

PUBLIC CONSULTATION ON 2014  
DIGITAL 21 STRATEGY SMARTER  
HONG KONG – SMARTER LIVING

*Ericsson submission*



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Re: Public Consultation on 2014 Digital 21 Strategy – Smarter Hong Kong – Smarter City

Ericsson welcomes the opportunity to contribute to the Office of the Hong Kong Government Chief Information Officer on the Digital 21 Strategy and is pleased to be able to participate in this very important discussion regarding ICT strategy in the context of economic growth, creativity, innovation, competitiveness and progress aka Digital Strategy Agenda. Some key Ericsson facts:

- Ericsson is the world's largest telecom infrastructure and services company with net sales revenue in 2012 amounting to SEK 227.8 billion (USD 33.8 billion). Today, more than 40 percent of the world's mobile traffic passes through networks provided by Ericsson. Ericsson is global market share leader in mobile network equipment (GSM/GPRS/EDGE, WCDMA/HSPA and LTE).
- Ericsson is the world's number one mobile network, real-time charging and billing, and telecom services provider. More than 1.4 billion consumers are charged and billed through Ericsson's solutions.
- Ericsson reached a milestone in May 2013, providing managed services to networks that serve more than 1 billion subscribers and Ericsson has signed more than 300 contracts worldwide.
- Ericsson is world market leader in Multi-screen TV solutions, IPTV and media compression technologies. Ericsson is the pioneer of LTE-Broadcasting technologies.
- As the world's leading technology provider, Ericsson plays a key role in the development of standards in fixed and mobile voice, data (IP) and TV/video technologies, and hence is a key actor in the digital economy by enabling and empowering innovation with technological means and solutions.
- Ericsson employs over 110,000 staff worldwide and over 20% or 24,000 of those are dedicated to R&D. Ericsson invested SEK 32.8 billion (USD 4.9 billion) in R&D in 2012. In Hong Kong, we employ over 300 professionals in the area management, engineering, sales and marketing.
- Ericsson holds over 33,000 patents, with 16 new patents sought each day and is the number one holder of GSM/GPRS/EDGE, WCDMA/HSPA and LTE essential patents.

# 1 INTRODUCTION

The world has undergone deep and profound transformative changes several times in the past, each bringing powerful clusters of dynamic new technologies, industries and products, along with their associated infrastructures. Once broadly accepted and adopted, new principles and tools become the natural basis for innovation, investment, the organization of activities, all bringing long-term improvements in economic development e.g. sustained and successive increases in the order of 10-30 times in the [standard of living](#) over a period of a century.

Ericsson believes that we are the brink of the next technological revolution. As ICT (Information Communication Technologies) and in particular mobile and digital technologies are expanding into more areas of society and business, opportunities for radical and disruptive innovations are emerging across industries, public services and private life. Some sectors have already to some extent been exposed to an ICT led [industry transformation](#), - what used to be well-defined industries with shared models of innovation, production, distribution and service offering are now all structurally changing. We can see how these industries are being reshaped and redefined by technological developments and changing customer needs while at the same time there is an ever increasing pressure from the society and markets resulting in expectations such as increased efficiency, new value creation and decreased environmental footprint.

Over the years ahead, further technological advances and improved performance of ICT infrastructure will bring fundamentally new ways for people to create, learn, produce and innovate leading to long term, sustainable and positive impact specifically on our economy and more generally on our world. Ericsson calls this new emerging society, of which we have only seen the beginning, the [Networked Society](#).

It is only when innovations are widely diffused and broadly adopted by people, businesses and public institutions that long term sustainable economic impact on overall economy and society can be achieved. Hence, **diffusion and adoption of innovations is what ultimately matters from an economic impact point of view**. This is why we need to realize that while technologies hold the promise to move frontiers, the particular institutional and public policy frameworks prevailing in a society assist or place constraints on how much and which opportunities can or cannot be realized.

Policy making on auto-pilot maintaining status-quo is not an option, since technological progress is shaped by society, **there is no deterministic built in design in technology that will “automatically” result in certain achievements of socio-economic benefits!** Hence, public policy will shape the size and duration of rewards that can be realized by the society from technology progress.

**Hong Kong’s policy makers’ possess the strategic capacity to manage technology led transformations in the most advantageous direction and further shape the competitiveness of Hong Kong and its capacity and ability of its economy to shift to higher productivity as well as to new value creating activities which in turn can generate higher levels of real wages and incomes.** Benefiting from transformational change requires sound public policy making that

shapes and determines the duration, cumulative strength and sustainability of socio-economic benefits that can be achieved in the Networked Society.

Increased use of ICT and broadband can enhance productivity in virtually all sectors of the economy and hence is a key input source to economic growth, job creation, and new business creation. Understanding the **transformative impact of general purpose technologies such as ICT and broadband** on overall economy is crucial. This sort of economic impact is more significant than for example the impact on economy from increased expenditure of consumer goods. This is because increased expenditures on **ICT can transform economies by putting them on to new and long lasting growth creating trajectories**. Some important economic effects caused by ICT and broadband that have been identified are<sup>1</sup>:

- Building knowledge society by improving human capital. Increased ICT intensity creates demand for higher skilled labor.
- Driver of multifactor productivity growth, which includes the impact of intangible investments and innovation such as organizational changes, new distribution and production processes, and new methods of doing business due to the increased adoption of ICT technology.
- For every 10 percentage point increase in broadband penetration the isolated economic effect on GDP growth is around 1% of GDP, with estimates varying between 0.5% - 2%.
- For every 1,000 additional broadband users, around 80 jobs are created, with estimates varying between 20 and 130.
- Doubling the average attained broadband speed for an economy increases GDP by 0.3% points.

Modeling Hong Kong's long term potential socio-economic benefit from ICT led transformation e.g. a Digital Agenda Strategy is imperative as such calculation will put light on the socio-economic benefits at stake and hence must be done. For example, within the EU 2020 Digital agenda, the economic impact from the digital single market DSM alone, was estimated to reach 4% of EU (27 countries) GDP by 2020. This corresponded to €500 billion or more than €1.000 for every citizen. DSM was found to have similar impact as the 1992 EU Single Market Programme.

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<sup>1</sup> The literature is enormous for some prominent examples see; Wired For Innovation – How IT is Reshaping the Economy, Brynjolfsson and Saunders; MIT 2010. The Economics of the Digital Society, Soete and Wheel, 2005. The Rise of the Network Society, Second Edition, Castells 2010. Boston Consulting Group, Socio-economic impact of allocating 700 MHz band to mobile in Asia Pacific, 2010, EPC/Copenhagen Economics – The Economic Impact of a European Digital Single Market, 2010. ADL, Socioeconomic impact of broadband network investments, 2010. See also <http://www.ericsson.com/news/1550083> Ericsson Press Release: "New study quantifies the impact of broadband speed on GDP".

## 2 REALIZING SOCIO-ECONOMIC BENEFITS FROM ICT

Ultimately, the essential long term public policy objective for any society is to increase the well-being of its citizens. **Increases in well-being are in principle achieved by improvements in; national competitiveness, through social progress, increases in material standard of living (e.g. economic growth) and quality of life.** In all these four dimensions technologies underpinning the Networked Society offer new and/or better avenues for policy makers to make a decisive difference. Therefore opportunities associated with the rising Networked Society must also be viewed in the context of how policy makers can make the most of this rising techno-paradigm to increase the long term societal well-being in general and drive long term economic growth in particular. As noted earlier, since the world has undergone, deep and profound transformative changes several times before, policy makers' central role in such circumstance has also been recognized before:

*“... if society does not determine technology, it can, mainly through the state, suffocate its development. Or alternatively, again mainly by state intervention, it can embark on an accelerated process of technological modernization able to change the fate of economy and social well-being in a few years”<sup>2</sup>.*

Mastering technology-led structural transformation from the society's most desired point of view comes with a number of public policy challenges. For a starter it is **imperative for policy makers to assume a long-term, perspective that aims to achieve broad, deep and long lasting, but yet from economic, environmental, societal and cultural point of view sustainable change.** Hereby, policy makers will not only have to cater for long term well-being of its current and future citizens but also focus on qualitative as well as quantitative policy objectives while striving to improve national competitiveness and encourage social progress.

A set of key ICT specific public policy issues (see figure1 below) associated with an [ICT-led transformation](#) require policy makers' attention. This is because they collectively have a substantial impact on ICT R&D investments (new knowledge) new value creation (innovation), roll out (diffusion) and use of (adoption) of ICT. **All in all, these policy issues shape both the cumulateness and sustainability of socio-economic benefits that ICT can realize in the Networked Society.** In practice, these policy topics impact the timing and scale of willingness to invest in ICT hardware, software and applications e.g. the long term supply of ICT related capabilities. But they also determine end users' (peoples, businesses and public services) ability to benefit from the use of ICT- as these policy issues define the speed, scope and intensity of economic opportunities and benefits available from ICT adoption.

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<sup>2</sup> Castells, The Rise of the Network Society, Second Edition, Wiley, 2010.

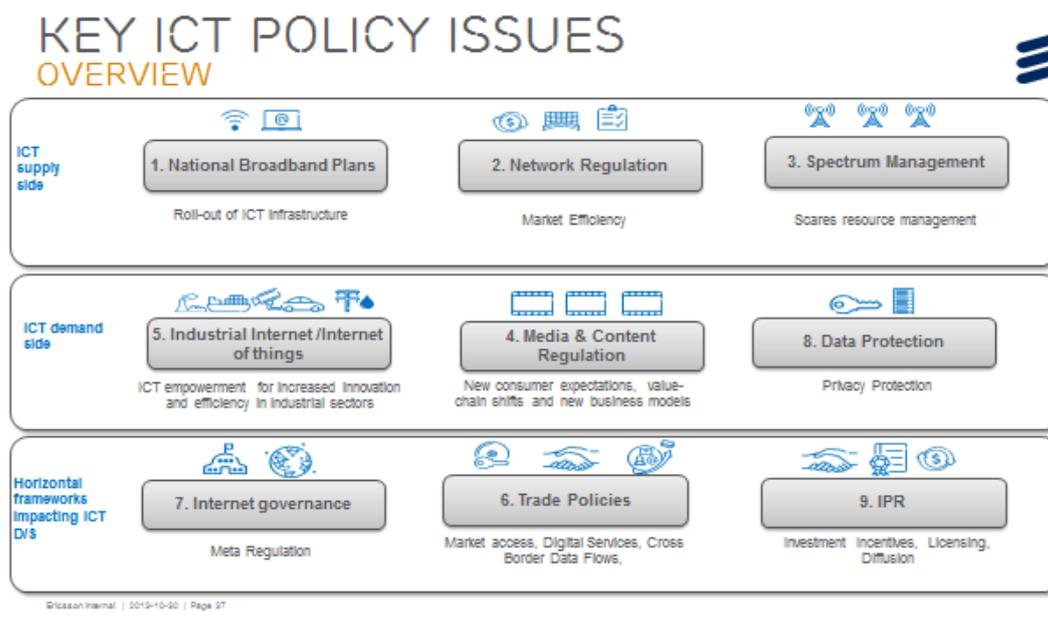


Figure 1 - Key ICT Policy Issues

### Brief description of ICT specific public policies:

#### Supply-side ICT policy issues

- **National Broadband (BB) Plans:** aiming to increase the roll out of BB infrastructure within a geography (region or a country) typically specifying an ambition in terms of expected BB service speeds, BB service roll-out time plan, and sometimes adoption. They may also include public funding and cooperation mechanisms.
- **Network Regulation:** aims to address technical (standards), market (incumbent, new entrant) and consumer (protection, pricing) specific conditions with the aim to improve market efficiency, public interest (universal access) and increase protection of consumers (contract terms).
- **Spectrum Management:** aims to effectively manage scarce resource and allocate new spectrum to highest value efficiently. It also includes global or regional coordination and harmonization of spectrum usage to decrease the cost of technology by increasing economies of scale.

#### Demand-side ICT policy issues

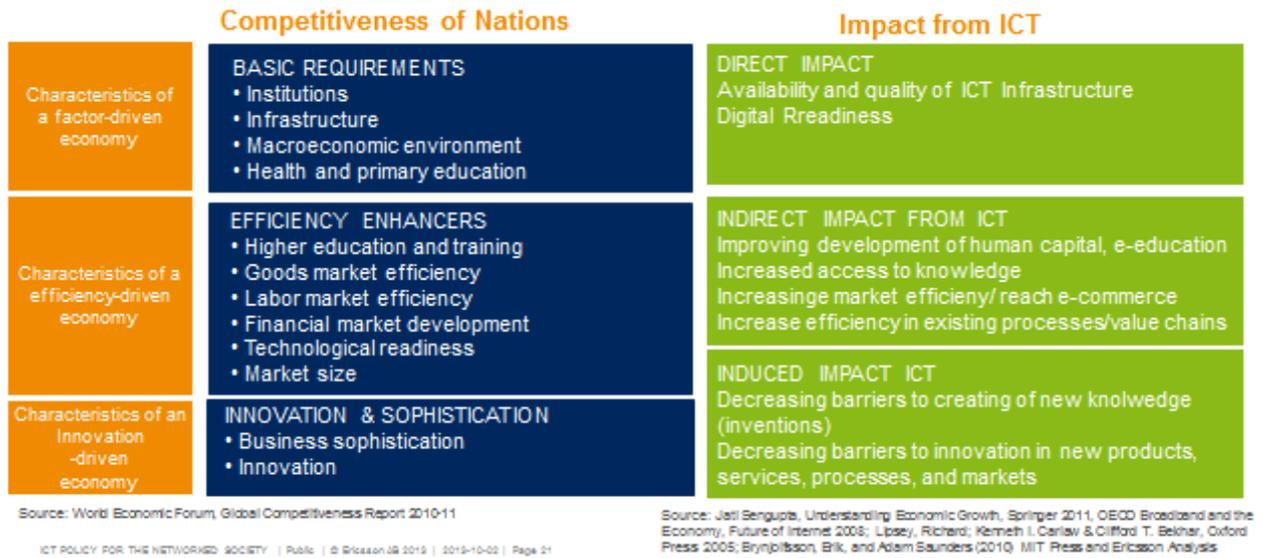
- **Industrial Internet / Internet of things (50B/M2M):** an umbrella term concerning emerging issue across a number of industrial sectors currently experiencing accelerated rate of digitization such as, health, electricity and energy. Increased use of ICT may result in changing relationships in existing value chains and in new business models upsetting the status quo.

- **Media/Content Regulation:** aims to regulate, increasingly in a multi-platform environment, media service providers and content providers obligations, roles and responsibilities while creating, aggregating and making available audiovisual content.
- **Data Protection:** aims to regulate data subjects' rights and data controllers and processors' obligations while collecting, processing, using and disseminating personal data. It also regulates the possibility to transfer data across national boundaries and roles and responsibilities in data processing value chain.

**Horizontal policy frameworks *impacting supply and demand side***

- **Internet Governance:** deals with meta-regulation that is the rules about governing the functioning of the internet e.g. qualification of governing stakeholders, organization, roles, responsibilities and mandate of governing functions.
- **Trade Policies:** aim to regulate trade (financial, products, services, technologies etc.) between countries and regional blocks. Trade policies can facilitate increased trade liberalization resulting in more trade, economic and social integration and transfer of technologies and innovations.
- **IPR:** Intellectual Property Rights is an umbrella term including trademarks, patents and copyrights. The regime aims to protect private interest and increase incentives in investments in new knowledge creation and innovations on one side and on the other stimulate diffusion of new knowledge and innovation, e.g. foster positive spillovers for greater societal benefit, thereby also limiting the private interest to appropriate some portion of the value attached to intellectual property investments.

Obviously the actual relevance of each policy topic in a given national context varies depending on, maturity, readiness and economic development etc. Somewhat simplified one way to contextualize the relative importance of each ICT policy issues is to relate them to factors driving national competitiveness and impact from ICT (Figure 2).



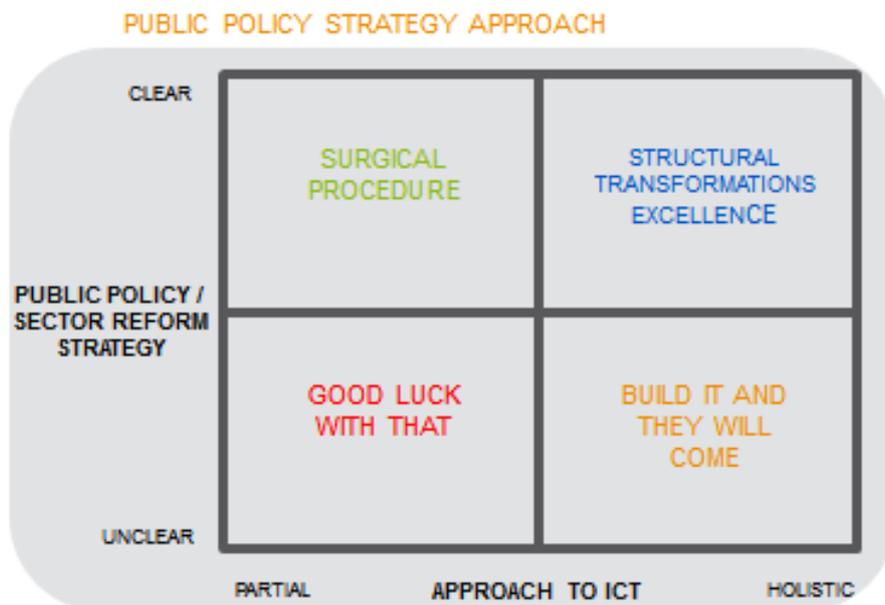
**Figure 2 - Competitiveness of Nations and Impact from ICT**

### 3 COMMENTS ON PROPOSALS IN THE CONSULTATION

#### 3.1 Define Clearer Agenda and Objectives

Ultimately, what is desired at the outset of Hong Kong’s Digital Agenda 21 Strategy is the specific public policy objectives that are being pursued e.g. formulation of desirability and justification e.g. **“Why” policy intervention is needed and thereafter “What” outcomes/objectives are being pursued.** Otherwise we may risk ending up in situations where ICT solutions are searching for “problems”.

*The Hong Kong’s Digital Agenda 21 should follow a sound Public Policy Strategy Approach (see figure 3) and have clearer agenda and objectives (see figure 4 & 5) for a cohesive policy reform before particular interventions and solutions are defined and chosen.*



Source: Ericsson Analysis inspired by, Transforming Government and Building the Information Society, Hanne 2010.

**Figure 3 - Public Policy Strategy Approach**

## POLICY OBJECTIVES FOR AN TRANSFORMATIONAL ICT POLICY



- › Sustained economic long term growth
- › Increase competitiveness of nations and industries
- › Create new jobs/business
- › Minimize exclusion and poverty, Increase equality
- › Increase public sector efficiency
- › Address climate change, environment and ageing population
- › Manage scarce resources more efficiently
- › Cope with increasing level of urbanization

This is not a destination but a continuous journey

Figure 4 - Examples of Policy Objectives related to ICT based Reform Strategies

Finally, just for illustrative purposes it is essential to draft a cohesive reform agenda as 'ICT cut horizontally through number of sectors, industries and policy frameworks boundaries', therefore lack of alignment and congruence will **limit both the cumulateness and sustainability of socio-economic benefits that ICT can realize.**

## COHESIVE REFORM STRATEGY ICT-LED TRANSFORMATIONAL REFORM AGENDA - ILLUSTRATIVE

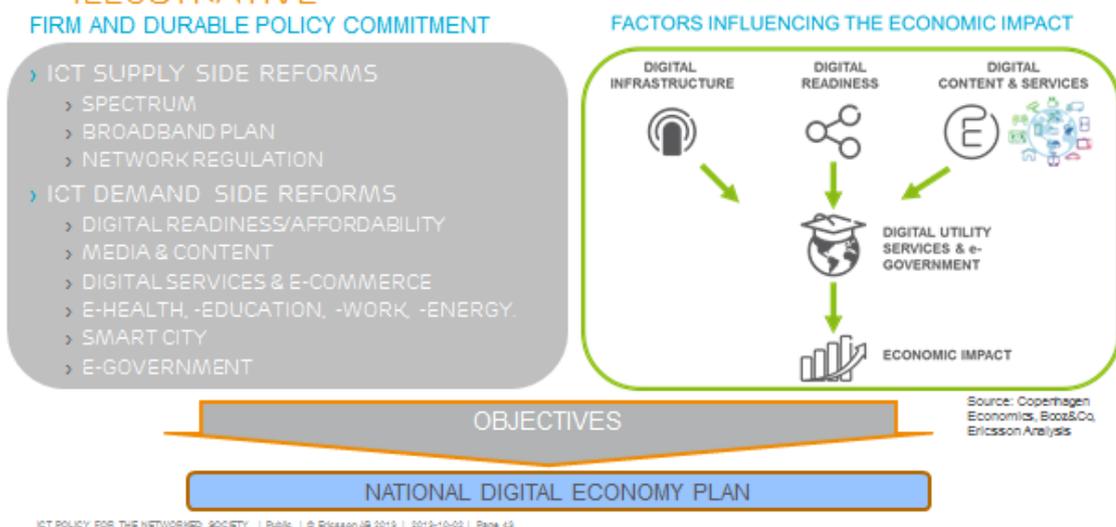


Figure 5 - Cohesive Reform Strategies

### 3.2 Use ICT for Greener Environment towards a Sustainable Low-Carbon Society

In Ericsson's latest City index, Hong Kong ranks # 7. Specifically, in terms of the environmental dimension [Hong Kong performs above average](#). Pollution values are better than in many other cities and almost all the wastewater is treated. The city's per capita impact on climate change is quite low compared to cities of the same economic performance. While Hong Kong has a high recycling rate and the amount of waste per person is around average, **it has relatively high fossil fuel energy consumption which Hong Kong residents are expecting improvement to be made in air quality.**

ICT has a potential to help reducing carbon dioxide emissions in many areas, in particular the areas of construction, energy and transportation. For example, fully integrating transport infrastructure, vehicles and users with ICT has been shown to significantly reduce environmental impacts and deliver improved safety and efficiency, and enables the connectivity required to support infrastructure for electric vehicles. Charging large numbers of cars simultaneously across the electricity grid is challenging, which has been seen as the main obstacle of adopting electric vehicle in Hong Kong. With ICT-enabled solutions, real time information can be used to control electric vehicle charging and manage peak energy demand on the grid. This allows utilities to handle the added demand with modest changes to the distribution network.

Obviously a number of well-known different ICT solutions can help decrease commuting and transport by enabling virtual meetings and remote participation in schools or at work. However, before jumping into ICT solutions, [a set of requirements](#) must be considered when evaluating the environmental and socioeconomic sustainability impact of ICT solutions at a city level, hereby allowing for more proper identification and priority setting of relevant policy objectives. Once this is achieved, well targeted and proportionate interventions with adequate supporting ICT solutions are significantly much easier to identify.

***Ericsson encourages the Hong Kong Government to exploit the full potential of ICT in addressing some of the critical environmental issues in Hong Kong, contributing to a sustainable low-carbon society.***

### 3.3 A Long-term Broadband Strategy to Support Future Need of Mobile Broadband Infrastructure

It's been highlighted in chapter 1 of the consultation paper that Hong Kong is one of the forerunners in the ICT development, providing affordable broadband internet services both in the fixed and mobile networks. The broadband speeds in Hong Kong are the highest among the cities in the Ericsson City index. **However, regarding the mobile broadband quality, the city does not perform equally well.** Since, the annual mobile data growth rate of around 80% and advancement of enterprise services, Ericsson anticipates further investments are necessary in the mobile

broadband infrastructure to cope with the demand. Since the city already performs very well on fixed and Wi-Fi infrastructure side further public investments in this area would seem incorrectly allocated delivering lower marginal socio-economic benefits than alternative uses would do.

Furthermore, Hong Kong needs a long-term mobile broadband strategy on par with global leading Cities that continues to ensure competitive, accessible, open and robust broadband service market within the SAR.

**Hence, policy objectives and policy solutions in this Digital Agenda must address issues about:**

- 1) Efficient use of spectrum**
- 2) Increase timely availability of more licensed and harmonized mobile broad band spectrum by for example releasing Digital Dividend spectrum for mobile broadband service**
- 3) Pro-actively facilitate deployment of small cells to cope with capacity demand in mobile networks**
- 4) Promote improved network performance of mobile broadband data networks such as improved [app coverage](#) and indoor coverage**

### 3.4 Technology Neutrality and Market Lead Regulation

Hong Kong adheres to “technology neutral” regulation, in that it allows technology to “take the lead” thereby attracting new entrants to choose a technology in view of its potential, availability of suppliers, roaming capability, and application. In essence, this policy of liberalization creates an open field for operators and new entrants.

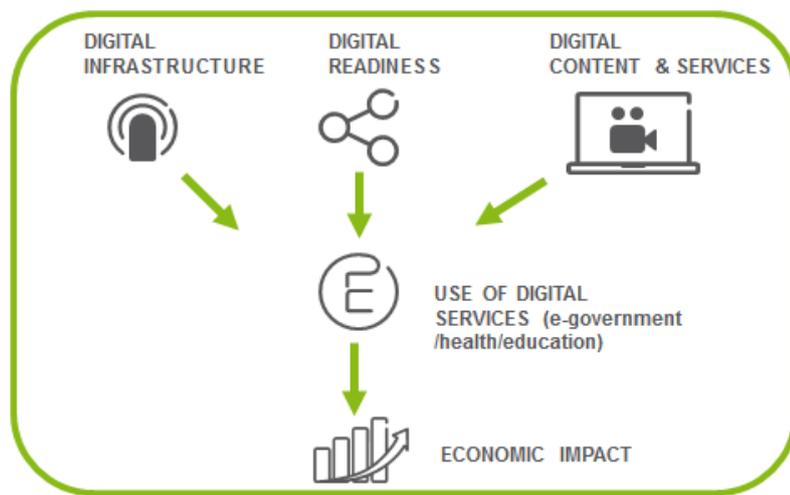
Furthermore, investor confidence is a critical factor in promoting investments into a market. Hence, any publicly funded interventions must assure minimal distortions in the market otherwise we risk the future willingness to invest in the Honk Kong ICT market. In this context, any publically financed ICT infrastructure must:

- meet specific public interest objectives that cannot be provided equally efficiently by the commercial market
- crafted in such way that they limit price distortions in the commercial market
- crafted in such way that they limit the crowding out the commercial market reach
- be technology neutral

*The consultation paper in question promotes a massive city-wide deployment of free Wi-Fi access in Hong Kong for both Government premises and public areas. Unfortunately, none of the key principles identified above have been taken into consideration. Ericsson recommends the Hong Kong Government to cautiously reconsider the plan to deploy a technology specific option in the provision of mobile broadband access as a free service.*

### 3.5 Media and Content Regulation

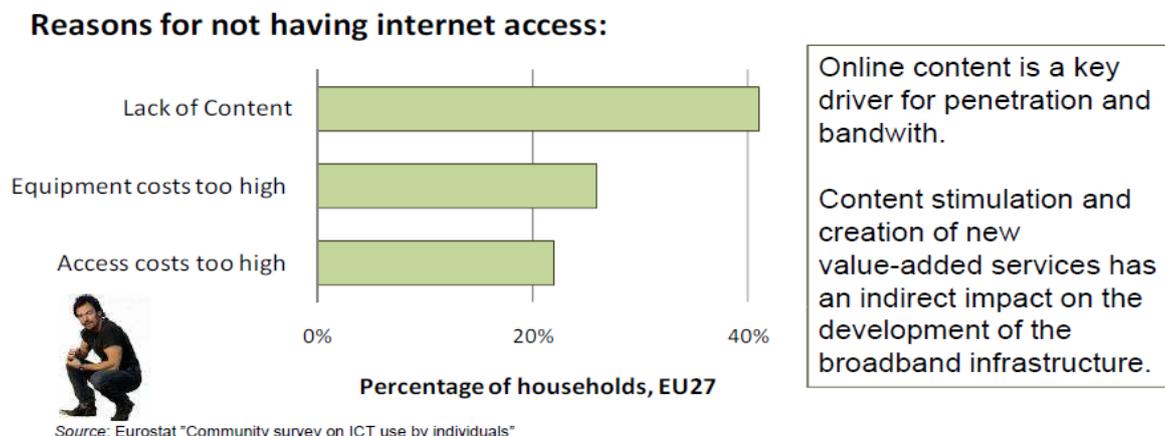
A vital link exists between the economic impact of broadband described in section one and the availability of digital content such as audiovisual works (see figure 6).



**Figure 6 - Factors Influencing Economic Impact of ICT/Broadband (Source: Copenhagen Analytics, Booz&CO & Ericsson Analysis)**

Availability of digital content and services are key factors that stimulate the **mass adoption**<sup>3</sup> of ubiquitous high-speed broadband services. Supply side broadband policies that promote availability of high-speed broadband rollout are necessary but insufficient since mass adoption of high speed broadband is also dependent upon additional factors, see Figure 7.

<sup>3</sup> In addition see New Zealand's Commerce Commission Demand Study: <http://www.comcom.govt.nz/media-releases/detail/2012/commerce-commission-releases-final-issue-paper-on-high-speed-broadband-demand-side-study/> (see also footnotes 3 and 4)



**Figure 7 - Digital Content is a Key Driver for Penetration and Bandwidth**

Consequently, sound demand-side broadband drivers such as the availability of lawful on-demand content needs to be in place to stimulate up-take of high-speed broadband services and consequently realize the economic impact. These demand side drivers include:

- Increasing economies of scope by increasing the availability of digital on-demand content; i.e. expanding trade in goods and services including digital creative works,
- Increasing the scale of economies by creating a growing digital market; i.e. maximizing the geographic reach of a borderless digital market,
- Lowering transaction costs, such as due to market fragmentation or outdated regulatory regimes
- Increasing the level of mass-personalization of services according to individual preferences and purchasing power, in this case increasing the availability of on-demand content.

***However, the consultation paper in question is not considering the significance of improved availability of lawful digital content which is a weakness that needs to be rectified. Some relevant policy considerations in this should include [copyright](#) and [film](#) and [TV-media](#) policies.***



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Ericsson is the world's leading provider of communications technology and services. We are enabling the Networked Society with efficient real-time solutions that allow us all to study, work and live our lives more freely in sustainable societies around the world.

Our offering comprises services, software and infrastructure within Information and Communications Technology for telecom operators and other industries. Today more than 40 percent of the world's mobile traffic goes through Ericsson networks and we support customers' networks servicing more than 2.5 billion subscribers.

We operate in 180 countries and employ more than 110,000 people. Founded in 1876, Ericsson is headquartered in Stockholm, Sweden. In 2012 the company's net sales were SEK 227.8 billion (USD 33.8 billion). Ericsson is listed on NASDAQ OMX, Stockholm and NASDAQ, New York stock exchanges.