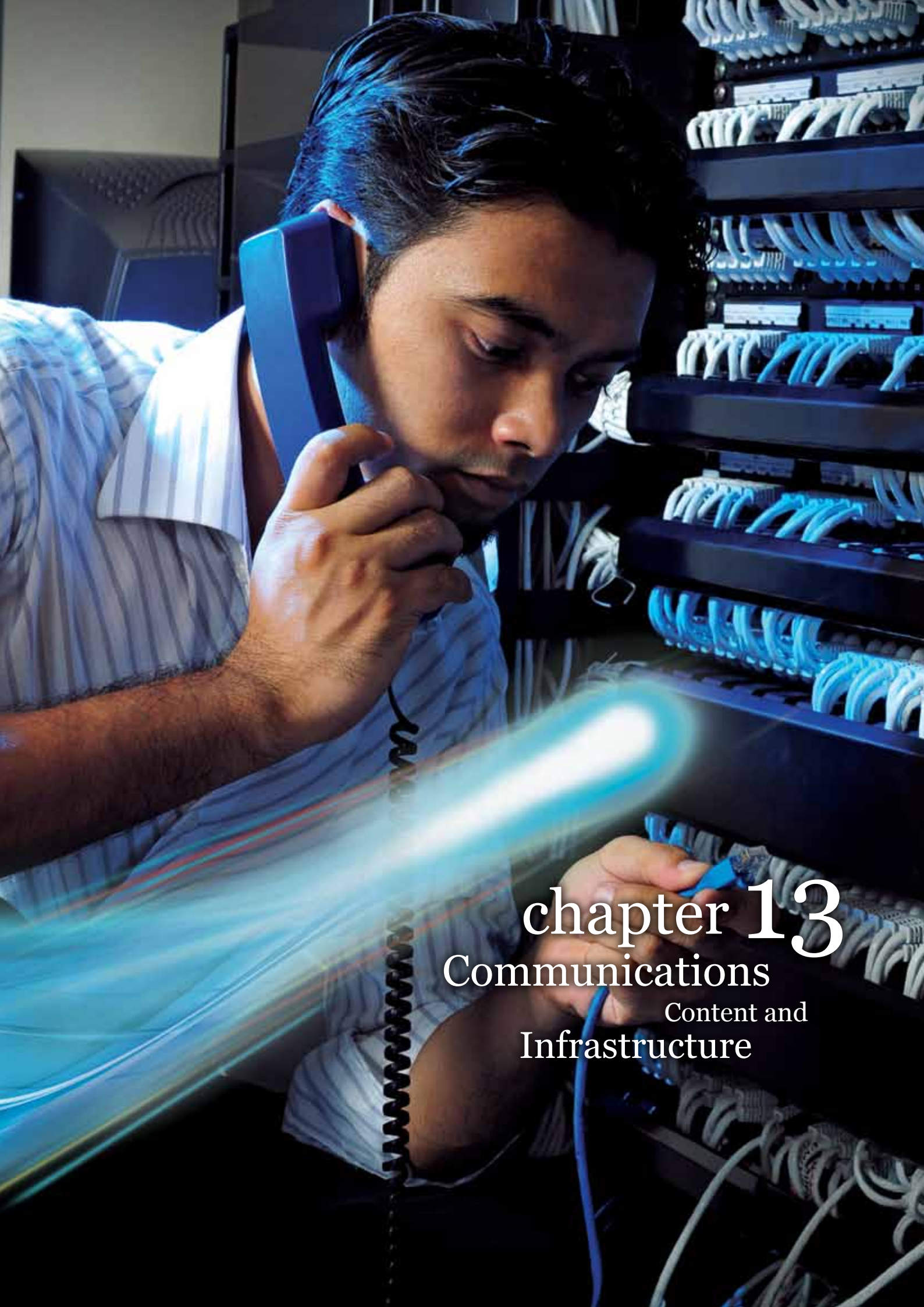




chapter 13

Communications

Content and
Infrastructure

Chapter 13: Communications Content and Infrastructure – Driving the Transition to a Knowledge-Based Society

“Our chosen commitment is to increase the quality of life for Malaysians through ubiquitous connectivity at affordable cost to all. I would like to see the convergence of technology to be a platform for our local arts and culture content to generate new income streams for the economy and concomitantly penetrate the world market. We strive to achieve world-class communications and multimedia services, thereby enhancing our innate goal in creating the 1Malaysia society. As Minister responsible for the Communications Content and Infrastructure NKEA, your full support towards realizing this very important agenda of our country is indispensable.”

Dato' Seri Utama Dr. Rais Yatim

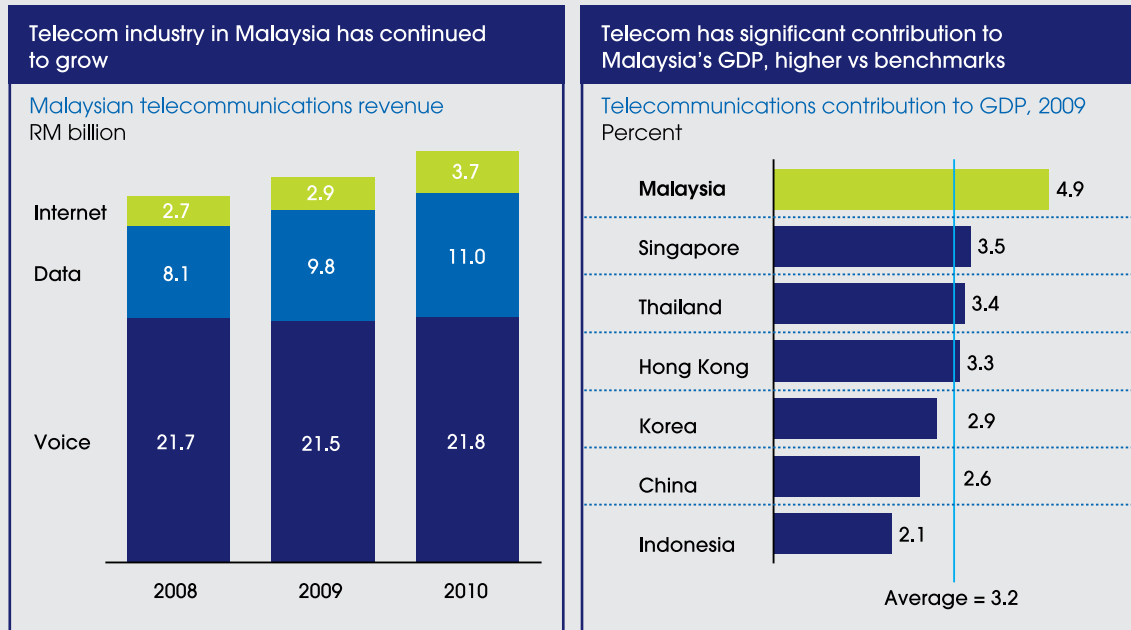
DEFINITION OF THE COMMUNICATIONS CONTENT & INFRASTRUCTURE NKEA

The Communications Content and Infrastructure (CCI) sector spans a wide ecosystem covering content, network applications, services and devices. In 2009, the sector contributed RM22 billion of gross national income (GNI) from telecommunications, TV, broadcasting, post and courier. This chapter focuses primarily on telecommunications, which accounted for the bulk of the GNI.

Efforts to liberalise the communications services market during the 1990s have borne fruit giving rise to a dynamic private sector driving strong growth over the last decade. This is achieved through extensive roll-out of infrastructure, and focused generation of high penetration for voice data and Internet services. *Exhibit 13-1* shows that the telecommunications sub-sector in Malaysia contributes a higher percentage of GDP compared to similar countries.

Exhibit 13-1

Malaysian telecommunications industry has done extremely well in the last years, contributing to 4.9 percent of Malaysia's GDP



Note: Voice defined as fixed and mobile voice, Data defined as frame delay, leased line, SMS and MMS, Internet defined as fixed and mobile.

SOURCE: IDC; J.P. Morgan Estimates, October 2009

For Malaysia to transition from a middle-income to high-income economy, the continued development of the CCI sector is fundamental. The CCI sector should now build on the infrastructure investments of the past. In addition, the sector will have to undergo a paradigm shift from providing infrastructure and access to providing applications and content that will enable the knowledge-based economy.

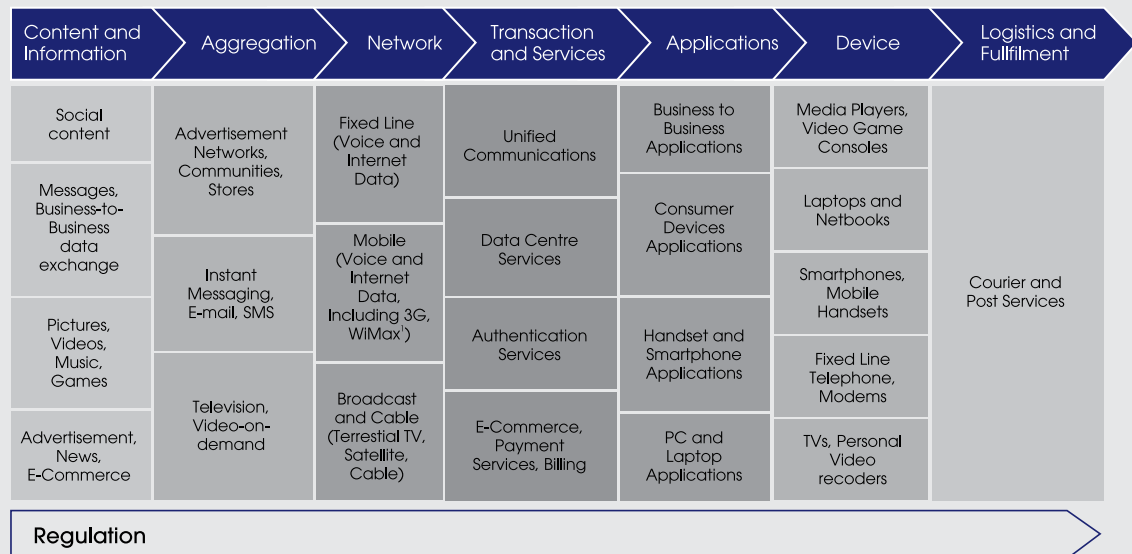
The CCI National Key Economic Area (NKEA) aims at driving continued high growth in communications services and enabling the paradigm shift from infrastructure and access to applications and content.

Communications Content and Infrastructure Ecosystem

The CCI ecosystem is comprised of a wide base with many distinct sub-industries (*Exhibit 13-2*). The leading participants in Malaysia are the network operators, i.e. Telekom Malaysia, Maxis, Celcom and DiGi Communications. In addition, there is a broad base of other companies (e.g. Astro, TIMEdotCom, PacketOne, and Axiata), multiple emerging players (e.g. U Mobile, YTL Communication, XOX) and small and medium enterprises (SME) active in the industry. Convergence is blurring the traditional boundaries between these various sub-industries and provides an impetus for these respective companies to review and enhance their business models.

Exhibit 13-2

Communications Content and Infrastructure industry encompasses a large ecosystem in Malaysia, with particular depth in network



¹ WiMax is a wireless technology standard that provides up to 40Mbit per second speeds, substantially faster than 3G

MARKET ASSESSMENT

Opportunities and Challenges

Malaysia has built a competitive industry and achieved high penetration rates for communications services. For example, Malaysia's mobile penetration of 106 percent compares favourably to Southeast Asia's 76 percent.

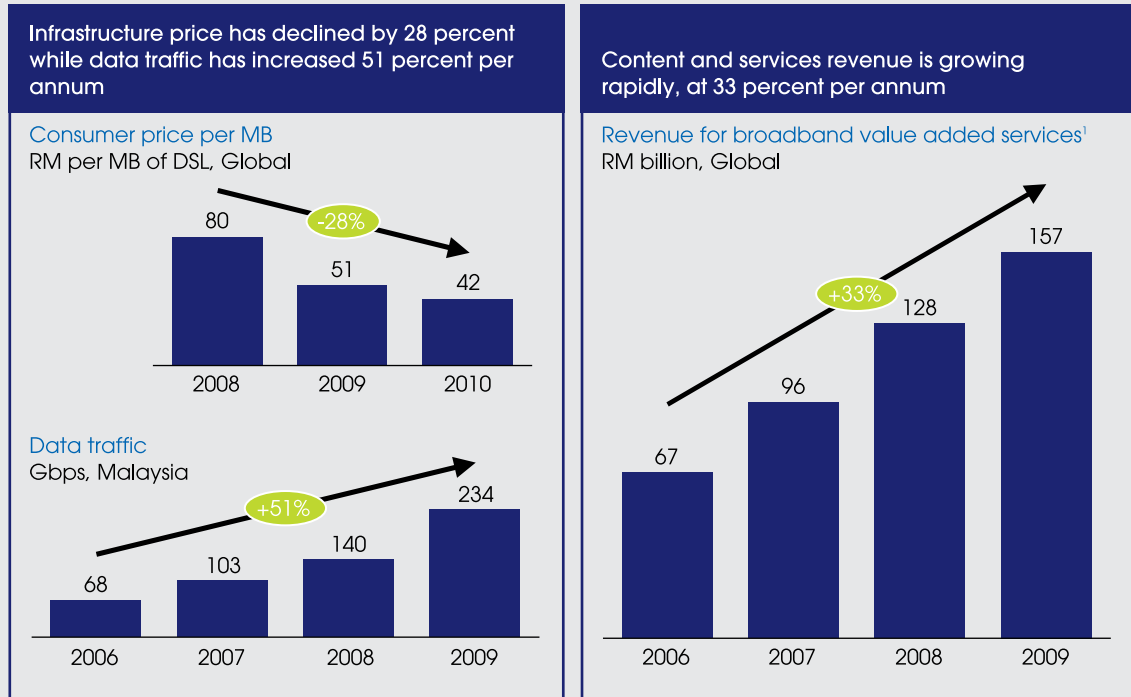
Global studies suggest a direct correlation between GDP growth rates and penetration of communications services, with a strong recognition of communications services as the key infrastructure for the 21st century¹. Recent studies on developing economies concluded that a 10 percent rise in Internet penetration correlates with a 1 to 2 percent increase in GDP growth. Adding 10 mobile phones per 100 inhabitants can boost GDP growth rates by 0.8 percent and every RM1 spent on mobile services generates RM3 in related sectors such as mobile devices.

However, the landscape continues to evolve globally, with rapid changes in technology and a shift of profit margins from traditional network operators to content-providers and application-providers, as illustrated in *Exhibit 13-3*.

¹ World Economic Forum, 2009

Exhibit 13-3

Infrastructure and access are seen as commodities, whereas content and services represent the key value-added components



¹ Broadband value added-services (BVAS) primarily composed of IP telephony, security applications, online gaming, IPTV and online music

SOURCE: Point Topic, 2010

The CCI sector faces the following opportunities and challenges:

- Shifts in profit pools to content and services:** Globally, infrastructure and access are increasingly perceived as commodities. Network providers risk becoming a low-margin 'dumb pipe'. Profit margins are beginning to shift to content and service providers, most of which are dominant global companies. Today, 80 to 90 percent of the content accessed on the Internet in Malaysia originates from overseas;
- Limited leverage of telecommunications for increasing reach and productivity in other sectors:** Modern telecommunications technology can unlock additional potential in many other sectors, e.g. education and healthcare. Malaysia has made good progress here, but has historically taken a fragmented approach mostly driven by the public sector. There is a real opportunity to design a holistic solutions, e.g. coordinated push on access, devices and content which incorporates public-private partnership; and
- Next generation infrastructure opportunities:** The current infrastructure has reached maturity, with limited growth expected in fixed lines and mobile penetrations. Future applications and content will require new infrastructure. Particular challenges in Malaysia are the rollout of a nationwide fibre network and fourth generation (4G) mobile networks, with very different challenges in urban and rural areas. In urban areas, coverage and quality will be paramount whereas in rural areas, mass affordability and inclusiveness are the key drivers.

Malaysia is well positioned to address these challenges, with a vibrant multitude of competing broadband technologies, significant talent in the country and a proactive regulator driving the rollout of future technologies. The CCI sector in Malaysia has been ranked at the very top in networked readiness among comparable economies globally ². The CCI NKEA is focused on achieving the industry's full potential, particularly by driving initiatives that require cross-industry collaboration and continued pro-active regulatory facilitation.

Regulation: Driving Towards a Dynamic Market Environment

Malaysia has historically done well in creating a positive competitive environment as new technologies were introduced. We established a diverse mobile operator landscape with national champions and slowly reduced the incumbent's dominance in the fixed line space while ensuring that returns in the industry remained attractive enough to ensure sufficient investment in next-generation infrastructure.

Going forward, it will be critical to continue maintaining an attractive market environment to drive investments in the industry while balancing this with inclusive policy aims, particularly around affordability of access and quality of service. The Malaysian Communications and Multimedia Commission (Suruhanjaya Komunikasi dan Multimedia Malaysia, or SKMM) and Ministry of Information Communications and Culture (Kementerian Penerangan, Komunikasi dan Kebudayaan, or KPKK) will need to maintain a proactive regulatory stance, ensure efficient spectrum utilisation and regularly review price points for key inter-operator charges (e.g. IP transit costs, termination charges and broadband wholesale prices). It will also need to ease access to various opportunities in the market by ensuring low regulatory hurdles to entry. This should always be done with an eye on maximising the benefits for the country as a whole, while driving pervasive use of communications technology by the rakyat, as well as ensuring that incentives for investments in next-generation infrastructure remain adequate. In addition, the Universal Service Provision (USP) fund needs to be handled thoughtfully to ensure no competitive distortion while benefits are maximised in driving coverage and penetration of communications services in the suburban and rural areas.

TARGETS AND ASPIRATIONS

We aspire to raise the CCI sector's GNI contribution threefold from RM22.0 billion in 2009 to RM57.7 billion by 2020. This incremental GNI is driven by 10 EPPs which will deliver RM16.6 billion incremental GNI and four business opportunities that will deliver RM11.7 billion in incremental GNI. In addition to EPPs and business opportunities, the GNI impact includes RM7.5 billion of contribution from the multiplier effect created by EPPs from other sectors. The largest source of the multiplier effect is from the Wholesale and Retail NKEA, which will come from drivers like increases in ePayment, and online shopping services.

² The Global IT Report 2009-2010, World Economic Forum

To achieve our RM57.7 billion GNI target, we will increase efforts to provide new and compelling content and services to stimulate demand and enable other sectors. To support demand, we will invest in application and content development, and infrastructure build up with specific focus on quality and speed. The objective is to establish a ubiquitous, high quality and affordable broadband network that will reach 95 percent of the population by 2020. In the same timeframe, all urban areas will have at least 100 Mbps broadband access, putting Malaysia's urban areas on par with leading countries globally. Suburban and rural areas will also have broadband access ranging from 10 to 100 Mbps, connecting the population with the nation and worldwide communities. Key sectors of the economy will be fully CCI-enabled with top 10 global recognition for Malaysia's E-Learning, E-Healthcare and E-Government implementations.

In the process, we will create an additional 43,162 jobs with more than 75 percent being high-skilled and paying more than RM48,000 per annum. The required funding for EPPs will be RM30.3 billion, of which 97 percent will be provided by private entities. The remaining 3 percent public funding will mostly be deployed to achieve inclusiveness for the rakyat.

10 EPPs To Deliver RM16.6 Billion Incremental GNI By 2020

To deliver on this vision, efforts should be refocused in stimulating demand rather than only building out supply. The lab has established three key themes. *Exhibit 13-4* illustrates the GNI impact of the EPPs, business opportunities, baseline growth and the multiplier effect.

Theme 1: Serving Tomorrow

We will address the paradigm change of shifting profit pools from infrastructure and access to applications and content, by strengthening Malaysia's domestic value-add in advanced services, particularly creative content creation, payments and electronic commerce and connectivity applications

- **EPP 1: Nurturing Malaysia's creative content industry** – Nurture the domestic creative content creation, services and distribution and broadcasting sectors, eventually transforming Malaysia into a regional hub for digital content;
- **EPP 2: Deploying 1Malaysia payments** – Deploy a unified mobile and online payment system to a large user base and at a reduced cost, by ensuring full interoperability among existing platforms and utilising mobile phones; and
- **EPP 3: Connecting 1Malaysia** – Drive the development and adoption of value-added communication services and applications for business, household and Government use.

Theme 2: Pushing Boundaries

We will fully leverage CCI in other sectors through coordinated efforts to provide access, devices, applications and content in order to facilitate the shift to a knowledge-based economy, particularly in E-Learning, E-Healthcare and E-Government

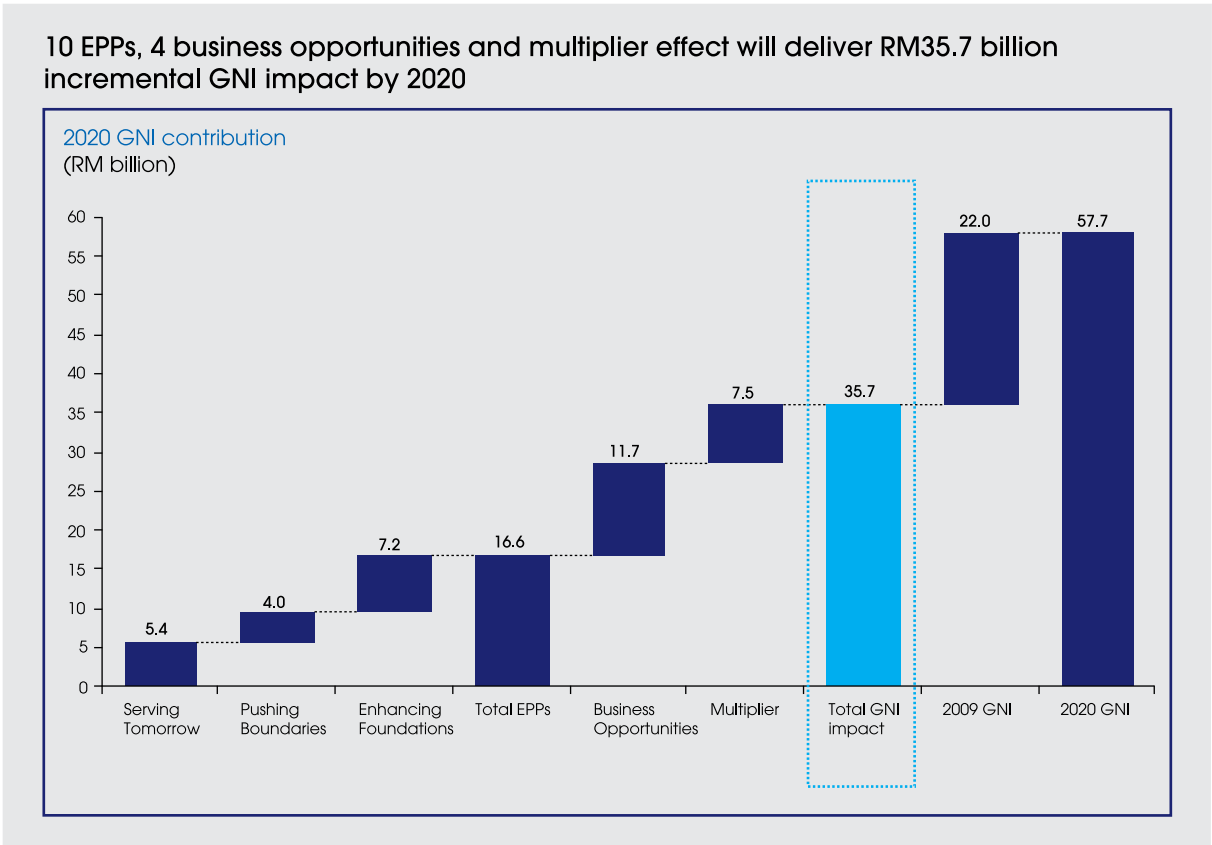
- **EPP 4: Establishing E-Learning for students and professional training** – Establish a common knowledge platform for all students and incorporate professional training into the same platform;
- **EPP 5: Launching E-Healthcare** – Address pain points in the healthcare value chain with the initial thrust of enabling remote scheduling, remote monitoring, facilitating personal record keeping and streamlining payments and reducing wait times; and
- **EPP 6: Deepening E-Government** – Increase use of CCI technology to improve the convenience, efficiency and transparency of Government services to the rakyat and for trade facilitation.

Theme 3: Enhancing Foundations

Capitalise on next generation infrastructure opportunities and build infrastructure to support the future growth of Malaysia, with particular focus on coverage, affordability and quality of access

- **EPP 7: Ensuring broadband for all** – To address access gaps (mostly in urban areas), we will mandate broadband for all, treating it similarly to water and electricity utilities to ensure all new residences will have ready access to CCI services;
- **EPP 8: Extending reach** – To address access gaps, infrastructure will be built in sub-urban and rural areas through shared infrastructure in order to reduce costs and accelerate roll-out;
- **EPP 9: Offering a smart network** – To address quality and affordability of services, differentiated broadband packages based on priority of service, usage caps and application-specific enhancements will be offered; and
- **EPP 10: Extending the regional network** – To address affordability and quality of CCI services, additional international submarine cable capacity will be laid and data centres will be built to host content locally in Malaysia.

Exhibit 13-4



SERVING TOMORROW - DEVELOP MALAYSIA'S CONTENT AND APPLICATIONS INDUSTRY

Next generation infrastructure will enable a broad range of new applications which are being developed globally (e.g. location based services, telepresence, mobile payments). In the telecommunications sector, profits are increasingly shifting away from infrastructure towards applications and content. We must exploit niches in which domestic companies can effectively compete to stimulate demand and ensure a share of the future profits in this space.

Given the pressure on profitability as well as the opportunities created by new technology, we have structured our approach around expansion into adjacent areas of the CCI value chain that currently are relatively underpenetrated. Upstream, developments in content and distribution through Internet protocol will produce a shift in types of content and broadcasting channels, offering opportunities in content creation and aggregation. Downstream, high penetration of fixed and mobile communications will create opportunities for telecommunications operators in transactions and services, as well as in applications.

The entry point projects (EPPs) target these adjacent areas of the value chain, which are prioritised as key drivers for Malaysian domestic value add. The specific focus of each EPP has been defined to capture the largest GNI impact opportunities.

EPP 1: Nurturing Malaysia's Creative Content Industry

Rationale

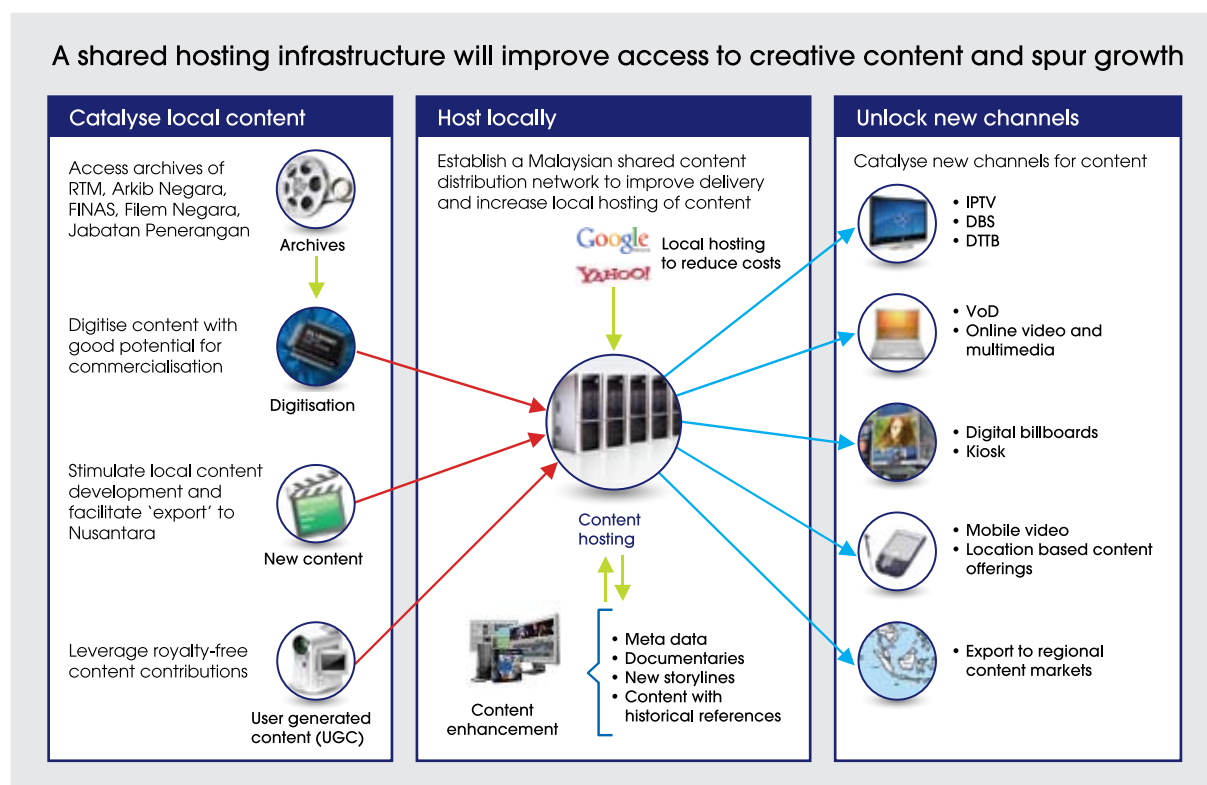
The creative industry has been identified as the cornerstone sector in the transformation of economies in several countries such as the United Kingdom and Hong Kong. The Malaysia Creative Content EPP aims to enhance our capacity and capability to create original locally produced content and at the same time develop a competency to provide content related services to the regional market.

Malaysia has already invested in the development of this sector over the past 10 years. We will build on current initiatives already started by the Government and enhance their returns (e.g. the National Creative Industry Policy in preparation at the KPKK and the MSC Malaysia Creative Multimedia Content Initiative run by the Multimedia Development Corporation, or MDeC). Current efforts by SKMM and other bodies such as the Access Forum, Content Forum and Consumer Forum have initiated interactions across the industry as a means to obtain feedback on the appropriate measures to further grow the industry.

This EPP represents a new industry-led public-private collaboration to grow the export segment at 20 percent a year and the domestic segment at 13 percent a year. The opportunities for improvement lie in developing talent for content creation and services, in providing necessary funding for local productions and in marketing our creations and capabilities internationally. Beyond GNI benefits, this EPP will help preserve Malaysia's unique culture and heritage for the 21st century and future generations.

At present, Malaysia is behind benchmark countries in terms of creative industry contribution to GDP. The marked preference for foreign productions and content manifests itself in audience ratings of TV programmes as well as traffic to major international websites. On the other hand, local productions like the animation series Upin and Ipin or the popular documentary Jejak Rasul have enjoyed considerable local success and have even made inroads into regional markets. This indicates a latent demand for quality local productions in Malaysia and regionally, a demand that is still underserved today.

Exhibit 13-5



Actions

Three focus areas are critical for developing this sector: creative content development, local hosting of content and ecosystem enhancement.

Creative content development. To address the current lack of critical mass of local content, we will start before the end of 2010 with digitising the existing archives at RTM, FINAS and Media Prima. Once the planned over 200,000 hours to digitise are available, they will provide a solid base for further enhancement and usage in producing new storylines by a large number of content developers.

The digitisation will be structured around the following steps: assessment of available content, digitisation, addition of metadata or indexing information and finally, storage. The content to be digitised will be prioritised based on its value to the national heritage of Malaysia. MDeC will oversee this initiative, while the respective content owners will lead the digitisation process.

Currently, a range of Government supported funding options is available to content developers. We will consolidate the application process for these funds to make it easier for SMEs to apply in one single step for all available resources. FINAS will work with funding resource providers for action films, while MDeC would do the same for digital productions. Besides easing access to funds, this measure will also allow a better alignment of different funding programmes with the overall industry development goals and needs. We recognise the opportunity to include cultural content whenever a production receives Government support, thus helping to promote key elements of Malaysian culture domestically and internationally.

A key factor for the growth of content creation is the availability of talent. To resolve the current gap we will provide increased support for human resources development, with scholarships and incentives to temporarily hire valuable foreign talent, starting in 2011 and continuing on a yearly basis. An Industry Guild will oversee the granting of funds (details of which are provided in the Funding section) and will complement these initiatives by maintaining a directory of professionals in Malaysia and matching them with available employment opportunities. We will maintain full alignment with existing initiatives, such as the local Pinewood Studios in Iskandar.

Developing the professional content services associated with film and video production will transform Malaysia into a preferred shooting stage for major international film projects. Professional content services are provided by a large number of small enterprises to content developers. Among these are digital graphics, professional lighting and sound, staff recruiting, stage effects and translation. Building on the competence created in this space, Malaysia will further support intellectual property creation. To enable this initiative we will expand the scope of FINAS to coordinate resources and respond to the needs of foreign and local film-makers. This will take place before the end of 2010.

Local hosting of content. Creating a content hosting platform (CHP) through co-investment from telecommunications sector companies will further drive efficiency in creative content intellectual property (IP) distribution. The CHP will be operational in Q3 2011 and will provide benefits to the Malaysian content developers, infrastructure providers and broadcasters.

With online content distribution on a fast growth path, the cost of international Internet traffic for the Malaysian infrastructure providers is soaring. To reduce this expense, foreign content will be stored on a local platform. Telecommunication companies, in their role as Internet Service Providers (ISP), will initiate negotiations with Google, Yahoo and other global Internet content providers, to build mirror servers for their content in Malaysia. Following successful negotiations, major Internet content networks will be locally hosted by end 2011.

The hosting platform will become a hub for local content, proving the link between content owners and broadcasters. This has become a necessity with the development of new broadcasting channels using a digital format. Broadcasters will be able to search easily through indexed content on the CHP and locate the material they require. The digitised archive content will also be stored on the CHP to facilitate access.

The hosting platform will be designed to respond to the needs of SMEs active in content creation and services by offering them an effective channel to market their productions nationally and internationally. On their own, an SME does not have the scale to justify individual investment and so will benefit from outsourcing this service. The newly created Malaysian Creative Content Association will promote the CHP to SMEs in Q2 2011.

Ecosystem enhancement. The content economy thrives on the ideas and talents of its practitioners. The creative market of ideas relies heavily on an efficient value chain which promotes and enhances the value of the original ideas. We will articulate a series of initiatives to help drive the growth of Malaysia's content industry. These initiatives are designed to ensure that creative content practitioners will be able to focus their energies on creating the most compelling content possible. The initiatives will require the full commitment of both public and private sectors to work together.

We will establish the Malaysian Creative Content Association (MCCA) as an industry led, non-profit organisation representing the interests of creative content practitioners in Malaysia. A key objective of MCCA is to collaborate with the Government to organise an annual international event for the creative industry, promoting Malaysia as a hub for content development. This event will first take place in early 2013 and will be preceded by a marketing campaign starting in Q3 2011. MCCA will also promote the interests of the creative content industry through the hosting of trade missions and key content market events.

The Creative Content Industry Guild will define the framework for talent development in the creative content sector. The guild will centralise the headcount and skill requirements of the industry practitioners and work with higher education institutions and professional training providers to structure the correct programmes to meet the needs of industry. The end goal is to design an accreditation system to ensure that the quality of creative content workers meets global industry standards.

The formation of the Malaysian Film Commission will formalise and centralise Malaysia's filming and production promotion activities to the global market. The existence of film commissions in other countries such as Australia, Taiwan and Singapore has helped drive the growth of their local film industries, and it is the intent of this particular initiative to put Malaysia in the same league as these other countries. The Malaysian Film Commission will sit under the auspices of the National Film Development Corporation (FINAS) and act as the central body of reference and assistance for potential incoming film projects and also for local film projects. The commission will be responsible for facilitating the necessary permits for filming and negotiating preferred rates for lodging and other logistics support services that are required by incoming and local film projects. At the same time, they will match local talent with the demands of producers.

All of the initiatives described would benefit from the formation of a centralised body to coordinate the various existing agencies and ministries that have creative content in their purview. KPKK will drive the creation of the Creative Content Development Agency (CCDA) before Q3 2011. CCDA will be responsible for tracking and monitoring the industry performance as well as ensuring that the programmes and initiatives run by the various stakeholders are fully aligned and focused on maximising efficiency in resource utilisation. CCDA will receive and use feedback from the industry to ensure it responds to existing developmental needs, while also balancing the aspirations of the Government.

Funding

This EPP will require approximately RM2.2 billion in total funds, of which RM426 million will be required from public sources.

Of the total funding needs, RM190 million will be spent on digitising existing content, and RM845 million will fund the production of content and enhancements to digitised archive content (24 percent of which will be publicly funded). A further RM186 million will be spent to address the talent shortage in services and content creation by awarding scholarships and supporting SMEs to hire foreign talent (19 percent of which will be publicly funded). A further RM147 million are required to build a content hosting platform. The private sector will fund working capital requirements with through an additional RM0.8 billion.

Impact

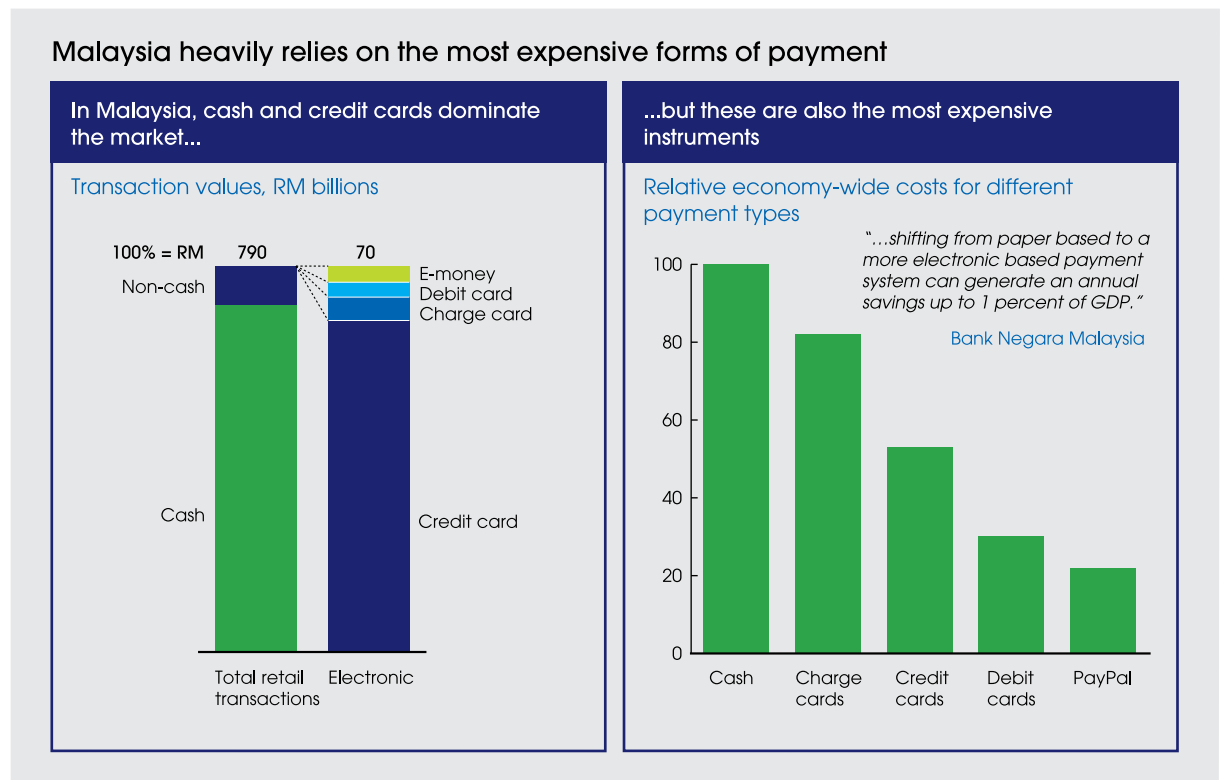
The GNI impact in the creative content sector in 2020 will be RM3.1 billion, out of which 66 percent will be generated in professional services, 22 percent in content creation, and the remaining portion in broadcasting. The EPP will create 10,326 employment opportunities.

EPP 2: Deploying 1Malaysia Payments

Rationale

1Malaysia Payments seeks to dramatically increase the access and usage of electronic payments, by capitalising on telecommunications companies' reach to virtually the entire population of Malaysia. Besides the convenience that electronic payment brings over traditional channels, this system is a necessary component for bolstering e-commerce. An additional goal is to reduce the costs of handling cash, saving as much as 1 percent of GDP³ while also delivering increased convenience and efficiency in transactions as illustrated in *Exhibit 13-6*.

Exhibit 13-6



SOURCE: Bank Negara Malaysia, *Payment Systems Report, 2010*; Centre for International Economics, *Exploration of Future Electronic Payments Markets, 2006*; McKinsey, *Global Payments Map, 2009*

Countries with more developed electronic and mobile payments ecosystems used one of three models for the development of the payment ecosystem: bank-led, collaborative or mobile operator-led. The participation of telecommunications companies in the payments ecosystem brings clear benefits such as a wider customer base and experience with large-scale and highly efficient billing platforms. Financial institutions are more experienced in setting up secure platforms as well as offering a wider range of transactions.

³ Bank Negara Malaysia, 2010

Actions

The EPP will pursue a collaborative model to capture the strengths of both types of companies. In parallel, financial institutions are driving towards interoperability among their existing non-mobile electronic payment systems. Our approach will be centred on a mobile payments component and ensure full interoperability with all platforms. This will expand the user base to cover the currently unbanked population who do however have access to mobile phones and tapping merchants for whom installing terminals would not be commercially viable.

A further step in our approach is to address and remove roadblocks in the way of developing electronic payments. Currently, telecommunications companies and banks have independently launched electronic and mobile payment platforms. Taken separately, these individual platforms cannot reach the critical mass of customers and merchants. We will drive towards forming a consortium with participation of both telecommunications and financial services companies, as a means to set up an integrated payment platform. This will combine existing start-up initiatives in micropayments to ensure support from all relevant participants.

A National Taskforce led by Bank Negara and SKMM will oversee the formation of the National Payment Consortium, to be concluded by end of Q1 2011. One of the first tasks of the consortium will be to drive the adoption by BNM and SKMM of the technical standards required for platform interoperability by Q2 2011. Lower transaction costs and the larger scale achieved through inter-operability will make the platform attractive to consumers and merchants. To mitigate existing security concerns, the consortium will obtain the certification of Bank Negara, building on the current initiative by SKMM and BNM to develop a standard for electronic transactions. Starting in Q2 2011, the consortium will drive a large media and public awareness campaign for the 1Malaysia Payments system. Under the Consortium's leadership, the platform will become operational before end of 2011. The deployment of our strategy is based on creating an interface platform to unify and make the existing start-up platforms interoperable, which will be fully operational by the end of 2011.

Funding

The total funding required is RM640 million, all of which will be provided by the private sector. Out of this amount, RM400 million will be spent on developing the platform. Furthermore, the private sector will fund working capital requirements with another cumulative RM240 million.

Impact

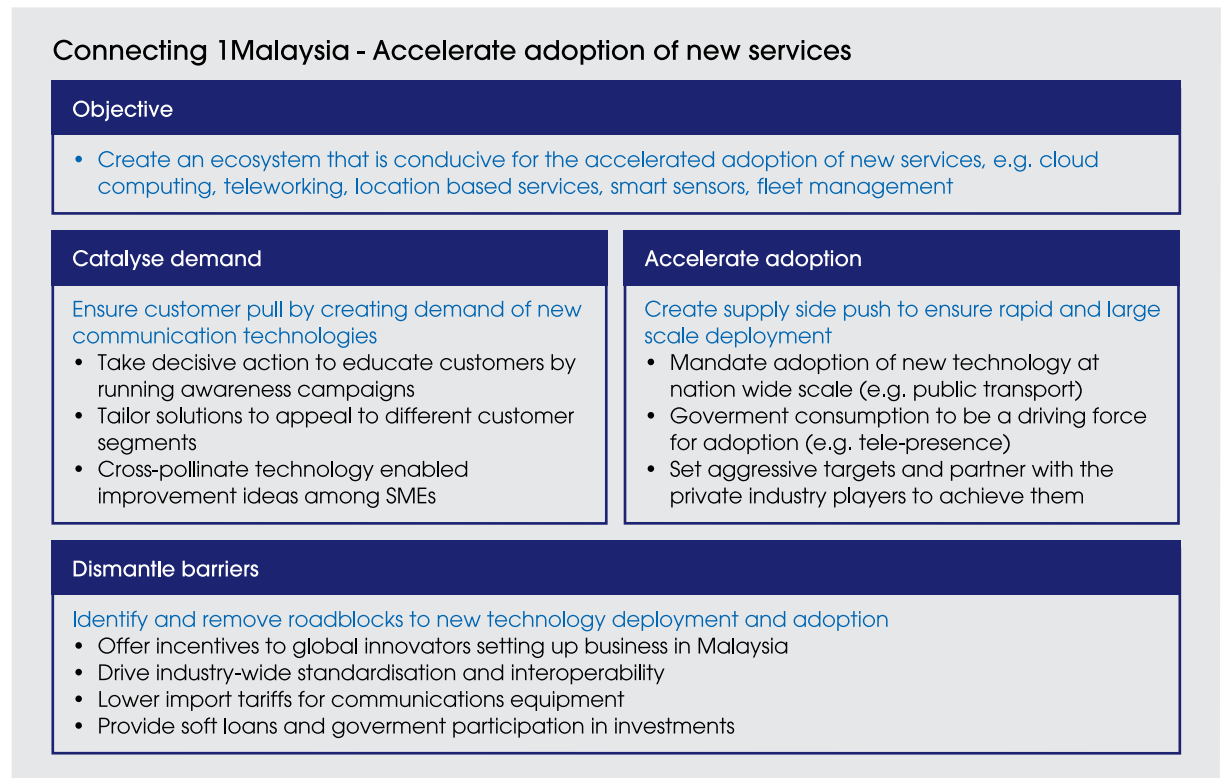
In 2020, we will generate approximately RM500 million GNI impact, from 450 million transactions per month and create 739 jobs.

EPP 3: Connecting 1Malaysia

Rationale

Connecting 1Malaysia will accelerate the benefits that communications technology can bring to the rakyat by creating an ecosystem conducive to the accelerated adoption of these technologies. To achieve this we propose a three-pronged approach: catalyse the demand for new services, accelerate adoption and dismantle barriers that prevent large-scale deployments (*Exhibit 13-7*).

Exhibit 13-7



The EPP will focus on commercially viable technologies that can have a large impact by 2020. Another criterion for the prioritisation is the degree to which the adoption can be influenced by the CCI sector. This initial focus will be on cloud computing, enhanced personal communication through tele-working and tele-presence, location aware services like location-based services and fleet logistics, and digital infotainment.

Actions

Cloud computing. Cloud computing is an enabling technology for the deployment of applications to a user's desktop or mobile device. Cloud computing is based on a software application running on a remote network of servers, while only a simple interface runs on a user's desktop. This makes intensive use of network connectivity and allows for a more efficient usage of computing resources. At the same time, the user does not need to pay upfront for the right to use a software package, but instead pays corresponding to the level of usage. The project will focus on software applications delivered to office workers employed by Malaysian SMEs. Telecommunications operators are best positioned to deliver this package to the SMEs, as they have already built customer relationships through providing more basic services. Furthermore, telecommunications operators can also provide and guarantee the quality of service critical to this type of application.

By Q4 2012 telecommunications companies will secure the first contracts with application developers and begin marketing the packages to their broadband customers. A target of two million users is set for 2020.

Enhanced personal communications. Tele-working is based on unified communications, a technology that integrates voice, video, messaging, multimedia sharing and many other technologies into a single platform allowing them to work seamlessly from anywhere. To drive adoption to 660,000 users by 2020, Malaysian Technical Standards Forum Bhd. will set standards for interoperability between different platforms across telecommunication companies. Furthermore, network operators will commence campaigns in Q4 2010, to dispel the existing misconceptions on telecommuting and showcase the increased convenience and productivity it can bring. The Government will be an early adopter of this service for its employees, creating the necessary momentum to spur private sector adoption. By 2020, 95 percent of the revenue will be generated from the private sector.

Telepresence refers to high-resolution video conferencing, which offers an experience akin to real life. To deliver this service, network operators will form partnerships with equipment manufacturers, by Q3 2010 at the latest, whereby network operators will lease telepresence terminals at a negotiated price. This technology will reduce the necessity of physical presence in typical face-to-face communications. Estimates indicate that by 2020, network operators will have 35,000 users. To reduce the cost of the equipment, import duties will be reduced.

Location aware services. Location-based services (LBS) are made possible by user position data available in a mobile phone network. Applications can provide local search and deliver location sensitive advertising. The commercial success depends on the richness of the points of interest database used by such a system. By Q3 2011, Malaysian Centre for Geospatial Data Infrastructure (MaCGDI) will develop and make available for commercialisation a central Malaysian points of interest database. Telecommunication companies will pay usage rights to MaCGDI. Between Q1 and Q4 2011, telecommunication companies will develop mobile platforms and launch the first LBS applications. By 2020, 15 million users will be using this service.

Fleet logistics and management will offer cost savings to fleet owners by providing position information as well as analysis and route optimisation plans. Telecommunications providers and equipment manufacturers will collaborate to offer a complete solution to the end customer for a monthly fee ranging from RM32 to RM100. In 2020, this project will serve a total of 190,000 vehicles. By Q2 2010, network operators will have established vendor relationships and prepared commercial offerings. Prior to Q3 2011, network operators will have participated in tenders organised by large vehicle fleet operators (i.e. public transportation, courier services operators). Starting in Q1 2012, network operators will target smaller fleets and commercial vehicle owners.

Digital infotainment is based on a large size touch-screen display installed in high traffic areas, such as shopping malls, commercial streets and hotels. The screens display targeted advertising and will offer on-demand information. Telecommunication companies will partner with equipment manufacturers to install these interactive screens and link them via wireless Internet. The roll-out preparation phase will be concluded by Q1 2011, at which time the marketing campaign will start. Beginning in Q2 2011, the screens will be progressively installed. A network of 5,000 smart screens will be deployed across Malaysia by 2020.

Funding

A total of RM2.9 billion in funding is required, all from private sources. RM50 million will fund cloud computing; RM260 million will fund investments in tele-working; RM580 million will fund telepresence; RM720 million will fund location-based services; RM350 million will fund vehicle tracking; and RM250 million will fund digital infotainment. Furthermore, the private sector will fund working capital contributions with another cumulative RM700 million.

Impact

Connecting 1Malaysia will generate RM1.8 billion in GNI and create 2,056 incremental employment opportunities.

PUSHING BOUNDARIES – ENABLE OTHER SECTORS

The increased use of communication services is a powerful enabler in increasing the ability of other sectors to enhance service value and reduce costs. Key sectors identified for concerted introduction of augmented communication services are education, healthcare and Government services. We are focusing on these sectors for three reasons. First, these strategic sectors play a large role in improving the country's competitiveness. Second, the Government's deep involvement in these sectors gives us a unique position to accelerate transformation. Lastly, these sectors provide a solid base for further improvement as they have already made significant progress in introducing innovative communications services.

Initial efforts have achieved success and can significantly be scaled up by embracing a more holistic approach, industry commitment and particularly cross-agency collaboration. The EPPs for this theme identify revenue streams that can be addressed cost-effectively and holistically across devices, access, infrastructure and content. A common challenge across these EPPs is the need for cohesive coordination between the public and private sectors and between different public sector entities.

EPP 4: Establishing E-Learning for Students and Professional Training

Rationale

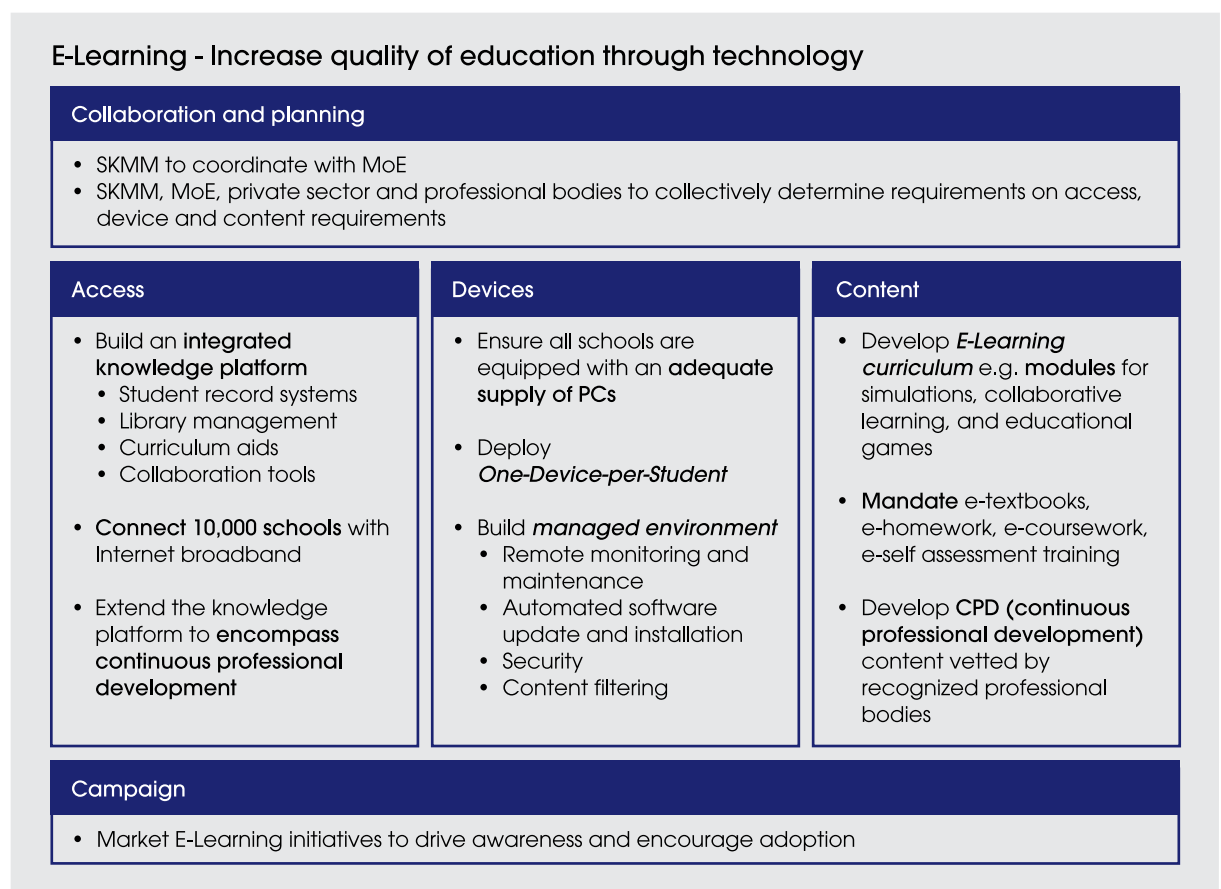
The E-Learning EPP aims to establish a common knowledge platform for students and professionals. The aim of this EPP is to enhance traditional teaching methods in terms of quality, interactivity and accessibility. It also aims to encourage continuous learning for professionals and help prepare the general population as the country shifts towards a knowledge-based economy.

E-Learning is the computer and network enabled transfer of skills and knowledge from schools and professional associations to users via different channels such as the Internet or satellite TV. Countries that have substantially implemented E-Learning have experienced tangible benefits. For example, in some studies in the US, students' course completion rates doubled, and exam scores increased by more than 20 percent. Moreover, the time and cost savings from continued use of online content, which has minimum operational costs, are significant. Effectively implemented E-Learning can provide learners with flexibility and generate wider access to high quality education.

Actions

Our approach to E-Learning as illustrated in *Exhibit 13-8* is based on tight collaboration between the public and private sector, easy access to the system, device distribution and content and a campaign to drive awareness.

Exhibit 13-8



Malaysia can improve bandwidth availability to educational institutions by rolling out fibre to reachable schools. Reachable schools, primarily located in non-rural areas, will have 10 to 100 Mbps of bandwidth by 2020. For rural schools, VSAT⁴ and new wireless technologies will be deployed. The private sector will drive this deployment to accelerate implementation.

The knowledge platform will be an ecosystem based on broadband connectivity, linking not only all Malaysian schools, but also related parties such as educators, students and their families. The knowledge platform will also integrate other institutions such as libraries, museums and universities.

All students and teachers will be provided with their own PCs and netbooks to enable them to connect to the integrated system. Interaction with the knowledge platform will be possible also through mobile devices. To the extent possible, these devices will be deployed under a managed environment to allow remote monitoring and automated maintenance.

The platform will support not only the E-Learning curriculum, defined by the Ministry of Education (MoE), but also Continuous Professional Development (CPD) for professionals such as teachers, lawyers and accountants. The cost savings to the Government from targeting teachers is substantial as it would greatly reduce travel expenses for their training. Electronic CPD (E-CPD) modules will be defined and accredited by their respective professional bodies, focusing on the targeted needs of professionals. The CPD applications should be made mandatory by both the Ministry of Human Resources and respective professional bodies.

E-CPD has the potential to be rolled out regionally. To do this, Malaysian professional bodies will contact their local counterparts in other countries to define module content and network providers will partner with local network companies to roll out and manage the system.

SKMM will lead the entire process and facilitate the effort in partnership with the MoE. MoE will work with network providers and SMEs to implement system requirements and content development.

Implementation will start in 2011 with a data centre and applications platform to support more than 10 million users. Educational and CPD materials will be digitised and placed onto this platform. To ensure a critical mass of adoption, the MoE will make specific portions of the digital curriculum mandatory. By 2012, 64 percent of schools should be connected.

Funding

A total of RM1.3 billion in funding is needed. RM0.9 billion, all from private sources, will go to ensure that all 10,000 schools in Malaysia have broadband connectivity and the necessary number of PCs to create a common knowledge platform for schools and to digitise and create educational content. Furthermore, the private sector will fund working capital requirements with another cumulative RM0.4 billion.

⁴ Short for "Very small aperture terminal", which are small two-way satellites commonly used to transmit narrowband data

Impact

E-Learning will generate incremental GNI of RM1.5 billion and 800 new jobs by 2020. Furthermore, 30 percent of families will be able to monitor their children's programmes and performance. A typical urban school's connectivity will be at least 10 Mbps; and less reachable schools (i.e. those located in deep rural areas) will have at least 4 to 5 Mbps. The number of connected devices used primarily for E-Learning will grow from 0.5 million to 8 million. The end-to-end management of the network, platform, devices and distribution will be managed by the network operators. Successful establishment of the domestic E-Learning industry will enable Malaysia to become an educational hub for the entire region.

EPP 5: Launching E-Healthcare

Rationale

Malaysia's medical institutions are hindered by low quality connectivity and insufficient IT equipment. Existing applications have limited adoption due to doctors' scepticism about their value and the general population's lack of awareness about them. Collaboration between the public and the private sector, access to the system, device distribution and contents are the basic elements that we have identified in order to reach E-Healthcare targets (*Exhibit 13-9*).

Exhibit 13-9

E-Healthcare - Increase quality of healthcare through technology			
Collaboration and planning			
• SKMM to coordinate with MoH • SKMM, MoH, private sector and representatives of the medical industry to collectively determine requirements on access, device and application requirements			
Access	Devices	Application	
• Connect 500 hospitals and 8,500 clinics throughout Malaysia, without broadband • Develop Health Net platform supported by data centre • Enable other providers to populate the platform with useful services and applications (e.g. workflow systems, patient record management)	• Deploy sufficient quantity and quality of IT equipment; provide option for managed environment (e.g. remote maintenance and monitoring, automated software update and installation, security) • Ensure all medical institutions have necessary IT equipment • Enable patients to interact with the "Health Net" using different devices, e.g. for E-Scheduling	• E-Medis: patient self-monitoring of data, personal health records and remote monitoring for chronic diseases (e.g. cardio vascular and diabetes) • E-MC: connection between companies and medical institutions (e.g. for electronic transfer of medical certificates) • E-GL: connection between insurance companies and medical providers streamlining process of claims information	
Campaign			
• Significant marketing campaigns to create public awareness			

Benchmarks show that significant social benefits can be achieved through this EPP. For example, Australia's E-Healthcare initiatives are projected to prevent more than 5,000 deaths by 2020, and the USA's initiatives are expected to help save RM704 billion over the next five years.

Actions

The E-Healthcare EPP aims to connect all medical institutions to the HealthNet platform. The platform will allow healthcare providers to access applications that will increase their productivity while lowering costs and errors. Companies and patients will also be able to access the system to access healthcare-related services.

SKMM will lead the implementation process, while the platform requirements will be jointly determined by the network operators, the Ministry of Health (MoH) and the private healthcare sector.

The E-Healthcare EPP will provide a managed network to connect all healthcare institutions with a minimum connectivity of 2 Mbps and provide a platform for the MoH's proposed ICARE plan. Companies, patients and insurance companies will have access to the system from anywhere. Network operators will provide medical institutions with the necessary IT equipment.

After interconnectivity among hospitals and clinics is established, four applications will be implemented to run on the platform:

- **E-Medis:** Allow patients with chronic diseases (e.g. diabetes, cardiovascular issues) to self-update their status to enable healthcare providers to remotely monitor and track their condition;
- **E-MC:** Directly connect companies and medical institutions for electronic data transfer, thus saving time for medical record-keeping (e.g. medical certificates);
- **E-GL:** Directly connect insurance companies and medical providers to streamline payment processes; and
- **E-Scheduling:** Allow patient access for electronic scheduling of appointments to reduce waiting times.

Implementation of the HealthNet platform and connectivity among medical institutions will commence in 2011. Applications will be ready by 2011 and they will be launched in 2012. By 2012, 50 percent of hospitals and clinics will be on HealthNet, with the ultimate objective of reaching all medical institutions by 2015.

Funding

A total of RM1.3 billion funding is required, all from private sources. RM1 billion will fund creation of an interface to enable interaction between hospitals and patients and the building of infrastructure for 8,500 clinics and hospitals. Furthermore, working capital requirements will require an additional RM0.3 billion.

Impact

E-Healthcare will generate an incremental GNI impact of RM1.4 billion and 250 new jobs by 2020. From fewer than 100 institutions today, we target to have 500 hospitals and at least 8,000 clinics connected to HealthNet with the result that more than 5 million patients will have direct access to the system.

EPP 6: Deepening E-Government

Rationale

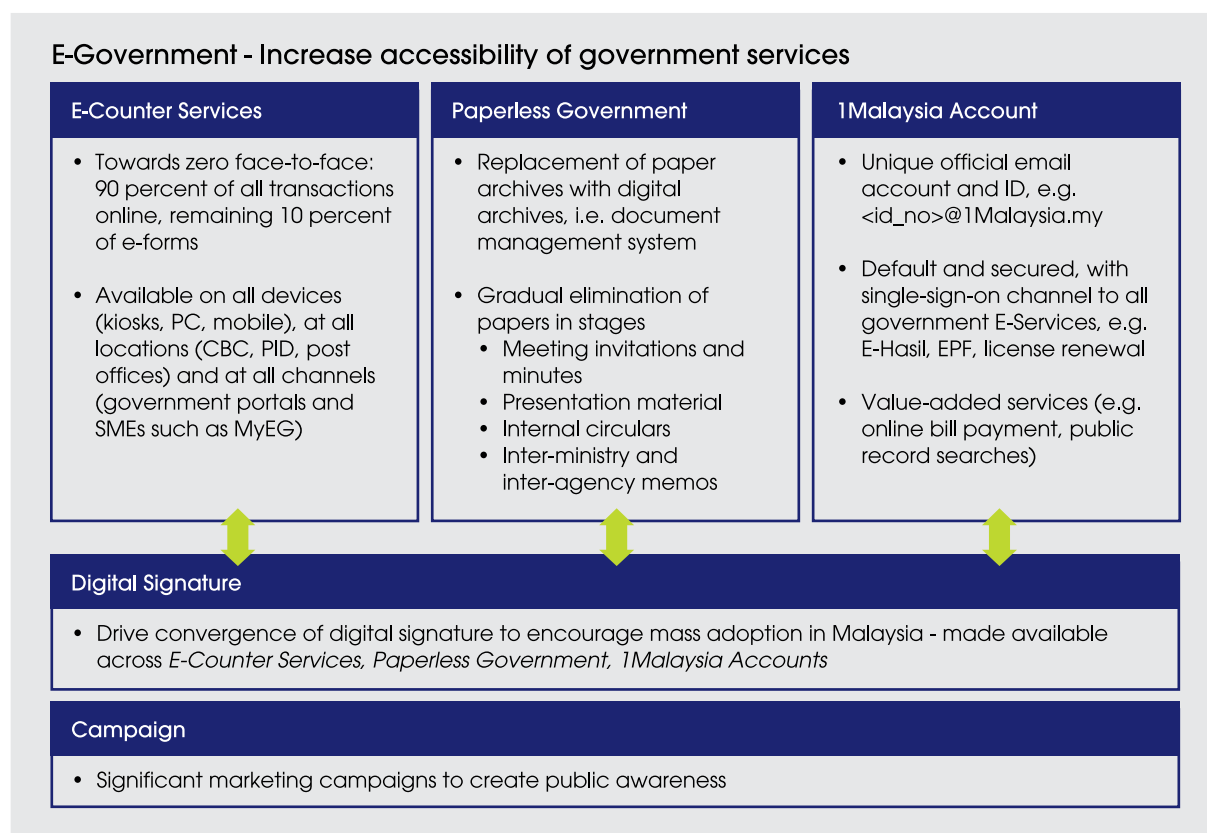
E-Government is the use of CCI technology to enhance the access to and delivery of Government services to the rakyat and businesses.

Actions

Malaysia's E-Government initiatives launched over the past few years have been recognised by international case studies. However, there are opportunities for further improvement (*Exhibit 13-10*) based on fulfilling three objectives:

- **1Malaysia account:** Enable a secured communication channel to Government E-Services accessible through all devices: @1Malaysia.my;
- **Counter services:** Move towards zero face-to-face services by setting a target of having 90 percent of all transacted services online and all services available on all devices; and
- **Paperless Government:** Create end-to-end online processes for job applications and internal circulars.

Exhibit 13-10



E-Government will foster a better business environment, strengthen good governance, broaden public participation and improve the productivity and efficiency of Government agencies. SKMM will take the lead in the process. It will coordinate, together with MAMPU, all the Ministries and telecommunication companies in order to determine the requirements and the necessary steps to push the migration to E-Government. In 2011, the digital document management system will be established and by 2012, 70 percent of transactions across ministries and key applications for the public, businesses and employees will be online. In 2012, 50 percent of the counter services will be available online and the 1Malaysia Accounts will cover half of the population older than 18 years.

Funding

A total of RM2 billion of funding is required. From the private sector, RM900 million will fund the creation of 1Malaysia online accounts, RM54 million will fund the setup of E-Government kiosks in select locations and RM520 million will be used for working capital requirements. RM560 million from public sources will fund the development of E-Government applications.

Impact

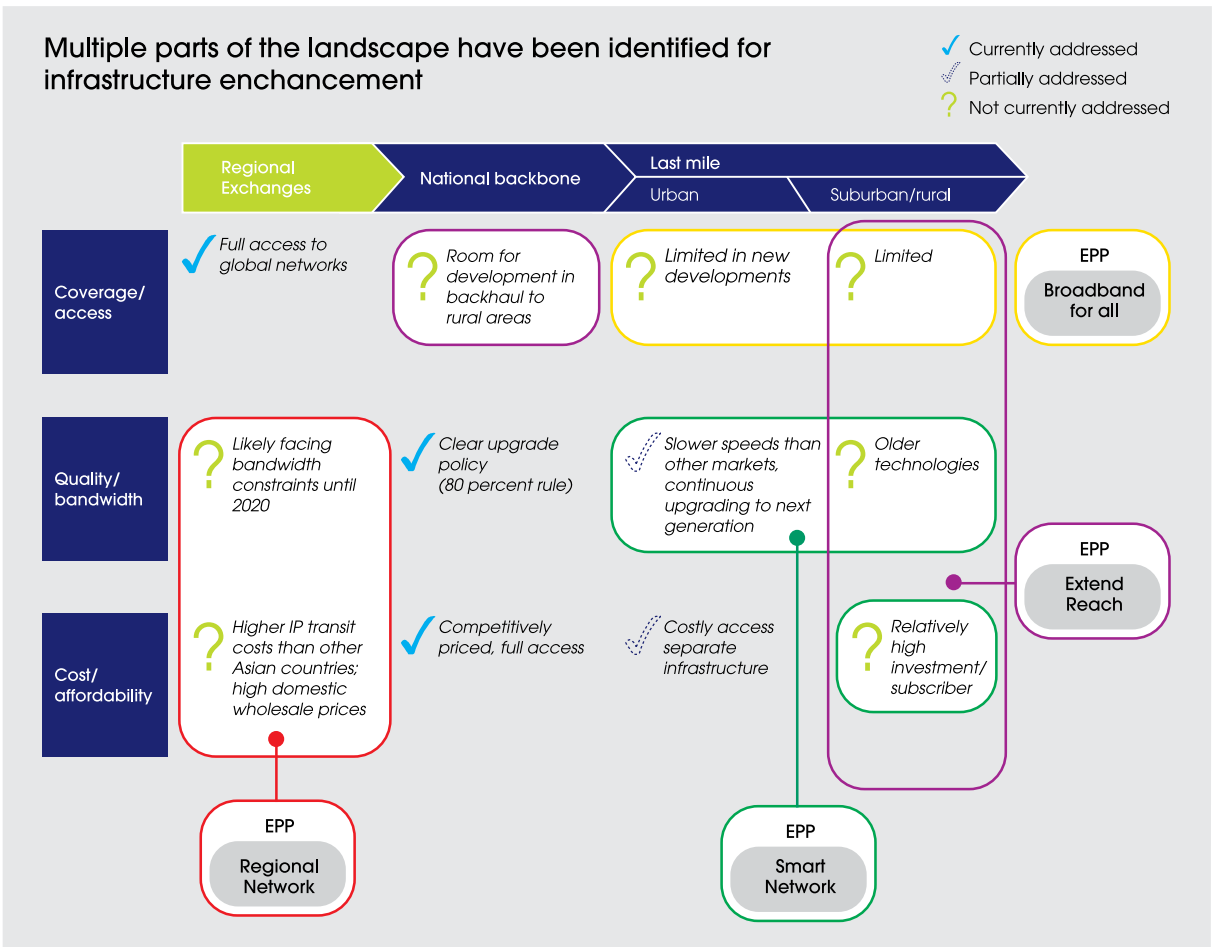
E-Government will have a GNI impact of RM1.1 billion in 2020 and create 1,000 new jobs.

ENHANCING FOUNDATIONS – SUPPORT GROWTH WITH NEXT GENERATION INFRASTRUCTURE

The infrastructure requirements of the sector need to be able to meet growing domestic demand, enable economic growth and drive Malaysia's evolution towards a knowledge-based society. Malaysia faces infrastructure issues on three dimensions: coverage, cost and quality. A recent study by SKMM showed that more than 45 percent of the population feel that broadband prices are too high. Slow speeds have plagued consumers due to the mismatch between the growth of Internet traffic and the growth of capacity. Moreover, significant portions of the population do not have access to broadband. Suburban and rural areas are generally underserved due to high costs associated with building infrastructure.

We have identified four EPPs to close gaps that are not currently addressed by private companies (*Exhibit 13-11*). Collectively, these EPPs will generate GNI of RM10.7 billion in 2020 and 10,728 new jobs.

Exhibit 13-11



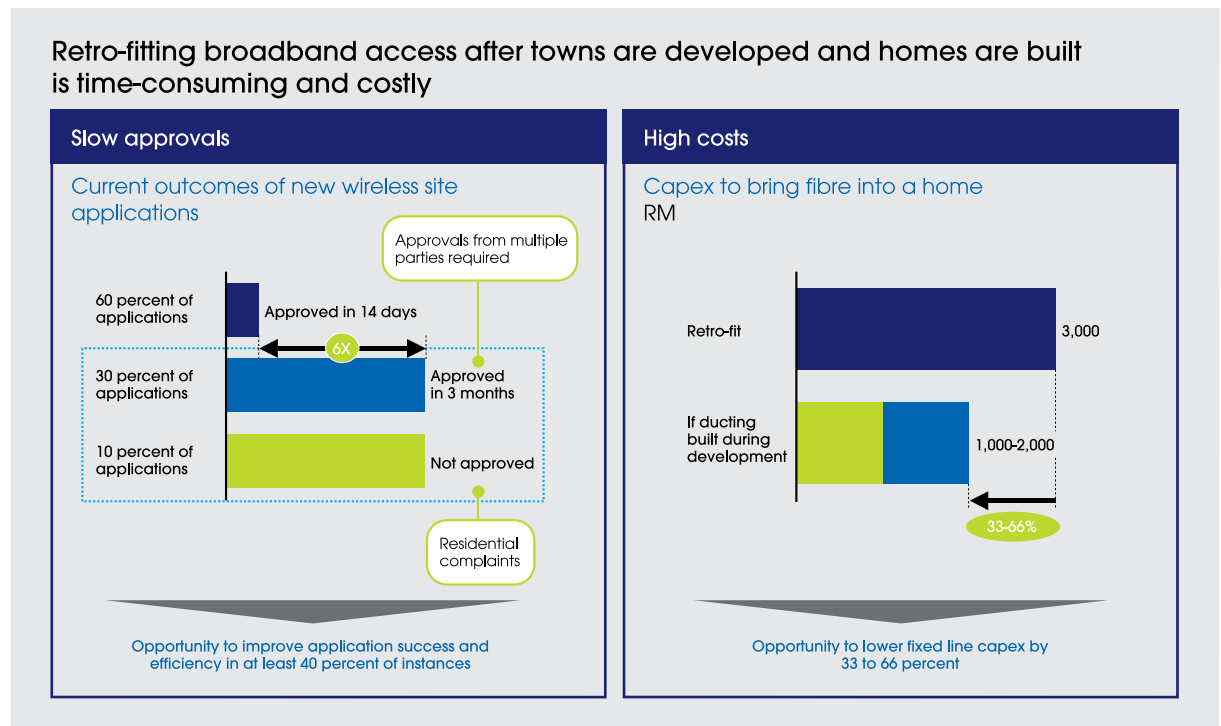
EPP 7: Ensuring Broadband For All

Rationale

Ensuring Broadband for All aims to increase broadband accessibility by designating broadband access as an essential utility for consumers, similar to the way in which water and electricity are treated today. Finland has legally mandated universal broadband access, and other countries such as the United Kingdom and Sweden have announced similar plans.

Broadband can be provided through both fixed and wireless means. However, wireless spectrum is a finite resource so particular emphasis should be given to provisioning fibre-optical cables. Many residential units in Malaysia today suffer from a lack of readily available broadband access due to developers not installing ducts during construction. Retro-fitting access is both time-consuming and expensive, causing inconvenience and raising costs to the end user (*Exhibit 13-12*). At least 1.2 million residential units are forecast to enter the market in the near future and this EPP will be the means to ensure that residents will have convenient broadband access.

Exhibit 13-12



SOURCE: Telecommunications expert interviews

Actions

To drive this, the Ministry of Housing and Local Government (Kementerian Perumahan Dan Kerajaan Tempatan or KPKT) will amend the Uniform Building By Laws to include broadband as an essential service by the end of 2010. This will make it mandatory for building developers to construct ducting into the nearest network boundary in all new developments. All state governments will need to adopt this in their respective statutes.

The current situation in which town planners do not gazette wireless telecommunications sites also hinders the penetration of wireless broadband. To remedy this, SKMM will amend the National Development Masterplan in all states to gazette landed and rooftop sites for wireless infrastructure by early 2011. Developers and SKMM will find an operator to take over the ducting and provide open access to telecoms operators, while both operators and state-backed companies (SBCs) will be allowed to build towers. SKMM will regulate infrastructure access pricing to be fair and affordable by the second half of 2011.

Funding

A total of RM2.4 billion will be required, all from private sources. Of this, RM1.34 billion will fund capital expenditure for providing fixed broadband to subscribers and the construction of 1,500 wireless sites. Furthermore, working capital requirements will require an additional RM1.0 billion.

Impact

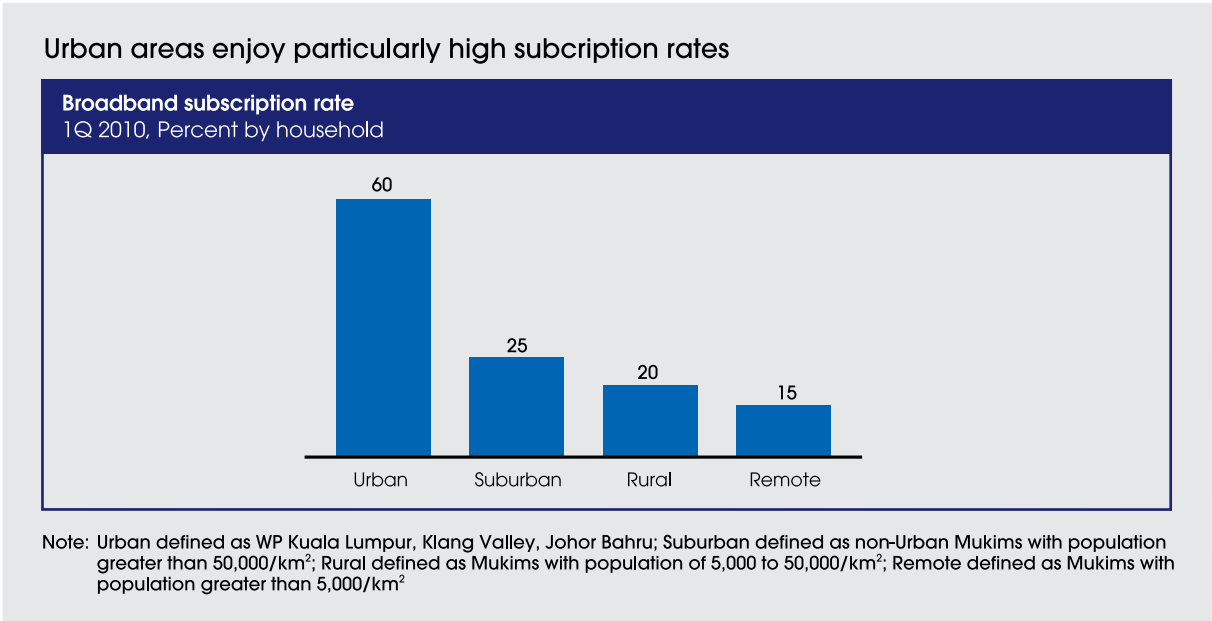
The initiative will result in RM1.7 billion in GNI contribution and create 5,468 new jobs. To achieve this, 0.75 million new fixed broadband subscribers, 1.92 million new mobile data subscribers and 2.4 million new voice subscribers are expected to take up services by 2020. To a large extent, this growth will come from servicing the increase in skilled foreigners and high net worth individuals the Greater Kuala Lumpur NKEA is striving to attract.

EPP 8: Extending Reach

Rationale

This EPP aims to drive up broadband subscription levels in non-urban areas in Malaysia through greater industry and public-private collaboration. Countries around the world have faced challenges in extending broadband access into sub-urban and rural areas, primarily due to high investment costs relative to expected revenue. Malaysia is no exception. Urban areas (Kuala Lumpur, Klang Valley, Johor Bahru) enjoy particularly high subscription (60 percent) rates (*Exhibit 13-13*). At the same time, in addition to economic benefits, broadband encourages greater integration of remote populations with the wider world. Therefore, extending network reach becomes a critical building block of development.

Exhibit 13-11



SOURCE: MCMC

Actions

Approaches to serving the non-urban population can be broken down by geography.

Sub-urban areas (greater than 50,000 people/km²). Wireless service providers will form a consortium by the end of 2010 to lower costs of providing access through active infrastructure sharing. Significant cost savings can be achieved through sharing electronic equipment. Up to two-thirds of capital expenditure could be reduced if multiple mobile operators shared systems, and operating costs of up to seven percent of revenue can also be eliminated. Once a consortium is formed, it will reduce overlapping equipment beginning in 2011.

Rural and remote areas (less than 50,000 people/km²). SKMM’s Universal Service Provision (USP) Fund is designed to enable the roll-out of broadband to these regions. The private sector will use the USP contributor utilisation clause and access funds to build backhaul and last mile infrastructure to underserved areas with a particular focus on wireless solutions for the short and medium term. Fixed access will take a larger role over the longer term to mitigate the impact of scarce wireless spectrum.

Beyond these geographic and demographic criteria, network providers must also take into account areas populated by the urban poor as these pose similar challenges to rural and remote areas in terms of commercially viable infrastructure provisioning.

Funding

A total of RM6.6 billion in funding is required, all from private sources. Funding of RM2.8 billion is needed to build 4,000 new wireless sites to reach underserved areas, while RM2.6 billion will fund fixed capital expenditure. RM0.9 billion will fund additional base stations to support active infrastructure sharing. Furthermore, working capital requirements require RM0.3 billion. The private sector will use the USP contributor utilisation clause and access funds to build backhaul and last mile infrastructure.

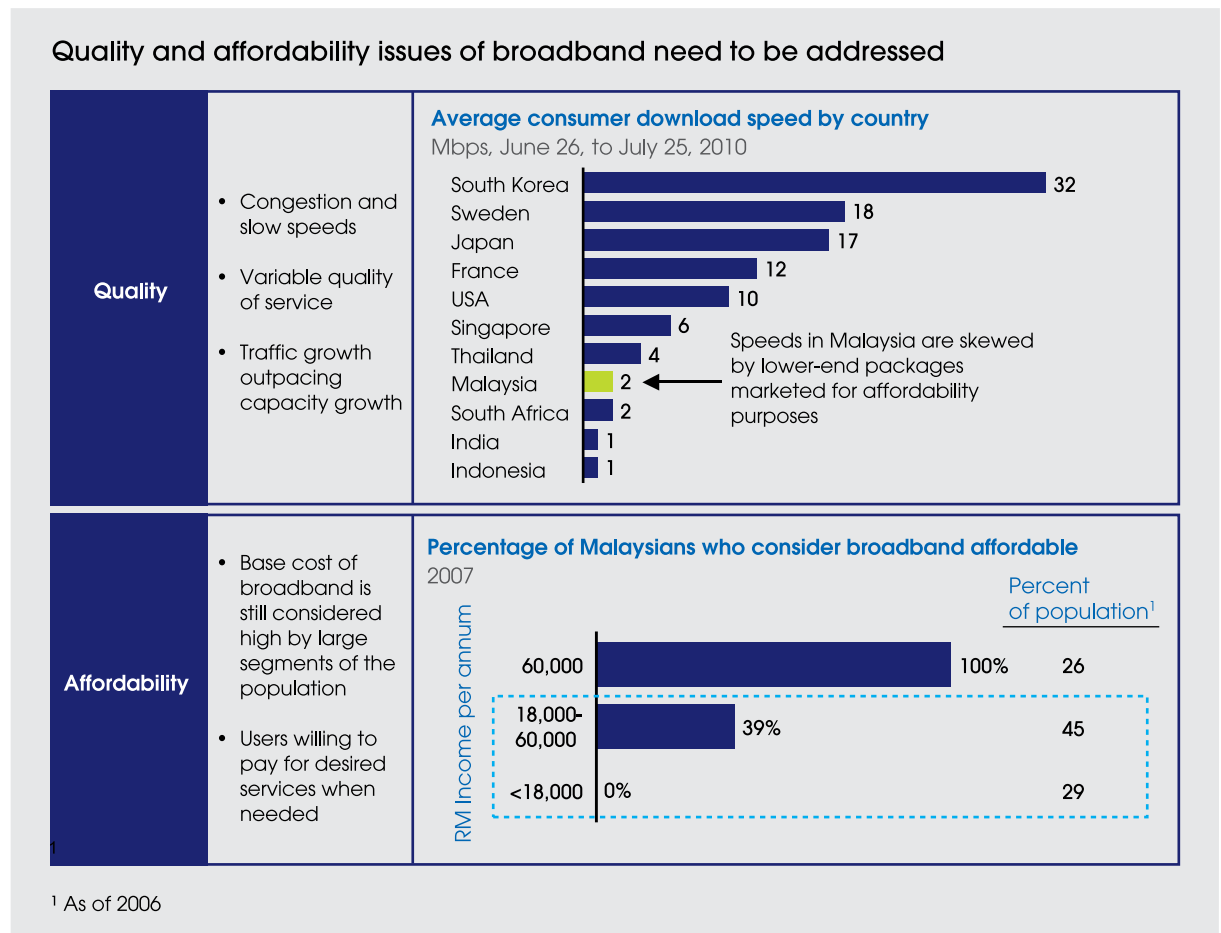
Impact

With this initiative, we aim to drive subscription levels in non-urban areas to as much as 90 percent of households by 2020, resulting in 3.4 million new broadband subscribers. We forecast corresponding GNI impact to be RM2.4 billion and for 2,090 new jobs to be created.

EPP 9: Offering a Smart Network

Through offering a smart network we aim to address affordability and quality of service issues hindering Malaysia's networks (*Exhibit 13-14*) by providing tiered price plans differentiated by priority of service. The high-end segment that finds broadband access easily affordable often desires and will pay for faster speeds. Meanwhile, the more price-conscious segment desires a low barrier to entry and services that are functionally sufficient. Currently, service providers can only differentiate based on speed and usage. With the smart network initiative, network operators offer differentiated packages based on priority of service and charge accordingly. The initiative will also be another instrument to fairly charge the small minority of users who consume a disproportionate amount of usage.

Exhibit 13-14



SOURCE: Net Index by Ookla; MCMC

Actions

At the top end, consumers will have their traffic prioritised with the highest usage caps. In return for premium service, tariffs will be higher than today. For the 'good enough' segment, we will offer a package at very low tariffs, offering basic speeds and low usage caps. As an improvement on offerings today, these consumers will have the option on buying priority services on demand. In addition, consumers may purchase application-specific priority packages, e.g. video streaming or peer-to-peer services. We will thereby allow end users to pay for the type of service they want and not negatively impact other users who have different needs.

The technology for this initiative is readily available; however, SKMM will need to maintain a light touch for its regulatory approach to quality of service. The industry can operationalise the smart network by 2012, and we expect 30 percent of service providers to offer tiered pricing plans based on service priorities by the end of that year. Over the longer term, investment savings will also accrue to the sector.

Funding

A total of RM0.7 billion is required, all from the private sector. RM0.4 billion will fund upgrades in network, billing systems and other back-office and front-office functions required to enable the initiative. Furthermore, working capital requires an investment of RM0.3 billion.

Impact

By 2020, GNI impact will be RM847 million and there will be approximately 1,950 new jobs.

EPP 10: Extending the Regional Network

Rationale

By extending the regional network we aim to add up to 3 terabits per second (Tbps) of international bandwidth by 2020 and support the growth of an additional three million square feet of data centre space, addressing cost and quality issues today and enhancing future revenue streams.

Given that 80 to 90 percent of Internet traffic in Malaysia travels outside the country, we require significant bandwidth on international submarine cables. Capacity in Malaysia has lagged behind demand historically. IP transit costs are higher than in other markets that have built out capacity more aggressively, like Hong Kong, Japan and Singapore; and the differential reaches about 80 percent when compared to Singapore. Quality has also suffered due to congestion on the international network with Malaysia's Internet speeds slower than 100 other countries.

Actions

International bandwidth demand is estimated to reach at least 4 Tbps by 2020. Today there are approximately 200 Gbps of capacity being used, with an estimated 600 Gbps that can become available. To close the gap, service providers will form a local consortium in 2011 to acquire 3 Tbps of capacity by 2020. To enable the capital expenditure, EPU and MoF will provide a soft loan to finance this project.

The increased bandwidth will lower wholesale costs and allow industry to reduce costs to consumers. In addition, it will enable the expansion of data centres in Malaysia by an estimated 3 million square feet, which will attract business from domestic and international sources. The sector will provide facilities within this space and enable business services companies to operate advanced data centres, moving up the value chain by offering premium differentiated services. This initiative is critical to providing a means to support local content and locally host foreign content.

Funding

Funds of RM10 billion will be allocated for the construction of 3 Tbps of submarine cables to Hong Kong and the USA. This will be enabled through a soft loan from the Government.

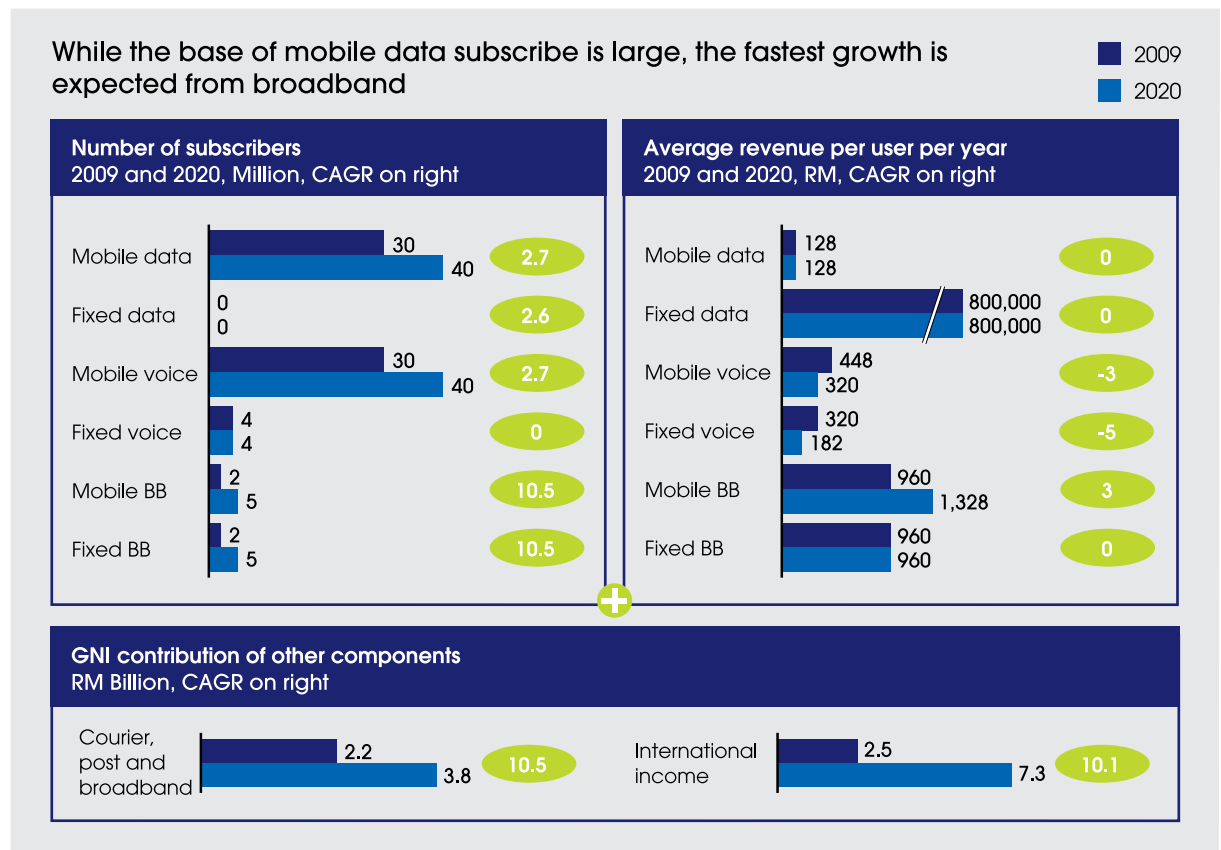
Impact

We target the initiative to generate RM2.3 billion in incremental GNI and 1,220 new jobs by 2020.

BUSINESS OPPORTUNITIES

Beyond the EPPs, the CCI sector will grow through the domestic growth of existing companies as well as through Malaysian ownership of foreign companies. Broadly, growth will be pursued along four fronts: fixed service, mobile services, courier, post and broadcast, and regional operations. The forecasts for fixed services and mobile services are shown in the *Exhibit 13-15*. These business opportunities will provide RM11.7 billion in incremental GNI and create 17,265 new jobs by 2020.

Exhibit 13-15



Business Opportunity 1: Fixed Services

Growth from fixed services will come primarily from fixed broadband and data lines. Fixed broadband subscribers will grow by 10.5 percent compound annual growth rate (CAGR), as existing fixed line users take advantage of bundled packages. Services such as IPTV and online gaming and music will drive much of this increased uptake. Fixed data lines will grow by 2.6 percent CAGR as more companies require their own internal networks. This opportunity will contribute RM1.7 billion in incremental GNI and create 3,250 new jobs by 2020.

Business Opportunity 2: Mobile Services

Mobile services will see subscription growth in all segments: voice, data and broadband. Voice lines will grow by 2.7 percent CAGR driven by both the growing population and increasing tendency of subscribers to have multiple mobile accounts. Mobile data, which includes SMS, content and services that do not require an Internet connection, will grow in line with subscriber growth. Lastly, mobile broadband subscribers will grow rapidly by 10.5 percent CAGR as 3G users begin to access the Internet, more advanced devices induce Malaysians to use their phones as their primary means of Internet access and lower costs allow mobile Internet access to become more widespread. This opportunity will contribute RM3.6 billion in incremental GNI and create 5,788 new jobs by 2020.

Business Opportunity 3: Courier, Post and Broadcast

Courier, post and broadcast sector's GNI contribution will grow by 5.2 percent annually over the next ten years.

The courier and post sector will offer a broader range of services such as commercial transaction fulfilment, warehousing, inventory management, demand planning for manufacturers and assembly services. A multi-tiered licensing system prepared by SKMM will impose higher requirements for top tier license holders and will encourage consolidation, raising the capacity of the sector to invest.

Furthermore, the post and courier sector has an opportunity to capitalise on the expected growth in electronic commerce and offer services specifically designed to meet the needs of merchants. Further opportunities exist in expansion in regional logistics, subject to obtaining freight forwarding licenses, as well as in competing internally on quality and performance of service rather than price.

Although paid broadcasting has almost reached a plateau in terms of penetration, new opportunities for the broadcast sector will open up as new services are introduced. Digital terrestrial TV will allow the broadcasting of more channels and will have a positive impact on revenues starting in 2015, when SKMM plans to mandate the switching off of analogue broadcasting.

Additional upside opportunities may come from mobile TV and 3D TV content. The infrastructure for offering these services are generally in place. Solutions are being explored to address content creation for these new channels and overcoming barriers to adoption.

This opportunity will contribute RM1.6 billion in incremental GNI and create 7,563 new jobs by 2020.

Business Opportunity 4: Regional Operations

Malaysian companies in the sector such as Axiata, Maxis and Astro are aggressively pursuing international opportunities in large and fast growing markets such as Indonesia, India and Bangladesh. Currently, these investments account for approximately RM2.5 billion of GNI. By 2020, these investments will generate additional GNI of RM4.8 billion and 664 new jobs, as the Malaysian controlled companies leverage the fast growth of these markets and pursue market share.

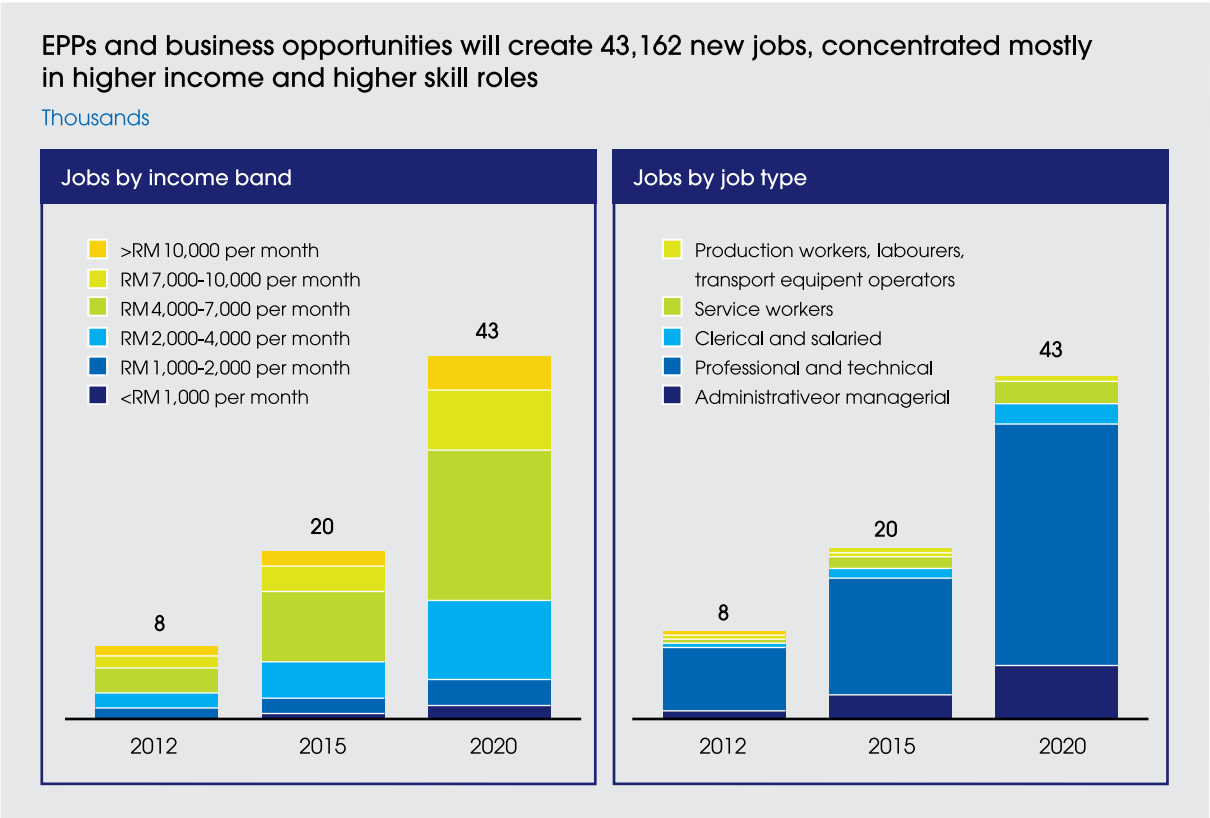
COMMON ENABLERS

Human Capital - Create World-class Communications Experts

Overview

Having the right human capital is critical in knowledge-intense sectors like CCI, and the positive outcome of this NKEA is driven greatly by the level of qualification and skills that the sector attracts and develops. To achieve our ambitious growth targets, 43,162 additional workers will be required by 2020. Of this, 25,899 workers will be required to support our EPPs, while existing business opportunities require 17,263 workers. In terms of qualifications, most of these new jobs will be high income (with 67 percent above RM4,000 per month in salary) and require a high level of qualifications. Examples include business managers, communications-related engineers and creative content experts. A breakdown of expected future incremental employment in CCI is illustrated in *Exhibit 13-16*.

Exhibit 13-16



Actions

While this growth will bring significant secondary benefits for the economy, we need to ensure that Malaysia's future workforce has sufficient educated talent available. The development of programmes to mitigate this challenge is covered under the Education NKEA.

The CCI NKEA envisions a few changes. In the near term, talent will need to be sourced from neighbouring countries and overseas Malaysians. Relevant incentive programmes and simplified visa processing for highly-skilled professionals will be critical in this context. In the medium term, multiple programmes will be planned to support growth of the domestic talent base:

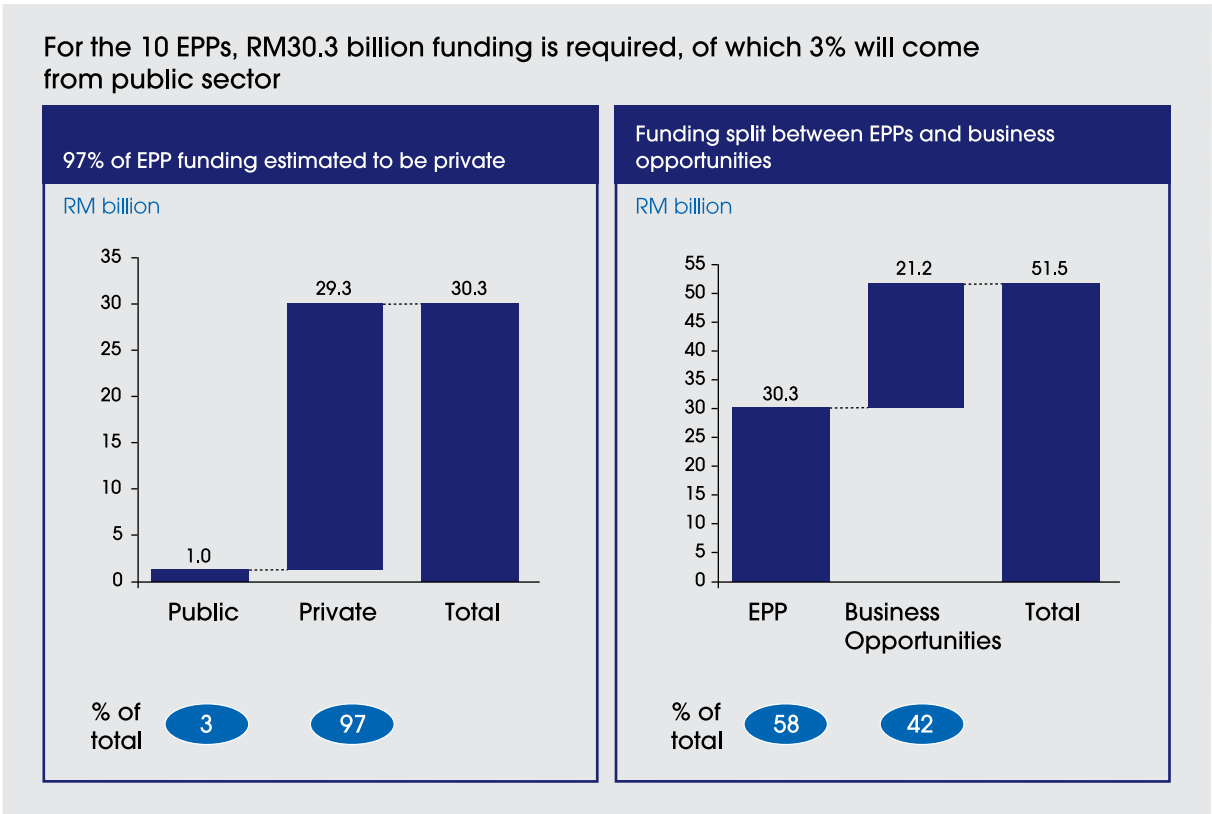
- **Grow continuous professional development in the industry:** Companies will drive ongoing training programmes for their employees as they form new divisions to address EPPs and new business opportunities;
- **Increase university education programmes on communications:** Further growth in communications-linked engineering programmes as well as creative programmes at universities; and
- **Drive company sponsorship of overseas studies:** SKMM will proactively track highly talented individuals and drive main operators to grow the programmes they sponsor for overseas study.

With a coordinated push from all interested stakeholders (education sector, KPKK, SKMM and private industry), we are confident in being able to close the talent gap.

FUNDING

To achieve the growth plans of the CCI NKEA, significant funding will be required for capital expenditures and working capital. As the sector is focusing on commercially viable projects, operating expenses will be funded by revenue after the initial phase. As illustrated in *Exhibit 13-17*, the sector will require cumulative funding of RM51.5 billion from 2011 to 2020 to deliver the expected GNI growth of RM35.7 billion for 2020. Only 3 percent of the funding needed for EPPs (RM30.3 billion) will need to be Government-funded, as 97 percent of the total will be provided by industry companies over the course of the next 10 years. This equates to an average annual investment by the private communications industry of approximately RM3 billion.

Exhibit 13-17



Of the total, RM21.2 billion will be required for business opportunities through 2020 with the largest share of RM10.3 billion in mobile networks. Business opportunities will be entirely privately funded to deliver additional GNI growth of RM11.7 billion.

For the EPPs, RM30.3 billion funding is required through 2020 with RM1 billion being contributed by the Government, mostly to initiate services.

GOVERNANCE AND DELIVERY

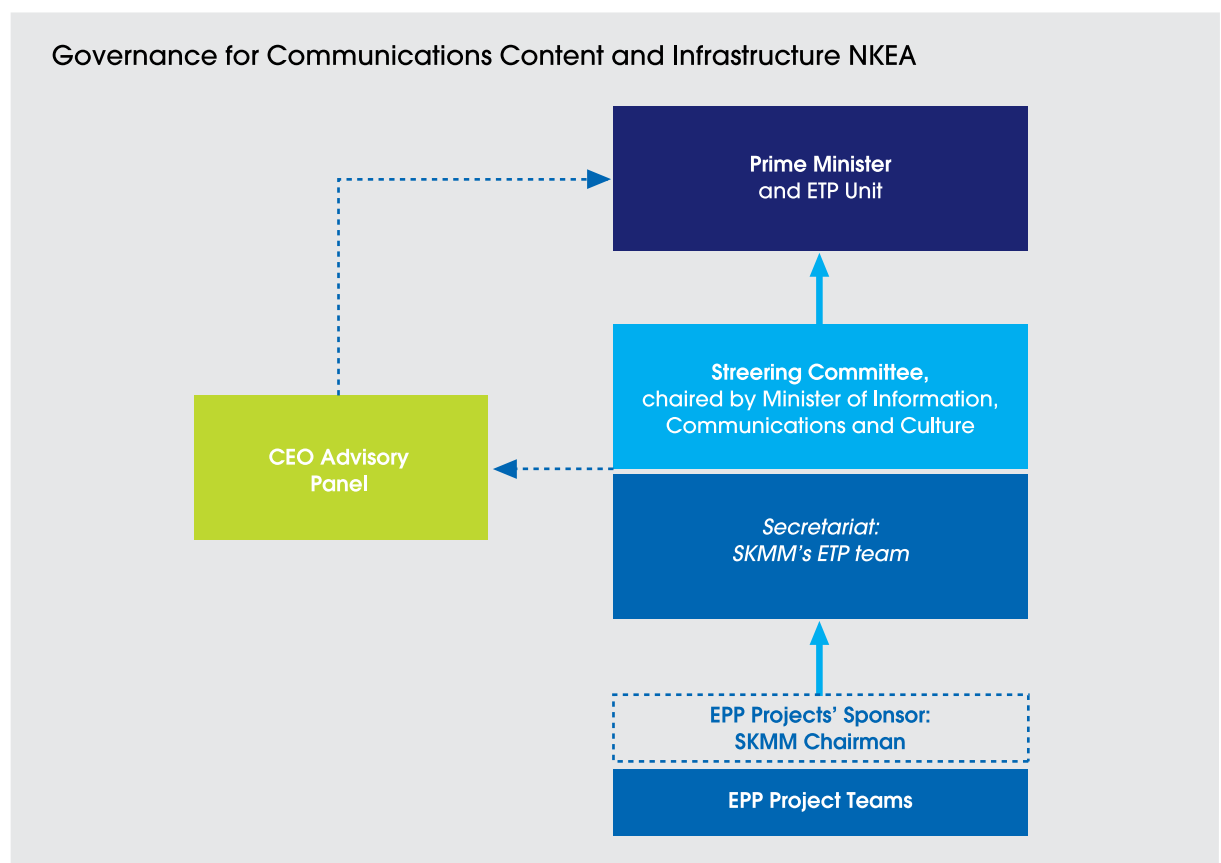
The CCI NKEA will require the public and private sectors to work closely together under the overall leadership of KPKK and SKMM. The private sector will provide most of the resources and be the primary driver for delivering EPP results. We understand the private sector's need to be convinced of the commercial attractiveness of pursuing EPPs and the assurance of the right regulatory framework to make such an investment. To do this, the public sector will need to lead by dismantling regulatory impediments, fostering a level playing field and providing oversight for issues impacting the entire sector or national interest. The public sector will also coordinate various private sector entities and public sector stakeholders.

To ensure successful implementation, we will undertake the following:

- The Minister of Information, Communications and Culture will provide strong public sector leadership through the existing SKMM structure;
- Private sector representatives will work closely with public sector at the implementation level; and
- The SKMM's ETP team will support project management and augment the current SKMM capacity.

An effective governance mechanism under the oversight of the Prime Minister will serve to ensure goals are achieved and implementation timelines are met (*Exhibit 13-18*). This structure brings together both private companies and public parties on an ongoing basis.

Exhibit 13-18



The Minister of Communications will provide strong public sector leadership through SKMM. The Minister of Information, Communications and Culture will take the lead and chair the monthly Steering Committee. The Steering Committee's primary purpose will be to overcome roadblocks and coordinate with other stakeholders in the public sector (e.g. Ministry of Housing for Ensuring Broadband for All, Ministry of Education for Establishing E-Learning). Senior Directors of SKMM will serve as owners of the various EPPs (*Table 13-1*). SKMM will also form an ETP team to serve as the secretariat and monitor progress. The Steering Committee will update the Prime Minister, ETP team and other key stakeholders such as cabinet ministers on a quarterly basis (bi-monthly, during the first six months of implementation).

Private sector representatives will work closely with the public sector at the implementation level. Private sector entities involved in the EPP will be represented and work closely with SKMM owners as part of weekly EPP project team meetings. SKMM will be flexible in its implementation approach, being heavily involved in EPPs that require more regulatory support and using a light touch approach with EPPs that are primarily driven by the private sector. As a rule, obligations will not be unduly imposed on private sector participants. However, private sector participants will be held accountable to the commitments they make. Additionally, a CEO Panel of Advisors will be convened quarterly to facilitate sector-wide collaboration and resolve commercial issues that arise.

SKMM's ETP team will support project management and augment the SKMM structure. This ETP team will support EPP implementation at all levels. This support will take the form of monitoring progress and KPIs, flagging and resolving issues and facilitating the coordination of the various stakeholders.

Table 13-1

Entry Point Projects	Lead initiative owner	Other key agencies, companies and organisations
Nurturing Malaysia's creative content industry	Zamani Zakariah	KPKK, Ministry of Tourism, Home Ministry, MIPO (domestic trade), MDeC, Media Prima, Astro, TM, RTM, Private Funders (MAVCAP, MDV), Creative Sector SMEs
Deploying 1Malaysia payments	Toh Swee Ho	Bank Negara, MEPS, Association of Banks, MTSFB, Internet Banking Taskforce, Khazanah
Connecting 1Malaysia	Toh Swee Ho	MAMPU, Khazanah and PNB, Device Manufacturers
Establishing E-Learning for students and professional training	Zamani Zakariah	MOE, EPU, KPKK, SKMM, National PTA, National Union of Teachers, SMEs developing educational content and applications, TM, TdC, Khazanah
Launching E-Healthcare	Zamani Zakariah	MOH, MMA, Insurance companies, Khazanah, PNB, SMEs developing medical content and applications
Deepening E-Government	Dato Jailani Johari	MAMPU, Identified pilot agencies (e.g. JKR), Other system integrators and service providers
Ensuring broadband for all	Mohd Ali Hanafiah	KPKT, KPKK, State Economic Planning (UPEN), Developers (REHDA), Service providers (e.g. Access Forum)
Extending reach	Dato Jailani Johari	KPKK, State Economic Planning (UPEN), Service providers (e.g. Access Forum)
Offering a smart network	Mohd Ali Hanafiah	Service providers and technology suppliers
Extending the regional network	Toh Swee Ho	EPU, KPKK, SKMM, Service providers, Data centre companies, Khazanah

Summary of Communications Content and Infrastructure NKEA

- **Incremental GNI impact in 2020**

RM35.7 billion

- **Additional jobs in 2020**

43,163

- **Critical targets and milestones within 6 to 12 months**

- MY Creative Content identified
- 1Malaysia Payments interoperability standards defined
- Connecting 1Malaysia industry partnership formed
- First batch of urban schools connected to E-Learning
- First batch of medical institutions connected to E-Healthcare
- Roadmap to full online processes for E-Government completed
- Uniform Building By Laws and National Development Masterplan amended
- Process of removing redundant active infrastructure begun
- Smart Network service standards defined and supported by SKMM
- 200 to 500 acres for data parks secured