

## **Position Paper: 2007 Digital 21 Strategy for Hong Kong**

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*With the emergence of new high-tech industries, major changes are occurring in both corporate and government policies. These changes merit the label “paradigm shift” because they are everywhere, and they are so profound that they may make conventional wisdom in business administration, economics, and international relations obsolete. And they are all taking place simultaneously, not in isolation from each other. – Fumio Kodama in *Emerging Patterns of Innovation**

### **1. Prologue**

The vision of the 2007 Digital 21 Strategy is to advance the achievements of and to seize new opportunities for Hong Kong by building on the city’s position as a world digital city. The Strategy states four objectives to be accomplished to realize this vision [Consultation]:

- Promoting advanced technology and innovation.
- Developing Hong Kong as a hub for technological cooperation and trade.
- Enabling the next generation of public services.
- Building an inclusive, knowledge-based society.

This Position Paper was written in response to the Public Consultation on the 2007 Digital 21 Strategy launched on Oct. 18, 2006 by the HK Government through the OGCIO. This Paper is limited to addressing the techno-economic issues raised by the first two objectives as stated in the Consultation Paper while leaving aside the last two objectives as they deal with socio-political issues unique to Hong Kong as a SAR of the PRC.

### **2. Introduction**

At the end of the last millennium, the 21<sup>st</sup> Century ushered in the much-heralded New Economy with the dot-com collapse and stock market crash. Is this New Economy nothing more than hype or were the financial markets overzealous in inflating expectations of overnight wealth?

According to Carlota Perez, the reaction of financial markets to the emergence of a new techno-economic paradigm follows a certain pattern: from the initial “irruption” to mass “frenzy” followed by focused “synergy” and finally widespread “maturity”. The “turning point” [Perez] occurs between mass “frenzy” to focused “synergy” in the “techno-paradigm shift” [Kodama] from the Old Economy based on industrial production and mass consumption to the New Economy based on digital creativity and technological innovations enabled by ICT.

With the emergence of a new techno-economic paradigm, social institutions need to adapt themselves to the new order of things but find themselves in a difficult situation due to institutional inertia. The existing institutions take a long time to absorb all the transformations taking place in more and more parts of the economic system. Vested interests, customary practices, established systems serve as socio-institutional barriers to the widespread adoption of the new technological innovations. During the transition from the old to the new paradigm, intense transformations in the techno-economic sphere clashes with the high-level of inertia and confusion in the socio-institutional sphere. It is only with the co-evolution [Kodama] of social

institutions in response to the requirements of the new paradigm can the technological innovations permeate the whole economy and spread to the rest of society. [Perez]

According to Fumio Kodama, an ICT-led “techno-paradigm shift” is currently under way, profoundly changing the nature of innovation in an increasing number of industries. Instead of scientific breakthroughs, ICT-based innovations rely more on technological fusion which involves adopting technologies from different industries and adapting them to nascent markets. Because of this, high-tech companies need to modify their corporate strategies to include diversifying into other industries. As the boundaries between industries dissolve, the intra-industry competition of the past shall give way to the inter-industry competition of the future. But technical evolution through technological fusion is not enough. For the successful diffusion of technological innovations, social institutions must also adapt themselves to the changing requirements of the new techno-paradigm.

### **3. Hong Kong and the New Economy**

In the old economy of trading goods and manufacturing services, Hong Kong built itself into a leading international business city by making effective use of scarce land in the city and cheap labor across the border. The world-class physical infrastructure of the city coupled with the low-cost but excellent cross-border manufacturing engines of the Pearl River Delta Region has propelled Hong Kong to become the 11<sup>th</sup> largest trading economy in the world. [Consultation]

But obstacles remain on the road to the New Economy. The world-class physical infrastructure of Hong Kong in the form of the Airport, Seaport and Mass Transit System has served the city well in the old economy of trading goods and manufacturing services. The liberal policy of market-led ICT infrastructure development has allowed Hong Kong to offer the world’s most affordable Internet access and mobile telephony services as evidenced by Broadband Internet household penetration rate of 66% (2006) and mobile phone penetration rate of 125% (2006). But the market mechanism works well only in lowering the prices of commodity services (Internet access or mobile telephone voice calls) by increasing the number of ICT network operators (Internet access providers or mobile network operators). It has not resulted in either lower prices for mobile text messaging services (SMS) or in the widespread adoption of wireless data services (mobile gaming or mobile Internet). Similarly, the high-rate of Broadband Internet household penetration rate has not spurred the creation of an online gaming industry in Hong Kong despite the city’s prominence in the entertainment and film production industries.

In the new knowledge-based economy, a state-of-the-art ICT infrastructure will act as a catalyst for the creation of new ICT-based industries. But neither the ICT infrastructure nor the ICT-based industries must be left to the whims and vagaries of a short-term, profit-minded market. Instead, it is the Hong Kong Government that must assume responsibility for building a state-of-the-art ICT infrastructure and for nurturing ICT-based industries. In the new economy of the 21<sup>st</sup> century, Hong Kong needs to position itself as a global hub of innovation and creativity where designs and technologies, ideas and concepts are created, shared, traded and exchanged. As we are now in the “turning point” in the “techno-paradigm shift”, Hong Kong must therefore reinvent itself for the Information Age and seize immense business opportunities that lay ahead to become the world’s leading digital city.

### **4. Technology and Innovation**

Promoting advanced technology and innovation through the support of R&D projects in the Science Park and Cyberport partly solves the supply-side equation of technological innovation but largely leaves demand-side issues unresolved. Without local support and demand for the new technologies generated at the Science Park or for content and applications developed at the Cyberport, commercialization of innovative technologies, and marketing and distribution of creative content is not possible.

The process of innovation that is driven by hi-tech industries depends rarely on science-based “technological breakthroughs” but rely mostly on “targeted technology development” to serve “virtual markets”. In high-tech industries, customer demand for a technology does not exist until a “virtual market” for it is articulated. Such “virtual markets” arise from the systematic examination of the socio-technical

environment and the effective “demand articulation” of technological imperatives. The need for a specific technology to satisfy a “virtual market” serve as the impetus behind R&D efforts at either the company or industry levels geared towards that technology. [Kodama]

The changing nature of innovations in the ICT industries requires less scientific breakthroughs and more technological fusion. Instead of reinventing generic technologies created in other technology hubs, the Science Park must work towards the adaptation and fusion of technologies sourced globally with targeted R&D efforts directed at local and regional markets. Similarly, the Cyberport must work towards the processing, distribution and marketing of content sourced globally or developed locally for local and regional markets. Development of digital content and applications differs from technology R&D in that the former requires creativity while the latter fosters innovation. The distribution of content and applications needs marketing and promotion while the diffusion of innovation depends on socio-institutional co-evolution. “Technology fusion is intrinsic to the process of demand articulation, because demand articulation is defined as the search and selection process among technical options. When specific technologies are not available within existing technical collections, a targeted R&D effort is needed.” [Kodama]

## **5. Hong Kong as Technology Hub**

The lifeblood of technology is knowledge, and knowledge is borne out of the sharing and exchange of ideas. While establishing channels of cooperation between the PRC authorities and HK serves to bridge the HK-PRC divide, HK must position itself as a global technology hub in partnership with other leading technology hubs around the world, and in particular with Silicon Valley.

The proposed merger of the Broadcasting and Telecommunications Authority is a step in the right direction. The merged body to be called the Communications Authority (suggested name: Information and Communications Authority) must not only perform the function of regulating ICT industries but also promote the adoption of new technological innovations by enacting industry-specific policies and mandating the timely deployment of certain technologies. This will in turn create the need for targeted R&D initiatives aimed at generating technological innovations to serve local and regional markets. This process of demand articulation implies a thorough assessment of existing technologies sourced globally, and the adaptation of such technologies through technology fusion.

The wireless industry is a strategic industry for Hong Kong and Asia due to its size and scope. Most analysts agree that the total revenue of the wireless industry in Asia will exceed US\$ 1 Trillion shortly after 2010. It is the one industry that is assuming the once dominant role played by the Rail, Steel, Oil, Power and Auto industries of the fading Industrial Age. Hong Kong is the only city in China that controls its own frequency spectrum and the ICT policies that can make use of that spectrum. As Hong Kong is now part of China, the scarce resource is no longer land but frequency spectrum. The reason is that China has lots of land but Hong Kong owns as much frequency spectrum as the whole of China! Hong Kong should therefore position itself as the global testbed of the wireless industry by leading the deployment of nascent technologies such as WiMESH, Mobile TV, IMS, IPv6 and 4G.

In other words, the proposed Information and Communications Authority must formulate industry-specific policies unique to the wireless industry. Such policies must force the articulation of demand for certain technological needs which may be satisfied only by directing local R&D efforts targeted at those needs. These R&D initiatives may then be assigned and delegated to such state-chartered R&D institutions as the Science Park and Cyberport.

## **6. Hong Kong as a Digital Content Hub**

Hong Kong is well-known as a global hub for the Media/Entertainment, Advertising/Marketing, Audio/Music and Film/Video Production industries. A well-built, state-of-the-art ICT infrastructure will be an empty machine of chips and cables without the bits and bytes flowing through it. If content is king, then digital content must be god. Because the world and everything else in it is going digital.

Hong Kong should transform itself into a digital content hub by encouraging its world-renowned creative industries to embrace the Information Revolution by going digital. The creation of the Digital Media Centre and the Incubation Centre at the Cyberport should help this process by addressing the digital rights management and skills training needs of the creative industries.

But creating digital content is not enough. It must be marketed, promoted, distributed and finally delivered to the end-user, the consumer. In the old economy of mass production and consumption, content was delivered en-masse via the broadcast medium such as radio and TV or circulated as printed matter. The role of the end-user is to consume the content passively while being bombarded with mass-targeted advertising material. In the new economy of niche production and consumption, digital content is now being delivered via ICT channels such as fixed-line broadband networks, mobile cellular networks and in the future wireless broadband networks. Upcoming technologies such as Mobile TV will allow narrowcasting to mobile handsets. Instead of passively consuming digital content, the end-user will now interact with ICT channels, thus allowing niche content, interactive advertising and targeted marketing.

The response of incumbent operators to the changing nature of the digital content business has been haphazard at best and lukewarm at worst. This may be due to the high-level of inertia and confusion in a society's institutions which is unable to cope with the rapidity of change and the complexity of scope involved. The best example can be found in the wireless industry. Mobile network operators other than those in Japan and Korea have yet to adapt themselves to the massive changes under way in the wireless industry. In particular, the case of NTT DoCoMo illustrates the degree to which mobile network operators in Japan have accommodated themselves to the techno-paradigm shift by assuming leadership roles in harnessing the whole value chain in the wireless industry cluster. "NTT DoCoMo has synchronised all the separate parts of the market and made them function as a group in a wholly different manner than for example the way the European market works. There is a functioning network, there are mobile Internet capable phones available, there is content for the customer to utilize and finally also a service that presents a solution to the user. Problems that would have limited the users or content providers interest in the mobile Internet service have been solved and a win-win situation for all parties has been created. A synchronised and functioning market has resulted in a complete and valuable end product for the users." [Devine]

In other words, for Hong Kong to succeed as a digital content hub, network operators must be willing to partner with content, application and service providers, must take the lead in promoting and marketing a new digital lifestyle to consumers, and must devise clever business models to enable a win-win situation for all parties involved.

## **7. Conclusion**

In conclusion, LUXONUS respectfully submits that the following changes be made to the first two stated objectives of the Digital 21 Strategy for Hong Kong:

- Building a state-of-the-art ICT infrastructure and fostering ICT-based industries through the leadership of the Hong Kong Government in partnership with global technology hubs such as Silicon Valley.
- Creating a new Information and Communications Authority with the charter of maximizing the strategic advantage of Hong Kong's unique asset, frequency spectrum, in order to create new ICT-based industries, foster ICT innovations, and enable global leadership in the wireless industry.
- Promoting advanced technology and innovation through targeted R&D efforts aimed at adapting and fusing technologies sourced globally for local and regional markets.
- Enhancing Hong Kong's status as a global hub for digital media/entertainment and interactive advertising/marketing by encouraging a new digital lifestyle for the 21<sup>st</sup> Century.

## 8. References

[Consultation] *Public Consultation on Digital 21 Strategy*, OGCIO, HK SAR, Oct. 2006.

[Devine] Devine, Alice and Holmqvist, Sanna, *Mobile Internet Content Providers and their Business Models: What can Sweden learn from the Japanese experience?*, Master Thesis, The Royal Institute of Technology, Stockholm, 2001.

[Kodama] Kodama, Fumio, *Emerging Patterns of Innovation*, Harvard Business School Press, MA, 1995.

[Perez] Perez, Carlota, *Technological Revolutions, Paradigm Shifts and Socio-Institutional Change*; Reinert, Erik (Ed), *Globalization, Economic Development and Inequality: An Alternative Perspective*, Edward Elgar, Cheltenham, UK • Northampton, MA, USA, 2004, pp. 217-242.