

Driving ICT in the Knowledge Economy

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I. INTRODUCTION

15.1 Malaysia embarked on its journey since the 1990s, from a resource-driven economy towards one, which is knowledge-led. One of the most significant initiatives implemented was the Multimedia Super Corridor (MSC), which focuses on uplifting Malaysia into an advanced nation by 2020. In 2002, the Knowledge Economy Master Plan (KEMP) was launched to provide strategic directions in the areas of human capital, science and technology, research and development (R&D), information and communications technology (ICT) as well as infrastructure. The KEMP defined the knowledge economy as an economy in which knowledge, creativity and innovation play an ever-increasing and important role in generating and sustaining growth.

15.2 During the Tenth Malaysia Plan (Tenth Plan), 2011-2015, several ICT initiatives continued to be implemented to transform the nation into an innovative digital economy. The national digital transformation agenda was primarily driven by the Strategic ICT Roadmap and the Digital Malaysia initiative. Efforts were also undertaken to make the nation a producer of niche ICT products and services.

15.3 The Eleventh Malaysia Plan (Eleventh Plan), 2016-2020 emphasises on driving ICT in the knowledge economy through innovation and productivity to enhance competitiveness and wealth creation. Within the ICT industry, focus will be given to the development of digital content under the content and media subsector, as well as software solutions and services, as these are potential areas for wealth creation and participation of local companies. The growth of the ICT industry will, in turn, drive the demand for robust digital infrastructure, fundamental to Malaysia's competitiveness. In addition, accessibility and affordability are equally critical in uplifting the economy and narrowing the socio-economic gap through the provision of digital opportunities to the have-nots. Central to the knowledge economy is a highly skilled and capable workforce to drive innovation, creativity and productivity. It is important to equip the workforce with specialised skills to facilitate growth in the various sectors, including R&D of ICT products and services. This will ensure the nation not only benefits from but also contributes to global ICT advancements.

15.4 This strategy paper focuses on ICT as an imperative enabler for a knowledge economy, especially in the areas of industry, infrastructure, human capital and digital inclusion. These enablers will increase productivity through innovation, thereby enhancing competitiveness and wealth creation.

II. TENTH MALAYSIA PLAN, 2011-2015: PROGRESS

15.5 In 2012, Malaysia was ranked 48 out of 146 countries in the Knowledge Economy Index (KEI) developed by the World Bank. The KEI represents a country's ability to generate, adopt and diffuse knowledge. It consists of four sub-indices, namely education and training, information infrastructure, economic incentive and institutional regime, and innovation system. Malaysia's performance in the sub-indices is as illustrated in *Exhibit 15-1*.

Exhibit 15-1
Knowledge Economy Index, 2000 and 2012

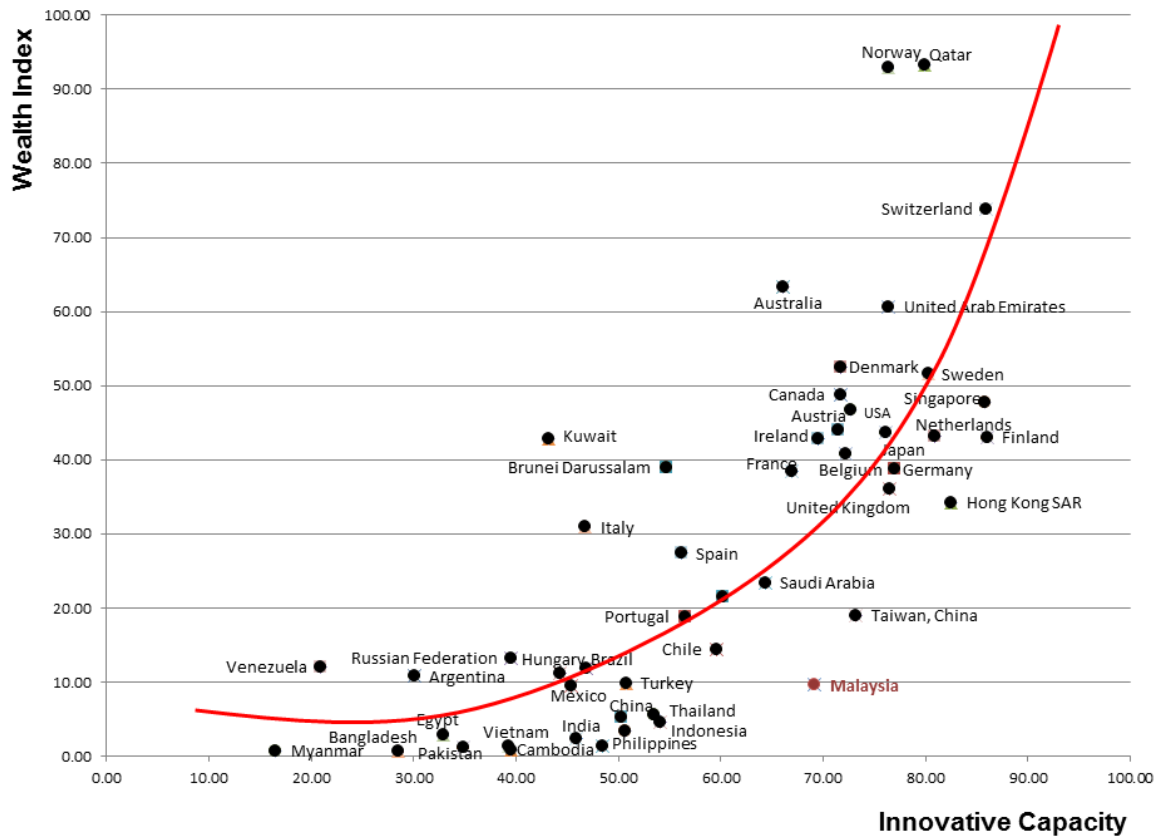
Country/ Economy	2012 Rank	2000 Rank	Four Pillars			
			Education & Training	Information Infrastructure	Economic Incentive & Institutional Regime	Innovation System
Sweden	1	1	6	2	4	2
New Zealand	6	9	1	23	14	22
Switzerland	10	5	41	7	6	1
US	12	4	13	18	26	6
Singapore	23	20	79	15	1	4
South Korea	29	24	4	29	53	21
Bahrain	43	41	45	1	48	75
Malaysia	48	45	75	52	61	42
China	84	91	95	94	97	54
India	110	104	111	122	99	76

Source: World Bank Knowledge Economy Index 2012

15.6 There is a strong correlation between innovative capacity and wealth of countries, as illustrated in *Exhibit 15-2*. National innovative capacity is defined as the ability of a country in producing a stream of innovation that is commercially viable for a long period of time. Some of the determinants of innovative capacity are spendings on higher education and R&D, skilled workforce, resource commitment and policies that support innovation as well as market openness.

15.7 Although Malaysia has progressed in its innovative capacity, its wealth creation is comparatively low. This is because most of its key economic sectors are still production-driven and operate at the low end of the value chain. Furthermore, a high number of patents that are owned by Government Research Institutes (GRIs) and Institutions of Higher Education (IHEs) are not commercialised. In addition, more than 80% of patent applications from 2010 to 2012 were filed by non-Malaysians.

Exhibit 15-2
Innovative Capacity and Wealth, 2013



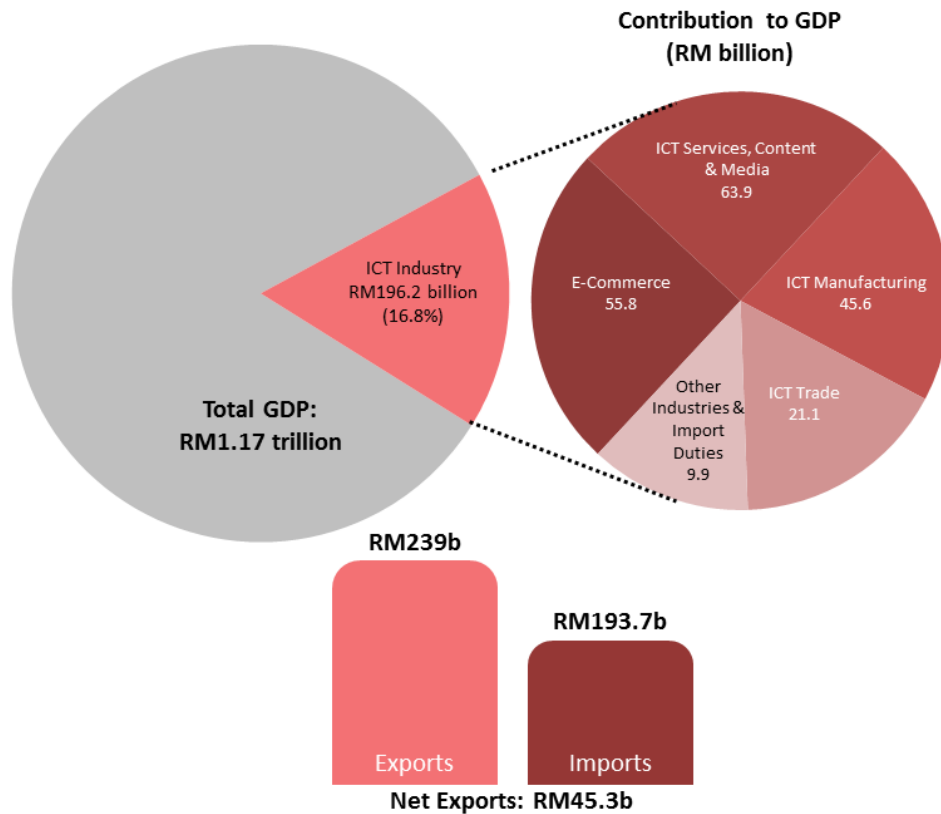
Note: Analysis from an ongoing study on Knowledge Content in Key Economic Sectors in Malaysia, Phase III (2014)

Source: Economic Planning Unit

15.8 The ICT Satellite Account (ICTSA) was established in 2012 to measure the progress of the **ICT industry** development namely in the services, trade, manufacturing, e-commerce, and content and media subsectors. The ICT industry expanded by 6.8% per annum in 2011-2015 and its share to gross domestic product (GDP) is estimated to be 16.8% (RM192.6 billion in current prices) from 15.8% (RM129.7 billion) in 2010. The contribution of the ICT services, and content and media subsectors to GDP is estimated to increase from 5.2% (RM43.1 billion) in 2010 to 5.5% (RM63.9 billion) in 2015. In the same period, the ICT manufacturing subsector contribution is estimated to decrease from 4.6% (RM37.7 billion) in 2010 to 3.9% (RM45.6 billion) in 2015, reflecting the transition of the ICT industry from manufacturing towards higher value-added services. In terms of export earnings, net exports of the ICT industry is estimated to decline from RM54.3 billion in 2010 to RM45.3 billion in 2015. There was a drop in the share of ICT goods to total exports, from 29.4% in 2010 to 25.4% in 2013. The contribution of the ICT industry including e-commerce in 2015 is as shown in *Exhibit 15-3*.

Exhibit 15-3

ICT Industry Contribution to GDP and Net Exports in Current Prices, 2015



Source: Economic Planning Unit and Department of Statistics Malaysia

15.9 The growth of the ICT manufacturing subsector was driven by the progress in the Electrical and Electronics (E&E) industry, which attracted 380 projects worth RM36.2 billion in capital investments from 2011 to 2014.

15.10 To help spur the content and media subsector, a total of 55 programmes were implemented under the Tenth Plan. Among others, these included the provision of funds and infrastructure, technology innovation and adoption, attracting investment, market access as well as talent and capacity development. In 2013, the share of this subsector was 3.5% (RM5.71 billion) to the ICT industry with exports amounting to RM10.03 billion. The performance of this subsector is shown in *Exhibit 15-4*.

Exhibit 15-4

Content and Media Subsector Performance

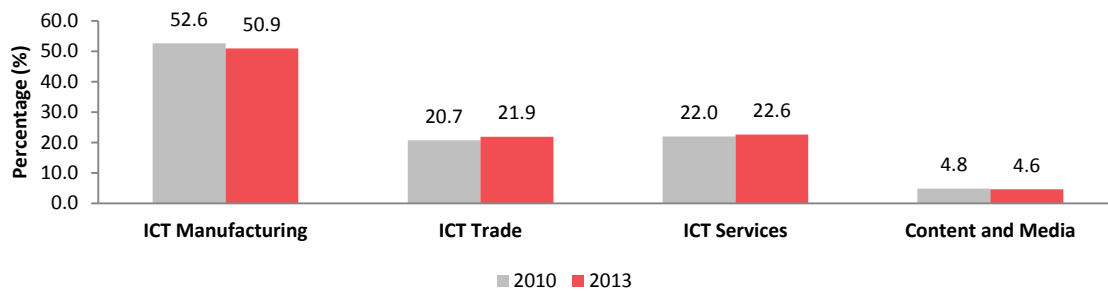
	2011	2012	2013
Gross Value Add (RM billion)	4.75	4.85	5.71
Exports (RM billion)	8.70	8.48	10.03
Investments (RM million)	259	341	467
Jobs	38,300	35,100	35,857

Source: Department of Statistics Malaysia and Multimedia Development Corporation

15.11 In terms of **ICT human capital**, ICT employment in 2013 was 779,500 or 5.9% of total employment of 13.2 million, an increase of 2.2% per annum from 762,800 in 2010. The Gross Value Added (GVA) per employee increased by 2% to RM133,719 in 2013 from RM131,062 in 2010. A comparison of employment by subsector in 2010 and 2013 is as shown in *Exhibit 15-5*. Although the employment in ICT services subsector was only 22.6% of the total ICT industry, it was the largest contributor of the ICT industry to GDP, indicating the shift towards higher value added activities.

Exhibit 15-5

Employment by Subsector, 2010 and 2013



Source: Department of Statistics Malaysia

15.12 The ICT Job Market Outlook in Malaysia, 2014 by the National ICT Association of Malaysia (PIKOM), showed that the average monthly salary of an ICT professional was RM5,714 in 2010 and increased to RM7,152 in 2013. In terms of supply of ICT graduates, a study done by the Multimedia Development Corporation (MDeC) in 2014 indicated that the total number of graduates in core areas¹ decreased from 8,237 in 2010 to 8,000 in 2014, while the demand for ICT graduates almost doubled from 7,121 to 13,300 for the same period.

15.13 In terms of **digital infrastructure**, the high-speed broadband is a critical enabler to support the growth of all sectors in the economy. The International Telecommunication Union (ITU) 2012 estimated that a 10% increase in broadband penetration will contribute 0.7 percentage points increase to GDP growth in Malaysia. Under the Tenth Plan, the Government expanded digital infrastructure to improve broadband penetration through the

¹ Computer science, software engineering, information technology, information system, networking, security, mobile technology, artificial intelligence, and technology management

High Speed Broadband (HSBB) and the Broadband for General Population (BBGP). The HSBB was rolled out in several areas, including Bintulu, Kuching and Miri in Sarawak; Kota Kinabalu and Menggatal in Sabah; Iskandar Malaysia in Johor; and Wilayah Persekutuan Kuala Lumpur and Putrajaya. This contributed to an increase of broadband penetration in Sarawak and Sabah from 40.2% and 25.6% respectively in 2010 to around 67% in 2014. States such as Wilayah Persekutuan Kuala Lumpur, Melaka, Perak, Selangor, Pahang, and Johor achieved more than 70% household broadband penetration. The targets and achievements in digital infrastructure are as shown in *Exhibit 15-6*. *Exhibit 15-7* shows the areas covered by HSBB1 during the Tenth Plan period.

*Exhibit 15-6***Digital Infrastructure Targets and Achievements, 2011-2015**

Targets	Achievements (as of 2014)
1. Communications network <ul style="list-style-type: none"> • Achieve 75% broadband penetration rate • Deploy fibre optic cables nationwide with upgrading 95 out of 103 exchange terminals • Install 1,335,544 ports • Increase international submarine cable capacity 	<ul style="list-style-type: none"> • 70.2% household broadband penetration • 55,801 kilometres of fibre optic (Fkm) deployed as follows: <ul style="list-style-type: none"> a. 46,518 Fkm for 103 exchange terminals with 64 in Klang Valley; 10 in Johor; 7 in Penang; 6 in Sarawak; 5 in Kedah, 2 in Pahang, Perak, Melaka, Negeri Sembilan, Sabah and 1 in Terengganu; and b. 9,283 Fkm for the core network • 1.63 million ports (111%) installed • Able to serve 2.4 million premises • Submarine cables and systems were upgraded and new submarine cables laid out to increase international capacity to 1.74 terabytes per second (Tbps) from 682 gigabytes per second (Gbps) in 2010
2. Increase broadband coverage to 84% in populated areas	<ul style="list-style-type: none"> • 83.7% coverage
3. Provide fibre optic backhaul links in rural areas <ul style="list-style-type: none"> • Deploy Broadband for General Population (BBGP) to cover suburban and rural areas 	BBGP was rolled out with fibre optic backhaul links as below: <ul style="list-style-type: none"> • 53 links with 1,120 Fkm for Sabah • 23 links with 1,237 Fkm for Sarawak • 8 links with 300 Fkm for Peninsular Malaysia

Exhibit 15-7
Areas Covered by HSBB1, 2015



Source: Malaysian Communications and Multimedia Commission

15.14 Digital infrastructure in the public sector, previously managed by individual ministries, was consolidated into 1Gov*Net in 2012, a centrally managed dedicated network connecting 10,552 out of 11,268, representing about 94% of all Federal Government buildings. Under the 1BestariNet programme, efforts were made to provide connectivity to schools to support teaching and learning. A total of 10,132 schools were connected through fibre (nine schools), WiMAX (6,628 schools), Asymmetric Digital Subscriber Line (ADSL, 1,086 schools), Very Small Aperture Terminal (VSAT, 2,129 schools) and wireless (280 schools).

15.15 In keeping pace with technological development, Free-to-Air Digital Terrestrial Television (DTT), offering digital television and radio services is scheduled to be launched by end of 2015. The first phase is expected to be rolled out in 14 areas nationwide including four areas in Sabah and Sarawak. Other services will be made available after the Analogue Switch Off (ASO) scheduled to start in 2016.

15.16 To ensure **digital inclusion** and provide opportunities to the underserved communities, a total of 1,122 telecentres were established as of April, 2015 to enable access in rural and suburban areas. The Universal Service Provision framework, under the Communications and Multimedia Act 1998, was amended to include availability of broadband for underserved communities. Additionally, 5,737 villages were connected through the *Kampung Tanpa Wayar* programme, 971 cellular towers were constructed and one million netbooks distributed.

15.17 The digital inclusion initiative succeeded in transforming the lives of several targeted community members. These success stories include an online seaweed entrepreneur from Sabah and a kapok pillow entrepreneur from Kedah, whose monthly income increased to approximately RM20,000 and RM40,000, respectively.

III. ISSUES AND CHALLENGES

15.18 The issues and challenges with regard to the ICT industry, digital infrastructure, ICT human capital and digital inclusion are as follows:

- Competitiveness of the ICT industry
- Talent development in ICT
- Coverage, affordability and quality of digital infrastructure
- Digital gap

Competitiveness of the ICT Industry

15.19 Both the government and the private sector collaborated to build an ecosystem to support local ICT companies keep pace with the dynamism of the industry. However, a few issues have impeded the establishment of such an ecosystem. These issues include inadequate support for start-ups, weak management of Intellectual Property (IP), low adoption of ICT in small and medium enterprises (SMEs), low internationalisation of ICT companies and lack of coordination among relevant agencies.

15.20 According to the Global Entrepreneurship Development Index 2014, Malaysia ranked 44 out of 120 countries. In order to improve its ranking, areas that need to be emphasised are start-up skills, technology absorption, risk acceptance and internationalisation. From the report, it can be concluded that fear of failure prevents many Malaysians from starting their own businesses. This and the aversion of financial institutions to high-risk enterprises have slowed down the growth of start-ups in Malaysia.

15.21 While innovative SMEs have the potential to drive improvements in productivity, competitiveness and technology, they are unable to capitalise on their innovation due to the lack of knowledge in IP management and innovative marketing strategies, and constraints in financial and human resources. Furthermore, they do not have the required partners and funders to provide the guidance and services related to IP management.

15.22 Malaysia ranked 60 out of 144 countries under the Technological Readiness pillar in the 2014/2015 World Economic Forum Global Competitiveness Index. This pillar measures the agility of an economy to adopt existing technologies to enhance the productivity of its industries. Similarly, the 2011 Economic Census reported that only 27% of SMEs in Malaysia use ICT in their business operations, of which two thirds of them (67%) utilised the Internet in their businesses. The same census reported that only 12% of SMEs using ICT in their business operations have their own websites.

15.23 The demand for ICT products and services from SMEs in vertical markets, such as automotive, aerospace, legal and healthcare, has not been encouraging mainly due to low adoption of digital technologies. The SME Masterplan 2012-2020, reported that SMEs are hesitant to invest in automation due to their perception that long-term productivity gains may not compensate for their high initial investments. In addition, the easy access and over-reliance on unskilled foreign labour have created disincentives for SMEs to adopt new technologies and move into higher value-added activities. A lack of trust in the virtual environment further hinders the industry from adopting digital technology.

15.24 The Malaysian Digital Economy Report 2012 by MDeC revealed that only 16% of SMEs embarked on e-commerce activities. This was because most SMEs were more active in brick and mortar sales, and traditional marketing networks and channels. The low participation of SMEs in e-commerce activities can also be attributed to the lack of confidence in digital platforms and high cost of broadband access.

15.25 With regard to internationalisation of ICT companies, the Services Sector Blueprint 2014 also highlighted that local ICT companies are overly dependent on domestic market while exports are dominated by foreign firms. According to MDeC, the low internationalisation rate of Malaysian ICT companies was due to limited access to global market channels, low adoption of new innovative business models, lack of commercialisation know-how and insufficient resources to support export initiatives.

15.26 The export share of ICT goods to total exports declined to 25.4% in 2013 from 29.4% in 2010. This is due to the fact that the industry is transitioning from a manufacturing-based to a high value-added services-based industry. An assessment by the Ministry of International Trade and Industry revealed that one of the main reasons for this decline was the increased diffusion of E&E devices and systems into other exporting sectors.

15.27 According to the ICTSA 2013, an export in the content and media subsector was only 1.24% (RM10.03 billion) to total exports in 2013. This was due to gaps in the support system including funding mechanisms and talent development, which limited the production of quality local content.

15.28 The research, development and commercialisation (R&D&C) activities for the ICT sector are done independently by different agencies with little consideration given to the technology focus areas as identified in the Strategic ICT Roadmap 2012. Ideally, to maximize benefits from R&D&C investments and productive usage of resources, these activities should be coordinated and monitored by a single agency. Furthermore, there is a need to have a formalised platform to foster innovation and co-creation through collaboration among academia, industry, government and community. Building an ecosystem to support

the technology focus areas, which entails capacity building, R&D, investment and infrastructure development, is imperative for higher ICT contribution to the economy.

Talent Development in ICT

15.29 There are challenges in relation to talent supply and human capital development in the ICT industry. These include limited access to ICT education in schools, outdated ICT curriculum in schools and IHEs, shortage of industry-ready ICT graduates in the market, and insufficient opportunities for ICT professionals in SMEs to diversify and broaden their knowledge.

15.30 Poor enrolment in ICT courses at the tertiary level can be attributed to the absence of ICT as an elective subject in most secondary schools, lack of interest among students to enroll for ICT exam at *Sijil Pelajaran Malaysia* level and the perception that the ICT field has limited prospects. This was reflected in the findings of the MSC Malaysia Talent Supply-Demand Study 2013-2017 by MDeC, where student intake for ICT courses for the period 2010 to 2013 registered a decline of about 4% per annum. In addition, the study showed that there will be a shortage of 5,000 to 7,000 ICT graduates from 2014 to 2017.

15.31 The fast changing nature of the ICT industry poses constraints in meeting current talent requirements. Generally, changes to the ICT curriculum in IHEs are not in tandem with evolving global trends. At the same time, the Malaysian Qualifications Agency (MQA) requires the delivery of lecture modules by individuals with academic qualifications higher than their students. This has resulted in the exclusion of people with vast industrial experience but without the required level of academic qualification to teach in IHEs. Moreover, the lack of active industrial involvement has led to curriculum design being incompatible with industry needs.

15.32 From the MSC Malaysia Talent Supply-Demand Study 2013-2017, it can be deduced that a significant number of ICT companies did not give high priority to training, which resulted in skills not being upgraded, hence their low competitiveness in the global market. The Study reported that more than half of 400 non-MSM and one third of 644 MSM status companies surveyed did not allocate funds for employee training and development. Furthermore, only one third of both the MSM and non-MSM status companies contributed to the Human Resources Development Fund (HRDF) while more than 15% of these companies did not utilise their HRDF contribution for employee training and development.

15.33 PIKOM in its ICT Job Market Outlook in Malaysia, 2014 report highlighted that the ICT industry workforce lacked interest in attaining global standards and competencies in process and quality improvement activities. The pursuance of global standards and

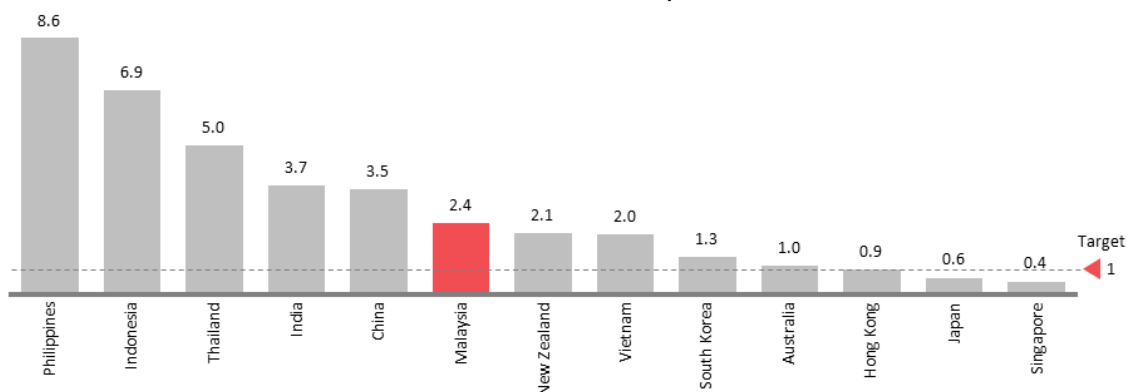
certifications is critical for Malaysian ICT products and services to be accepted in other developed countries.

Coverage, Affordability and Quality of Digital Infrastructure

15.34 Issues related to digital infrastructure are coverage, affordability and quality of services. Malaysia has undertaken various efforts to improve digital infrastructure coverage nationwide. However, it is still inadequate, especially in rural areas, primarily due to high cost of broadband deployment and low returns on investment. Moreover, inconsistent and complicated procedures at the local authority level have also delayed broadband roll-out.

15.35 The affordability index in the Measuring the Information Society Report 2014 ranked Malaysia at 70 out of 165 countries for fixed broadband. The fixed broadband cost was 2.42% of gross national income (GNI) per capita compared with Singapore at 0.44%, Korea 1.27%, Thailand 5.02% and Indonesia 6.87%. Comparison of fixed broadband price between Malaysia and other countries is as shown in *Exhibit 15-8*. In order to meet consumer and business demand for quality of service, the capacity, availability and speed of broadband need to be improved.

Exhibit 15-8
Fixed Broadband Price, 2013



Source: International Telecommunication Union and World Bank

Digital Gap

15.36 The Government's commitment to address the digital divide in Malaysia is undertaken through various digital inclusion programmes and initiatives. Improvements in ICT skills and knowledge have enabled online usage for communications and business operations. Although access and adoption of technologies have improved through investments in infrastructure, value creation through content and programme development is still lagging. Moreover, there is limited sharing or replication of successful programmes to other target communities to optimise their benefits. Lack of collaboration with universities,

private sector and non-governmental organisations (NGOs) have also hindered the development of relevant programmes to the community.

15.37 Programmes such as 1Nita and Get Malaysian Business Online (GMBO) have been developed to give opportunities to SMEs and micro enterprises (MEs) to venture into online businesses and further improve their revenue. However, a very limited number of SMEs and MEs have embarked on such programmes due to lack of skills and trust in digital platforms.

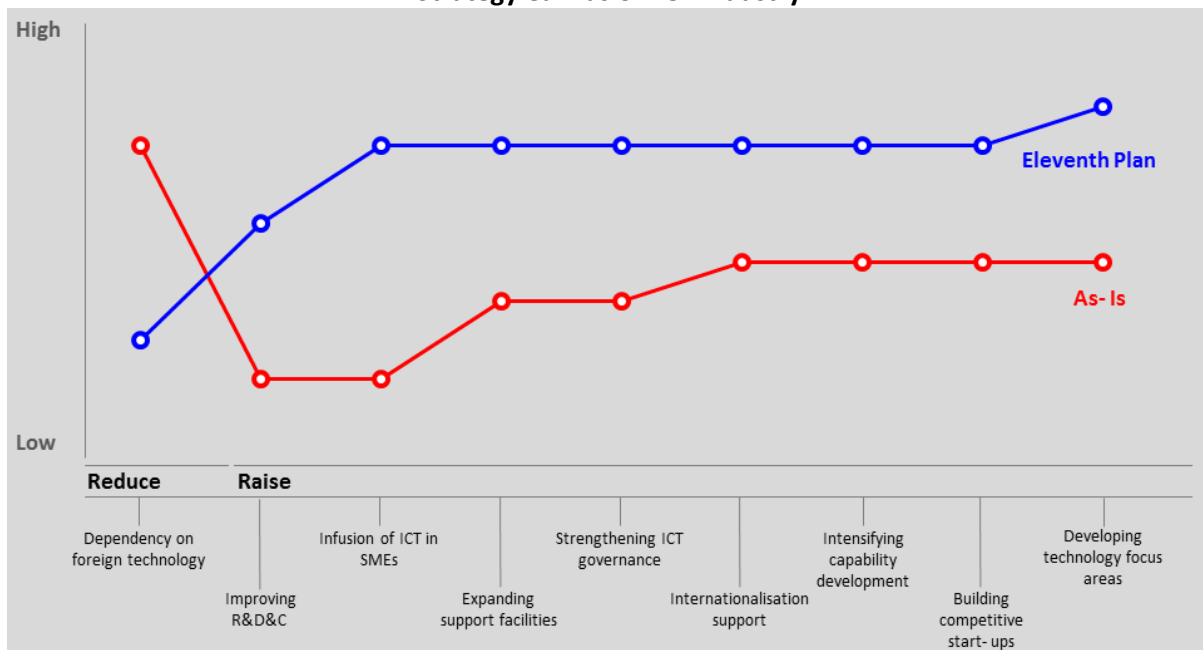
IV. ELEVENTH MALAYSIA PLAN, 2016-2020: WAY FORWARD

15.38 Malaysia's vision of being an advanced economy and inclusive nation will be built among others, upon a knowledgeable and skilled society supported by a robust, vibrant and sustainable ICT industry. This transformation will hinge on mindset and behaviour change of businesses, citizens and the public service towards a data driven culture. This calls for the industry to further capitalise on the Internet for revenue generation and to nurture a high-knowledge and skilled workforce. In this regard, efforts will be strengthened to drive ICT in the knowledge economy through four main strategies, namely re-energising ICT industry, ensuring supply of high quality ICT human capital, improving digital infrastructure and pursuing digital inclusion. These will increase productivity through innovation to enhance competitiveness and wealth creation.

Re-energising ICT Industry

15.39 In order to achieve an 18.2% or approximately RM324.9 billion ICT contribution to GDP by the year 2020, initiatives to be undertaken during the Plan period include the development of technology focus areas, infusion of ICT in other sectors and building the support ecosystem. It is targeted that the ICT industry registers an annual average growth rate of 10.7% and Malaysia to maintain its position as a net exporter of ICT products and services valued at RM56.8 billion in 2020. To ensure the shift from supply to demand, consumption to production and low to high knowledge-add is sustainable, nine strategies have been identified, as shown in *Exhibit 15-9*.

Exhibit 15-9
Strategy Canvas on ICT Industry



Developing ICT Industry Technology Focus Areas

15.40 Capabilities and niches in selected technology focus areas will be built in namely, digital content, software development and testing, Internet of Things (IoT), data centres and cloud services, cyber security and big data analytics (BDA). This will allow the nation to be competitive, move from a technology consumer to a technology producer, build the local industry as well as enable job creation and export opportunities.

Digital Content

15.41 In order to increase the contribution of content and media subsector to the economy, focus will be given to improve the quality of local digital content and the creation of IPs that can be monetised on multi-platforms. The number of digital content IPs will be increased and exploited as collateral against loan financing, product line expansion as well as licensing and merchandising. Global technology trends towards digital distribution and adoption of new business models will further strengthen the export potential of local digital content.

15.42 Efforts will be undertaken to spur the growth of animation, gaming, simulation and virtual reality in education, entertainment and healthcare. These include attracting anchor companies to serve as industry drivers, building local capacity and capability as well as raising global market access. In addition, the gaming industry will spin off games publishing platforms as a new industry.

15.43 The creative industry funding framework will be enhanced to encourage a pro-business environment for content creation, where the private sector will continue to be incentivised to co-fund production of content. In addition, to maximise returns on funding, two mechanisms, pre-sales and completion bond, will be introduced as criteria of eligibility for production funds. With pre-sales, funds will only be given to recipients with potential buyers while completion bond will allow unfinished production to be passed on to another content producer for completion.

15.44 *Perbadanan Kemajuan Filem Nasional* (FINAS) will intensify efforts to ensure Malaysia becomes a signatory to co-production treaties to develop new markets for made-in-Malaysia content. This will result in reciprocal benefits to the signatories in which any content produced is deemed to be of origin from the signatory countries. The treaty will enable wider market access, better quality of local production for export, enhanced collaboration with foreign partners as well as greater financing options.

15.45 Content Malaysia, an entity under FINAS, will champion content development initiatives as a one-stop reference centre and provide consultancy services to the industry and investors. It will extend its services to the private sector, such as MyCreative Ventures, to maximise its utilisation. Hence, any overlap in funding and functions related to content development will be eliminated.

Software Development and Testing

15.46 Software development will be intensified in the areas of Islamic banking, healthcare, logistics, halal industry and education. Market access programmes will be enhanced to match potential local companies with global demand or technology partners. In addition, the Global Acceleration Innovation Network programme will be implemented to move high performing software development companies to the next level. This includes catalysing the development of the mobile applications industry in tandem with the demand for ICT products and services created through the growth of mobile Internet.

15.47 To complement software development, software testing will be developed as a new source of economic growth, through the Malaysia Software Testing Hub initiative, as shown in *Box 15-1*. This will enable local players to drive revenue growth and achieve market leadership within the industry. To be a preferred software testing destination, Malaysia will

promote higher value software testing services at lower cost, develop a local market, raise local flagship companies and build the talent pool. With the aspiration to capture 5% of global revenue of the software testing market, it is expected that 30,000 testers will be certified by 2020.

Box 15-1

The Malaysia Software Testing Hub

In realising the potential of software testing as a new source of economic growth, the Malaysia Software Testing Hub (MSTH) programme was initiated in 2009 to make Malaysia a preferred destination for software testing. The MSTH programme comprises four components, which are:

Q-Capability Development (Q-Cap)

Q-Cap focuses on training and certification to produce internationally certified software testers for the industry. The Q-Cap syllabi are recognised by the International Software Testing Qualifications Board (ISTQB) and the International Requirements Engineering Board (IREB). Q-Cap offers certifications, namely, Certified Tester Foundation Level (CTFL), Certified Tester Advance Level (CTAL) and Certified Professional for Requirements Engineering (CPRE). It is open to graduates from technical fields, such as IT, engineering and sciences as well as companies that wish to train and certify their in-house software testers. In order to accelerate the creation of a critical mass of software testers, Q-Cap was expanded to the universities under the Academic Outreach programme to train and certify undergraduates and lecturers with CTFL and CPRE.

Q-Industry Development

Q-Industry Development aims to raise awareness about software testing and the availability of training and accreditation. Efforts in promoting software testing include the annual Software Testing Conference (SOFTEC) and Software Testing Straight Talk (STST). SOFTEC managed to attract renowned speakers in the software testing arena and was attended by local and foreign participants from the industry. Under this programme, a cluster of software testing companies will be nurtured through customised development programmes to enable the supply of quality software testing service providers. STST complements SOFTEC by providing an avenue for local industry, public sector and academia to disseminate knowledge and promote uptake of software testing. This also enables the interaction between demand for and supply of software testing services.

Q-Laboratory (Q-Lab)

Q-Lab is a software testing facility built to assist in the development of Malaysia's professional testing community. It is furnished with state-of-the-art test tools and test equipment. In 2013, Q-Lab received Level 5, which is the highest level in the Testing Model Maturity and Integration (TMMi) in recognition of its advanced testing capability and processes. Q-Lab functions as a testing centre for local and international companies to outsource their software testing requirements. In addition, Q-Lab also collaborates with local universities, where students are given the opportunity to use the testing tools and equipment available in the lab.

Q-Portal

Q-Portal is the gateway to connect professional software testers to the industry. Q-Portal connects people to services or products related to software testing companies, where companies can advertise job vacancies, products, services and their overall software testing needs. It also provides updates on industry events, training sessions and seminars. In addition, training syllabus and sample examination questions are also available.

Internet of Things

15.48 International Data Corporation (IDC) estimated the worldwide IoT market to grow to more than RM10 trillion while the National IoT Strategic Framework estimated the local market size to be RM9.8 billion in 2020. Hence, an IoT industry will be developed to tap into the global and domestic markets by enhancing the regulatory framework to cater for its implementation, strengthening R&D, developing standards, upgrading infrastructure and leveraging on existing initiatives. Technopreneur capabilities in IoT applications and services will be strengthened through various SME development and incubation programmes. The development of the IoT industry will focus on healthcare, logistics, agriculture, smart cities, halal industry and advanced manufacturing.

Data Centres and Cloud Services

15.49 Efforts will be made to attract foreign data centres while expanding the growth of local data centres. In addition, initiatives will be undertaken to formulate data centre friendly guidelines, including ensuring electricity tariffs and telecommunication costs are competitive.

15.50 Malaysia will attract iconic global cloud service providers while building clusters of domestic cloud service companies around them. Cloud services will also complement the growth of data centres to increase the contribution of the ICT industry to the economy. In addition, more software developers will be incentivised to offer their services on the cloud while awareness programmes to SMEs will be continued to increase cloud adoption.

Cyber Security

15.51 The cyber security industry will be further developed through cyber security certification programmes. These programmes include the certification of all critical national information infrastructure in accordance with Information Security Management System ISO/IEC 27001 as well as certification of local products and services in compliance with the Common Criteria Recognition Arrangement.

15.52 The development of home-grown cyber security products and services will be emphasised to enable self-reliance. In this respect, Malaysia needs to acquire its own capabilities in cryptography to protect online information, hence reducing reliance on foreign products. Coordination and prioritisation of cyber security R&D activities will be enhanced to spur the development and commercialisation of cyber security related IPs. The R&D activities will cover both the technical aspects of cyber security as well as the responsible use of the Internet.

Big Data Analytics

15.53 With the tremendous increase of data generation due to digitisation, BDA will be crucial for organisations in both the public and private sectors to create value for effective decision-making, productivity growth and innovation. MDeC together with MAMPU, MIMOS and industry partners will accelerate the adoption of BDA through the implementation of the National BDA framework. Three initiatives under the framework are spurring demand for BDA in all sectors, catalysing adoption of BDA in the public sector and building the BDA industry.

15.54 To support these initiatives, data science programmes will be introduced through collaboration between local and foreign universities as well as data science institutes. In addition, upskilling of the present work force will be introduced and intensified through certification programmes. This will be complemented by the National Open Data initiative, which will spur the creation of innovative products and services. MDeC will facilitate collaboration between local SMEs and global technology partners to spin off multiple centres of excellence (CoEs) in different industries to produce market-driven solutions and start-ups.

Infusion of ICT in Small and Medium Enterprises

15.55 MDeC will collaborate with SMECorp in enabling the SMEs to leverage ICT towards moving their businesses up the value chain. This will be done by increasing ICT adoption among SMEs, promoting cloud services, enabling e-payment, accelerating international trade through e-commerce and maximising the use of fulfilment hubs. Through the Shared Cloud Enterprise Services initiative, SMEs will be facilitated with software solutions to assist them in their businesses.

15.56 The usage of ICT-based applications will be encouraged to improve the productivity of SMEs. MDeC and SMECorp will expand their outreach programme to address issues of ICT uptake by SMEs, which are, trust in digital platforms and perception that long-term gains will not compensate for their high initial investments. The increased use of ICT among SMEs will result in improved efficiency and decreased dependency on unskilled foreign labour.

This will also help SMEs to move into higher value-added activities, thus expanding their market potential.

15.57 Programmes to enable e-payment among SMEs and MEs will be further strengthened by the recruitment of additional third party acquirers to receive and handle sales proceeds, including processing payments directly to SMEs and MEs. Through the introduction of low cost point-of-sales terminals, SMEs and MEs will be able to transact electronically, hence widening their outreach of customers.

15.58 Efforts to boost the development of e-commerce will include formulating guidelines and instituting mechanisms to address dispute resolutions. MDeC will also offer on-boarding programmes for SMEs, which include technical and financial assistance to develop platforms for online businesses. MDeC will continue to increase the effectiveness of existing fulfilment hubs by attracting global e-market places to utilise them. In addition, e-commerce traders will be incentivised to outsource their fulfilment activities to these hubs to enhance their productivity. Furthermore, the implementation of the eTrade initiative will be intensified to boost SME exports by leveraging global e-commerce networks.

Building the Support Ecosystem

15.59 Building competitive start-ups, intensifying continuous capability development, promoting internationalisation, expanding support facilities for the ICT industry, improving R&D&C and strengthening ICT governance will reinforce the ecosystem of the ICT industry. This is to ensure the shift from supply to demand, consumption to production and low to high knowledge-add is sustainable and that the nation continues to be a net exporter of ICT products and services.

Building Competitive Start-ups

15.60 Special focus will be given to nurture and groom start-ups through enhanced collaboration between MDeC and SMECorp. Through its Digital Entrepreneur programme, MDeC will match local ICT start-ups with potential local and global funders as well as technology partners to further exploit on ideas and innovative products. Besides traditional funding sources, crowdfunding will be explored to encourage private sector and community involvement in developing the ICT industry. In addition, the Malaysian Global Innovation and Creativity Centre (MaGIC), established in 2013, will continue to provide training, mentoring and incubation of ICT entrepreneurs.

Intensifying Continuous Capability Development

15.61 Emphasis will be given to develop capabilities to support the value chain of the identified technology focus areas. The Global Business Services (GBS) initiative will offer high value-added shared services and outsourcing in areas such as finance and accounting, human resources, procurement as well as engineering design and services. This will require a shift from transactional-based business processes to knowledge-based services requiring domain expertise. In moving up this value chain, focus will be given to increase foreign investment and nurture local ICT companies. Through this initiative, the GBS footprint in MSC Malaysia is targeted to double in terms of jobs, exports, revenue and investments. The GBS will also focus on expanding the talent pool through crowdsourcing and embedding shared services and outsourcing related curriculum in universities.

15.62 In the area of digital content, capacity building programmes will be enhanced to produce talent and professionals in the content and media subsector. In addition, to support IP development and management, especially in the software development and digital content industry, capacity building of professionals such as legal practitioners, will be given priority in the Eleventh Plan. In the areas of cyber security and software testing, efforts will be intensified to certify professionals, companies and testing facilities according to global standards. The pool of certified professionals will be increased by the development of localised training modules and programmes through engagement among industry, university as well as local and foreign certification bodies.

Promoting Internationalisation

15.63 The Malaysia External Trade Development Corporation (MATRADE) will facilitate the formation of partnerships of multi-national companies (MNCs), local companies and industry associations to penetrate global markets. In order to be eligible as partners, local companies need to ensure export readiness through product certification and possess good track records.

15.64 Conditions for FDI incentives will be tailored to promote clustering of local ICT companies around anchor FDIs to improve quality of services and products. Performance-based incentives will also be introduced to foster high knowledge-add investments in ICT.

Expanding Support Facilities for ICT Industry

15.65 The digital economy relies on the availability of quality telecommunications infrastructure and data centres. It will be further propelled with increased international connectivity and the roll-out of the next phase of high-speed broadband. The growth in local content and services will be further accelerated with the increased availability of data centres and cloud services. This will also result in reduced demand of outgoing traffic, hence lowering broadband subscription costs. Shared testing facilities will be further expanded to pilot the implementation of solutions for the ICT industry.

Improving Research, Development and Commercialisation

15.66 In order to improve R&D&C, open innovation platforms will be promoted for greater collaboration between public research institutes, universities and the ICT industry. These platforms enable application developers improve speed-to-market of research outputs due to faster product prototyping and development, and enhance product functionality by leveraging credible technology building blocks. They also provide better potential for commercialisation of research as a result of stronger alignment with market needs.

15.67 A study will be conducted to evaluate the impact of IP-related initiatives undertaken thus far, to better understand persistent IP issues and to further accelerate monetisation of IP assets among SMEs. Focus will be given to matters pertaining to awareness, legislation, financial and human resources in IP management.

15.68 The Research Incentive Scheme for Enterprise (RISE), developed to enhance technology absorption and allow local companies to hire experienced researchers to be based locally at a competitive cost, will be expanded. This programme will continue to attract and incentivise technology leaders to set up R&D centres, focusing on high-value work in technology focus areas.

15.69 The collaboration between MNCs and local SMEs in the development of embedded systems resulted in 3,250 jobs created and RM297 million private investments in 2013. Leveraging this success, more joint-collaborative R&D and design and development with MNCs, large local companies and SMEs will be established. This will also create opportunities for ICT manufacturing workforce to be reskilled and upskilled.

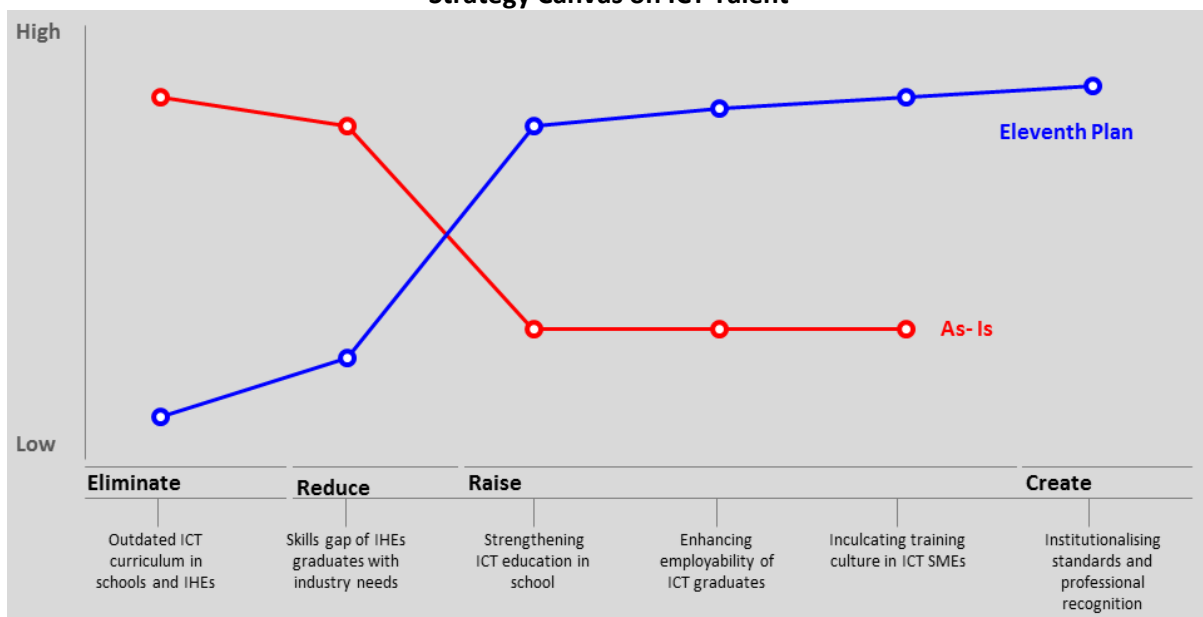
Strengthening ICT Governance

15.70 All agencies related to the development of the ICT industry will be aligned under the Ministry of Communications and Multimedia and its role will include oversight of R&D&C and cyber security. This will result in cohesive planning, coordination and monitoring of the ICT industry.

Developing High Quality ICT Talent

15.71 The supply of human capital with specialised skills and capabilities is required to support the potential of the ICT industry. As such, six strategies have been identified, as shown in *Exhibit 15-10*. It is targeted that towards the end of the Plan period, the GVA per employee in the ICT industry will increase to RM304,100.

Exhibit 15-10
Strategy Canvas on ICT Talent



Strengthening ICT Education in Schools

15.72 In line with the aspiration of the Malaysia Education Blueprint 2013-2025 to increase the enrolment of students in Science, Technology, Engineering and Mathematics, ICT will be offered as a compulsory subject at lower secondary level and as an elective subject at upper secondary level. Outdated aspects of the curriculum will be eliminated and computational thinking will be integrated into the learning modules in schools. This includes higher order thinking skills, algorithmic thinking, creativity, innovation and problem solving skills. In line with this, the ICT curriculum will be strengthened to cover areas such as programming languages, hardware and software design, databases and information retrieval. This will

provide preliminary background knowledge to students prior to enrolling in higher education.

Enhancing Employability of ICT Graduates

15.73 To increase employability, the Ministry of Education (MOE) will collaborate with MDeC to reduce skill gaps among ICT graduates. This will ensure graduates produced by IHEs are in line with the dynamism of the ICT industry. Efforts to enhance employability will be undertaken through intensifying industry-academia collaboration, introducing a structured apprenticeship programme and promoting scholarship programmes in niche areas:

Intensifying Industry-Academia Collaboration

15.74 Industry-academia collaboration in ICT curriculum development and integration of industry certification in ICT courses will be intensified. The *Majlis Dekan* ICT will spearhead and monitor the implementation of the industry-academia collaboration with MDeC as the industry partner. In addition, the fundamentals in the ICT curriculum will be strengthened and aligned with certified curriculum which is credible and recognised by professional bodies. Collaboration between the industry and academia will be further improved to focus on demand-driven R&D for industry solutions. The industry will be encouraged to provide facilities for IHEs to support teaching and hands-on training.

Introducing Structured Apprenticeship Programme

15.75 A structured apprenticeship programme will be introduced for all ICT students beginning from the second year. This will be carried out on a pilot basis at ICT faculties in research universities. MDeC will institutionalise a mechanism to enable the industry to provide information on human capital needs based on project requirements. This will be matched with relevant apprenticeship programmes at universities.

Promoting Scholarship Programmes in Niche ICT Areas

15.76 Scholarship programmes in niche areas such as software development and testing, data science and cyber security will be offered to produce the necessary pool of talent to support the public sector and the ICT industry.

Inculcating Training Culture in ICT Small and Medium Enterprises

15.77 To encourage training culture in ICT SMEs, the current SME Competitiveness Rating for Enhancement Plus (SCORE+) programme conducted by MDeC will be expanded to all ICT companies. At the same time, the certification and upskilling programmes for existing workforce through professional certification will be increased to meet higher demand from the industry. Local ICT companies must be cognisant of the importance of training and development to be competitive globally and equip themselves with advanced knowledge and skills coupled with credible industry certification.

Institutionalising Standards and Professional Recognition

15.78 To ensure ICT professional competencies are on par with global standards, an independent governance body will be considered. It will be responsible to enhance the value of the profession, raise professional standards, review qualifications, provide assurance of quality and serve as the central repository of ICT professionals. In addition, through the governance body, Malaysia will be a signatory to the Seoul Accord, as shown in *Box 15-2*. This will ensure ICT qualifications in Malaysia are accredited according to standards set by the Accord, which establishes an internationally recognised level of quality of programmes and graduates.

Box 15-2

The Seoul Accord

The Seoul Accord is a multilateral agreement among agencies responsible for the accreditation or recognition of tertiary-level computing and IT-related qualifications. Member countries or signatories are committed to the development and recognition of good practice in computing and IT-related education. Established in 2008, the signatories as of 2013 are:

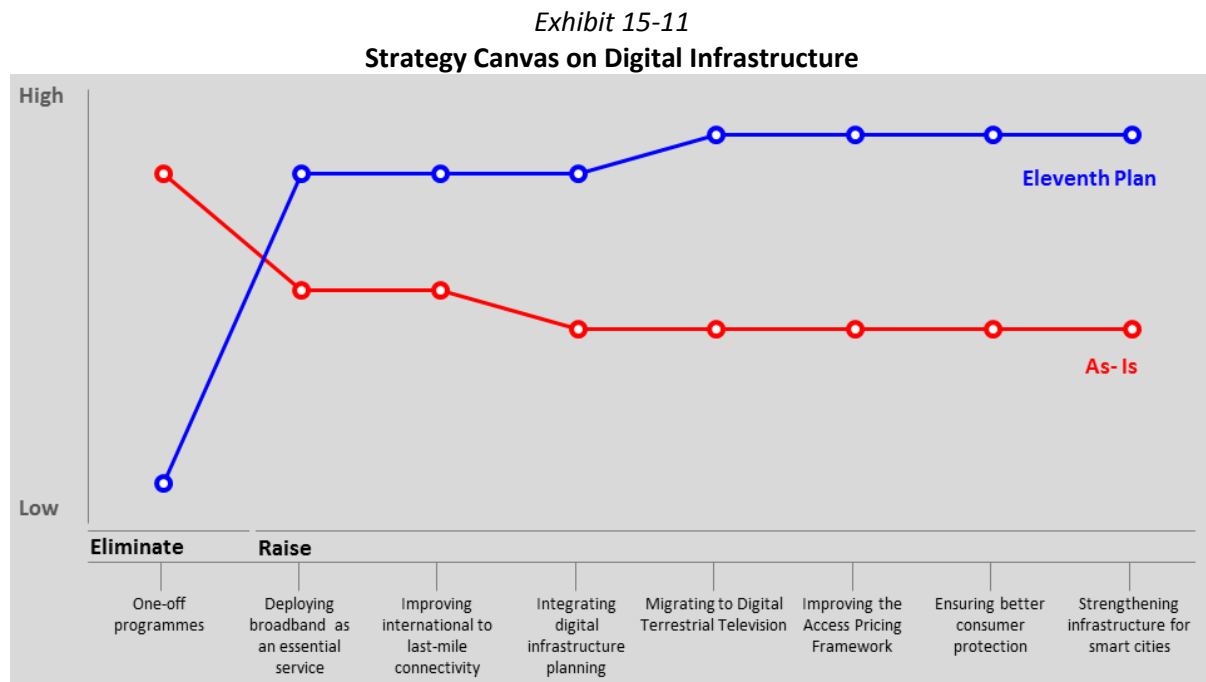
- Australian Computer Society
- Canadian Information Processing Society
- Institute of Engineering Education Taiwan
- The Hong Kong Institution of Engineers
- Japan Accreditation Board for Engineering Education
- Accreditation Board for Engineering Education of Korea
- British Computer Society
- Accreditation Board for Engineering and Technology (United States)

Graduates of accredited programmes in any of the signatory countries are recognised by the other signatory countries as having met the academic requirements as IT professionals. Each signatory will ensure that any bodies responsible for registering or licensing computing and IT-related professionals to practice in its country accept the equivalence of academic computing and IT-related programmes accredited by the signatories.

Source: www.seoulaccord.com, December 2014

Improving Digital Infrastructure

15.79 The capacity and coverage of digital infrastructure will be further improved to support socio-economic growth, whereby focus will be given to efficiency and affordability of services. Eight strategies have been identified, as shown in *Exhibit 15-11*.



Eliminating One-Off Programmes

15.80 Existing non-viable one-off programmes such as the supply of devices and infrastructure will be discontinued. Focus will be given to digital infrastructure programmes, which contribute to socio-economic growth. Programmes will be crafted to ensure long-term benefits to the target groups.

Deploying Broadband as an Essential Service

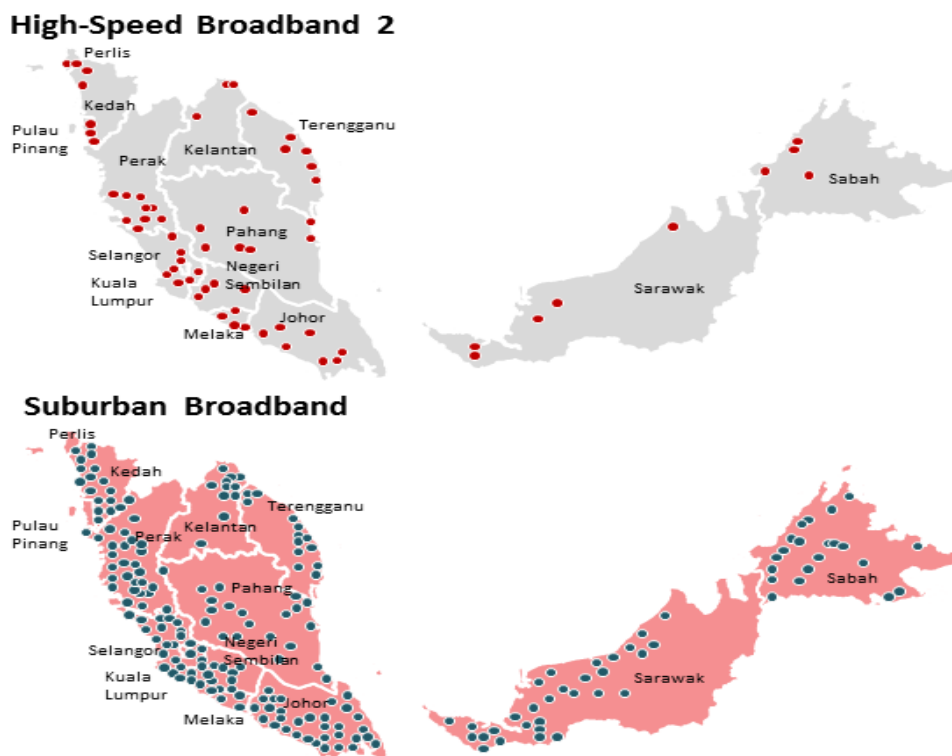
15.81 An amendment in 2011, to the Uniform Building By-Laws (UBBL), 1984 stipulates that communication installation is one of the essential services similar to water and electricity under the certification for completion and compliance of buildings. This requires developers to provide ready-to-use communication infrastructure for new housing and commercial developments. The eight states, namely Johor, Kelantan, Melaka, Pahang, Perak, Perlis, Selangor and Terengganu, which have gazetted the new UBBL requirements, will be fibre-ready by 2018. The remaining states will be encouraged to comply with the UBBL requirements.

Improving International to Last-Mile Connectivity

15.82 Measures will be undertaken to improve the international to last-mile bandwidth capacity to meet the expected demand of 41Tbps during the Plan period. These include a review of the regulatory framework and the promotion of a conducive environment to encourage international submarine cables to land in Malaysia. Efforts will also be undertaken to enhance connectivity through deployment of the High Speed Broadband 2 (HSBB2) and Sub-Urban Broadband (SUBB) for a more holistic coverage in all state capitals and selected high impact growth areas. The HSBB2 initiative will enable connectivity of 100Mbps to all households in state capitals and selected high-impact growth areas. Meanwhile, through the SUBB initiative, it is envisaged that up to 20Mbps broadband access will be available to 50% of households in sub-urban and rural areas by 2020. The HSBB2 and SUBB coverage areas are as shown in *Exhibit 15-12*.

Exhibit 15-12

HSBB2 and SUBB Coverage Areas in 2020



Source: Malaysian Communications and Multimedia Commission

15.83 For areas that cannot be connected via fibre, next best technologies will be deployed, including ADSL and high-speed wireless broadband. The end-to-end infrastructure deployment will enable users and industry demands to be met during the Plan period. These initiatives will result in 95% coverage of populated areas by 2020.

Integrating Digital Infrastructure Planning

15.84 Collaboration among KKMM, the Malaysian Communications and Multimedia Commission (MCMC), state governments and the local authorities will be strengthened for the planning and deployment of digital infrastructure. Focus will be given to encourage the sharing of infrastructure and smooth deployment of broadband at standard and reduced cost. This will ensure the broadband supply meets both federal and state requirements. In addition, the State Structure Plans as well as the Local and Special Area Plans will incorporate digital infrastructure coverage.

Migrating to Digital Terrestrial Television

15.85 The second phase of the Digital Terrestrial Television (DTT) service will be implemented in 2016-2017, covering 46 areas nationwide including 24 areas in Sabah and Sarawak. In addition to TV and Radio services, DTT offers new value-added services, which are Connected Services such as Catch-Up TV, video-on-demand and application-on-demand; TV-based Commerce including e-shopping, transaction and payment gateway and delivery tracking; and other services such as social media TV, ratings research and analytics, and e-learning. These services will be made available after the completion of the Analogue Switch Off (ASO), which will commence by regions in 2016 and completed in 2017. The DTT services are as shown in *Exhibit 15-13*. The migration to DTT will allow more efficient use of the spectrum. This will provide an opportunity to meet the demand for new wireless communication services and enable broadcasters to expand their services to the underserved communities. This will also spur the content and application development, contributing to the growth of the content and software solutions industry.

*Exhibit 15-13***Digital Terrestrial Television Services**

TV Services	Radio Services	Connected Services**	T-Commerce & Applications Services**	Soft Services**
<ul style="list-style-type: none"> • Free Channels • Subscription • Limited time Subscription • Near Video-on-Demand • EPG* Advertising • 'Red Button' • Interactive Games • Digital Teletext • Multi-Lingual Subtitling • Multi-Lingual Audio • EPG* Schedule Data-Standard • Mosaic Channel • Classified Advertising Channel • Over-the-Air Download 	<ul style="list-style-type: none"> • Free Channels • Subscription • Podcast 	<ul style="list-style-type: none"> • Catch-Up TV • Video-on-Demand • Application-on-Demand • Online Games • Web TV • Multi-Screen Video • Video Contribution Network • EPG* Schedule Data-Enhanced • On-Screen Chat 	<ul style="list-style-type: none"> • E-Shopping • Ordering Services • Transaction & Payment Gateway • Third Party Integration Management • Delivery Tracking 	<ul style="list-style-type: none"> • Hot Line • Ratings Research & Analytical Customer Relationship Management • E-Learning Application • Social Media TV • Voting • Subscriber Management System • Playout

Note: * Electronic Programme Guide

**Services after the completion of Analogue Switch-Off

Source: Malaysian Communications and Multimedia Commission

Improving the Access Pricing Framework

15.86 The Access Pricing Framework (APF) will be improved to facilitate competition and infrastructure sharing among service providers. This is expected to reduce the fixed broadband cost from 2.42% of GNI per capita in 2013 to 1% in 2020, in line with the national target. This will increase affordability and improve broadband outreach to the underserved communities. The APF will be reviewed towards the end of 2015 and subsequently in 2017, where specific service pricing will be determined through a review and public inquiry process.

Ensuring Better Consumer Protection

15.87 The self-regulatory framework under the Communications and Multimedia Act 1998 will be strengthened to enhance consumer protection and promote industry responsiveness. These improvements will provide consumers clear and specific criteria to measure Quality of Service (QoS) of service providers, and protect their rights in cases where minimal acceptable standards are not met. Services such as public cellular service, dial-up internet access, content applications, public payphone, digital leased line service and broadband access will be included. In addition, the monitoring and compliance framework

will also be strengthened to impose stiffer penalties to service providers for non-compliance.

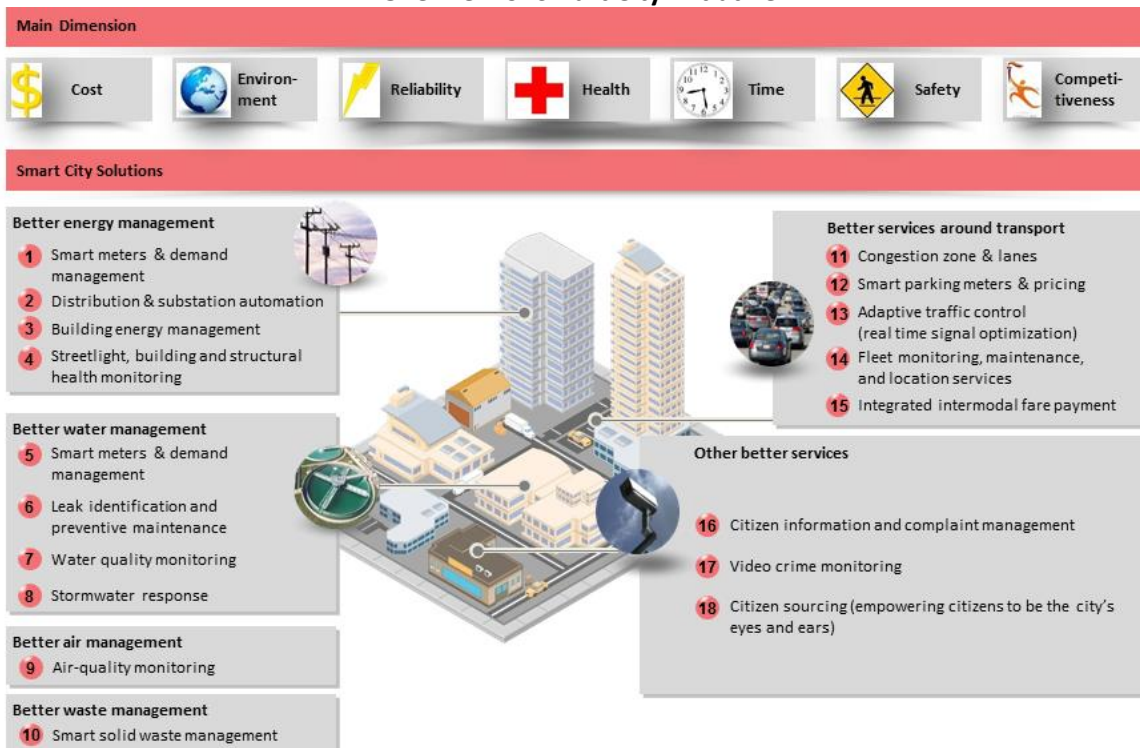
15.88 In addition, a Star Rating System for telcos will be introduced to assist consumers in making informed choices about service providers. This will be based on MCMC’s Extensive End-Point Service Availability Testing, a mobile network quality measurement which is conducted twice a year to benchmark the QoS for mobile services. This effort is to keep consumers informed and encourage mobile operators to improve their networks and services.

15.89 The General Consumer Code (GCC) will be reviewed to provide model procedures for service providers on reasonably meeting consumer requirements, handling consumer complaints, protecting consumer information and promoting a high level of consumer confidence in service delivery from the industry.

Strengthening Infrastructure for Smart Cities

15.90 As more Malaysians live in urban areas, cities are starting to face pain points such as congestion, pollution and inefficient deployment of urban services. Smart cities is a next generation approach to urban management with solutions that address these issues and improve quality of life of urban dwellers as shown in *Exhibit 15-14*.

Exhibit 15-14
Overview of Smart City Initiative



Source: Based on 'How to make a city great', McKinsey & Company Cities Special Initiative 2013

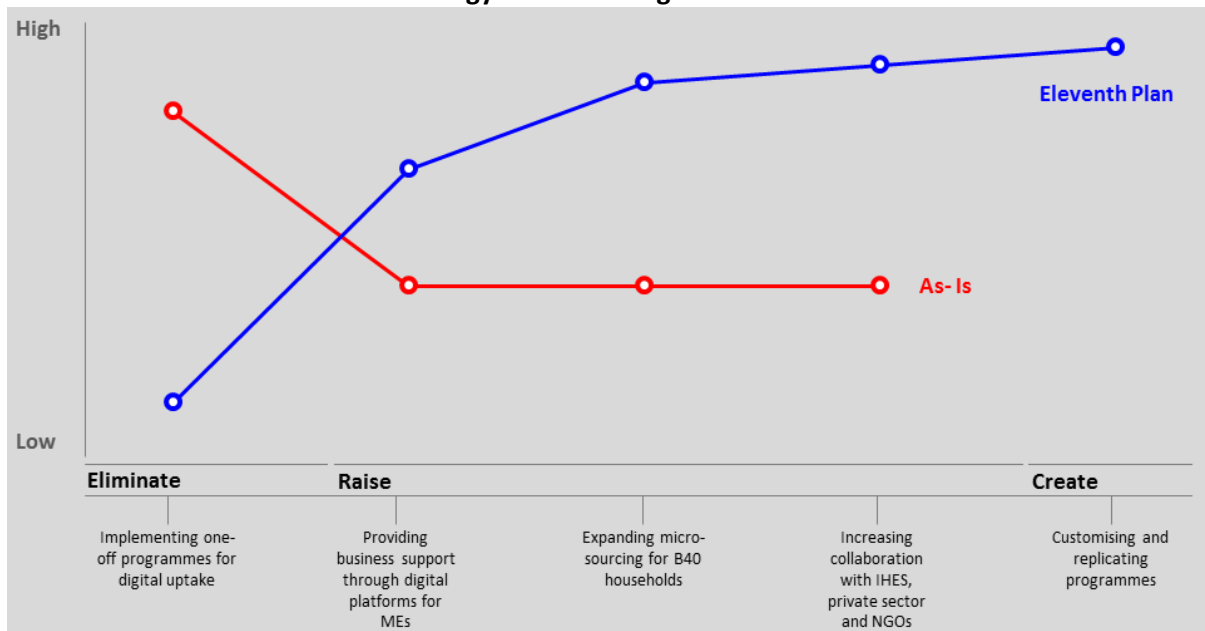
15.91 Efforts will be undertaken by the Ministry of Communications and Multimedia to promote smart living in cities. To enable connectivity and seamless integration of services, focus will be on developing pervasive broadband, sensor networks and applications. Data will also be made available on an open basis to support analytics and planning as well as create opportunities for open innovation by businesses and individuals.

15.92 During the Plan period, a framework will be developed to prioritise areas of focus in the development of smart cities. A fundamental initiative to realise the migration to smart cities will be the development of smart communities.

Pursuing Digital Inclusion

15.93 The strategies proposed to ensure digital inclusion consist of customisation and replication of programmes, provision of business support through digital platforms for MEs, micro-sourcing for the bottom 40% households income group (B40 households) as well as collaboration with IHEs, private sector and NGOs. Four strategies have been identified, as shown in *Exhibit 15-15*.

Exhibit 15-15
Strategy Canvas on Digital Inclusion



Customising and Replicating Programmes

15.94 Localised and customised content in areas such as agriculture, business, education and health, will be developed to help specific community segments to access information and add value in their daily lives. Such content will be delivered through technologies that are simple and easily accessible such as mobile platforms, which allow greater outreach to the population.

15.95 Successful programmes at the community level will be identified and replicated to benefit the wider B40 households, as shown in *Box 15-3*. Examples include initiatives under the 1Nita and GMBO programmes conducted at a number of 1Malaysia Internet Centres and Rural Internet Centres. Universities, as CoEs, will be tasked to identify critical success factors to enable replication to similar communities. Support mechanisms will be put in place to ensure success of the replication.

Box 15-3

Selected Digital Inclusion Initiatives

The digital inclusion initiative has uplifted the lives of many of those in the B40 group. An example is a couple with four children, who made their living by selling toys in the night market in Raub and Kuala Lipis in Pahang. In 2010, the couple were exposed to basic ICT lessons on the usage of Internet, email and social media through the Sungai Koyan Rural Internet Centre (RIC) in Kuala Lipis. In March 2012, the Sungai Koyan RIC organised a pastry and cake lesson, which became the turning point in the couple's lives. They started their own cake and pastry business, using Facebook as their main marketing tool. With orders from as far as Cameron Highlands in Pahang and Gua Musang in Kelantan, the couple manage to increase their monthly income to RM5,000. They have since shared their experiences and knowledge with the local community in Kuala Lipis by organising pastry and cake decoration lessons.

Many women were also empowered via the digital inclusion initiative. This includes a homemaker from Perak, who started making handmade chocolates as a hobby. In 2011, she was guided by 1Malaysia Internet Centre in Felda Sungai Klah, Sungkai in Perak to start up a blog and Facebook page as well as setting up an email account to be used as sales and marketing tools. She started with monthly earnings of RM200 to RM500, which has increased to RM2,000 to RM3,000 and plans to employ more workers if orders are high.

Another example involves a single mother who was determined to provide the best for her five children. She was making ends meet by selling traditional delicacies to nearby food stalls in Tanjung Malim in Perak. In 2013, she was introduced to the Tanjung Malim RIC, where she enrolled herself in basic web design lessons. The single mother uses her blog for marketing purposes and her monthly income has increased by more than double, from RM600 to RM1,400.



Source: Ministry of Communications and Multimedia & Malaysian Communications and Multimedia Commission

Providing Business Support through Digital Platforms for Micro Enterprises

15.96 MCMC and MDeC will introduce more programmes for MEs to convert their businesses from traditional to digital for better outreach and market access. This will be done by providing online platforms and a secure environment for MEs to build their confidence and trust in performing online transactions. MDeC and SMECorp will drive the adoption of e-payment methods for MEs by providing affordable terminals and readers, integrated with easy-to-use e-commerce solutions. As a result, more Malaysian MEs will be able to carry out cashless transactions, thereby increasing revenue through e-payment.

15.97 MCMC and MDeC will collaborate with SMECorp to provide business-matching services to local entrepreneurs through digital platforms in telecentres. This initiative will assist local entrepreneurs to forge strategic business partnerships and networking with large companies in various aspects, such as supply of products or inputs, processing and marketing. This partnership will help spur the development of their businesses contributing to an increase in their income.

Expanding Micro-sourcing for B40 Households

15.98 Micro-sourcing programmes will enable the community to perform micro-tasks, such as data entry, price watch and document translation, from their homes or telecentres. These programmes offer opportunities to generate additional income, especially for the B40 households. Agencies providing micro-sourcing programmes will collaborate with departments at the state level to promote their programmes. These programmes will be carried out after identifying and profiling communities. They will be given basic ICT training and awareness before being matched with relevant tasks via engagement with local enterprises. One such example is the eRezeki programme by MDeC, which is expected to train and match 400,000 potential B40 beneficiaries with micro-tasks from domestic and foreign sources by 2020. This will enable them to earn an average additional annual income of RM6,000. eRezeki will be rolled out across multiple digital work centres, such as the Urban Transformation Centres, Rural Transformation Centres, Rural Internet Centres, 1Malaysia Internet Centres and community colleges.

Increasing Collaboration with Institutes of Higher Education, Private Sector and Non-Governmental Organisations

15.99 The collaboration between ministries and universities as subject matter experts will be continued to address the needs of the community around them. Universities will be identified as CoEs for digital inclusion initiatives for communities within their vicinity and

they will help to develop programmes to uplift the socio-economic status of the local community.

15.100 Ministries and agencies will engage with the private sector, NGOs and community-based organisations to deliver effective digital opportunity initiatives through co-creation. It is envisaged that this collaboration will bring about programmes that are more relevant to the needs of the community. Thus, the community will be empowered to deploy, manage and operate the programmes to ensure sustainability.

V. CONCLUSION

15.101 The Eleventh Plan emphasises on driving ICT in the knowledge economy by re-energising the ICT industry from supply- to demand-driven, consumption to production and low knowledge- to high knowledge-add. Efforts will also be undertaken to enculturate R&D, develop high quality ICT talent, improve digital infrastructure and pursue digital inclusion. These strategies will give Malaysia a competitive edge in the global landscape through increased innovation and productivity, while catalysing the achievement of an advanced economy and inclusive nation.