

Wednesday, 20th November 2002

(9.00 am)

Telecoms Infotech Forum,  
"Next Generation Wireless Services  
Development in Hong Kong",  
at The Sheraton Hotel, Hong Kong

MR JOHN URE: Good morning, ladies and gentlemen. There are still quite a few people outside registering and coming in, but in order to keep good time keeping, and set an example which I hope we will follow for the rest of the day ...

Firstly, welcome. For those of you who do not know me, my name is John Ure, I am the director of the Telecommunications Research Project at the University of Hong Kong, and of the Telecoms InfoTechnology Forum, which is organising this event.

I would like firstly to say that the really good turnout today -- we have well over 300 people registered for this event -- would not have been possible without the very generous support and backing from the Government, the CITB, from OFTA, from our sponsors, and their names will appear on that backdrop -- there you see a little history of the telegraph, which we thought might be interesting for you to know -- and also from our supporting organisations, which are the industry associations. So I would like to give a very sincere thank you to all those bodies for the support that they have given us.

Now, the good news or the bad news, which would you like first? Let us start with the bad news, because it is always nice to end on the good news. The bad news is that the Honourable Henry Tang is not able to be here this morning, he had some urgent business, and equally the director-general of OFTA was not able to be here; I think he is out of Hong Kong today. That is the bad news.

The good news is that we have Francis Ho, Permanent Secretary, CITB, who has given a lot of his personal backing to this event, and I am sincerely grateful to Francis for that, and MH Au, deputy director of OFTA, who again has been very, very supportive, so again I would like to thank MH a lot for that.

I am going to call on Francis and then MH to give some opening remarks, welcoming address. I will then conclude the opening session with just a very short presentation, and then we will be going straight into

the first session.

Just a word about the way the forum is being structured: throughout the agenda you will see various questions that we have posed, which we hope will be raised with the panels which are at the end of each session. These questions are just indicative of some of the issues which we feel need to be discussed, but please feel free to raise from the floor other issues, or address the questions that have been posed in the agenda themselves.

The outcome of this forum will be an input into the seminar which the Government has agreed to organise sometime early in 2003, to look into ways in which content and applications development for wireless platforms can be promoted in Hong Kong. So this forum is very much part of a process; it is not just a one-off forum where we all get together and have a nice discussion.

There is a general feeling I got from the industry, talking to people in preparation for this forum, that there were a lot of useful workshops and so on that had taken place in the last year or so but it was really time to take this forward in some way, to actually do something to help develop this industry which is very important for Hong Kong's future.

So that is the purpose of the forum, and I do encourage you to ask as many questions or make as many comments as you can throughout. We will be producing a proceedings paper at the end of it which will be generally circulated, in which we will bring together the key issues which have been raised.

Without further ado, I would like to invite Francis Ho, Permanent Secretary of CITB, to give a welcome address. Thank you, Francis. (Applause).

MR FRANCIS HO: Good morning, John, and everybody here.

As John has already told you, the Honourable Henry Tang is not able to join us this morning. He has also asked me to send his apologies to this audience. I hope you can understand the reason why he is not here this morning: because the Premier is still in town.

I am actually trying to deliver these opening remarks on his behalf. First of all, the development of wireless services has never failed to amaze anyone. Some 20 years ago we saw the appearance of first-generation mobile phones working with analogue technology. Those mobile phones, which could double as self-defence devices because of their size and weight, cost something like \$24,000 in today's money.

Nowadays, 87 per cent of our population have a mobile phone. For many of the more advanced users,

they have already upgraded from 2G, the second-generation mobile phone services, to 2.5G service with no delay. While 3G has been or is being introduced in different parts of the world, industry leaders are already talking about the advent of 4G.

For consumers, they care little about whether their mobile phone is 2.5G, 3G or 4G. Their message is very simple. They want better and more innovative services. For industry, it is more complex. They need to identify and tap new revenue sources offered by new generations of mobile technology. They need to develop and market content and value-added services.

New business relations will be defined and redefined for all players involved. Since data revenues only account for some 3 to 5 per cent of our operators at present, there surely is a lot of room for growth as their voice counterparts level off.

The key to success, as I see it, lies with what I call the three I's: infrastructure, inter-operability, and also innovation.

Let me elaborate. The first "I", infrastructure, points to an excellent telecommunications infrastructure for the development of new mobile services. Hong Kong has already had a head-start with our ubiquitous mobile coverage. The ITU ranked us first in the September report on the Mobile/Internet Index, recognising Hong Kong's competitive advantage in infrastructure usage as well as market structure. We are already ready to reap the full benefits of future advancements in the information and telecommunications technologies.

For 3G services, we have already put in place a transparent and fair regulatory regime. The four network operators can make their own commercial decisions on the roll-out of 3G networks and services, subject of course to the requirement that they must cover half of the population by the year 2006.

We have also spearheaded the introduction of the open network access requirement, to facilitate access to the networks by non-affiliated content and application providers. Consumers now look to our network operators for state-of-the-art 3G infrastructure as well as services.

The second "I" is inter-operability. By that, I mean the ability for consumers with different mobile devices and on different networks to communicate effectively and efficiently. To achieve this, the joint efforts of network operators and equipment suppliers is indispensable. Indeed, to benefit consumers and businesses most, inter-operability should be practised on a global scale to facilitate roaming services as

well.

Experience in major economies shows that the short messaging services, SMS, could not have been popularised without inter-operability. Our SMS started taking off after the launch of inter-operator SMS in December last year. Since then, our network operators have been working with their overseas counterparts to launch international SMS. Last month, two groups of operators in Hong Kong launched inter-operable multimedia messaging services within their group.

I hope that the network operators will complete their commercial negotiations as soon as possible, to ensure fully inter-operable MMS in Hong Kong, and as a next step, international MMS as well.

Looking ahead, I would appeal to the network operators and equipment suppliers to work closely to ensure inter-operable services for the much-awaited 3G services.

The last "I", and not the least, is innovation. The new business model for next-generation wireless services provides the industry with the opportunity to profit from the provision of content and value-added services. Our network operators will be building their 3G platform. They will introduce a brave new frontier for our businesses, in particular SMEs, for equipment, content and application development.

Our network operators have already demonstrated their innovation by spearheading the introduction of MMS and one-stop corporate e-mail services in Asia. It is an opportunity that cannot be missed and can only be exploited by those with innovative ideas.

I would like to add that our innovation does not stop at the border. Hong Kong companies have every potential to export their innovative ideas to other parts of the world, particularly the mainland of China. Our bilingual capability, strong knowledge in finance, business and logistics, and experience of doing business with mainland China, gives us a competitive advantage to explore the biggest mobile market in the world. Indeed, some of our operators are already working on exporting their highly successful entertainment applications to other parts of Asia.

Ladies and gentlemen, the success of next-generation mobile services depends on the concerted effort of all of us, including network operators, equipment suppliers and content and application providers. As the Government, we are committed to providing a level playing field, as well as an up-to-date and transparent regulatory framework. We also support public sector and private sector dialogue, like this one, to nurture new

ideas and enhance co-operative effort.

The Office of the Telecommunications Authority organised a conference on wireless services in September this year, and this is another meaningful event organised by the TRP of Hong Kong U to continue their effort. Besides ITU's Telecom Asia 2002, to be held in the early part of next month, we would expect a further workshop during the information infrastructure expo organised by the Trade Development Council, and supported by my bureau, in February 2003, that is next year.

Wireless services have been a business spinner and also job spinner for Hong Kong. They have played such a significant role to bring Hong Kong to a leading position as the telecommunications hub in the region. With the harnessed efforts of all of us here, I am confident that the next-generation wireless services will continue to bring prosperity and improvement in our quality of life.

Lastly, I would like to thank John and the Telecommunications Research Project, as well as the sponsors and speakers, for bringing this event to fruition. I would also like to thank all participants whose ideas and exchanges will make this forum productive and meaningful for Hong Kong. Thank you very much. (Applause).

MR JOHN URE: Thank you very much indeed, Francis.

Just picking up on a couple of points that Francis made, before asking MH to give his address: the role of SMEs is particularly important in the development of the content and applications. For that reason, we have kept the barrier to entry here very low for delegates to participate in this forum. We have also, because of the generosity of our sponsors, been able to offer free of charge the tables outside, so do visit them in coffee breaks, and so on; we have a number of examples of Hong Kong-based SMEs who are doing content and interesting applications.

Just one further point: Francis made mention of Greater China and the Asian markets. I am pleased to say that with our China partner, the China Institute of Communications, we will be running a forum, for the first time ever, in Beijing on 19th December, which follows ITU 2002 here in Hong Kong. Further details of that will be made available later. This was confirmed for me yesterday, last night, so this is why there is

nothing in written form. Anybody who would be interested in knowing more about that event, please contact me during the day.

With that, perhaps we could ask MH Au, Deputy Director of OFTA, to give a presentation. Thank you. (Applause).

MR MH AU: Dr Ure, Mr Ho, distinguished guests, ladies and gentlemen: there is no doubt that Hong Kong is already well served by mobile services. Consumers have plenty of choices, from six operators and eleven digital networks. The coverage is almost ubiquitous, overground and underground, outdoor and indoor. Prices are completely affordable and the mobile penetration is approaching 87 per cent, one of the highest in the world.

Like other markets in the world, the predominant usage of mobile services in Hong Kong is still voice communications. But there is obviously a limit to which people can spend their time talking over the phones. And 87 per cent penetration for human beings is probably near the saturation point.

Therefore, further growth of the mobile sector lies in the use of the mobile services for non-voice communications. This is data communications between persons, between a person and a computer, and between computers.

If you count the number of computers in your home -- and by "computers" I include embedded processors -- it is not difficult for you to find that the number of computers actually exceeds the number of human beings. Data communications will therefore open up tremendous business opportunities for all participants in the mobile industry, and these include the network operators, the service providers, equipment manufacturers, software suppliers, and content and applications providers.

I am going to talk about what I believe will be the key ingredients contributing to the success of Hong Kong's mobile sector in a transition from the traditional voice services to the next-generation communications services.

The starting point must be an infrastructure that has the speed and capacity to meet the demand of the users for next-generation communication services. In a modern information society, the user will be reliant upon access to and exchange of an increasing amount of information, information that will be increasingly more sophisticated. Interaction will be increasingly more real-time. Users are no longer satisfied with the waiting time for logging on and transfer of data. They

demand instant access when they need the information. The circuit-switched infrastructure designed for voice communications can no longer meet the demand for the next-generation communication services.

There are, of course, no barriers to the upgrading of the 2G systems to provide the users with the always-on connection and the speed that satisfies some of the users in the transition to the next-generation networks. Such 2.5G systems are, of course, already in place and operational.

The next quantum jump in the upgrading of the infrastructure will be the roll-out of the 3G networks. Hong Kong has already completed the licensing process for the 3G services in October 2001. In designing the licensing framework, we have adopted the spectrum pricing approach to achieve an objective and transparent selection process, and yet we have avoided some of the problems of spectrum pricing, in diverting limited capital resources from network roll-out and development. Therefore, our bidding was based on royalty percentages instead of an up-front payment.

Network operators are required to pay for the spectrum on an annual basis, and they will pay more when their 3G network business generates more revenue from customers. If their network business turns out to be less favourable than what they have forecasted, then they just need to pay the minimum fee. In this way, the Government has shared some of the risk of the network investment. We believe that, to the extent permitted by not giving away the spectrum free of charge to operators, we have created an environment as favourable as possible to investment in the 3G infrastructure.

There is no intention for the Government to pick the winners in technology. The Government adopts a technology-neutral approach and allows the market to pick the winners. Thus we did not dictate a particular standard for the 3G services. There is also no regulatory restriction for the use of alternative technologies, such as the wireless Local Area Network technology. In this regard, the plan to introduce a class licence to permit the operation of public telecommunication services based on new wireless LAN technologies, such as IEEE 802.11a and HiperLAN 2 in the 5 gigahertz range is on schedule. We are just awaiting the completion of certain legislation which is now expected to be in place by January 2003.

We need full interconnection between the different platforms created for data communications. When a user sends an MMS message to the intended recipient, he must be sure that the recipient will get it. Without full

interconnection, the enthusiasm of users using the service will inevitably be dampened and the attainment of a critical mass of consumers will be delayed. We note that the mobile networks operators intend to achieve full interconnection of the MMS platform by the end of the year and will be monitoring the progress.

Not only must the networks be fully interconnected, there must be inter-operability between platforms of different operators, between platforms of operators in Hong Kong and also those outside Hong Kong, and also between the platforms of operators and customers of different vendors.

The development of inter-operability specifications is rightly in the hands of industrial bodies like the 3GPP and the WAP Forum, as no single administration is able to formulate inter-operability specifications between manufacturers of different countries. But the Telecommunications Standard Advisory Committee, under the auspices of OFTA, will play a role if required in co-ordinating the standards of local operators.

Now, the consumers. Technology development on the network must be matched by corresponding development of the consumer equipment technology. Consumers need larger screens, better resolution, colour displays, the same if not longer battery endurance, the same if not lighter weight, and, most importantly, more friendly interface between the users and the handsets, particularly the interface for text input.

We need a tariff that is straightforward and that is readily understood by the consumers. The consumers must be able to control their monthly bills for their services. The consumers must clearly understand pricing and the salient terms of the contracts before they enter into contracts with the service providers. Settlement of bills must be free of hassles. Consumers should not be required to settle separately the bills from the content and applications providers they used. Consumers must not be required to pay for the services that they have not requested. Therefore, the "opting out" mode of marketing is not acceptable.

The prices of services must stimulate usage rather than deter usage. In this regard, excessive interconnection charges might not be conducive to the setting of consumers prices that stimulate usage. A pricing structure that is too complicated, such as mixing one-way and two-way pricing for the same type of services in the industry, might also cause confusion and deter usage.

The consumers must be protected from unsolicited messages from mobile services. You may be aware that,

with the co-ordination of OFTA, mobile operators have already issued an industry code of practice for the prevention of unsolicited short messages. OFTA is reviewing the existing codes of practice to see what changes are required to cater for the developing market environment, such as the introduction of MMS.

The consumers must also be protected from the attack of viruses. Virus protection probably would generate business opportunities for the content and application providers. The consumers must have confidence in the security and integrity of transactions over the mobile services. In this regard, the Hong Kong Post has launched the Mobile e-Cert in October 2001, to facilitate the development of mobile commerce. The consumers' privacy must be respected in the introduction of various innovative services over the mobile platforms, such as location-based services. Under all telecommunications licences, operators are already required to protect the confidentiality of consumer information. Such information will include the present and past locations of the consumers. Thus the use of the customer location information for the provision of location-based services must be with the prior consent of the users. The customers should also have the capability of suspending the use of the location information from time to time.

We must have a consumer base that is prepared to embrace new technology. In this regard, Hong Kong is not short of such consumers. The high broadband penetration rate for households, which stood at 40 per cent as of September 2002, shows that Hong Kong consumers have now regarded access to the Internet as part of their daily life. The high mobile penetration shows that Hong Kong users value the ability to communicate anytime, anywhere. All we need to achieve now is a critical mass of users for mobile data communications that will generate the incentive for other users to join in.

There must be content and applications that the consumers need and are willing to pay for. These will be content applications that will genuinely bring benefits to the consumers, content and applications that will bring pleasure and convenience to their everyday life, at work and for leisure.

When it comes to development of content and applications, what matters will be creativity and a sense of keeping tabs on the market and consumer demand. Undoubtedly, 1,000 brains participating will be able to generate more ideas and better designs than 100 brains. Hong Kong is not short of talents for

creativity and innovation. Just think of our film, television and music industry. That is why 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. The choice of content and applications should be left to the consumers rather than the carriers.

In the 3G licensing environment, we have already introduced a requirement that each 3G network operator must make available at least 30 per cent of the network capacity to non-affiliated content and application service providers. We believe that "open network access" will lead to more participation by the SMEs to develop content and applications for the mobile services. This in turn will generate more consumer demand and then more content and applications, thus forming a virtuous cycle.

Another ingredient in content and application is the protection of intellectual property. In this regard, Hong Kong has already implemented a comprehensive system for the protection of intellectual property under the Copyright Ordinance.

Finally, I come to OFTA's role in promoting data communications over mobile services. The success of the mobile sector requires the collaboration of all in the industry. OFTA, as the regulator, will also play a part. Our policy is a light-handed one that relies on market forces to the maximum, so OFTA will not intervene unless the market fails.

I shall set out in greater detail the role of OFTA in the coming years, but this is not by any means an exhaustive list.

First, OFTA will continue to create and maintain an environment conducive to investment in the telecommunications sector. This will include a transparent regulatory framework, fair competition rules and effective enforcement. The merger and acquisition regulation now before the Legislative Council is just part of the effort to complete the regulatory framework to preserve fair and effective competition in the telecommunications industry.

Second, OFTA will facilitate network roll-out by working with other Government departments to streamline the approval process for sites, particularly sites under Government control. In access to privately owned land, such as tunnels and large indoor complexes, OFTA will use the power under section 14(1A), where justified, to facilitate access.

Third, OFTA will continue to promote the

interconnection between networks and services. If network operators fail to interconnect, or fail to come to commercial agreements on interconnection, OFTA may intervene under section 36A of the Telecommunications Ordinance.

Fourth, through the Telecommunications Standards Advisory Committee, OFTA will play a part in co-ordinating standards among industry players to ensure inter-operability of platforms and customer equipment.

Fifth, OFTA will ensure that consumers have a fair deal. OFTA will monitor marketing practices to ensure that consumers are fairly treated. That is, they must know the salient terms before they enter into contracts, and they are not forced to accept services which they have not requested. OFTA will issue guidelines on misleading or deceptive conduct under section 7M of the Telecommunications Ordinance, to give guidance to the industry in this area. OFTA will also review the codes of practice and consider other measures to protect consumers from the harm of unlisted messages.

Sixth, OFTA will also contribute to the effort in promoting the use of mobile services for non-voice communications. OFTA will collaborate with other industry players to launch a series of initiatives in 2003 to promote the awareness of consumers in the use of mobile services for non-voice communications.

Ladies and gentlemen, the next-generation communications services will present great opportunities and challenges to all participants in the industry. We must build on our strength in the industry and exploit our talents in creativity and innovation. I honestly believe that Hong Kong has all the essential ingredients of success in the mobile sector for the next-generation communication services.

Thank you very much. (Applause).

MR JOHN URE: [SLIDES] Thank you very much indeed, MH. I have just a very few slides which I want to introduce, as a way of introducing the themes that we are going to be discussing today. If you have not visited the website, please do; there is lots up there which I hope will be useful to you.

Let me begin from a quote from a report which was written by a team headed by Lara, who will be one of our key speakers, in fact our first speaker this morning:

"Investors want to see proof that a market for mobile Internet services exists. But operators can't provide that proof until they build the networks. Because of this 'chicken and egg' conundrum, the mobile Internet is potentially the biggest gamble the telecommunications industry has ever taken on."

I think many in this room will know that to be true, and I will leave it for Lara to elaborate on that.

My own estimates this year are that the cellular mobile sector in Hong Kong probably adds about 2 per cent to the growth of GDP in Hong Kong in recent years. My estimate was that the multiplier effect would be about 5 per cent. For example, if for example the GDP grew by 4 per cent, then 0.2 per cent of that growth would actually come from the growth of this sector, so we are talking about a very significant sector for the Hong Kong economy, in terms of value added and in terms of employment and growth prospects.

I called this slide "Men in Black", because I think one of the points that is worth remembering is that we have a very resilient industry here. Whatever difficulties the mobile operators face, they have shown the world how to operate in very difficult circumstances. Last year, I believe there was only one network operator that was showing a profit. This year I believe at least four of them are showing some black ink.

On the other hand, there are costs involved with the very intensive level of competition. Six operators, eleven networks. Under those circumstances, the need to differentiate networks is clearly a big pressure, and the danger that MH alluded to just now is that this could segment the market for content, if content is seen as a way to differentiate networks and therefore there is a segmentation, and that makes it difficult, MH said, for SMEs to break into the market on any large scale. That is an issue that we might discuss a bit more today.

This one I called the "Men from the Ministry". On the network side, MH mentioned the fact that Hong Kong's royalty auction has avoided the big up-front debt problem that some of the European operators have faced. Again, in Lara's report it is described as an "exemplary licensing process", and I am going to take an opportunity to claim some part in the process, since the proposal was originally my own.

OFTA has eased the conditions of the 3G performance bonds. Is more needed in this area? That is possibly another issue that could be discussed.

Will broadband fixed and wireless Internet stimulate mergers, amalgamations and industry consolidation. Will this help or hinder the development of the content and application markets? Again, that is another issue that perhaps some people might like to take up and comment on.

Will broadband fixed and wireless Internet lead to fixed-mobile convergence? Again, there are regulatory

as well as business model implications in that, and again that is something that may come up during the course of the discussions.

On the SME developers' side, just a few ideas which again I think are perhaps worth considering during the course of today: the role of e-Government. We see it on the fixed line side at the moment. Should Government put more of their applications on a mobile wireless platform?

We have seen in recent years Government putting money into venture capital funds. Is that the way to go in this case? Should there be, for example, a soft loans policy? I know at least one proposal that came from people I was speaking to who would like to see, for example, the Government giving soft loans when the SME developer has actually contracted a sale, not before, but when the sale is actually contracted; so, as it were, the Government is supporting the market. That is an interesting idea that might be floated.

Testbed facilities -- this is going to be the theme of session 2 this morning -- should Hong Kong build and offer testbed facilities; would this be of any genuine help to developers?

Incubation programmes, we have them already -- are they working well, should they be extended? That is another possible area.

Public sector and industry association collaboration? This conference is an example of precisely that. Are there other ways to develop this collaboration for the general good of the industry?

Cross-border collaboration -- Francis raised the question of a Greater China market. How do we actually do that in practice?

And what I called in the background briefing paper that you all have, "Building the Ecosystem", and by "ecosystem" very simply I mean the up-front and personal approach. In other words, it is the personal side of the value chain. The value chain can be distant and it can be impersonal; it is market relations. So one part of the value chain can be in North America and another part of the value chain can be in Hong Kong.

The ecosystem is local and personal communications, at different points along the value chain. To make an ecosystem work, it requires certainly creativity, and MH has alluded to that, we have that in Hong Kong; innovation in bringing ideas to the market, perhaps -- this is the issue that perhaps most of all needs to be addressed; and information about the market. SMEs often do not have the resources or the time to get the necessary information about potential customers that

they need.

Finally, the ecosystem implies clustering. Clustering is not yet an illegal activity.

"The literature on innovation suggests that informal, unplanned, face-to-face, oral communication is critical to the innovation process."

This is a quote from a paper by Michael Enright, who is a professor at Hong Kong U and one of the world's experts in this area. I think this is a very important point to remember.

So, the next step -- from this forum, the output will be an input into the seminar that Francis referred to, and the widespread support for this forum across the industry shows that there is indeed a commitment to succeed. So please be vocal throughout the day. Thank you very much. (Applause).

On that point, again I would just like to finally thank Francis and MH for their welcoming addresses and keynote speech, and invite Marisa and the panellists and the speakers for the next session. Thank you very much. (Applause).

MR PETER LOVELOCK: While they are reorganising the stage, let me just do the side-kick routine.

John mentioned the Beijing conference that we are running. We got confirmation of this yesterday. We had originally planned to run it as a parallel version of this workshop, but a little bit smaller and more strategic, we were going to run it two days from now, originally. Because of Party Congresses and people being tied up, that is now being rejigged and it will be run on the 19th.

It will have the key operators and the ministry people from China, very focused on content, and again SME development, very similar along the lines to what you are seeing today. If you would like to find out any more information about that, talk to John or to David Almstrom, who you can see over to one side over here.

MS MARISA KWOK: Good morning, ladies and gentlemen. I am delighted to introduce the first discussion session of the day. The theme of the session is "sustainability and the future of mobile", and it talks about the development of a content and applications ecosystem in Hong Kong.

I am pleased to have four speakers today. The first I wish to introduce is Ms Lara Srivastava. Lara currently works as a policy analyst in the Strategy and Policy Unit of the ITU in Geneva. She has worked for the Legal Department of the Canadian Radio-Television and Telecommunication Commission, and for the Technical

University of Delft, Netherlands, as a Research Fellow in telecommunication regulatory reform.

Lara's topic this morning is the Internet for a mobile generation. Can I ask Lara, please ...

(Applause).

MS LARA SRIVASTAVA: Good morning, everyone. Thank you, Marisa. "Ni Hau". I thought I would like to try a little bit of Cantonese this morning.

Thank you for this opportunity to share with you some of the work we have been doing at the ITU on mobile communications, and particularly on the mobile Internet.

The focus of my presentation this morning is a recent report that we have released, entitled "Internet for a mobile generation". In this context, I am going to start off with giving you some indication of some of the trends that we have been observing. We will then focus on the key findings of the report, including market development and corporate strategies. Then finally the highlight of the report, which I think many of you are interested in, is the ITU Mobile/Internet Index, which Mr Ho alluded to this morning. I will probably give you some idea as well of where Hong Kong ranks in that index and among the scheme of things.

So what is all this excitement? Well, let's face it: mobile communications and the Internet have been two of the major demand drivers of the last decade of the 20th century. Combine the two and you might just have one of the major demand drivers of the first decade of this century.

Mobile and Internet: can we say that these are identical twins just born a couple of years apart? Looking at this figure, you see the tremendous growth, and thus the tremendous growth potential, of both of these industries. You will also notice that there is about a two-year lag between the two; the penetration of mobile in 1999 was about the same as the penetration of the Internet at the end of 2001.

What is also interesting to look at is the distribution of mobile and Internet usage by region. This has also evolved dramatically over time. There are currently almost 1 billion mobile phone users in the world, and who is leading in this area? That is the Asia-Pacific region.

We see that this region has the strongest growth and the largest number of mobile users, ahead of the Americas and of Europe. There were about 333 million mobile subscribers at the of 2001, compared with only 23 million in 1995. The growth rate was about 56 per cent. To take one country alone that you are all

familiar with, China added 100 million subscribers in just two years, between 1999 and 2001.

The story is not that different when you look at the Internet. There were about 500 million estimated Internet users worldwide at the end of 2001. The Asia-Pacific region, even though US and Canada were leading in the early days, has now taken over, catching up fast to North America and now actually has overtaken North America; that figure for the Americas includes South America as well.

In addition, new broadband services -- out of the top 15 countries/economies worldwide for broadband Internet penetration, five of those countries are found in the Asia-Pacific region.

The region has also been an innovator, emerging as a leader in areas such as prepaid cards, offshore software development, e-Government and of course cyber cafes and gaming, and I hope that Alex Young, one of the panellists, will tell you a bit more about gaming.

Upwardly mobile in Asia -- who are the leaders? The Asian leaders in mobile teledensity have followed a similar growth pattern. You will see that Hong Kong, Singapore, Korea, Taiwan are leading the pack. Very soon, just as Taiwan has reached 100 per cent penetration, Hong Kong is going to reach that penetration very soon as well.

Of course, as I mentioned earlier, the theoretical saturation point is at about 85 to 90 per cent. 100 per cent saturation point seems a little bit counter-intuitive when you consider that there are a number of people who will never adopt mobile phones. There is also a large number of people who are very young and do not know yet how to pick up the wireless handset, although that number is getting bigger and the population for using mobiles is getting younger and younger every day.

Nonetheless, saturation point usually should hit about 85 per cent to 90 per cent, and the reason we are seeing 100 per cent saturation points is usually due to the fact that, typically, prepaid means that many people might have more than one mobile phone; business users might have two mobile phones, one for personal use and one for business use, so there is a certain double-counting of subscribers, so that is why we are seeing these kinds of rates.

But it does not stop there. The Asia-Pacific region is also leading in terms of mobile Internet penetration, with the economy with the largest number of mobile Internet users being Japan, with its famous iMode service, followed by Korea. Hong Kong, for instance,

was one of the first economies to launch the mobile multimedia messaging service, MMS, in March of this year.

"Internet for a mobile generation", the title of the report, or "Mobile for an Internet generation". Whatever you call it, what is the mobile Internet exactly?

In this report, we tried to define it as follows. Mobile Internet is a combination of wireless technologies, with information and data communications services, and eventually the benefit and flexibility of package-based IP-type networks. This is why is it a big gamble, because it involves a convergence at many levels. It involves a convergence at the level of terminals. A hand-held device may allow you to browse a website, listen to streaming audio, by e-mail, and perform many of the functions that you might perform through a PC, but at the same time it might enable someone with a portable PC to connect to the Internet, with reasonable access speed, without requiring a fixed connection.

Network convergence -- at present, most mobile voice networks are based on circuit-switched technologies, and the Internet is based on packet-switched technologies, so convergence is required as we migrate towards a more all-IP architecture, where wireless networks are also going to be based on packets.

There is a convergence at the level of services and applications, of course, which implies that the same types of services can be accessed both on a fixed network and on a mobile network. You can already, for instance, send an SMS to a mobile phone from your fixed-line PC. There are services like that that exist at the moment, but with fairly rudimentary functionality, and that will improve as the mobile Internet becomes more of a reality.

There is a convergence at the level of the corporation. Corporate structures are converging. That means that a company may choose to provide both mobile and Internet services, or a combination of the two. A good example is the British company Virgin, which is both an Internet service provider, Virgin.net, and an MVNO, Virgin Mobile, and a lot of other things as well. This has important implications for how these service providers will be regulated in the future.

That is not to say that the mobile Internet is simply based on packet-based, high-speed mobile networks, known as 2G or 2.5G. These IMT 2000 services or networks are not the basis for the mobile Internet; they are only part of the overall picture. There are

a number of other alternative network technologies that have been alluded to this morning and that one must bear in mind. For instance, Bluetooth and short-range wireless technologies, and the next hot thing, the wireless LAN or the 802.11 series, which have been popping up in hot spots across Hong Kong and in other economies.

So 2.5 and high-speed 3G are one of the enablers of the mobile Internet revolution, and there are a number of other enablers: WLAN; mobile connectivity protocols, like WAP; messaging protocols, MMS, EMS; Location-based services, how to locate a user at any time; and the growing importance of security, wired equivalence privacy, public key infrastructure -- all these security considerations are going to become more and more important when a lot of data will be transmitted and available over wireless networks.

What are some of the strategies for market development that we looked at? The first thing that we did for the report was look at some of the high-demand regions, and by those regions we mean Hong Kong, Japan and Korea -- again, all in the Asia-Pacific region.

We also looked at how corporate strategies have been evolving. This is a world in which old players are adopting new roles, and established roles are being taken over by a very new brand of player. Operators, for instance, are adopting a more portal and content rationale. Manufacturers, on the other hand, are trying to move into the service provider space.

When we look at the mobile Internet market, what are some of the factors that are facilitating its development and what are some of those that are hindering it?

Let's start with the bad news, factors hindering market development -- one of the key factors is handset availability. It has been cited as the reason for many of the GPRS delays. DoCoMo had to delay its service for 3G due to glitches in its software for handsets. Low availability of handsets translates into high cost, and both of those things translate into low user take-up. That is one factor hindering market development.

Another is the plethora of languages, formats and protocols. We have WAP on the one hand, we have i-mode on the other; a lot of mark-up languages like Compaq's HTML for i-mode and a number of other formats, for instance for audio and video streaming, like JPEG, et cetera. Also, there is also a lack of evolved billing models. There are a number of different issues that need to be taken into consideration for billing, and that is something that still needs to be worked

upon.

So what is the other side of the coin? The economics of success include the following, and this is not an exhaustive list, by any means, but to avoid pure technology-push plays; to promote open access platforms; to increase partnerships and industry collaboration; to encourage sharing, and that means both in terms of revenue sharing and sharing of resources, infrastructure; and ensuring the transparency of tariffs in order to encourage customer take-up.

Digital content -- one thing that we need to remember for digital content is that we must not try to emulate the fixed-line experience. User sessions for digital content tend to be very short, and it is a targeted type of browsing experience, as opposed to the very slow-moving, perhaps more impulsive fixed-line Internet experience. The killer application, therefore, we found in our report was not to be pure content.

Since I am running out of time, I am going to go a little forward here, maybe into trying to tell you a bit about the Mobile/Internet Index.

Hong Kong at the top of the world. What is this index? First of all, let me just start by telling you what it is and what it is not. It is a measure of current ICT development, with a focus on mobile and Internet technologies. It is basically trying to gauge an economy's ability to take advantage of mobile and Internet technologies in the future. What it is not is a measure of "mobile Internet" as such in a economy. It is not limited to mobile and Internet development only.

There are a number of parameters that the index covers, and they are weighted as follows. Infrastructure was weighted about 50 per cent, and usage and market structure were weighted equally 25 per cent and 25 per cent. The infrastructure cluster measured the development of ICT infrastructure, but with a special emphasis on mobile Internet technologies. The usage cluster was attempting to look at the existing network by examining network cost, component and revenue.

The final cluster, the market structure cluster, which is where Hong Kong excelled, assigns an overall value for an economy in terms of how competitive its different market segments are.

Are you mobile ready? Hong Kong certainly seems to be, ranked number 1 out of 171 economies that we looked at. You will notice that, out of the top 5 economies, Hong Kong actually has the lowest GDP. It beat Denmark, Switzerland, the US, Japan and Iceland to be number 1.

It is not surprising, when you look at the

development of Hong Kong's network penetration -- 85.5 per cent mobile penetration; as I said before, probably reaching the 100 per cent mark fairly soon -- and an Internet penetration of 45.9 per cent is also a leader in broadband technologies.

Some of the areas where Hong Kong gained points on the index, and I would be very happy to expand on that during the panel discussion: infrastructure, it ranked number 8, usage has been ranged number 4, and market structure ranked number 3.

The key areas where Hong Kong did well was due to the competitive nature of its market segments, particularly mobile, the six operators, the licensing process, which was an exemplary example of an interesting way of allocating licences without imposing too much of a financial burden on operators.

I seem to have lost my slide capabilities. Technical problems already occur in technology forums, don't they?

Still, I will finish with this: other countries are still ahead in terms of Internet usage and services cost, and catching up fast in areas such as broadband and mobile penetration. So the question is, Hong Kong is at the top of the world today -- how can it maintain its lead? I am just throwing these out for discussion later on.

First of all, there are a number of ways that it can maintain its lead. I am highlighting some of the ones that I think are important. First is our continued efforts in allowing access to MVNOs and alternative service providers -- this includes open access provisions and resource sharing -- regulatory mechanisms focused on reducing tariffs and ensuring transparency; inter-operable and complementary development of alternative wireless networks, such as WLANs, so operators start having to view WLAN not necessarily as a threat to their 3G revenue streams but more as an opportunity; and the promotion of content development out of the vacuum, which means a focus on the successes of person-to-person communications and not an attempt to emulate digital content over the fixed-line network.

We have a website which will give you a little more information about our report, and there are a number of background resources available as well on this website, so I recommend that you visit that.

Finally, just a pitch for a forthcoming ITU report, because we do not just stop there, at mobile Internet. We are looking at Asia-Pacific Telecom Indicators 2002. This report will be released just in time for ITU Telecom Asia in Hong Kong, which will be held from the

2nd to 7th December, and it is also going to be available through our electronic bookshop, if you are interested.

With that, I thank you very much for your attention.  
(Applause).

MS MARISA KWOK: Thank you very much, Lara, for sharing your report with us.

Our next speaker is Mr Bruce Hicks. Bruce is the group managing director of SUNDAY, and he has been with SUNDAY Communications Limited since 1995. He has also been a partner, director and chief technical officer of Distacom Communications Limited of Hong Kong since 1994. Bruce has extensive experience in technical operations and new business development in Asia and Europe.

I would now like to invite Bruce to share with us his thoughts on unleashing wireless creativity.  
(Applause).

MR BRUCE HICKS: [SLIDES] Thank you, Marisa, and good morning ladies and gentlemen.

I have been looking forward to speaking at this conference, because I think it is a very appropriate topic, and I think the timing is very appropriate for Hong Kong. We have an opportunity facing us, as a city. It is an opportunity that is important not just to the mobile telecommunications industry, but it is important for Hong Kong, I believe. We have a new industry that is developing, the content and applications industry. It is very much in an infant stage right now. It has an opportunity to grow up, if we do things correctly.

Hong Kong's content and mobile applications industry is not developing at the pace of some of our surrounding neighbours. It is not developing at the pace that it is in Japan or Korea, Singapore, and some would even argue China.

The fact that the industry is not developing as it should has a potential to hurt mobile telecommunications in Hong Kong and, as I pointed out earlier, it is potentially a lost opportunity for Hong Kong.

John wanted some concrete proposals today, so I thought I would throw out of idea for consideration.

We have a very sophisticated mobile telecommunications market in Hong Kong. By my own estimates, well over \$20 billion has been invested in mobile telecommunications infrastructure in the last six or seven years. Another at least \$5 billion will be invested in mobile telecommunications infrastructure over the next few years, as the investment is made for 3G.

As has been pointed out already, we have one of the most sophisticated markets in the world, with high

levels of penetration. We have a very interesting situation here. We are perhaps the first market in the world that has reached a level of saturation. Our growth, our future growth, is not coming from new subscribers; our future growth is coming from the services. It is dependent upon us, as industry players, to ensure that that is made possible.

Hong Kong has a well-recognised, well-respected, source of telecommunications expertise. We are well known around the world for our telecommunications expertise. We also have, from other industries, a great depth in the history of software creativity. This software creativity should now be turning its focus on supplying the future of the mobile Internet. Hong Kong also has an abundance of entrepreneurs. We have lots of great ideas. How do we bring these factors together so that we can create a successful content and applications industry that supplies the needs of our local market and supplies the rest of the world?

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. We cannot be spending all of our time, all of our money, working with all the ideas that walk through the door.

That leads to my next point. This marketplace has six mobile operators who face a fiercely competitive market. It has been very successful but it is fiercely competitive. Operators are focused on their own needs, primarily on operational survival. As John pointed out, we are finally reaching a point of profitability, which is healthy and necessary going forward. We look forward to that continuing so that we can start to consider some payback on the investments we have made.

We have focused on the creation of the infrastructure, the network. We have invested to get the network we need to build our business, and we are investing selectively in mobile content and applications where we think it will help our business.

Hong Kong, as you well know, today is struggling. We have had nearly 50 consecutive months of deflation. We have somewhere between 7 and 8 per cent unemployment. We have unprecedented saving in bank accounts. People are not spending, people are not investing, and companies right now are focused, across all sectors, on survival.

Local mobile telecommunications operators are not in a position to support the mobile content and mobile applications industry to the extent that is necessary to

make this nascent industry flourish. No single operator in Hong Kong has a large enough subscriber base to justify investment to set up extensive R&D centres. We have to be very selective in the investments we make as far as content and applications are concerned. Our investments these days are very much focused on immediate needs.

We are not in a position to encourage the funding of a substantial content and mobile applications industry that is capable of delivering dream applications, beyond what we consider are necessary for the immediate needs of our businesses.

As a result of this, the content and mobile applications industry in Hong Kong, which is in an infant stage, is not moving forward at the pace that some of our surrounding countries are, and I pointed out Japan, Korea, Singapore and again China. This is unintentional. Our unintentional lack of support for local mobile entrepreneurs, the content and applications industry, is not intentional, but it is happening.

As a result of this situation, we are leaving an opportunity on the table. Content and mobile application developers, this new industry, is potentialing losing out. We are not developing the ideas into products to supply our local market and to export. Hong Kong's mobile operators potentially lose out because we do not have the choices that we would for local content. We are going overseas for content that is already created and we are selectively picking the developers that we work with. Hong Kong is potentially losing out because there is a nascent industry here, with considerable potential for export, that may not develop.

If we can solve this problem, mobile content, applications, technologies and services with local flavour, which are much more relevant to our local customers, will be available. Operators presumably will be more profitable from having these applications available, and we will create a new industry capable of helping Hong Kong's economy for domestic consumption with export potential.

Hong Kong should continue its tradition of being a world telecoms leader. We should be a net exporter of applications.

So that is the bad news. What do we do about it? I would like to propose specifically that a non-profit, independent mobile content and application development centre is established. I think this is necessary. Such a centre is necessary. It creates an opportunity for Hong Kong's local developers, all the ideas, to come and

gain the information it needs about all of the industry standards. This is complicated stuff. The mobile Internet, inter-operability, all these issues are very complicated. Access to that information is difficult for small companies. We need to have a centre where the information is readily available. We need to have a centre where independent, small companies, developing ideas, have a place to go to test their services, to test their ideas.

The centre should not be affiliated with any particular operator. It should not be affiliated with any particular manufacturer. We are fulfilling that role right now, the manufacturers and the operators, but we are not in a position to do it to support Hong Kong as it needs. It must be independent. It needs some infrastructure, it needs a working mobile network, so that developers can actually test that stuff, or at least access to the mobile network. It needs to have switches, it needs to have an SMSC, it needs to have MMS; a place where a guy with an idea can actually go and test this stuff.

That is a great idea. How do we do this? There are a couple of hurdles. Obviously we need to fund something like this. It is something that I think we need to look at, and I look to our Government to take some lead in this idea. It is something that operators would probably be receptive to. SUNDAY would certainly be receptive to participating and co-funding something like this, but it needs somebody to be the leader.

We need space. It has to be located somewhere which is independent, to break that tie to any particular operator, any particular manufacturer or the burden on any particular operator or any particular manufacturer.

What is the reward for achieving this? If we can solve this puzzle, we are going to have more vibrant, exciting lifestyle-oriented services that can be created by Hong Kong. It can be supplying the local market -- our operators would benefit from having that content -- and it would become, I believe, another source of export for Hong Kong, as we continue the many years of history we have as a world leader in telecommunication services.

Thank you. (Applause).

MS MARISA KWOK: Thanks very much, Bruce, for sharing your proposal with us.

Next I would like to invite Ms Janice Hulse of Cisco Systems. She is the regional director of mobile service providers for the Asia-Pacific. Janice is responsible for the sales and business development of Cisco product and applications offers for the mobile service provider market segment in Asia-Pacific. She

has over eight years of experience in the Asia-Pacific region and has been working in Singapore for the past five years.

I would like to thank Janice especially because she apparently flew in from Singapore just for this occasion, so thanks very much Janice; I would like to invite you to the stage. (Applause).

MS JANICE HULSE: Good morning. I am delighted to be here, ladies and gentlemen. I know that time is of the essence, so I will go through my presentation fairly crisply and succinctly so that the panel will have an opportunity to address your questions.

The focus of my presentation this morning is: how does one capture the enterprise market, and what can operators do today in terms of providing wireless data access?

If we take a look at the mobility market and the wireless LAN connectivity requirements from an enterprise perspective, there are some interesting things that are happening. In North America, Gartner estimates that 75 per cent of US enterprises will be deploying wireless LAN by the end of this calendar year. What is happening, then, is that enterprises are typically driving the early growth for wireless LAN, and that is leading us to an area of: how do we capture those requirements from a mobility perspective? Because enterprise users and corporates are demanding access and mobility access to these applications. They want to be able to have the same type of ability to be productive off-premises.

There have been a number of reports and research studies that have been done, in particular this one here, that actually ranks in order of priority the mobile or business applications requirements of a user in terms of relative importance. The first one is typically remote access to e-mail; employee organising or access to calendars and Outlook features, for example; and customer relationship management.

I think that many of you are familiar with the breadth and depth within Cisco systems and the deployment of IP from a productivity perspective, transactional processes and so on. All of the sales representatives and account managers and field sales organisations rely on the Internet access to our corporate infrastructure applications and content. We have e-learning, e-sales applications, we are constantly on the road, and having access to this content is critically important. So, therefore, the value that we place on that access is equally important.

If we take a look at what this means in terms of

an enterprise customer experience, if we consider the aforementioned mobile business applications and how this translates: number 1, the enterprise content already exists on the corporate infrastructure. I named a couple of applications as an example. Number 2, in the middle, the requirements are really the access anywhere or office anywhere.

"Office anywhere" is a term that is actually being constantly used in the United States today, because it is the ability to transparently be in the office no matter where you are located. That office, if we take a look at the left-hand side of the screen, is obviously your office location, or any other scenario, that being your hot spot, as we are today in the Sheraton Hotel, or at your home, through perhaps wireless LAN or broadband access, or elsewhere.

I am wondering if any of you have read recently about the announcement that Lufthansa is doing, importing access wirelessly on their 747s which I believe they will be announcing or launching in the new calendar year of 2003. So, again, it is the opportunity to have access anywhere to your information.

The enterprise market also represents very lucrative opportunity for mobile operators.

As we take a look at the challenge in Hong Kong, and we listened this morning about the 87 per cent penetration in terms of the market here, what other opportunities and avenues are there for mobile operators to be successful and increase their revenue streams?

One of the things I wanted to touch on is the importance of mobility access to the enterprise customer, and probably the most critical feature is that of security. So the important thing is, how do I, as an enterprise user, have the confidence in security to be able to access my corporate information? That is typically done through virtual private networks. In the United States, over 48 per cent of the SME market are already using IP VPNs, and I believe that an estimate in terms of the global corporates is actually higher, closer to 75 per cent. We are certainly seeing that pollinated here in the Asia-Pacific, but the beauty of that is that it allows corporate employees to be productive 24 hours a day, if they choose to be so.

Access to corporate is typically through broadband or wireless LAN; Cisco, as an example; Nokia, GPRS, and so on. What I would like to actually demonstrate to you right now today, with the complements of CSL/GPRS -- I will actually go into my VPN client and my Cisco site confidential directory page, and show you that while I am here today I am actually accessing that

information.

You can see here, this is an example of my accessing the Cisco directory. This is a profile of my particular contact details, and I am able to go into this and view on any item; my contact details for my manager, in this case Andrew Murray.

Let me demonstrate to you that I am accessing this through my GPRS. You can see I have got the Nokia D211, GPRS. You can see the screen here that is actually showing you the data in, data out, and the data flow. So, again, here I am, with the ability through GPRS, being able to access into my corporate VPN, totally secure. This particular page is not public webpage access.

The point of this next slide simply illustrates that the device is independent, so, regardless of the device in this particular scenario that I just showed you before, I was actually accessing my corporate internal website through my laptop and GPRS. I could also be doing that through my PDA or tablet, or whatever new technology device is on the market today to provide me with that access. When I travel, I take my integrated i-pack telephone online VPN client as well. So, again, the opportunities for me are endless.

One of the comments this morning that I thought was particularly interesting was the challenge of access and that being speed. I am sure that most of you who travel as business travellers and find yourselves in a hotel that does not have broadband access, you do not even attempt to do a dial-up. So the criticality of access to applications is going to be directly related to the ability of speed and how you can access those.

GPRS, as an example, or even 2.5 or wireless LAN -- wireless LAN, as Lara said this morning, is really a complementary service, and how can you bundle that with the current offerings you have today?

Each of the scenarios that I described are off-the-shelf products and services available today. Demonstrating laptop PC access through wireless LAN in a hot spot, with my Cisco wireless LAN card, and of course I do use Cisco, being a Cisco employee. I can go downstairs in my office in Singapore, sit down at Starbucks and have virtual private network access to my corporate database wirelessly, with my laptop, or with a wireless PDA, as I demonstrated before, access to my enterprise domain via GPRS.

The challenge, however, is then: how do you charge or how do you provide compelling applications and solutions to enterprise customers, in terms of what the value is that they want to gain out of this? I will

disconnect the GPRS right now, since we have demonstrated that.

One of the things that we are finding that our customers are asking and demanding is ways of differentiation of billing, so that they can go to market, provide differentiated services, whether that is complementary for wireless LAN and GPRS access, as well as how do they scale the different applications on top of that and be competitive in the market? So the challenge, and one thing that you all need to be thinking about, is how do you tariff or how do you do a fee-based billing: is it content based, is it bytes based; what value do you place on that?

The other area that is important is the area of integration models and the different scenarios that you can actually take to market. From a GPRS and public wireless LAN integration, you can start in a very phased approach, but the higher up you move, or in this particular case from the top down to the bottom, where you achieve that tight coupling, that is probably the most value that you will be able to give your enterprise user, and that being seamless mobility. But there is always a place to start, because the demand is there.

A decoupled perspective is where everything is separate, so the challenge there is: how do you charge for that, and will you truly capture a significant percentage of the enterprise corporate in that particular mode? A loose coupling approach, where you have a number of common services available; there is common subscription, so you have one bill for any type of service that you may be providing to your customer, and common billing.

But I think the highest point is where you talk about looking at areas of user authentication, where I can seamlessly roam from my handset device back to my laptop and back to my handset, where the session is always controlled and always secure.

So these are the areas that you need to be taking a look at, because different integration options will also lead to different implementation timeframes. But the faster that you can get to the seamless mobility will assure you possibly the biggest penetration and success in reaching the enterprise corporate customer.

The conclusion is, the value proposition simply to the user, it is all about access. Speed, complementary services, ability to be online and be highly productive. No technology constraints -- off-the-shelf solutions exist, whether it is the preferred choice of PDA that I have, or another handset, or my laptop. Most importantly, it offers truly new service opportunities

for the mobile service providers, because it is an area where you can complement your current GPRS data services with wireless LAN in getting to the enterprise. It is the sweet spot. There is not one operator that I don't talk to when I travel in the Asia-Pacific that is asking me about business case models for public wireless LAN and adoption as a service in their network. Of course, as you are aware, there are a number of mobile service providers that are offering that today, in the various areas of Asia-Pacific.

Business case models are a challenge. In some markets they do not stack up, but predominantly operators are seeing there is no choice; they have to be offering these services to stay competitive and ensure that they minimise the churn of their customers and ensure stickiness at their base as well.

The "office anywhere" vision is really a reality today. I wanted to leave this slide with you, because I think it captures everything I have tried to touch on this morning, which is from a mobile IP, quality of service, and most importantly, virtual private network. Anywhere, anytime, with any device.

Thank you for your time. (Applause).

MS MARISA KWOK: Thank you, Janice. Our fourth speaker is Mr Alex Young. Alex recently held the position of Senior Research Engineer for Mobile Entertainment at the Multimedia Innovation Centre of the Hong Kong Polytechnic University. His roles included researching the local mobile application market and training teams of students the lifecycle of mobile game production.

Alex specialises in mobile entertainment, and has had three years' experience in this field. This morning, Alex will share with us his ideas on designing content for the jaded user.

May I invite Alex, please.

MR ALEX YOUNG: [SLIDES] The title of my slide, defining mobile gaming, has slightly changed, but is still aimed at understanding who the end user is and what their usage patterns are with regards to their mobile phone.

I will keep talking so we do not waste time. To start off with, I will talk a little bit about the current market, how I see it from my point of view, as someone who uses mobile devices, someone who has played a lot of mobile games, both here in Hong Kong, throughout Japan, Australia, as well as Europe.

The way I see the market here is that there are a lot of eager developers, people who are really interested in developing for wireless devices. Everyone has good ideas.

Another thing is that consumers are very interested

in new technologies. They are willing to give it a try. Whether or not they will take it up and adopt this new technology and use it as part of their lifestyle is another thing.

There are some bad points to the market, as Bruce has already mentioned earlier. Do not believe the hype. A lot of analysts predict that great things will be happening in China, especially for investors. This is not going to happen without your assistance or your developments.

There is low penetration of higher-tech devices. Consumers in Hong Kong prefer very small devices. These are the same devices which have very difficult interfaces to use, if you like to use mobile Internet or downloadable Java applications. There is also low uptake of data services. Although people may subscribe to services such as GPRS, it is another thing if they are actually using it.

Another point I would like to make, although it is slightly controversial, is that 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. It is not even a case of technology holding anything back. I know people have developed amazing things, but Hong Kong -- you may have a few excellent developers, but that does not build the market. We need a lot more push for innovation, imagination, compelling applications. I will talk a bit more about that later.

Hopefully, everyone can have a copy of the slides later to have a look over. What I am looking at right now is a slide talking about the importance of understanding the end users; in other words, why is the end user so important? One reason is that it is not like selling traditional software. You do not get a box, you do not get a manual. People on the street, if they get an application in their phone, how will they know how to use it? You have no instructions. That is why it is up to people like developers to keep that in mind.

Therefore, with no tangible evidence of this purchase, you pay money, and magically through the air your phone receives an application. There is a strong emphasis on the value that the user receives in using that application, the experience they have while using that application. It is not about having, "Here is a CD, I can share it with my friends, I can re-install it." You download it, or it is in your phone. Once it is gone, it is gone; you pay for it again. Therefore,

you must understand what consumers value. Understanding what they value will help you understand what to develop, who to develop for, and basically work out your strategy.

So some of the basic questions to understand are: who will be playing your games or applications, when will they play it, how often will they pay, and how often are they likely to pay for it?

You have to understand that in Hong Kong there is this problem where a lot of people have a lot of money -- sorry, a small number of people have a lot of money and everyone else has no money. This is very true -- if you walk around, you will see that the type of phones that a lot of normal people have in Hong Kong are very low-tech. A lot of people just have SMS. A lot of people do not have MMS or any other capabilities. They are not aware of any other capabilities. All they want is something that is nice, small, that they can show to their friends; it is part of a status symbol and fashion, and I will talk a little bit about that following.

I took it upon myself to interview about 113 staff and students from the Hong Kong Polytechnic University and City University. They were aged between 18 and 30 years old. The direction I was taking was: do you play mobile games? Around half play games, but only embedded games. One or two used SMS, but the general feeling was that SMS is too expensive, and anything above that, MMS, Java applications, is even more inaccessible for them.

As you can see, half the people played games on a weekly basis, and slightly less for daily or monthly. The main reasons for playing were to pass the time when they were bored, or to pass the time when they were on transport, and a few played for entertainment. This is 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.

These are the reasons for not playing. A lot of people just simply are not interested in playing games on their phone or other forms of entertainment. A lot of people just did not know how to play, or they did not know how to use their phone properly. They did not know what GPRS is, or WAP, or any other technologies. Not that it is necessary for them to know, but they have not been branded in any other way here in Hong Kong, so that is all there is for them.

Also, there is the high cost of the base usage, so people would prefer to use their phone for voice. When

it comes to data services, "Pay more -- what do I get for it?" They do not feel they are getting enough value from it, then it is simply not an option.

I have identified three key areas for you to consider when you are thinking about developing for Hong Kong, or strategies for applications and services for Hong Kong. These areas are unique to Hong Kong, Hong Kong people and the culture here. We have different mobile phone habits, we have different gaming habits and a different lifestyle.

Here in Hong Kong, people really, really have a relationship with their phone. It means so much to them. It is both a social tool and a business tool. A lot of people cannot do business without their phone. It is used throughout the day, throughout the week, on the weekends. As a social tool, it is really required to organise anything with anyone. People do not sit still in Hong Kong; they are always on the move. You have to have a phone or you have no social life.

Your phone is on a par with your wallet/purse, PDA, diary, handbag. It is really up there with what you carry everywhere, to the toilet, anywhere; it is with you all the time. It really says a lot about the value that people hold with it. As a status symbol, you will find that some phones coming out of China now have little diamonds and things. I asked someone, "Why is this necessary? It looks really ugly", but was told that it is really quite popular and it does add something to someone's status. If you look at VO2's phones, you cannot find them in shops but you have to get an appointment to see them. I think the highest model or cheapest model was about HK\$158,000. You can get gold plated, platinum; lots of high-end, stylish, luxury-style phones.

The mobile phone is a primary means of contact, therefore a lot of people use their phones as the only way to get hold of them; they do not use their house phone.

I am going to quickly carry on, because I do not have much time left. Phones are also used as a fashion accessory, therefore people do not necessarily purchase their phone based on the technology that it includes inside; it is more of the size and what their friends will think. It is very much a social purchase.

Hong Kong is a land of plenty for gaming. Hong Kong has the best alternatives, besides mobile gaming, for gaming. You have a great deal of pirate games -- it is a bad thing, but they are there. You have a deal of Internet cafes, online gaming, video games. There are a great deal of games released from Japan that find

their way here very quickly.

How do these affect their end user's expectations in terms of what they want to play on their phone? You can look at these in more detail later, but because voice usage is very cheap, it is a very difficult thing to overcome if people want to sell data services. There is a lot of Internet access, so why use mobile Internet, because it is there anyway; you can walk into any Internet cafe. A lot of people are unaware of these data services and do not know how to use them.

Something that is very important for Hong Kong, especially for Chinese culture, is the great importance placed on the cost of a purchase, because when you buy something the first question people ask is how much did it cost and whether you got a bargain, and if you made a poor decision your friends will look down on you, your family will look down on you. It is very important that you get a bargain, and data services at the moment do not provide that. It is strange, but it is necessary to keep this in mind. There is limited leisure time as well, and the data service must provide strong value to the users.

These are some points to consider about how well the applications that you develop or deploy fit into people's lives, because there are certain times and places they use their applications. They use it for a certain reason. Are you simply deploying something you think that they want, or have you asked them, "Do you want this, how will you use it, when will you use it?" These are questions which must be asked and research areas that need to be covered.

So the goal for complementary mobile services is not to deploy applications which you think will fit, but applications and services which will add value to people's current lifestyle. Consumers need to be the focal point of the market, not necessarily technology. Technology is moving very quickly; it is always going to change. The idea is to think about consumers, how will they use the applications, when will they use it, and therefore you feed what they want.

There are lots of ideas for crossover applications from different mediums -- TV, movie, et cetera -- lifestyle applications which will add to, for example, a businessman's lifestyle, a young person's lifestyle; things that are relative to what they do in their daily life.

Here are some conclusions. For Hong Kong, in terms of the future of the wireless industry, a lot of those really have to be carefully taken into consideration. We really need to understand consumers' usage and the

way they use their phones and consider their phones. One minute you are using it for phone calls, voice; the next minute you are using it for data services. That is a huge change in the way people think of their phones. Why use your phone for that when there is a PDA, there is a computer? Every device has a certain usage. People do not understand that you can just switch like this between data/voice, data/voice. There needs to be an increased emphasis on the marketing, because the users need to understand and conceptualise in their mind what is possible with their phones and not just, "We have WAP, J2ME, Java, et cetera.

Increased quality -- I would say the quality of services or applications in Hong Kong needs to improve dramatically. It is not about just keeping people happy in Hong Kong. You have to look at the bigger market, look at the international level; aim for international standards and at least you will keep people in Hong Kong happy. There needs to be a fostering and growth of mobile entertainment culture and community. A lot of people are not aware of what is possible with gaming on phones; a growth in information or education of consumers with this key area in mind is really required.

Of course, as Bruce mentioned earlier, there is a lack of investment. But it would be nice to have more accessible pricing plans and packages. Maybe packaging or the way that the models are used is something that needs to be addressed. I am sure everyone has looked at the pricing models used in Japan and how successful they are.

Finally, increased competition among developers. We need more developers, we need to have them fighting against each other, "I can outdo you". Let us see what each one can do and how they can outdo each other. That is what is going to drive the quality level up.

I had better finish there. Thanks a lot.  
(Applause).

MS MARISA KWOK: Thank you very much, Alex, for sharing some of your interesting thoughts from your project.

We still have a few minutes, I think, left for the panel discussion. Of course our key speakers will be on the panel, and I would also like to invite Mr Tim Storey -- he is the managing director of Goldman Sachs' Asia-Pacific investment research -- he will join our panel of analysts.

I would also like to invite our moderator, Mr Peter Lovelock, who is the deputy director of the TRP and the director of MFC Insight -- he will be moderating the panel.

MR PETER LOVELOCK: Why does everyone always pick upon the

purchasing habits of the Chinese? I was in LA last week -- diamond studded handsets at half price. La-la land, and they do not even have a network that works, for crying out loud.

While we wait for Tim to join us, wake up. I am serious -- wake up, pinch yourself. It is 2002 here. Let us go back five years, to 1997. Remember those days? Hong Kong ruled the planet, or if not the planet at least Asia. The currency speculators had tried to storm the citadel and we kicked their butts. China? Come on. We were the gateway to the world's biggest potential market. They were not even in WTO, and we held the key.

The Internet? How about PCCW? No PCCW, no Little Richard. The big telecom guy in town was profitable. Remember that? The Internet? That was cowboy territory. Remember those conferences? The Internet -- the suits did not get it. Look around. Are you still pinching yourself?

Personally, I just arrived in Geneva at the time, to work a few floors below Lara. She is big shot. At the ITU, we were looking at this phenomena called mobile. You remember that saturation level she talked about, the theoretical saturation level for mobile in an economy of 85 to 90 per cent? In 1997, it was 50 per cent. Go back and look at the World Development Telecommunications Report of 1997. It was a complementary good in those days. It was not a given that you would hit 100 per cent teledensity for a mobile service.

So what is the point? Okay. You guys are all sitting here, dealing with John's prescribed session for the morning, and, as John likes to do, he has set you up with an oxymoron. Sustainable development of an ecosystem -- how do you sustain development? He is asking you to plan the future. Five years ago, mobile was an unforeseen phenomena and the Internet attracted people who did not wear ties.

With that, the ecosystem. We only have 15 minutes. I am going to use the chance to try to stimulate you guys, because we brought you in here to work out what happens to an industry in crisis. I will allow each of our panellists to attempt to deal with the question of how we build the ecosystem, and then I get to open it up to them.

Given that we have had Tim sitting there for the last two and a half hours while the panellists did their thing, let me address the question to Tim first and give him a chance to rebut some of the comments you have heard, and then I will work through the panel in order,

giving them a shot at identifying the single key factor that they think is missing from the ecosystem right now. Tim?

MR TIM STOREY: Thanks, Peter. I think in Bruce's presentation there were a lot of points that hit very close to the issues that I see the investment community -- which is ultimately going to be somewhat linked to the funding that is going to be available for this -- is considering. The most important point here is Bruce's point about operational survival being the key focus of the wireless industry in Hong Kong right now, rather than necessarily putting money into new areas of development.

I do not think that there is a lot of confidence right now in terms of the cost benefits of putting a lot of investment into mobile data, just given that the industry itself is still fairly fragile. We have seen an improvement in profitability, and I think that point was made in one of the presentations, but there still is a perception that there is fragility there in that recovery in profitability, so I think probably at the end of the day the one thing that the financial industry is definitely looking for still is consolidation within the wireless market.

The fact that we have six players here is unique, but it is unique I think in, probably at the end of the day, a more negative than positive context, in that it limits the opportunity for the operators to take the risk to make new investment, unlike in other markets, and I would highlight, because Korea and Japan have been focused on this morning as successful mobile data markets in many ways, that both of those markets have gone through consolidation, some of it being driven in part by the Government's support for that as well.

So I would say that, for the ecosystem to work, the consolidation and improved profitability of the remaining players in the Hong Kong wireless market is probably a very important starting point.

MR PETER LOVELOCK: Thank you very much. Let me just jump around, we are going to do this one at a time, and then I will open it up to your questions.

Janice, the most important factor missing from the ecosystem -- the infrastructure?

MS JANICE HULSE: I believe that the infrastructure is already there. I think it is in its evolutionary and migration phase, but nonetheless it exists.

A fundamental challenge, in my view, and I see not only in Hong Kong but also Asia-Pacific, is really the development of a true ecosystem partner based. Cisco Systems uses ecosystem partners to bring our solutions

to market. We are, at the end of the day, a hardware box company. We would not be successful unless we had created strategic alliances with partners in the radio supplier side, in the applications side.

As I am seeing what is happening in the area of applications to the market, the biggest challenge, as you have pointed out, was the billing context side of it, putting on top of current IN services that are in the market today, whether they are prepaid, post-paid, location-based services -- how do we straddle those particular applications and make it very lucrative for the mobile operator? You cannot do it on your own. Behaviour has to change, and that behaviour change has to be with the adoption of new partners; the developers that are the next Microsofts, forgive me, out there in the world, that will be driving those content applications to you to be successful.

MR PETER LOVELOCK: We have more Microsofts coming?

MS JANICE HULSE: I hope not.

MR PETER LOVELOCK: You are on record with that.

Bruce, the most important feature currently missing in the ecosystem -- you put forward an exciting proposition based on the fact that, if I have your words correct, the operators get hit with many, many exciting ideas every year, from potentially creative types, and yet the best we have come up with are icons, ringtones, and a phone that thinks it is a camera.

MR BRUCE HICKS: Thanks, Peter. Let me separate some of the issues that are relevant here. First of all, I have full confidence, enthusiasm, and so on, that the world is going to move on in this area, that there is going to be more and more acceptance of mobile Internet or wireless applications, whatever terminology you want to use, both in the enterprise sectors and the consumer sectors and whatever sectors. The world is not going to turn back. We will look back in five years, using your history lesson, and be amazed at what has been accomplished. I sincerely believe that.

The issue that I was attempting to raise was Hong Kong's ability as a centre for development of applications and content that satisfies the domestic market, and continues as an export opportunity for Hong Kong. We have a long heritage of good telecommunications expertise but, unless something is done to help that nascent industry, you are not going to see that continue.

As Tim picked up, it is not going to come from the efforts of the mobile operators. We have needs; we will acquire content and applications, where we can get it. We will selectively pick a few players and work with

them, because we think we will get an opportunity. We just do not have the capacity right now that operators in Japan and Korea do.

Singapore is a little bit different. You have some industrial policy there by Government that I believe will ultimately result in Singapore being a player in the supply of content and applications.

Hong Kong is sitting here with a huge market to the north that is a consumer of these applications, and it is an opportunity that I think we should embrace.

MR PETER LOVELOCK: Thank you.

Lara, leaving aside the question that I would like to ask -- which is shouldn't you at the ITU be able to foresee these trends -- how well positioned is Hong Kong in developing its ecosystem moving forward?

MS LARA SRIVASTAVA: Thank you, Peter.

I think Hong Kong is fairly well positioned, as we noted in the ITU Mobile/Internet Index. I did put forward some ideas for continued improvements and how to maintain the lead, and if I were to focus on one key factor I think which summarises what we have discussed, it is information flows.

I think we need to encourage and promote information flows, and by this what I mean is the relationship between operators and manufacturers, between operators and content providers, information flows to the user as well as flows of information between entrepreneurs, thus focusing on industry collaboration as well as increasing user awareness, and focusing not, as Alex mentioned, purely on a technology-push way forward, but looking also at the demand-pull side, in order to move forward in this market.

MR PETER LOVELOCK: Thank you.

Last but not least, Alex. I know how to make the gaming industry work, I know how to make it more exciting: money, we introduce money -- let's make it gambling.

MR ALEX YOUNG: I have considered and talked to a lot of different people about the prospect of gambling, and very much gambling is one thing which, if you put it on mobile, if you present it in a way which is accessible, if it is legal then it will be successful. It is definitely one of those applications which you already know the target audience, gamblers; especially for any Chinese, it is very easy to target them, and that may not sound too nice but there is definitely a market there that is ready to adopt wireless gambling in that way.

MR PETER LOVELOCK: Isn't where we are now indicative about what is lame about the whole industry? Every other time

there has been a telecommunications revolution, the porn or the sex industry leads the way, and here we do not have the sex industry leading the way -- there is the problem.

MR ALEX YOUNG: When I was thinking of the jaded consumer, it was more like jaded WAP users and that, but in terms of porn or violence, or any other immoral stuff which finds its way onto the Internet and is really big, it is interesting that it has not really taken off in Hong Kong. It is not difficult to do, anyone -- you can sit around and develop something yourself and provide it -- but whether or not there are regulations inside the operators to stop that kind of thing is another issue.

MR PETER LOVELOCK: You would like to learn to set up your own sex industry while you are sitting alone at home? Alex will take questions at the end of the session.

For those of you with questions now, we still have five minutes. If you would like to zap us your questions, I will hand them down the line, if you pull out your -- because you are all using it, right, you are all mobile Internet enabled; yes? Do we have questions from the floor? You are desperate for coffee, aren't you? Do we have questions from the floor? Over here.

PARTICIPANT: Martin Walsh, Hongkong Land. As an industry provider of the infrastructure that is used by mobile users -- for instance, common antennae systems within Hongkong Land portfolio buildings, that is my plug -- I am just interested to see -- you are talking about the building of the ecosystem -- the one thing that has not been discussed is actually where the regulator fits into that.

MR PETER LOVELOCK: If he was not here, I would jump in and say there is a good reason for that, but he is still here. Who would like to take the question? Bruce, it is begging for you. What do you do with the regulator in the ecosystem? Is that correct -- where does the regulator fit in building the ecosystem?

PARTICIPANT: You are talking about customers, you are talking about the technology developers and so on and so forth -- the regulator is a vital part of that ecosystem, unless I misunderstand the nature of the industry.

MR PETER LOVELOCK: I think we have two answers. Bruce, or at least Lara wants to jump in and elbow you out of the way.

MR BRUCE HICKS: Okay, I will take a lead with that. I was

trying to tie the regulator in and common antennae systems, and I was missing that point. Clearly, the role of the regulator in our industry must continue. We have a complicated industry that is evolving, and it would be idealistic to assume that there is not a role for a regulator in that industry.

One of the things that I am encouraging in my comments is that helping Hong Kong to establish its content and applications industry is going to take a leader, it is going to take somebody that steps forward and says, "I will be the independent body that will bring all these parties together", so that we can get -- I have proposed the need for a content and applications development centre, which is essentially two functions. One is a library of information, because we are dealing with some very, very complicated, rapidly changing standards, and you cannot rely on all the manufacturers and the operators to be the source of information -- it is confusing and it is a large amount of information -- so a library of standards information, so that developers can come there and learn about the present state of technology.

The second thing is actual access, and a real testbed access. In terms of whether it is the regulator or whether it is other Government bodies, I would request or appeal, or whatever, for some leadership shown in this area, to bring the parties together so that we can have an independent centre established. I think that is good for Hong Kong.

MR PETER LOVELOCK: Lara?

MS LARA SRIVASTAVA: Thanks. I agree with what Bruce has said. A regulator's role here is to encourage, again as I mentioned before, the flow of information between the various players.

In addition, I see two key roles for the regulator in this industry, moving forward. The first is to ensure the continued open access to various technologies and platforms; this is the key role for a regulator in this industry. This includes not only access to networks; it includes access to infrastructure, access to information about the subscriber -- for instance, location information -- and it includes the access to equipment and encouragement of resource sharing.

The second major role, one of the slides that I wanted to show earlier on, is that in this move towards what one could call a mobile information society, where these all-pervasive wireless devices are affecting the way we do business and are transforming our everyday lives, in an area like that there may be an increasing need for governments to get involved in

protecting the consumer.

Consumer protection -- with mobile devices now becoming ubiquitous, and in fact moving towards what some people call invisible mobile, which are wireless implants or machine-to-machine communications -- there is an increasing need to protect the security and confidentiality of consumers as well as businesses, and concerns over health issues and mobile spamming, which has already begun. I remember getting something like four SMSs when I arrived here in Hong Kong, from various operators.

So I would say, just to summarise, that the regulator's role is two-fold: open access and sharing, and consumer protection.

MR PETER LOVELOCK: With that, you have been startlingly patient, so we will bring this first session to an end.

I would like to thank each of our panellists. We are going to break for coffee, and we are going to give you until 11.30 -- right, John?

MR JOHN URE: Correct.

MR PETER LOVELOCK: But, before you go -- I am handing back.

MR JOHN URE: As is traditional, we have small gifts, and I am going to hand these gifts to Marisa to hand to the panel.

They consist of two types of things. One is book tokens. Some of us still read books in Hong Kong. Marisa, this one is for you. (Applause). These are for the other members of the panel. Two members of this panel do not come from Hong Kong, and you cannot use these book tokens outside of Hong Kong, so for the two members of the panel who are not from Hong Kong we have another kind of gift, which is not a mobile phone. Then, when Marisa has given the gifts, we will have a coffee break and we will try and make it to 11.30.

MR PETER LOVELOCK: Can I get you to thank all of our speakers for the morning session? (Applause).

(11.10 am)

(A short break)

(11.40 am)

MR FRANCIS FONG: Ladies and gentlemen, welcome back to session 2. Session 2 for today is "Making it happen: can an ecosystem for wireless platforms be built or does it just grow?"

I see that not everyone is coming back, so I want you guys after your coffee break to do a little bit of exercise right now -- can you raise your hand if you do have a handset with GPRS? Come on. Good. Then how many of you are actually using GPRS yet? Really? Okay.

Okay. Let me introduce our first speaker for the second session, Professor Reg Coutts. He is from the University of Adelaide, and he was a Director of the Centre for Telecommunications Information Networking

which closed in May of this year. Currently, he is Associate Dean, Industry Linkages, in the faculty. Welcome, Professor Reg. (Applause).

PROFESSOR REG COUTTS: [SLIDES] Thank you very much. I closed my centre in May, and thankfully I did do it in May because the industry got even worse after that. So I can now be more independent spirited than I usually am, and talk about one of the exciting ventures that I have been involved in, and that is the creation of m-Net, which is in fact a wireless testbed, and in many ways it is an example of what Bruce was suggesting you need here in Hong Kong. Maybe after my presentation some elements will probably help that proposal and some elements will not.

Lara commented that this opportunity of building opportunities through the collision of the Internet and the mobile boom is a huge opportunity but with big risk, and I can only wholeheartedly agree with that. One of the reasons for that is that it requires many of the aspects of convergence to happen in a timeframe that supports the applications and the industry development that we are all hoping for.

The particular aspect of convergence which I would say is here now is the convergence between the IT industry and the telecoms industry in the wireless space. It is not coming, it is here, and it is going to directly impact on what that market demand is going to be and what it looks like for this wireless Internet revolution.

If I can look at the two opposite sides, so to speak, of this convergence of wireless Internet. That is, one, coming from the cellular evolution, from what was the telco industry; and the other is arising out of the IT industry and wireless LAN.

When it comes to technology and standards, we know that the telecoms industry is wedded to a strong emphasis on establishing industry standards, and while that is increasingly difficult to do in a timely way it is still as an industry committed to that approach. So we have seen cellular through to 2G, 2.5G and 3G, albeit we still have multiple standards. Having been involved in 3G since the 80s, we have less 3G standards than we had 2G standards, so in the standards world that is

called progress.

On the other hand, the IT industry believes in the setting of standards through market dominance. Take, for example, Microsoft, a company we all love to hate. Having worked for a telephone company, I am glad they hate other people other than incumbent telcos. But they took some 10 years to get around to defining the IEEE 802.11 standard, because they really did not get the point that if they would decide on a standard, then a new opportunity would arise. They finally did, and defined the series of IEEE 802.11 standards that we see now on the market, and particularly the B standard, which has really increasingly become a commodity in every PC and mobile device, and we are seeing these WiFi networks being rolled out, and I will comment more on that.

So really quite different approaches to technology, but you can see each side learning from the other. The ITU now does not define standards, as they used to 10 years ago; they are more families of standards, looking for commonality, et cetera.

Let us look at regulation. The telco industry very much has a history with respect to spectrum allocation of allocating exclusive spectrum to operators, and so we had the whole series of auctioning of spectrum for 3G, as we know about. Hong Kong adopted a very innovative approach of licensing in quite a different way, and I think that demonstrates that we should not slavishly follow what other countries do in their approach to industry regulation.

It is exclusive but it is expensive, certainly in European countries. In the case of 802.11, it is shared but free, and people often refer to the opportunity of the spectrum commons.

Culture I think is a critical one, that the telco industry had a focus on service, and revenue models and business models that were based on having sustainable building solutions to make a profit out of a very small transaction, something that the banks have not quite worked out how to do too well.

On the other hand, the IT industry has had a focus on product and best endeavours, and if it does not work then if you pay them they will fix it.

The m.Net vision, and I had better rush along, was that there was some money going in Australia, basically coming out of the part-sale of Telstra, and this was called the advance networks programme. So I and a colleague put our heads together and we built a collaboration of partners to put a case to Government for the building of an advanced wireless platform for

the building of 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 clash of cultures, there are opportunities. So that is the green m.Net networks, and then building, essentially, both sides of the supply and demand equation, to allow the market to tell us those applications that are going to have a future.

The Government thought that was a good idea, and they funded us over \$9 million over three years to actually build this enterprise. That is what we have been doing, basically since the end of last year, and we are in the process of achieving our one-year milestone -- and that was to establish these wireless networks; undertake some advanced wireless research with our R&D partners, but also others around Australia; but more particularly to support the development of innovative applications.

Later this month, we will be launching what we are calling Gallery 4, which is essentially a support club for application developers in Australia and potentially in other regions. I would be very interested if there are application developers here in Hong Kong who would like to participate in this collaborative effort. We are also talking to a number of application developers in Singapore who, mind you, are very interested in collaboration, so I hope that provides some incentive.

Very briefly, the experimental 3G network -- Whyalla is based in Adelaide, the core network is based in Adelaide, and we have coverage of about 30 per cent of the city of Adelaide.

There are also nodes in Melbourne and Sydney, and a rural node, because you will understand in Australia the politics of telecommunications regulation is that you must address the needs of folks in rural Australia. The statistic I always like to quote: in the cellular coverage, we have some coverage of 95 per cent of the population but that is in less than 5 per cent of the land area. So the challenges we have in Australia in the rural areas are something that taxes the time of governments in particular, particularly as they continue to try and sell the rest of Telstra.

So the 3G coverage, in building this is, is very focused at one end of the city, around what we call North Terrace, which is very much the street that has two of the universities, museums, a major conference centre. It is quite a small area. One side to the other side is about 1 mile, for those of you brought up in that system, and quite amenable, with some seven base

stations, in fact very much overkill. And its relationship to wireless LAN coverage, you may ask? I will get to it.

Outdoors, of course, that coverage extends further, up to what we call North Adelaide and the Adelaide Cricket Ground, for those of you brought up with cricket, so that you can sit and watch England getting beaten again and access services from your 3G phone.

But in addition to the 3G network, we are rolling out also a WiFi network in Adelaide. We initially provided a deployment of that wireless network for the IT Congress in Adelaide in February, in the major hotels and the congress centre, but that now is being rolled out across Adelaide, and in fact two of the partners in m.Net, who are two very small carriers, regional carriers, they were formerly ISPs that use wireless LAN for providing their services and certainly see Telstra as the enemy, and Telstra is also a partner in our venture, so you can see we have some interesting parties in our m.Net venture. We have a large carrier, Telstra, and we have two small regional players, but they recognise that, through collaboration, all parties can win.

These two parties, Airnet and Agile, who I might add were also deadly enemies with each other -- one of the successes of m.Net, we have actually got them to recognise that collaboration can actually lead to positive outcomes. They have formed a new venture called AAA, and they are working with the city council to make use of their infrastructure to assist the rolling out this WiFi network which will overlay the 3G network.

That is just an illustration of the hot spot coverage across Adelaide. The red was where originally we deployed it for the World Congress; and then the relationship -- what is its relationship to 3G?

It is starting to get messy, but the role of m.Net, now that we have established, or we will have by early next year; the 3G network which is now established, built in Adelaide and Whyalla, and we have the other nodes. Needless to say, there is a shortage of terminals. We only have three 3G terminals at the moment, but they are the only ones in the nation, so we are well off in comparison, but certainly no basis for applications development.

But we are also in discussion with Telstra to support our Gallery 4 club, with cheaper access to GPRS, for example, for developing new applications, and we are supporting those application developers with information on what is happening in the technology, the information

standards.

Another key partner in m.Net is Alcatel. Alcatel is our supplier for the 3G network, and we are looking to exploit the Nextenso application base to support some of those application developers for 3G.

On the left-hand side we see we have the supply side of the equation; both the vendors, but also the application developers, as they come to us through Gallery 4. On the right-hand side of the equation we are also setting up industry programmes, because we are of the belief that the cellular industry, which was principally developed historically at horizontal markets, is going through a fundamental change, to have to address industry verticals, and perhaps transplant some of the application of what used to be private mobile/radio-type proprietary solutions. In that, we are looking at a number of industries and working with those industries, for example the health industry, on innovative ways of reducing costs in the deployment of medical services.

So you can see the role of m.Net is very much to bridge both the supply and demand side of the equation, and in the middle we actually have a partner, Playford Capital, which was really set up as part of EDS establishing in Adelaide, to provide seed capital for those application developers, because the application developers have had a hard time trying to communicate with the large 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.

In conclusion, there is no question that there is a sustained market demand for wireless LAN. Our speaker from Cisco, I am sure, would be the first to support that their investments in the development of the WLAN technology is producing some excellent returns. Unfortunately, that is not necessarily the case for WiFi operators; they have not quite worked out what their business model is, but that is another story.

The market demand is there for having tetherless access from their PC. However, the market demand for 3G is a lot less uncertain, and in fact in some cases, even where operators have an agreed business case, they have gone back and had a look at those business cases and said, "Gee, we are lucky we did that at that time because no way would we get it through our boards now."

Even though i-mode has worked in Japan, Japan and NTT DoCoMo are having troubles seeing FOMA coming up to expectations. Again, it is an issue around short supply of terminals. But what are those

applications? How do we know what they are? You do not know what they are. This is a new age for our industry. We are moving into a situation where the nature of the market demand is uncertain.

Therefore, my message is, if you can develop similar testbeds that we are doing in Australia, like m.Net, to facilitate the meeting of demand and supply, that is the way you will find out and that is the way we will grow an industry out of the current -- what is the term, I have forgotten it now -- but let's say I hope we do not come back to this terrible state of the industry for another 10 years.

With that, thank you. (Applause).

MR FRANCIS FONG: No matter what, we are always talking about wireless LAN as the best friend and competitor to 3G.

I forgot to introduce myself. I am the session chair for this section. My name is Francis, on behalf of the Hong Kong Information Technology Federation, which is one of the supporting organisations here for this conference.

Our second speaker, Mr Ulf Ewaldsson, is the Deputy Managing Director of Ericsson Limited Hong Kong and the Executive Vice President of Ericsson (China) Company Limited. Mr Ewaldsson joined Ericsson in 1990, after his graduation from the University of Linkoping, Sweden. So his speech today will be "Pieces of the jigsaw". Please, Mr Ewaldsson, welcome.

MR ULF EWALDSSON: [SLIDES] Thank you very much, Mr Chairman. Ladies and gentlemen, honoured VIP guests, we are very happy from Ericsson's side to be able to address you this morning.

Actually, the title of my speech was given by John, I think. We thought we were going to provide pieces of a jigsaw. I think everybody expects us of course this morning to talk a lot about 3G, what Ericsson is doing, what our customers are doing, what our industry is doing, but I will not talk so much about that. I will quickly do a commercial and just say please visit the ITU booth in the Exhibition Centre and you will get all those answers there, about what we are selling and all those things.

I will talk more about problems and current problems in MMS, and we have had some hints this morning already from our regulator and other speakers that we have some problems certainly in the industry that we need to address.

Ericsson. We have broken out our handset side, as you know, and formed Sony-Ericsson, a joint venture. However, I will start with handsets. The good thing

with that is that now Sony-Ericsson are on their own, it is a joint venture between Ericsson and Sony. That means that we who are left in Ericsson have the privilege to talk about handsets independent of our own.

If you address the handset issue as it is today, because that is a very good starting point -- on the streets of Hong Kong, it is really our users, they are the ones who are walking around and they are supposed to use mobile Internet, or as it was talked about this morning as mobile Internet, but very few are actually doing that. Somebody addressed this morning, which is very rightfully so: We are actually lagging behind many of the countries in Asia in terms of usage and in terms of pick-up. It is important first of all, of course, to realise that we have that problem.

Handsets that we are using in the market are of various kinds and are becoming more and more every day. The handset explosion is becoming evident. In China, it is even more evident. I think you are all aware that there are new handsets introduced every month from local manufacturers, and also taking a very strong position in the marketplace. Asia overall is going through an explosion in terms of handset models and introductions of new brands at the moment.

Most of these provide voice, of course, but they also need to have these features which the end users supposedly should be looking for: Bluetooth, GPRS, all these things. The problem is that the end users do not know what these features are, and they go into the stores and they are convinced by some salespeople to buy GPRS but without having really a clue what it is.

A lot of people tell me that the good thing with T68I is that it has Bluetooth. "Very good", I say; "Thank you for buying Ericsson. Are you using it?" "No, but it is very nice." Maybe they think the phone is blue, that may be why it is Bluetooth. We are basically on that level when it comes to some of the understanding of these things.

I did an experiment the other day, where we connected a Bluetooth phone to a video camera, with also Bluetooth, and we had a PDA which also had Bluetooth, through a GPRS connection, via a repeater, that went into a base station, that went into a PCU, a packet control unit, et cetera, et cetera, and it worked; if we provided some artificial breathing, we could make it work for a few minutes. It was nice.

I think we are living in a euphoria of technology. We have all the technologies we need for the next

10 years, I would say, in the industry. Of course, a lot of this has been developed by Ericsson, very good, but on the other hand it is very difficult to realise how any end users are going to make this work in the market. I think they are chanceless. I think the distribution chains, for instance, in Hong Kong, the stores that are owned by our customers, our operators, will have to play a very significant role if they are going to teach all these end users how to set all these parameters and make these phones, which are exploding in the market, to work.

Screens are all different. Screen sizes are all different. Everybody has a killer screen today. They should be in colour, they can come in different shapes and sizes, which compared -- there was a long a comparison from our ITU speaker this morning with the Internet. The major difference here is of course that the screens on the Internet are standardised. The PC has a huge advantage, because it has the same size of screen wherever. This is a huge problem in the mobile industry; they do not have the same size.

The other things are the keys. There are some innovative things happening with our keyboards, particularly from our friends at Nokia, recently, and these are also things -- people have to learn how to use the keys, how to put things in, and it is getting even more complicated when we are introducing new services which have to be navigated from the phone.

Then we have menu structures, battery lifetime, features. Inside the phone, it is even worse. Then we have different memory sizes, different browser technologies. I think there are more than 600 web browsers available. If anybody wants to do an application, make sure that you comply to some percentage of those 600 web browsers; it is likely to have a higher pick-up. We have embedded softwares of different kinds, codecs; now we are looking at compression techniques when it comes to streaming -- everybody now in the industry is trying to put streaming together, and there you would have to face the challenge of different compression techniques. Not only for that; for pictures it would also be applicable.

So, in a way, our industry is facing a problem of open standards being supported by all of us in the industry, including Ericsson and all our colleagues from the vendor side, and at the same time the good blueprints we have for mobile Internet -- the take-up from Korea and Japan was mentioned this morning -- they did not do that. So there are some contradictory things in our industry which have to be addressed if we are

going to be successful on this.

I would like to say that of course the standardisation efforts, and in contradiction to the more corporate standards set under -- proprietary standards that are succeeding because of dominant positions of certain corporations, these two factors have to be balanced in our industry as well if we are going to succeed. If we start in the handsets, it is very difficult to see today that one dominant standard on the handset side will really create a proprietary take-up of mobile Internet, or proprietary-based take-up of mobile Internet.

So we have efforts like the OMA effort, where for instance Nokia and Ericsson are heavily participating, and then we have 3GPP and these other big standardisation efforts. But they are moving very slow, and we cannot really wait. Our industry needs imminent payback. Somebody said that this morning. We need to be able to provide those dollars back from all this investment that has been done. So we are looking at imminent payback but we are trying to standardise ourselves out of this problem. It is difficult.

We have the hopes or wishes that some proprietary standards might be able to provide us with solutions that will be dominant enough to take off. I think we will very soon see many of the largest operators in the world, including Vodafone and others, being able to tell handset manufacturers that this is what we need and they will have to comply to that, which says that I think some power in our industry will have to move back to our operators. It has been very much a technology-driven, vendor-driven, partly, industry in many ways, and some of these handsets certainly would have to move the power back to the operators.

We are currently engaged in a huge IOT process. It was mentioned this morning by SUNDAY that this is complicated stuff. It is very, very complicated stuff. If we look at GPRS only, it is a huge challenge for us, who are vendors in the industry today, to make sure that all our systems and all our terminals, or all available terminals, actually can talk to each other.

The sad truth is that most of them cannot, when we start, so even a single GPRS terminal can tear down an entire GSM node by sending a wrong message. So things are not that robust, and it takes a lot of work from the industry to be able to provide a well-working IOT. Certainly here in Hong Kong we have recently been challenged with putting MMS to the market. I think all of us are able to do that; very soon, we will have totally inter-operator MMS, which is very good.

The next challenge is to address all the other countries in the world. 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. I would see that the largest players will play the dominating role in providing those services globally.

If you look at -- now we come down to the very details, because I guess John has asked us to be detailed: do not be too overview, do not fly too high up and then everybody will agree. Now we come down to things that maybe not everybody will agree.

If we look at -- there are basically three ways, if we go very concrete, on what can be done on a handset to make it work with a backbone or make it work with a system to provide a very good service, because the service has to be very good if it is going to be taken up at all.

There are so many content providers in the world. I know in China, Ericsson started this Internet lab, or a lab where all the content providers in China could come to us to try their applications, and today we have more than 1,000 partners, but it is very difficult, among all those partners, all those services, all those good ideas that somebody mentioned this morning, to bring them actually into a mobile network and start to sell them through a store; that is a totally different issue. It has to be a very, very good service in order to have any take-up at all.

What we do then is we build this particular backbone construction that is working very well with a certain handset, with that particular screen or that particular memory size, or that particular menu structure of that handset. That is the first point on this slide. The second thing we could do is we could take a number of handsets that work similarly. I think a good example here would be, for instance, Vodafone Live, which is launched by Vodafone recently, where you have a number of handsets that work similarly and then you try to build a backbone construction that would support some services by these handsets fairly well, including MMSs and WAP, et cetera, et cetera.

Then the third approach, which would be more aggressive, is to standardise the handset and say "This is the handset we are going to have; all handset manufacturers please build." That is a much more controversial point, but that is actually what has happened in Japan very much, and is very much behind the success of both the Japanese phenomenon and the Korean phenomenon, where handsets have been launched in groups

standardised by the operators.

Back to MMS, just to show you some of the problems that we are teasing on MMS. I will not go through all these slides, due to limited time, but you can say that basically the problems start when you buy the handset. You need to get commission, the first thing you do, and the operator needs to find you. "Thank you for buying the handset, very good"; we need to find you first, where are you, where is your handset, and when do you have that SIM card in that particular handset; oh, now it has moved to another handset, now you cannot send MMS, et cetera.

There are all these issues, and this slide here shows a process where you get commission and you are starting to create your first MMS, which is number 2 here, and then you find out that not all the operators, "I cannot send to my friend in Singapore", that will never work, so you really need to be some sort of a guru on MMS to be able to create one and send one. That is perhaps not the wanted situation.

Then maybe somebody has a WAP phone, then they also should be able to read this and do this. By launching all new technology, we will get nowhere. The name, unfortunately, with Java; maybe 80 per cent of the Java users will run into the same problem. There you have a problem that you will have to do overloading over certain times, and there are a number of available Java engines on the market, et cetera; I hope it is compatible with your particular handset, et cetera. It is similar problems. I will not walk through that. These examples show that.

So what communication problem are we really solving, then, by doing all this? Of course, we have person-to-person communication, and that is the whole MMS story. What we can see already is that these three strategies I talked about -- building particular backbones for a singular handset, that will never really work in a handset-exploded market. So very much now the industries such as ourselves are focused very much on building backbones that can take as many handsets as possible and make services work as good as possible with as many handsets as problem. Then you need different codecs and machines to support that.

Then you have person-to-content, where you need to be able to -- for any person to download content or get content into the phones, it is a similar strategy there, hoping that larger players or constellations of players will be able to adopt certain industry standards when they are creating the content, to make them work on as many handsets as possible.

It is not only about technology. It is really about what I said; it is very much from the vendor's side and from us who are working in integration, system integrators such as Ericsson, to try to build an integrated environment that can take as many handsets, as many standards as possible, and that is ongoing in the operator side at the moment, but it certainly is a big challenge because it is distorted by all kinds of very small initiatives, which usually is providing just more technology complexity to the equation.

Then you have the matter which I talked about before, which is the end user experience, really the man on the street experience. We know that for any service, including a very simple service -- again, as we talked about this morning -- in order for it to work and get any type of penetration, because in our industry we are used to addressing penetration in terms of percentage of all users, for instance, which I would say is a huge success -- if anybody can reach 1 per cent penetration in Hong Kong on a service, it will be a huge success. So we can say that in order for us to be able to get this type of penetration on any of these services, we need to create a very, very good end user experience. So it has to be integrated really end to end, and marketing and branding is a very important part of that job. We know already from the blueprints of Japan and Korea how important it is to market a service very heavily, once we have integrated it.

This is a bit contradictory to what we talked about this morning, about walled garden approach compared to totally open approach, where any service can come from anywhere, and it is very difficult, I think, to see a very Internet-type of development, at least short term, on mobile phones. I think it is a wish that we have, that this would happen, but I think it is very difficult to see that happen, given this complexity of our technology.

Perhaps, due to the short time, we will not go through this; it is another thing about the MMS. My example of this is really that all these applications that we want on the mobile phones, from 2.5G to 3G, it does not matter, the bearer technology. The only thing 3G will provide you with is that you are able to use -- perhaps we can have more moving images, there would be more streaming type of applications. That is basically the only thing that 3G will really do to the network. Apart from that, every mobile datacom application can be created in 2G or even in Moby text network, as we recently launched another Moby text network in

Hong Kong, which shows that even the simplest type of bearer service can provide a mobile Internet experience if you just integrate it enough end to end, which is really to say that all this technology has to be put together in a totally vertical, integrated way.

We have come out of a situation now where the last two or three years everybody has abandoned the vertical approach and said "No, no, no, we need to work with standardisation, horizontal approach to the network, to the applications", everybody talks about open APIs, et cetera. But it is very, very difficult to see an industry take off from working like that.

Perhaps that is an important input I would like to put in this morning, that the only thing that really works, that has shown to work in the world, including Vodafone Live and iMode and all this, is when somebody takes a very, very vertical approach to what they are going to launch and provide a lot of marketing to it.

By doing that, we can say that we need to establish -- and that is what we are establishing in most of the networks now -- is really key performance indicators that take into consideration such things as latency, throughput, successful service attempts, dropped service, et cetera. So there are lots of things which have to be there in order for a service to work very well. You can imagine, if someone creates a game that requires network interaction in that game, nobody will wait more than so many seconds for a response, nobody will have -- if you make an attempt and you lose your fellow player, et cetera, this will never work. People can never charge for this. Charging was brought up this morning also by one of the speakers as one of the key things, and quality of service is totally related to charging. So there are a lot of things in terms of integration that have to be done to make this work well.

Due to shortage of time, I will skip a few slides.

Summary. User experience is everything, and user experience is tied to the handsets, so remember that. All the handsets have to be approached, there were three ways of approaching that problem, and I think the way in the long run would be to standardise or further standardise the way that the handsets look and the way they operate.

We need a lot of customisation for each service to be successful. Many of you who are representing SMEs, et cetera, have to come together and have to go to larger industry players, I would say, to get hold of that customisation, to really get hold of the technology.

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.

The principles enabling person-to-person and person-to-content approach -- it needs different approaches. I think the end-to-end optimisation will be key for any of these services to be taken up in the Hong Kong market. I believe that Hong Kong perhaps is too small to act on its own, also, in this industry. I believe Hong Kong would have to work closer to China in order to succeed in this, and of course we are very happy about the recent address from the visiting Premier, which is also addressing some of these issues. I think even the regulator in Hong Kong has an opportunity to share some views. With MII, I know it is already happening, but I think it is an important part of the health of China to also secure that we have a larger market for applications, not only our own market.

Content tools are available already. We do not need to necessarily build an entire network just to help content providers test their applications. 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.

Thank you very much this morning for listening to my address, and I hope I have been able to share some of the problems but also come up with some suggestions that might be discussed later, among all of us, so we can reach the result of the conference organised today. Thank you very much. (Applause).

MR FRANCIS FONG: Thank you for your speech. We terribly apologise for running out of time, so we cannot share the whole presentation today, but this was a very good presentation.

To be in sync with what Ulf was asking, about 1 per cent of the mobile services to be a success, I want to ask, how many of you people have actually sent MMS already? 1, 2, 3 -- not more than 10. Recently, we saw a joint agreement with three operators for MMS, Intop, and another three for Intop. We hope we can sort out a joint agreement for the six operators for next year, early next year I hope, for joint inter-operability of MMS.

Our next speaker will be from Nokia, Mr Timo Toikkanen. He is the General Manager for Hong Kong and Macau Nokia Mobile Phones, appointed in June 2000. Timo has overall responsibilities for the operations in the territory, including sales and marketing. He joined Nokia in 1995 as Legal Counsel in Finland, and in the same year he moved to the company's Asia-Pacific regional headquarters in Singapore to set up and manage Nokia Mobile Phones' legal functions. Welcome Mr Timo for his speech today. It is "Driving growth with key enablers and 'desirable devices'." Let's welcome Mr Timo. (Applause).

MR TIMO TOIKKANEN: [**SLIDES**] Thank you very much, Francis. Good afternoon, ladies and gentlemen. I am delighted to be here today and delighted to see so many of you here. It is a firm sign of the interest in Hong Kong on the future of the wireless business here.

Now, the purpose of this event today obviously is to create discussion and exchange ideas and different views. Ulf has just a moment ago set a perfect platform for me, because he has made a number of assumptions and pointed to and made some fair comments about the potential difficulties and challenges that we have facing us, taking this industry from voice to non-voice, which is exactly what everybody, be it operator, regulator or content developer, application developer, would like to happen as quickly as possible.

So we need to be aware of those challenges and we need to be aware of those potential problems, but at the same time we need to realise that we are facing a huge opportunity, and if we can resolve these problems and challenges in a timely manner we really are in for a very, very interesting next five to ten years in this industry.

In the next 15 minutes I would like to spend a few minutes of your time talking first about the key enablers for mass market adoption of non-voice services, and when I say "key enablers" I not only mean technology enablers. Many of these enablers are not technology, they are not complex technology; they are just things that need to come together at a given time for things really to kick off.

I will carry on and talk a little bit more about the fundamentals of service take-up, and then cover in a few slides the Open Mobile Alliance, which really is all about this horizontalisation, this horizontal layer and standardising these services going forward, before then concluding.

Ulf a moment ago made a point about horizontal and vertical approaches, and he said that the biggest

non-voice successes in the world have been vertical approaches in limited geographical markets like Korea and Japan, very much orchestrated and driven by a single dominant operator.

I agree. These exercises and these experiences have been highly successful in these very unique marketplaces, but exporting the model from those unique geographical areas will be very, very difficult.

At the same time, I think we have a tendency to forget the biggest horizontal successes we have had. The biggest mobile success of all time is GSM voice. GSM voice is where this whole thing started. We have a billion subscribers using GSM voice services today, or mobile voice services -- most of it is GSM, 90 per cent is GSM -- and this was very much achieved by using a horizontal approach, by making sure that we release the innovation of all the players in the marketplace, that we do not lock ourselves into proprietary situations, and that we standardise the key technologies very, very carefully.

Well, what is the second biggest success? That is SMS, personal messaging. How did we get there? Exactly the same way. I think we have good examples of successful models, both from the horizontal world and the vertical world.

If we go back to the horizontal model, GSM voice, SMS, what was the next thing to come about? What was the next thing we as an industry started to push? That was mobile Internet, that was WAP, and that didn't work. I think we all need to recognise, and everybody would agree now, that that really didn't fly. Why didn't it fly? It didn't fly because the key enablers were not in place. Why does MMS fly? It flies because during the last two to three years those key enablers have emerged.

What are those key enablers? Let us look at this picture here. What did we not have when we tried to get WAP off the ground? We did not have colour displays. Today, colour displays is very quickly emerging as an industry standard. You would be hard pushed to find black and white displays in new products from Hong Kong a year from now. At the same time, we did not have camera capabilities in the phones. Today we have integrated cameras, we have access free cameras, and camera capabilities becoming mandatory enabled in pretty much every mobile device, almost as quickly as colour displays are. We did not have MIDI polyfonics, we did not have really Java, we did not have MMS standardised, and in terms of WAP we were stuck at very much text content, black and white, no graphics, no cascading style sheets, no excitement, no resemblance of the fixed

Internet experience.

All that has changed. Now all that is possible, and I am not talking about a future development that might take place in a year from now or two years from now on, depending on how things may pan out. I am talking about things that really are in the marketplace today and are very quickly becoming standard. So these key enablers are now in place, and that is why we have this great opportunity that we did not have a couple of years ago.

I have not even mentioned radio technologies. We tend to be stuck with talking about GSM and GPRS, ... (inaudible) ... CDM and so on and so forth. These are just bearers. No consumer buys a bearer. I think we have all learned that no consumer is interested in purchasing into a radio technology. Consumers prefer services, services that they can relate to and they want to use and they are willing to pay for.

Let us look at some of the other fundamentals. If those things I mentioned before are more like product features, features that will be carried in a mobile device or handset with you, there are some a little bit more underlying fundamental things that we need to understand as well.

The starting point for everything really is that top set of bunch words and things mentioned there which really can be categorised as a portfolio of services. This portfolio of services we firmly believe really is all there to be driven and to be accepted by the end user, and the end user acceptance does not happen by accident, it really needs to be made to happen, and it can be done and it can be instigated by marketing, but it also can be instigated by bringing various types of devices to the marketplace so that people can very easily, even without marketing, associate with new types of behaviour. When you put a camera on a device, it is quite easy for a consumer to understand that this device is intended for something other than voice services. So the consumer is the starting point, and that portfolio of services needs to be accepted by the end users.

Then of course we have the business system. I think we have spent a lot of time here talking about the business system today. We have been discussing, is the problem not-attractive-enough content and applications, or is the problem not-good-enough technology, or is it something in between? I think it is all of that, but having all the technology in the world and having the most attractive content in the world is not going to be enough for this business to fly, because we still need to gel that together with a business system. The business system really is the way the content gets to

the marketplace.

This is where Korea and Japan have been good. It has not been the technology, and it has not necessarily been the content either; they are maybe a little bit ahead, but there is no fundamental difference there. The difference is in a business system. They have had a very clear business system 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.

To touch on a couple of the points that have been made by previous presenters in the course of today -- I think the point about, for example, fragmentation in terms of user interfaces and displays is a very, very true issue. It is really something that we need to address. Luckily enough, we have learned, and I would not -- I think there are two trends happening at the same time. There is clearly this trend of more and more handsets coming to the marketplace and more and more manufacturers being players in this space, which potentially could lead to a very, very fragmented space, with all kinds of displays, all different sizes and shapes and colours and so on and so forth, but at the same time we have another trend happening, which is some of the key manufacturers really first of all standardising the display sizes.

For example, at Nokia, and we represent a fairly large part of the world market for these devices, we have standardised everything we do to four display sizes, so every device coming out of Nokia carries either series 30, 40, 60 or 90 display, and this is something that the application developers and content developers can take as a starting point. The same applies also to the operator, or any other player in the business. So you are not really riddled by a choice of 250 different displays. In reality, the situation is much better than that.

At the same time, we have also taken steps to open our user interfaces and our display categories to other players in the industry. This was perceived very much to be a very strange thing for a very, very strong player like Nokia to do. Why would you, Nokia, give your best weapon, your best in the industry user interface to other players for them to license? We do it to avoid this very problem. We do it because if the smart phones coming out from all the different manufacturers -- and we have licences in the Korea, Japan, the US, Europe -- if most or many of those smart

phones carry the same type of display and follow the same logic and the same navigation, then you have avoided fragmentation, then you do create that mass market for all of us to tap into.

So these problems and these challenges that have been mentioned are true, they are there, but at the same time there are very many good ways to resolve many of these issues, and I think we are well off the mark towards resolving many of those.

I have talked about the business system already, so I am not going to dwell on this too much. I will go straight to the technology enablers. This technology enabler space really is the one that we tend to be spending most of our time on in this industry, sort of debating the benefits and disbenefits of standardisation or non-standardisation and horizontal or vertical, and so on and so forth. We think that on basis of the experiences we have had, the real true success stories that have been financially rewarding, and to be honest probably responsible for most of us being here today, have been based on shared open architecture and standardisation and horizontalisation of technologies.

This leads me to Open Mobile Alliance. Open Mobile Alliance really is the vehicle that the industry has chosen to use, to try to avoid that fragmentation and make sure that we get standardisation in place, and that we create that mass market for non-voice services. Many people may be confused about open mobile architecture and Open Mobile Alliance. Open mobile architecture, if you like, was before the Alliance was founded. Architecture was the philosophy where the key industry players sort of came together and decided that the leading principles of going forward must be things like all products and services, not only products but also services, need to be based on open, global standards, protocols and interfaces, and 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.

So, some of these guiding principles, these basic building blocks, were put in place first, and when people came together and decided this is the way we want to go forward, the need emerged maybe to make or set up a body that can make sure that this really happens, also, in a little bit more formal sense, and that is how the Open Mobile Alliance came about. The Open Mobile Alliance was founded a few months after the basic philosophy of architecture was decided.

Today, Open Mobile Alliance is in existence, it has I believe approximately 250 members, including all the key manufacturers of network equipment, service layer equipment, terminals, and all the key operators in the world, including, for example, NTT DoCoMo, which is one of the founding members, and recently we have also had one very significant addition of Microsoft to the Open Mobile Alliance. So pretty much everybody who is anybody in making this happen has subscribed to the same philosophy.

I think what has been said about speed of standardisation probably being an issue, I think definitely that is true. If you look at what Open Mobile Alliance is trying to do, this picture gives you a fair idea. What Open Mobile Alliance tries to do and is doing today really is working across, first of all, the enabling technologies, and secondly across the standards and specification forums.

This is a big step. There used to be a specification and standardisation forum for everything, every single piece, every application technology, every radio technology, standardised by a different body. Now this has been recognised and these bodies have come together under the umbrella of the Open Mobile Alliance, that can set priority and timing and so on and so forth.

At the same time, OMA is working across obviously all the different services and products, so all the different network technologies, and you need to be able to send from any brand terminal to any brand terminal, from any brand network or any vendor network to any vendor network, and so on and so forth, and of course across all the companies and so on and so forth.

But when you look at this picture, it goes without saying that this is a very, very complex task, and I think all of us are very aware and quite motivated to make sure that we do not compromise speed in trying to do everything at the same time. One of the biggest achievements of OMA so far has really been setting the base, setting the tone and setting the key technologies that the potential is biggest on, and start from there, rather than trying to do everything at the same time. If you try to standardise the whole world, all the possible services and all the possible scenarios in one go, it probably would not happen, but OMA is taking a fairly sensitive step-by-step approach, focusing on some of the key technologies first and then moving gradually to some of the others.

I think this concern about, "Is this sort of GSM type proven standardisation and horizontal approach too

slow?", I think the jury is out. We will see. So far, I think the achievements and the progress made with OMA has been tremendous. For example, digital rights management standards, the first standard was formulated from within three months of the start of the Open Mobile Alliance. So there are tremendous successes and the signs are pretty promising, but the jury is still out; we will see whether this is going to be providing us with all the speed that we need for the standardisation.

So basically, to cap what I said about Open Mobile Alliance, inter-operability, which everybody is talking about, that is really what OMA will do. What it will enable is economies of scale; everybody is competing in one large market rather than hundreds of tiny fragmented pieces which will not be a very sustainable model for growth of business for anybody, as we know in Hong Kong probably better than anybody else, being a small territory and fairly fragmented. Of course, creating the largest possible common market provides us with all the innovation. No one company can dictate the pace and direction of the innovation; everybody can play in this big market. At the end of the day, of course, this means business opportunities for all parties in the value chain.

In conclusion, what we think is important is first of all to keep the consumer focus so that technology itself does not do anything. I think this has been said by everybody today, be it operator, be it content developer -- it is really the consumer that decides. We just need to make sure that we get the innovation in the marketplace and then the business system that provides the consumer with a choice and ...(inaudible)...

Secondly, we need to make this non-voice market with a little bit of patience. I think multimedia messaging is a good example. We have had multimedia messaging for a few months. It is very early days. We think it looks very good and it is going to be working, but multimedia messaging is not done. We have taken the first baby steps with MMS, we can send still images, digital images, from some of the networks to some of the other networks. Once we can send from every network to any other network, and we can send to anywhere else in the world, and we can not only send still digital images but we can send audio and we can send video pictures, and all these things that are coming in the coming months, then we can talk about a job well done. So let us not think that once we launch something the job is done. It is not. We need to make this market, and it needs a little bit of time and patience.

We need to focus on the key enablers, not try to do

everything at the same time, but make sure we focus on the first things first. We need to have some sort of a framework to base this on, and we believe that Open Mobile Alliance is the framework. The ones of you who have been following, for example, the COMTEX announcements of the exhibition in the US -- all the multimedia messaging players, all the companies, all the key players providing infrastructure for the service layer of networks, or terminals, just demonstrated, I think the day before yesterday, full inter-operability in COMTEX in the US. So basically it can be done, it has been done, it has been proven.

Of course, coming from Nokia, I cannot finish off without saying this: we must not forget the importance of having attractive devices out there, having a broad range of various kinds of devices, not trying to force everybody to the Japan scenario where everybody will have an identical handset whether they like it or not because it is given to them. We need to make sure that we have a choice, we have a broad range of devices, because this will really drive the end user acceptance of the new services.

Thank you very much. (Applause).

MR FRANCIS FONG: Thank you, Mr Timo.

Due to running out of time, I am going to introduce our moderator for the panel on the 3G testbed network, Mr Terry O'Neill. Hi, Terry.

He is the Managing Director of CM Consult, a business-focused market and business development service. Prior to setting up this innovative service, Terry developed the CLP telecom business, including the deployment and launch of the first redundant wholesale telecommunications network between Hong Kong and China.

Then we have quite a long list of panellists here. Dr Albert Wong, Vice President, communication systems and wireless technology, from ASTRI; Dr KF Tsang from City University and IEE; Mr Wong from Cyberport Management Limited, he is the director of IT; Dr Lawrence Cheung from Hong Kong PC, Principal Consultant, Mobile Business Solutions; Mr CD Tam, CEO of the Hong Kong Science and Technology Parks Corporation; Professor TS Ng, department of EEE of the University of Hong Kong; and then we have our three speakers on the stage to join this panel today.

MR TERRY O'NEILL: Good morning, everybody. Just while we are setting up the table, John has very kindly agreed that although we are due to break for lunch just about now, we can have a 20-minute session on the Q&A, summarising the papers we have just heard and obviously

the august company about to take to the stage.

As the gentlemen do take their places, I would just like to summarise the talks we have had so far. Professor Reg Coutts, University of Adelaide, was talking about use of Government funding, seed funding to encourage venture capitalists to come on board to develop networks and move forward. Ulf Ewaldsson from Ericsson was promoting the concept of an information bank for content developers, to encourage application development, and whether there was an independent institution that could actually take the lead in managing that or even becoming gate-keeper of some description, in order to facilitate the content development.

Finally, Timo Toikkanen of Nokia, talking about the benefits of the Open Mobile Alliance and whether we should be waiting for the Open Mobile Alliance and the benefits therefrom before content development really takes off.

Now, I had better see if there is actually a space for me on the table. Thank you for your patience.

I am quite sure there are plenty of questions from the floor, but if you will allow me the liberty of starting with the first question. I would direct this to both the panellists and also the speakers.

Following on from the first session that we had this morning, where John and the other speakers were talking about an ecosystem and how can we use an ecosystem to encourage a wireless development continuum within Hong Kong and how could that then be used for the benefit of the Hong Kong community, the Hong Kong economy, and possibly looking to China and even outside China for promotion of the Hong Kong content development community.

So my question would be to each of the panellists and speakers, is that actually a serious proposition, and if it is, where would we start, where could we start? If I could start with Professor Ng at the very end of the table and work across, to start with, if I may. Thank you.

PROFESSOR TS NG: My personal view is in that particular statement there is no contradiction between the two. In fact a system needs to be built first, and then I think it will continue to grow in the next five years or so.

The reason for that is at the moment we have a very complicated landscape at present, so you have 2G, 2.5, 3G. Five years ago you did not have this wireless LAN, you did not have Bluetooth, but suddenly in the last couple of years you have had this 80211.B coming in, and

some grabbing a lot of functions which had been intended by 3G. Now you have this Bluetooth coming in, and also suddenly in the next couple of years you will see the second generation Bluetooth devices coming out, which will again change the landscape.

So in my view, you need to build something for this particular purpose, but at the same time I personally believe you have to cope with all these changes in the future, and it is going to happen very fast as well.

MR TERRY O'NEILL: Mr Tam?

MR CD TAM: I would like to come at this from two angles.

The first angle is in my previous job, working for Motorola for 33 years, the last three years as the president of Motorola in the Asia-Pacific region, Japan and Asia. The other one is in my new job with a semi-governmental organisation, the Hong Kong Science and Technology Parks Corporation.

The first one is, do we need, the topic that was asked, a 3G testbed network? I will answer this question using my experience. I do not think, in my role as a statutory body, it is the right time for the Hong Kong Government to put the money on the 3G testbed network to China.

The reason is very simple. Most of the things that we can try out exist already on the 2.5G GPRS. The thing that we need is the agreement to go forward on OMA. Those things can be done. 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. You go and grab your old Toyota and then you drive a bit, and our stage of application of data graphics on 2.5G network is like going to driving school. So that is the first thing.

The second thing is really different. The second thing is what are the ways that Hong Kong can co-operate, using the 2.5G network which we do have -- what other organs should be there that would allow the interaction between the network operator, the software content people, the handset people and, importantly, to get the semiconductor chipset people in?

Let me explain why. If you are in the software business for PC, you will be sitting and always trying to anticipate what Intel is going to come up with; the next chip, the next Pentium from Intel. We will always want to know what Microsoft will do, the next upgrade, or the next Windows. You do not wait until a personal computer with that new Intel chip or the new Microsoft OS comes into the market and you try to write software.

What we are doing right now in this particular industry, basically a lot of time we sit and wait for

the handset to appear, for everything to be in place, and then we try to figure out how to write killer applications, and so far we have not found one, because we do all this right at the very back end, just the opposite of the PC industry. Why? Because we have no access in influencing the early stage of development.

But this is going to change, because I think with OMA, that will help. That means the advantage that we can demand the chipset manufacturers start designing chips that fit and support this, and also have flexibility to support, for example, multiple wares, things which are important for them in the chipset arena, but this is all taken care of.

In fact, people then ask one further: to what degree the Government or a statutory body should put in money to do that? I say we should put in some money. The Science Park, the Incubation programme, the Cyberport, should, but I also believe we should use existing resources. Few of you know that, for example, Motorola has its 2.5G semiconductor chipset platform development located in Hong Kong for the whole of China, and that supports all cell-phone manufacturing. They put it in Hong Kong rather than put it in Beijing, where their cell-phone headquarters is -- it is a conflict of interest, because they need to support other independent cell-phone manufacturers. That is why Siemen's cell-phone would use that chipset from Motorola. So that means this type of facility is open to the developer to use, it is just that most people do not know.

This is something we should bring in. We should bring in the operators, and then I think we will have a chance to mix and match with what is called -- not tremendous investment, but get the most back and help the OMA standardisation.

DR LAWRENCE CHEUNG: Good afternoon. I certainly agree to this point of view, because I think at Hong Kong PC we actually have explored the idea about testbed and wireless development and all that, in the past year. We actually have explored that idea with the developers, as well as operators and handset manufacturers. Definitely from the developer's side they thought it would be a good idea, because from the developer's side, when they develop applications, they would look into how they can reduce their costs in terms of GPRS time-charge and all that, but practically setting up a facility like that has its difficulties.

For a start, a lot of the operators, when they want to recruit partners, they would like to have it on an exclusive basis. If we set up a centralised body for

a testbed or something like that, it has the difficulty that one operator asks, what happens if we help the development of an application and what happens if that particular company goes to another operator and he has that application housed with the competitor? That is one thing.

The second thing is, I think for the handset manufacturers, the actual financial support for this type of centre is quite enormous, because they need to put in a lot of the latest equipment and stuff into this particular type of testbed, and I think they would not be prepared to do so.

In particular, like what CD has just said, a lot of the handset manufacturers and branders have their own facilities, like Motorola and Ericsson and Nokia, they all have that type of development centre in Hong Kong or Shenzhen. 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 at the moment.

One more thing I would also like to point out is that we have a lot of talk about development and architecture and developers, vendors, but we also need to pay a lot of attention to the user. I think the mobile industry is one of the most technology-driven industries around, because we bombard the users with a lot of the latest acronyms like GPRS, 3G, CDMA, WCDMA and all that. I think we have a new four-letter word coming out every week.

This type of thing is confusing to the user. I think for the public, I think there are some very fundamental basic questions; not many people in the public know how to use SMS. I actually frequently ask for a show of hands as to how many people have made use of an SMS in a situation like this, and we are all IT people here, all people who are interested in mobile, and usually we got about 10 to 20 per cent -- people who have made use of SMS. There will be less for Chinese, people like me do not know how to enter Chinese in a hand-phone, maybe even worse.

I think the public education and public awareness of mobile data, the advantage of that, is also as important as the developer side, because at the moment the developers, if they want to get on to technology or facilities, they can get on to the operator and ask for help, or get on to the device manufacturer and ask for help. If they have training, a lot of different bodies will provide training for them.

But the key thing is that when they develop an application, do we have a market for them, do we have the users for them or the market for them to sell the product?

MR TERRY O'NEILL: Thank you. Dr Tsang?

DR KF TSANG: I am from the City University of Hong Kong. Thank you for the valuable comments from all the former speakers. Instead of giving you even more comments, perhaps I can start of by giving you my personal experience on 3G test beds.

I may be in a minority, because I might be working on a 3G testbed in collaboration with an operator in Hong Kong. We will have a 3G testbed in our campus and we will do something on it, including perhaps testing for the quality of service, not just in the air but also at the terminals, and we are thinking about some killer applications as well.

We have built in-house an automation system for buildings, and homes, and offices, so we attempt to associate all our internal developments with the 3G testbeds. Personally, I have the view that we might have a common, shared 3G testbeds for different interest groups, so as to allow software developers to develop more killer applications.

So I think that is the projects or plannings that we are going to build or do, so here I welcome any interest groups that would like to look into 3G testbeds in our place. Thank you.

MR TERRY O'NEILL: Thank you, Dr Tsang. Dr Wong?

DR ALBERT WONG: I am Albert Wong, from the Applied Science and Technology Research Institute of Hong Kong.

I think I have heard a lot of interesting and stimulating speeches and comments this morning.

With regard to the question of whether a testbed will help stimulate an ecosystem in Hong Kong, I think before answering that question we need to ask some questions about what that ecosystem means. Is that ecosystem -- I am a believer that if there is value to be had, then an ecosystem will develop in Hong Kong very quickly. So my question for that ecosystem is: what is the value input to this ecosystem? Is it to increase the local productivity or increase our image as an information-based society, or are we trying to create technologies or applications that would create export and money flow into Hong Kong based on technology import?

To the many speakers and vendors here, I am certainly hoping that -- in the past Hong Kong has been more confined to the role of technology user or services provider, and I 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.

Perhaps the way to achieve this goal is to examine the things that we can do in Hong Kong, and building a testbed is not necessarily the best approach to achieving our goal. I think that is my comment.

MR TERRY O'NEILL: Thank you, Dr Wong. If I could just move on to Mr Wong from the Cyberport. Perhaps a more directed question for you, Mr Wong, and that would be -- you have heard that Dr Tsang has a testbed in place. Does the Cyberport have any such plans?

MR YK WONG: I think the Cyberport has plans for having some innovation centre and testbed to be set up within the campus. I think Cyberport has a gigabit IP network and also the majority of the mobile operators have installed radio equipment and antennas in the Cyberport and reserved space for 3Gs.

On the other hand, in Cyberport there are over 10,000 IT and IS workers from over 100 companies, and it consists of a cluster of software application developers, software suppliers like Microsoft, also some hardware and some incubating companies. So I think it is a perfect mix of IT population for people to try out the applications and test their latest model handset or even sell to some of these high-income customers.

Also, in the Cyberport we have 250,000 square feet of space, which I think is an ideal environment for the operator to try out the location-based service and the mobility performance of the 3Gs.

So in that sense I think Cyberport is well placed to serve as a testbed for the operators, and it also has ample data centre space. That means that all the mobile networks going to be set up by the operators are well taken care of.

Referring to Bruce's point earlier regarding the availability of space, infrastructure, and that it must be independent -- I think Cyberport meets all these requirements.

MR TERRY O'NEILL: Thank you, Mr Wong. I would ask the chair if he has any comments at this point.

MR FRANCIS FONG: I certainly agree with some of the speakers about the 3G testbed. I think we need it, but do the Government or do certain organisations need to buy? Because it is very expensive. To my knowledge, one piece of equipment may cost hundreds of thousands of US dollars. Is it worth that much?

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.

MR TERRY O'NEILL: Reg, there was a question posed earlier or a point posed earlier by Dr Cheung about public awareness of data services and public acceptance. As we have already observed, usage of SMS and MMS is still in its early days. Could you give us a brief feedback on the user experience of the trial in Australia?

PROFESSOR REG COUTTS: It is probably a bit early to give you feed-back-on the user experience form m.Net as such, because we have just established the network, there are very few terminals available, and we have not managed the WiFi as such, but if I could make some comments on a testbed.

The first comment I would make is that the establishment of a 3G testbed is not cheap. I would say that you had better start at a couple of million US dollars to realistically do that.

The two key elements that I think are required to really see this growth in applications in the role of the testbed is 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, which means both the operators and vendors and of course the application developers or users, and in that sense they have to enter such a venture -- there has to be self-interest in that exercise.

I am not suggesting that is easy, but for example, if Government just funds a testbed and then just waits for the operators or the vendors to find some spare time to contribute, it will not work. There has to be something in it for all of the partners.

In the case of m.Net, we have some 17 partners, involving, as I said, Alcatel and Cisco and Motorola, parties that would normally be competitors, but see essentially benefit out of collaboration.

So, in contrast to an earlier speaker, while I will admit that if you are going to learn how to drive you do not necessarily buy a Ferrari, but I can tell you one thing: if you actually want some innovative people in the auto-mechanical field to come to your door, you tell them you have a Ferrari.

MR TERRY O'NEILL: Timo, before I move on to you, I would like to open the questions to the floor. Are there any questions at this point, particularly in view of the comments made by some of the panellists around testbeds

and whether content developers would actually find such facilities of use, of financial value, whether they can actually add anything to your business?

While you are thinking about that, let me ask our august sponsors and vendors to my right -- Reg has very kindly pointed out there is a very big price-tag on even thinking about a testbed. Why do the vendors believe it would be important?

MR ULF EWALDSSON: I will start, importantly -- with why to have a testbed? We sell those Ferraris and they are certainly not cheap, I can agree with that. I think, because they are very complex and I am not really sure you need to have a 3G testbed to be able to test applications. We do not use it internally. We build networks for operators. If we want to test 3G applications, we do that on simulators today.

But then you can say that there is some value to have one; of course, because you will be able to attract, perhaps, people that believe that you need one, such as good mechanics, or people who say "Is this really it?" -- yes, it is it.

Otherwise, I think some key points that were made here by the other panellists are very important. One I would like to point out is OMA. I think OMA is a very important initiative. The press releases that have come out on what activities have been performed are very promising, in terms of OMA being that IOT development, et cetera.

My point really is that it is a bit slow and there are other initiatives that are perhaps more of a threat, which is really prioritised or proprietary interface, et cetera, that can really lead to non-working between countries, non-working between operators, et cetera.

So OMA is the basis, I can say, for the industry, but I do not think there is any doubt that Hong Kong will follow the OMA initiative. I do not hear any other initiatives that are parallel or conflicting with OMA in Hong Kong. It is very important that we share that. That of course has to be supported by regulators, and it is.

Then we are talking about creating industry. It sounds a little bit, from my perspective, that we are back to the old Internet hype days when everybody talked about creating new value-chains and so on. I think today we are back, more or less, in the existing industry.

If you look at the creation of a vertical segment market for industry applications or enterprise applications, et cetera, I think that very much exists in the existing enterprise needs and enterprise markets.

I do not think there will be huge revolutions in terms of fleet management. There are software companies already in Hong Kong which are specialised in those areas. I am not sure, perhaps there are some representatives from these companies here.

I think very much we are more -- that piece of the jigsaw puzzle that I was trying to present here is really that the system integration is the weakest point today. It is very complex and very complicated to put these industries together, to make sure that we can use mobile or mobility as one of the angles of existing industries.

I think this is where vendors such as ourselves, system integrators such as Ericsson and others, we have to be able to provide this knowledge to the enterprise market and through operators but also perhaps through support of other Government bodies than OFTA, that are more focused on the Hong Kong industry. I think that is something that we need collaboration from the Government, where mobile is seen as an opportunity for other industries in Hong Kong.

That includes also the media, in Hong Kong the media industry. There I think we have a good opportunity, because Hong Kong has a fairly developed, also in the region, media industry, and they are not really yet seeing the mobile channel as a huge potential. I think that is something that they have to start to look at, and if there are things and barriers that can be removed on that side, I think we should help them to do that.

Otherwise, I am quite optimistic, from Ericsson's point of view, also about the future. I think we will be able to get this together. After all, it is only during the last one and a half or so years that we have had colour screens, and we have started to get exciting mobiles in the market, so I think it is happening. We are in the middle of a happening, both for vertical industries and for mass market industries.

Talking about the Cyberport and the Science and Technology Parks involvement, what can be done out there, I think it is very much to support those middleware software pieces that can be needed to create these end-to-end integrations, and I think there are a number of companies in Hong Kong already which have entered into this space.

However, you can never create companies that provide profits based on hype. All companies have to have a sound foundation for their idea or for their industry development. They might need funding for a while to be successful, but that will only be based on a sound business idea, and that can only come from existing

industries that provide value from the beginning. It is very difficult to create that industry. That perhaps is more difficult to see.

So overall quite optimistic, and I think very much information that can be provided by the regulators and the Government and more collaboration with other industries I think would lead to a success also here in Hong Kong, and I think we will succeed.

Thank you.

MR TERRY O'NEILL: Thank you, Ulf. Timo, a quick response, if you can?

MR TIMO TOIKKANEN: I realise lunch is imminent so I will try to be as quick as possible.

Just a quick comment on the testbed thinking. Now, if what we mean by 3G testbed is basically a place where can go and test their applications and make sure that the quality of service will be there and so on and so forth, that already exists today. There is no harm in having better places to do this and more places to do this, but there are various places in Hong Kong, some owned by manufacturers, some by other instances, where you can do that today. That does not to me seem to be the main issue here.

Of course, there really is not one place where you can go today that can test as well and as smoothly, and so on and so forth, for example every brand of handset or every type of network infrastructure, but I think that is solvable. I think we as an industry are realising that we need to avoid that fragmentation and we need to make it easy for these people to develop and test applications. I think that is definitely do-able, and if there was some body that could pull this together, for example, in Hong Kong, I think that could be done.

But then I think we come to the issue: even if you have the most fantastic applications in the world, and if you have the best content and you have fantastic quality of service, and so on and so forth, do we have the business system? Do we have the market mechanism in place, in a fairly small market like Hong Kong, that enables proven business return and sort of proven return on investment, both to the investors who own the operators or to the investors or the entrepreneurs who provide the goods?

Because everything we talk about is the truck. We all own part of the truck, we all own part of the transportation of the service from A to B. But the service itself, that is the goods, and the goods manufacturer, do we have a model that enables the goods manufacturer to load the goods on the truck and then

drive it all the way to the consumer?

That is where I think we have a tougher nut to crack. I would like to throw that question back to everybody here for the afternoon discussion.

MR TERRY O'NEILL: Thank you, Timo. A chance for one last question from the floor, or even one question?

PARTICIPANT: Thanks, Terry. We have been hearing this morning about how the important thing is not technology, that people do not actually care what bearer or what platform they have; what people want is the services.

I think that while all of this talk about testbeds and things like that is very good, and stumping up a few million US dollars for the technology and a few hundred thousand for the Ferrari to attract the appropriate people is very good, I think we have a much greater opportunity here, because Hong Kong, uniquely, is not just on the top of the IP mobility stakes; it also has more property developers who are in the telecommunications industry I think than anywhere else in the world. We have two representatives up on the stage here at the moment representing two arguably complementary and not necessarily competing science parks.

Can we not see, as a testbed, not just --

MR CD TAM: Science Parks is not a property developer.

PARTICIPANT: I know it is not a property developer, CD, and neither was PCCW until it got into the business of buying a telephone company. What is interesting is that there is a huge link between the property and the IT industry.

Can we not see Hong Kong itself as the testbed, testing not just a bit of technology, because with the greatest respect there are plenty of people who can do that, but testing the marketability, testing the appeal, testing whether there are those kids out there who want to develop the applications; see the whole of the 6 million people in the SAR as being the testbed; take this much more widely, using the links between property and telecommunications, resolving the contradictions between those two, property being about the most long-standing thing you have and telecommunications being the most ephemeral, to bring those two together.

There is kind of a question in there for the property developers and the people: why not take something rather larger than North Terrace in Adelaide and do it over the whole of Hong Kong? Thank you.

MR CD TAM: Can I answer this question?

MR TERRY O'NEILL: I will throw it open to any of the panel who choose to answer it.

MR CD TAM: That testbed actually does already exist. In

fact I talked about the I250, which is the platform testbed in Motorola in Hong Kong, which is, by the way, at the Hong Kong Science and Technology Parks Corporation, our location in the Tai Po Industrial Estate, the centre there.

That testbed is used not just for Hong Kong but for the entire China, to drive what is called integration of services, applications, and a semiconductor platform that leads to different types of cell-phones for China.

One of the things we can learn is -- maybe we should all make a visit, and I believe the person in charge of that centre, Kenny Cheung, is here in the audience, he should be here talking about his experience, how his 150 hardware and software engineers are doing this type of integration.

That is the type of model that we can continue to expand throughout Hong Kong, and may well be a viable way for us to help drive a good business model.

MR TERRY O'NEILL: Thank you. Okay. Any last questions from the floor? John, did you have a point?

MR JOHN URE: No.

MR TERRY O'NEILL: One quick last question for all the members on the panel -- and your response has to be five seconds or less, please, because there are a lot of hungry people in front of us -- I would like to fast-forward you one month. It is Christmas Day. You have each been given a Christmas present that is a wireless device. What is the one -- this is your personal view now, of course, not your professional views -- what is the one application or the one piece of content, or the one thing that you would most like to see, in any particular order? Timo, I will start with you.

MR TIMO TOIKKANEN: I think my Christmas dream application would be a nice 10 or 15 second video clip.

MR TERRY O'NEILL: A video clip from Timo.

MR ULF EWALDSSON: I think we are still on the picture of the Ferrari.

MR TERRY O'NEILL: CD?

MR CD TAM: I would like to trade that for a Ferrari.

MR TERRY O'NEILL: TS, anything from you?

MR TS NG: I would like an integrated PDA with a phone as well as a camera.

MR TERRY O'NEILL: An all-in-one there. Dr Cheung?

DR LAWRENCE CHEUNG: A phone and camera and colour screen.

MR TERRY O'NEILL: A colour screen? We are getting fussy now. Okay, Dr Tsang?

DR KF TSANG: The same.

MR TERRY O'NEILL: It is getting too easy now. Dr Wong?

DR ALBERT WONG: TS has answered my question.

MR TERRY O'NEILL: Mr Wong?

MR YK WONG: A video-conference with Santa Claus in Norway.

MR TERRY O'NEILL: Gentlemen, forgive me for asking such a flippant question. Let me hand the floor back to Mr Fong.

MR FRANCIS FONG: My Christmas present will be probably the same device that they want, but I will switch it off for a while.

Thank you everyone for joining the second session for today.

MR JOHN URE: Francis, that one is for our Australian friend, it is not a cricket bat, and the rest of them are book tokens. Thank you very much. (Applause).

MR FRANCIS FONG: I think our sponsor, CSL, has lunch waiting outside.

MR JOHN URE: Yes. The lunch is actually on the 18th floor, in the Sky Lounge. The lifts will take you up. The lifts are being dedicated to take us from the 3rd floor straight up to the 18th, so please if you can make your way up there. It is a buffet lunch.

(1.25 pm)

(Lunch break)

(2.40 pm)

MR ALEX YOUNG: Welcome back for the third session. This session's title or theme is "The dilemma for developers: do we don't we? -- and just what is this ecosystem idea?"

Earlier this morning you have heard from a lot of people who are the players in the industry. Today on our panel we have a little sample of some of the developers here in Hong Kong, and they will be outlining or giving us a small case study about what they have been developing and some of the problems or pros and cons of development here in Hong Kong.

I will just introduce myself. You saw me earlier this morning. I am Alex Young. I am representing the Hong Kong Digital Entertainment Association now. The HKDEA was founded in 1999 as a non-profit trade entity. The association is based at the Hong Kong Polytechnic University, and I will tell you a little bit about HKDEA's missions for Hong Kong.

One is to promote technology development within the digital entertainment industry, in order to create internationally competitive products; to explore and develop new markets; to eliminate the negative images associated with playing video games; to discourage software piracy; and to facilitate communication and interaction between industries associated with digital entertainment, including toys, entertainment and video games.

The HKDEA was recently representing Hong Kong in Japan at the Tokyo game show, and that was quite a good step for Hong Kong to be represented there.

The next four speakers are just a sample of developers from Hong Kong. They will be giving a short presentation. We have IMOEBEA, J-Spectrum, INFOiSLIVE and Artificial Life representatives.

On my right is Benny -- the title of the paper is incorrect -- from IMOEBEA, Benny Leung, and he will be speaking about mobile games.

MR BENNY LEUNG: [SLIDES] Thank you, Alex. Ladies and gentlemen, thank you for coming to the conference of next-generation wireless service development in Hong Kong. I am Benny Leung, business development director of IMOEBEA Limited. Today the topic is mobile entertainment in the Asia-Pacific region.

Let us go through the agenda first. First of all, I will introduce the company background and the business. After that, I will give you some market information of the mobile industry. Finally, I will take some showcases developed by the group in Hong Kong and the Asia-Pacific region.

IMOEBEA Limited was established in 1999. The headquarters of the group is in Hong Kong. Like an amoeba, we are one cell, very simple in nature but responsive; we constantly change our strategy to meet the rapidly changing marketplace. The missions are to create scalable, top-quality entertainment games on mobile devices; to deliver world-class e-commerce and m-commerce solutions and products; thirdly, to become the trend-setter in the multi-platform and wireless application markets in Asia. Today I will concentrate on the areas of mobile entertainment. Let us go to the next section, marketing information of mobile industry.

Nowadays, we are all talking about 2.5G and 3G. They will be the next trend of the mobile industry. How about the expected revenue in the future? According to the statistics, 2.5G and 3G will be one of the main revenue streams in mobile data services. It is expected more than 1.2 billion mobile subscribers will use 2.5G or 3G, and the expected revenue will be up to US\$100 billion per annum.

Then how about the current market? Right now, 2.5G was just launched to the market. Currently there are not many applications targeted for these handsets. For SMS, there are many applications launched in the market. The reasons include the mature development of SMS technology and the high penetration rate of the mobile handset. As a result, SMS is still a major stream in the mobile data service. According to OFTA information,

there were around 85 million SMS sent in Hong Kong in August 2000. In the PRC, the potential of SMS is very large. From China Mobile's annual report, it is estimated about 60 billion SMS will be sent in the PRC by the end of this year. Of course, it is believed that the market share of 2.5G or 3G will be increased rapidly when more and more handsets and applications are launched in the market.

Regarding to the applications, which area of applications will be popular? There is some information sourced from the Japan market. Under the portal of DoCoMo, it is found that mobile entertainment accounts for around 35 per cent of the total revenue generated. Under this category, mobile entertainment, more than 50 per cent are mobile games or network games, so we estimate mobile games will be one of the popular ways to let us test the market.

According to this market information, the group has planned to develop a series of mobile games to launch in Hong Kong in order to test the future. To suit for the future trend of GPIs, we have developed the game both in SMS and GPRS versions. For the SMS version, we can target the mass market so that all users can play the game. Of course, only pure text can transmit from or to the mobile handset during the SMS mode. If the user would like to enjoy the higher speed advanced user interface, he can choose to use the GPRS mode.

The first mobile game developed and launched by the group was i-Date U. This is an interactive virtual dating game through which mobile phone subscribers of HKCSL can date with the virtual date idols created by the game. The objective of the players is to successfully court a virtual girlfriend in the virtual world by using SMS, WAP or GPRS. There are five virtual idols to let the player choose. After selecting a target virtual girlfriend from these virtual idols, the player will start courting her by performing various tasks, including working, studying, conversation, dating her or giving presents, et cetera. In further games, the player will receive different points upon completion of different tasks and will finally succeed in courting the target virtual girlfriend if a certain number of points as specified in the game have been obtained.

Because of the successful launch of i-Date U in October 2001, the game was also selected as one of the runners-up in the Mobile Application Awards 2001 by Wireless Asia.

After that, the group has launched another application, Super Stable. Super Stable is a virtual horse-racing game launched in January 2002. The

objective is to train a champion virtual horse, using SMS, WAP or GPRS. To start playing this game, the player should purchase a physical horse master card, game card, just like this one, for the purpose of creating a new virtual horse in the virtual world of Super Stable. There are 18 different types of horse master game cards, each of which represents an unique horse with unique attributes, including weight, ...(inaudible)..., et cetera. After creating the virtual horse, the player should train up the horse in various training courses like swimming, running and so on. Then the horse can participate in different horse-races and achieve good rankings.

Employing the technology of IVRS, the players can listen to the progress of the virtual horse-races and experience the excitement of real-time horse-races through their mobile phone. In addition, it is a multi-player game; each horse-race can accept up to eight horses to participate.

Other than these two showcases, we have the third one, Heroes of Fighting. Heroes of Fighting is another mobile game developed by the group and collaborated with CSL in April 2002. It is an interactive virtual fighting game, based on the story and characters of four local popular fighting comics published by Culturecom. The objective is to become the best virtual fighter by using SMS, WAP or GPRS. In this virtual world there are over 60 virtual heroes, who are created based on the four fighting comics. When a player starts playing this game, he will need to select the favourite comic hero. In further games the player will be required to fulfil various tasks, including, the first one, fighting with other characters created and controlled by the system; the second task is fighting with other virtual heroes selected and controlled by the other players; third, searching the virtual ...(inaudible)... and weapons; and finally, participating in Kung Fu training sessions to increase the virtual hero's power.

After the successful launch in the Hong Kong market, the group has also collaborated with different mobile operators or distribution partners to launch the games in other regions. For the game of i-Date U, it was successfully launched in Taiwan in late 2001 with TCC and Chung Wah Telecom respectively. In January 2002 we have successfully launched this game in the PRC, GMCC, which is China Mobile in Guangdong Province. In May we have also licensed the game to Tom.com and localised the contents to suit Northern China. Other than Taiwan and the PRC, we have also localised the game in an English version and successfully launched it in Singapore in

May, and the partner in Singapore is Mobile One.

Regarding Heroes of Fighting, the game was also launched in the PRC and Taiwan markets in June and August this year respectively. The game has developed cross-region features that enables mobile game users in Hong Kong, Taiwan and the PRC to participate in the game simultaneously.

Finally, for Super Stable, it was successfully launched in Taiwan, Macau and Shanghai. The same as Heroes of Fighting, the user can also play together in different areas. Another feature of this game is the IVRS technology, the player can listen to the same progress of a virtual horse-race with different languages. That means Hong Kong and Macau users will listen to the Cantonese version and the language for the Taiwan user will be Putonghua.

Finally, those clientele are our business partners in the mobile entertainment area in the AP region.

This is the end of the presentation. Thank you very much for your kind attention. (Applause).

MR ALEX YOUNG: Thanks for that, Benny.

Coming on next we have Alfred Ng from J-Spectrum Software. He will be talking about network applications.

MR ALFRED NG: Good afternoon, ladies and gentlemen. My presentation is going to be in two parts, as John asked me to, first a very quick view of our product, not as sexy as Benny's -- congratulations, Benny, for your success. The second part is I would like to share a few comments about the future of the industry and how we can build an ecosystem, as was much discussed this morning.

John gave me this title, "Network Applications". I cannot claim that we are a 100 per cent network application developer as such, but two very well-known network applications are roaming, international roaming, and call forwarding. Now, these are intrinsic properties or characteristics of the GSM network, and we are not in a position of doing those things, but there is a new coming up capability of the network called mobile location, which we do, hence the mobile network application.

The GSM Association in January this year prepared a document of many operators on a topic called end-to-end application, and their view of services is like this, a very simple view: services exposed to the customer, visible only to customers. The rest is hidden. There are enablers and features.

Actually, not being academic, I insist on trying to differentiate services and applications. Applications are something that is technical. Services are things

that are visible only to the users. They see the items on their bills. I will give you an example. IVRS is a technology, but mobile banking is a service.

A bit of background about ourselves. We were founded in September 2001, on the day of September 11th, and we actually survived all this during the last year. We are a member of the Science Park Incorporation, and a very small, agile team with a network of software contractors, and we focus mainly on network enablers.

After 12 months or so, we have three products now under commercial trial and operation, and I am very proud of having one mobile location centre now in commercial pilot. I would like to thank our customers. Without them, we would not have survived.

This is a very quick -- I am not going to do ... (inaudible) ... but just a quick idea of what we do. This is a J-Push initiator product. You can see there is actually a software connect to the push engine, the WAP push gateway, and I think the future of this product lies in the event matching; when you have a personalised event, you want to match and give you a push, this is something that is useful.

Secondly, we also produce an Excel-based SMS creation tool. Using a simple Excel template, you can build an interactive SMS in seconds, by just writing down what you want in English, or in Chinese for that matter, then write down the choices for the users. I will give you an example. This one was done during the World Cup. If you want to build an application like that, the user chooses a choice of menu and then interactively, knowing the choice of the user, first meaning Brazil, send an invitation for that kind of action. You can build this within seconds or minutes. We have other tools, graphic tool, to also create more elaborate SMS interaction, together with a simulator and a wordpad for programs.

Recently we spent, in the last six months on the mobile location project -- what we did is we built a positioning enhanced algorithm to the enhanced cell ID, "cell ID" meaning identification cell, so actually the terrestrial-based positioning system uses sites of cells for references, to give you a position, rough estimate of where you are.

Application examples -- you may or may not know that the Government has taken an initiative to build a so-called intelligent transport system in Hong Kong, and the tender was awarded in the middle of this year. We believe that, with this mobile location service, consumers rather than motorists can use this service. I will give you an example -- with ITS and the location

capability, you can actually estimate the amount of time you require to travel from one place to another, given the real-time traffic conditions given by ITS.

Workforce management being another one -- there is a colleague here at Pinpoint company who is doing this very well. I would like to share maybe any comments or any market feedbacks, that is welcome.

This is the market structure of the mobile location services regarding transportation and a more vertical market like the tracking and personal safety and so on. It is a bit complex, but I think it suffices to think about whether the operators would offer consumer services themselves.

Games -- Benny talked about games. In Europe there are two countries which have had very good experience with a mobile location based game, called Bot Fighter, in Denmark and Sweden. The experience was that the game actually created a lot of physicality, a motion impact game, and actually you are always in the game, while you are moving about. A phone is not a phone but an imaginary weapon, and so on, a radar screen and so on. This game actually creates a lot of clustering effect, word of mouth on the service.

This is what I call ultimate location-based services. You can see the message on the phone actually consists of several components that do not exist today. First of all, "Winnie" is personalised. Secondly, the message was sent exactly when Winnie was actually in a shopping mall where Lane Crawford was. So without being in the shopping mall this message would not be sent to Winnie. The location-based service has to be personally profiled to be of any use.

Here is another scenario which I think I also would regard as a Holy Grail, because when you move into an area, it actually triggers a message that you want, that you actually want. For example, free beer -- you want free beer, don't you? So it is profiled, like music, French dinner, and so on. This also requires commercial collaboration. The technology itself is not enough. So here is something that we need to overcome.

The critical success factor of location-based services is mass enablement. You must mass enable every handset. It is no good if you have to use a special handset or SIM cards. Privacy -- we talked a lot about privacy this morning. I am not going through this list because I only have one minute left, but I do have one proposal, as John asked me to think of it. As a developer, I think adoption of our software is the most important thing, but it is more important than revenue. Even if you do not pay me, I would rather you

to adopt it and use it, otherwise it will not grow. Software grows right at the door or at the table of customers.

So I would propose to the Government that adoption, because of the risk factor and aversion by most IT managers, executives in companies, if a pioneer adoption is such a barrier, then if there is a tax, small tax relief proportionate to the amount a company spends on pioneering or adopting software with potential to them in the future, I think this would be great. I know we have a budget deficit, but Premier Zhu said we are okay. I think this is a small amount of money.

We are not talking about a large amount, because pioneering projects -- software companies like ours are willing to cut margins for adoption, but the barrier is not about money. It is about risk, and the amount of time they have spent taking this risk. So a champion inside of the big IT users like the Swire Group, Hong Kong Government and so on should have that reassurance that if they fail, it is okay; the Government give some tax relief to them.

That ends my presentation. Thank you very much.  
(Applause).

MR ALEX YOUNG: Thanks a lot for that, Alfred. Next we have Julie Cheng, who is Vice President of Business Development for iNFOiSLIVE. She is involved in alliances and sales, and also responsible for the Taiwan market. She was previously working in Blue Factory, the Hong Kong office. Blue Factory is a Swedish mobile games developer. Because she is involved in mobile games and entertainment, she will be providing a very entertaining presentation for you.

MS JULIE CHENG: Hi everybody. It is very nice to be here, and this morning's session has been actually very encouraging, although most of what we discussed is actually the problems, the very big problems that we are facing and the very large steps that we need to take in order to overcome these problems.

But the positive sign is that everybody actually sees the problems, so we are all aware of this, and we are also thinking of solutions, how we could overcome these problems and bring forward wireless applications in Hong Kong and also other countries in the region.

I think in this area we do have some experience and some insights to share.

To start with, I can introduce a little bit about our company. Our company name is iNFOiSLIVE, or nowadays we actually call ourselves "IIL" because we think it might be a little bit easier for people to remember.

Our company was established three years ago, in 1999, and we are based in Hong Kong. Right now we have offices in Guangzhou, in Beijing, and actually just recently we set up an office in Taiwan. Our plan also is to set up another office in the Silicon Valley at the end of this year.

What we do, basically we have two roles. One role is we are a value-added mobile entertainment distributor and enabler, so what happens is we help a third party who has interest in mobile entertainment to enter the market.

Some of our partners include AOL Warner, Sanrio, Yamaha, et cetera. They have the raw content -- Sanrio does not have a team to develop mobile content. We have the expertise and we have the market coverage, like we know the carriers, we have the wireless expertise to develop these applications, so we take the Sanrio content, like Hello Kitty, and then develop into mobile games, like K-Java games, MMS, et cetera, and we bring these to carriers, because we already have the network, so that through the carriers we can reach the end users.

This is one role that we have. The other is actually we also have our in-house content, so we have our brand name, which is called gAMEiSLIVE, and we develop K-Java games, we compose polyfonic ringing tones, MMS greeting cards, graphics, et cetera. We started off with WAP games.

Actually, when we first started our company, the first WAP handset was not launched in the market yet, so what we were doing was we used a simulator to develop our first WAP games, and we did develop quite a lot of WAP games and these days we have our focus on K-Java and MMS.

This is another role that we have. Actually these two roles we find more and more are complementary to each other, because when we approach the carriers with our own applications we will get to know about user behaviour and we will get to know about what carriers actually want, and these actually are very important assets and very critical information that our partners will need, like Sanrio or Yamaha; they will want to know this information as well, if they come to Hong Kong or if they want us to help them in China or Taiwan. So we find these two roles are quite a firm background for our company to continue our role in the market.

This is our corporate set-up, which I briefly mentioned. There are different roles like in R&D, in business development, et cetera. Some milestones -- the latest milestone is actually we launched MMS in Taiwan and we are one of the first CPs to launch MMS in Taiwan.

We consider this -- this is actually a very special case for us. What happened was, as you know, in Hong Kong it is like one of the first markets to launch MMS, and when we bring our MMS applications to Taiwan, the Taiwan carriers are very impressed, because we have launch experience, and we have launch experience with actually six carriers in Hong Kong, so we have experienced the integration process, a very long and painstaking one, with six different operators, six different systems. So the Taiwanese carriers are very impressed and they actually want to learn from our experience, what kind of different set-ups that we have experienced, what is bad and what is good, and actually we kind of work with each other, kind of a little bit of a consulting role that we play, and we kind of share experience of better ways to handle the integration part so that the content will be actually more user friendly to the end users.

Some of the things that we have done -- we supported Yamaha in launching their ringtone services. We helped Sanrio to develop games, MMS, et cetera.

Some screen shots, very quickly -- for Sanrio, different applications. The Yamaha one, actually our content in China with a portal, this is actually the MMS applications that we have on TCC in Taiwan. Our K-Java game screen shots -- actually, they are doing quite well now. We have launched in Hong Kong, in Taiwan and the US, and there will be upcoming launches in Southeast Asia and other countries.

We work quite closely with different handset vendors, and this is our SMS game which was launched in China last year and will be launched in Taiwan and Hong Kong and other places.

We are the other platform provider for Nokia in China, and this is a download and game platform. Some SMS games we have in Hong Kong, in China, and various applications -- our in-house graphics, our client list.

A little bit about this conference -- what is good and bad in Hong Kong as we have felt? Good is that there are a lot of keen content providers, like us, like IMOEBEA and others, and there are a lot of high quality developers. There are eager consumers, they know a little bit about mobile, they know they want to download ringtones, they want to download graphics. It is a test market for new and advanced handsets -- you see that all the handsets are launched in Hong Kong first rather than other markets. It is quite competitive for the telcos, so there will be ahead launch of new technologies like MMS, the advantage of which I have shared with you just now. That is why we are actually very high in the ITU Mobile/Internet Index.

What is bad? There is a lack of funding, as a lot of us have acknowledged, or the investors do not know much, enough about the mobile industry, so they do not have the confidence. It is very high cost, labour cost and rental. The last point is actually low revenue. IT is a very small market, like 5 million subscribers, and we share revenue, and we are talking about less than a 1 per cent penetration rate. The revenue share percentage from telcos is actually not very handsome like in the case of Japan.

Adding the bad and good, it is actually bad bad. Just from low revenue it is already bad enough, you do not have to think of the others.

So how we survived three years -- there is no magic potion, we did the same thing as traditional industries: we export. As you see, we export all our applications, because we see it is quite international. Games are more or less alike. We have to localise in some ways, but the engine is the same, like K-Java games, et cetera. So far, we have proved that our games are popular in China, Taiwan and other areas. We keep our costs low. Among other things, we have developed our China development team, so of course salaries are much cheaper than in Hong Kong, and we try to increase our revenue stream, so of course through various legal methods we expand our market, nothing else; that is what we do.

Given all the problems, like we try to cater for different inter-operability problems, et cetera, there is no funding, no market -- we do not wish for 100 per cent penetration, it is not something which is really necessary. Good users -- how do we find good users? Do they have to spend their fortune, or if we only target game maniacs, but not 100 per cent of the subscribers are game maniacs -- so a more down-to-earth version is that we want to have a good ecosystem, as everybody has voiced out today, and the users have to actually be very demanding users; they have to know what are the good quality applications, because if any applications can be launched in the market, then there is no point. One day some of the developers will die out.

We have to have educated users, actually, but who educates the users? As actually very small developers, we cannot go out and educate the users, so we have to think about that. Regulatory bodies, telcos, handset vendors, we think these are more relevant players to educate the users. Telcos have the first role to educate the users, and we hope they could actually work with developers as a team. Right now, we are not in

opposing camps, but what happens is revenue share in some cases it is not very reasonable or realistic that content providers can stay alive with the revenue share.

Another thing is the work process. Telcos these days, I think if you have worked with content providers you would know, you do not really have a smooth work process. You are given one new request and you have to do that within a day or two. This happens all the time. Actually, we see some carriers, they are starting to reorganise their process, they want to also make their own workforce very cost efficient, that they would save their resources as well.

So we think that this is a good way to start. We see that in Taiwan and China there are some carriers that actually appoint master CPs or aggregators to do all the content aggregation work, and we think this is good, because this aggregator will actually set out a very systematic organisation and there will be policies, rules that we have to follow step by step, so these rules would be actually more or less well thought of before they actually start to implement. The other things, like handset regulators, the different roles that they can play.

A little bit more, about our company -- where to start? Actually, for our company, we are thinking more in terms of Greater China. Hong Kong, we used to think of it as a starting point, as I said about the new technologies being launched in Hong Kong first, but these days we are starting to rethink Hong Kong's role, because just now -- as I mentioned, new handsets are usually launched in Hong Kong first, but these days, actually just these couple of months back, it is not the case any more. More handsets actually are launched in China first, not only talking about Chinese manufacturers but even Japanese handsets are launched in China first.

Actually, we are shifting our own R&D role to China as well, because we do not have the new handsets to test, we have to go back to China. In China there are lot of questions to be answered that we are experiencing. In Taiwan, they say they have more than 100 per cent penetration, but this is a very competitive market, and we are testing other markets too.

I am well over time and this is actually the end of my presentation. I hope we will have a good discussion after this. Thanks. (Applause).

MR ALEX YOUNG: Thanks for that, Julie. Next we have Ernest Axelbank from Artificial Life, presenting "Artificial intelligence as a business application".

MR ERNEST AXELBANK: Good afternoon, ladies and gentlemen.

I will just load this presentation.

I apologise that the CEO of Artificial Life is not able to be here today to give you presentation; I am sitting in here. Through this presentation I hope to give you a short introduction and show you the power and possibilities behind artificial intelligence and natural language processing systems in the back end, providing interfaces and applications to mobile devices.

Artificial Life was founded in 1994, and since inception it has engaged in significant research and development efforts, resulting in a solution set of tools and applications for a broad range of markets. Later, I will show you a couple of those targeted markets for which there have been applications developed with proven success, and I will tell you more about that in later slides.

This is just a corporate structure overview, probably not very interesting, so I am just going to skip by this, since we are limited in time.

This is a slide showing some of the core competencies of Artificial Life. Although traditionally for web-based systems we have seen a shift into mobile and instant messaging areas, these promise to be equally as successful. There are three areas Artificial Life focuses on: artificial intelligence, natural language processing, and data mining.

The artificial intelligence portion provides for you the algorithms in the back end, for example for serving up custom-tailored location-based content.

Natural language processing is used for the users; they are able to use natural language to communicate with our artificially intelligent bots, and I will give you an introduction to those in the next slide.

Data mining allows you to leverage data and information that a corporation has already collected in their repositories. This is useful because a corporation does not need to replicate data into our knowledge bases. It is much better to leverage data that is already existing in their systems.

I will show you some things here. Artificially created smart bots -- these are the avatars which are client facing interfaces to natural language systems. These can take on any form on the client side.

What this allows you to do is take legacy push channels and turn them into bi-directional dialogue systems. By engaging the user, you are now able to have them utilise the bandwidth and stay on the channel and through a dialogue system request information, learn information about a corporation or a company. This can be used for e-learning, for marketing purposes.

The goal is for omnipresent virtual assistants on these communication devices. Traditionally, like I mentioned, this was for web-based systems, but by using transport layers these can now be deployed on any given channel; now, with mobile devices, PDAs, via GSM, GPRS, CDMA, i-mode and WAP.

*(Water started pouring from the ceiling here!)*

These systems allow automatic answering of SMS queries. I mentioned bi-directional systems -- the user can communicate by asking questions to the server back end and receiving custom-tailored information. The knowledge bases also store user profile information about a user, and therefore provides custom-tailored replies, and these can be location-based as well.

Here is a slide showing some of the deployment channels, and like I mentioned for the web, as well as for mobile devices, also via instant messaging now.

The power behind the technology is in creating one centralised knowledge base. After developing this knowledge base, which is also localised, the content can then be deployed on any given channel without needing to replicate this knowledge.

Like I mentioned, this can be used for customer support, for providing self-help, as virtual advisers, since it has a profile of the user, you can now provide custom-tailored information and suggestions because you know the user's preferences, and these are all stored. When you have multiple agents, they can also communicate, they can inter-operate between themselves, depending on privacy policies and user preference settings.

Also for marketing entertainment, this can also be used, as we have seen in past presentations, virtual friends, gaming, in marketing campaigns. Once again, these can now be two-way marketing campaigns, so not only as a push channel, but you can now gather information that comes back from the clients, whether it is positive or negative feedback; you can gather and find out a lot more marketing data from the clients.

These slides just show some of our past clients, and these have been traditionally financial institutions, but now we are seeing a shift towards more marketing-type and gaming types of applications. As an example, for these past financial institutions that we have dealt with, we have provided self-help systems where users are able to communicate, via any device, to find out how their portfolio is doing or get alerts on various aspects of their portfolio or financial advisory system.

Of course we have won several awards. Wow, there is

a leak in the ceiling, I see. I was wondering why everyone was leaving; I thought it was my presentation.

To conclude, I would like to say that we were speaking about ecosystems and, before the ceiling caves in, let me just say that Artificial Life's vision of course is an ecosystem of intelligent agents, an ecosystem of inter-operable smart agents that are able to communicate with each other and provide useful information that is also going to keep the client online, using the service, whatever service that might be, whether it is web-based or mobile-device-based.

Let us try and finish up here. Thank you for your time. (Applause).

MR ALEX YOUNG: Thanks for that, Ernest. Would it be possible to put towels inside the buckets, because it is really loud.

Our next speaker will be Chris Wylie from Qualcomm, Regional Sales Director for Asia-Pacific.

MR JOHN URE: This is a special effect put on by the Sheraton Hotel. (Applause). You think it wasn't planned, don't you? I apologise to our speakers for this. If anybody has an umbrella, perhaps they could bring them down.

MR CHRIS WYLIE: [SLIDES] Good afternoon. My name is Chris Wylie. Amongst the rainstorm we are having here, I am going to try to give you a presentation to talk to you about one of Qualcomm's new technologies, the Brew software platform. We are going to specifically talk about the Brew technology in respect to wireless developers. We will not charge you for the special effects here.

Take a look at the Brew solution. For those of you who are not familiar, Brew stands for binary run-time environment for wireless. Qualcomm developed this technology solution in response to problems we saw in the marketplace, with previous technologies that had failed to reward developers for the work that they had done, that had failed to bring the revenue from the wireless carriers to the developers that were promised, and so Qualcomm worked hard to put together an API that we provided free of charge out to the phone manufacturers.

Most importantly to the group here, we have put together a Brew software development kit for application developers. This software development kit is free of charge to the development community, it is available online, and you all developers can have access to this software tool to develop Brew applications.

The other pieces of the solution include a Brew distribution system for carriers, which is a software platform that allows these Brew applications to be

downloaded to handsets, and then, in the end, and most importantly, is application downloading for end users.

So we look at what are the demands of the marketplace, and we talk backwards from the carrier all the way to the consumer. The operators in the mobile industry are looking for a service that they can customise to their end users, and those services need to have value. As was mentioned in an earlier presentation, that needs to be a personalised service, a personalised application to the end users.

So we work with the handset manufacturers to provide good handsets that are customised for the needs of these applications, as well as the needs of the consumer. Then we work with the application developers to create applications that have meaning to people's lives, that affect people's lives, that people are willing to pay for.

Then last but not least -- wow, I may charge you for that one -- are the mobile subscribers, the people who actually pay for these services.

So, what Brew does for consumers -- consumers are used to the experience of being able to customise their desktops, of being able to customise the applications that are on that desktop, and these are the applications that have meaning to their personal life. We look beyond that and are trying to create the same type of experience for the mobile subscriber, for the end user, so that the subscriber can personalise their handset and they can have access to applications that actually mean something to them, versus applications that are pre-installed on handsets by the carrier or the phone manufacturer.

So, when we talk about the operators, the operators are looking for these types of services and these types of applications to bring these personalised services to the consumers. We look on the far left at some of the companies that Qualcomm is working with -- these are all companies who have launched commercial Brew solutions into the marketplace, the most mature of which is KTF. KTF retailed out of Korea. They private labelled -- they branded the Brew service as a magic and multi-pack service. You can see Verizon Wireless in the US, which is the world's largest CDMA carrier with over 30 million subscribers -- they have labelled it the "get it now" service. In KDDI in Japan, who we have seen had phenomenal success with using Qualcomm CDMA 2000 technology -- we have seen KDDI implement the AU service, that provides personalised applications.

You are looking at a screen shot here of an application of the streets of Tokyo, using GPS1, which

is satellite-enhanced technology. KDDI offers an application to their consumers that will find them anywhere in Japan and will show them directions to any point of interest. Also in the handset is included a digital compass that will tell them what is always true north and, as they walk down the street and turn the corner, the handset actually turns with them.

So, moving forward, we look at the Brew distribution model. Qualcomm works with the application developers to bring the community together, and they provide their applications using the Brew system out to the carrier community. These are some of the many carriers that we are currently working with that will be implementing Brew solutions in the future. Then those applications are distributed out to the consumers.

So we take a look at what does Brew do for the application developers? Brew offers the application development community a familiar development environment. It offers common APIs 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 customisation for each of those handsets. You can see some of the application developers here that we are working with -- JamDat, Rocket Mobile -- all of these that you are familiar with.

We take a look at the Brew payment model -- how does the money flow from the consumers and through their phone bill back to the carriers and then back to the application developers? Actually, using the Brew system, application developers do not need any more to have individualised 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 that revenue for them, from the sale of those applications. This is something that was missing in the past. This is something where we saw failure in past technologies.

So we take a look at what Brew actually means to those developers and makes it easier to write to handsets. When we talk about the software, basically the operating system here that runs on the Brew system -- the Brew system is air interface independent, it is applicable across all networks, from CDMA to GSM, GPRS; all of these technologies can support Brew.

The Brew software layer sits on top of the operating system, so now, as you add applications, as you add e-mail, as you add photo sharing, as you add group chatting services, as you add a browser to the handset, a video player and even Java applications, there is no

need to link these individual applications down into the software of the phone. Each of these applications can be downloaded over the air, and they can run on any handset.

Specifically we talk about Java. Some people in the press have indicated that Brew is a competing technology to Java. Actually, Qualcomm has done a lot to embrace the Java technology and provide a solution that we believe embraces the Java community as well. We say, if you do not want to develop using the Brew software and the Brew software development kit using C++, okay, that is fine; use the Java development tools that are available to you.

To accommodate that, we have added a piece to the Brew software. We are working with a partner called Insignia Solutions, and they have developed an ability for us for the network to read on the handset if a Java virtual machine is available. If no JVM is found, then the Brew layer tells the phone, go out, download a JVM to the handset, and now you can run the Java application. So Brew is an agnostic technology; it is available to all developers.

These are some of the developers that we are working with. I think it should be very interesting to note here, specifically for those small developers in the room, those people that are struggling to get by, that are working hard to develop applications and promote them to the carrier community, we are working with lots of big and small developers.

I can show you a couple of developers here who have sold their applications to Verizon in the US. These are small Korean development houses, if you will, development companies, who have been able to take their applications using the Brew system and provide them to customers in the US, and they never had to get on a plane and fly to New York and negotiate contracts with Verizon; they did all of this using the Brew system. Now these developers in Korea are receiving payments for their applications. It was all done using the Brew system remotely.

I will give you a quick snapshot of some of the top 10 applications that are working with KTF. KTF in Korea has over 2 million Brew subscribers now, after 12 months of operation. They have been extremely successful in the Korean market with upgrading their current subscriber base to Brew phones. These are higher-end phones, these are colour phones that have lots of features on them, which provide good revenue for the carrier as well as the application developer.

It is interesting to note, what we are looking at

here, here is the first five, and the next five of the top ten, all of these applications are network-based applications, meaning they drive revenue, they drive traffic on the network, and that is what makes it interesting to carriers. I say to the developers, I would advise you to look into applications that help the carrier drive ongoing, recurring revenue, that brings the subscriber back to the network to upgrade that piece of software, to chat with another user, to download another karaoke song.

We will look at some of the sample applications that have been developed for Verizon in the US. As you can tell, the applications in the US market have a bit of a different feel; they have a different colour, they are not as graphical. US consumers are probably not quite that far along as the Korean consumers in terms of using applications and using their handsets for various purposes.

So we are looking at applications here that actually have meaning to people's lives. Flight information services; these are city guide directories; ringtones, which I know is quite old over here but is relatively new to the US market, and has been very successful. Here is a Soda Pop e-mail application that allows access to Hotmail and Yahoo and and the free e-mail services out there.

Specifically, we will talk about KDDI -- I showed you a screen shot from this phone, and I wanted to show you again that this phone is allowing maps to be pulled up on the user's phone, real-time maps using GPS technology, and the user can tell the phone whether they are walking or they are driving and then give them mapping instructions based on if they are walking or driving down a one-way street. You can see again in the screen shot there is the digital compass, that as the consumer is walking down the street and turns the corner, the phone actually turns with it and the map re-renders itself again.

On a final note, Brew and Qualcomm are working hard. We are dedicated to supporting standards and major bodies who direct policy for applications, for wireless platforms, and we are actively involved in those.

Then, when we talk about technology standards, Brew incorporates and supports the current technologies and we are building the future technologies into Brew. Some of the examples: Bluetooth, HTTP, SMS, mobile-originated SMS technology. So we are working hard to embrace all the technologies that are available in the marketplace.

To wrap up, this is the Brew developer or the Brew

public website. Everyone has access to this website. For the developers, you can download the developer software kit for free and you can participate in a message forum that shares information, you have moderators there from Qualcomm to help people with problems they are having with Brew applications.

Thank you for your time. I will be here for the panel and around after if you have any further questions. (Applause).

MR JOHN URE: Thank you very much, Chris. I apologise for the unexpected problems. Under the circumstances, what I am going to propose is that we will take a half-hour coffee break now. In the meantime, the Sheraton Hotel -- maybe this is a coffee break, I am not sure if it is coffee coming down -- and then in half an hour we will re-convene and Ferrie and the panel will continue, and then we will continue straight through to the end of the programme. So a half-hour coffee break. There is a towel outside if anybody got a bit of coffee or water, whatever it is.

(3.43 pm)

(A short break)

(4.13 pm)

MR ALEX YOUNG: Welcome back, everybody.

I will just introduce Mr Ferrie Hu from the China Motion Group. He is the Chief Scientist and a member of the board of directors. Mr Hu is responsible for the group's network development, information technology planning and policy setting. He has also been the Executive Director, Deputy General Manager and Chief Engineer of the group. I would like you to welcome Mr Hu. (Applause).

MR FERRIE HU: [SLIDES] Thank you. Good afternoon, ladies and gentlemen. I also thank you, John, for giving me the opportunity to let me stay here, talking about marketing for IT and wireless applications. I would like to take about 15 minutes to let you understand as an MVNO what we are thinking about on wireless applications.

First, I will maybe take a little bit of time to talk about our bigger vision. For telecommunications, we have a very big picture, a vision for open network architecture. Open network architecture is not only for wireless applications, mobile applications. It is also for the fixed network, also for the home network. Around this architecture, a lot of different servers connect to a backbone, and we can join together. This is our vision.

Further down this picture, how to implement such open architecture is very difficult, so I need to take a little bit of time to review our history and some

organisations, the Government, what they are doing.

For the telecom guys, we are always thinking about the mobile phone, thinking about data network, thinking about the telephone, but actually around our life we may be involved with a lot of different components, such as the land lines, such as TV, such as utilities, So we may through the open architecture link together.

Open network architecture is just design for the carrier's basic network, The facilities and services for all users to access. They involve the open network architecture, not only for the telecom operators, telecom servers, such as mentioned here, PC and computer, totally different -- PC is personal computer, and computer is computer -- and consumer electronics, also some software and hardware, and our telecom operators, also the broadcasters and Internet servers and TV set-top box, other utilities and connect applications involve a lot.

So we foresee open network architecture, this is our dream, so actually there are three dimensions coming together. One is our telecom and mobile communication. The other is from the computer industries and consumer electronics; this is very important.

We can go down to see the Government and Internet, industry, how to create regulations so our different industries can join together.

This is very old history from the United States. Even at that time, they did not have the Internet, they did not have the backbone idea, they already set up the open network concept. Also, at that time, they had on hand only some components such as the network connection, some standard interface, such as equal access something; some basic functions, and at that time they were already thinking about the open network architecture, so they were pioneers.

Mobile people, the GSM Association, they also put all operators, all manufacturers, together to think about open mobile architecture enabled. This morning, a lot of speakers have been talking about some standard, some applications, based on open network architecture.

In Hong Kong, the Government already has a good picture for Digital 21. Going down to our wireless services environment, also I can say Hong Kong is a pioneer. We issue the 3G licence based on creating more competition for the content and server provider, and also allow the small and medium size service providers and content providers to join in the market. These two points are very, very important. So the regulations makes the network operator open the network for the simple retailer, also MVNOs.

I am one of the MVNO operators, as I stand here, so I can say I will enjoy the MVNO environment in Hong Kong. Also, I can say I understand how to set up the fully MVNO infrastructure.

The other point, Government makes network operators open the network, at least 30 per cent. Also, we have some arrangement with network operators; we have reached some basic agreement.

Actually, on the Internet, a few minutes before, some country was mentioned, the name National Internet Infrastructure, NII -- More countries also around this vision to proceed the Internet backbone, so they have already set up some basic architecture for the data network, so we can see today the Internet has connected to the whole world, more applications over the Internet, so this is a very important regulation.

For consumer electronics, maybe not many people understand, actually consumer electronics still ...(inaudible)... because computer is popular. Hard disk, some storage is very, very good. One of the standards, called HAVI, that is home audio video inter-operability architecture standard, the standard has a lot of components for the application, also based on IEEE 1394, and also has very clear schemes for different consumer electronic devices.

Also, we are looking to Microsoft. Everybody knows UPNP, universal plug and play -- also set up the environment to connect consumer equipment. This is not only for the PC; it includes printers, some gateways and some consumer electronics.

I just need to take a little bit of time to let everybody agree this concept -- open network is very important. This reason is not only for our telecom and mobile industry; it also comes from the computer industry and consumer electronics.

We turn to our point, how to foresee the marketing and technology. I would like to share some points with you. As an MVNO, I need to think about PDA. The PDA has a very good programming environment. Also we foresee other protocols, also we are thinking about how to make the programming in the handsets, also thinking about the intelligent network and other building platforms. Also we are thinking about some tools such as Parlay. Also you need to understand the wireless Internet, everything.

Today, I would like to share two points with you. One is WiFi's Tango with 3G. I think WiFi and Tango is very important technology, but by using Tango, that means the two guys just Tango together. So actually this point is not my creation; I have read from articles

from Australia, so I just copied something to share with you. The next is also interesting, between the TV and the personal computer -- they Tango.

Actually, some questions may be difficult to answer by the 3G operator and the WiFi operator. Everybody knows 3G is next-generation mobile service, but WiFi is coming, WiFi is successful. So these two questions are difficult to answer, right? But for our telco point of view, 3G is a standard. WiFi also is a standard, a wireless standard. So the problem is the application, what kind of application we need.

For the 3G operator, they need to pay a lot of money to get the spectrum or get the licence, but the WiFi operation in 2.4 gigahertz, it is only a license, get the open license. Actually, the 3G is for greater range of movement application but WiFi is for stand-alone. If you are only in this conference hall, also you can make a WiFi connection so easily.

WiFi can provide very high-speed Internet access, but 3G can give you the connection, we have a vision of office anywhere, anytime, everywhere, always on -- 3G can do that. But 3G, the speed limit is only 2 megabits per second, but WiFi in the beginning is up to 11 megabits per second, bigger.

This is some terms just from an article from Australia, but sometimes it is very important we can think about this. Actually, no-one is winning the other one, because they have different market segments, different applications.

For the TV and personal computer, they are also so funny. Today a PC, a personal computer, becomes a common device in our homes. The PC is not only word processing or spreadsheets or desktop publishing; The PC can connect around the world through the ethernet. PC may become a digital hub, as a home "master box". So the master box can connect to audiovisual media, such as CD and DVD players, and other electronic controls, and air-conditioning, fire alarms, something like that, et cetera.

So in the consumer electronic industry they have a new slogan, "digital networking for life", from the CES. That means they already have the infrastructure to link to the home equipment, so the wireless connection and networking also can be used in the home network in the future.

Also, we can see that also Bill Gates is not only focused on the personal computer, but also focused on home electronics and other machines.

In some Silicon Valley companies, some new companies, such as pay-TV, such as Microsoft Web TV and

other companies also have some products joining the game. So the set-top box also becomes a home media server. They can connect with all electronic devices and cables for the TV, et cetera.

Everybody can see the Microsoft X Box, the games machine, as a digital hub, which is not only the game; they need to go through the Internet to connect everywhere. You also can download DVD movies and CD music from the Microsoft website. XP, also the same. Apple, everybody can see the i-ports, this is a very good music player. Maybe next time they will create a new product called IWAP, a mobile computer, or i-camera, which becomes a camcorder. This is existing equipment, exports. Sony, web-TV, pay-TV, and then ... (inaudible) ... i-port and Microsoft RCA, web-TV, like this. So all equipment, they have infrastructure linked together, also they can base on IEEE 1394, also they can through IEEE 802.11 link together. As an MVNO, we not only focus on mobile, we also focus on home electronics and fixed network things.

Even the TV box and the PC box, we cannot foresee which one is -- we consider they will coexist. We just think about these two industries will join together and understand customer needs and provide the product.

The last slide is back to the first one, so everybody maybe has a picture of we are opening the network, this architecture, so we have a lot of things we need to do.

Thank you. (Applause).

MR ALEX YOUNG: Thank you very much, Ferrie. To complete this session we have a panel discussion, and I will pass the controls -- Craig Ehrlich, please come up and join our panel. I will hand over to Duncan now.

MR DUNCAN CLARK: Thanks, Alex. My name is Duncan Clark, and I am Managing Director of BDA China, based in Beijing. I will be moderating the panel, which is listed in your programme, but first we would actually like to invite Craig to kick off and join the panel. Craig Erlich, as many of you know, is representing now here the GSM Association as Deputy Chairman.

MR CRAIG EHRLICH: I wanted to say a few things. John gave me the opportunity, fresh back from London over the last week, with the new role that I have -- most of you know I have a little bit of a unique opportunity to speak because, for the past five and a half years, at least up until earlier this year, I was the CEO of one of the mobile operators here in Hong Kong, and now I have the opportunity to be the Chairman of what is going to be -- and I will talk about it in a moment -- I think a very unique trade organisation in the world.

Many of you have heard of the GSM Association. The early history is that it was started by the Europeans; it was primarily to put together a standard for second-generation technology in the wireless business. Today, we have 178 countries in the world, and by the end of next year we will likely have about 1 billion subscribers who are using GSM family technology, and that may be 2.5G, that may be Edge, that may be WCDMA.

So it is a product and an organisation that really is unprecedented, because it has so much impact on the world, certainly as a consumer product.

Now, I want to tell you just a few secrets, so I do not want you to tell anybody what I am about to tell you, so you just have to keep this between us. You laugh. You will not be shocked to hear me say the following: our industry was not ready for the mobile data business. Certainly people now know that. There was very little evidence, internally or externally a few years ago, that that was true, but it is very clear now.

What was the reason why that became clear to all of us, or the analysts? It became clear when we had a stock meltdown, because during the stock up-tick there was nothing we could do that was wrong -- everything was right, because our stock prices went up -- so we as CEOs thought we were so cool, we could create our own applications, we could create our own services.

The truth was, for those of who are doing it, even if we were successful in a place like Hong Kong, we would probably only be successful on our own network, at best, because we could not work on somebody else's network within Hong Kong and we could not go beyond Hong Kong. But these were all disguised, in a sense, because we were all so full of ourselves as the stock market went up.

Then the meltdown came. Then it was clear that WAP was not going to work because there were 900 different versions of it; there was no specific standard of WAP. We have had delays in 2.5G, thank goodness that seems to be over with; we are really humming along now throughout the world with 2.5G. MMS, a little bit slower than we thought, but I think we will get over that certainly by the first half of next year, and we do expect to have significant revenues globally for that new service.

Then of course 3G. 3G, as I call it of course, in the GSM family, is WCDMA. There are even analysts today who still write documents that say, "If it ever happens". Come on, guys -- I think there are only one or two analysts who are my friends around here, but 3G WCDMA is going to happen.

I remember 12 years ago, when I was the Operations

Director of Hutchison Telecom and we started a company in the UK, called Microtel, or we bought this company. Later, we named it Orange in the UK. You know the story of that. But 12 years ago people told us PCS will not work, it will not hand off. PCS was just GSM 1800. It was probably too early, that is why in 1991, when we bought the company, Hans Snook later on introduced it in 1994; he was smart, the technology became robust, it was working, but back in 1991 everybody said it would not work.

We are a little bit in that era of WCDMA where people are saying it will not work. Trust me, in another 12 months that is history, the analysts will not say it and you will not say it. But we have to be aware this is a perception issue, this is an issue for our industry, and ultimately I am going to tie this in to those of you who are developers and content people, so there is a method to my madness.

Six months ago, when I decided to take this honorary position -- I do not get paid for this, I have other jobs -- to become Deputy Chairman, I decided to accept it under one premise, that I could change this organisation from what it had been. Historically, it had been very effective in creating the world's largest mobile group, GSM, but over the last few years had really lost its way, it really was not having an impact. As I talked earlier about the problems with our industry, we as operators were not addressing them. How could we get our stock prices up, how could we be much more commercial and much more strategic?

So, when I took this honorary post, I said I would take it if I could change the organisation. I am pleased to say that about four weeks ago we dramatically restructured the organisation and, as of January 1st, but already informally, we have a board of directors that now consists of the 12 largest operators in of the world, all of them -- you know, China Mobile, DoCoMo, Telefonica, Orange, T-Mobile, SingTel, all those kinds of good companies -- they are now part of this.

But, by the way, it is not just their company, it is the CEOs of those companies who are now involved on my board that I am chairing, discussing unprecedented issues, working together. This is an opportunity that we have never had before. So I think over the next 12 months the vendors, the developers, as well as our colleagues, who are other operators who are not directly involved, are looking for us to take a leadership role. I am hopeful we will take advantage of this opportunity.

Now, you have to dismiss the following -- well, MH in particular, because MH has been the regulator who

I have been dealing with for many, many years. I have been here 15 years in Hong Kong, worked for Hutchison for many years, started some companies, started SUNDAY, so I have a little bit of concern in making the following comments, but they are sincere comments.

Hong Kong people know what the problems are with our industry. You guys know what the problems are. What we are trying to figure out is what are the solutions, and this is a very, very difficult situation, because quite frankly, while we may have been leaders in the late 1980s and the early 1990s, we really are not leaders anymore, unfortunately. I am not going to back to why we missed opportunities, we can do that off-line, but we did miss some opportunities as an industry and as a government, and we now have to be realistic about where we are. We are 7.2 million people. We are on the doorstep of the world's largest market in the world for our business.

There is a tie-in, obviously. We must be realistic, as Hong Kong people, about what we can do. Do we have any natural advantages? Can Hong Kong, being so small, have a major impact on the global market? Some of the speakers have presented this point. Some have been a little bit more optimistic, some have been a little bit pessimistic, and I would say probably realistic about our role.

I am going to come back to some specific solutions, because I know that is what you want to hear, but it is concerning to me as a Hong Kong resident, taxpayer, home owner and all these things, how do we get our unemployment down and all these other things, but realistically, first and foremost, as a taxpayer, the question is, 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?

I am going to let you think about that, because mostly you are taxpayers here in Hong Kong and you are interested in the industry, so you have a bit of conflict as to how you are going to see all of this.

Two years ago I spoke before an organisation, some of you may have heard of it, called I and I. Two years ago they drew a lot of people, they had 250 people when I spoke, and a lot of journalists coined my speech as "3G as a scam", it got a lot of publicity and I got a lot of pressure on that. But they took it out of context; 3G is not a scam. I was trying to make some points about the vendors and the bankers and some of the regulators, particularly in Europe, not in Hong Kong, who were driving us faster and farther than we wanted to be.

But my most important point in that speech was -- I was sitting before mostly developers, and I said, "I have good and bad news for you guys. The bad news is that most of you will not be here in two years." I hated to say that. It ended up being true. Two years ago, if you look at today, if you look at some of the people up here, a few of them were in that speech, but very few.

What has happened is, we were not ready as an industry. I am not talking about Hong Kong, I am saying globally we were not ready. How do we change that? Do you believe this industry is global? How many people believe this is a global industry? Basically -- anybody disagree with that? Is it small pieces? No. I think we have a consensus that this is a global industry. It is so massive, with our group at GSM having got close to a billion, the CDMA people having, I do not follow their numbers, another 100 or 200 million. It is a very, very big industry.

How do we solve the problems that a lot of the speakers have already outlined? How are we going to do that? How do we provide opportunities to developers if we are global?

My solutions -- which are not going to be specific, obviously, they are going to be quite general -- I think you are talking about global platforms. You are talking about the fact that we need to have terminals, we need to have infrastructure, we need to have all these underlying platforms standardised and inter-operable.

Without that, and I think the Qualcomm gentleman was saying basically the same thing; we are in complete agreement with that, because if we do that, as an industry, it is going to make your jobs, your opportunities, so much greater. 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. You are going to be then competing, or having the opportunity to build a much stronger company, which means that investors are going to want to rush to you.

A couple of solutions on how we do it, one focused on the Hong Kong Government, and I am not going to say OFTA specifically, because I think it is better to focus on the Hong Kong Government; the Government will decide in what department, at what level, this is done. I actually think you should put pressure on the operators; you as policy-makers and you as the regulator ought to put pressure on us.

I can tell you, as the Chairman of the board, I am

talking to the Oranges, the T-Mobiles and the DoCoMos and saying, if we do not work together, if we do not solve these problems quickly, we are not going to get our stock valuations up. Basically, I am a commercial guy, that is where I come from -- how do I get the stock valuations of all these companies up? I am more of a facilitator as a chairperson; I do not really have a personal agenda, other than I want to make sure that we all make more money.

All of that I think is good for you, because if we get the operators working together we are going to make a massive impact on this industry. We have let the vendors, to a great extent, do what they want to do. This is not to be critical of the Nokias and the Ericssons of the world at all. I am not saying that. They are in business to make money; they are going to go out there and put in their own platforms and their own standards and their own technology as fast as they can, and hope that it is adopted, but the truth of the matter is, because we have not had things talking to each other, truly it is the operators who have failed, and that is why I made the commitment to go in and change that organisation. That is why I have made the commitment that I am going to try to get these operators to work together, to make a massive difference by putting all these platforms together, and we have to do it immediately.

By the way, there is sentiment to do it. It is unprecedented to see the guys, these biggest companies in the world, sitting down and saying, "I will work with you and I will make sure that our Java is the same Java that you have." DoCoMo just last week when I was there said, "You know, the Vodafone Java is a little different, could you talk to them for me, go over to see Vodafone", and all of a sudden they are talking. They just never have had the opportunity, nor have they had the incentive, because of their stock prices. So we will see.

I think the last thing I wanted to say is, it is not just the Governments that can do this. I think you as not the consumers, but you as either the developers or the application people, you ought to be putting pressure -- whether it is the individual operators in Hong Kong, whether you know the China Mobiles, the Unicoms, the DoCoMos, the Taiwan Cellulares -- you ought to be putting pressure on them, because quite frankly you cannot do your business unless we operators get these common platforms in place.

So I am actually enlisting all of you, whether it is the Governments -- and if you are talking to the EC, if

you are talking to different Governments in Asia, I say collectively get together, put the pressure on operators. It may be a reverse psychology, probably no operators would want me to say this, but this is going to be all part of this putting pressure on us to deliver. So you guys can do the same. In your very own small way, 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.

Guys like Hutchison are going to be on this board, even though they are not one of the 12 biggest companies in the world, but we are going to have them on the board because they are so important to the future of 3G. CSL is Telstra. These are big companies, they have relationships and they can have an impact.

I will end there. I hope I gave you some thoughts. It is a little contrary to what you have heard. It is more global. Please do not interpret in any way that I am negative on Hong Kong, this is my home, but I think realistically we have to have expectations that make sense, for us as business people as well as consumers here in Hong Kong.

Thanks. (Applause).

MR DUNCAN CLARK: Thank you. So 3G is not a scam, everybody write that down, and it never was.

One issue in terms of the future of 3G -- obviously I think we are transcending Hong Kong, though I will talk a little bit about that in a minute. I will ask Colin McCallum on my right, from HSBC, about his views on Hong Kong's role, and perhaps with respect to this issue.

Another related issue is on 3G, and I think it was very useful to hear Ferrie raise the wireless LAN point, and we heard this morning, does wireless LAN have some of the attributes that Craig described earlier with PCS and so on? Should we have greater representation on this panel? We have Qualcomm, we have GSM; we do not have DoCoMo and TD-SCDMA. If we had them and we talk about wireless LAN, I think we are covering all the key issues here, and these are global issues, as Craig says.

First, to address the question of Hong Kong, I would like to turn it over first to Colin to express some views.

MR COLIN McCALLUM: Thanks, Duncan. It was interesting hearing Craig talking from a global and also a local Hong Kong perspective, because I think that is exactly the right way to look at things, and if you look at the way the day has progressed, it has actually broadly split between those two contributors, or two sets of contributors.

My feeling is, on first of all the sort of infrastructure side, it has been well recognised today there is a chicken and egg situation. I do not think the Hong Kong Government can address that. I think it is up to the level of the kind of global GSM organisations, or indeed the Nokias, the Ciscos and the Qualcomms, and so on, to address that, and it is absolutely not the Hong Kong Government's job to actually subsidise or try to solve that themselves.

On the content side, again I do not think it should be the Government's job to directly drive that process. My feeling is that the Government should be there to create conditions such that content developers can thrive. I think the content developers in Hong Kong have to be thinking globally, because content of course is a global industry, it is about getting as much scale as possible, and really what is missing is a business case. The business case has to be to look for scale.

I thought that is why Julie's speech from IIL was actually a very important one, because it showed the routes that a Hong Kong company has to take: look at the biggest market in the world just up north, or indeed be talking to Chris on the Qualcomm side and selling your content through to the US, Korea or Japan or wherever that might be. I actually think that is the solution.

In other words, Hong Kong should adopt the global standards as quickly as they can, but should not try to redevelop them, and the content providers should be looking with a global outlook, or indeed taking global content and localising it for the Hong Kong market. Those are the two business cases that make sense, and the only business cases that make sense, I would have thought, in Hong Kong.

MR DUNCAN CLARK: We heard earlier about the US\$300 billion that China has standing by to help Hong Kong, the "Mei Wen Ti" kind of approach. Zhu Rongji also yesterday said "Mei Dao Ti" , we have not hit the bottom yet, so I think there is a caution there.

Who on the panel -- we have heard some people talking about subsidies and so on -- who wants to stand up for subsidies? Who would like a handout? Craig, you did actually say you were working non-profit; that is true, he needs help.

MR CRAIG EHRLICH: Take it out of my tax bill.

MR DUNCAN CLARK: That is another issue. Clearly, the idea of subsidy, in terms of the short-term attraction of creating jobs and so on, obviously there is a terrible problem with unemployment and so on, but the question being efficiency.

Julie, actually your experience as a Hong Kong-based developer a couple of years ago was very much focused on the Hong Kong market, and then you started to spill into Taiwan and the mainland. When did you actually reach that realisation; what was the turning point for you, Julie?

MS JULIE CHENG: Actually, when we first started in the industry, from day one we already knew that we had to export our applications, because we knew that we could not survive on 5 million users. We were looking at Japan, looking at the case of Japan -- that one of the reasons, they have a very, very big market. We are not exporting our applications there, so when we think of our own expertise, like China, we have similar language, and especially for us right now we are looking at Guangdong, because very similar culture, the same dialect and the same media that we are watching, TVB and ATV, et cetera. That is another way also that we try to export Hong Kong media, because Hong Kong media is proven to be successful in the region, not only in China but the Asia-Pacific as well.

MR DUNCAN CLARK: That raises a question, in terms of independent stand-alone mobile content developers, not specific to Hong Kong but one of the issues we see, say, in markets like China is that increasingly the portals, for example, which by the way hit their 52-week highs last week -- in fact, I think yesterday NetEase was worth more than United Airlines as a company, which is surprising. That is more of a reflection on United Airlines, but it was actually the fastest growing stock on the NASDAQ last year, or this year to date.

But the question is, a lot of the money that the portals are making in China relating to SMS is actually payment, micropayments, simply paying for things like dating, we heard about that, and I think obviously that is a killer application for this market, as any market, but the ability to pay, even unrelated to the mobile phone -- it is actually, for example, you are on the web and you are simply needing to charge something and using SMS.

So mobile operators actually have a tremendous opportunity to leverage the SIM card, and in China the removable UIM card on the Qualcomm side, rather than necessarily thinking always of content as a stand-alone -- meanwhile, the stand-alone content companies I think are squeezed now. We talked a little bit about different regional models, but certainly Korea has a much more hands-on role, DoCoMo has obviously a very hands-on role with content, and China Mobile is showing signs of moving too, and I think John mentions

this in the paper here, to actually take more of a cut and actually take more of a direct role. We are also starting to see companies like Disney very active, in Taiwan and Japan and so on, looking regionally as well.

So the question is not only should we fund individual companies, through subsidy or otherwise, but what is their viable future as a stand-alone entity and really are they selling skills and ideas to the operators which -- do you feel you will have to actually partner closer with operators or actually become part of operators at some point? You talked about interfacing more effectively with the operators, but do they actually have content people that you can deal with now? Is that something you see in Hong Kong?

MS JULIE CHENG: That could be possible, but actually we do see some similar cases in Hong Kong, where the operators bring some content providers to China, to Taiwan and other places.

For us, we have not tried this approach. Our company, we try to be more aggressive, that we do not want any red tape, we just go on our own and do not talk with others, but we do see other successful cases and we would be interested to explore that if there would be a good case that could work efficiently and bring the applications as well, through the carriers' networks, especially these days that there are so many carrier networks, like Telstra, SingTel, these groups.

MR DUNCAN CLARK: Craig, I remember, a couple of years ago at SUNDAY, the very inclusive attitude that you had towards different content developers, but that has not been shared in the past by all of the operators in Hong Kong. Do you see a shift towards more, for example, not demanding exclusivity of small content providers on applications and things like that; do you think we have moved beyond that in this market?

MR CRAIG EHRLICH: I think we moved beyond that a long time ago. That is what I was referring to. In fact, I saw some of the services that some of the companies are doing, and I whispered to an ex-colleague of mine that SUNDAY did that in 1997 with location-based services where you get text and all that.

I was not being critical of the company that was showing it. Actually, I am glad that maybe the time has arrived and we were much too early, but my earlier point was that if you do not have these common platforms, even if SUNDAY had done a good job or CSL does a good job, it does not go beyond that. For these content people and developers, they need scale desperately. If they do not get scale, they cannot make it.

So whether again it is a CDMA or it is a GSM, we

need to provide them common platforms that make it easy, and if we do not do that, then we are kind of shooting ourselves in the foot, and they cannot grow.

MR DUNCAN CLARK: A quick question from Colin to you.

MR COLIN McCULLAM: Just on that point about common platforms, obviously you are now pushing very hard for a change in operator mindset for this to happen, and you have now come to the realisation that it has to happen or the industry will not progress. But is that necessarily the right way to go, I mean given that GSM really has in some respects lagged CDMA development?

I think a lot of that has been to do with the whole consensus way that GSM has been developed: you have to discuss it with everyone Europe, the regulators there, whereas a company like Qualcomm has just moved ahead within its own environment much, much faster.

So should the regulators be allowing more closed portal activity, or indeed, if you like, a Microsoft situation arising initially, in order to get the industry going, rather than relying on a consensus of far, far too many interest groups?

MR CRAIG EHRLICH: I do not want to comment on Qualcomm, other than to say they are highly successful, they are very good at what they do, they are extremely good at what they do. I wish I was in that position, because I have the task of trying to rally 535 operators in 178 countries and get them to go forward, which I think is your point.

Let me respond to it very specifically. My whole issue, when I took this honorary position, was to say we cannot continue to fragment. That has been the problem with the GSM companies in particular, and I think there is -- no, I know there is -- an acceptance of that by the 12 biggest companies in the world. Nine more will join the board in January, we hope a few more in Asia, and I think there will be. They are making the resource commitment and the intellectual commitment to sit on a board, and these are the CEOs of their companies.

I think -- I do not want to oversell this, because I cannot prove it yet to you, but I do want to say that in 12 months from now I think we can prove that the GSM industry has moved light years ahead of where it was just 12 months ago.

MR DUNCAN CLARK: Chris, your name was mentioned.

MR CHRIS WYLIE: I think both of the comments are right here. I think Craig is right in saying we need to see the development of a global platform here. There has been a lot of criticism over the last few years of what Microsoft did in the PC industry, but the fact remains that the commonality of the Microsoft Windows platform

provided for a rich, stable environment for people to develop content.

The development of content, as Craig pointed out, is very important for the growth of the industry, because without the richness of the content, that does not bring the mobile consumer to pay for those value-added services that bring additional revenues and higher stock valuations to individual carriers.

Some of the places where Qualcomm and CDMA in particular have seen success, they have been those walled garden environments, they have been those environments that create a stable platform for developers to bring content to. So I think it is important to say that Qualcomm supports a global platform.

It was just two weeks ago, or last week, that Qualcomm announced we have developed a chip that overlays on all our interfaces, that works on GSM networks, that works on CDMA networks, and I think the wireless industry as a whole, both the GSM entities and the CDMA entities, should push for that common platform. Maybe it is not a common technology platform, but it is a common development environment for the development community.

MR DUNCAN CLARK: We have talked a little bit about wireless LAN, but given the fact that, as you described, Microsoft is already there, and wireless LAN increasingly is -- for example, deployments in Japan using PHS and wireless LAN integrated handsets; we are seeing obviously deployments in China, China Mobile, NetCom, all rolling out; of course, Korea being blanketed with this, and you already have content, of course it is already there.

Is this the ultimate sort of asteroid coming in? Craig, perhaps -- you have made a vociferous defence of 3G, and so on -- what do you see as the impact of this Tango, as we heard it described very elegantly before, or do you see it as not relevant, given the deficiencies in wireless LAN at the moment?

MR CRAIG EHRLICH: Just a quick comment. I am not an expert on wireless LAN, but I hark back to an earlier industry -- I was very involved in the cable TV industry when they built something called SMATVs, and I equate that to the wireless LANs, because they work, they are wonderful, but they do not stand on their own, there is no business model by themselves. So will they be helpful to a number of the large companies who use them as another service? I think absolutely, but standing alone, no.

So I do not see them as a threat to the wireless --

MR DUNCAN CLARK: The ability to charge though, for wireless LAN, saying using the SIM card which is being evaluated through GPRS, WLAN such as China Mobile, isn't that something where, if you are offering 11 megabits connection, ultimately how fast can you be moving around to consume certain types of content? Don't you see that as potentially something to be looking at?

MR CRAIG EHRLICH: Sure, and that is why China Mobile is doing it. I believe ultimately those people who are outside the GSM operators who try to do this will maybe make some money in selling out, but they are not likely to have a business model that makes themselves some money long term.

MR DUNCAN CLARK: Go ahead.

MR CHRIS WYLIE: On that note, I would just like to comment, I think the market is starving for the functionality of what you are talking about, in terms of a wireless LAN. I do not know if it is going to be 802.11 technology or other technologies, but I think the market is starving for that, that functionality of being able to basically roam anywhere and have access to broadband services.

I think you will probably see that functionality migrate towards the carriers. You will not have these individual companies setting up networks in Starbucks locations. That role will become the role of the wireless carrier.

MR DUNCAN CLARK: I think we are actually moving forward now to the conclusion. I would like to invite -- John, would you like to ...

We have time for maybe one or two questions. We are running a bit over time.

MR JOHN URE: We are going to maybe take one or two questions, if there are any, to the panel, and then we are not going to have the feedback panel from the moderators. I will ask the moderators to give me feedback by e-mail. I will ask WK from the Hong Kong Chamber of Commerce if he has any views on what has been said, and then I will invite MH also to make some closing remarks before I close it down.

MR DUNCAN CLARK: First, any questions from the floor? Yes, sir?

PARTICIPANT: This is directed to Craig, to give him an opportunity so he will not be misquoted, and actually for everyone else.

MR CRAIG EHRLICH: Are you a journalist?

PARTICIPANT: Yes.

MR CRAIG EHRLICH: Oh, I love journalists.

PARTICIPANT: When you talked about the key performance indicators of success and what your vision is, the only thing you seemed to mention was raise the stock values

of the operators. That is ultimately what will happen.

What are the other performance indicators that denote success in your mission? In other words, stock values can go up irrespective of whether a company is profitable or not, as we have seen in the past.

MR CRAIG EHRLICH: As I pointed out earlier.

PARTICIPANT: Yes, and so the key thing is, how do we move to revenue, how do we move from revenue to profit, which obviously should equate, ultimately, if the market is rational, to higher stock prices?

MR CRAIG EHRLICH: Excellent question, and my comment is, because I was given very few minutes and I sped through, the risk is, by using the term "stock valuations", it did seem simplistic, exactly what you have pointed out is the underlying conditions that get your stock up, so you have hit exactly on it. Probably if I had talked longer I would have talked about revenue and profitability. I just went to the bottom line.

So the milestones in essence are how do we drive data revenues, how do we drive the higher margins that we are seeing on MMS, SMS, and all other data applications. It is clear that throughout the world the operators are getting higher margins in these data applications. So there is a huge amount of interest in getting more and more. That ultimately will drive the stock valuations up, hopefully.

MR DUNCAN CLARK: They have become higher, but we have not yet got to the expectations, perhaps, of what Japan had said in terms of the mid-20s and so on. Do you see hope, then, with your work, to translate that into 20-plus percentage of total revenue coming from data at any time?

MR CRAIG EHRLICH: I do not see my role as getting into that kind of thing. When I ran SUNDAY, I will give you whatever information that I thought, but as chairman of this thing, I try to stay in between all those statistics.

MR DUNCAN CLARK: One more question from the floor before we -- yes, sir?

PARTICIPANT: I want to get an opinion on what the panellists think about how Hong Kong telcos have made the transition from the somewhat predictable voice revenues to, I guess, some of the uncertain world of content and applications, and will customers be willing to pay for the 3G services? That is the million-dollar question.

MR DUNCAN CLARK: Or 100 billion dollar, depending on currency. Any answers to that, on Hong Kong?

MR COLIN McCULLAM: I guess the answer to the second question is: I think people will pay, if there are

applications available. That brings us back to this whole chicken and egg situation, which I guess is the reason we are here today. So when these applications do come -- and, as Duncan says, we are now seeing that in China already; on a very simple transmission mechanism, people are making money from content because there is enough scale to do it. So I think the answer to that is yes.

Regarding how the Hong Kong industry has dealt with this, I think the Hong Kong industry thus far has been held hostage by the global lack of standards, content and everything else, particularly the fact that Hong Kong is a GSM environment and not a CDMA environment, or indeed PHS or i-mode, and therefore that is the reason why I think they have struggled a bit.

But also you have to add in, of course, the difficulty in the voice market through basically over-competition and a certain amount of irrationality from the operators, who at the time were thinking that revenue equated to higher stock prices rather than profit equating to higher stock prices, but I am glad to see that Craig is now back on the right side of things.

MR DUNCAN CLARK: The old Hong Kong mobile consolidation question, yes. It is 1993 all over again.

I think, with that, we will now move on to our concluding session. Thank you very much to the panellist and the earlier speakers, and the audience for your attention. (Applause).

MR JOHN URE: WK?

MR WK CHAN: Thank you. WK Chan from the General Chamber of Commerce. In view of the time, I guess my best contribution would be to make my comments really very short.

From the user's point of view, I guess it has been very useful to have all these developments, but what really counts at the end of the day will be the actual substance that is coming out from the market. A lot of these things probably would not matter until we see the real thing. From that point of view, it would be great if what has been said works. For instance, it would be great if the efforts by the GSMA works.

But in order to drive that, one suggestion has been made in some quarters of providing some sort of a platform, not really a commercial platform but a platform for people, especially for the wonder case, for the SMEs, for the smaller guys, to try out some more innovation, to challenge, not necessarily a commercial platform but some sort of a public platform for people to try to develop more content and applications.

If that were to be established, then probably it

will have to draw on efforts of academics, trade associations. Let me first declare that the General Chamber of Commerce has no interest in that, but probably some sort of collaboration between academics and some appropriate bodies, GSMA maybe. But 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 money and some more resources. That is just a thought.

I guess we have to leave some time for MH to respond to that and for John to wrap up. Could I ask first if Mr Au would like to make a few remarks?

MR MH AU: Thank you. Because the representative from the Commerce, Industry and Technology Bureau is not here, so I will have to try my best, because I work for the telecommunications regulator, and telecommunications by definition just includes the conveyance, so the content is somewhat outside the responsibility of OFTA, but I will try my best.

First of all, I would like to congratulate Dr Ure and the Telecommunications InfoTech Forum for organising this very successful conference. This conference has certainly identified a number of problems, a number of issues, and through this conference I believe that the audience, particularly myself, have gained a better understanding of the issues in the industry, particularly for me, because my issues normally are concerned with conveyance and transmission, so through this conference I can get a better picture of what is happening on the content side, and certainly through this conference I have become aware of the very good work that has been done by SMEs on content.

Undoubtedly the TIF would collate -- I know that this lady is very busy transcribing all what has been said at this conference -- I am sure TIF will have to collate the views obtained from this conference and provide that as an input to the Government.

As John mentioned, there will be the IT Expo conference in March next year, and that will provide another opportunity for this sort of gathering to discuss the problems and possible solutions. But, before that, there is an Information Infrastructure Advisory Committee convened by the Bureau of Commerce, Industry and Technology, and also there are some working groups, under the auspices of the IIAC, and certainly those will be forums to further discuss the issues and perhaps, for those issues on which there are still divergent views, there needs to be further discussion and crystallisation of the views.

As I mentioned, there are a number of issues that

are clearly identified in this conference. For some of those issues, there seems to be a clear consensus, but for some there are still divergent views. For those issues which have a clear consensus, I would say that I think everyone, every speaker, will agree that the future growth of the mobile sector lies mainly in non-voice communications, data communications, and now, because we are just at the starting point of a long road to the next-generation communication services, this is just a beginning, so this is now the critical point.

So the industry must now take some important strategy decisions, and as corroborated by our representative from the International Telecommunications Union, certainly Hong Kong has a very good potential to be the leader in the next-generation communication services. So Hong Kong can be a centre for the content, not just for supply to Hong Kong but also to neighbouring territories, particularly to areas where Chinese is spoken.

Those are the points where I can perceive consensus. But for some issues I can see that there are still some divergent views, and that is on the question of a testbed or a platform for testing of content. It seems to me that, for example, speakers like CD Tam think there is no need, because they are already in existence. Some are existing platforms that content providers can make full use of. There is also a suggestion that you do not need actually a test network, you can do that by simulation. So the industry will need to do some more discussion on this point and put forward a proposal to the Government.

Another point that is not so clear is about the actual involvement of the Government, whether or not such a testbed, if required, should be funded by the Government or should be funded by venture capital or should be operated on a normal commercial basis. So that point may still need further discussion.

Coming back to my area, when I gave the first presentation I was given the title by John of "What are the ingredients for success for the mobile sector in Hong Kong?" After listening to the presentations of the different speakers, and panel discussions, I think I can perceive not too many changes required to my remarks made in the first presentation.

In my presentation I mentioned some of the work that OFTA is doing, and I did not hear any dissenting voices. In fact, I heard some support from Lara of ITU and also Ferrie Hu of China Motion. They are very supportive of the open network access requirements imposed by OFTA in the 3G licensing.

I still consider that the Government's role is mainly to provide an environment whereby the content providers and the application providers can reach the customers, and whereby the customers can reach the content and applications. This can be likened to a market or a shopping mall. The Government provides the market, provides the shopping mall, to provide the contact and interface between the shoppers and the shopkeepers. So when the market or the shopping mall is provided, then it is up to the shops, the restaurants, to think about the products and the services that they want to market to the customers.

I have heard a few remarks about whether or not the past policy, for example the regulation on mergers or on the consolidation of mobile industry, has actually resulted in lack of incentive. I think that was a remark from Bruce Hicks. He mentioned that the mobile industry in the past year was trying to survive and therefore they did not have the capital to invest on the research and development for further development of content or applications. Also, there were some remarks from I think someone from Goldman Sachs; he mentioned that Hong Kong cannot sustain six operators.

Let me make it clear that there is actually no policy that Hong Kong needs to have six mobile operators. In line with our market-driven approach, the number of operators in the market should be decided by the market, and therefore the mergers and acquisitions regulation before LegCo is to provide a clear framework whereby we can consider and take a decision on mergers and acquisitions. Such proposals will be purely assessed on the impact, based on the impact of the mergers or acquisitions on the effective competition in the market.

Actually this merger and acquisition regulation, if enacted, when enacted, will actually provide for a clear framework for analysis of such proposals.

I do not think the consolidation or lack of consolidation is attributable to any practice or policy of OFTA.

OFTA is basically a regulator, so our job is to provide a fair environment for the operation of the network operators, but in the past one or two years we have gone slightly beyond the role of a regulator, in some areas. In some important issues, some issues important in the community, we have gone beyond the role of a pure regulator, so in some issues we have played the role of a promoter or facilitator.

I have mentioned that in the area of making the consumers more aware of the potential of the mobile

services for non-voice communications, we will be collaborating with members of the industry to launch a series of initiatives to educate the public on the potential. So basically this is part of the work to provide a conducive environment for the mobile industry to develop.

We hope that this small contribution of OFTA would help the further development of the industry.

I think this is about all that I have jotted down. Thank you very much for your patience. (Applause).

MR WK CHAN: John, would you like to wrap this up, and perhaps tell us when you are going to do the next TIF?

MR JOHN URE: Thank you very much, WK. Thank you, MH, for those observations. There is no time to go into them, and I am sure we will be bringing them up at the seminar in the New Year that you mentioned.

Just briefly before I close, just a story of when I was coming down from Beijing last time by plane, there were a guy and a girl sitting right in front of me. He was obviously from the cellular industry, because he was talking to her through mobile phone, and he was asking her, would she like to play a game, and she was obviously not interested, she said "No, I want to sleep", and she was trying to sleep on the plane.

He said, "Go on, it is very easy; I ask you a question and if you cannot get the answer, you give me \$5. Then you ask me a question and if I cannot get your question, I give you \$5." She said she was not interested, again, she said she just wanted to sleep.

He was persistent, he was thinking, "She is just a woman, how could she possibly ask me something I would not know?". He said, "I tell you what, I give you a question, you pay me \$5; You give me a question and I cannot answer it, I give you \$500". She is thinking, "How can I get rid of this jerk? Well, he is not going to give up; "Okay, I will play your game".

So he starts and he says, "Tell me how much bandwidth in the UVH and VHF bands is given over to radio?" She opens her purse, she gives him \$5. "Okay, now it is your turn to ask me a question". She says, "What is the killer application for 3G?" He gets his notebook out and he goes through his database and phones back to his office. After about half an hour he has given up. "Here is your \$500. Okay, what is the killer application for 3G?" She opens her purse and she gives him \$5.

MR CRAIG EHRLICH: I am not going to steal that one. I will not repeat that one.

MR JOHN URE: Do not worry, I stole it from a lawyer.

I would like to firstly express thanks to all our

speakers, to all our presenters, to our sponsors, thank you very much indeed, and to our supporters, industry associations, who did a fantastic job getting out the information, and to all of you for turning up and for staying to the bitter end, despite the special effects laid on by the Sheraton Hotel. They are going to do it in colour next time, I am told, for Christmas.

Just a word -- I mentioned right at the beginning, we will be running a forum on 19th December in China, in Beijing. It will be a much smaller affair. If you are interested, contact me. We will probably put some information up on our website in the next few days.

This forum I think has been tremendously successful, because it has raised some really key issues. We were not here to answer them all, we were here to kind of raise issues which go into the debate that is going to go into the New Year, and hopefully we will come up with some results.

Finally, we have a cocktail. It is sponsored by KPMG. I am told by Anson that there is a lucky draw. The cocktail is on this floor, in the Tang Terrace which is just around the corner overlooking the atrium, so please enjoy yourselves. Thank you once again, all of you.

(5.30 pm)

(The forum concluded)