Telecoms InfoTechnology Forum
Next Generation Wireless Services in Hong Kong
20th November 2002
The Sheraton Hotel, TST, Hong Kong

Executive Report – containing
(a) Executive Summary, and (b) Executive Digest

Executive Report

A: Introduction

1. This forum was on a larger scale than usual, a one-day event for TIF with over 300 participants including speakers, and it reached for a wider canvas. The future healthy development of the content and applications sector for Web and server-based wireless and mobile services is something that holds great promise for the Hong Kong economy, but it comes with an unusual set of challenges. First, the network operators face the challenge of a transition to a new business model, one not based upon voice and value-added services that are for the most part embedded within the network itself, but one based on access to content and applications that often may be found on Web servers off the network. Second, the content and applications developers face the challenges of market entry, of a proliferation of requirements and standards from both networks and handsets, and of scale and market scope. Third, the vendors and operators struggle to achieve harmonization of standards, of interoperability and of revenue models. Fourth, the policy makers and regulator have to decide on how best to facilitate and promote these developments.

2. This list of challenges is by no means exhaustive, but it was obvious that to run this forum we needed to bring together all these parties and others such as market makers and fund managers, if progress was to be achieved. Hence the theme we adopted focused on the need to encourage the development of an "ecosystem" around the industry in Hong Kong. The turnout was not only magnificent, but participants stayed right to the end of the forum. Every sector of the industry was represented, although in the crowded programme two sectors, venture capitalists and end-users, were not directly represented, something that needs to be addressed in the future.

3. TIF wishes to thank the sponsors. Not only did the sponsorship make the forum possible, and not only did the sponsors provide expert input which was designed not to market themselves but to aid the discussion, but their support also allowed TIF to (a) offer a marginal cost entry fee that encouraged SMEs to participate and (b) provide broadband connections and demonstration tables to SMEs at no extra charge. Six companies took up this offer and all reported a high level of interest and feedback.

> **Thanks to the Sponsoring Organizations:** Commerce, Industry and Technology Bureau (HKSAR), Cisco Systems, CSL, Ericsson, KPMG, Nokia, Qualcomm, SmarTone, SUNDAY

4. The success of this forum resulted from it being so well supported by the industry associations, by OFTA and by the CITB. TIF has just played the role of a catalyst, a neutral forum to assist those in the industry and Government who have the responsibilities of steering this sector to success. It is within the industry and industry associations themselves that the real work of bringing about the types of cooperation and collaboration discussed at this forum will take place. TIF will continue to offer support to these efforts in any impartial way we can, and the Executive Summary and Executive Digest that follow are designed to be inputs into the follow-up seminar being organized by the Trade Development Council (TDC) for February 19th 2003.

> **Thanks to the Supporting Organizations:** OFTA, HK Digital Entertainment Association, HK General Chamber of Commerce, HK Internet Service Providers Association, HK Information Technology Federation, HK Java Users Group, HK Productivity Council, HK Telecommunications User Group, HK Trade Development Council, HK Wireless Technology Industry Association, Institute for International Research (IIR), Internet & Telecom Association of Hong Kong, Internet Professionals Association, Information Software Industry Association, World Teleport Association

Executive Summary

B: Sustainability of the Future of Mobile

5. In his welcoming address, **Francis Ho, Permanent Secretary, CITB**, identifies the three I's: infrastructure, inter-operability and innovation as being the key to the success of the mobile sector in Hong Kong. Open access to the network infrastructure by non-affiliated content and applications providers is essential; inter-operability on a local, regional and global basis to facilitate roaming services is another essential; and by definition innovation lies at the heart of the content and applications development for next generation wireless platforms. These themes, and especially that of the regional and global nature of the marketplace for access to and usage of content and applications, run through the entire forum – see for example **Julia Cheng's** speech from iNFOiSLIVE - and is picked up again by **Craig Ehrlich** in the final session. Francis Ho also strongly endorses the call for public-private dialogue to enhance the cooperative effort to advance this content development sector. In this context he mentions the TDC's Information Infrastructure Expo in early 2003 as the next opportunity to take the dialogue further.

6. **M.H.Au, Deputy Director of OFTA**, outlines the regulatory framework that is designed to promote the industry, including a flexible licensing regime to enable the use of technologies such as 802.11, and OFTA's efforts to facilitate the discussions between the networks to achieve inter-operability for Short Messaging Service (SMS) and Multi-media Messaging Service (MMS). But he also stresses ways to protect the interests of the consumer and users, including 'opting-in' provisions, data and privacy protection – something that can be at risk with the introduction of location-based services and the temptation to push unwanted messaging – as well as the need to find reasonable structures and levels of pricing and to offer unified billing services. The structure and level of interconnection charges is a related issue which he also notes.

7. Finally MH stresses that 'we believe that an "open network access" mode of operation is so much more preferable than a "walled garden" approach in delivering content and applications to the users and consumers.' In this context he mentions the Mobile Virtual Network Operator (MVNO) provisions in the 3G licences, adding that 'We believe that "open network access" will lead to more participation by the SMEs to develop content and applications for mobile services.' This is a theme picked up by **John Ure, director of the Telecommunications Research Project,** who questions the dangers of market fragmentation given that Hong Kong is only a market of 7 million people. He suggests that Government adoption of mobile content services is one way in which a local pull can be given to the market, but stresses the main consideration has to be the organic development of an "ecosystem" around the industry in Hong Kong. In the Background Briefing paper examples are given of how important a close interaction at the personal level between the companies in the industry's so-called 'value-chain' really is. Without this SMEs in the content development business, in particular, will be kept out of the loop, and the flow of information about technologies, about product innovations, about market opportunities will not work effectively.

8. John reports on one suggestion made by an SME who pointed out that in the previous round of venture capital funding for dot.coms the VCs often did not have the capacity to understand in detail the nature of the business or of the product and its market, so a lot of money was wasted on non-productive expenditure. An alternative would be to offer soft loans or grants to SMEs who won actual contracts. This would lower the purchasing price thereby encouraging the early adoption of innovative ideas and would be a way to back real winners. It was an idea worth considering.

First Session
9. **Marisa Kwok, CSL and ITAHK**, introduces the first panel of speakers for the session: *Sustainability and the future of mobile in Hong Kong – the development of a content and applications ecosystem.* The first speaker is **Lara Srivastava, Strategy & Policy Unit, International Telecommunications Union (ITU)**. Lara

led the team responsible for the ITU's *Internet 2002 – The Internet for a Mobile Generation*. She makes the point that cellphones and the Internet combined might be one of the major demand drivers for connectivity in the twenty-first century. As an aside we could bear in mind the aim of the ITU's Maitland Commission thirty years ago was to bring telephony within easy reach of every human being by the end of the twentieth century. The problem was then seen principally as a supply-side issue. It is interesting to think of Lara's observations as hinting towards a demand-side solution, at least partly so. Asia is well positioned in the latest growth round of telecommunications infrastructure. Asia leads in numbers of mobile users, with China, Japan and Korea dominant, and five out of the top 15 economies for broadband Internet penetration are in Asia. Asia also leads in mobile Internet penetration, and according to the ITU's recent Mobile/Internet index, which measures penetration rates, levels of competition and liberalized regulatory regimes, Hong Kong comes out number one.

10. But Lara also stresses that mobile Internet is a big gamble, involving a series of challenges for the industry, for regulators and even for consumers. Convergence is the problem, or rather brings problems. At every stage in the value chain, from network equipment through to modes of customer access, and from content provision to billing systems, convergence requires harmonization of standards and protocols, inter-operability, synergies between business models, and so forth. For example, while some operators are moving into portals and content provision, some manufacturers are moving into services. One conclusion of the Report is that pure content is not a 'killer application', and the success stories in terms of user demand relate more closely to peer-to-peer communications, such as email, file-sharing, SMS and maybe MMS. So just emulating digital content over the fixed line networks is not the way to go.

Proposal for a Development Centre
11. **Bruce Hicks, Group Managing Director for SUNDAY**, picked up on the essential theme of content, stating bluntly that mobile operators in Hong Kong simply did not have the resources to support the local content and applications business. 'Mobile operators receive dozens of creative propositions every year from people with good ideas. Propositions for development of new mobile applications come in regularly now. As an operator, we are forced to focus on only a select few.' Two points stand out. First, the name of the game for mobile operators in Hong Kong for the past few years has been survival through innovation of services and pricing models, and cost reductions through rationalizing their use of network resources. The result is resilience, but also a focus on the tactical short term and not much opportunity for longer-term strategic positioning. Second, people with good ideas for content and applications are not scarce. There is potential for a vigorous local content development sector.

12. The crucial next step is how to turn these good ideas into developed and tested products? Without the support of the local mobile operators this task becomes monumental. Bruce again makes the point: 'We are going overseas for content

that is already created and we are selectively picking the developers that we work with.' This is a low risk strategy for networks, and behind it lies the implication also that networks are reluctant to adopt local innovative content and applications that may require them to risk adding more resources to their networks, or to undertake expensive marketing for these new products.

13. Given the limited size of the Hong Kong market the answer clearly has to lie in the growth of regional and global traffic opportunities before Hong Kong networks will feel it commercially viable to take the risks of making a market for local content and applications. But then the risk is that Hong Kong developers will lose out to other markets. There would seem to be two options. The first is to encourage, if encouragement is needed, local developers to explore regional and global markets from Day One, and we have some examples from this forum of developers doing exactly that. This is clearly a strategy more open to some than to others. The second is to aid local developers by offering them local support for product development and funding for sales and marketing.

14. One possibility is the proposal **Bruce Hicks** makes: 'I would like to propose specifically that a non-profit, independent mobile content and application development centre is established…where independent, small companies, developing ideas, have a place to go to test their services, to test their ideas.' It would be about providing information about standards, about testing ideas in practice. It would need 'switches, it needs to have an SMSC, it needs to have MMS', it needs a location, and it needs funds. A debate about this and similar proposals comes in the next panel discussion.

The Enterprise Market
15. **Janice Hulse, Regional Director, Mobile Service Providers, Cisco Systems**, addresses the enterprise sector demand for content and applications, noting the Gartner Group estimate that 75 per cent of US enterprises will be deploying wireless LAN by end of 2002. Not surprisingly the number one application is remote access to email and to the corporate server, and, as Janice points out, corporate network infrastructures already contain vast amounts of their own content. The facility to access the "office anywhere" as it is termed in the US, and for example to access the enterprise customer while mobile is becoming something of a no-brainer. The crucial feature of that is the demand for security, typically achieved through VPNs. As of today the use of IP VPNs has reached 48 per cent of SMEs in the USA, and possibly as many as 75 per cent of large corporations, with access typically over broadband or wireless LAN.

Billing Systems
16. Janice clearly sees 2.5G and 3G development as complimentary to this explosion of wireless and fixed line broadband enterprise networking, agreeing with Lara's view that convergence brings its own challenges. Different modes of access will serve different but complimentary demands for content and applications in different locations, at different times, to serve different immediate needs, and will

require differentiated billing systems tailored to those different services. How will this fit in with the drive towards seamless mobility across networks and systems? Janice suggests three possible models: (a) 'decoupling', where each service is separately provided and charged; (b) 'loose coupling', where a range of common services are offered with a common subscription fee, and (c) 'seamless roaming', where access is ubiquitous and billing is unified. Each approach will have its own timeframe.

17. We may add each will probably work differently in different economies. For example, recently in the USA both a major wireless operator (AT&T) and an IT company (IBM) announced a common subscription fee for access to WiFi 'hot spots' across America. In Asia it seems the fixed line telephone companies are mostly driving wireless LAN. However, as Janice notes, wherever she travels in Asia operators are all asking about the business case models for public wireless LAN.

Consumer Demand
18. Looking at the consumer demand for content is **Alex Young**, until recently **Senior Research Engineer at the Hong Kong Polytechnic University** with detailed experience in game development for mobile phones. Alex's presentation draws on interviews he undertook among young people in Hong Kong and he identifies a number of Hong Kong characteristics. For a start, young consumers want and like small and fashionable handsets that add to their 'lifestyle' ambitions and their peer-group status. They develop a 'relationship' with their mobile phone, but on the other hand they will buy handsets for the design but without much knowledge of their functions. This is something developers need to bear in mind when designing and marketing content.

19. Alex is quite forthright about current content: 'there are lots of ordinary and uninspiring applications and services here in Hong Kong. I know the technology and I know what is here. I would say the potential is definitely not being tapped, not even halfway.' This harks back to the comments of Bruce Hicks. There needs to be an engine to drive and improve local development, and according to Alex, to raise the quality.

20. Alex makes another very interesting observation, that most young people are not high-income consumers and their handsets are mostly on the low-tech side. Furthermore they play games but mostly those already embedded in the handset by the manufacturer, and not daily but weekly, mostly to relieve boredom and while away the time. For developers this may be 'a really bad thing because it means that people are not actually seeking mobile entertainment. A few people may use it, but that does not mean there is a growing industry of mobile entertainment.' An additional factor is the large variety of alternative game play locations, such as games arcades and Internet cafes easily available in Hong Kong. These are sobering and realistic observations for the industry. In similar vein Alex points out that in Hong Kong SMS is not that popular because it is

considered costly, especially when the marginal cost of voice calls is effectively zero. What we are tempted to call "trivial pursuits" such as games, horoscopes and ringing tones generate non-trivial revenues for operators in other economies whereas in Hong Kong voice messaging would seem to remain the key revenue source, except where text messaging goes international.

21. So Alex has some important messages to operators and developers alike, and he ends with a stress on local Hong Kong Chinese culture where 'great importance is placed on the cost of purchase' and also on services that will 'add value to people's current lifestyle'. Here we are back again in the realm of peer groups and peer-to-peer communications. Alex leaves us with five messages:
    a) we need to understand the way consumers relate to and use their phones
    b) greater emphasis on marketing about what the phone and content can do
    c) developers need to look to the bigger markets and international standards
    d) review the way in which phones and content are packaged and priced
    e) increase the competitive level among developers to raise the quality

First Panel Discussion
22. **Peter Lovelock, Deputy Director of the TRP and MFC Insight**, moderates the first panel, introducing **Tim Storey, Managing Director, Asia Pacific Investment Research, Goldman Sachs** who picks up Bruce Hicks's point that the margins for mobile network operators are too tight for them to help the developers. Tim sees industry consolidation as the only way forward in Hong Kong. **Janice Hulse (Cisco)** stresses the importance of growing partnerships if the ecosystem is to develop around the sector, citing Cisco's partnerships as a case in point where each partner learns and adapts to the other. We may say that through such positive feedback loops Hong Kong developers and network operators could better understand the potential of the marketplace. **Bruce Hicks (SUNDAY)** also homes in 'on one key factor [I think] which summarizes what we have discussed, it is information flows' between manufacturers, operators and developers. Later Bruce comes back to his proposal for a Development Centre, in which a library of information would be a crucial component, and a network "testbed" would be the other. Prompted by Peter, **Alex Young** adds that gambling and online sex are usually considered money spinners, but actually neither has taken off in Hong Kong. Maybe his description of 'jaded consumers' got it right.

Second Session
23. Francis Fong, Synergy technologies and HKITF, chairs the second session: *Making it happen: can an ecosystem for wireless platforms be built or does it just grow?* **Professor Reg Coutts, University of Adelaide**, is the co-founder of M-Net, a collaboration of industrial partners, supported financially by the Government of South Australia. **M-Net** is a research and testbed facility for wireless Internet applications. 'A key element of that was that it was going to be an overlay of both 3G and wireless LAN technologies. Again, where there is convergence, where there is a clash of cultures, there are opportunities.' The conceptual model is to construct and test both supply and demand sides,

simulating market conditions. With financial support and support-in-kind, such as donated equipment, M-Net is about to launch its latest phase of development, 'Gallery 4, which is essentially a support club for application developers in Australia and potentially in other regions.' The core network is in Adelaide, with nodes in Melbourne and Sidney and one rural node. Telstra and two rival ISPs who offer services over wireless LAN are co-operating to roll out a WLAN infrastructure that will overlay a 3G network.

24. Applications development will encompass a wide range of local industries, for example ways to reduce the cost of health care provision. This is a practical example of building an ecosystem, bringing the supply and demand sides together in a sector where 'application developers have had a hard time trying to communicate with telcos, and the large telcos are the first to admit that it is not an easy communication process, as Bruce was outlining, so that M-Net fills that middle ground.'

Vertical Harmonization
25. 'Pieces of the Jigsaw' was the theme taken up by **Ulf Ewaldsson, Deputy Managing Director, Ericsson**. Ulf starts by reiterating a point made by Alex Young, that users 'are convinced by some salespeople to buy GPRS but without having really a clue what it is.' He then homes in on the lack of harmonized standards which fragments the market and confuses operators, developers and users alike: 'we have menu structures, battery lifetime… Inside the phone it is even worse. Then we have different memory sizes, different browser technologies available… we have embedded software of different kinds, codecs; we are now looking at compression techniques when it comes to streaming…' Ulf applauds the Open Mobile Alliance (OMA) initiative, but is concerned with the speed of progress and contrasts this step towards a horizontal harmonization process with the need for a greater emphasis upon a vertical harmonization process that starts with the end-user and works backwards to the manufacturers. In Ulf's view, larger operators, like Vodafone and DoCoMo, can establish their own handset specifications and vendors have to respond. 'The sad news is that there are so many hundreds of countries and operator constellations that this can probably only be driven in the industry from the largest players.'

26. For applications and content developers this vertical harmonization of standards is essential. 'Perhaps that is an important input I would like to put this morning … when somebody takes a very, very vertical approach to what they are going to launch and provide a lot of marketing for it.' Ulf outlines three areas of help for developers: (a) the development approach which sees development laboratories assisting extremely good and compelling content that achieves significant take-up; (b) the backbone approach in which networks can begin to work with a wide range of handsets and access devices; and (c) the handset approach in which standards become global and/or inter-operable. Whichever approach works, the success of an ecosystem is when vendors, operators and application developers

are working closely together to brand, and to promote information about how handsets work and what applications can do.

Information Bank

27. But given the enormous complexities still to be resolved Ulf remains skeptical as to how open the systems are likely to be in the near future. In light of this he stresses the need to share information widely throughout the development community, and supports such an initiative: 'I think we support the initiative in Hong Kong to create an information bank, if you will, perhaps provided by OFTA or by a regulator initiative, where all the SMEs and others can get hold of this technology, because it is extremely complex, and even we in the industry, Ericsson and Nokia and others, understand that the complexity of this is so high that you need to have somewhere the goal to really be able to work with this.' But he stops short of the need to build a physical testbed facility. 'All the things in 3G and 2.5G can be simulated on PC platforms, so I am sure that we could provide some of these things from the vendors and also from the operators to make this happen if somebody took the lead.'

Horizontal Harmonization and OMA

28. **Timo Toikkanen, General Manager, Nokia**, was in agreement with but also had a different emphasis from Ulf. While seeking both vertical and horizontal harmonization of standards was the right direction to go, Rome was not built in a day. The success of the OMA had already achieved remarkable progress, for example agreement on digital rights management, and not least by bringing into its ranks all the major players, even including Microsoft. GSM itself was the first and biggest success of horizontal standardization, and SMS was the second. Mobile Internet needs to be the third, but WAP 'didn't fly because the key enablers were not in place.' No colour screens, no camera-phones, no proper polyfonics or Java, no MMS standardization, no graphics, no cascading style sheets and 'no excitement.' Now all that has changed. Timo also suggests that the underlying bearers (GPRS, CDMA, etc) are not part of the consumer experience, but he leaves those distinctions for another debate. Clearly inter-operability between systems is preferable to having await 4G!

Business System and Enablers

29. Timo's emphasis is upon what he terms the "business system". How to develop a business system that makes money for the operators and 'where anybody who develops content and applications has a way to the marketplace, and then the consumers decide which content sells. This is what we lack, for example, in Hong Kong today, and if somebody can crack that, I think we have a great opportunity; the other enablers are emerging.'

30. The technological key to successful business systems lies in the enablers. 'We think that on the basis of the experiences we have had, the real success stories that have been financially rewarding, and to be honest probably responsible for most of us being here today, have been based upon shared open architecture and

standardization and horizontalization of technologies… we must not lock ourselves into proprietary situations, and things like the applications layer, you need to be totally agnostic to the bearer, so the applications layer needs to be the same for a CDMA operator as it is for a GSM operator, and it would be the same for 2.5G and 3G.' In other words, the ideal to be reached incrementally is inter-operability in all directions so the end-user has a wide variety of choice of access devices that all work across all systems.

Second Panel Discussion

31. **Terry O'Neill, Managing Director of CM Consulting,** moderated the following panel discussion. The key issue was which comes first, the chicken or the egg, the network infrastructure, including testbeds or other facilities to promote content developers, or the markets and the adoption rate? If the former, then what is required to accelerate its development in Hong Kong? **Professor T.S.Ng of the University of Hong Kong's Department of Electronic Engineering** saw no contradiction between the two. They would happen together, and they 'would happen very fast as well.' **C.D.Tam, CEO, Hong Kong Science & Technology Parks Corp.,** took a strong view against additional Government intervention in this area on several grounds: (a) most of what could be done over 3G could now be done, and tested, over 2.5G networks: 'We should not be using Government money to go and do a 3G testbed network. Why? You do not buy a Ferrari in order to try to learn driving'; (b) Government already backed facilities such as the Science Park, the incubation programmes of the Technology Centre, CyberPort, and others – for example, the Productivity Council, the industrial estates, and the universities - so rather than creating new facilities: 'I believe we should use existing resources'; and (c) more emphasis should be placed on working with chipset manufacturers to solve the interoperability issues - in this context C.D.Tam specifically mentions Motorola's chipset facility at the Tai Po Industrial Estate.

3G Testbed?

32. **Dr Lawrence Cheung, Principal Consultant, Mobile Business Solutions, Hong Kong Productivity Council** agrees that existing facilities should be fully utilized. HKPC explored the idea of a testbed network and '[d]efinitely from the developer's side they thought it would be a good idea.' But there are problems: (a) would operators support developers who may end up with competing operators?; (b) the resources required would be 'quite enormous', so would the vendors be prepared to fully support with funds and equipment? 'I think they would not be prepared to do so.' So in Dr Leung's view 'The key is that I think we need to bring the developers together and make them aware of these types of facilities that are available, and make the most of what is existing rather than setting up another centre and maybe that may not be as effective as what is [present] at the moment.'

33. A contrary view was expressed by **Dr K.F.Tsang of the Electronic Engineering Department of the City University and IEE.** Dr Tsang has designed and is

actually operating a 3G testbed network at CityU with one of the operators. 'Personally, I take the view that we might have a common, shared 3G testbed for different groups, so as to allow software developers to develop more killer applications.' On the other hand, Dr Tsang believes it is important to clarify what is the aim of developing an ecosystem in Hong Kong: 'Is it to increase local productivity or increase our image as an information-based society, or are we trying to create technologies and applications that would create export and money flow into Hong Kong based on technology import?' He 'certainly would like to look for more ways for us to … for Hong Kong to participate in a greater variety, in our role in this value chain from the global perspective.' Thus Dr Tsang raises an important consideration, namely knowing what the realizable objective should be, because 'building a testbed is not necessarily the best approach to achieving our goal.'

34. **Wong Yuen-kin, Director of IT, Cyber-Port Management Ltd,** tells us that there are now over 100 companies committed to CyberPort employing over 10,000 IT and IS workers served by a gigabit IP network and most of the mobile companies have already installed antennas and radio equipment. This makes CyberPort an ideal location with a 'perfect mix of IT population for people to try out the applications and test their latest model handset or even sell some of these to high-income customers.' **Francis Fong, ITAHK**, also adds his voice of support for a testbed facility, but sees the funding issue as a difficult nut to crack, however 'I think most of the developers, those handset developers, or some of the operators which will get revenue in the bank at the end of the day, should actually start a 3G testbed and also try to share the resources with some of the other smaller mobile Internet developers.'

35. **Prof. Reg Coutts** comes in with a figure of around US$2 million to realistically build a testbed. He sees a testbed as 'a combination of really stimulating innovation and really trying to manage what I would call collaborative self-interest. The problem is that while I think the Government has a role to play here, in many ways it has to be in partnership with the key stakeholders in the industry… in M-Net we have some 17 partners. He comments that C.D.Tam is right to say we don't learn to drive in a Ferrari, but 'if you actually want some innovative people in the auto-mechanical field to come to your door, you tell them you have a Ferrari.' To some extent **Ulf Ewaldsson** concurs. He reiterates the point that 'If we want to test 3G applications, we do that on simulators today' but adds that having a separate facility could serve other purposes, such as attracting people with the right skills. Learning to manage systems integration of the pieces of the jigsaw, especially the 'middleware software pieces' is what Ulf sees as the 'weakest point' and facilities like the Science Park or CyberPort can support these activities, especially if they provide a platform for information. For **Timo Toikkanen** the issue remains not having bigger and better 3G testbed facilities but whether or not Hong Kong has the business system, the market mechanism in place to encourage developers to the markets.

Third Session

36. **Alex Young, Hong Kong University Polytechnic**, chairs the third session The *dilemma for developers: do we, don't we? – and just what is this eco-system idea?* Four developers based in Hong Kong present outlines of their products and gave their opinions on ways ahead. **Benny Leung, Business Development Director, IMOEBA Ltd**, outlines the online mobile handset games of his company which generate SMS traffic for the network, pointing out that China Mobile reported 60 billion SMS during 2002. An important part of Imoeba's strategy is to address markets in mainland China, Macau, Singapore and Taiwan as well as Hong Kong. **Alfred Ng, CEO, J-Spectrum**, demonstrated his company's customer location product that triangulates cell sites from the network server. He proposes as a way to help stimulate the industry a tax relief scheme for companies adopting innovative IT that would reduce the financial risk they undertake: 'the barrier is not about money. It is about risk, and the amount of time they have spent taking this risk.'

Content, Applications and Markets

37. **Julie Cheng, Business Development Vice President, iNFOiSLIVE (ILL)**, also underlines the importance for a designer of games and MMS applications of marketing in mainland China, Taiwan and the rest of Asia, rather than waiting for the Hong Kong market to take-off. The company is even moving its R&D to mainland China to keep costs down, and she warns that Hong Kong is losing its leadership role, for example handsets used to be launched first in Hong Kong, increasingly this is no longer true. She sees as a positive sign 'that everybody actually sees the problems', amongst which the largest in Hong Kong are 'lack of funding' because 'investors do not know much, enough about the mobile industry, so they do not have confidence' and 'low revenue' because the market is small. She also stresses that the job of 'educating the users' is beyond the resources of very small developers so the networks really need to lead the way, and this implies team work, but in working with developers the networks 'do not really have a smooth work process' and things are worse if the revenue-sharing arrangements 'are not very reasonable or realistic.'

38. **Ernest Axelbank**, standing in for the Chairman & CEO, **Artificial Life, Inc.,** outlines an interesting application of artificial intelligence in small bots or avatars that appear as 'real' persons using natural language with memory recall, to customers making inquiries over their mobile phones. His presentation was interrupted by the roof of the ballroom springing a water leakage and he did well to continue.

BREW

39. The leakage problem got worse during the presentation of the next speaker, **Chris Wylie, Sales Director Asia-Pacific, Qualcomm** who nevertheless manages to present the contribution that **BREW** (**B**inary **R**un-time **E**nvironment for **W**ireless) has been making to the achievement of platform neutral applications development. The BREW software development kit is freely downloadable, and

for carriers the BREW applications can then be downloaded directly onto mobile handsets. Crucially 'BREW offers the application development community a familiar development environment. It offers common api's across devices. Once an application is written for one handset it can be ported across to all classes of handsets with very little changes or customization for each of those handsets' and 'is air interface independent, it is applicable across all networks, from CDMA to GSM, GPRS.' Further, a piece of BREW software has been added to accommodate Java, the most popular platform for writing games software.

Revenue Platform for Developers

40. Qualcomm has also entered the market making space: 'Actually, using the BREW system, application developers do not need any more to have individualized relationships with the carrier community. Qualcomm will help them go to the carriers to promote those applications, and we actually work with the developers to collect revenue for them, from the sale of those applications. This is something that was missing in the past.' In the context of an immature market for applications like Hong Kong the role of market making can have a very important role. Chris leaves developers with this advice: 'look to applications that help the carrier drive ongoing, recurring revenue that brings the subscriber back to the network…'

Market Making

41. Market making is very much what China Motion does, although **Ferrie Hu, Chief Scientist, China Motion Telecom,** devotes more of his address to what Timo would call 'enablers', except in this case the enabler is not a device but an open network architecture. Ferrie brings together the elements of the architectural jigsaw as he outlines an environment in which bearers are transparent (interconnected) and devices are seamlessly networked (inter-operable) within the home or office space. For example, he refers to the home audio video standard HAVI that ensures inter-operability, and the increasingly ubiquitous 'plug-and-play' capabilities of devices to local area networks. Ferrie calls this the 'tango' between devices and associated protocols. China Motion is one of five licensed MVNOs in Hong Kong, but the company's vision is not limited to mobile and focuses also on home electronics and fixed networking. As this vision of an open network architecture becomes a reality, linking home and office and community spaces, then adoption rates for content and applications are expected to take-off. The role of market makers like China Motion will prove very important in driving this process.

Third Panel Discussion

42. **Duncan Clark of BDA China Ltd** moderates the panel discussion that follows. **Craig Ehrlich, recently appointed Deputy Chairman, GSM Association (GSMA)** begins with a sober reflection on various opportunities missed by the industry, and the failure of WAP is an evident one, but at the same time Craig is upbeat about new thinking within the GSMA, noting that members of the board now represent CEO level from the largest and leading companies and there is a

new found recognition of and commitment to establishing inter-operable global platforms to take this industry into the mobile Internet era. Craig appeals to developers, policy-makers and regulators to add to the pressure on operators to make progress in this area: 'where you have the relationships with operators, send that message to them, they send it to me and they send it to the bigger guys.'

Issue of Global Scale

43. **Craig's** message that a Web-based mobile content and applications driven industry is by its very nature global has implications for the debate. For developers it is: 'Simply being in Hong Kong, trying to sell to six operators, you are not going to have great prospects, but if you can roll that out across the world and you understand what the underlying platforms are, it is going to be much easier for you.' Easier said than done maybe, but from earlier contributions it is clear that some small developers are already looking far beyond Hong Kong. Again the hurdle may be getting the information about those platforms, and the availability of development for them. For the idea of testbed facilities, the question becomes: 'should the Government be pumping money into something that may be very questionable as to how we can have an impact on the global marketplace.' As a taxpayer Craig also has his doubts!

44. **Colin McCallum, Regional Telecoms Analyst, HSBC**, couldn't agree more with that perspective. Hong Kong alone cannot solve the chicken-and-egg issue about which comes first, the content development or the networks with inter-operable platforms, and 'really what is missing here is a business case. The business case has to look for scale.' So Colin agrees wholeheartedly with the business strategies outlined earlier by **Julie Cheng** of IIL and **Chris Wylie** of Qualcomm. **Duncan** raises an interesting question for developers, whether they have a future going it alone or whether they have to become absorbed by the operators, either as partners or as part of the business. **Julie's** response is that IIL has wanted to avoid the 'red tape' of network operators, but if a 'good case to work efficiently' arose then it would be of interest, and in fact there are some successful instances of this. Underlying much of this discussion was the issue of scale, with **Chris Wylie** pointing out that experience showed that there are cases where the walled garden approach works because, by default, it offers a common platform. Qualcomm has developed a chip that overlays the interfaces of different networks as a step towards this global aim.

Closing Session

45. The closing session of the forum was chaired by **W.K.Chan of the Hong Kong General Chamber of Commerce**. W.K. notes that there is a feeling within the industry that some sort of platform to bring people together, especially for the SMEs to help them develop their content and applications would be productive. It would encompass trade associations and academics and other appropriate bodies, and 'if that were to be explored, then the Government must have a role. That will not just be a role in providing money. You have to be both [a source of] money and some more resources. That is just a thought.'

The Next Step

46. In conclusion **M.H.Au, Deputy Director, OFTA** reflects on the day's discussion, noting the various issues that have been raised and the variety of views expressed. M.H. notes the divergent views on whether a 3G testbed network is needed, whether PC simulation is sufficient, and what role Government has to play. He also takes issue with any suggestion that OFTA's pro-competition policies are in any way responsible for the hard times faced by the mobile sector, pointing out that OFTA has no policy view on the desirable number of competitors, just on the need to maintain competition and protect consumers, and has recently enhanced its own statutory powers in the case of future mergers or amalgamations. Finally, M.H. reiterates the Government's support for these discussion forums and looks forward to the follow-up seminar that is being arranged for the **Information Infrastructure Expo and conference** organized by the **Trade Development Council** for February 2003. **John Ure, Director of the TRP**, explains that the summary of these proceedings, with Executive Summary and an Executive Digest of the key issues and viewpoints, will be forthcoming as an input into that seminar.

Executive Digest