

## Executive Digest

The following Digest is a condensation of points and suggestions raised during the Telecoms InfoTechnology Forum (TIF), held 20 November 2002, together with interpretation and suggestions added by the Telecommunications Research Project (TRP). It is intended to provide input into the follow-up seminar organized by the Trade Development Council (TDC) scheduled for 19 February 2003 as part of the Information Infrastructure Expo to be held at the Hong Kong Conference and Exhibition Centre.

<p>Please Note: the views expressed in the Digest are solely the responsibility of the TRP and do not necessarily reflect the views of any individual sponsor, supporting organization or participants.</p>
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The Executive Digest, together with the Executive Summary of the Proceedings and the verbatim Proceedings themselves, plus the power point presentations, will be posted on the home page of TIF at: <http://www.trp.hku.hk/tif>.

John Ure  
Associate Professor and Director of the TRP  
University of Hong Kong  
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<b>SME developers</b>	<ol style="list-style-type: none"> <li>1. Handset &amp; api standards</li> <li>2. Development tools updates</li> <li>3. Information “bank”?</li> </ol>	<ol style="list-style-type: none"> <li>1. Development funds</li> <li>2. Marketing money</li> <li>3. Financial advice</li> <li>4. Financier who understands the industry</li> </ol>	<ol style="list-style-type: none"> <li>1. Testing &amp; simulation</li> <li>2. Skill sets</li> <li>3. Premises</li> <li>4. Working with operators</li> </ol>	<ol style="list-style-type: none"> <li>1. Regional or global reach</li> <li>2. Compelling quality content</li> <li>3. Tailored applications – subcontracted?</li> <li>4. 2-3 year windows of opportunity?</li> </ol>
<b>Network operators</b>	<ol style="list-style-type: none"> <li>1. Vendors’ deliverables and backwards compatibility</li> <li>2. Interoperability</li> <li>3. Roaming</li> </ol>	<ol style="list-style-type: none"> <li>1. Profitability</li> <li>2. Marketing budget</li> </ol>	<ol style="list-style-type: none"> <li>1. Business - people process</li> <li>2. Test facilities</li> </ol>	<ol style="list-style-type: none"> <li>1. HK small market</li> <li>2. Acceptable billing system</li> <li>3. Open access to developers</li> </ol>
<b>Vendors of handsets and equipment</b>	<ol style="list-style-type: none"> <li>1. Standardization and open systems</li> <li>2. Interoperability</li> <li>3. Roaming</li> </ol>	<ol style="list-style-type: none"> <li>1. R&amp;D and Marketing</li> <li>2. Support to SMEs in-kind</li> </ol>	<ol style="list-style-type: none"> <li>1. Technical support</li> <li>2. Development platforms</li> </ol>	<ol style="list-style-type: none"> <li>1. Need for a revenue model</li> <li>2. Global interoperability</li> </ol>
<b>Consumers</b>	<ol style="list-style-type: none"> <li>1. Mostly low tech</li> <li>2. Mostly uninformed</li> </ol>	<ol style="list-style-type: none"> <li>1. Low handset purchase cost</li> <li>2. Low churn cost</li> </ol>	<ol style="list-style-type: none"> <li>1. Irregular users</li> <li>2. Can anything be compelling?</li> </ol>	<ol style="list-style-type: none"> <li>1. Complements lifestyle</li> <li>2. Good value</li> <li>3. Passing time</li> </ol>
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## Technical Issues

Technical issues are both key to the success of the industry and the least important of issues. They are the key to success insofar as they enable operators, developers and users to achieve what they want to achieve. A lack of globally accepted standards, of interoperability, and so on, only serves to delay the mass take-up of Internet mobile devices and services. But gradually, too gradually for many in the industry, progress towards global compatibility of devices, networks and applications is taking place. The key danger identified by the forum was the danger of fragmentation of the market between different and incompatible technologies before it could reach critical mass.

But technical issues will be overcome, and another point generally agreed at the forum was that Hong Kong was not in a position to much influence the timing or outcome of this process. This leaves Hong Kong operators and developers with commercially difficult decisions to make.

**For the SME developers:** the key technical issues seem to be twofold. First the time and effort-consuming burdens imposed by lack of common standards among network operators and handset devices. Second the need for clear and timely information about the technical requirements of each network operator. Related to these issues is the need for timely information about changing technical standards and development tools and platforms being adopted by the industry generally. During the forum the idea of an Information Bank was proposed.

Easy and ongoing access to technical information seems to be a high priority requirement. Establishing a Centre that can host an 'Information Bank' may help.

**For operators:** the question is when do they risk major new investments in their networks and large marketing budgets on promoting 2.5G and 3G services? Different operators have different strategies, but they feel compelled to differentiate their networks. One way to achieve this is to use dedicated content and applications. This inevitably fragments the market and raises the danger of the 'prisoner's dilemma' syndrome – what makes sense for the individual does not necessarily make sense for the industry as a whole.

Revenue problems for mobile operators in Hong Kong make them reluctant to adopt open access networks or to market content aggressively, but without taking these steps can Hong Kong developers survive? Longer-term the answer probably lies in services such as regional roaming, international messaging and enterprise applications.

**For vendors:** solving the standards issues to achieve inter-operability is widely recognized as the priority to remove roadblocks critical to raising rates of adoption of Mobile Internet within the larger economies and to achieve regional and global roaming.

Hong Kong is not a 'larger economy' and therefore its role as a critical testbed for new models of handsets is diminishing. Would a neutral 'Development Centre' that offers testbed facilities or simulation for devices, for network applications and for mobile content help to revive Hong Kong's role? [M-Net in Adelaide has now started offering these facilities to Asian developers.]

**Consumers:** early adopters are young, but some evidence also suggests in Hong Kong they are more price sensitive than technology sensitive, and remain not well-informed about the capabilities of the new devices.

Marketing and advertising are often strong on the 'message' but weak on clear or genuine information. This may work well for low-tech devices, but not for advanced technologies that cost more to purchase.

**Enterprises:** Following the slump in IT spending, caution is now the keyword. Proven technology that is unlikely to be rendered obsolescent by new advances in a very short timeframe is the low-risk strategy. Backward compatibility and security issues are important to larger enterprises. On the other hand, mobility fits SMEs like a glove, but their service requirements call for fewer innovative applications.

Technical issues impact on the enterprise market far more than on the consumer market, and requirements vary greatly across enterprises of different types and sizes. But this should open up many opportunities, such as outsourcing, technical support services, etc.

**OFTA:** has voiced the opinion that 'open networks' and interoperability are the ways to go, whereby any user can use any network to access the content they desire and to send and receive multimedia content to and from anyone on any network. For the industry as a whole this will certainly encourage greater traffic growth; the question for the moment is are walled gardens a temporary phenomenon, a stepping stone to a more mature market structure, or will they prove to be a dead-end?

Technological neutrality continues to make sense for Hong Kong as an adopter and as an adapter of technology. So does pushing/encouraging the industry towards open

access and interoperability if the industry-as-a-whole is to take advantage of the regional opportunities that will open up.

**ITBB/CITB:** Since ITBB was formed, IT development has been given a higher profile in policy terms. According to TRP estimates, the demand for mobile services constitutes over 2 per cent of Hong Kong's GDP and the multiplier effect of the sector's growth is 4.9 per cent. So for example, if GDP grew at 6 per cent the industry would be making a contribution of around 0.29 per cent. This gives the sector an important role in Hong Kong's future economic growth.

The shift from 2G to 2.5G and beyond offers Hong Kong an opportunity to develop the content and applications side of the business, but also threatens the relevance of Hong Kong as a regional player. Government has a role to play in encouraging the development of inter-personal information systems (an 'ecosystem') within the industry for the spread of ideas and knowledge of technical systems, standards and specifications.

## Financial Issues

Financial issues cover various phases of business, from startup funds and project development funds to the costs of sales and marketing, and from internal financial management to issues of billing and payments. Startup funds for SMEs usually come from personal sources and angel finance at a time when uncertainty about the potential of the project is at its highest. As the potential becomes clearer, risk replaces uncertainty as the key element when SMEs seek development funding to turn the prototype into product. Development funding can come from networks or vendors and from venture capitalists or banks, but usually only when there is a proven market for these types of products. Even when the potential is good, lack of marketing budgets can still kill off the product.

**For the SME developers:** the development and marketing stages are naturally the key problem areas, but there are also structural problems. First, networks in Hong Kong are currently very reluctant to risk backing unproven products or developers, or to commit funds to any corollary network investments or to marketing. Second, funding sources from venture capitalists or banks have little detailed knowledge of this aspect of the business. Understandably they usually start by looking at market size and market potential, and from a Hong Kong perspective this looks small.

SMEs probably have to look regionally before they can attract development funds, but it would help if there were more channels through which they can meet up with financial advisers, fund managers and networks, and through which the risks associated with the business can be reduced or hedged.

**For operators:** the key current issues seem to be (a) revenue streams and profitability, and (b) waiting for the technology to stabilize and markets to give clear signs of emerging. Each operator has their own strategy to introduce 2.5G and 3G network services, and most are sticking to a low-risk incremental approach, conserving cash. In the background hovers the prospect of ownership changes and mergers and amalgamations.

Under current circumstances it seems unlikely that network operators in Hong Kong will, of their own volition, adopt collaborative strategies. On the other hand it does seem possible that some would respond to initiatives to cooperate by pooling information about technical requirements and business processes, and in that way open up to much more inter-personal contacts with SME developers than occurs at the moment. A Development Centre could be a mechanism to achieve this.

**For vendors:** the days of vendor finance to networks and developers seem to be over. But handset manufactures do contract developers for built-in content and applications, such as games and calculators. On the other hand, vendors are very keen to support initiatives that will drive the development side of the business.

Vendors have shown themselves willing to support Development Centres and similar initiatives with donations of hardware and software tools and technical assistance. Can this be done on a non-exclusive basis in Hong Kong, similar to M-Net in Adelaide?

**Consumers:** are used to highly competitive prices in Hong Kong. They are also used to switching handsets and operators, with monthly churn rates around 5 per cent.

Surveys have shown that customer satisfaction is a necessary but not a sufficient condition to keep subscribers loyal to a network, while price seems to be the key issue, especially among the younger and lower income groups who are the most likely game players and MMS users. Can 'walled gardens' outweigh the price factor? Unlikely.

**Enterprise:** the 'total cost of ownership' includes the hidden costs, what an enterprise ends up paying when all the equipment and licences have been purchased, backward compatibility problems sorted out, maintenance and upgrades taken into consideration, and so on. SMEs are more likely to want to avoid these uncertainties, and less able to cope with them, than large corporations. Enterprises of all sizes also run the risk when investing in new technologies that they may not produce the desired results in terms of productivity gains, or greater security or better customer care, etc. The risk factor may outweigh the 'cost of ownership' consideration.

Both 'total cost of ownership' and 'risk avoidance' could influence the enterprise decision to invest in innovative mobile technologies and applications. If either is true then the policies of industry and Government to promote the early adoption of innovation should be framed with this in mind.

**OFTA:** has already taken steps to relieve the industry of some of the burdens of introducing 3G networks. At the same time OFTA maintains a commitment to competition policy as shown in its new powers of investigation of mergers and amalgamations. The telecommunications regulator is not directly responsible for issues of content, but related issues of interconnection and interoperability.

OFTA could use its powers to relieve the industry of certain financial burdens to drive a bargain over issues such as interoperability, open systems, customer care, etc.

**ITBB/CITB:** Given the Government's commitment to see this sector prosper in Hong Kong, how far should the Government go in 'facilitating' and 'promoting' a collaborative approach to open systems, interoperability and the sharing of information in an effort to build an industry ecosystem?

Three specific proposals were aired at the Forum: (1) support for a Development Centre that would include an Information Bank and possibly a 3G testbed network or simulators, open to all developers and networks; (2) soft loans or grants to SME developers *upon the signing of* sales contracts with customers of innovative products; (3) tax relief for enterprises who become early adopters of innovative mobile technologies and applications.

## Development

Translating good ideas into a marketable product is what enterprise is all about. In Hong Kong's case the ideas will mostly consist of inventive ways to use existing technologies, and to produce innovative applications from them. The aim in consumer markets is to produce something compelling in the sense that customers will return to it again and again. Where this involves downloads and messaging it also involves recurrent revenues. The aim in the enterprise market is to produce a good value proposition, something that tangibly saves money or improves quality or widens a market. In a small market like Hong Kong, imitation rather than innovation reduces uncertainty, and if successful this approach can become a temporary cash cow while more innovative products are under development so for example, many games are just variants on a single theme.

**For the SME developers:** development issues focus on having the right skill sets, adequate finance, and premises where the work can be done. But there are two areas that may be beyond the control of the SME. First, the ability to fully test the product on a live network for (a) technical quality and (b) market appeal. Second, sufficient access to the network operator for guidance and cooperation. The business process within the networks

is often opaque to the smaller developers. Just knowing whom to contact, getting hold of the api specifications, and understanding the network's marketing strategy and the resources it can devote to marketing can be a major problem. Even when a small developer does manage to bring their product to market, the chances are their success will be short-lived, and larger developers will steal the market. So SME developers have to be fast-footed, constantly moving ahead to survive. This problem is especially acute in immature markets which lack content aggregators to provide economies of scale in the wholesale marketing and distribution of content to networks.

SME developers need close personal contacts and working relationships with the network operators, something that is often missing today. This should be a vital part of the industry's ecosystem, and ways to bring it about are important to the industry. One option smaller developers may have to take is to migrate from separate and exclusive relationships to partnerships with some operators or with larger developers.

**For operators:** Given the uncertainty of demand, operators are unwilling to take risks with untried and untested content and applications, preferring the products of established developers, often from overseas. At the same time they have a common interest to encourage the supply of local development. Operators are caught between their own 'walled gardens' and letting 'a hundred flowers bloom.'

Operators should consider two things. First, opening their business processes to SME developers, devoting more time and human resources to personal contact and information sharing with the developers. Second, seek areas of collaboration between operators and developers on a wider basis, perhaps through a Development Centre. IPR safeguards could be built into such collaboration.

**For vendors:** stand to gain from greater collaboration between SME developers and networks because the outcome is likely to help drive the market.

Besides supporting the idea of a Development Centre, vendors could also open their own facilities to SME developers, even inviting Hong Kong developers to work in their overseas facilities.

**Consumers:** in Hong Kong young users appear to be irregular rather than compulsive consumers of, for example, games and mostly play those embedded within the handsets. Messaging is also restricted, as local voice calls are cheaper. This suggests limited immediate demand for new developments.

Operators probably need to be much closer to their end-users if their content is to become compelling, but for developers their customers could be regional so being close to them is a problem. For this reason developers need to forge close working relationships with networks and market makers outside Hong Kong. How can they do this? Do organizations like the TDC or Chambers of Commerce have a role to play here? Could a Development Centre develop such a regional role?

**Enterprises:** the role of market makers could be especially important in driving take-up among enterprises. Offering discounts on bulk purchases of handsets or networking equipment, service and maintenance contracts, offering onsite or offsite or network-based applications are ways to stimulate interest in Mobile Internet solutions. SME developers are then sub-contracted to design the applications. These opportunities could increase substantially as industries are forced to restructure in light of changing economic conditions or owing to China's WTO membership, the logistics sector being an obvious case. New industrial needs open up opportunities for new applications development.

In an immature market, the role of market makers becomes important. An industry ecosystem should actively involve the market makers.

**OFTA:** has run industry forums and supported industry forums, and by insisting on 3G wholesaling in the form of Mobile Virtual Network Operators (MVNOs) has opened the door for market makers in the 3G sector. OFTA's M&A and competition policy commitments are also relevant to the future structural development of the industry.

OFTA should review any remaining regulatory barriers that could slow down the transformation of the sector, for example, fixed-mobile convergence, PNETS charging and Mobile Party Pays billing arrangements.

**ITBB/CITB:** Government can influence the pace of development in several ways. Direct assistance already takes place in the form of various industry initiatives, such as public support for universities, the Science, Park, CyberPort, the Productivity Council, industry R&D funding schemes, and so on. Indirect support occurs in the encouragement the ITBB gives to the IT and telecoms industry to be innovative and its commitment to a transparent and open licensing policy.

The key questions for Government are: (a) whether present commitments are as effective as they could be, and if not how can they be better targeted or coordinated, and (b) what additional measures would be effective? Past experience suggests that to be truly effective Government measures need a 'champion' to carry things through, and resources dedicated to that end, with timelines and milestones.

## Market

One very clear message from the forum was that the market in Hong Kong is too small on its own to sustain a major content and applications development industry. An Internet and Web-based business is global almost by definition, and the technical standards, the 'enablers' required to sustain it, have to be equally global.

**For the SME developers:** the lesson is from Day One to think regionally or globally for markets. Striving to find compelling content is the way to a network's heart, and wallet. This may not mean the most technically sophisticated content, nor the most original, but the content that clicks most closely with the imagination of the customers. Content that generates messaging is potentially of greatest commercial interest to networks, but it may have to overcome local cultural hurdles. Applications for the enterprise market will require close collaboration with end-users and /or market makers.

One of the greatest challenges for SME developers is information about markets, and about overseas networks. This, along with technical information, is a primary requirement and an Information Bank could be very helpful.

**For operators:** getting the pricing and the billing systems right and simple is a crucial first step. The recurrent problem for the telecoms industry is shifting mindset from the old narrowband concept of a new product sold at premium prices to the broadband concept of driving access through availability and price, and then driving demand for usage through open systems. We still have a way to go before achieving the new model. For the most part operators are adopting a cautious incremental approach, waiting for many of the 'enablers' of the market, such as colour handsets, to fall into place.

Operators should consider two things. First, to raise their focus from the purely domestic market, where voice will continue to be the cash cow for some time to come, to international traffic through more transparent, consumer-friendly agreements with overseas operators. This has to be an international effort, for example supported by both the GSM and CDMA operators. Second, to shift to open network systems to encourage consumer excitement and let the consumers work out their own ways to make use of the systems. The short history of mobile and the Internet is that the killer application is peer-to-peer (P2P).

**For vendors:** are desperate for the network operators to find a revenue model that works. For their part they can provide the means for global interoperability.

Vendors should put pressure on their own customers, the operators, to adopt open network systems. They could also help themselves, the networks and the developers, by providing much more informational advertising about their products.

**Consumers:** in the forum we were told that young consumers in Hong Kong are primarily looking for devices that enhance their lifestyle images, not their capabilities in using content. And their lifestyles place a lot of emphasis upon just 'passing the time' with their friends.

How far is content development *in* Hong Kong and content development *for* Hong Kong the same thing? How far are young Hong Kong consumers very different from, for example, their Shanghai or Guangzhou or Taipei counterparts? The answers have yet to emerge, so information sharing across the industry and between economies is really important for network operators and developers alike.

**Enterprises:** most large enterprises have their own content and the immediate issue for them is remote and mobile access to the corporate network. This is less true of SMEs. Market segmentation is therefore likely to be much stronger in the enterprise markets.

How far do enterprises actively seek solutions and how proactive do the networks and application developers have to be? Is there a means for developing an information exchange for enterprise applications in Hong Kong that would bring the two sides more closely together? Is this another role for a Development Centre?

**OFTA:** focuses on consumer protection issues, and this extends to encouraging the industry to adopt consumer-friendly pricing and billing systems.

Consumer confidence is an important issue when shifting to insecure Web-based services. Should OFTA do more to speak directly to consumers?

**ITBB/CITB:** providing the framework for the encouragement of take-up of mobile technologies is not a presumption that this stuff is good for you but a presumption that this stuff will happen somewhere sometime and Hong Kong should reap some of the benefits. Governments can act passively by only providing the frameworks, or can be active participants themselves.

The Hong Kong SAR Government has taken several initiatives in putting Government online and adopting e-commerce. Is the time yet right for Government to adopt m-commerce? The answer is really a judgement on the state of the market as a whole. And should the Government do more to encourage university grant-funded research projects in areas such as m-commerce technologies and security issues? Or should this to be left entirely to private initiatives?

## Conclusion

There emerged from the forum a clear need for much more inter-personal and ongoing contact between the different parts of the industry, with the focus not so much on the needs of the vendors or the networks but on how to encourage the growth of the developers. What emerged was the need for a much closer understanding by SME developers of three issues: (a) the business processes of the networks, (b) technological developments, and (c) the market. Ideally, everyone should be talking to everyone else, exchanging information, sharing experiences, working with a shared vision for the industry, but this is far from the reality. On the contrary, the industry in Hong Kong is still largely marked by the lack of what was described as an industry 'ecosystem'.

But the forum also achieved quite a lot. Para. 37 of the Executive Summary reads: '[Julie Cheng from iNFOiSLIVE] sees as a positive sign "that everybody actually sees the problems", amongst which the largest in Hong Kong are "lack of funding" because "investors do not know much, enough about the mobile industry, so they do not have confidence" and "low revenue" because the market is small.' The forum did identify a common understanding of many of the problems, and also came up with many different ideas and suggestions, as the Digest indicates.

Central to the debate was whether the initiatives proposed were stand-alone or whether consolidating them in some form, for example through a Development Centre as proposed by Bruce Hicks of SUNDAY, would make sense. Views differed on how this might be done, and how far existing facilities could be better used or could lend themselves to this task, but there did appear to be general agreement that disseminating information within the industry was essential. Should this be through the formal establishment of an Information Bank? Should it be limited to technical information, or extended to market information? Should it be based in one existing facility or shared across several? Should the role be extended to networking? Should the networking be between vendors, operators and developers, or should it extend to customers? Should it play a regional networking role? Should such a Centre include testbed capabilities, and if so should these be with a real network or using simulators? Who would support such a Centre? Who would use it?

Maybe the next step should be a Working Party convened or supported by Government, representing all sectors of the industry and the industry associations that could select some issues for more detailed exploration. Through this Executive Digest, the Telecom InfoTechnology Forum (TIF) and the Telecommunications Research Project (TRP) hope we have contributed to this process.