Telecoms InfoTechnology Forum

The Economics of Software: where does it go from here?

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Executive Summary

1. The convergence of telecom and IT has been happening since telecom turned digital and became increasingly a software driven industry. Both have become General Purpose Technologies (GPTs) meaning that they have not only both undergone revolutionary changes but they also have radical downstream effects. There is virtually no industry in modern society that does not rely heavily upon both and that has not in some ways been transformed by both. Yet, despite the convergence of these two sectors on the network side and on the services side, senior managers and professional staff in both sectors tend to remain in occupational silos. This is understandable in terms of the specific expertise required in different jobs, but a wider understanding and appreciation of how each affects the drivers of the other is really needed if service innovation by companies and the relevance of policies by governments and regulators are to keep pace. This is especially important for Hong Kong as more and more manufacturing and less skills tasks migrate to mainland China's lower cost base. What policies are open to government to encourage the development and growth of IT-based telecom services and IT services and applications accessed over broadband? How tradable are such services? Can Hong Kong develop itself as the management, customized, marketing and logistics base for IT products and services entering Mainland China or being outsourced to Mainland China? Can local Hong Kong companies take the initiative to give Hong Kong this advantage? Jobs, incomes and taxation revenues will depend upon the answers to these questions. These were the underlying questions of this **TIF sponsored by Microsoft.**

2. **Daniel McHugh, Senior Analyst, IDC Asia Pacific Consulting** started the afternoon with an overview of the growing role of IT in the economy, and therefore the importance of maintaining its pace of innovation and development. IT directly employs 9 million people in over 4,000 companies worldwide, and a further 21 million professionals in a range of other industries. The hardware sector contributes around $330 million to the global economy, packaged software a further $180 million and IT services another $420 million. Between 1999-2002 IT industry jobs increased 40 per cent, but software-related jobs increased nearly 80 per cent. IT is clear that software drives the industry, and IT services are the most important element. This is becoming clear as the business models change. All the large vendors are moving away from relying upon hardware sales and have moved into services, in some cases bundling hardware for free. [This is similar to the trend within telecom towards bundled voice services, the traditional source of revenue, as other services, such as fast Internet, cable TV, data applications, begin to drive the business.] Applications and applications management through systems integration has become the new paradigm. Software development is following this demand with self-describing and predictive software that offers extra manageability.

3. In this way software and the services constructed around the sale of software systems are raising the levels of productivity throughout the economy, and thereby helping to raise real incomes. Of course, from a social welfare perspective it all depends upon how those benefits are shared across the community. Workers with these new skills benefit, as do less skilled workers who have the opportunity to retrain and the community-as-a-whole benefits directly as falling costs are passed on in falling real prices, assuming a competitive marketplace. The community also benefits if rising productivity results in higher taxation revenues. One of the points Daniel stresses is that software piracy is, in this regard, especially damaging because taxation revenues are lost to the community, for example to fund retraining, and there is no growth in the local software industry, so no new jobs are created and no new tax revenues collected. He ends with an interesting comparison between the strategies emerging from China and India. India has a focus on IT services and exports, notably through outsourcing. China has a focus on domestic hardware and software, essentially for domestic deployment.

4. For simplicity and clarity Daniel refers to 'proprietary software' as any software that sells for a profit, whether it comes from an 'open source' background or not. Later, **David Chow, Chairman, Hong Kong Linux Industry Association** confirms that his members are there to make a profit, and that 'open source' does not imply non-commercial. The stress that Daniel has placed upon the shift towards IT services actually embraces many of the activities of the Linux Industry Association. In light of this Daniel stresses the importance IPRs as a means to protect the commercial viability of the industry. In response to a question from the floor, Daniel suggests in many countries writing customized software packages is one way to reduce the piracy problem, especially if the licence is designed to cover the entire enterprise, and that can also help to raise pubic awareness of the issues involved.

5. **Anmar Alani, Director, Developer and Platform Group, Microsoft**, very kindly stepped in at the last moment for **Peter Moore, General Manager, Public Sector, Microsoft** who due to illness was unable to make the journey from Singapore. Anmar was also suffering from a cold and TIF is grateful to him for giving his presentation. Answar begins by picking up a theme that Daniel identified, the trend among customers to demand more manageable software systems. This was a key point because this feedback from customers is an essential core of the 'eco-system' surrounding the software industry. The eco-system consists of four major pillars: (a) customers, (b) government, (c) intellectual property, and (d) the industry itself consisting of developers, vendors, distributors, service providers, and so on. The concept has always been essential to the IT sector, for example in the early days of Unix and the Internet and Linux they all relied upon an eco-system of partners, collaborators, customers and government to achieve a virtuous loop of feedback and improvement. The Microsoft model has been no different in this respect, it is built around partners. "It is always core in us that Microsoft was built on a partner model. It is very, very important. The only reason why we succeeded is not because of the product, it is because we have built 99 per cent of our model on a partner model. So our success was built on an ecosystem." [See also the quote from Bill Gates in the Briefing Paper[1].]

6. In Hong Kong, Microsoft has 2,800 partners, sellers, resellers, independent software vendors (ISVs), etc. Microsoft does share source codes on a restricted basis with partners, and with

[1] http://www.trp.hku.hk/tif/papers/2004/jun/briefing_040608.pdf

governments under 'government security programme'. But the four key commercial issues for customers are (a) security, (b) reliability, (c) interoperability [this also implies manageability] and (d) cost. At the heart of these concerns lie standards in two senses. Standards in the sense of security and reliability, in other words good standards, and standards in terms of interoperability which also reduces cost. Standards as 'good standards' are part of the value software developers sell, and 'open source' vendors may not guarantee these, especially the many varieties of 'free software' downloadable from the Web. Standards for interoperability are part of network economics, so XML, SOAP, HTML are all common standards to which vendors conform. How do these apply to Microsoft? Well, when a customer buys into the Microsoft eco-system they are buying into a portion of $6.8 billion of R&D, of constant improvement by Microsoft, and also into the feedback to Microsoft from other customers, from government, and from the industry. In response to a question Anmar agreed that flexible licensing models that distinguished between different categories of users is desirable.

Panel Discussion

7. **Stephen Mak, Deputy Director of Information Technology Services, ITSD** led off the panel discussion, chaired by **Simon Chan, Chairperson of the Hong Kong Telecommunication Users' Group (HKTUG).** Stephen directs our attention to Eric S Raymond's book *The Cathedral and the Bazaar* that introduces the distinction between developing software like the way a Cathedral is built, from blueprints and strictly engineered, and the approach of the bazaar, incremental, experimental, a bit chaotic and sometimes accidental.[2] Understanding the history and philosophical differences in approach is helpful the keep everything in perspective. However, from a user's point of view the issues are purely practical and as a major user the Hong Kong Government has adopted a position of promoting the use of the most suitable form of software for the circumstances, whether this is 'open source' or proprietary. Stephen stresses there is nothing mandatory in this policy. It would rather seem that departments have been given the green light to use open source when this is the most cost effective solution.

8. **Michael Mudd, Director of Public Policy, Asia Pacific, CompTIA HK Limited,** spoke next, explaining the Computer Technology Industry Association is a global trade association with around 5,100 corporate members across 89 countries including big names, but like in Hong Kong, 90 per cent of members are SME independent software vendors (ISVs). CompTIA promotes the IT sector but with neutrality towards hardware and software vendors, telecom and service providers. During discussion Michael points out that in many Asian countries, Vietnam being a case in point, piracy is absolutely rampant and the result is that developing a local software sector in these countries is being undermined. He also fully supports governments selectively funding IT projects, reminding us of the role of government and military spending in countries like the USA that led to many IT application spin-offs, including the Internet itself. In Hong Kong there is a debate ongoing about public funding for IT projects and Michael suggests a matching funds approach where contracts or tenders are involved.

9. **David Chow, Chairman, Hong Kong Linux Industry Association** prefers the term Linux over 'open source' to describe the work of members of his association because they add-value in terms of their own development and IT services. He argues that Anmar implicitly excludes the Linux community from the ecosystem ('Anmar didn't really say that but, in fact, there is a

[2] See http://eu.conecta.it/paper/Contents.html for an introduction.

kind of hidden phrase behind the presentation') because of the suggestion that 'open source' does not contribute to 'open standards', but he gives the example of email, SMTP 'which is really derived from open source software.' David's point is that 'open source' is not really in competition with proprietary software because all it means is that a user can write their own programmes to suit themselves. Unix started out like that but because there was no GPL as there is with Linux, people would write their own versions and sell them as proprietary packages. The HKLIA is not really interested in users who want to write their own, or want to use Web-based software for which there is no quality control. For enterprise users there are issues of quality and security and interoperability and these are what commercial software vendors offer, including those selling Linux-based products. For David the real issue is about whether the underlying operating system is open source for all developers to innovate.

10. **Sin Chung-kai, IT Functional Constituency Member, Legco** gave us two yes answers and one no. Is commercial software good? Yes. Can open source [David would say 'Linux'] compete with Microsoft? Yes. 'Can open source compete with pirated Microsoft? My answer is No.' Chung-kai points out that in Hong Kong's piracy laws are among the strongest in the world, and piracy has been made a criminal offence whereas in the USA it remains only a civil offence, but he thinks enforcement is the key issue and 'the government's role is to protect IPR.' During discussion Chung-kai answers a question about outsourcing, pointing out that Hong Kong can never compete with low cost Mainland China. But 'if outsourcing means getting projects from the US and Europe and then completing the projects in the Pearl River Delta, with Hong Kong as a prime contractor, that would be a good opportunity.'

11. **Gordon Milner, Senior Associate, Bird & Bird** admits to being a nerd [should that be geek?] as well as a lawyer specializing in IPRs, and to working on both sides of the street, for open source and Linux specialists as well as for proprietary software vendors. He makes the point that ecosystems are not monocultures. During the discussion on outsourcing he tells a story of a client who was very reluctant to outsource to China precisely because of IPR dangers. In this respect Hong Kong has a huge advantage as a place where the rule of a well defined law is applied without bias.

12. Several discussants from the floor were ISVs and concerned that open source and government promotion of it was undermining the market for local commercial software, and that even teachers in schools were being encouraged to write their own programmes for classes. Both Stephen Mak and Sin Chung kai responded. Stephen makes a very important point, that there are many business models that can be adopted by ISVs. For example, manufacturers of digital cameras do not charge separately for the software but receive their compensation through a bundled product. Other vendors make their money from the IT services they sell with the software. Different business models should be explored. Sin Chung-kai adds that the budget for IT in education has previously focused more on hardware and there is now an average of around 200 computers per school in Hong Kong. The emphasis should switch to software development, but it wasn't true that teachers were developing separate programmes for schools. Rather they were developing content to run with those programmes.

13. Bringing the forum to a close, Stephen Mak and Anmar Alani both stressed the good position Hong Kong was in to take advantage of developments in IT. Stephen points to the ID smart

cards and Octopus cards in Hong Kong as examples of Hong Kong really using IT well. Anmar adds that spoken and written English are big advantages for Hong Kong, together with sophisticated skill sets and strategically important industries like finance and banking, logistics, communications. ‘But in Hong Kong I do believe there is an opportunity to work in multiple countries around the world, absolutely. We talked about gaming before. Gaming is a huge industry. How many games in Asia are developed by Asians, outside Japan [and Korea]?’

14. Perhaps Bill Gates should be given the last word, with a vision that has certainty driven Microsoft: We haven’t seem anything yet. And just when in Hong Kong we were thinking we’d seen it all!

MR URE: Good afternoon, ladies and gentlemen. For those of you who don't know me, my name is John Ure. I'm the Director of the Telecoms Research Project at the University of Hong Kong. Welcome to the Telecom Infotechnology Forum. Traditionally, our themes have been directly on the telecoms side, so it's nice once in a while for us to look more on the IT side. Of course, these two sides are converging all the time. The telecom sector itself essentially became a software driven industry as soon as switching became digital and electronic. In the most recent phase, the telecoms industry is being driven by software on the content and the application side of the industry. Clearly the IT side and the telecom side have got a lot in common. Having said that, I am bound to point out that a number of the telecoms people who would regularly attend TIF are not necessarily here today and the reason given is that they're telecoms people; they're not IT people. That is kind of interesting because one of the things I often find in the industry is that there are silos between telecoms and IT and, of course, within the telecoms sector and probably within the IT sector, there are silos. One of the objectives of the forum is to help try and break down some of those silos because these developments are converging and those companies and individuals who are able to take advantage of that are the ones who are the most likely to forge ahead in the marketplace and with innovations. That is by way of introduction. We are very grateful to Microsoft for being the sponsor of today's TIF and I have to personally thank Mimi Ho for all the help and assistance that she has given me in bringing this event about. I also thank the Mandarin Hotel for their usual professional support and standard of support. One announcement before I introduce our first speaker. Unfortunately, Peter Moore, General Manager, Public Sector, Microsoft, who was to be here today, can't make it. He apparently has been feeling not very well and was not therefore able to travel. On the other hand, I'm delighted to say that Mr Anmar Alani, Director, Developer and Platform Group, Microsoft, has very kindly stepped in really very much at the last moment to fill Peter's shoes. We are very grateful for that. Thank you very much and we wish Peter a speedy recovery. Our first speaker in this session will be Daniel McHugh, Senior Analyst, IDC Asia Pacific Consulting. We are very delighted to invite Daniel to open the proceedings. IDC, of course, have a reputation for analysis of trends and are a close follower of trends within the industry. I know that they have done some very interesting work on this particular subject of total costs of ownership and total costs of acquisition. I am going to hand over immediately and ask Daniel to explain in more detail about that. After Daniel has spoken, he will be about 15 minutes, I will take one or two questions and then ask Anmar to come and give his presentation. That should still leave some time for questions for both Anmar and Daniel. Then we will have the break and then we will go to the panel. Without further ado, Daniel, the floor is yours.

MR McHUGH: Good afternoon and thank you very much for having me here today. Once again, thank you very much to the Telecoms Infotech Forum and also to Microsoft for having me along today. Basically, what I'm going to impart this afternoon is a little bit of context around the whole issue about expanding global economies and looking at the benefits that software give us. Then in a little bit more detail, how software relates to the whole economy, not only IT, but the whole economy as a large ecosystem, and work out exactly how much value that software brings to the marketplace. We will look firstly at a couple of key assumptions for today. First and foremost, one of the main things I would like everyone to start putting into a bit of context is the IT sector is an engine for global economic growth. That growth is fairly constant and has been increasing considerably in the last 10 or 15 years. Secondly, more and more so the software sector is fueling broader IT sector growth. What we are seeing and what I will go into in a little bit more detail later on is exactly how much the software sector is impacting IT as a whole through systems integration, IT services as a whole, telecommunications and some of the older more hardware-centric business models. Lastly, reducing piracy or increasing the amount of legitimate software, increasing the ecosystem of software as a whole, whether it is open source or proprietary, will create positive and tangible economic benefits. Today I'm not going to go into a lot of detail or get into a lot of opinion regarding what is open source and what is proprietary. For the sake of my comments today, I'm going to treat basically proprietary software as anything that gets sold for a profit. So if that is developed on an open source platform that is still sold, I'm treating that as some type of proprietary software. It has a proprietary IP value once it goes out the door. Moving along and looking at how the IT sector delivers key economic benefits. This is a fairly busy slide, but basically I want to run through in a little bit more detail exactly how much benefit the IT sector provides. Globally, if we look at this, we know that the IT sector directly employs about 9 million people in high wage, skilled jobs in more than 4,000 companies across the world. These are sort of the highways jobs, so we are really looking at those people who are looking at marketing, sales, development and the support of IT across its many sectors. The IT sector employs almost 21 million professionals in a range of industries. We are looking at a multitude, from consulting, all the way through to just some of the logistics involved in getting pieces of software from

one part of the world to another. The number of IT industry jobs grow by 40 per cent between 1996 and 2002, while software jobs grew by 76 per cent. This is one of those key areas where we start to see software being aggressive in growing its market and in driving a lot of the IT industry growth. The IT sector returns more than $700 billion a year in tax revenues to Governments in every country. I'll go on in a little bit more detail in terms of how that return and how that investment from various software components and how those various components of software investment, be it through software vendors or be it through the channel, increases government coffers and also increases a lot of benefits indirectly to governments around the world. Lastly, the IT sector contributes nearly $1 trillion a year to the global economy, including $330 billion from the hardware sector, $180 billion from packaged software and another $420 billion from the IT services sector. This is globally. We understand that the hardware market also does include telecommunications and the telecommunications spend compared to a lot of the packaged software and a lot of the IT services is still very, very large, just due to the nature of that business being very largely infrastructure driven, in terms of supporting a vast number of people. The key thing to take away here is that the major proponent of this growth is software. If we look at the software sector in a little bit more detail, what does the software sector provide the overall IT sector in terms of its growth? I have summarised a few points here—mainly for me. One of the key things that the software industry provides the overall IT industry is a multiplier effect. For every dollar in software that is spent, there are going to be additional dollars. We know that it is more than $1 for software services, it is normally in the range of $2 or $3. We know that for every dollar in software generated, be it packaged or customised, there is also additional services that get attached to that, be it systems integration or application integration within the IT sector. Also, we know that with the software sector, there is a fairly developed channel structure to be able to get software to market. In a lot of cases, software, when it becomes more complex and starts branching out into the more enterprise style, really it does demand a lot more attention in terms of getting that product into market and being able to get it to run correctly and efficiently. The software industry growth also drives local outlet growth and local IT services expansion. When we talk about the global IT economy and we talk about the global software economy, what we need to drill down in a lot more detail is to understand exactly that the software market, from a global point of view, creates jobs and creates a really rich ecosystem from a local level. You take a lot of multinationals and a lot of multinational software vendors and, in many cases, their products drive demand for additional components, be it for things like taxation regulation, which differs from country to country; be it language translation or be it some form of government legislation that drives the need for additional components. These additional components drive a lot of need for IT services players that sort of pop up to be able to support these additional software demands. We also see that the software industry has cross-industry benefits and they are both within the IT sector, as we have already stated—hardware, IT services and telecommunications—but we also note that it provides cross-industry benefits outside of IT. It creates high wage, high skilled jobs, contributes to government revenue and in terms of benefiting other industries, we like to talk about this in terms of increased efficiencies and lowering costs, which allow companies to either branch out, enter new marketplaces or become more efficient. One of these key areas which really brings this out into a lot more detail is the way in which many of the hardware companies, such as HP and Dell, as well as some of the major logistics firms, have used software to enable their growth within a completely different industry. We see that software is the place where things get done. Moving along to a little bit more information and some general statistics. This slide is for the AP market. We are looking at software and services versus hardware spend. We see that in terms of overall dollar spend—this is just hardware in terms of PCs and servers—we see that software and services is well and truly outstripping and growing the hardware market. What we see here is that the growth—and we will go into this in a little bit more detail in the next slide—from services is really driving that additional spend within software and services. We see a lessening of importance in terms of hardware as part of the overall business value when a lot of IT vendors are beginning to go to market. What we are seeing now is a lot more talk. We have seen in the press just recently what Scott McNealy from Sun Microsystems has come out with and we have new pricing models. The hardware will be free. A lot of this is driven by the need for vendors to really position products that address a business value and in a lot of cases, that business value comes from the applications serving a particular purpose. We see also that major vendors like IBM and HP are beginning to develop utility business models and these utility business models have hardware as a fairly commodity part of that overall business value and overall solution, but the main key drivers are the applications and the application management. Moving on to a little bit more detail within the software and IT systems sector in Asia Pacific, we can look at some of the overall growth. This slide is across 2001 to 2004. This period has been hit by a fair bit of turbulence and a fair amount of upheaval. We have had SARS, a number of economic crises throughout the region, but we can still see here that software and services, in terms of growth over this period of time, has well and truly outstripped hardware. We see that the benefits that software are providing are actually growing that services component. We see that the overall IT economy relies very, very heavily for its growth on software and services. Getting into a little bit more detail of what IDC sees happening going into the future in the next two or three years, what we see is a complexity crisis. This omes down to what benefits software is going to

continue to bring. IDC in the United States undertook a relatively large survey of a number of CEOs and CIOs across the world and asked the question: what are the major software initiatives going forward over the next two or three years? What we found was for the majority of those new investments, it was all about manageability. It was all about some form of manageability—whether it was infrastructure manageability, looking at licence manageability or looking at application management. One of the key things to bring out here is that, going forward, we see a shift in software, going from being just systems, languages, fairly basic, fairly stand alone, and getting into integrated systems and getting into some of the key applications which we see now, which are more on the client side and getting further, as we get into 2005/2006, into areas of self-describing, predictive software that really brings a lot of extra manageability. Manageability comes back to one of my previous comments: software providing and software being needed to be supported by a lot of IT services, hence growing the market even further. We are getting into a lot a these more complex systems and we begin to have a real need for additional parts of the IT economy to join in and help manage these applications and manage these information needs. This slide is going into a little bit of a tangent here on how economies benefit from a robust, legitimate software industry. The first point is that entrepreneurs benefit from new opportunities for new innovations. What we see is when we have new software applications coming out, we automatically start seeing a rise in the amount of businesses that spring up to support that software, be it within the channel to actually get that software to market, new marketplaces, or building on new technologies to take advantage of what we see. Workers benefit from more jobs that pay higher wages. We see a shift in a lot of the developing nations at the moment, a shift between just sort of usual non-knowledge based roles, getting into a lot of service based roles, a lot of service based jobs and so knowledge based jobs. We see a lot of initiatives from some of the local governments within the Asia Pacific Region to increase the amount of knowledge based jobs and to increase the amount of service based jobs within those companies. This is a direct component of the software industry increasing that benefit within the marketplace. We see the consumers benefit more and more from additional choices and from more competition. This is one of the key elements of having a very robust, very diverse local and multinational software industry. We see that the more competitors you have, by and far, the cheaper prices will get and the more opportunities buyers will have to be able to pick and choose what parts of those solutions they want to buy. We see the governments benefit from it, from new revenues for needed services. New products equal new jobs, equal increases in channel, like I have already said, but the underlying part of that is you have additional taxes and additional investment into areas like education, to be able to continue the growth within a particular part of an industry. We see also that economies benefit from a greater productivity, leading to a higher standard of living. This was one of the overall findings from one of our studies that I'm about to go into. In terms of having a robust software industry in place, that vastly improves economies in general. You see businesses and governments and workers will invest in IT because they can see the underlying benefits of efficiency, they see that they can become more competitive if they are faster to market, more accurate or have a better pricing structure. We see that knowledge is passed around in different ways. When technology is introduced into areas such as education, we see that there are new communities springing up, we see that there are new ways of learning and all of those things that happen within this context leads to a vastly increased standard of living. I would like to go into a little bit more detail about a study which IDC undertook late last year in terms of understanding what the key tangible benefits of a stronger software economy are. First, a little bit of detail on this particular study. We looked at a large number of inputs, from head count, looking at how an increase in the software industry would impact head count in hardware, the software industry itself, services, channels and ID professionals. We looked at how that increase in the overall amount of IT infrastructure impacted revenues and also head count. We looked also at taxation revenue, we looked at how much value added tax was added to new software areas, we looked at how much of this tax would be created by individual employees entering into the marketplace and entering into the workforce because of the jobs created through the IT market. We also looked at companies themselves, we looked at how many new companies would spring up and we looked at what impact a more robust software industry would have on the overall revenues that a lot of these new companies would start generating. This is a little bit more detail on how exactly we did this. The main point I would like to take away here is that we did not make any judgments about how a stronger local software industry might increase exports. This is one of the more interesting parts of this discussion. When we talk about a robust software market and we talk about the differences between various types of software, be it imported into a country or having a very robust local domestic software market. I would like two countries as an example here: China and India. We see fairly similar countries in terms of overall population, sort of largely either manufacturing or agricultural based, but both countries have a very aggressive stance on technology and taking two very different stances to the way in which technology is being invested. In one case, we have India which has taken very much a services based path. These services are based largely upon leveraging imported software, taking software that has been developed in the United States and Europe and being able to create services at quite a cheap cost and being able to re-export those services internationally. We see that as being quite successful. If we compare that against the China market currently, we see again an IT market that is very strong, but has taken a more domestically focused route. We

see that a lot of the investments have been into internalising software development. We see software development really going sort of localised formats, we see a lot of focus being taken on the local market itself. What we don't see is a very large export market, so one could be led to believe that a very strong focus on using software that has already been developed and robust service industries have been created around it. It can have a very positive impact in terms of a country's viewpoint on export markets and its position and its strength within overseas markets. Looking at, again, some of the key assumptions— and I will start to go through these very quickly. What we saw here was basically more or less a linear relationship between piracy and losses. I'm talking about piracy here mainly because our study focused on the impacts of piracy and how a more robust software market reducing piracy would increase jobs and increase the amount of taxes and the amount of revenue that the local companies produce. If we look at piracy in a different way, we look at just increasing profits by 10 per cent or increasing the local IT ecosystem. We can see similar relationships. An increase in the software industry will have a very strong linear relationship between an increased software industry and increased benefits. If we look at some of the key findings, we saw that a 10 point drop in piracy from 40 per cent to 30 per cent or an increase in profitability would add quite a number of new jobs. We see that a very strong software market increases high-tech jobs, it increases economic growth and it also increases taxation revenue that can be used within the economy as a whole and spread across multiple industries. If we look at the Asia Pacific IT sector, we see that currently it employs about 3 million people and has about $95 billion a year in taxation revenues. We see also that software represents about 14 per cent of this IT sector. If that software amount increased, the software industry became stronger and more robust, we would see a vast improvement in terms of overall jobs. We would see 1.1 million new jobs, $15 billion in taxation revenue increases and $170 billion in economic growth, all through an increase in the robustness and the diversity of the software industry ecosystem. There are some numbers on your handouts. I won't go into those, but that is basically the overall findings in terms of how a stronger software market affects the overall Asia Pacific GDP and also allied areas such as taxation and those new jobs. I have some details on China and Hong Kong. I'm going to flick through those for the sake of being relatively short, but I would like to point out that in terms of increasing a level of software robustness and diversity, we see that very, very quickly, taxation revenue can increase. Currently, the Asia Pacific market has terrible taxation when it comes to the software market. That is mainly due to piracy, but also due to just the sheer fairly simplistic nature of the marketplace. With growth in the complexity and growth in the robustness of the software market, some increases in the taxation revenue will be very apparent. That certainly flows on to many areas of government spending. In summary, software is the glue that holds the IT industry together. It is an engine for global economic growth, it certainly is one of the key areas within the overall global economy that is still growing at a fairly rapid pace. It is still being incredibly innovative and it is still increasing jobs just by its own accord in a relatively aggressive fashion. Lastly, just to reflect again on some of the tangible benefits that do come from a strong, legitimate software industry, there are entrepreneurs benefiting from new opportunities. The software industry really does create jobs outside its own sector in a very, very meaningful and very, very real manner. Again, using India as a reference point, we see that they certainly have used that software model as a driver to grow many parts of their overall domestic economy. We see that workers benefit from more jobs. As I just mentioned, consumers benefit from more choice and more competition. Governments benefit from new revenues, as I have mentioned a few times, and overall economies benefit from this extra revenue, extra spending and the extra learning that is created through the use of application software, in all facets of life, with a higher standard of living. That brings me to the end of the presentation. If there are any questions, I think I can address one or two now.

MR MUDD: Michael Mudd, Computer Technology Industry Association. I spent all last week in Vietnam speaking with the government there. Vietnam, as you may know—I'm sure you do know—has close to 100 per cent piracy of proprietary software. They consider that the only way they can solve that is by essentially investing their own system because they're a poor country and they can't afford to buy very expensive commercial software. That kind of argument, I think, has been bandied around before. What you have presented here, of course, is very legitimate and that is what I'm trying to put forward as an association, but this kind of mindset takes a long time to change. How do you think, for example, myself, representing the industry association, can go about trying to convince them using some of the tangible data you have presented here?

MR McHUGH: There are certainly a couple of areas I would like to touch on. I think, first of all, there are a lot of learnings that have been done. Again, for example, take India. Learnings where you take a lot of existing software and existing knowledge and you look at other areas of the industry to grow. It is not necessarily growing the software industry, but using legitimate software to grow other areas and focus on exports. I think for a country like Vietnam, which wants to increase its impact on the world stage, and has a fairly low cost structure to begin with, there are certainly some parallels that they might want to recreate through their own market in terms of growing export-related jobs. I would certainly be a proponent of saying: okay, let's look more at the services area. Let's look at custom

software applications, taking sort of existing software and creating modules that work within a particular area or a particular circumstance and then being able to resell those to overseas customers. I think that actually solves both problems. First, it creates a very strong local knowledge in terms of software development and, second, it sort of gets a very strong export focused mindset and really does get away from that sort of piracy rate. You still might have a very high level of domestic piracy, but in terms of the focus which it takes from an export point of view, that is legitimate. I think there are still a few countries—India, for example, still has fairly high piracy rates. It is still up around per cent, if I remember correctly. They still have a very aggressive export market and they are doing very, very well from an export point of view. I think that is probably where the government would really see a lot more benefit for their local population in terms of an increase in jobs.

MR URE: I was going to say, you didn't mention the buzz word of "outsourcing", which is obviously relevant. I am going to put this to the panel later on, but do you think Hong Kong is a place you outsource to or outsource from?

MR McHUGH: That is a good one. Certainly Hong Kong has a lot of domestic IT skills. It has a fairly robust economy just from a services point of view and also from a software point of view. However, if you look at what Hong Kong does very, very well, I think it is seen as a base for a lot of global finance and it is seen as a base for communications. I think in terms of taking an outsourcing point of view, there is far too much competition still from China, but I believe that Hong Kong does play and can play a very strong part in terms of either being a leading force for that and working a lot closer or being even the more service-orientated part of that, where a lot of the more high-end customised parts of outsourcing can be addressed. That is mainly in the outsourcing of, I guess, the IT Department and a lot of the application management and sort of that is a fairly easy thing to do. So there is no real competitive advantage there. If you are looking at, for example, business process outsourcing, Hong Kong has a very strong competitive disadvantage compared to a lot of markets within the Asia Pacific area. You have China, India, Malaysia and also Thailand. They have a very low cost structure and are going to be really hammering on this particular buzz word "outsourcing". There is a lot of opportunity for it and they are going to be grabbing it. What Hong Kong needs to do because of the higher cost structure is look at either how they can support that outsourcing for other countries, export learnings which they already have or export their knowledge and their IT workforce overseas to be able to spread a lot of that learning.

MR URE: Daniel, thank you very much. We will come back to that and probably other issues in the second session. Firstly, may I thank Daniel for his presentation and now invite Anmar to come up. Anmar Alani, for those of you who came in after I made the announcement, has very kindly agreed to step in at the last moment for Peter Moore. Peter, unfortunately, is not feeling well and cannot make the meeting today. So Anmar has come in to speak on behalf of Microsoft.

MR ALANI: Good afternoon, everyone and thanks very much for the opportunity. First, I apologise for Peter not being here. He is not feeling well. But the bad news is I'm not feeling well also. I think Microsoft is overworking us a bit too hard. So it is a common factor there. Just a bit introduction about myself. I have been with the company for about 11 years, starting in New Zealand, then Australia to Eastern Europe, Russia, Germany and then to Seattle. I have been in Hong Kong for about two and a half years. When I first told my wife we were going to Hong Kong, she wasn't that keen. Now I can't even get out of Hong Kong. She loves it too much. She said, "I don't want to leave any more." So I have been with the company for a while. In this period, most of my work has been involved with the developers and the IT. So application has always been quite important for the people and the companies I have worked with for the 11 years I have been with Microsoft. Before Microsoft, I was an ISV; I was a developer myself. What I would like to do today is give you an opportunity to hear Microsoft's side of the story. We always get challenged on competition, we get challenged on open source, we get challenged on learnings. What I would like to do is give you an opportunity to see what Microsoft has to say and how we see the economics of software. So if you allow me the opportunity just to take you through that and I will take questions at the end. What we see as I meet with CIOs, enterprise customers and so on, the clear feedback is that CIOs have said we are moving from IT managers, from infrastructure managers towards business transformers. CFOs and CEOs don't see us just managing structure. They are demanding IT be much more agile because the challenges of the industries and the competition is becoming far bigger, that IT needs to be their neighbour. They are asking us, as a company that provides infrastructure and application and a platform, "We need you to reduce our costs. We need you to reduce our focus on this basic infrastructure, which today is sitting at around 70 per cent, and help us increase our focus on the new capability." We, as Microsoft, believe and we see that also from the customer, the IT is a core enabler in that. How do you do that? How do you create that innovation? Behind that, this is where we see the commercial software model that drives innovation from companies like Microsoft and the

partners around them, the ecosystem, to drive that innovation. Let's move into the commercial software ecosystem. We see it has four pillars: customers, the government, the intellectual property, the IPR, in respect to that creation of value, and of course the industry around it. These are the four components that Microsoft see as an important part of the ecosystem. Let me take you to commercial software versus open source. I'm going to talk about commercial software. We all know open source. I will talk about how we see what commercial software is and how we look at it. It is just basic stuff, so we are on the same page, and see how we, Microsoft, look at the commercial side. We generate IP innovation, innovative solutions. That has value. You sell those solutions. That creates revenue. Revenue drives back into the innovation and so on. So you create that cycle. The more products you sell, the more create revenue, the more you spend back into your research and development to keep funding that innovation. That innovation, as I mentioned, goes back to the earlier slide where customers talk about we need innovation at the business agility level. As we all know, competition creates value for customers. Why? Because now you have two, four, five, six partners or companies competing, providing the best product, the best innovation, the best service for customers. That drives competition, which drives innovation, as we all know. There are also some benefits. Some of the benefits of that we see is you continue improvement on the technology. For instance, bug fixes, attaches, support—you create an ecosystem around it from the department, the developers, the customers. You listen to the customers, you get feedback and you add new features to the product. You move some features. Customers tell you, "We don't like those features", and so on. So you create the cycle. Again, we go back to the commercial software model. In the years I have been with Microsoft, it is always core in us that Microsoft was built on a partner model. It is very, very important. The only reason we succeeded is not because of the product, it is because we have built 99 per cent of our model on a partner model. So our success was built on an ecosystem. You can see from the numbers there, the ecosystem is huge. Daniel just mentioned some of the numbers around the Asia Pacific and maybe some of the numbers around the world, but around that ecosystem, the software and the services—this is just the Microsoft partners around the world. It is an enormous number of partners. As I mentioned, these independent software vendors, this could be system integrators, this could be Microsoft certified partners and so on. Again, providing the value around the software that we produce. You see down there it is very simple. The business model for these companies is really simple: selling products and services around the Microsoft software. Let me just tell you a bit more about Microsoft. We talked about innovation, we talked about Microsoft generates revenue, but where does that revenue go? There is $6.8 billion of R&D. What does that mean to you? If you are an enterprise customer, if you are a medium business, if you are an individual user, when you buy a product today from Microsoft, you are buying into $6.8 billion of R&D. You are buying into future innovation that keeps coming in and in and in. As you provide feedback to Microsoft, and as Microsoft innovates with the industry, that creates value and that is what you buy into when you buy into our Windows operating system or an Office product and so on—all from our partners. Daniel also talked about the community and the partners. Here I have some numbers for you on the numbers of people around the world that are building that ecosystem. This is from Microsoft's point of view. This is not from the industry, just Microsoft that we know about. If we drill down to just the Hong Kong partners, there are 2,800 partners in Hong Kong, around the Microsoft software, selling services, resellers, independent software vendors and so on. As we talk about competition and open source, do we believe in open source? Do we believe in open standard? Competition is good. We believe in competition. We believe in customer choice. We, as a company, were built on competition. We were build on customer choice. We learn from our source. It has been a very, very useful experience for us as a company and some of the points I mentioned there. Community. If you really look into the Linux world and open source, they have a very, very strong community. Microsoft saw that. We listened to that. We listened to the feedback of our developers and, as I mention, have been working with them for over 10 years. They said communities are very, very important in the UNIX world and then into the Linux world. So we said, "Okay, we can do that. We can create communities around the Microsoft development world." And we took the same approach and learning from that. Source code. We do actually provide some source code and some details there of two programmes. There is a government security programme which we have signed in Hong Kong and also the shared source programme. TCO has always been a challenge and I think what we have seen from a Microsoft point of view, it really challenged us as a company with the open source. Linux challenged Microsoft to really go back and see the value of what TCO we are providing to our customer. We learn how to justify to our customer really what TCO are we providing and is it really valuable to the customer, not only from a Microsoft point of view, but from the customer point of view because the customer has a choice. Some of the benefits of this platform that I talked about and the integration and, as you can see from there, one of them, as we all know, is ease of use, creation, making use of the product as you learn the futures, as you know how to use it, we make the product easier and easier. Interoperable is a big request from customers, especially from the enterprise customers, medium customers. That I said is a heterogeneous world out there. There is no one solution. Interoperable is very important. We try to innovate on that one and the commercial software model drives that one too. I talked about lower TCO and so on. The second point is the commercial software as an economic development. I think Daniel touched on those points. I won't repeat on that.

Daniel had much more solid numbers and details and what drive and how many jobs and how many local software and so on and how you invest with that. All of that, the commercial software model, needs to be respectful of intellectual property, as we all know. IP is the engine, is the driver at the end of the day. The value of it is very, very clear. You create, you are developing, you will spend one, two, five years developing application, you don't want the hard work, at end of the day, to be given away for free. I don't think anybody wants to do that. That is respect for IPR. So our software model is built on respect for IPR. Daniel talks about a 10 per cent drop in piracy is huge value not only for the government and the economy, but a lso for the actual commercial industry itself. So just to summarise from a commercial software model and what we look at, it is an option. We believe it should be an option. So being a customer, a government department, medium customer and an individual user, we believe commercial software should be an option for you as an individual, as a customer, to choose and consider, for the reasons I outline here. We believe there are direct benefits that commercial software provides. As I mentioned, choice is important. From our commitment, that is the model we believe in, that is the model we commit to continue focussing on and providing innovative solutions around the commercial software model. What do our customers tell us? What do we seek from customers? There are four key areas that customers tell us all the time. These four key areas are built on innovation, strong security. TCO, as I mentioned earlier, is very important for me. I want reliability, I want interoperability and all that is built on top of innovation. When you give me these four cornerstones, I want all the time for innovation to be continuing. It is not a snapshot in time you give me that and that is it. It is a moving target. That is what the customers are asking us. How do we, Microsoft, respond to that? This side, from a customer point of view, is what the customers ask us for and this is not only as an operating system platform, but also as an application platform. On the right side is what Microsoft provides from the development platform area, for ISV development, for the system integrators, for the solutions to that. You will see the integration there all around the Windows server family. These are fairly detailed slides, but I think you can see there is the value of the Microsoft we provide. When I talk about innovation, when I talk about commercial software, that is the area that has been created in value. $6.8 billion—again, I repeat that R&D is extremely important and we have been growing this on average at 10 per cent to 20 per cent every year, the R&D budget to increase our innovation. What have we seen? You might ask: what has Microsoft done this time? That are some new break through technologies? There is speech technology, realtime communications technology, scalable reading experience—I guess you see that with e-book and so on. What you see with Windows XP and what you see with the Windows server in the managing files and so on. One interesting thing we have noticed from Microsoft's point of view is that as hardware and technology evolve, there has always been a slight gap in the adoption of the software technologies. You will see that there in the PC DOS area and where the adaption comes in. We move to the GUI interface and the mouse itself and how Windows came up and the adaption from the users and the customer benefits and then moved on to XML, SOAP, HTML—all the internet stuff that we have been talking about for the last five years or so.Then we got challenged. About a year or so ago, some of the articles came out: is this the end of the IT industry? What else can they do? What is new? I think this is it. We are done. There are no more new things going to come out from this software industry. I still remember a famous line from Bill Gates. He said, "We just got started. It is just the beginning. This is just the beginning. It is far from over. We have just got started. We are just getting the basics right as a software industry." There is far more new stuff coming out—new technologies, new innovations. You have heard about a lot of these. Wherever you go, there is computering. Wherever you utilise some kind of computer technology— and this is just one of the areas that Microsoft is looking into. Microsoft do believe we are right at the beginning. We have a long way to go and there is more innovation to come. I don't know if any of you managed to see the new Windows from Microsoft, but we showed a quick video just a month ago and it shows some of that stuff on the right, the cool stuff. If you want to see something closer, look at the tablet PCs today. If you have not looked at the tablet PCs, how you can handwrite, how you can see a web page and not only you see the web page, you can highlight it in yellow and say, "Hi John, look at this article." You put a circle around it and send it to your colleague. That kind of innovation is available today. Microsoft is driving the industry towards that. Summary. We believe in commercial software. We believe open systems does not equal open source. They are two different things. We believe in IPR 100 per cent, for the reasons I have highlighted before. From our commitment, we will continue focusing on the four pillars I mentioned earlier, to drive what the customers are asking us, around security, reliability and interop and cost. With that, thank you very much. If you have any questions, please feel free to ask them.

MR URE: Thank you very much. Let's open it up straight away for questions to Anmar about what he has said or about what he has not said.

MR MAK: Thank you. Stephen Mak from Government IT Services Department. Anmar, that was an interesting presentation. I heard you use the term "ecosystem" eight times, if I remember rightly.

MR ALANI: Yes.

MR MAK: Similarly, Daniel used it three times. I'm interested to know if you have a more precise definition of an ecosystem. That will be very useful to the rest of the forum because I know you have something in mind when you say ecosystem, but the fact that you are using it so often prompts me to ask, out of curiosity, what components do you think are in the ecosystem? In particular, I'm interested to know whether your definition of ecosystem includes the customers at large.

MR ALANI: In the first slide, I showed the four pillars of an ecosystem, so customers create the demand, they tell you what features they need, you come up with a product and they say, "We like it." They say, "We don't like it. These are the good things we like. These are new features." So customers definitely play along. Government, as I mentioned earlier, play another role in there. Then intellectual property, because you want to create that value and you want that respect for that value in commercial business and then the industry, which is the software industry, the services, so that is the four pillars that we, from Microsoft's point of view, look at as ecosystem. Customers definitely are part of that ecosystem. That is why we believe in choice.

MR URE: In your very last slide, this point here, open source does not necessarily equate to open standards.

MR ALANI: Yes.

MR URE: Could you elaborate on that a little? I'm an economist. I'm not a techy. I know a little bit about the telecom sector, I know less about the IT sector, but I do know as a user and not just a Microsoft issue, hardware and software, we are constantly coming up with non-interoperable or proprietary standard. As a simple user, it becomes very frustrating. In fact, I lost my attachment to my Sony machine earlier today—the part that needs into this overhead projector. Of course, there is only one manufacturer who makes that damn thing and I spent an hour trying to trace one. I managed to find one eventually in Hong Kong. It drives you crazy. Could you elaborate on that point?

MR ALANI: Sure. I think the example you just gave, even though it is a hardware example of open standards, I think we have all gone through the VHS versus Beta days of video. Once you have a standard, that becomes easier. You have the USB drive. That is the hardware industry. The software industry open standard becomes a topic with the language XML. XML sounds very techy. What is XML? I mentioned it to my wife. She looks at me, "What are you talking about?" What is XML? XML is very simple. It's a language that every programme in the world understands. It doesn't care if you are UNIX or Windows or Linux. What it cares about is: you speak this language; I speak this language. It is as simple as that. That is an open standard. So how do we translate that into business? You are running an ERP back-end solution. You are a very large customer. You might have SAP. You could be running UNIX. You could be running Windows. You could be running Oracle. But you are running an enterprise ERP application. You want to get some of that functionality accessed by, let's say, maybe with your manufacturing part of the business, which is built on a different technology. How do they communicate? XHL came and said it is a very basic English language based; it is not very technology based. When you look at it, it is very English based so it is very simple to read. That will describe what the SAP business rules are and that the other side of the manufacturing can communicate with. So that is open standard. So the industry got together and agreed— us, IBM, Sun, Oracle and all the other partners that— that XML is the open standard. Open source. Do I need to say what open source is? I think we all are aware of what open source is. It is where you share your source code and when you add any value to that source code, you have to go back and share that source code again with the other people because that is part of the licence of the source code. Does it mean source code has to be built on XML? No. It just means anything I give you as an application, you need to see the source. It does not mean it has nothing related to being built on XML or has nothing related to being built on a certain standard. All it means is the source code you can access. We think sometimes there is some confusion, as you mentioned earlier, and I think we take responsibility as an industry. Maybe we haven't clarified that to the business users, that the word "open" is on both sides of the equation, but really there are totally different meanings between "open source" and "open standard". We believe in open standard and that is why you see in our platform, open standard. XML is part of our platform, from the client's side Office to the back-end server, high-end servers, database—XML is all integrated.

MR WONG: John Wong, Hong Kong Government Information Technology Services. One of the key considerations in the selection of software is total cost of ownership. In countries like Thailand, they now enjoy privileged pricing. How soon will that come to Hong Kong or China? If not, why is it not coming?

MR ALANI: That is a good question. I think you got me there. I don't have an answer for you and I'm not going to come up with an answer now, but I do promise that we can come back to you on that one. I saw the articles yesterday. It came up on this topic. I respect that question. Let me get back to you. Please stop by after to make sure I get your card and we can respond back to you, because I don't have the response for that one just now.

MR URE: Is that also related to the announcement in Malaysia about the government sponsored programme to promote the use of PCs? I noticed, in fact, Peter Moore was quoted in the press last week as saying that Microsoft were offering a kind of cut-down version of the Windows operating system or Office. I think it is related to something in Thailand, around that line. It is really to promote usage where usage is not very high.

MR ALANI: Yes. Question from the floor: Just following on from Mr Wong's question, I would be interested on views from Anmar or Daniel on the interplay between licencing models and piracy and innovation in licencing, particularly in countries like Vietnam and other developing countries, but not only in developing countries. I think also in more developed economies, whether there is a relationship, linear or otherwise, between the two.

MR McHUGH: From my point of view, and I guess my learning is from Australia. I used to work in Australia and look at a lot of licencing relatively closely. Microsoft came out with Licencing 6.0 about two and a half years ago and basically what we saw there with some of the licensing from 6.0 is that from an enterprise point of view, you see that it is more of a realisation of how enterprises are using software and you see a lot of other software vendors following suit. You have not necessarily the software vendor who is touching the customer directly, but you have systems integrators or you have some type of service provider. Having a licensing system that is flexible enough to cover a whole enterprise and some of those service agreements makes a lot more sense. That probably reduces piracy from an enterprise point of view. If you are looking at, I guess, some of the licensing from more of a consumer point of view, I think some of the various licencing models maybe, for example, application service provider models or the like, can certainly step in and reduce piracy, but I think the main thing is that when you are paying for a licence, you are not necessarily just paying for the software, you are paying for, as Anmar mentioned, that whole ecosystem that supports that piece of software. That necessarily means I'm going to go out and I'm going to buy a copy of Office and I know that I can go to a number of different people and get an answer to a particular problem. I can either go to Microsoft directly or, if I'm an enterprise, I can go to my partner. If I'm a customer, I can go to any number of local smaller players. I know that my license actually covers the support of some of that ecosystem—sorry to use the word "ecosystem" again. Ecosystem is a good word. Let's all stick with it. I think that really needs to be taken into account, that when you are buying a licence, part of that license cost really does go into supporting a whole number of players who provide legitimate and real value and take a lot of the pressure off the application vendors to actually continue to build new products and to focus what they do really, really well, which sometimes isn't necessarily support. That is the way I see it.

MR ALANI: When we look at the license itself from Microsoft, one of the things we look at is innovating also. That is why you see multiple versions of it. So it is consistent feedback. That is why you see version 3, version 4, version 5, version 6 and so on, because customer feedback said, "This is complicated. Make this easier." The challenge with that is if you try to make it easier, as Daniel mentioned, there is quite a large audience you have to cover. Sometimes as you make it easier, you might make it more complicated. So we look at the license itself, think of it as a product and how we make it easier to the customers so they know how to have a business transaction with Microsoft or partners. Does that relate to piracy? What we have learnt about piracy is respect for IPR is not related to the license itself. Respect for IPR depends on the country itself, the education and whether they understand IPR. Once they have respect for IPR, the license I buy from Microsoft just becomes—it is an easy transaction or have we done a bad job, that is really hard for the customer to buy and that is where the sales and marketing of the local office comes in and tries to explain to the customers how you purchase these licenses. As I have worked in multiple countries, like New Zealand and Australia, who have very high respect for IPR, and also Hong Kong, towards Russia, where you walk in the subways and for $1, you buy Office and Adobe and everything on one CD. It is always about IPR. They never understood the value of IPR. So it has always been understanding intellectual property. Once you get to that understanding, governments and institutions and so on, then the licence comes in. Does that answer the question?

MR URE: I think we are going to have to draw the first session to a close because the tea and coffee is available, but maybe just one comment as a user. I think it would be very much welcome if there was kind of maybe a greater

flexibility in licensing systems for different kinds of categories. The problem is of asymmetric information, because you don't know who I am and how I'm going to use it, so that is the challenge. I'm not quite sure how one gets over that problem, but certainly, as a user, I think I reflect a wide view that the licensing conditions on me and the licensing conditions on a large commercial corporation should perhaps be very different. One further thought comes into my mind. I remember a member of a certain embassy in Beijing complaining bitterly to me in around about 1999 to 2000 about this issue of piracy. Then I discovered that the entire embassy used pirated software. I won't mention the name of the country. Anyway, can I thank Anmar and Daniel very much for a very informative first session.

PANEL DISCUSSION

MR URE: This session is going to be a Q and A session. We are going to begin it by inviting each member of the panel to give a 2 or 3 minute reaction to what they have heard already, say any other points that they would like to make and then go from there straight to Q and A. So we want the maximum amount of audience participation. By the way, I should just point out before I introduce our chair for the session, this little diskette that you have was produced by us for the conference last year. It marked the 10th anniversary of the Telecoms Research Project and contains various papers and also photographs from some of the early meetings, including the very first TIF meeting which was held in the Mandarin Hotel. You might even find yourself in that photograph if you were at that meeting. Let me hand over the introductions of the panel to Simon Chan. Simon is the chairman of the Hong Kong Telecom Users Group and also now works for New World Mobility. Simon, would you like to introduce the panel.

MR CHAN: Thank you, John. John asked me to help chair this session because he doesn't want to speak all the time.

MR URE: He was about to say, "He doesn't know anything about IT", but he was too polite to say that.

MR CHAN: The Hong Kong Telecom Users Group is one of the supporting organisations of this forum, so sometimes you can see me coming out to this stage here. For this session, I think we have a very good panel of speakers here, so I will ask some of those who have not already spoken, to give a couple of minutes response to the session that we have just had. Of course, Anmar has just spoken, so we will skip a comment from you. I will first invite Stephen Mak, Deputy Director of ITSD, to say a few words.

MR MAK: Thank you, Simon. Good afternoon colleagues, ladies and gentlemen. It is my pleasure to be here. I have heard two very stimulating presentations. I was asking Anmar about his definition of "ecosystem", partly for the reason that I have it at the top of my list as my first cue when I was supposed to speak. I just wish to make the point that software is indeed part of the ecosystem of IT development. IT development includes a whole host of things: hardware, software, people, services and so on. The key point I would like to share with you today—I am assuming that we are going into the discussions about open sourcing proprietary software. Software has two kinds of values, one being, according to Eric S Raymond, who wrote the book, The Cathedral and the Bazaar, which is a very readable book on open source. By use value, we mean the utility of the software to the user, as opposed to the sale value— the utility of the software to the seller, the manufacturer. So a lot of the discussions we have heard today, especially those from Microsoft, came very much from the angle of the sale value side. So I would be more than happy to share with you, for the remainder of the session, the differences between use value and share value. But just to use up my 2 or 3 minutes, I would like to share with you how government is looking at the notion of open source and proprietary software. As you probably know, government adopts a very open and transparent procurement regime and we are a signatory to the WTO government procurement agreement. That means that in all procurements, we are not allowed to specify brand names or even project specifications that are so tight that they will point to a particular range or name or product. That means, over the years, we have been doing tendering in an open or functional manner. More recently, with the advent of open source, we are widening up the choices to departments by promoting the adoption of open source software. However, we stop short of mandating departments to use open source. There is a major distinction I need to draw here, because we cannot be swaying to one camp over the other, either to the proprietary or to the open source. So that has been the development so far. Over the past year or so, at least half of the government departments have embarked on the open source journey, in that they are going to the open market for open source software, where it fits their environment and gives them value for money. But that does not mean that government will be stopping the use of proprietary software—far from it, in fact. Government does in the region of $1 billion of purchases of hardware and software on an annual basis over the past two or three years. That will continue. We are promoting the use of open source software and proprietary software in everything we do, including our recent promotion of wireless and mobile services, our

electronic services, delivery and so on. I think I should stop here and let other panel members share with you their insights first.

MR CHAN: Thank you, Stephen. I'm sure that with the government being a keen supporter of open source, it is good for the community to follow your example. Next I have Michael Mudd, Director of Public Policy, Asia Pacific, CompTIA, to say a few words.

MR MUDD: Thank you very much, Simon. CompTIA, for those that are not familiar with us, which is the majority of people here, I think, stands for the Computer Technology Industry Association. It is a global trade association with about 5,100 corporate members from the industry, including the large giants but, like Hong Kong, 90 per cent are SMEs, the ISVs that we have been talking about today—in fact, the whole ecosystem. That is a nice word. I quite like that one. There are another 4,000 institutions, mainly educational institutions that sell. We exist in 89 countries; we have members from 89 countries. Our role is to try and promote the IT industry in general, without any particular favour towards any manufacturer of hardware, software, telecoms or services. I'm here as a strict neutral person in the debate which I think we are going to talk about here. My only view is that I work on behalf of my members. They pay my salary for me to stay in Hong Kong, which I enjoy very much and always have. We basically want to make sure that all our members have the ability to compete in the open market on their own merits. In other words, not to be precluded from any contracts— either government, private, educational or otherwise. With that, I would like to hand back to the chairman.

MR CHAN: Later on, we will talk a bit more about open versus proprietary and Michael can comment on that later on. With the words "open source", I think what normally comes to our minds is the Linux system, so I will ask David Chow to say a few words.

MR CHOW: Thank you, Simon. Thank you, Michael. Thank you, Stephen. I also thank John who invited me to participate in this event. To give a brief introduction about the Hong Kong Linux Industry Association, which is founded by a group of software vendors and hardware vendors who supported the Linux operating system. I will emphasise the word "Linux" rather than "open source" software in general, or you can say "open source operating system" specifically, because we don't represent the open source software industry because open source software didn't really have a very structured industry rather than a community, but members of our association believe an open source operating system does create an industry or does exist in part of the ecosystem, as I repeat. I apologise in saying that about the ecosystem that Anmar mentioned, it didn't really include us but, in fact, we are part of the ecosystem. One thing we believe is that we agree with what Anmar mentioned in the presentation about the benefits of commercial software, you know, which continues being developed and continues being maintained, has a good incentive of innovation, but it does not mean that this cannot happen on Linux or on an open source operating system. In fact, one thing I would like to clarify during the rest of the day is that open source does not really equal no business. Anmar didn't really say that but, in fact, that is kind of a hidden phrase behind the presentation. Previous speakers didn't really talk about open source having some part in the ecosystem or making some business. Also, we would like to emphasise about the openness of the platform rather than the openness of the software. One thing that I would like to point out is that on the last slide that Anmar pointed out that open source is not equal to open standard. I partly agree that open source is not equal to open standard, but I partly disagree that open source is not always not equal to open standard. For example, the SMTP protocol. Forgive me for using some technical terms. That is a protocol that we use every day—e-mail, SMTP—which is really derived from open source software. Some open standard that we use today is really from open source software. It has some kind of implication that open source software may become open standard because open source software did start everything from open. It is pretty difficult to see in the future or from the history that proprietary software created an open standard. These are some points that I want to clarify. So I will pass the microphone to our chairman. I will continue the discussion about the open source operating system during the rest of the event. Thank you.

MR CHAN: Thank you, David. Keep your questions about open source versus proprietary and what the value of the open source brings for later. Let's go through the panel speakers before we come back to these important questions. Next is Sin Chung-kai. He is a current Legco member of the IT Functional Constituency.

MR SIN: Today is about Microsoft and open source. I have a couple of questions and I will answer these questions. Is commercial software or Microsoft competitive or good? My answer is definitely "yes". Is open source competitive or good? My answer is also "yes". Can open source compete with Microsoft? My answer is "yes". Can open source compete with pirated Microsoft? My answer is "no". Use Vietnam as the case. If

Vietnam continues not to protect IPR, what will happen? The general public will continue to rely on pirated software and they will not create their own software industries. They are just like worms, you know, relying on their masters. The route for protecting the IPR is the route to generate the industry, to groom the industry. In Hong Kong, we have been trying very hard in our legislation to protect the IPR. Many Americans, you know, rely on the civil routes. They litigate. The software companies prosecute using civil litigation to take infringing parties to court. In Hong Kong, we use a different route. In Hong Kong, we criminalise people. Especially in business use, we criminalise people who use pirated software. We passed the legislation in the year 2000. Although we had a hiccup in the year 2001, where we took out a certain part of the legislation, but in terms of software, we have not done anything to roll back the legislation. In one sense, we have one of the most protective legislations around the world, around the region. However, I have heard complaints that our enforcement agencies, Custom Department, have not taken sufficient cases to court, especially where parties have been using pirated software in the business sector. I believe open source and Microsoft can continue to compete in this business world. The government's role is to protect IPR. Thank you.

MR CHAN: Thank you, Sin. That leads us to Gordon Milner, a lawyer with the firm of Bird & Bird.

MR MILNER: Thank you to the panel for inviting me here today. I would like to say, firstly, my name is Gordon Milner. As you can see, I'm from a firm called Bird & Bird. We specialise in IT and intellectual property law, so this is really sort of our core business as well as it is your core business. As well as being a lawyer, I'm also a nerd. I have my propeller hat in my bag. I run both Microsoft systems and Linux systems at home, so I do know what all these long words mean. As the sort of token lawyer here today, I would like to see if I can present a bit of a balanced viewpoint, from someone sitting in the middle who sees what is going on from all different perspectives. As a firm in this industry, we find ourselves acting for one client who might be, for example, getting an open source solution in respect of some back office banking services they are using and at the same time, we might be acting for a major commercial software provider in respect of, say, their enforcement work. We have a view of both sides of the fence, if you want to look at it like that. We have heard a lot about ecosystems today. To extend that metaphor a little bit, I think every ecosystem has its niches and the diversity of the ecosystem is driven by those niches. What I hope we get across today is that monocultures are not really what gives the ecosystem its diversity. We will see hopefully that there are examples of where a commercial software provider is absolutely the right model and there are other cases where perhaps an open source model is much more sensible. Finally, in terms of misconceptions, there are a lot of misconceptions around about intellectual property and, in particular, about open source. I'm hoping that through the questions that people ask today, we might be able to sort of resolve some of those misconceptions so that people can actually get a better feel for what the debate is about from a legal point of view, as well as from a commercial and economic value point of view. I'll now hand the mike back to the chair. Thank you.

MR CHAN: Thank you, Gordon. Maybe this is a good time, now that we have spoken about open source and IPR, to move back to Microsoft to give us some response about what they feel about the open source arena.

MR ALANI: I promise I won't mention the word "ecosystem". I think, as I mentioned in my presentation earlier, we do believe in competition. We do respect open source. We respect it as a competitor and we welcome competitors like any other products in the market or operating systems and so on. I apologise if the message didn't come through. We don't see one world, one solution. That is not how Microsoft sees it. As I mentioned earlier in my opening messages, we believe in choice. What we ask is to be judged on the value of the products that we present—I mean the operating system, the platform, the application. We do see the market for both worlds. There could be more; you never know. IT innovation, it is always amazing what comes. So we do see both worlds, but we like to compete on the merits of the applications and the value to the customer or enterprise customer. Just to clarify that point, just in case it didn't come through. Is there anything else I have missed?

MR CHAN: I think you have mentioned the four pillars about security cost, reliability and interoperability. Because I am also running the IT infrastructure of my company and I quite agree with your analysis that in choosing any IT solutions or systems, we look at it that way. So we are not just looking at technology by itself, we are looking at the four pillars and the benefits to our business. Actually, I would like to pose this question back to David in terms of the Linux Industry Association, how they see the solution to the business user, rather than just promoting the operating system itself. Do you have anything to say?

MR CHOW: Before answering Simon's question, I heard a lot of—I forget how many times the word "competition" has been spoken, but I heard a lot of mention about competition between open source software and Microsoft. We don't see open source software as really a competition against anyone. One fact is that open source

software has existed for maybe, I think, longer than the company Microsoft. I think we do have people who are from a UNIX background or from a telecom background. If we remember, UNIX started with open source, with its source code available to universities and many research institutions in the late 1960s. So open source software has been in existence for many, many years. I am also a commercial software vendor. We make software to run on Linux or an open source operating system. We have open source software as an alternative to our products, but we don't see their competition against us. For example, we are happy to see Microsoft put their software to run on Linux, if Anmar is happy to do that. What we see is the customer always has an option or an alternative, but from our point of view, customers who do not wish to pay for high-quality software products or pay for services, are not really our market or our target. If I am a worker with Microsoft in sales, I'm selling a piece of software to my customer or I'm trying to promote a piece of software to my customer, but my customer says, "I don't want to buy your software. I want to run my own." This can happen. So the customer can always write their own software, in practice or in essence. I don't really see open source software as competing with any commercial software vendor because customers can always write their own. However, to get back to your question, promoting Linux or solutions that run on Linux, is that from our point of view, an open platform—or you can say "Linux"—really exists in part of the ecosystem. So we know about the importance of open platform and open standard. We see that a true open platform, like Linux or— UNIX has been trying to do that for the past 20 years but, in fact, we didn't really succeed due to the licensing is not really an open source licence. Vendors simply grab their own copy of UNIX and modify it and distribute it in a proprietary way. But Linux, which is licenced under a GPL licence, which itself protects its software to be open source, together with each distribution. So we see the importance of Linux is to open up the business opportunity for companies who would like to work in the part of or in the role of operating system or system software. If you see the ecosystem of software, there exists a part or the lowest part of the ecosystem is the operating system. Then we talk about applications. But maybe from Microsoft's point of view, the operating system part is only Microsoft. We are kind of arguing between open platform, rather than talking about all the software to be open source. We see that open platform gives some opportunity for software companies to enter the system software market, rather than only one company. Does this answer your question?

MR CHAN: Yes, partly. Thank you, David. I think it is important that from a user point of view, we always like to have choices. By having an alternative to Microsoft, we are happy to see that, regardless of whether it is Linux or UNIX or whatever. That is my point of view. Anyway, I would like to take this chance to ask the floor who would like to give their opinion about open versus proprietary or how they see the open source arena, whether that will help us to create a more versatile software industry.

MR PHAN: My name is Thomas. I am actually an ISV in Hong Kong. I don't disagree with open source and I am actually more supporting of some of the commercial software rather than open source, but I think there is nothing wrong with open source, but the usage of open source may hurt the industry. As an ISV in Hong Kong, we would like to do something, like make software with IP, with people to respect it. As a company, to run a business, we would like to earn money and we would like to save our source code and things like this, so we are actually building a commercial software. But with open source, let's say from a government point of view, I think the education to use a software, should we educate a typical business user to use open source? I see some promotion, from time to time, saying that Apache, MySQL and whatever, those solutions can help industry. They are trying to promote things to lower the cost because of using the open source software. In fact, this hurts the industry. It doesn't give opportunity for ISVs to invent their own software, to get their own IP. For example, I don't see a problem for a user to use Linux or UNIX or whatever, but maybe for some open source software, let's say a mail system, a PHP mail web thing—I'm talking about Hong Kong. I'm looking at this from an economic point of view. If people can sell or can deliver the service of this kind of software, like the PHP mail service, then this hurts a lot of industries who like to create or invent a similar system in Hong Kong. There is some difference with what David said. If we are going to invent our own software on top of Linux and this kind of invention also has IP on top of it, but if we are going to use the open source software directly, this hurts the industry. It seems to me that I'm seeing some open source software, people start selling services on top of the pure open source thing. They are doing maybe some support on it or customisation or it, but they don't have the knowledge. As Hong Kong people, we would like to have maybe some support from the government to give us the opportunity to let business people know the value of maybe a Microsoft product or maybe let's say Java, those kinds of commercial software, so the business decision people can see that they need to buy these kind of things, so they can build on top of it and then there is more chance for people to make this society be more knowledge based. Without this kind of thing, Hong Kong may be just doing supporting services and we don't have our own software here. This is very important to educate non-technical people—like the ecosystem in the commercial software. Because from what I see from the slides, I don't see that open source is a part of the ecosystem, because they don't give the innovation

from the business point of view. As a business runner, I know that my innovation comes from money or my protection of IP, but I don't work to share my code with other people. If I'm doing that, I'm more like academic people, maybe in a university. I truly agree that the existence of open source is very important. For example, in the university, I really respect that open source helped a lot in educating people. To build a knowledge based society and we want to improve the Hong Kong developers' standard, we have to respect IP and let the overall business people understand the importance of commercial software.

MR CHAN: Thank you very much. It is a very practical consideration that you make about the IPR and the support issue. Maybe this is a good time for Stephen to give some response.

MR MAK: Thank you for the question. I was about to make a point before this gentleman asked his question. First to address your concern about government promoting the use of open source software seems to be at the cost of proprietary software. I can guarantee you that government has never got that intention. When government promotes the use of software in general or the wider use of IT or e-commerce in the community, we never advocate the choice of a particular product—certainly not a single brand of product. If you go to the over 5,000 public computers that we have, there is a mix of different products in the territory. Coming back to your point, you have problems with being an ISV; you are seeing your business as an ISV. That is very natural. But as you and others have pointed out, we are in an ecosystem. The use of software is to conduct business. Earlier on, Daniel showed us some slides on the economic benefits of the use of IT, but he stopped short of mentioning the figures about the indirect use of software. He mentioned the IT industry contributing $1 trillion on a worldwide basis. He stopped short of mentioning the economic effects of using software. That is where my answer comes in. Actually, you are right in pointing out that a particular model, like OSS versus proprietary, when seen in isolation, will not end up having a win-win situation. It is a win against the loss of another. I can tell you that there are over 9 to 10 different business models that people can adopt in selling or promoting software. You happen to be working on one. There are others that will cater for exactly your situation and the dilemma that you are in. Some people give away software only to attract more service business. Some people give software to support their products—like digital cameras, like digital phones that we use today come with the software. We never buy the software. You may wonder, where do people get paid for the IP rights to the software that is embedded. It is in the product or it is in the service that you are paying for separately. So I would encourage you and ourselves to look at this in a more macro sense, especially when you are talking about the whole Hong Kong industry. Software cannot exist in isolation. It can only coexist, quite rightly so, in the ecosystem and the larger ecosystem of the economy, rather than limiting to the ecosystem of the software industry, certainly not to the software manufacturer. I would like to address your question that way.

MR CHAN: You would like to comment further?

MR PHAN: I would like to ask more specifically in the knowledge based sector, I don't see there is a lot of local invention of software. I think part of the reason is because of the open source or maybe some direction that if Hong Kong is going to be a knowledge-based city, I think we have to encourage people to do more IT invention. To do that, I think it is better to move down the commercial path. As you said, there are many other sectors—

MR CHAN: I think we have your point about innovation. Let's see how the government have been adopting open source systems and how you are making use of it. Stephen, can you mention about the use of OSS system in government.

MR MAK: In my earlier brief, I alluded to government. Over half of the government departments now are en route to adopting open source in one form or another. More specifically, the figures I have on hand, up to March, there were some 1,400 deployments of open source software in government. They are not only on service. In fact, about 500 of them are on service and the rest, 900 of them, are for desk top applications. You may start to wonder, how does that compare with the proprietary lot. The proprietary lot, I can give you a figure that government, as a whole, has over 100,000 workstations. So you can guess that there is still an imbalance, so to speak, but this imbalance is nothing wrong, is nothing criminal on anybody's part. It just so happens that in the past, government has been installing or acquiring software from the open market, which happened to be proprietary. Now there is a mix and the open source products are starting to come in. As I mentioned earlier, there is no policy of moving away from proprietary in favour of open source, for a good reason. There are some systems which are, right to this day, better served by proprietary products. If I may just extend my answer to your latest question, government does support innovation. In fact, I happen to be on the committee of the Innovation and Technology Fund for supporting IT Innovation—local, indigenous software products. But it does not mean that we do not promote open source. Even within that committee, we look to the open source approach to software development as one channel

of letting the intellectual property or letting the knowledge be disseminated into society. So that other players in the Hong Kong scene or in the international scene can make use of that. One classic example is the ebXML initiative being undertaken by Hong Kong University. They were funded by the ITF. Their product was developed using open source. They happily tell me that thousands of international downloads have been made on their product, which is on open source, including local supplies. So that is the extent to which open source can be used and government is supportive of that.

MR CHAN: Thanks, Stephen. The government is taking the lead by using the open source. At the same time, how to create innovation in the software business is something we have to consider. I think Stephen just mentioned about the innovation and technology fund.

MR MAK: That is one channel, yes.

MR CHAN: That is one of the channels. I think John, in his briefing paper, also mentioned several others. Would you like to comment on this?

MR WINGROVE: Norman Wingrove, Kintak Enterprises. I speak very much as a user, a customer and a content provider as opposed to an IT vendor. I think one point, which is very obvious which perhaps you are overlooking, is that we all use open systems to a very large degree every single day of our lives. If you think about the worldwide web—by far the majority of servers run Linux or UNIX, they run Apache, they run PHP, they run MySQL—all open software. That is not to the disadvantage of people who are selling. It is to their advantage. It is the platform. It's the foundation on which people are able to sell their software, sell other products to communicate. So open systems is a reality. It is just a question of how it is mingled in with proprietary products. I think they both have an equal validity in the market.

MR CHAN: Thank you, Norman. Norman is our web master. He creates and maintains the chief forum website. Thank you for the comment.

MR YU: My name is Gabriel Yu. I am from IT Ventures. I have one comment and also one question. First of all, a comment. When you talk about open source, you are not talking about a homogenous product. You are talking about a whole range of products. Some of them are proven technology, that people find it safe to use them. On the other hand, you have a fly-by-night software developer who just builds something that may not be reliable. So the economics of open source software is the user will have to determine whether the software is suitable and reliable and can be used for certain strategic operations. If it is for some daily user, if my kids want to use some software to play games, I think that is perfectly legitimate because there is very little cost involved in that. But if you are using it for business development, business related purposes, obviously you have to look at reliability, service and support. I think what the branded software do give is the confidence, the support and the quality. If you look at open source, my own view is that you just cannot lump them all together as one single homogenous product.

MR CHAN: How about your question?

MR YU: The question is the economics of software. I'm an investor in a company that produces educational software for the Hong Kong market. To date, I have not been successful in developing that market because I think the government has taken a wrong approach in this area. The government has spent over $12 billion in buying the hardware, but if you look at what one of the speakers mentioned, maybe 10 per cent is initial investment in hardware and the other 90 per cent makes up the total cost of ownership. Is the government spending enough money to provide the school sector with the resources to buy the necessary software and hardware? That is why I think this policy of just looking at the hardware spending is totally misguided. I think the government should try to work out something in order to assess what is the total cost of ownership. In the past five or seven years, since Mr Tung announced his policy of investing heavily in IT in education, my experience is that because not enough resources have been allocated to the cost of supporting schools in IT education, EMB has a policy of trying to encourage the teachers to develop their own software and distribute freely in the market. Therefore, there is very little chance for us to provide quality service to the educational sector.

MR CHAN: I have your point. It seems that you are not in favour of the open source, then?

MR YU: No, I'm not saying that. I'll bringing up an issue, that if you really want to support open source, somebody has to do the quality control in order to help the users to choose. One problem I have in talking to the schools is, "Okay, you ask me to pay so much for software, but the other guys are providing it for free. Why should I buy the software from you?" I think that is the issue.

MR CHAN: Thank you for the point. In blending the open source and proprietary, Norman just mentioned about the worldwide web. I think there is ample opportunity for a user to take the right choice. It is, of course, the education area, which I think all of us will be going into—educating the user on how to make informed choices. I do disagree with this gentleman about gaming because I think Microsoft agrees that gaming is big business.

MR ALANI: Yes.

MR CHAN: I will just try to ask some of the panelists to answer the question about EMB policy in the IT area, about spending too much money on hardware and not software. My son was in Form 4 and he is looking to study computer for his Hong Kong CEE exam. I was told that his school has just been converting from Fortran to C. That means that two years ago, they are still learning Fortran and then previously Basic. Anyway, can I ask Sin Chung-kai to give us some perspective about—you have seen through the history of EMB spending money on the hardware side. Can you give us some perspective.

MR SIN: First of all, it is not $12 billion, it is $1.2 billion. The government actually appropriated at a scale of $2.9 billion to $3.1 billion. Around $1 billion is spent on infrastructures—laying out the computer rooms, re-engineering the school infrastructures and then spending around about another $1.2 million, as Gabriel said, on purchasing PCs. At the very start, I think in 1995 or 1997, the government actually was proposing a scale of 15 PCs per school. Then around, you know, 40 or something in secondary schools. Subsequently, in 1998, the government said they have to catch up. They spend more on hardware, allowing the PCs to be installed in both secondary and primary schools. At the end of the day, I think on average, in secondary school, now they have around 200-something PCs installed in some of the secondary schools, after having spent $1.2 billion on that. Teachers are encouraged to create teaching contents, teaching material, rather than actually writing software. I do not believe that teachers have the knowledge to write softwares as teaching tools. They rather create more contents. If you teach geography, you need some geographic content. They are not writing software, sponsoring millions of dollars in writing software, but they are encouraging teachers to share teaching content. For example, even photos. If you talk about rubbish bins in Hong Kong, this kind of subject, you need to take pictures of rubbish bins in Hong Kong—various kinds. Then they encourage teachers to share these kind of photos taken by the teachers themselves. So they can run Microsoft PowerPoint in their schools. What I'm trying to say is in Hong Kong, we have not been spending sufficient money on software. We are still in the very early stage, even in IT educations. We need to catch up. This is the message. Right now, the government is consulting in IT and education—the second round. They had the first rung starting from 1998. The first one is simple: get schools connected. The second rung is give them content.

MR CHAN: I think it is right that the content now is the king.

MR LEUNG: I'm Simon Leung from Microsoft. Just now I heard that the government is not saying that they are going to buy from one vendor or just buying from the OSS, but instead is promoting the OSS. Also I see that the government is supporting the OSS in terms of funding the projects, like the ITF. So I just wonder on the economics terms, for these type of fundings, like we are talking about the values, and if we are not talking about the seller values, we are talking about the buyer values, how do we justify having the returns for these type of OSS projects and how do we compare these type of OSS projects with the non-OSS projects? Do we get better returns or do we just get more or less the same or are we getting less returns from these type of OSS projects?

MR MAK: Thank you for the question. First of all, government does not fund or support OSS per se. Government provides funding support to schemes that are able to enhance the various industries. The IT industry is but one of the many industries that can look to government for support. By supporting OSS, government is not necessarily supporting OSS per se. But the end result that that OSS initiative may bring, the initiative in question may be a new innovation, may be opening up the market, opening up the IT infrastructure for a given sector or may be a combination of both. When government does render support to OSS, especially funding support, it is not because government is keen to promote a particular OSS product. That needs to be very clear. Conversely, when assessing the return on investment or return on funding, government certainly does not look at how many copies of OSS solutions will be sold versus proprietary products. That is not the way we deal with it. It is rather the end result. The end result may be the wider use of IT in the community or may be the better use of IT by SMEs to increase their productivity and competitiveness, for example.

MR CHAN: I think just now we are on the question of OSS and there seems to be a perception about the quality of OSS, that teachers may not be able to do that and so on. Can I have David to comment on this point.

MR CHOW: Mr Yu, you have a comment about quality control of the open source software. Actually, there exists an organisation called Open Source Development Lab, which is formed by the open source community, but is itself supported by many IT vendors—for example, IBM, HP and Intel. Many vendors are actually supporting open source software development. Regarding OSS quality, not the technical point of view about rather we hire quality engineers or whatever, in the process of software purchase, there is always a trust between the distributor or the vendor and the customer or the user. Let's say you download a copy of open source software from the web or from the internet. There is no guarantee the software is maintained in high quality or there is no one who will provide services or guarantee some kind of service level together with their software. However, there exists software distributors. As Thomas earlier mentioned, those distributors destroy business models for traditional software companies. In fact, there exists many of those companies who are providing open source software services, together with open source software. Those companies they claim have the knowledge of the software and the technology and provide some degree of service levels and services and maintenance of the software. This makes up OSS as part of the ecosystem of the software business because we all know that software and services is one of the major proportions of IT revenues these days. Distributors of OSS software guarantee or you trust the distributor of the OSS software who provides the services. Getting back to the question about teachers writing open source software or teachers writing their own software, I partly disagree with this argument. I do see some teachers write their own software. For example, if you are a teacher in a university, many of the open source software maintainers are from universities. They do have the time and skills to maintain open source software and providing for their own use or research purposes. If you say secondary school teachers, who are less highly skilful people, they are more or less reliant on commercial software. So I think if you are talking about the educational software market, it depends on which part of the education sector you are targeting. Still I see more people in the secondary or primary education are relying on proprietary software or buying off the shelf software—not necessarily to be proprietary. When I say "proprietary", I refer to closed source software or open source or people who also buy open source software from some distributors, rather than downloading software because even when the teacher downloads some open source software, they will still require the knowledge and the resources to maintain the software to be properly used in education. I will stay neutral in this point. Everyone is free to get a copy of open source software to provide the suitable services for it and no one is not allowed to do that. If you are talking about hurting anyone, I would say you can always write better software than the alternative open source software to give more features or more value to your customer. I can't see there is any degree of prohibiting innovations or invention in the software industry because if you talk about invention or innovation, you are asking: are you the first guy to write this or to invent this idea and turn it into an implementation? If there already exists some alternatives or some software that provides similar functionality in the open source software community, you are not talking about invention. You are talking about reinventing the wheel. So referring to Thomas's argument, that open source software prevents invention, I don't agree on that point.

MR URE: Because of time, can I throw in a question which probably picks up some of these points, but also moves it on one little step. In the first session, we heard a lot about the importance of R&D and the need, certainly in the commercial software side, to financially support R&D. I also asked through, I think, Daniel, a question about: is Hong Kong a place you outsource from or outsource to? I would like to just get some feedback, maybe from Daniel as well as the rest of the panel, on this issue. Basically, looking at what Hong Kong's prospects are for software development, are the economics of the R&D beyond software developers in Hong Kong or are there specific focuses and markets where software developers can undertake that R&D reasonably? Hong Kong, for example, is a mobile cellular market. Presumably, there would be a lot of potential content and application software developments and customisation in that area. We have tried to indicate a few that may be true in the briefing paper. If there are, where are the economies of scale that Hong Kong software developers need to develop? Is that where outsourcing can help? For example, can Hong Kong outsource some of that to the Pearl River Delta or vice versa? I would like to get some comments from the panel on that perspective. Where does the economics work out for Hong Kong's software developers?

MR SIN: If I may, I want to respond to the question because I want to leave earlier. If outsourcing means outsourcing to the Pearl River Delta, then it will diminish our chances in Hong Kong. If outsourcing means getting projects from the US and Europe and then completing the projects in the Pearl River Delta, with Hong Kong as a prime contractor, that would be a good opportunity. I think Hong Kong is good at integrating different kinds of applications, different kinds of proprietary or even OSS softwares. We are good at actually providing solutions, rather than providing the fundamental proprietary software. With should actually leverage on this in the process. We see a lot of successful cases. In fact, for example, recently, you may have had a chance to attend the Electronic Protocol Global Consortium. I think the seminar was held a month ago or two or three weeks ago. RSID

developments are talking about choosing Hong Kong as a trial site, as a logistics trial. They wanted to use RSID as the tools and they would like to use Hong Kong as a trial. So we can actually do something on these kind of things, rather than building up the basic blocks.

MR CHAN: Can I ask Michael to give us a response.

MR MUDD: What I would like to talk about, which has been touched on here a lot already, is the role of government in this business itself. Perhaps I would like to give the view from our members. Our members are for profit organisations, so please bear that in mind. Our members want to make money. I think this gentleman here is smiling. I think he kind of agrees with this. CompTIA doesn't discriminate between any kind of software model—either open source, proprietary or commercial. We have members which work with both; they develop both. However, we believe that governments should not discriminate either. They should have an open minded and open policy. Hong Kong, in general, has an open minded open policy towards most things. It is a very competitive market and we hope it continues to be so. Responsible government should encourage research in all areas of technical innovation, and with appropriate funding policies and implementation of those. Government should separate research from commercial development. Research is fine. If you look at, for example, what went on years ago in Britain with text television, which, arguably, together with France, was the first time you actually saw innovation in text to the masses. It worked well through government funding. It didn't work commercially. Then another innovation, which came through government funding, called the ARPANET, which was the defence system's communication network in the United States, morphed into the internet, which has worked very well commercially for many other people. The research of Tim Berners-Lee at CERN in Switzerland gave us the worldwide web, funded by governments. That is excellent stuff. That is the role government should play. The commercialisation of these processes should be left to those that wish to take the economic and the entrepreneurial risk. I believe—and, again, our members believe—that this is the way that innovation does in fact come about. The continuous investment that is required to move forward is basically what put us on the moon. Some people have said, "Why did we go to the moon?" Because it is there. The point is that to innovate does take commercial risk and that risk should be borne by private enterprise. Don't forget, we are government. Everybody who sits in this room is the government. We support the government. We pay for the government. We should make sure that government does not take unnecessary risks with our money. For example, there is a government not very far away from here that wants to take a risk with the constituents' money in buying a football team. I don't think anybody here would agree that that is a good idea. If somebody wants to buy a football team, go ahead and do it, but don't do it with other people's money. The point I'm trying to make here, again, is keep the choices open and have good government research into all types of technological innovation. The fund that is available in Hong Kong is a good fund. It has not all been utilised. I know there is an awful lot of money there. There is a lot of money available for funding good projects. I look forward to that being dispensed amongst commercially-minded organisations. In the hard world of reality of business, it really should be the most appropriate software or hardware or services that should be matched with the necessary contract or tender. Whether it comes from a government or a large business or indeed a small business, I think that government has a very important role to play in policies that are very good. Hopefully the Hong Kong Government will continue on the path they have been in the past and play along with those sets of rules. I think the industry itself would benefit.

MR CHAN: Stephen, do you want to comment on whether government will like to continue to use those funds wisely?

MR MAK: It is not in my brief to talk about the ITF per se because that is under the charter of the Innovation and Technology Commission, but I fully echo what Michael has said. In fact, he will be pleased to know that the ITC is actually reviewing the funding disbursement arrangements, with a view to maximising the use of the funds and with a view to closing the gap between government, industry and academia. They have started a consultation round, about two months ago, and I am told that they are going to put out a paper for public consultation later in the year. So we look forward to that. As to John's concluding question, I would like to respond and again echo his view positively, that Hong Kong is indeed well placed to innovate and innovate through the application and development of software. We have seen many examples of Hong Kong taking on technologies, like Octopus, like e-banking for that matter. Hong Kong has picked up e-banking quite well. Hong Kong was one of the first places to use ATMs widely in the community. We pride ourselves in having rolled out more than 1 million smart ID cards that can support e-commerce and that can help a lot of new applications to be developed around it. Again, it comes back to the famous ecosystem that we have been talking about so many times in this session. We need to continually look for ideas and look for ideas for software innovation. That, I must admit, has nothing to do with proprietary or open source software per se because software is getting very component-ised nowadays. Although

Gabriel is gone, I would like to answer his question. He made the remark that open source is not conducive to being packaged as a final product. The question is whether you need to if the code is so widely known and the ideas are so widely known and contributed to by so many people that the owner of the IP is no longer relevant. That is a point that I would like to make. Again, I'm not saying that in favour of open source. There are other benefits of proprietary software that an open source environment cannot provide. Anmar has already highlighted many in his brief.

MR CHAN: Anmar, would you like to talk about the comment on the R&D, whether you think Hong Kong is an R&D centre? You are in Cyberport?

MR ALANI: Yes, we are in Cyberport. I will talk as a Microsoft representative and also as a person living in Hong Kong—I'm very passionate about Hong Kong—and as a taxpayer. I think there is a lot of opportunity for Hong Kong to innovate. If I were running my business, I don't know if I would start if it was open source or Microsoft. Look at the business opportunity out there. Look at where the niche market could be or the wide market. Look at my skill set. Hong Kong has a lot of factors that makes it very successful in the worldwide economy. One of the them is language. English is the spoken language. It is the international communication language. That is a very big barrier. People skill set—there is a very high skill set in Hong Kong. Then you look at the niches that Hong Kong has: logistics, shipping—Hong Kong is one of the largest ports in the world. Is there an opportunity for ISVs to develop applications in Hong Kong? I think absolutely there is opportunity. When you consider that opportunity, do you want to develop it locally? Do you want to outsource some of the code into China or other markets? That is a business decision. I don't know if that is related to the application itself. That is a cost issue. Then there is a risk. As in any IP development, how far do you want the IP to be from you? Do you really want your developers that are owning the IP sitting 1,000 miles away with a very different culture? That is a business risk you need to take. I think these are the factors any ISV needs to consider. Then you can decide: what is my distribution model? How do I go out to the market? One of the beauties of the internet is it has given the smallest ISV in the world, even in Hong Kong, access to the world. That is one of the successes. From a Microsoft point of view, our job is to provide the best platform, the best development tools, the best applications. You as an ISV, it is your choice to make those business decisions, technology decisions where you are. But in Hong Kong, I do believe there is an opportunity to work in multiple countries around the world, absolutely. We talked about gaming before. Gaming is a huge industry. How many games in Asia are developed by Asians, outside Japan? Very few. I think it is underdeveloped. Entertainment and the movie business. There is a lot of opportunities for Hong Kong companies. I think they can take an approach towards a solution and then you can decide what operating system, you can go down the route. That is our view and we play towards that view.

MR CHAN: Gordon, can you come in to talk about IRP and R&D?

MR MILNER: Sure. I wanted to answer John's question first, which was what are the attractions to Hong Kong as potentially a place for outsourcing to? Not just outsourcing from. To share with you a very good example of this, a couple of years ago I was working in England. My client was a developer of operating systems for mobile telephones. They were eyeing the mainland Chinese market with the dollar signs appearing in their eyes, like in all the best cartoons. But their operating system was in English. They wanted to basically convert it to localise it, so that it would work in the Chinese market. I had a call from the in-house lawyer and they said they were very worried about taking their crown jewels. They were very much the Microsoft commercial software supplier model. The source code was their crown jewels. They were very worried about taking that into mainland China—to Beijing, Shanghai or whatever—and having it developed there. As Anmar said, the crown jewels, the source code, would have been 6,000 miles away from the people who held it closest to their heart. Our advice was, "Well, have you considered Hong Kong?" You have the English language skills. You have the Chinese language skills. You have the technology skills. You have, on top of that, something which I think is quite often forgotten, but actually it is fundamental and it must be close to many people like Microsoft's heart, which is the fact that you have a legal system here that is very dependable. You have courts who you could be pretty sure aren't taking backhanders. The ICAC does a fantastic job in ensuring there is no graft around. In terms of copyright law and intellectual property law here, to some extent, it is based on the old UK law. It is very, very clear. I think it gives people certainty as to what the person is. That is something which you can't necessarily say about some of our close neighbours in the region. I think that is a good example of where Hong Kong really is in the right place at the right time. Just to really sort of cap that off. That may be a very specific example, but I'm sure that in the gaming industry, for example, as well, the biggest thing in China at the moment in IT is probably the on-line gaming, the multi-player on-line gaming, where you have thousands of people pretending to be knights in armour or wizards or something, running around and killing dragons or something. Some of those kind of games are developed in China. A lot of

them are developed in places like Korea or Japan or in the west. There must be, I think, a huge market for localising that kind of stuff as well. I think Hong Kong is perfectly placed for that kind of outsourcing.

MR CHAN: Thanks for the optimism. Can I have David say a few words.

MR CHOW: Just one thing I want to emphasise before ending the conversation is that I'm from the Hong Kong Linux Industry Association, so we are the people who have dollar signs in our eyes. We are here to make money. Myself, I'm also a software developer. We are an ISV. We create our own IP. I fully agree with what Gordon has just said. Hong Kong has a very mature legal system to protect IPRs. What that means to Linux industry people is that we here have the freedom to innovate, not just in the application part of the ECL system, but also the operating system part of the ECL system. So regarding Linux, as you see, China has a very good or a very clear strategy on the open source and Linux adoption in the government and all sectors. So I do think that ISVs or software developers in Hong Kong should make use of this great opportunity with the open source operating system and create your own IPRs or even doing, let's say, services, project management, outsourcing, in the position of Hong Kong's advantages and then the China market advantages. Hong Kong really has a good advantage. We are more than a neighbour, w e are part of the one country. But we are very close with the market and we do have direct access to the market. As you know the CEPA really gives the advantage to Hong Kong to work in the software industry. That is it.

MR CHAN: Thanks to all of you for your patience. I think we are running quite late. I will just pass the floor back to John.

MR URE: Thank you, Simon. Firstly, it is my great pleasure to thank all members of the panel—Gordon, David, Mike, Stephen and particularly Anmar. Anmar not only is from our sponsor today, but also stepped in so well right at the end. Thank you very much. Thank you, Simon, for chairing this session, and also to Daniel who is sitting here ready to field any questions that came his way. Just as a point of information, I just came back from Mongolia. It is a large place, but there are only 2.5 million people. They have just done their first outsourcing, doing some coding on double byte in the Mongolian language. It is a global development. I think the key issue that underlines it all is that we are seeing—I think it was Anmar who said, quoting Bill Gates, he hadn't seen anything yet, or words to that effect. We are clearly just in the beginning of an enormous expansion in IT in every conceivable field. Therefore, the opportunities in a growing market are going to be stunning. So I think one of the messages that did come out very clearly today is that all the debates about whether it is open source or commercial are really quite secondary issues. The primary issues are how to take the industry forward to take advantage, especially for Hong Kong, of those opportunities. I think that came out very clearly. Hopefully that will be the theme of subsequent debates in the industry, in the public space and with government. Thank you all very much indeed for attending. The proceedings of the discussion will be up on the website, hopefully within a month, and also the presentations. Watch that space for the next forum. Thank you very much indeed.