

Public Consultation Paper on 2004 Digital 21 Strategy

The paper invites public comments on the updated Digital 21 Strategy to be released in early 2004.

Background

2. In November 1998, the Government promulgated the first Digital 21 IT Strategy with the aim of enhancing and promoting Hong Kong's information infrastructure and services. An updated Strategy was issued in May 2001 to position Hong Kong as a leading e-business community and digital city in the globally connected world.

3. To sustain the momentum created in the last five years and to harness the benefits of IT for business, the community and Hong Kong's position in the world, the Government has reviewed the implementation of the 2001 Strategy and intends to issue an updated Strategy in early 2004. A draft of the 2004 Strategy is at Annex. The Government would like to invite public comments on and input to the 2004 Strategy before finalizing it.

Comments on the 2004 Strategy

4. Please send your comments and suggestions to this bureau **on or before 10 December 2003** through any of the following means:

By post: 2/F, Murray Building
Garden Road
Hong Kong

By fax: 2511 1458

By e-mail: digital21review@citb.gov.hk

5. We shall assume that all the submissions made are not intended to be confidential and may be inspected by the public on request, unless there is a specific request to treat all or part of a submission in confidence.

6. For enquiries on this public consultation, please contact Miss Wendy Au, Assistant Secretary of this bureau, on 2189 2309.

**Communications and Technology Branch
Commerce, Industry and Technology Bureau
October 2003**

DRAFT

2004 Digital 21 Strategy

CHAPTER ONE

WHERE ARE WE?

The importance and impact of information technology on our economy and our way of life is taken as axiomatic nowadays. The Government of the Hong Kong Special Administrative Region has taken the leadership in promoting the development and adoption of information technology by setting out its vision, initiatives and programmes of how Government, business, industry, academia and the public can work together to make Hong Kong a leading digital city in a globally connected world.

2. Against this background, the first Digital 21 Information Technology Strategy was published in 1998 and it was reviewed and updated in 2001.

3. Our remarkable progress and achievements have received international recognition. Hong Kong was ranked first in the International Telecommunications Union Mobile/Internet Index 2002. The Economist Intelligence Unit ranked Hong Kong first in Asia in 2003 in terms of e-readiness. Accenture ranked Hong Kong seventh in the world in 2003 in terms of e-government leadership. The Electronic Service Delivery (ESD) Scheme also won the prestigious Stockholm Challenge Award in 2001. An important milestone in this regard will be the coverage of 90% of amenable public services with an e-option. Hong Kong has come a long way in positioning itself as a leading digital city.

4. The full liberalization of our telecommunications market has resulted in the availability of wider choices and better quality services at competitive prices. Affordable telecommunications charges have in turn stimulated service take up. Our mobile and broadband Internet penetration rates are among the highest in the world, and the Hong Kong community is avid users of information technology (Box 1).

5. Most of the initiatives set out in 2001 have been successfully completed. The remaining items are ongoing and proceeding on schedule. Our e-business environment has been further enhanced notably through the implementation of the e-government initiative; its outsourcing strategy with the support of an e-procurement system; the establishment of new information infrastructure at the Cyberport; and critical projects funded by the Innovation and Technology Fund (ITF) for upgrading our technology and infrastructure. A comprehensive programme of measures to assist business IT adoption supports these initiatives.

Box 1: Where Do We Stand

- Mobile phone penetration: 96% in 2003
- Broadband reaches all commercial buildings and virtually all residential buildings
- External telecommunications capacity: about 900 Gbps in 2003 (20-fold increase since 2000)
- Household personal computer (PC) penetration: 62% in 2002 (50% in 2000)
- Household Internet penetration: 53% in 2002 (36% in 2000)
- Household penetration for broadband Internet service: 48% in 2003 (18% in 2000)
- PC penetration in business sector: 55% in 2002 (52% in 2000)
- Internet penetration in business sector: 44% in 2002 (37% in 2000)
- Over 50% of businesses adopted some form of e-business (2003)
- 70% of Internet users had used e-government services, of which more than 60% rated e-government services as “very good” or “quite good”.

6. With a wide service coverage, focus on customer needs, improvements to service quality, enhanced efforts in joining up Government, the Hong Kong Government is now much more mature in e-service provision.

7. The package of immediate and longer term measures launched in the past years to address Hong Kong’s IT manpower needs has also helped build a competent IT workforce to meet the demand of today’s information economy.

8. The issue of four third generation mobile services (3G) licences in 2001, setting up of a high speed link between the local tertiary institutions and the Internet2 backbone in the US in 2002 for research and development on advanced and multi-media applications, and roll-out of a new generation of multi-application smart identity card in June 2003 have laid the foundation for Hong Kong to exploit the latest enabling technologies to develop applications, services and content.

9. A detailed summary of the progress of our implementation of the 2001 Strategy is set out in Box 2 below.

Box 2: Progress of Implementation of Initiatives in 2001 Strategy

- All sectors of the telecommunications market liberalized from 1 January 2003 to encourage competition and provision of services at affordable prices.
- Four 3G licences issued in October 2001. 3G services expected to be rolled out later this year.
- Class licence to regulate public wireless local area network services introduced in February 2003 to promote the development and usage of wireless services.
- Among the first batch of economies in the world to open up the relevant frequency bands for IEEE802.11 type of wireless services.
- Amendments to the Electronic Transactions Ordinance introduced into our legislature in June 2003 to ensure that Hong Kong has an up-to-date legal framework for the conduct of e-business.
- A non-statutory, not-for-profit corporation set up in 2001 to provide market-oriented Internet domain name registration services.
- Awareness building programmes, technical support and advisory services, financial support, and training programmes provided to businesses to assist them in adopting IT to enhance efficiency and productivity.
- Phases I and II of the Cyberport completed in April and December 2002 respectively to provide state-of-the-art IT, telecommunications and digital media facilities to create a strategic cluster of IT companies and to support and facilitate development of new technologies, applications, services and content.
- Phase I of Science Park opened in June 2002, with a strong information industry cluster being built up.
- \$352 million provided from the ITF to projects for upgrading IT and e-business infrastructure in Hong Kong.
- By end 2003, e-option available for 90% (figure to be updated) of the public services amenable to electronic mode of delivery.
- Some 170 public services from over 50 Government departments and public agencies now available via the ESD Scheme.
- By end 2003, 83% (figure to be updated) of Government procurement tenders conducted through electronic means.
- Specific joined-up and Government-wide projects launched/initiated, such as the Common Look and Feel Website Design, Business Entry Portal, property information hub and Integrated Criminal Justice System.
- Professional IT training provided to students at all levels and overseas IT talents admitted to ensure an adequate supply of quality IT manpower.

- Free IT awareness courses, IT Easy Link enquiry service, infotainment television programmes, IT promotion activities, free public computer facilities with Internet connection etc. to enhance IT awareness and promote wider use of IT in the community.
- Multi-application smart identity card rolled out in June 2003, which can be used as a public library card and can store a digital certificate. It can also be used for automated immigration clearance at border control points by end 2004 and for driving licence functions in about 2006.
- A high-speed link set up between local tertiary institutions and the Internet2 backbone in the US in 2002 for research and development on advanced and multi-media applications.

CHAPTER TWO

WHERE DO WE GO FROM HERE?

10. The challenge is our ability to sustain the momentum that has been created in the last five years and how we can continue to harness the benefits of IT for business, the community and Hong Kong's position in the world.

11. We see this endeavour in eight main areas of action:

Government leadership

Sustainable e-government programme

Infrastructure and business environment

Institutional review

Technological development

A vibrant IT industry

Human Resources in a knowledge economy

Bridging the digital divide

Government leadership

12. Government leadership and commitment is vital in realizing our goal as a leading digital city in the region. This has proven to be the case in the last five years since the publication of the first Digital 21 Strategy in 1998. Public policy aside, the Government has strong influence through its resources, implementation of information systems and procurement arrangements on how we pursue to achieve our aspirations. For one thing, the Government is one of the leading investors in IT through its e-government programme and other administrative and operational systems. In the past three years, the level of investment has averaged at \$4.6 billion per annum.

13. The Government's role is indeed significant if the momentum that has been created can be sustained and deepened. This is particularly important despite the budgetary stringency within which the Government will have to operate in the next few years. We will also need to find new impetus to take the e-government programme to the next stage as it will soon meet its initial target of covering 90% of

amenable government services with an e-option. Another consideration is the need, in the course of Hong Kong's economic transformation, to realize the opportunities, business or technological, afforded by government investment in the promotion of information technology and its wider adoption in the community.

14. Our conviction is that the Government should be an effective facilitator to enhance the innovative capability of both industry and the community, promote the development of industry and enterprises, and in this process encourage investment and innovation in information technology.

The following are obvious examples of what the Government will continue to do as a facilitator in promoting information technology and its applications:

- *Government as an advocate and champion*

The stride towards building a digitally connected city and keeping up as a leading digital city is a long-term endeavour. The Digital 21 Strategy has already established its reputation and indeed branding to symbolize our effort and actions. The Government should continue to be a leading "shaker and mover" of public opinion to support Hong Kong's pursuit and as a champion to promote Hong Kong's international image as an aspiring, dynamic digital city.

- *Continued enhancement of the IT outsourcing programme*

The Government is a major user of information technology. About 88% of our new projects in 2002-03 were outsourced. We will continue to press on with our e-government strategy and expand our outsourcing policy, covering both new projects and maintenance of systems and applications. The significance of this is not just to generate business opportunities for the private sector (and where appropriate, local service providers), but also opportunities for innovation, entrepreneurship and technical development.

A notable new target will be the outsourcing of the computer centre operation in the Information Technology and Services Department.

- *Enabling the development of innovative technological applications*

Hong Kong's position as a major international service centre in financial services, trade and commerce, and transportation and logistics at our sophisticated level of operation has made these sectors major users of information technology. This has provided an enormous platform for the development of innovative applications, contents and services based on information technology. The government can facilitate and augment this process through its information system requirements, procurement policy that demand such innovation, and other supporting measures, such as the opening up of intellectual

property ownership by the Government for wider application by the information technology industry.

- *Facilitating the development of e-commerce through the e-government programme*

E-commerce in Hong Kong, like the rest of the world, is still not living up to its promises. However we must not lose sight of the impact of e-commerce and supply chain management in a highly globalized business environment if Hong Kong industry is to derive productivity gains and maintain its competitive edge in international trade and commerce. While the main onus would be for business to adopt the application of e-commerce, either with their customers or their business partners, the Government will have an important role to play through education and facilitation.

Specific tools which are available to the Government in this respect that need to be sharpened are:

The e-procurement arrangements. The Government, like any other governments in the world, is a main player in the purchase of public goods and services.

The ESD Scheme. This will also need to be reviewed and sharpened for greater adoption of on-line transaction of public and relevant customer services.

- *Fostering the development of the digital entertainment and broadcasting sectors as creative industries*

The potential of these sectors cannot be over-emphasized. While there are wider public policy issues that are fundamental to the development of these sectors, such as education, the Government can also play a major role in the provision of the supporting infrastructure and enabling environment, and also through changes to the relevant regulatory regime based on technology neutrality, facilitation of convergence, and deregulation.

Sustainable e-government programme

15. A good example of government leadership is the policy on, and implementation of, the e-government programme. The Government is committed to leading by example the use of e-business, both in conducting internal business and delivering public services. The use of e-business not only allows us to improve efficiency through technology exploitation and service transformation, but also drive the wider adoption of information technology in the business sector and the wider community.

16. With the implementation of the e-government programme in the last four years and 90% of the amenable public services covered by an e-option, the main challenge in e-government strategy is: where do we go from here?

- *Review of e-government strategy*

As with other governments' e-government programme, our initial target and focus is to provide an e-option. In 2004 we need to deepen the e-government programme, including the ESD Scheme, and link it more sharply to service quality and effectiveness. Specifically, we would focus on the following aspects:

Driving utilization up

Improving customer interface and promoting customer relations management (CRM)

Promoting horizontal integration in service delivery with more effective business process re-engineering

Enhancing further government accessibility and transparency in the process

Leveraging the most appropriate technologies

Enhancing the measurement of the benefits of e-government projects

Formulating a strategy in the first half of 2004 for the further development of e-government delivery, including the ESD Scheme, having regard to the above and other relevant considerations

- *Driving utilization*

Driving utilization is key to the realization of the benefits of e-government. Specifically actions to promote the migration of customers towards e-services include:

Identification of specific services for targeted improvement of utilization and helping department set and achieves these

Identification of suitable services for introducing cost segmentation and price differentiation for online service

Closure of service counters where necessary and justified

- *Engaging customers*

Engaging customers is the key to achieving greater CRM.

We will set out clear CRM policies and guidelines for all projects involving a customer interface, and link them with funding conditions.

We will also introduce measures to obtain more customer feedback in project implementation and in monitoring service utilization.

- *Driving information technology adoption through e-government*

We are taking the lead to drive the business sector and the community to adopt information technology. This includes:

Deepening electronic procurement starting with certain types of government purchases. We will introduce arrangements to encourage adoption by suppliers, including small and medium enterprises.

Exploring further the inclusion of value-added applications on smart identity cards. Such additions may have commercial and e-commerce applications.

Infrastructure and business environment

17. The importance of a world-class infrastructure and a business friendly environment cannot be over-emphasized. These are the very fundamental factors contributing to the development of a digitally connected city and a highly competitive economy in a globalized environment. Hong Kong's achievement in these aspects is evident. We stand out in terms of external connectivity, penetration of broadband access, and use of mobile network services by international standard. On the other hand, the free and competitive market of Hong Kong, its strong entrepreneurship, excellent financial services and capital market functions, legal system and rigorous protection of intellectual property rights have provided Hong Kong with a very favourable business environment.

18. The telecommunications sector has benefited from this development. Our policy to liberalize the telecommunications market has reached a new milestone with the full opening up of the fixed telecommunications network services market on 1 January 2003. We have one of the most advanced telecommunications infrastructure and networks in the world. Industry accounts for the bulk of this level of investment. Our operators provide basic and also innovative services on a highly competitive basis. They embrace new opportunities such as those afforded by new technologies, such as 3G mobile services.

19. This achievement is, among other things, the result of public policy that promotes competition, investment and innovation in the telecommunications market.

20. We need to strengthen these success factors and apply them to other sectors where appropriate.

- *The broadcasting industry*

Broadcasting is another sector that provides promises for Hong Kong to be the leader in Asia. The regulatory regime was reviewed in the late 90s', resulting in the enactment of the Broadcasting Ordinance in 2000. We have witnessed the further expansion of the domestic pay television market, not just in terms of the increase in number of licensees from two to five but also the diversity of the technology platforms from which services are launched, including transmission over cable, satellite and fixed network, as well as broadcast over the Internet.

From this evolution we are seeing the impact of convergence on the telecommunications and broadcasting industry. This in turn leads to the question of how the current regulatory regime is able to deal with the challenges to industry as a result of the rapidly changing technological landscape and new business and operational models caused by convergence.

The Government is reviewing these developments and considering necessary changes to the regulatory regime to meet the above challenges. We intend to strengthen our policies and regulatory framework by facilitating convergence, removing regulatory burdens and providing an enabling environment for industry to innovate and develop new services. We will consult the public on our thinking in the beginning of 2004.

- *Digital broadcasting*

We will conduct a second round of consultation on digital terrestrial television regarding specific issues such as technical standards, licensing approach, transitional arrangements, potentials of digital broadcasting and digital audio broadcasting.

Although the decision to provide digital terrestrial television services will be a matter of commercial judgment, it will be helpful if the Government sets out the regulatory framework within which such services are to be planned and provided. Our plan is to achieve this in the first half of 2004.

- *Make the best of our technology infrastructure*

The two flagships of the Government's programme to promote technological development through the creation of high value added industrial clusters, namely the Cyberport and Science Park, are making steady progress in the fulfillment of their missions. Apart from leasing

and recruitment of tenants, these projects are also intensifying their efforts to sharpen their technology focuses and promote wider industrial application in such sectors.

The Cyberport will provide supporting infrastructure for wireless applications and services and for digital media technologies. On the other hand, the Science Park has stepped up its support for integrated circuit design and related support. Photonics will be its next focus area.

These and future initiatives will receive public funding support where justified.

- *Promote the adoption of e-business*

We have established a world-class e-business environment including our telecommunications infrastructure, the Electronic Transactions Ordinance which provides a clear legal framework for the conduct of e-business, a public key infrastructure for secure electronic transactions, Chinese language interface and market oriented Internet domain name registration services.

The amendments to the Electronic Transactions Ordinance were introduced into the Legislative Council in June 2003 to update and improve the Ordinance. We aim to complete the legislative process within 2004 so that our legal framework keeps pace with international e-business practices and technological advancement.

We will continue to drive e-business and information technology adoption by business sectors. Our targets are small and medium enterprises. Apart from our existing generic programmes, we will also roll out sector-specific programmes. We will collaborate in this endeavour with trade associations. The Information Technology Services Department (ITSD) will initially provide support to the Travel Industry Council of Hong Kong to launch a campaign to encourage the wider adoption of information technology among travel agents. We will also work with trade associations to make use of relevant public funding for the development of common processes and data standards, as well as free or low costs business solutions.

21. Given the global concern over information security, we are committed to maintaining a secure environment both from the legal framework and security policies and practices points of view. In this connection, our Government information security management framework and associated guidelines and procedures have helped Government departments in upholding very high standards of security and data protection. We will continue to share relevant information on security best practices with the community.

Institutional review

22. We have proposed a visionary programme of measures with the aim of realizing the potential of information technology to its full to provide the impetus to economic growth and prosperity. To deliver the expected results, an institution acting as a central focal point is required to coordinate, monitor and ensure their effective implementation.

23. ITSD has already embarked on a change programme under which it will, among other things, pilot the implementation of a knowledge management framework in 2004 to facilitate the sharing of knowledge in the government and foster the development of a stronger government IT community consisting of ITSD staff, departmental IT management units and IT users under the evolving new governance environment for the further development of e-government.

24. The convergence of telecommunications, broadcasting and the Internet and the rapid changes in technological development and business models have presented major challenges to regulatory authorities in the world.

25. The institutional structure will need to continue to evolve. In 2004 we will look into three main aspects:

- *The case for a more integrated structure of the Government*

We will consider the case of a more integrated structure within the Government by merging the transforming ITSD into the Communications and Technology Branch of the Commerce, Industry and Technology Bureau. In addition to driving the e-government programme, the merged organization will be able to have a coordinated role in promoting the development of applications and services, supporting the information industry and driving information technology adoption. One question is whether there should be a Chief Information Officer (CIO) function, either in a person or an institution, within the Government whose responsibilities may indeed go wider than what it is understood in the corporate world¹.

- *Role of the Information Infrastructure Advisory Committee (IIAC)*

Since 1998 the highest-level government advisory body in information technology matters has been the IIAC. However as its name implies the Committee's original focus was on information infrastructure;

¹ A number of leading e-government countries, like Canada, the US and the UK, have a powerful CIO role at the centre of government. The CIO function is characterized by strong leadership over the business direction of other government agencies and ample technical expertise, sometimes coupled with professional knowledge from the private sector. Such a CIO function has enabled the government to better manage information for the benefit of the community, to effectively perform its cross-agency leadership role and to take a whole-of-government approach in driving e-government.

whereas as it stands, the Committee is covering *de facto* an increasingly wider range of issues related to information and communications technology, industrial development and policy matters. We will examine how the terms of reference of the IAC and its operation reflect adequately this evolution.

- *The case for a unified regulatory body*

The Federal Communications Commission (FCC) in the United States and the Canadian Radio-television and Telecommunications Commission in Canada are single regulators covering both telecommunications and broadcasting. In the recent years we have seen the evolution and transformation of regulatory bodies in other economies along the line of a single authority. The combination of five regulatory authorities in the UK to form a single regulatory body, viz. Ofcom, is one notable example (see Box 3).

In Hong Kong the regulation of telecommunications and broadcasting falls on two separate entities, respectively the Telecommunications Authority and the Broadcasting Authority, which operate under different legislative framework, institutional basis and professional support with different organizational culture and competency.

We will review whether this regulatory structure will best serve Hong Kong in the era of convergence and deregulation.

Box 3: Examples of recent initiatives to merge telecommunications and broadcasting regulators

In the United Kingdom, recognizing that content and networks, in economic terms, are becoming more and more intertwined, the Government seeks to establish a simpler and more flexible system where the regulator will be able to act independently in response to fast-changing circumstances. It therefore creates a new Office of Communications (Ofcom) by merging the functions of five existing regulatory bodies, namely, the Independent Television Commission, the Broadcasting Standards Commission, the Office of Telecommunications, the Radio Authority and the Radiocommunications Agency. Ofcom will be fully operational by the end of December 2003.

In Australia, the Australian Communications Authority and the Australian Broadcasting Authority currently regulate the telecommunications industry and the broadcasting industry respectively. The Government considers that convergence of communications technologies and markets is placing growing pressure on the current regulatory institutional arrangements. In August 2003, it issued a consultation paper on the proposal to merge the two authorities.

Technological development

26. Technology manifests itself as infrastructure, processes, goods and services. The opportunities afforded by technology are enormous. It enhances the innovative capability of industry and the community. It also builds the foundation of the knowledge base of society. Information technology plays a particularly important role in these aspects. It is a strong driver for productivity enhancement of any advanced economy.

27. We need therefore to strengthen our ability to adopt and apply information technology and develop our capability for the development of innovative applications and services.

- *Support for research and development*

The Government's continued investment in research and development is essential if we can produce innovative applications, content and services that take advantage of Hong Kong's excellent infrastructure and competitive market. University research on information technology has been a major beneficiary of public funding for research and development. The Applied Science and Technology Research Institute has also identified communications and Internet applications as its major focus technology areas.

The availability of funding for research and development is important, and so will be the need to link industry to the research organizations for more effective technology transfer and commercialization arrangements. Such a process is a major challenge for Hong Kong, as with other economies. We need to continue to work on this front if public funding is finding its best use and industry is able to harness the results of public sector research and development.

- *Focus area: wireless technologies and services.*

With one of the world's highest mobile phone penetration rates and the impending rollout of 3G mobile network services, Hong Kong stands to benefit from the rapid development of wireless technology and services, particularly through deployment in business process to enhance productivity and efficiency.

To provide a platform for development of wireless applications, solutions and services, the Government is supporting the Hong Kong Wireless Technology Industry Association to set up a wireless development centre at the Cyberport with funding from the ITF.

The centre will bring wireless solutions developers together with mobile operators and equipment vendors and provide a neutral platform for the development, testing and marketing of innovative

applications and services. The developers will have access to information on technology standards and market information. The centre will also identify anchor projects for the industry and assist in marketing outside Hong Kong, including the Mainland. The parties will work together to make the centre a focal point of industry and a main driving force to “push” Hong Kong technologies in the Mainland and Asia.

The IIAC will publish a report from its working group for the promotion of wireless applications in early 2004. Together with industry, we will follow up on relevant recommendations.

- *Focus area: digital entertainment*

Digital entertainment is a relatively new and evolving industry worldwide. Hong Kong has considerable advantage in developing this sector with our industrial base in film production, broadcasting and advertising and also the considerable training facilities that have been put into our universities and institutes of vocational training. We need to harness the opportunities afforded by digital and multimedia technologies. Specifically we will work on two fronts.

First, the IIAC will publish the report of its Working Group on Digital Entertainment with recommendations to explore measures to drive the development of the local digital entertainment industry. We will follow up with the implementation of the recommendations.

Second, we are setting up a digital media centre in the Cyberport with funding from the Cyberport and the ITF to provide hardware, software, technical and marketing support to industry in computer graphics and animation and in the production of films and games. Multi-media content creators can make use of the centre facilities on a time-sharing basis without the need to invest in their own expensive equipment initially. We will make sure that this new infrastructure is instrumental to supporting industry, particularly start-ups, and spawning of new companies.

- *Riding on new developments*

The introduction of new technology platforms for service delivery, such as 3G mobile network for telephony and data services, digital broadcasting, the convergence of telecommunications, broadcasting and Internet services, smart card technology, and the development of a Digital Trade and Transportation Network have provided an enabling environment for the development of innovative applications, contents and services based on these new operating media.

The Government will provide the necessary support, in public policy, infrastructural and funding terms, to industry to harness these potentials.

- *Openness in technological and standards adoption*

Hong Kong has been a pioneer in the adoption of new technologies. We are, for example, the first to have our telephone network digitized in the early 90s' and the first to adopt the CDMA standards in the world. This has put Hong Kong at the forefront of competitive telecommunications services.

We need to keep up with this openness and spirit of pioneering. Although the onus will mainly fall on industry, the Government will continue to set an example.

Thus we will continue to promote open source software (OSS) technologies and solutions as viable options for adoption within the Government through showcases and trials organized through ITSD's IT Solution Centre. We will also promote OSS development and adoption in the private sector through provision of funding support from the SME Development Fund and ITF for projects that develop OSS or assist small and medium enterprises in using OSS. We will conduct a survey on OSS adoption in the business sector to identify barriers to OSS adoption and measures to promote wider adoption.

Grid computing is another area that deserves attention. The Government has already started a pilot scheme with the Environmental Protection Department as the client department.

- *Outsourcing and opening up of intellectual property ownership with a pro-innovation angle*

This is discussed in section 14 above.

A vibrant IT industry

28. We need to promote a vibrant, competitive and innovation driven information technology industry in Hong Kong. The reasons are obvious. Hong Kong already has had considerable advantage in terms of its infrastructure, service economy and related domain knowledge. We also have an industry that is highly dynamic and international in outlook. The fostering of a vibrant industry will leverage on these strengths and add to the economic diversity of Hong Kong. A vibrant and competitive industry will in turn be able to contribute to innovation in applications and services and technological development.

29. The opportunities afforded by the Mainland market hardly need any emphasis. The Mainland is known to be a very large market for goods and services; it

is also a major source of technical expertise and human resources; it has ambitious aspirations to become a major world player in the information industry; and its motivation to play a major role in the world information technology market is fully justified.

30. This is an ideal background against which to promote a vibrant information technology industry in Hong Kong. While the Government's economic policy is clearly not to subsidize industry, there are a lot that it can do together with industry support organizations and trade associations. The courses of action open to us are as follows.

- *Mainland/Hong Kong Closer Economic Partnership Arrangement (CEPA)*

CEPA's impact on promoting the free flow of goods, services and professional personnel between the Mainland and Hong Kong is clear. Phase I of CEPA is encouraging as it covers specifically the telecommunications sector. This will enable Hong Kong's telecommunications industry to have a first mover advantage in five value added services in advance of the commencement of China's obligations under the World Trade Organization. The promotion of e-business as a means for trade facilitation is already referred to in the Arrangement.

CEPA is an evolving process and works on an incremental basis. We will continue to work out further areas to be included in the Arrangement for the expansion of business opportunities and mutual benefits of Hong Kong and the Mainland.

- *Pearl River Delta (PRD)*

The PRD is a natural economic ally of Hong Kong, given its geographical proximity, cultural and linguistic affinity, and long established economic inter-dependence, with Hong Kong. The economic integration between Hong Kong and PRD is a major item on the agenda of the Government. We would identify and work out measures that will foster a strong information industry in Hong Kong and Guangdong through the existing high-level government contacts between both places.

In this context, a standing communication channel has been set up between the Commerce, Industry and Technology Bureau and the Guangdong Provincial Information Industry Department to enhance collaboration between industries of the two places.

It must not be overlooked that there already exists a strong business network between Hong Kong based trade and professional associations and their counterparts in different cities and municipalities in the PRD.

On the other hand, the Hong Kong Productivity Council is establishing its presence in Guangzhou, Dongguan, Shenzhen and Zhuhai. Integrated support and services will be provided through these offices to Hong Kong companies operating in PRD. This will include the information technology sector.

- *Working with the Mainland*

The Mainland of China will be a major player in outsourced software development, information technology services and software products in the world. Hong Kong with its international experiences and connections can play the role of a window to facilitate this outward process that will expand and enhance the competitiveness of the Chinese information industry internationally. The benefits to Hong Kong industry are more than just business opportunities, but the prospect of becoming part of a much larger and increasingly competitive, technological or otherwise, information industry.

- *Hong Kong Trade Development Council (TDC)*

The TDC is already playing a very major role in supporting Hong Kong industry in raising the profile and branding of Hong Kong industry, and in exploiting business opportunities in Mainland and overseas markets. The Government will continue to work closely with it and relevant trade and professional associations to pursue this mission. We will also continue to encourage participation in international trade fairs, award schemes, trade matching and networking events. A highlight of these endeavours is the International ICT Expo in Hong Kong in April 2004 and thereafter.

- *Quality assurance and capability building*

As global competition becomes increasingly keen, our information technology industry must constantly improve its quality in order to stand out from others. The ITF has approved funding for Capability Maturity Model (CMM) Assessment Grant project, which will provide funding support to 15 local software vendors to achieve CMM Level 2 or above. The SME Development Fund has also approved funding for a project to raise awareness of CMM in the local software industry.

We will monitor the progress of these projects and where necessary, explore provision of further funding to our software industry to obtain internationally recognized quality certification.

- *Procurement/outsourcing strategy*

This is discussed in section 14 above.

- *Opening up intellectual property in Government IT systems*

This is discussed in section 14 above.

Human resources in a knowledge economy

31. To maintain Hong Kong's competitiveness, we must have adequate and quality human resources in information technology to meet the demand of a knowledge economy and specifically that of commerce and industry. We will continue to work with the educational and vocational training institutions and industry to enhance the training and skills of our workforce and the next generation. As with the rest of the world, we will also facilitate the recruitment of talents to fill gaps in manpower, expertise and experience.

- *IT in education*

The five-year "Information Technology for Learning in a New Era" strategy promulgated in 1998 heralds the beginning of our efforts in integrating information technology into education. The major achievement in the first five years is that all schools have been provided with the required infrastructure and connected to the Internet. All teachers have been trained on the use of IT in education and they are increasingly adept in using IT for enhancing the effectiveness of learning and teaching. Building upon the existing strengths, the Education and Manpower Bureau (EMB) is formulating the strategic directions for the further development of IT in education in light of the Government's vision for future education and experiences gained.

A steering committee comprising experts, academics and frontline educators has been formed to deliberate on the strategic directions and the major policy initiatives. The focus of future initiatives will be on equipping students with the skills, knowledge and attitude to use IT effectively for lifelong learning. To this end, teachers and school heads will undertake continuous professional development with a view to harnessing the power of IT for learning and teaching of different subjects, communications between home and school, and supporting reform initiatives. Partnership among the stakeholders will be encouraged and fostered

The Hong Kong Education City, the most popular education portal in Hong Kong, will continue to serve the education sector and the wider community by providing a rich repository of educational resources and educational information. While the Government will continue to provide resources to schools to support initiatives, schools are encouraged to collaborate with various stakeholders for pooling resources and experiences.

EMB is working out the way forward on the use of IT in education and will consult various stakeholders in the coming months.

- *Tertiary education and vocational training*

To meet increasing market demand for manpower and to equip students to master information technology as a generic tool, the tertiary institutions in Hong Kong have been strengthening the information technology component in their programmes and courses. Programmes that allow specialisation in particular areas, such as e-commerce, information engineering and creative media have been introduced in the past few years. The institutions will continue to fine-tune the course contents to keep pace with developments in the IT field and meet market demand.

The Vocational Training Council (VTC) will continue to monitor the market demand for manpower in information technology, review its programmes regularly and propose new ones in consultation with relevant industry bodies. New programmes and courses have been introduced in the past few years to equip our workforce with the expertise and skills required by the market. These include game design, 3D animation, and video production and multimedia development. The VTC also keeps rolling out new courses on state-of-the-art technologies in web application development, e-commerce, and open source technology and information security.

- *Qualifications Framework*

EMB has proposed to set up a Qualifications Framework (QF) and its associated quality assurance mechanism across different sectors in Hong Kong. The QF will provide clear information on the standards of courses and course providers. With clear and flexible progression pathways, learners can draw up their own roadmaps to upgrade their skills and pursue lifelong learning. To underpin the implementation of the QF, EMB will set up Industry Training Advisory Committees (ITACs) to develop Industry Training Specifications (ITSs) for individual industry sectors. The relevant ITAC will define competency standards, their aggregation into qualifications for different levels of jobs in a sector, and assessment criteria. Employers, employees, professional bodies etc. will be represented on the ITACs so that the training needs of industries can be met and the qualifications widely recognized. The EMB has carried out a pilot study on the development of ITSs for the IT sector. The outcome of this study will provide solid foundation for the work of the future ITAC to be established for the IT industry.

Bridging the digital divide

32. To ensure that the entire community will benefit from IT development in enhancing the quality of life, a wide range of measures has been introduced to bridge the digital divide in the community. The “IT Hong Kong” campaign is aimed

to raise awareness and promote wider adoption of IT in the community. Specifically it consists of free courses providing basic IT training to different sectors of the community, free talks in public libraries, a dedicated website for information dissemination, district promotional activities and infotainment programmes for citizens. Other support includes the provision of public computers with Internet access at convenient locations, computer recycling for the needy, financial assistance to people with disabilities for purchase of computer facilities for home working and the installation of supporting devices in public computers for access by the blind and the visually impaired.

33. In addition, all government websites are now in compliance with our internal accessibility guidelines to facilitate access and navigation by people with visual disabilities. Seminars and workshops are conducted regularly for the private sector to encourage the adoption of barrier free web design in the private sector.

- *New initiatives*

Four government departments, namely Information Services Department, Leisure and Cultural Services Department (LCSD), Social Welfare Department and the Department of Health, will launch on a pilot basis in the first half of 2004 a sound version of selected information on their websites to enhance accessibility for the elderly and the visually impaired.

LCSD will consider setting up a Chinese Digital Library to assist visually impaired users to access electronic publications through the web without the use of printed Braille or audio tape.

Over 150 additional computers will be installed in public libraries to enhance public access to the Internet and the Multimedia Information System of the libraries.

Further radio programmes will be provided to introduce e-government services, the web accessibility concept, functions of the multi-application smart identity card, and encourage the use of IT by citizens.

The free public enquiry service, IT Easy Link, has been extended for one year to provide helpdesk support to members of the public and businesses on the use of basic IT applications.

CHAPTER THREE

SUMMARY AND CONCLUSION

34. Since the publication of the first Digital 21 Strategy in 1998, Hong Kong has come a long way in positioning itself as a leading digital city. We have successfully established the infrastructure, environment and capabilities for both the public and private sectors to adopt IT and e-business, and to become active participants in the information economy. Our progress and achievements have gained wide international recognition. The challenge now is whether we can sustain the momentum created in the last five years and how we can continue to harness the benefits of information technology for business, the community and Hong Kong's position in the world.

35. Having reviewed the progress made in the past years, we have identified eight main areas of action, which represent our roadmap for driving further development and adoption of information technology in Hong Kong:

- The Government will continue to be an advocate and champion to promote Hong Kong's international image as a dynamic digital city, and facilitate the development of innovative applications, e-commerce and creative industries by providing the right opportunities and programmes.
- We will deepen the e-government programme, drive up utilization and link it more sharply to service quality and effectiveness in service delivery.
- We will continue to promote e-business adoption, intensify the support to different sectors provided by the two flagships at Cyberport and Science Park, and strengthen our policies and regulatory framework to facilitate the development of the broadcasting industry.
- We will conduct a review on our current institutional structures to ensure that we have the right institution in place to coordinate, monitor and ensure the effective implementation of the programme of measures highlighted above.
- The Government will continue with its investment in research and development, and foster the development of innovative applications and services in areas including wireless technologies, digital entertainment and open source software through provision of funding and other support measures.
- We will promote a vibrant, competitive and innovation driven IT industry in Hong Kong through leveraging the opportunities afforded

by the Mainland market, brand-building and trade promotion efforts of the Hong Kong Trade Development Council, and our programmes to help the local industry enhance service quality and build capability.

- We will work with educational and vocational training institutions and the industry to enhance the training and skills of our workforce and the next generation.
- We will continue with our programme of activities to bridge the digital divide so that all sectors of the community will benefit from IT development in enhancing the quality of life.

36. Information technology development is an evolutionary process that has to be sustained by continuous inputs in terms of innovation, investment, regulatory and policy support, and commitment of all stakeholders. The Government, industry, academia and general community have worked closely together in the past years to realize the vision set out in the Digital 21 Strategy. This updated Digital 21 Strategy sets out a visionary programme of measures with the aim of realizing the full potential of information technology to accelerate Hong Kong's transition to a knowledge-based economy, and to provide the impetus to economic growth and prosperity. As in the past, collaboration of all stakeholders in the implementation of these measures is needed to ensure that they deliver the expected results. Our concerted efforts in implementing the Digital 21 Strategy will make Hong Kong a leading digital city, connecting the world.