



## Executive Digest

### Putting the Service into Broadband:

### Hong Kong's Telecommunications Future

14<sup>th</sup> October 2003, Mandarin Oriental, Hong Kong

#### Conference Sponsors:

Alcatel China Limited, Cisco Systems HK Limited, Hong Kong Broadband Network, HSBC, IBM, KPMG, Mandarin Oriental Hong Kong, Microsoft MSN, Tradelink, HeliServices

#### Themes and Issues

1. Hong Kong often compares itself, and is compared by others, with Singapore, South Korea, Japan and other advanced centres of telecommunications, but often the value of doing so is questionable. It is true that the excellence of the telecommunications infrastructure and the liberal and transparent regime of regulation is one of the top three reasons given by MNCs for choosing to locate RHQs in Hong Kong (the others being the financial infrastructure and the rule of law) but choice of location depends upon many other factors as well, such as closeness to suppliers or to markets. There is also the danger of comparing like with unlike and perhaps this raises a key issue: in Singapore, South Korea and Japan the state has played a proactive role in building broadband networks, whereas in Hong Kong both network rollout and usage have been driven by a competitive market. *So in the league table Hong Kong is second only to Korea, but may well have developed a more sustainable model.*
2. In light of this, the theme of the conference reflects the issue of usage, which in turn raises issues of content and applications available over broadband networks and stimulated by the affordable and availability of high speed transmissions. So two types of issues arise: how will Hong Kong developers of content and applications respond to the opportunity, and how fast will high speed transmissions need to go and what will incentivise the industry to provide them? These keynote issues were raised in the Opening Session by Francis Ho, Permanent Secretary, Communications and Technology Branch of the CITB and M.H.Au, Director-General of OFTA. Francis Ho places the spotlight on the Digital 21 consultation paper, a must-read found at [http://www.info.gov.hk/citb/ctb/english/paper/doc/2004\\_D21\\_Strategy\\_consultation](http://www.info.gov.hk/citb/ctb/english/paper/doc/2004_D21_Strategy_consultation)

[paper\\_Eng.pdf](#). Among the issues raised by M.H. are two that are vital for future policy issues. The first relates to unbundling of the wireline local loop (narrowband and broadband) and the issue of exactly what does Hong Kong want to achieve? See [http://www.info.gov.hk/citb/ctb/english/paper/doc/2nd\\_Consult\\_Paper\\_\(Final16-12-03\)clean.pdf](http://www.info.gov.hk/citb/ctb/english/paper/doc/2nd_Consult_Paper_(Final16-12-03)clean.pdf). The argument threatens to become one between industry interests and consumer interests, with industry arguing that unbundling does, or does not, promote investment. But investment at the end of the day will be driven by what returns are expected from selling content and applications over broadband, and the markets in question will vary in their demands for transmission speeds. Here M.H. poses the question of whether market failure is a serious danger or not. ***If market failure is a serious danger then presumably either unbundling should continue or Hong Kong should follow Singapore, South Korea and Japan. If it is considered less of a danger then Government should unwind regulatory intervention whenever and wherever possible.***

3. All the evidence is that Hong Kong is a highly price sensitive market, and with many high quality networks, for example eleven mobile cellular networks and over 90 per cent coverage of fixed line broadband networks, quality of service has become less of a differentiator. But price wars will devalue the industry, and alternatives are only slowly emerging, but they will come as new markets open up. These include digital high definition television for mass audiences, IP-VPNs for SMEs, managed IP networks for larger companies, enterprise solutions over broadband, convergence of fixed-mobile usage of broadband content and applications, and so on. These different market segments will have varying requirements for bandwidth, some up to 20 Mbps or 30 Mbps or even more, others just 1.5 Mbps or 6 Mbps. The industry is therefore in a period of transition technologically (to next generation networks) and commercially (content and applications) that give rise to uncertainties that make the normal commercial process of risk-taking difficult, because while a probability can be assigned to risk (like tossing a coin) none can be assigned to uncertainty. ***In periods of uncertainty the industry is more likely to be critical of the regulator if it isn't being as protected as it would like, or isn't being freed from regulatory obligations.***
4. Network operators in Hong Kong are positioned and readying themselves to exploit these new markets. Ricky Wong (HK Broadband Network) and Joseph Yuen (New World Telecom) in Sessions 3.1 and 2.2 respectively, make that very clear. Facilitating them the vendors are racing to bring greater capabilities to next generation networks but with greater operational simplicity, and this is the trick. Lionel Adnet (Alcatel) and Charleston Sin (Cisco) outline some of these developments in Session 1, Lionel emphasizing the need for variable bandwidth on demand and also affordable access pricing, Charleston paying special attention to the needs of SMEs. In Session 2.2 on Network Services, Colin Chan (IBM) and David Zhang (Micromuse) discuss developments in systems architectures and system software that allow more complex operations and service provisioning to be handled with greater simplicity, while Ricky Chau (Speedcast) gives the specific example of dynamic bandwidth channel assignment from AsiaSat using a low-cost technology known as RCST. Of the many outsourcing opportunities that exist Sidney Yuen (HK

Call Centre Association) reminds us that as well as the operational efficiencies and cost savings available with new network capacity the recent growth in call centres also reflects changing customer expectations of levels of service. ***Hong Kong's great advantage lies in the ability of its networks and service providers – the users of network technologies – to adapt next generation network capacity to innovate and pioneer new markets. Meeting our China counterparts halfway will open up even greater opportunities.***

5. The theme of content, applications and variety or difference became prominent in a number of the sessions. Nick Price (Mandarin Oriental) in Session 2.1 Travel & Leisure shares his vision of an IP-environment in every guest room that adapts itself to the guest's known personal preferences. For Nick the critical issue is not just content, but high-definition content over high definition television (HDTV). Ricky Wong (HKBN) in Session 3.1 Broadband Content stresses the need to experiment with different content across a variety of platforms, including TV to a 3G handset. Nigel Harper (Yes TV) in Session 3.1 agrees that on the demand side offerings need to be flexible to encourage the market, but on the supply side many different broadband platforms will significantly reduce the cost and increase the choice of entry. Darren Olivero (Centro) sees lots of good infrastructure but insufficient content creation going on in Hong Kong, something the new Digital Media Centre at Cyberport is designed to stimulate. Nick Price's frustration at the lack of high definition content prompts him to make an appeal to Government to speed up the introduction of HDTV through an agreed digital terrestrial transmission (DTT) standard. [In December the Government has issued a second consultation paper [http://www.info.gov.hk/citb/ctb/english/paper/doc/DTT-c-paper-2\\_E.pdf](http://www.info.gov.hk/citb/ctb/english/paper/doc/DTT-c-paper-2_E.pdf) ]. ***The conference reinforced the importance of Government taking a pro-active view on the need to help foster Hong Kong's content creation industry.***
6. Not all content and applications need broadband, but broadband provides higher quality of service guarantees and, of course, faster ways of doing things. Doing things better can be just as important to doing new things. Celina Chan (Microsoft) illustrates this in her review of MSN Messenger, pointing out that messaging is a rapidly growing means of networking for both personal and professional reasons. Greater bandwidth not only gives more people more access to messaging, but also allows for more personalized messaging services including, for example, the use of avatars. Raymond Ngai (HK Jockey Club) in Session 2.1 gives the example of increased amounts of information in different languages on races, matches and betting that broadband can deliver as well as higher quality of services and fewer dropped calls - using narrowband telebetting, the call success rate in the five minutes before a race begins falls to 22 per cent. Streamed video of races will also become feasible. Needless to say price will always be a critical issue as Edward Nicol (Cathay Pacific) explains with regard to satellite broadband inflight cabin services. Currently speeds used are no more than 2.4 kbps or 9.6 kbps, but 128 kbps or even 432 kbps will be available by 2005. So while emails are cheap, bandwidth-consuming attachments are not, and pricing packages will have to reflect a variety of menus. Rob Taylor (Pacific Coffee) brings this together in many ways when he traces the incremental

development of the traditional coffee shop from a place of gossip to a place of fashion to a place of online communication, first by email and most recently by introducing video over broadband. Looking ahead Paula Brillson (H2H Digital) argues the case for the digital distribution of video to cinemas to replace 35mm film distributed as a single print to each theatre. Apart from reducing costs it opens opportunities to change entirely the environment of the cinema. Allan Wong (PCCW) as the WiFi partner of Pacific Coffee adds another dimension to incrementalism, the issue of the business model that will evolve, maybe into a revenue sharing model. ***It is clear that while technologies may appear to offer revolutionary jumps, the development and marketing of new products and services tends to be incremental, even when the consequences can be revolutionary, and this is a perspective worth bearing in mind, basically of building steadily on success by keeping an eye on the future.***

7. Elizabeth Quat (President of iProA) introduces Session 3.2 on Logistics with a brief background to the Digital Trade and Transport Network (DTTN) project and together with Justin Yue (Tradelink) explains the DTTN as a messaging infrastructure that will operate according to globally-recognized standards in a transparent, neutral and voluntary manner. The company operating the DTTN will only venture into value-added services if there are market needs that are not being addressed by the private sector. Kevin Taylor (Descartes) adds that on top of the systems infrastructure, messaging standards and applications we should add mobility, and what he terms mobile resource management. Kevin, Leo Yeung (GXS) and Anna Lin (HK Article numbering Association) devote time to explaining the coming importance of radio frequency identification (RFID) tags that are being pioneered by companies like Wal-Mart and Gillette and others on pallets and cases and containers for shipping. The next step will be RFID on items for stock control and automatic checkout in electronic store environments. To promote the adoption of uniform standard RFID tags an Electronic Product Code (EPC) standard called EPC Global has emerged and the next step is to set up a Hong Kong EPC Roundtable. This and other initiatives such as the Pan-Asian E-Commerce Alliance that besides Hong Kong includes China, Japan, Malaysia, Singapore, South Korea and Taiwan tasked with facilitating the mutual recognition of electronic documents will help keep Hong Kong at the centre of trade developments drawing on the potential of broadband. Following 9/11 the introduction of the Automatic Manifest System (AMS) has given the introduction of electronic documentation a further imperative, but this raises a number of questions, such as who is entrusted to attach an RFID, who pays for it, who checks it, and who takes liability for it? And a word of warning, in the words of Leo Yeung, 'there is no quick fix' and panelists Philip Lam (HK Logistics Association), Ringo Ng and Almon Yu (HK Association of Freight Forwarding and Logistics) and Leo Chow (Institute of Purchasing and Supply of Hong Kong) underscore this point when noting these developments are just as important to SMEs in Hong Kong as to larger companies. The discussion also noted the procedural complications in obtaining e-certificates. ***The advantages to SMEs in Hong Kong must be shown to be real, the dangers of not adapting to the coming changes must be made clear, and the incentives to adapt must also be there. The processes must be made simple, including obtaining and using e-certs. The role of the Logistics Council and trade associations can be vital***

*in this process, but it may also demand even greater coordination between the IT, customs and the trade departments within Government itself.*

8. Co-ordination between departments of Government was a theme of Session 4.1 Citizens and Public Services where Simon Harriss (Accenture) reports on Accenture's 2003 e-government study of 22 countries, placing Hong Kong at the fourth level of maturity in the delivery of services online. The fifth and highest level was occupied by Canada for its cross-agency approach. Robin Gill (e-Government Coordinator) agrees that this is the next step, together with finding out more about citizen needs and preferences and making Government more open to feedback. Terminology and perhaps concept were also issues. While Government should offer the citizen consumer rights and value and quality of service, the consumer is also a citizen with rights and responsibilities in a participatory democracy, and e-Government should take this into account. Peter Yan (Global e-Business Services) reviews the existing Government back-office online tendering and trading systems. The company will soon be providing the Government with an electronic trade document service similar to Tradelink, but with more of the emphasis upon cross-department systems. Michael Yung (ESD Services Ltd) reviews the front-office *ESDLife* system which claims 5 million hits a day and quarter of a million transactions per month of which 30 per cent involve online payments.<sup>1</sup> As in the session on logistics, so here the question of difficulties in obtaining and using e-certs arose and the potential role for using mobile devices and applications could be further explored. Sin Chung Kai (IT Constituency, Legco) adds a further dimension, that of quality of service standards for the citizen and especially the need for protection against spam. ***E-Government is not just about placing Government services online, it is also about making Government more transparent, more open and accountable to citizens, coming at a time when Hong Kong society as a whole, especially post-SARS, is clearly developing a new level of community identity, one based upon an information society that is global in its aspirations. Like cities such as New York, Hong Kong can only gain strength from such openness.***
9. Session 4.2 on Financial Services came to focus on three issues: security, system integrity and system and bandwidth capacity. John Barnes (KPMG) puts these issues into context but drawing attention to people, process and technology, in that order. Awareness among people of the security issues with well designed procedures and practices can make the best use of technology at minimum risk. The importance of doing so for Hong Kong becomes evident in the presentation of Li Shu-Pui (HK Monetary Authority) who reports on a survey of banks in Hong Kong. There are 35 banks offering retail online services across 1.8 million accounts, and 25 banks offering corporate electronic transactions representing 46,000 customers. The HKMA

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<sup>1</sup> The award to *ESDLife* of the World Summit Award (WSA) Asia Best Practice Awards for the e-Government category in December was marred by the arrest by the ICAC of 17 people in connection for inflating the number of electronic transactions according to ComputerWorld Hong Kong – see <http://www.idg.com.hk/cw/readstory.asp?aid=20031219001>. Government outsourcing requires continuous vigilance if the interest of citizens is to be protected, and the costs of vigilance need to be factored into the savings involved.

approach to e-security is the Supervisory Control Self-Assessment guideline for banks. Paul Mackellar (Forensic Partner, KPMG) who has a background in the police specializing in major fraud and money laundering tells us that most fraudsters are in fact either employees or managers, with less than 10 per cent of cases involving outside parties. He recommends regular risk assessment, internal controls and a fraud response plan. Stephen Law (HK Exchanges and Clearing Ltd) also emphasizes the need for security as well as quality of service and capacity to serve the growing customer base. The merging of the HKSE, HKSCC and the HKFE into one body places a great demand on the integrity of the next generation IT system which is due for completion by 2005. The system needs to support 30 applications, 90,000 virtual connections, cover the whole of Hong Kong and with capability to connect to Mainland China. This is a good illustration of the complexity modern IT systems have to provide, the bandwidth capacity they demand and the need, as discussed above, to simplify the operation, support and service provision of these networks. ***The growing demands for system software support, for security applications, for encryption devices, and so on should be seen as business opportunities for Hong Kong which already has the basic broadband infrastructure to support these networked devices and applications.***

## 10. Conclusions:

- a. Hong Kong has perhaps the most sustainable broadband model in Asia because it is truly market driven. The caveat is the scale of the market when content and applications replace network connections as the main drivers, but Hong Kong has an excellent track record of developing new markets.
- b. There is a chicken-and-egg situation with content and applications whereby the delivery systems and the billing models are slow to develop if there is little content demand, and vice-versa. This will resolve itself naturally over time, but the scale issue probably requires greater integration with the Mainland market. There is therefore a potential of 'market failure' for a period during which limited Government support, such as the Digital Media Centre and the Wireless Development Centre at Cyberport, is justified.
- c. Government has been proactive in numerous areas, such as the Electronic Transactions Ordinance, but probably needs to consider issues at the more detailed and practical level. For example, how accessible is information to the average citizen, can the e-cert procedures be simplified, what are the costs and benefits to SMEs of going online? Certainly anti-spam legislation seems called for and closer co-ordination within the industry to combat computer fraud.
- d. The private sector does best when it builds incrementally upon its core competencies and strengths without losing sight of changes due to technologies, markets or regulations. IT and to a lesser extent telecommunications often trend in fads and fashions which are good for raising public awareness but not very good as a guide to policy and

regulation which should aim as far as possible at being generic and long-term market neutral. When the industry is still suffering from the hangover of the post dot.com boom and remains fazed about the future, special pleading will be at its loudest, and is the time when markets are most fully tested. Public policy should remain firmly fixed on the future, enabling new markets to emerge. Policies towards DTT, DTTN, WDC, DMC all seem sound and sensible.

- e. Policy review should focus particularly on concrete issues, such as who is using e-Government and who isn't; how to encourage SMEs to adopt e-commerce, how to foster support for industry standards such as EPC Global, how to tackle the growing problem of spam, and so forth. In other words, the emphasis should now be on how to make the best use, and better use of the broadband infrastructure we have.

**Supporting organizations:**

The Office of the Telecommunications Authority in Hong Kong (OFTA)  
Cable & Satellite Broadcasting Association of Asia (CASBAA)  
Chartered Institute of Logistics and Transport in Hong Kong (CILTHK)  
Hong Kong Association of Freight Forwarding and Logistics (HAFFA)  
Hong Kong Call Centre Association (CCA)  
Hong Kong Digital Entertainment Association (HKDEA)  
Hong Kong General Chamber of Commerce (HKGCC)  
Hong Kong Information Technology Federation (HKITF)  
Hong Kong Internet Service Providers Association (HKISPA)  
Hong Kong Java Users Group (HKJUG)  
Hong Kong Logistics Association (HKLA)  
Hong Kong Productivity Council (HKPC)  
Hong Kong Sea Transport and Logistics Association (HKSTLA)  
Hong Kong Shippers' Council  
Hong Kong Telecommunications Users Group (HKTUG)  
Hong Kong Trade Development Council (HKTDC)  
Hong Kong Wireless Technology Industry Association (WTIA)  
Institute for International Research (IIR)  
Institute of Purchasing and Supply of HK (IPSHK)  
Internet and Telecom Association of Hong Kong (ITAHK)  
Internet Professionals Association (iProA)  
Information and Software Industry Association (ISIA)  
World Teleport Association (WTA)

## Opening Session

**John Ure, director of the Telecommunications Research Project (TRP) and the Telecom InfoTechnology Forum (TIF)** opened the conference with a word of thanks to the **sponsors: Alcatel, Cisco Systems, Hong Kong Broadband Network, HSBC, HeliServices, IBM, KPMG, the Mandarin Oriental Hotel, Microsoft and Tradelink.** He also showed a photograph from the anniversary CD of the TRP's first conference *Information Services & Technology in China and Hong Kong* held May 1995 at the same Mandarin Oriental Hotel ballroom venue, with many of the same people in attendance. The big difference between now and then in terms of IT and telecommunications has been the advent and rapid adoption of broadband in a competitive environment, a change that has kept Hong Kong at the forefront of regional developments. Now the task and the challenge is to keep at the forefront in terms of content and applications and services delivered over broadband.

This is the theme of **Francis Ho, Permanent Secretary, Communications and Technology Bureau**, who gives the welcoming address. Hong Kong has achieved not only excellence in infrastructure and vibrancy in the marketplace, but has reached a critical mass of broadband users. The way ahead is now being mapped out in the Government's revised **Digital 21** Strategy consultation document which is devoted to exactly the issue of applications and services. Feedback on this strategy document will ensure that Hong Kong maintains the right balance between Government promotion and facilitation on the one hand, and the role of competitive market forces on the other.

**M.H Au, director-general of OFTA**, provides the statistical update to quantify just how well Hong Kong is doing in this area. For example, 98 per cent of commercial buildings are 'passed' by broadband and forty-eight per cent of home are actually connected to the Internet by broadband. Broadband connections now exceed narrowband connections. Broadband speeds currently range from 1.5Mbps asymmetrical to 10Mbps symmetrical and international connectivity has reached 900 Gbps compared with 44 Gbps before competition was introduced, placing Hong Kong among the leaders in Asia. OFTA has reformed the licensing system to aid the rapid roll out of networks and services, including strengthening legal rights of access to buildings and simplifying some licensing processes with class licences. Hong Kong has also led the world in unbundling the local loop (Type II interconnection) where now 58 per cent of residents have a choice of PSTN network provider. This is a controversial policy issue currently under review and consultation. Basically, has it been successful enough, and if so should it be continued or phased out? One thing M.H. makes clear is that the policy won't be extended to fibre. 'The real focus of a debate should be whether Type II interconnection to the copper based local loops would affect investment in the customer access networks.'

M.H dismisses 'another potential misconception [which] is that investment in the customer access network equals all investment in the broadband infrastructure... The local loop is not the entire infrastructure.' So criticism of networks that fail to build their own local loop is misguided if it implies they fail to invest in their own broadband infrastructure. He also questions the suggestion that Type II interconnection is directly

responsible for telecommunications investment peaking in 1996, pointing out that general economic conditions became unfavourable after the Asian economic crisis and the recession that followed and the dot.com crash, and without any unbundled broadband price having yet been determined it seems unreasonable to assume Type II interconnection could be responsible for lack of investment by non-cable networks in broadband. Furthermore Type II interconnection does not extend to many of the network elements included by other jurisdictions, notably the USA. The key question is what is the policy objective? For example, future demand for applications may require speeds of 25 mbps and beyond, so should the Government be trying to promote fibre-to-the-building to facilitate this? Or should this be left entirely to market forces on the basis of sustainability? Is there a digital divide issue here to be taken into consideration? By leaving us with these questions, M.H. raises important questions for the future.

**Lionel Adnet, Vice-President of Alcatel, Asia Pacific** points out that Alcatel has been one of the earliest and most successful vendors of broadband DSL equipment, having shipped more lines than any other company. Reviewing the roll out of broadband globally, Lionel notes problems of regulatory uncertainty in various countries, but suggests the latest Triennial Review in the USA, with the FCC coming out against unbundling broadband will improve the investment climate for telecom companies allowing them to catch up with the cable companies. Fibre-to-the-building is the next step along with building up the customer base for bundled voice, video and data. A key point here, echoing the point raised by M.H., is for operators to have a platform that can offer varied services and speeds to different sets of customers. This together with price reductions and even pre-paid services such as those offered in Italy to compete with cable is the way forward. For example, recently monthly DSL charges in the USA have fallen from \$45 to \$35. Two other key areas are breaking into the business or enterprise market which should show strong growth, and continuing advances in compression technologies.

**Charleston Sin, Regional Manager, Cisco Systems** followed up on the importance of the business sector, but with an emphasis on SMEs and the opportunities for telecom operators to win outsourcing contracts for broadband network management services. In Cisco's view this is a great-untapped market, offering facilities such as VPN tunnels to facilitate home working and small-scale networking, while large enterprises will build single networks that need management. Cisco sees this as a worldwide development. Charleston talks us through the basic mechanics of a next generation network and the shift from a network surrounded by end-users to end-users surrounded by network facilities and services, and then goes through numerous issues, such as the need for billing systems designed to meet the demand for new services. He identifies the following as some of the crucial trends: (a) the growth of content that needs routing and transmission capacity, (b) the importance of service continuity and backup, (c) the growing importance of storage requirements and data centres, (d) the shift to IP video conferencing and IP telephony which has reached the point of becoming mainstream, (e) enhanced security and alert systems, (f) convergence with mobility.

**Ricky Wong, Chairman, Hong Kong Broadband Network**, speaks as a customer of Cisco Systems. 'If you have 100 per cent Cisco, then you have 100 Mbps per customer'

over Metro-Ethernet in contrast to both lower DSL speeds and shared cable capacity. HKBN in a very short period of time has achieved sixty per cent coverage of residential homes, or 1.2 million households, and of these fifty-five per cent are direct to the building HKBN owned or leased from other operators. [The remainder is provided over LMDS.] HKBN's customer base stands at 330,000. Ricky has previously announced plans for TV services which he discusses in Session 3.1 (see below) but on this occasion turns to M.H. to say that after returning from S.Korea where mobile phone operators are offering TV channels to the handset, he too now wants a crack at a 3G licence! [Currently under review by OFTA is the reassignment of spectrum from expiring 2G licences.]

Ricky Wong also helpfully points out that every time he speaks at a TIF his share prices seem to bounce up 10%. A good reason to sponsor future forums!!

## Session 2.1: Travel & Leisure

**Nick Price, Director of Technology, Mandarin Oriental Hotel Group** opened the session from New York, that is to say he recorded his presentation on DVD while supervising the opening of the latest addition to the MOHG in NYC. Nick is known as an IT director with a vision, and his vision is high-definition broadband content and not just current content and services across broadband that is widely available in the world's leading hotels today. He outlines the facilities that he wants all his customers to enjoy, ranging from IP telephony to an entirely intelligent room based on an IP infrastructure. In New York there are 40-inch HD LCD televisions connected to all-round sound systems with DVD players and FM radio. Nick's vision is a customized suite of services, including both free HDTV and stored content, based upon a knowledge of each frequent hotel guest. For example, knowing your guest wants to wave goodnight to his family real-time half way across the world via the LCD video-screen should be no problem.

Nick goes on to raise a number of challenges for Hong Kong. Producing high definition content is number one, and Hong Kong should have every advantage in this area given its traditional strength in depth in the creative media sector. To drive this Hong Kong needs high speed broadband to feed the new generation of high definition flat screens coming onto the market, speeds of 20 Mbps and above. Hong Kong is ready for HDTV right now, yet has not agreed a standard. It should push ahead immediately. [*The Government has since announced in December the go ahead with Digital Terrestrial Transmission following China's decision to push ahead with the European standard until China's own standard became marketable – ed.*]

**Raymond Ngai, Manager of IT Infrastructure, Hong Kong Jockey Club** speaks as a representative of one of the biggest users of IT, pointing out that the not-for-profit HKJC contributed 10 per cent of all the tax collected in Hong Kong. By far the most popular form of off-course betting is the telebet voice betting service, with 1.2 million calls on a race day and a call completing rate of only 22 per cent during the five minutes before the race starts. Online betting from a computer is growing and all six mobile operators offer HKJC mobile betting using SMS. Two-way messaging using a wireless data network is also available and a device that operates as a customer input terminal using dial up from home or a plug-in at the race course to connect to a betting engine. This device is slowly being replaced by a PDA. These are all ways of making a betting transaction.

But betting information is the other key application. Online betting also provides information about the race, about the betting odds and types of bets, and a transfer of funds facility. Broadband is not essential for any of this, but it speeds up the process and eliminates dropped calls. This is especially important when customers want to be just-in-time with their bets. Football betting will drive a lot of the new demand, and off-course touch-screen kiosks have been set up to provide information. But content is likely to be the key driver of broadband, such as providing live commentary in three or more languages, real-time video from different race angles, archive video materials of races and matches, etc. During discussion, Raymond makes the point that the process of setting up an e-cert account with the Post Office to facilitate online betting remains a headache for many people, and therefore a barrier.

**Edward Nicol, Director of Information Management, Cathay Pacific** reviews the current satellite-based facilities available on commercial aircraft today, of which the most common is the INMARSAT CN64 service that provides connectivity of only 2.4 Kpbs, sufficient for phone calls, the moving map, etc. Northern American Telephone Services (NATS) provides 9.6 Kbps at low cost, and INMARSAT has introduced Swift64 offering 64 Kbps, but in reality perhaps only 300 kilobytes per minute - a typical email is 2 kilobytes, and attachments can be much larger. Currently no commercial airline can justify its deployment based on the cost of the radios. By 2005 it is expected that 128 Kpbs and even 432 Kbps will be available for service. The two major suppliers are Connexion by Boeing and Tenzing owned by Airbus (others include Rockwell Collins, SITA, Thales and AirTV) are both talking broadband, but as the capacities above indicate this is very limited broadband.

Aircraft mostly use L-band frequencies, but Ku and Ka bands are also available, and S-band will become available opening up a lot of potential, but cost is the big issue as aircraft transponders are very expensive. Another issue is latency. Aircraft flying the Atlantic route cross Northern Canada and Greenland beyond the reach of most satellites. A third key issue is security, to prevent worms and viruses attaching the cabin's LAN systems.

Ed talks about what passengers want. They want cached information, they want updated news, they want to use their own laptops and mobile phones, and 97% of passengers consider email as the critical application but among the problems are cost, such as phone calls at US\$9 per minute. The average number of calls per day per aircraft in the USA is just three. What do the airlines want? Aircraft cannot expect to replicate the ideal home or office but they could aim to provide a hotel-like environment comparable to Nick Price's vision for the Mandarin Hotel... 'that would certainly be my short-term goal.' To pay for this airlines need to find high-usage applications. Currently most airlines batch up emails every 15 minutes, costing passengers between \$10-\$20 a flight, around 60 cents a kilobyte. Sending attachments can cost as much as \$300 for 3 Meg. Cathay, using Tenzing (Ed tells us his previous job was CEO for Tenzing) now offer \$19.95 as much as you can eat, which is good value. Boeing's model is very different, offering much greater bandwidth but they want to run all parts of the system themselves in an exclusive model. Their current price is around \$30 per flight. BA and Lufthansa have carried out free trials, but they will 'need many, many passengers per flight to break-even.' Smaller vendors, such as SITA, AirTV and TELAS are focusing on SMS (around \$2 per message) and simple email, like Tenzing. And there 'is also the illegal model which is quite widely used in the US which people are using inflight. And that, of course, costs absolutely nothing.' [Ed is here talking about the use of cellphones.]

**Rob Naylor, COO Pacific Coffee** reminds us that the coffee shop is traditionally a place of gossip. [Tea and coffee houses were also often places of transactions, giving rise to early stock exchanges.] But the nature of gossip has changed from face-to-face chat, then to information gathering and exchange, and then to a focus on lifestyle. The installation of PCs in Pacific Coffee started about 5 years back to take the trend just one step further. PC partners with PCCW, Intel and Sony and aim principally at two groups, business users and people who just want to chill out for 20 minutes or so. PC has now taken the next step with wireless WiFi, Bluetooth and PDA cradles in all the

stores, an Infrared Internet take-away service as customers can download emails and attachments to their laptops and PDAs.

PC does not aim to become a cybercafe, but to use IT to serve its customers. So, for example, PC has installed Net stations to allow customers to communicate by video with their friends and family, a similar consideration to Nick Price's vision for Mandarin guests. PC has also seen the numbers of people using broadband connections in their stores double between January and August 2003. Their survey shows in September 2002 and May 2003 showed people initially just browsed with 75% just testing and 59% downloading emails. That has changed, and now 63% of those using wireless broadband are downloading emails while mere browsers are in decline.

**Paula Brillson Executive Vice-President, H2H Digital** discusses digital cinema and how broadband can be used to distribute to cinemas across continents and cut quite dramatically. For example, a single film print may cost around US\$2,000 whereas digital transmission costs less than this and can deliver to multiple theatres simultaneously. Filming in 35mm is also more expensive than digital shoots, and cutting costs opens the door to many more independent film producers. Currently there are around 160 producers and distributors in Hong Kong. Digital offers opportunities to create new environments within cinemas and tailor content much more exactly to local audiences, including boosting advertising revenues. China is already beginning to equip its cinemas with digital, as is the USA and Europe and Hong Kong is falling behind. From Rob's contribution it seems Pacific Coffee has advanced further than most Hong Kong cinemas

**Allen Wong, General Manager of Product Development and Management, PCCW** joined the panel for Q&A, telling us that PCCW's investment in hot spots was not too expensive so break even was already very close. Looking forward, revenue sharing agreements with hotels, coffee shops, shopping malls and the like, is possibly on the cards, but Allen was naturally cautious on this subject but noted that revenues were growing. He also notes that WiFi really represents the portable market where someone walks in, sits down and goes online whereas new technologies such as 3G represented mobility, online on the move.

## Session 2.2: Network Services

**Colin Chan, Enterprise Application Integrator Leader of Business Consulting Services, IBM China/Hong Kong Ltd (sponsor)** starts with the point that the transition from 2G to 3G is changing the role of the telecoms operator from a support role to an information broker and from operating within a 'walled garden' to standing mid-point in the communications-information value chain. Traditionally the operator relied heavily upon equipment manufacturers but now operators need to build their own architectures to broker the layers of platforms and operating systems required to deliver access, applications and content, authentication and billing, customer care, system maintenance and system, etc. IBM has developed a reference architecture for operators to achieve these aims.

Colin's presentation focuses on four core systems that have direct contact with the customer, CRM, billing, assurance and fulfillment. The problem for 2G telecom operators is that they lack a comprehensive or integrated IT system to support any one of three business models. The first is where they provide all the applications and content themselves supported by a traditional billing model. The second is where they host all the applications and content and bill on behalf the third parties. The third and majority model is a sharing model where the third parties own and host their own applications and content and share revenues with the operators, billing for themselves. The billing systems in turn require assurance and fulfillment monitoring, in other words who is responsible for system failures. There are many transaction points that need to be implemented seamlessly.

Each layer in the architecture from network layer to platform or service layer to applications layer requires systems integration, with the operator requiring meta-data for monitoring and recovery purposes. These complexities are time consuming and potentially costly barriers for operators. The IBM solution is to reduce the complexity through an integration hub. Interface is of complexity  $N^2$ , but by reducing point-to-point integration down to interconnection between adaptors at each layer,  $N^2$  complexity is reduced to  $N$ . By reducing complexity, time to market is similarly reduced.

**David Zhang, Vice-President Micromuse Greater China**, introduces Micromuse as a software vendor meeting the needs of network operators who are looking for end-to-end solutions. As a global partner of IBM, Micromuse designs and installs software across the layers of the operations stack, from device connectivity at one end to operations management at the other. This allows operators to cater for customer care at one end of the business to monitoring performance levels to identifying and measuring different traffic flows through the system which is important for both provisioning, routing and billing purposes, to recovery and maintenance.

David Zhang's presentation reminds us that (a) the operation of telecommunication networks increasingly demands levels of IT competency, and (b) that speed to market and speed of service maintenance and recovery are strategically key issues in an era of service level agreements, or SLAs.

**Joseph Yuen, Assistant General Manager, Marketing, New World Telecom** reinforces these points with his outline of NWT's strategic involvement in next generation network (NGN) services and a focus on related IT services such as systems integration (IS) for carriers in China. Joseph sees four components involved: first, the fibre backbone; second, VPNs serviced, third, by NGNs, and fourth knitted together by systems integration. Central to this strategic outlook is the view that more and more enterprises will look towards an integration of their own systems with their communications networks, using virtual private networks over IP, or IP-VPN. Carriers are in the best position to provide these integrated services, providing multi-point mesh networks and telephone numbers can become fully personalized as IP addresses.

NWT's strategic vision also underscores the point that the move into a broadband era will see a rapid growth in demand for bandwidth. NWT already provides 12 Mbts connectivity. The fact that NWT is a client of IBM further reinforces the point that the worlds of IT and telecommunications are entering a new age of systems integration in terms of both what the carriers can offer, especially the move to NGNs, and what the enterprise market will demand.

**Ricky Chau, Director of Business Development for Greater China, Speedcast**, an associated company of AsiaSat. Speedcast operates a hub-and-spoke network out of Hong Kong offering 45 Mbps channels delivering services to 25 countries in the Asia-Pacific region. This TDMA broadband network can be delivered in smaller units using low-cost indoor equipment costing less than \$4,000 that includes a reset channel box known as RCST. This allows access to a broadband IP network anywhere within the footprint. IP-VPN service is another application, very useful for video-conferencing and providing backup to land-based systems. Satellite communications can hardly compete with submarine cable for most regional traffic given the glut and low prices of the latter, but for utility and social development applications such as distance health care and learning satellites have a unique role to play.

**Sidney Yeun, is Chairman of the Hong Kong Call Centre Association** that has 140 members both from the public and private sectors, mostly front-end people, operations managers and directors of marketing. Sidney sees the growth of call centres arising from three trends; one based on cost reduction leading to locations of choice in India, the Philippines and Mainland China. The availability of broadband and the Internet is facilitating this movement. A second is increasing levels of competition, and acquisitions through mergers also give rise to the consolidation of customer care centres around the Asia-Pacific region. The third is changing customer expectations, and customer care directors looking for simple solutions for customers to access assistance.

Two areas are not yet mature are voice-over-IP as many companies retain the tried and tested PABX solution, and so far there has been little integration of the services of application service providers into the managed service arena. In this regards companies are becoming increasingly aware of the importance of human resources and training call

centre staff with the skills of sales and marketing, with more and more web-based training becoming a major trend.

### Session 3.1: Broadband Content

**Ricky Wong, Chairman of Hong Kong Broadband Network** (sponsor of the session on Broadband Content) addresses the issue of whether broadband infrastructure drives the demand of content or the increase in the supply of content will encourage the development of the broadband infrastructure. According to Ricky, who started Hong Kong Broadband in the year 2000 and moved into the Pay TV business a few months ago, this is a chicken and egg issue. Both the content providers and the Pay TV operators see the high risk involved in moving first into the business. Content providers probably worry that there are not enough TV channels for their content whereas operators may complain that the content is too expensive to acquire.

For the content providers, he thinks the questions they should ask is what kind of infrastructure providers their content should target as “different content has different characteristics and is suitable for different devices,” such as mobile handsets, PDA, TV and PC. At the moment, Hong Kong Broadband has 24-hour news channels which is very expensive to maintain and highly risky especially if you do not know the customers’ response to the content and what to put on the Pay TV platform.

For the infrastructure providers, they should understand why they want to upgrade their infrastructure to provide a broadband platform to the content providers. There are uncertainties in technology development, and whether there will be a good supply of content after investing in the infrastructure. Another consideration is consumers’ willingness to pay for the content. Ricky’s point of view is that consumers are more willing to pay for content on the mobile than other platforms. In Korea, it is commercially viable to view TV channels live on the mobile phone, which he thinks is a good platform for content development.

Ricky also outlined the vision of Hong Kong Broadband. As a broadband service provider, Hong Kong Broadband is moving into the Pay TV business and producing its own content tailored to different niche markets and are technologically prepared to provide the content through all four media simultaneously with the technique of multicasting. As an infrastructure provider, Hong Kong Broadband will take the first step in laying the infrastructure for the content providers to deliver their content. To conclude, Ricky regards content as the king and the network as the queen, while the customer is their baby. Although content is king, without the queen one cannot deliver to the baby he needs.

**Celina Chan, Director of Microsoft MSN**, introduces the main features of their worldwide instant messaging communication service, MSN Messenger, which she sees as a perfect match for the broadband platform. There are 11 million users in Asia of which 560,000 users are from Hong Kong. The latest version of MSN Messenger has moved beyond instant messaging and chatting to expressing one’s digital self and business applications that help increasing productivity. Popular features among youngsters include self-made emoticons, which add a personal touch to realtime communication.

For business applications, users can share large files easily as there is no limit for the size of attachment. Besides, users can share the desktops with their colleagues, allow them access to one’s files when having online meetings on the Messenger. Also

included in the Messenger are digital entertainment such as peer-to-peer online games and localized content. All these applications are bandwidth hungry and require a broadband platform, be it fixed wireline, WiFi or 3G for it to perform seamlessly.

**Nigel Harper, CTO of Yes TV:** Yes TV has been involved in television broadcasting, interactive TV and PC broadband services in Hong Kong. The digital broadband platform of Yes TV allows a whole variety of mixed media to be ingested, managed and then delivered to different networks and devices. To fulfill these functions, the platform should possess the qualities of being highly efficient, involving low risk and low cost as well as creating a television like experience for the consumers. It is also important for a platform to be able to deliver the pool of entertainment and information on different devices.

With the blurring distinction between PC and TV, Yes TV has ventured into Broadband PC services since April providing movies, news, music entertainment educational programs, etc on personal computers. The system they are using has embedded Microsoft streaming technology within the Yes TV applications, offering content providers a secure delivery platform and the flexibility in assembling and putting up different pricing and packaging options. It is hoped that the service will be offered in a 3G and a PDA environment.

**Darren Olivero, Executive Creative Director, Centro:** one question we may ask is whether the three entities of technology, commerce and art is out of balance in Hong Kong with very good network infrastructure, huge amount of commerce but little content creation. Darren, through introducing the projects Centro has been doing including “The Eye” and “Kill Bill”, suggested that there is a lot of talent in content creation in Hong Kong and there is also a lot of global collaboration taking place to bring this content out to the world. Centro’s experience with the project of Now Broadband TV shows that consumers do not care about the technology behind it. What they are concern about is the kind of content they are getting and how much they are willing to pay for the content.

Another project designed by Centro is the Digital Media Centre (DMC) at Cyberport which provides content producers with access to a wide range of multimedia content production facilities that helps them to overcome investment hurdles. It is suggested that network operators could provide research funding to organization like the DMC to facilitate the cooperation between content providers and network operators in the distribution of content.

## Session 3.2: Logistics

### **Elizabeth Quat, President, iProA and V-P Corporate Development of SC Fulfil Ltd**

chairs the logistics session. Elizabeth provides a short review of events leading up to the proposal for a Digital Trade and Transportation Network (DTTN) which is a network designed to provide an architecture open to all sectors of the logistics value-chain. Its guiding principles are (a) neutrality, (b) non-exclusivity and (c) transparency, using widely accepted industry standards. Following a bidding process, the Logistics Council resolved to negotiate a DTTN contract with Tradelink subject to final agreement.

### **Leo Yeung, Director-Consulting Services, Asia Pacific, Global eXchange Services (GXS)**

explains the structure of the logistics industry in terms of its usage of IT. At the retail end of the stack are leading companies such as Wal-Mart adopting AS.2, an IP protocol to transport EDI messaging and requiring their suppliers to do likewise. Wal-Mart is also leading the adoption of RFID (radio frequency identification) on all pallets and containers destined to its retail outlets by January 2005. At the hi-tech manufacturing layer the not-for-profit organization RosettaNet has for a long time been promoting industry standards for EDI over IP with backing from companies such as Intel, supporting direct shipping, third-party logistics (3PL) and outsourcing to OEMs clusters, in which Taiwan is the leader. Malaysia's Dragonet is another example of such an initiative. The third layer is government, especially after the events of 911. The US Customs and Border Protection organization now requires under the Automatic Manifest System (AMS) ship manifests 24 hours before sailing. Similar rules are being introduced for passenger airlines. Given these drivers, Leo also presents an interesting chart showing the impediments to going digital in the logistics sectors, a range of issues from financial and organizational to practical questions of handling items and trading partners – 'there is no quick fix.'

**Anna Lin, CEO, HK Article Numbering Association** notes there are always two key issues arising in public discussion. One is the need for and difficulties of synchronization across the industry of the adoption of IT standards. The second is the need to adopt an electronic product code (EPC) for RFID, a technology that despite the recent hype has been around since World War 2 when it was used to identify aircraft. RFID is not just about technology, it is more about creating a network of information for the movement and management of goods. 'I call it the Internet of things.' Various standards have been developed, including the G-tag or global tag which defined the standard for the tag itself. Over 100 major companies, like Wal-Mart, P&G, Gillette, are currently exploring uses of RFID. Non-contactable RFID tags can be used in many different environments, and passive tags can be etched into any items, for example pills to identify their content. In 1999 the MIT founded the Auto-ID Centre to link RFID to the Internet and hundreds of companies have supported this programme. The EAN International-Uniform Code Council (UCC) – see <http://www.ean-int.org/> and <http://www.uc-council.org/> - has now formed the EPC Global to promote the adoption and standardization of the EPC network.

Anna sees the current drive by companies like Wal-Mart and Germany's Metro as leading the development of EPC for pallets and cases, and this will be followed over the next 2-3 years by an EPC in-store environment. Left to the market alone EPC would probably take 25 years to become adopted globally, but driven by EPC Global this could reduce to 15 years. There are however real issues to be resolved. Personal privacy is a key issue if personal items are to be bought ready-tagged, while disabling tags to protect privacy could also destroy many of the benefits of tagging. One option may be to somehow de-link personal ID and product ID. A further issue is to synchronize radio frequency bands globally, most likely around the 860-920

Mhz range. The next step locally is to set up a Hong Kong EPC Roundtable to promote EPC in Hong Kong.

**Justin Yue, CEO, Tradelink** begins with a stress on the high quality of Hong Kong's infrastructure, including commercial law such as the Electronic Transactions Ordinance, to support initiatives such as the DTTN. There are three recognized digital certification authorities in Hong Kong: Hongkong Post, Digi-Sign a subsidiary of Tradelink, and HiTrust. To date the first two have issued more than 300,000 certificates. Tradelink is 42% Government owned, the rest privately owned and provides all manner of trade-related services, including Hong Kong-China trade facilitation with JingMao Link and a China-Hong Kong Cargo Manifest Interface. Tradelink has also been instrumental in developing the Pan-Asian E-Commerce Alliance that covers China, Japan, Malaysia, Singapore, South Korea and Taiwan facilitating the mutual recognition of electronic trade documents, with pilot projects including package lists, invoices, purchase orders, advancement notices and bills of lading.

Referring to the government's decision to discuss with Tradelink the operation of the DTTN, Justin reiterates Anna Lin's point that the DTTN is essentially about the adoption of worldwide standards and protocols, and the DTTN operator is expected to provide a call messaging infrastructure, leaving value-added services to service providers unless there remains an obvious unfilled need. Most Hong Kong trading companies are SMEs and while they can join the DTTN it is expected that most of its members will be the service providers. The tasks of the DTTN Company will include forming standards groups and it is expected to have the first phase completed by 2005.

**Kevin Taylor, Regional VP, Descartes Systems Asia-Pacific Inc.** describes the IT sector as a fashion industry. One moment it's ERP, the next it's the dot.com, then CRM and now the next wave is logistics. Supply chain costs of transportation and storage of materials, components and final products can be as high as 30 per cent of total cost. Cost efficiency is becoming a key driver giving rise to something called *mobile resource management* enabled by technologies such as GPS and RFID. Another driver is the customer's need to know where and when their goods have arrived. Leo, Anna and Justine outlined the importance of messaging and standards, and the key to it all is integration which is what the DTTN is all about.

Riding on top of an integrated standardized messaging infrastructure are applications, everything from track-and-trace to warehouse management to routing and scheduling. Achieve these goals requires a combination of mobile technologies, RFID and GPS. Pallet and cargo tagging is already with us. Item tagging will become widespread within five years, so for example scan-and-pay retail checkouts will be widely used where an entire trolley of items can be scanned in one go. The marriage of applications with mobile devices is the other important component, putting truck drivers in easy and ready contact with routing and scheduling applications for example. So the three components are: the systems infrastructure (DTTN), the applications and mobile networking.

Panelists:

**Philip Lam, Vice President of Information Technology Committee, HK Logistics Association** refutes the idea that SMEs cannot benefit from RFID, giving the example of its use by an SME that is the sole importer of pigs and livestock from China. RFID has cut down the number of wagons required to be able to separately identify which pigs come from which shipper. A reusable RFID tag the size of a \$5 coin is attached to each pig's ear.

**Ringo Ng and Almon Yu of the HK Association of Freight Forwarding and Logistics** emphasized the need for cost effective access to a DTTN, suggesting that ubiquitous broadband can make this affordable and lower barriers for SMEs. Justin Yue points out that

probably 90 per cent of Tradelink's existing customers are SMEs, and anticipates most will migrate to using the DTTN.

**Leo Chow, Chairman of the Information Services and Communications Committee, Institute of Purchasing and Supply of Hong Kong** raises the question of whether the DTTN would be run primarily as a community service or as a profitable concern, to which Justin responded that first and foremost as a community service because participation was voluntary and non-exclusive. A further question concerned the role of telecom companies. Here Kevin Taylor points out that Descartes alone generates 95 million transactions a quarter, so the role of the telecom companies as service providers and as partners is vital.

## Session 4.1: Citizen & Public Services

**Peter Yan, CEO, Global e-Business Services:** Peter talks about two major e-government projects, the electronic tendering system (ETS) and the electronic trading system, his company has been doing. ETS links the suppliers with the Logistics Department of the government. The company not only manages the electronic tendering system for the government, but also develops the technical platform and provides the customer services to the government suppliers.

ETS differs from the other tendering systems in that it is a two-way Internet based system, allowing people to download information related to tendering and also submit tenders to the government. Over 80 per cent of government tenders, including mega-tenders of over HK\$10 million, are processed through this system. The company tries to replicate this system in the commercial sector to enable large enterprises to automate their procurement processes and their suppliers, mostly SMEs will benefit through receiving automatic alerts when business opportunities arise. Over 5,000 SMEs and 2000 suppliers are using this platform.

Apart from the electronic tendering system, the company is going to provide an electronic trade document service to the government. Although the service scope will be similar to what Tradelink has been providing, their system emphasizes the interoperability among different government departments and different users and enables them to integrate the service with their back-end systems. They will work closely with a number of business partners to deliver the services in a cost effective manner.

**Simon Harriss, Director, Communications and High Tech Hong Kong, Accenture:** in his presentation Simon shares with participants the key findings from the 2003 e-government study which Accenture conducts annually to survey the global trends of e-government among 22 countries.

First, it is observed that e-government services progress or mature through a series of well-defined capability or maturity levels. All the countries examined have moved beyond the first level of capability where the governments have established online presence and developed electronic channels of communications with the citizens and businesses. In the second stage are countries that have legislative frameworks in place and have one or two transactional e-government services. These countries include Mexico, Portugal and South Africa. Countries that have attained the third level of maturity have established basic portal capabilities and try to put as many services online as possible. Hong Kong, together with Singapore, United States, United Kingdom and Australia are in the fourth level of maturity termed matured delivery, where sophisticated, customer focused e-government portals are established with the capabilities to deliver tangible benefits to citizens and businesses. Canada, employing the cross-agency approach has attained the highest level of maturity of service transformation.

Another important finding from the study is that value is what drives e-government visions, in particular among the immature delivery countries. The most expected benefits of e-government services are streamlining business processes and improving

ease of access to government services. Cost saving, on the contrary, is the least expected benefit.

For those governments that have moved beyond the stage of service availability, their priority is to increase service take up. One way is to select those business applications that will be adopted quickly and to use intermediaries to drive the service take up. For example, encourage people to file their tax returns online through tax agents and accountants. The survey findings also suggest that there is a need for e-government targets to change from availability and reliability to measures of effectiveness and efficiency improvement.

For e-government services to move forward, they should think in a customer-centric way to identify the right services for the right customers and segment the customers in a richer way. It is also important to implement service initiatives rationally, prioritizing projects that are of higher value in terms of reduced bureaucracy, simplified business processes and making use of existing infrastructure.

To conclude, Simon sees the future of e-government moving towards what he calls ubiquitous government (u-government) with the proliferation of broadband and tracking technologies where customers can access government services anywhere, anytime through various kinds of device and technologies.

**Sin Chung Kai, IT Constituency, Legislative Council:** Chung-Kai reviews how Hong Kong stands in terms of the availability of broadband, public access to the Internet, broadband customers and traffic. He shows that Hong Kong has achieved a high ranking in broadband availability and the number of broadband users will overtake dial up users very soon. However, the increase in broadband penetration rate also coincides with an increase in the number of complaints related to broadband service.

In 2002, there are about 6000 complaints on telecommunication service of which 25 per cent were addressed to the Consumer Council. Almost half of the complaints are related to unfair charges or charge disputes and quality of service complaints accounts for the second major category. To tackle these issues, it is important for the ISPs to improve the service quality through increasing service transparency, respecting customer's privacy, providing service pledges and setting service benchmark.

Chung Kai also brought up the issue of spamming which can impose high costs to marketers, ISPs and recipients. Countries like UK, Australia, United States (36 states), and Japan already have anti-spam laws in place whereas the European Union has issued a Directive regarding the protection of privacy in electronic communications to its member states which is being implemented in October 2003. In China, the state-run Internet Society of China is responsible for the control of unsolicited emails.

In Hong Kong, there are no official figures on spam and there is no specific law to regulate the sending of spam e-mails except for the "Anti-SPAM Code of Practice" issued by HKISPA and the provision in the Section 34 of the Personal Data (Privacy) Ordinance that requires the sender of direct marketing materials to provide the recipient with an "opt-out" choice of not receiving further emails. OFTA will conduct

a study and consult the industry before deciding whether an anti-spam law is needed in HK.

**Michael Yung, General Manager - Technology and Operations, ESD**

**Services Limited:** Michael discusses how broadband enhances citizen services in Hong Kong from a service operator's point of view. At present, ESDLife, a bilingual one-stop portal that delivers both government and e-commerce services, has launched about 170 services from 50 government departments. Key services launched include LeisureLink services, SmartID Card and marriage registry appointment booking. Out of these services, about 15 of them require encryption and a digital signature in order to provide end-to-end security to customers' data like marriage or taxation information. The ESDLife website receives 5 million hits per day and 250,000 monthly transactions were carried out of which 30 per cent involved payment.

With broadband being taken up in Hong Kong, more graphics can be incorporated in their e-shops, more information can be made available to the users and even better is they can deliver the information requested such as Certificate of Vehicle Particulars electronically through the Internet. The major challenge ahead is to understand customer behaviour and the characteristics of online transactions so that more customers are attracted to these services.

**Robin Gill, E-Government Coordinator:** raises the need to increase utilization of e-government services, as usage is still low in some areas. E-government services need to be more customer-oriented and it is important to understand why people are not using the e-government service when they have the option. The direction for e-government service to move forward is to look at whether some services can be carried out more efficiently by linking up processes from different government departments. Also broadband technology should be used proactively to solicit views or feedback from the citizens and improve communications between the government and the citizens.

## Session 4.2: Financial Services

**John Barnes, Principal, KPMG:** with the increasing popularity of doing business on-line, businesses are facing the dilemma of providing as many customers as they wish with access to their products but at the same time facing higher risks associated with exposing customer data, information and security systems to theft and threats. The lack of security can lead to serious consequences including disruption of service, and in turn loss of revenue and productivity. Damage to the existing systems can lead to further security breaches and damage to company reputation and even decline in credit rating.

A number of countermeasures including antivirus programs, firewalls, encryption technologies are commonly deployed by companies doing on-line business, however, these are not sufficient in John's opinion. Effective risk management should be a holistic approach involving all the three aspects of people, process and technology.

People measures include awareness and support from senior management to identify all the security risks, determine the level of security required and establish processes and procedures to monitor and improve the response rate.

John ended his presentation with some important questions that he thinks businesses interested in developing online business should ask themselves. Basically, one should consider what are the potential benefits of doing business on-line and the value of it in terms of the bottom line. When doing on-line business, how to achieve a balance between the benefits and the security risks faced by the business and how to minimize the latter.

**Mr. Shu-Pui Li, Head of the Banking Development Division, Hong Kong Monetary Authority:** Mr Li in the first part of his presentation shared with us the results of a recent survey they carried out to illustrate the current state of Internet banking development in Hong Kong. At present, 35 banks are offering e-banking services to the customers and serving 1.77 million accounts representing about 10 per cent of retail customers. 12 banks offer mobile banking over mobile phones or PDAs. Compared to last year, the number of retail e-banking accounts grew 15 per cent while the monthly logins per customer increased by 7 per cent to 7 per month. 25 banks are offering corporate e-banking services and they have about 46,000 customers, representing a 50 per cent increase since January this year. It is also noted that during the outbreak of SARS, online banking transactions increased substantially as reported by major retail banks in Hong Kong.

All these findings suggest that there is a significant growth in the number of internet banking accounts and utilization in terms of transactions in Hong Kong. It is expected that the growth will continue in 2003 and will be driven by the increase in corporate e-banking and large institutional customers.

Mr Li briefly explained the supervisory framework they employ. At the foundation of the framework are policies and guidance, emphasis is then put on customer education and awareness as well as monitoring the banks to make sure their practices are in compliance with the policies and guidelines. This year the Monetary Authority has introduced a new methodology called the "Supervisory Control Self Assessment" for

the banks to perform self-assessment in relation to e-banking and technology risk management.

The major challenges ahead for HKMA are to increase customer awareness regarding fake websites, and emails, and educate them on how to protect their password and personal information through leaflet, radio and TV programs. In order to tackle cross-border cyber crimes, an updated emergency contact list of the Electronic Banking Group (EBG) of the Basel Committee members is created to speed up the response time for an outbreak of cyber crimes. HKMA also suggests to other EBG members that they should screen through bank-like domain names as we did in Hong Kong.

**Stephen Law, Head of IT/Systems, Hong Kong Exchanges and Clearing Limited:** Stephen's presentation focuses on the next generation network of HKEx which is targeted for completion in late 2005. With the merging of the three companies, SEHK, HKSCC and HKFE into HKEx, there is a need to consolidate, not just the data centers, but the networks. It is believed that the consolidation will result in better price performance, leveraging the economy of scale, improved manageability and more flexibility in accommodating future growth and new application deployment.

The major challenges to creating a trading and clearing network in Hong Kong are to overcome the problems of size and keep the delay in multicast traffic under 25 milliseconds. Also, certain quality standards on network performance and network availability such as packet loss, roundtrip latency, network convergence time have to be met.

The next generation network is likely to deploy Optical Ethernet because of its advantages of being the most widely deployed data transport technology, low cost, simplicity to customers and high network performance.

In the actual design of the network, the following factors need to be considered. First, the network capacity including the host-end bandwidth, participant-end bandwidth and the total bandwidth. The network needs to support no less than 30 different applications and 90,000 virtual connections and cover the whole of Hong Kong with the capability to connect to Mainland China and other financial centres. Quality of service like guaranteed end-to-end bandwidth for each application is another major consideration. In terms of resilience, it has to ensure that less than 25 per cent of the population is affected by any network faults and the network automatically recovers in 15 seconds.

The implementation of the network involves three aspects: technical, business and production rollout. In the technical aspect, network testing and security are of utmost importance. On the business side, HKEx has to work out a business model with the brokerage firms. The production rollout involves circuit installation, market rehearsal for each application and switching over to the new network by phases.

**Paul Mackellar, Forensic Partner, KPMG:** Paul, formerly a detective superintendent with extensive experience in the areas of major fraud, money laundering and organized crimes, shared his views on the trends of electronic frauds. The advance in technologies, integration between telecoms and computers, e-commerce, etc have opened up more opportunities for fraudsters. Within a banking or

financial institution, the high risk areas for fraud and misconduct, according to Paul, are the treasury, sales and marketing people as well as the IT area where outsourcing is very common these days. Fraudsters are mostly from employees and management and about 6 to 10 per cent of cases involve collusion with an outside party. About half of the frauds are discovered by tips, that include the whistleblowers who reported cases anonymously. For fraud detection systems to be effective, it needs to be real-time and the detection programs have to be developed in relation to other risk management efforts to give a complete picture.

KPMG has recently conduct a fraud survey on 2000 Hong Kong companies looking at the fraud preventive measures that are in place and the best practices Paul would recommend are regular risk assessment, implement internal controls and a fraud response plan.