The fruit of emerging markets
Transforming ideas into
great potential.
Realize Your Potential

Like the idea of a pinwheel to a powerful wind turbine, Huawei innovates for potential growth based on customers’ needs.

As a company committed to staying in the forefront of the telecoms industry, we have been investing heavily in Fixed Mobile Convergence (FMC) solutions based on ALL IP network. That’s because at Huawei we strive to bring the best possible experience to every customer, via any device, at anytime, anywhere.

By offering what you require right now for your next stage of development, we help you to truly realize the potential of your business.

www.huawei.com
In *Contemporary Marketing*, the authors Mr. Louis E. Boone and Mr. David L. Kurtz illustrate the four development eras of marketing: the production era, the sales era, the marketing era, and the relationship era. They also state that telecom industry marketing has gone through the relationship era and entered the interactive era.

The Internet has had a profound influence on the telecom industry and accelerated the arrival of the new era, which features openness, cooperation, convergence, and interaction. Telecom operators are now facing constant changes in technologies, customer needs, and income sources. Traditional telecom business models are facing unprecedented challenges. The era when profits could be continually realized by merely setting up one network has gone. Globalization and rapid Internet development have pushed the telecom market into becoming a more open arena with even stiffer competition.

Knowledge of industry development trends, meeting customer needs, and gaining customer recognition are critical areas for both telecom operators and vendors to win out in such a complicated telecom environment.

All-IP, FMC, and transformation have now all appeared on telecom operators’ agendas. At the same time, cultivating the emerging markets to realize a continually increasing revenue stream is now one of the most essential choices for telecom operators. All these center on one core - customized service. Telecom operators now hope to attract and retain users by introducing innovative services and providing all-around service experiences, lower operational and network costs through innovative business models and convergence.

Telecom vendors, on the other hand, are also facing more stringent requirements in this new era. They need to have a thorough understanding of the telecom industry. As telecom operators are turning to focus on customization, vendors also have to change. They must provide customized solutions based on the detailed requirements of operators to form a stable strategic partnership with operators, and then understand, explore, and succeed in the marketplace together.

Huawei, a leader in providing mobile network solutions, fixed network solutions, and All-IP based FMC solutions, has years of extensive development experience in the telecom industry. Huawei also provides consulting services in the fields of marketing analysis, strategy planning, network planning, business modeling, and financial analysis. Hereby we look forward to collaborating with operators to explore the development trends in telecom industry, tailor the solutions to meet customer needs and market development, and embrace together the coming of the new era.
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**Vodafone wins bid in Qatar**

A group led by Britain’s telecom giant Vodafone won a bid for Qatar’s second mobile phone license, beating out AT&T among others. Although Qatar’s telecom regulator would not say how much Vodafone’s group bid, a report in Reuters cited a source that claimed Vodafone’s bid was less than USD612 million. Vodafone’s group includes the Qatar Foundation.

Other bidders besides AT&T included Verizon Communications, Emirates Telecommunications and Mobile Telecommunications of Kuwait. Currently, Qatar Telecommunications runs the country’s only telecom services, both mobile and fixed-line. Qatar’s telecom regulator said it plans to sell another fixed-line license in 2008.

Qatar currently has a population of 840,000, but is seeing steady immigration and a growing economy. The country also has more mobile phones than people.

Vodafone’s bidding group plans to start operations in 2008. The group is required to sell a 15% stake to the government. It is unclear whether Vodafone will have a controlling share in the group.

**Google to bid in upcoming spectrum auction**

Google formally announced its intentions to bid in the upcoming 700 MHz spectrum auction. Earlier this year, Google and others lobbied the FCC to adopt open access provisions that will require the winning bidder of a spectrum block to allow any device and any application to run on the network it builds.

Applicants interested in participating in the 700 MHz auction must file with the FCC on by Dec. 3, 2007. Google said its application does not include any partners. The company said that after the application deadline, in accordance with the FCC’s anti-collusion rules, it will be required to keep quiet about its bidding strategy or plans for a network should it win spectrum in the auction.

The auction will begin on Jan 24, using an electronic, anonymous bidding process. The auction will be complete once there are no new bids and all blocks of spectrum have been sold; after that, the FCC will announce the winning bidders.

**AT&T looks to APAC for growth**

With recent boosts to its operations in India, Vietnam and other countries, AT&T has invested aggressively in Asia (the continent, not the band) and it looks like the effort is paying off. Through the Asia-Pacific region as a whole, AT&T officials say they are expecting revenue growth of at least 20 percent next year. Specific countries like India and China are at the top of the list of the money-makers, having grown by 40 percent and 30 percent respectively in 2006. That’s got to be a nice departure from the lowering margins its home market offers, and soon, instead of describing domestic wireless and broadband as its top growth engines, maybe AT&T will be citing Asia-Pacific.

**Verizon selects LTE**

Verizon plans to develop and deploy its fourth generation mobile broadband network using LTE - Long Term Evolution - the technology developed within 3GPP standards organization.

The selection of LTE provides Verizon and Vodafone, joint owners of U.S.-based Verizon Wireless, with a unique opportunity to adopt a common access platform with true global scale and compatibility with existing technologies of both companies.

Verizon and Vodafone have a coordinated trial plan for LTE that begins in 2008. Working within 3GPP, Verizon and Vodafone, as well as a broad group of infrastructure suppliers, device suppliers, and technology companies from around the globe, have advanced the standards to enable a technology that will deliver unprecedented wireless broadband service for high performance mobile computing, multimedia, and consumer electronic devices and applications. The technology is designed to deliver mobile data networks with higher speed and throughput performance, lower latency, global roaming, and improved efficiencies.

Today’s LTE announcement builds on Verizon Wireless’ technology leadership as the first company to launch high-speed wireless broadband service in the United States using CDMA Evolution-Data Optimized (EV-DO) technology. Its data innovation and leadership have been marked by the introduction of new multimedia handsets and innovative applications such as V CAST Music, V CAST Video, VZ NavigatorSM, V CAST games, e-mail, Internet access, and picture and video messaging on a variety of devices, including handsets, PDAs and laptops.
Orange reveals mobile data explosion

Orange unveiled its second Digital Media Index, a detailed report examining trends in customer consumption of digital media. The Orange Digital Media Index reveals usage patterns across the full range of Orange’s entertainment and communications services, including home broadband, text and picture messaging, and mobile Internet over a three month period.

Key findings from the Orange Digital Media Index include:

- The camera phone comes of age - there has been a 37% surge in picture messaging with over 1 million photos uploaded from mobiles to online photo albums in August alone.
- The continued popularity of text messaging - a 25% increase in the medium, with over 1 billion text messages sent per month.
- The mobile Internet gains momentum - Orange World, the Orange mobile portal, received 2.34 million monthly visitors and an average of 250,000 daily repeat users.
- Music downloads soar - there has been a 15% increase in music downloads to a figure of 295,000, and a 3.4% increase in games downloads to 691,032.
- A strong demand for mobile television - so much so that revenue is almost double the forecast.

The Index shows that there has been an explosion in mobile data services, generating nearly 22% of network revenue in the last nine months. Rather than using mobile phones for just voice calls and text messaging, customers are increasingly exploring the mobile internet and using email and social networking sites to keep in touch.

Telefonica and Vodafone invest in mobile advertising

U.S-based mobile advertising firm Amobee Media Systems announced that rival wireless carriers Telefonica and Vodafone have made “strategic minority investments” in the company.

Founded in 2005, Amobee’s solution supports digital ad delivery to all mobile content and communication types, including WAP and mobile Web browsers, mobile games, mobile video and mobile messaging.

Telefonica said it chose Amobee after it “evaluated a large number” of other mobile advertising platforms. “We have chosen to invest in, and partner with, Amobee because we have concluded that it offers the best solution to ad-fund our growing number of mobile data services,” said Russ Shaw, director of innovation at Telefonica, in a statement. “We also believe that Amobee’s carrier-centric model will generate the highest quality mobile advertising inventory, thus ensuring that advertisers are given a compelling proposition.”

Along with Telefonica and Vodafone, Amobee announced investments made by Sequoia Capital, Accel Partners and Globespan. Financial terms of the investments were not disclosed.

There are now approximately 3.3 billion active mobile phone connections worldwide, enough to cover half the global population, according to new data from Informa Telecoms and Media.

Wireless subscriptions have increased 18% in the past year, from 2.8 billion in late 2006, as a growing number of people buy handsets in emerging markets like India and China. The Indian market alone is expected to achieve penetration of over 40% within the next few years, up from just 13% at the beginning of 2007.

It took 19 years - from the launch of the first commercial wireless network in 1981 until 2000 - for mobile phone subscriptions to reach 10% penetration worldwide, and just 12 months to grow from 40% to 50%, representing the remarkable growth that has occurred this year.

Informa believes that it will take longer to reach further wireless market milestones, however, now that developed cell phone markets in Europe and North America have largely matured. The research firm predicts that 60% global penetration won’t be achieved until 2009, and 66% isn’t likely to happen until 2012.

More than 1 billion WCDMA handsets are expected to ship between 2006 and 2012, representing a compound annual growth rate of 22%, according to a report from IMS Research.

“The growth is fuelled by both the GSM and CDMA markets,” said Bill Morelli, the report’s author. “Operators continue to see WCDMA as a powerful upgrade path for their networks, and a springboard to HSPA technologies in the future. Naturally, handset manufacturers are responding with a wide range of handsets to meet this growing demand.”

IMS Research said WCDMA has the advantage of enjoying support across carriers and vendors in both GSM and CDMA camps.

According to a report from China’s Ministry of Information Industry, China produced about 500 million mobile phones, or more than 40 percent of all phones made worldwide in 2007. The figure marks a 41 percent increase in production over last year. About 80 percent of the phones, or 400 million, were exported. According to the report 38 companies manufacture mobile phones in China.

The penetration of 3G services in Europe’s connection base reached 10 percent in the latter part of October 2007, having stood at 9.75 percent at the end of the third quarter. WCDMA net additions reached a record 9.1 million in the third quarter, up more than 1 million on the previous high of 8 million recorded three months ago, to leave the total customer base at 68.3 million.

1 Billion

40%

10%

3.3 billion
Vodafone and Huawei to set up global Application Innovation Centre in Spain

Madrid, Spain, 21 December 2007 The Chief Executive Officer of Vodafone Spain, Francisco Román and the President of Huawei Application and Software Product Line, Che Haiping, signed an agreement to set up an Application Innovation Centre in Madrid for Vodafone Group to innovate new products and services.

The centre is being opened in an endeavor to boost innovation in mobile solutions communications, based on test laboratories located in Spain. The two companies will start up a test bench in Madrid for Vodafone Group.

This collaboration will bring Asian’s innovations to Europe. Thanks to the experience and knowledge of both Huawei and Vodafone on the mobile networks and applications, this will offer a unique opportunity for the information and communication industry.

By leveraging the synergy between them, the two companies seek to devise and adapt new technologies and business models.

Huawei and Qualcomm successfully complete commercial test of CDMA2000 1x EV-DO VoIP based on IMS

Shenzhen, China, 13 November 2007 Huawei announced a successful testing, in collaboration with Qualcomm, of an overall solution for CDMA2000 1x EV-DO Rev.A access to the IP Multimedia Subsystem (IMS) network and the world’s first successful end-to-end Voice over IP (VoIP) call in Shanghai. Utilizing EV-DO Rev.A with IMS will enable service providers to enjoy benefits of an All-IP network and provide new services, including seamless roaming from fixed telephones to mobile handsets.

This test included interoperability trials using Huawei’s 1xEV-DO Rev.A and IMS system, All-IP transmission system, CDMA IP BTS based on the UMB technology and devices enabled by Qualcomm’s MSM6800A™ chipset and IMS device client solution. It verifies the clear advantage of EV-DO Rev.A accessed IMS over traditional voice technologies in providing increased capacity and transmission savings. Currently, Huawei serves more than 100 million CDMA users worldwide, and has won 51 EV-DO commercial contracts.

Huawei and Global Marine Systems Ltd. announce new venture

London, 11 December 2007 A new entrant in the submarine telecommunications market has been created with the announcement that Huawei and Global Marine Systems have committed to launching Huawei Submarine Networks Ltd (Huawei Submarine). A signing ceremony held in London commits both companies to launch the entity in early 2008. Huawei Submarine is the culmination of the Memorandum of Understanding signed by both parties in March 2007.

Huawei Submarine will deliver leading end-to-end submarine network equipment, and related services, enabling highly advanced communications capabilities on a global scale.

Selected as “Next Generation Network Vendor of the Year” and “Business Development Strategy Leader” by Frost & Sullivan

Sao Paulo, 8 November 2007 Huawei announced that it has received two “Best Practices Awards” from Frost & Sullivan, the Growth Consulting Company: the “Next Generation Network Vendor of the Year” and the “Business Development Strategy Leadership Award”, in recognition for excellent performance in the highly competitive NGN equipment market and outstanding business strategy implementation in Latin America.

The Awards recognize Huawei’s ability to best perceive consumer needs, develop products and services that meet these needs, successfully introduce them to the industry, and identify new market segments to expand the existing customer base”, explains Eduardo Dubin, Industry Analyst for the Enterprise Communications and Networks group, Frost & Sullivan. “Through a combination of vision, technology, sales strategy and successful marketing, the company has demonstrated excellence in performance and superior market growth”.

The Frost & Sullivan Awards, introduced globally five years ago, are presented to companies that demonstrate best practices in their industry, commending their diligence, commitment, and innovative business strategies required to advance in the global marketplace. A Panel of Judges comprised of senior Latin America team members select the award recipients from nominated companies identified through research process.
To build European Packet Switched Core Networks for T-Mobile International

Bonn, Germany, 11 December, 2007 Huawei announced that it has been selected by T-Mobile International to provide Packet Switched Core Networks (PS-CN) across five key European countries: Germany, the UK, Austria, the Netherlands and the Czech Republic. This is an important cooperation between Huawei and T-Mobile, indicating the establishment of an effective partnership between two companies.

The contract requires Huawei to replace existing networks with its next-generation PS-CN equipment. Huawei’s advanced solutions can meet T-Mobile’s business needs in future competition. Also, Huawei’s long term evolution strategy in Next Generation Mobile Network (NGMN) can help T-Mobile to protect their long term investment and ideally fit their development strategy.

Early in July 2006, Huawei was selected to provide IMS network infrastructure and applications for the Magyar Telekom, a subsidiary of Deutsche Telekom, for its wire line and mobile business lines in Hungary. This latest contract win of PS-CN stands as a proof of the success of Huawei’s work with T-Mobile, and is a milestone of the companies’ continuous partnership.

“We believe Huawei to be a reliable and trustworthy partner for us, and a company that, we hope, could be a long term partner,” said Joachim Horn, CTO of T-Mobile International. “By deploying Huawei’s advanced solutions, T-Mobile looks forward to providing excellent and more reliable services to our customers and to achieving our strategic business objectives.”

“We are delighted to continue our work with T-Mobile,” said William Xu, President of Huawei Europe Region and Executive Vice President of Huawei, “We look forward to commencing work on this latest project. At Huawei, besides providing advanced solutions featured with large capacity, high performance, intelligent billing and full 2G/3G integration, we are committed to providing fast delivery and excellent service, ensuring a win-win outcome for T-Mobile.”

Huawei helps Saudi Telecom support enormous Hajj peak traffic for three straight years

Shenzhen, China, 26 December 2007 Huawei announced that its Network Services for Key Event (NSKE) had successfully sustained peak telecom traffic for Saudi Telecom Company (STC) during the Hajj, for the third consecutive year.

Since STC and Huawei began their long-term strategic partnership in 2005, Huawei’s integrated network services and mature softswitch solutions, used in every high-traffic event, have enabled STC’s network to repeat excellent performance with zero incidences of overload, interruption and faults during the last three Hajj gatherings.

The Hajj is the world’s largest annual religious pilgrimage to the city of Mecca with more than three million pilgrims from all around the world gathering within a 10 km² area. This area is one of the highest mobile traffic densities in the world, creating very unique network traffic challenges for operators. In 2007, Huawei provided professional network services for high-traffic event, which helped STC completely handle network trouble during Hajj.

Huawei’s high-quality NSKE solutions, including network consultancy, network evaluation and optimization, preventive maintenance, guaranteed STC subscribers’ access to a multitude of services during Hajj, including voice, data and SMS services. Utilising advanced technologies, such as data mining and modeling, traffic loads assessment, Huawei was able to help STC to accurately forecast network tendency and fully optimize the network in time.

Dr. Zeyad Thamir Al-Otaibi, Vice President of Saudi Telecom Company, commented: “It is a great honour to be a part of something that enables over 3 million visitors to call their families all over the world to share with them the glory of the Hajj. Our fixed network supported smooth communications under such rare high-density traffic tides. We’ve created a miracle in telecommunications history and Huawei played a very important role.”
Broadband enabling service innovation and ICT convergence
Macau, 28 November 2007 – Huawei has successfully held the second Asia-Pacific CTO Forum 2007, where more than 70 leading telecom executives throughout Asia-Pacific have participated to exchange views on key trends and share experiences in broadband, Web 2.0 and service innovation. With this CTO Forum, Huawei has grouped Asia-Pacific operators together to tackle, and hopefully resolve some of the market issues and challenges brought about by the changing industry landscape and growing consumer demands.
The broadband service price has been declining and now reached an average of USD33 per month globally. The price declines, however, coincide with the increase penetration rate of broadband. As one third of all households around the world have PCs, broadband service availability is greatly improved. Over 95% of fixed lines in the developed markets are now ADSL-enabled and 50% - 75% in the emerging markets. Besides, WCDMA and HSPA network upgrade also lead to the strong growth of 3G subscribers globally and WiMAX is also driving and stimulating mobile broadband.

Making broadband affordable is not just in terms of the services, but also the devices. Telmex introduced a computer sales program to the market, in which desktops could be acquired in monthly installments starting at USD16.50 plus VAT over a period of 36 months. Customers, though, did not have the obligation of acquiring Internet access. As a result, customers were happier with the experience of exposure to broadband services, while Telmex could sell more broadband services and improve the customer experience.

Broadband and IP serve as an effective platform for launching differentiated services which content is becoming a strong point of differentiation. Triple play, quad play and mix-and-match service flexibility are key steps in the competition. The new competition to telecom operators are coming from Google and other web service providers, who are able to introduce large number of new services quickly. Hence telecom operators are looking for new technologies and delivery platforms that would allow them to respond to Google in kind. The broadband would be a suitable one. Broadband allows telecom operators to expand into the pay TV and advertising markets. In the developed markets, telecoms and media sectors are approaching saturation since the competitive barriers for content distribution are being eliminated. Advertising budgets are being diverted away from traditional distribution platforms and fuelling demand for internet-based advertising. IPTV is one of the early broadband services to be rolled out, some early successes but the jury is still out on the commercial viability of IPTV and VOD services. In some emerging markets, most notably Russia, China, and Brazil, IPTV generates a lot of interest and is becoming a driver for the adoption of broadband services.

There is a worry as operators start rolling out broadband platforms, this is because operators are just becoming the bit-pipe. Web 2.0 idea is actually offering a way out from this business risk. Web 2.0 refers to the second generation of web-based communities and hosted services (social networking, wikis etc.), which allow users to do more online in a less restrictive and more interactive way compared with the early Internet. Web 2.0 is associated with users generated and distributed content that can often be shared and reused freely, thus users can do more online and increase the economic value of the web.

Amazon illustrates a much richer and differentiated Web 2.0 user experience that goes "over the top" of the network operator’s services, it enriches an existing reference standard for its product database. Amazon allows extracting, so that customer can download the section of the book before making buying decision. Besides reader reviews, tags theme, recommendations and bundled book offers are also available in Amazon.com. Similarly, operators are trying to bundle triple play, quad play and retail services. The principles of Web
2.0 are that users’ behavior is not pre-determined and users are allowed to come in and navigate the environment. Besides, operators must trust their users in allowing them to post what they like, choose information themselves, and guarantee the granular addressability of content.

How operators are applying Web 2.0 principles? For instance, SFR (France) hosts a user forum for customers to post questions, capture responses and resolve service issues. This is effective competition against independent user sites, interactive and up to date. Through the forum, an agenda involving a broad range of topics can be defined by customers. Operators can benefit from the off-load problem resolution, bind customers to SFR through registration process, and obtain customers’ insight.

In Europe, mobile operators are launching proprietary and non-proprietary services for user generated content (UGC). Operators are opening up the mobile broadband environment and pulling other service providers into the space so as to encourage usage and stimulate content application. Several operators in France are sharing revenue related to the mobile video with contributors who upload home video content.

In the fixed operator arena, BT is an important case study in how to address the changing telecoms landscape. BT’s 21 Century Network (21CN) is a PSTN to IP transformation involving a multi-year investment of over £10 billion. 21CN enables infrastructure growth, improves customer experience, and provides greater control and flexibility. BT is encouraging third party applications by exposing web services through its Web21C software development kit (SDK). Furthermore, BT’s Web21C employs an event-based pricing structure for developers to consume the web services which exposed by BT.

Network operators can get back “in-the-middle” by adapting Telco assets to meet the needs of new services. There is a need for credit controls and policies to minimize revenue leakage as well as the needs of companies that involve in Web 2.0 services. What the telecom operators have is a lot of accessing into the network and subscribers. Telco assets such as location, presence, profiling, identity, authentication, ability to manage QoS and messaging can be offered, and operators start getting involve in packet inspection, which allows some sort of value proposition and charging. Operators also have very strong operational capabilities in controlling the network availability, network scalability and security. These are all strengths of assets that the new entrants in terms of Web 2.0 don’t have on a proven basis. The opportunities are to expose carrier network via interfaces to application developers and the service delivery platform. From the infrastructure point of view, solutions that enable content and service providers to off-load development risks and apply usage information.

There are four lessons to learn from leading operators. In terms of the first stage, broadband service bundles and entry into pay TV segment need to be differentiated. Secondly, service innovation can lead to revenue growth and cost-savings from user-contributed content. Besides, the interesting development in the infrastructure level, in terms of scale-down revenue-share business models, is emerging through advertising and user-promoted content approaches. Lastly, third party developer communities and software development toolkits can accelerate the pace of telecom service-development.

operators need to invest in network and service offerings as well as to anticipate evolving customer expectations that are conditioned by the ubiquity of broadband access. Web 2.0 innovations are enabling a richer and a more relevant Internet experiences. All these are happening and operators have to find somewhere to react and respond to it.
Mr. Enrico Bagnasco has led OSS standardization activities in ETSI, ITU and TeleManagement Forum, and currently he is the member of IEC board. Within the Telecom Italia, he has hold different management responsibilities in the areas of network management and service platforms and also the head of research & trends, driving the technology plan, then standard coordination and the long term research projects.

Telecom Italia has a solid fixed broadband customer base by serving over 10 million customers in Europe. Besides, Telecom Italia has sold 3.7 million handsets in the first half year of 2007, one third of which are 3G enabled and this also indirectly bring up the UMTS customer based. Besides, interactive VAS accounts for 42% of the total VAS revenue, indicating that customers are picking broadband and online services very quickly.

Telecom 1.0 consists of fixed and mobile services which are expected to be the stable business. On the other hand, if you like to grow businesses and stand ahead of your competitors, you need to seek for different and additional business opportunities in other segments such as entertainment and ICT services. Both services have the significant growth rate and are projected to grow at 12% in 2008.

Telecom Italia is addressing the new market by converging the business opportunities. Telecom Italia foresees that a few possible sectors such as telecommunications, entertainment, IT and consumer electronics, are coming into the similar space from different directions with their own specific assets and value chains. Telecom Italia thinks that it is a successful approach to address traditional and other markets. Besides, in addressing convergent of business we need to have convergent approach in the IT infrastructure. The network used to be separated into fixed network and mobile network has now become one entity. All the different IT network access solutions are combined into one single network infrastructure with the fully integration in many different layers including the optical packet metro, the edge nodes, optical packet backbone, control layer and service layer. The only area for differentiation is the specific access technology and the service platforms which are specified to personal communications service.

The growth of fixed broadband access is phenomenal in the past few years which went from few hundred Kbps to 50 or even 100 Mbps. Similarly, the mobile broadband access was at the 9.6 Kbps access rate and now has the commercial service on HSDPA at 7 Mbps, and will roll out the 14 Mbps in HSUPA. Obviously, Telecom Italia moved from Kbps to Mbps in a very short period of time.

The reference architecture for Telecom Italia was named as the new era of ultra broadband (NGN2), all the network nodes and network segments are in common regardless of the services. The distinctions and the access are no longer to be judged on the mobile/fixed approach, it is more related to the broadband access and the ultra broadband access.
The broadband area is basically what Telecom Italia has today and we started the ultra broadband during the middle of 2007, at the same time rolled out the NGN2 project in the city of Milan. Telecom Italia thinks that the next cycle of investment in billions of Euros will be driven by this technology.

The combination requirement is coming from the business customer who has the specific fiber optic access line and the customer experiencing in triple play, ultra broadband and edge services. As the broadband air interface is moved up to 7 megabit or 14 megabit, especially the higher frequency that is needed to operate, hence there is a very interesting synergy between the needs of ultra broadband mobile access and broadband fixed access network. Everything is a simple IP over optical network in the metro region and backbone region. The service nodes will move into a unified platform that is able to combine all different accesses of the broadband, GSM, and 3G that are separated today.

The approach that Telecom Italia has in mind is to build the NGN2 which is an open platform for many of the vertical markets, such as the multimedia evolution and the virtual presence moving to TeleWork, TelePresence. Besides, a lot of activities and money are invested into the next generation era for e-Health, such as Digital Medical Records, Remote Therapy Management, TeleMonitoring and TeleConsulting. Another large platform is the Intelligent Transport Systems, which consists of Goods Logistic, Fleet Management Toll, City Access Control and Toll Gating in many cities with high population. Furthermore, there are also many applications on tourism, energy, and environment in combination with other technologies.

In addition, the Internet is no more considered as a library, but as an open market place, there are a few lessons to learn from the Internet technology. The brokering is the key technology to open up the service and network platform to third party for application development. As we are moving forward from Telco 1.0 to Telco 2.0 era, new business models focus more on the non-core revenue sources, and operators need to adjust their business roles to extend the service eco-system. The telecom industry is not treated as a Walled Garden anymore but as an open market place. Anyone can create the applications by given the availability of the open API.

There is a case study which Telecom Italia is working together with the automobile industry. The responsibility is to provide a telematic platform in automotive context, where a vehicle on-board platform is connected with the mobile network. The framework is used to expose IT and network capabilities to external service provider. As we can see that, service providers can also be the players of the automotive domain in assisting for both of the travelers and cars, traffic management, and insurance services.

The jumping into the service providers 2.0 era is shaped by number of key forces. Firstly, full deployment of fixed and mobile broadband access such as xDSL, HSPA and the beginning of NGN2. Secondly, radical redesign of service architecture with highly dynamic service creation tools through the exposure of network and service capabilities. This actually gives the possibility to end users themselves to address a Telco-web mash-up environment. Lastly, just the broadband itself is not enough, we need the radical reengineering of business value chain (e.g. advertising, brokering) and the new paradigm of relationship with customers. The social network will also be the main driver to find the success of new services.
Innovation, exploration of broadband & applications

By Frank Ching

Nowadays, we all depend on the broadband service heavily for our daily social life. Our lifestyle has been changed significantly in recent years. Internet users are now generating contents and uploading them into the web to share within the friend circles. This can only be done with the wide deployment of broadband network. Obviously, broadband has become the most critical infrastructure for the modern society. However, consumers are not content with today’s broadband services. They want more bandwidth, higher speed, and lower price. Moreover, they want to access the broadband network anytime, anywhere with any terminals, which would be the most challenging task for the telecom industry.

To provide high speed access services, we must extend the fiber from today’s central office deep into access networks and all the way to the premises of the customers. For mobile broadband service providers, the base stations should also be moved closer to end users. The goal of Ubiquitous Broadband would eventually be achieved through the deeper fiber and deeper wireless deployments.

We are witnessing the coming of the mobile broadband era. The terminal, which was once regarded as the bottleneck for mobile application, now is good enough. Apple’s iPhone and Google’s Android platform show that before long the intelligent mobile terminal would be good and cheap enough that everyone would like to have them. “Widget” is another catalyst for mobile Internet. Widget allows web-based applications to be used without launching a browser. They reside as small icons on terminal screens and can be used to access real-time information, which make Widget an ideal technology for cell phones. Besides, it’s easy to do the application development. Enthusiasts could quickly convert their beloved Internet applications into Widgets which could be easily used in cell phones! We predict that with the help of Widget, the mobile applications would be proliferated at a fantastic speed.

The landscape of Internet has changed significantly. New business models such as The Long Tail, Software as a Service (SaaS), Perpetual Beta, and Open Innovation are playing dominant roles. As the underpinned Internet technologies are evolving to Service Oriented Architecture (SOA) and WebService, Internet users can now create contents by themselves and share with their friends. But telecom operators are only familiar with old type of application and service delivery in which contents and applications are created by operators themselves. Hence telecom operators should also introduce new business model and new IT/Internet technology into the service delivery and creation platform.

As far as we are concerned, SOA and Web Oriented Architecture (WOA) would be the basic methodologies to model the service and product process, and WebService would be the fundamental technical architecture for the new systems. Through deploying these technologies, telecom operators could form an open environment for application innovation and create diversified Web 2.0 services and applications to bring brand new experiences to the end users.

Telecom operators are required to invest big money in broadband network. Unfortunately, most network operators are complaining that they can not earn good money from broadband business. So the key issue is: How can we construct the broadband access network in a more cost-effective way?

We believe a simplified network would be important for cost reduction, especially in aspect of network operation and maintenance. So, a unified access platform supporting diversified access services will be the direction. We generalize this FTTx & xDSL solution as “Four Ones”:

1. One line, to provide multi services: Voice/Data/Video over one copper wire or fiber;
2. One box, to provide various access technologies: POTS/ADSL2+/VDSL2/ GPON/P2P;
3. One platform, to fit into multi scenarios with series of products: FTTCo/ FTTC/FTTB/FTTH;
4. One network, to provide services for all market sectors: residential/business/ mobile backhaul.

In the past, we took access to IP, and take access to full services to present. In the future, we are taking access to the Ultra Broadband. A lot of new technologies have been invented to provide high speed access services. Wave-length Division Multiplexing (WDM) technology would play a more and more important role in the building of ultra broadband access network. For instance, we could map the GPON/EPON frames into wavelength, so the coverage of the PON technology could be extended from 20km to 60km or even more. Through this way, the Optical Line Terminals (OLTs) could be located in fewer offices, and the network will be consolidated to a very flat architecture, which will drive down the maintenance cost substantially.

For the innovation in copper wire technology, we believe the Dynamic Spectrum Management (DSM) is the direction. Crosstalk effects have proven to be the main obstacle on the way of high-speed copper wire. Many VDSL network subscribers complain about their unstable broadband connections, which are easy to be torn off during the session. This issue could be addressed by DSM, for the signal interference within wire bundle could be significantly alleviated by coordinating the spectrum assignments of different wires.

In mobile network arena, we believe the main bottleneck for the coming mobile Internet era is the network side. To provide mobile broadband access services as cheap as the fixed counterparts is what we are pursuing. IP backhaul and Self Organizing Network (SON) would be very critical for the success of mobile broadband access network deployment. Backhaul becomes the most serious bottleneck after the enhancement of air interface. High QoS plus high bandwidth backhaul resource are not economically available for most deployment scenarios. So many innovative technologies are invented on IP based backhaul.

With such a large number of small sites being installed, network behaviors are dynamic and unpredictable, making it more complicated to plan, roll out and optimize these sites manually. Regarding this matter, SON will be the right way that we should go. SON is one of the solutions to cut down the maintenance cost. Its base idea is to support plug-and-play functionality for all the small size base stations, which the base station can be installed easily without any manual configuration, and it should support detection of the environment as well as allow self software upgrade capability. So, transmission powers, Radio Resource Management (RRM) parameters, handover parameters and neighbor cell configuration etc, should be changed automatically for the network optimization. All these call for innovative intelligent algorithms.

Important innovations are also happening to each mobile network component. The internal switching and processing architecture of base stations and BSC/RNC have migrated from ATM to IP/Ethernet technology. Multi-mode base station with future-oriented design becomes the new trend. In addition, radio unit and baseband processing unit of base station could be software configured to support smooth migration from GSM to UMTS, even to LTE without changing hardware components.

In terms of telecom application, services like broadband voice service and mobile video are very common today, but telecom transformation and vision of operators are volatile and changing rapidly. In such a complicated environment, telecom operators should work together with a lot of third party application creators or individuals who create the applications, hence the partnership relation would be just like a social network connection for multi-play. The changing of the thought and culture proved to be the hardest of all for becoming a multi-play provider; comparatively it is not very hard to do the network migration toward All-IP target.

A lot of explorations have been made in telecom industry to introduce Web 2.0 type of services to end users. We could stride the first step from IMS based IPTV, to integrate IMS services with IPTV applications. We can actually provide “TV + IMS” to let them work together and provide the video and voice connection community with different terminals.

Last but not least, efforts have also been made in “IMS-Live!”, which adopts the new IP technology and integrates a lot of new web services into IMS architecture, so that the IMS end users could get blended services (communication + Web 2.0) from service platform through mash-up methodology. New ideas of introducing latest Web 2.0 technologies and applications to IMS service portfolio and IPTV portfolio are well planned by many telecom operators.

In summary, the technology’s roadmap will continue to lead the industry through substantially increasing performance while reducing costs. The consumer experience will also continue to improve, with fast and fit individual lifestyles in the future.
COVER STORY
The fruit of emerging markets
The rapid development of telecom industry over the past few years is reflected by a global mobile phone penetration rate of almost 50% - or 3 billion subscribers. However, the contrast between countries distinguished by economy and development is vast: the mobile phone penetration rate is approaching 100% in some developed countries, but remains as low as 1% in some emerging markets.

In India, for instance, the urban areas exhibited a mobile phone penetration rate of around 40% by the end of 2006, while its rural areas achieved less than 2%. China’s overall mobile phone penetration rate reached 38% - or 500 million mobile subscribers - by early 2007, but with rural areas averaging just 12%. In 2005, African mobile phone subscribers accounted for 6.5% of the continent’s population, and this is expected to merely double by the end of 2008. Latin America saw an overall mobile phone penetration rate of 43% by the end of 2006, but the variation between countries was huge. Haiti and Cuba, for example, managed only 5% and 1% respectively.

Given these figures, emerging markets offer enormous potential for future development and are as such becoming hotly contested battlefields among the world’s telecom players.
Emerging markets are mainly distributed in developing countries with rich natural and human resources, many of which are also prominent tourist destinations including India, China, and number of countries in Africa and Latin America. Economic globalization is stimulating rapid economic growth in these countries, and meanwhile the telecom industry, as an integral facet of a nation’s infrastructure, is faced with great opportunities and potential for development. The characteristics that nascent development imbues, such as population dividend, increased population mobility, a burgeoning middle class with high disposable income, and a large low-income population, can create tremendous demands upon telecom services.

Population mobility: the opportunities

In many developing countries, large-scale population mobility results from regional economic imbalances, and, recognizing this, some operators have derived commercial opportunities from the demographic phenomenon and gained market success.

In China, for example, around 100 million farmers have left their inland villages to seek employment in coastal cities. Focusing on these migrant workers, China’s mobile operators launched low-cost mobile phones, prepaid services, and tariff packages in order to cater for their communications needs. Now, for most of these people, mobile communication not only forms a feature of their working lives and but also plays an essential role in maintaining family contact.

Shenzhen, where Huawei’s headquarters are located, is a definitively modern coastal city that exemplifies China’s economic miracle. Shenzhen was a fishing village with a population under 100,000 thirty years ago. Huge and sustained migration from...
other provinces has spearheaded its transformation into a bustling metropolis housing over 10 million people, with an average GDP exceeding USD10,000 nowadays.

Chinese New Year sees an annual mass exodus of over 2 million people, as a relatively high percentage of the city's inhabitant return home for family reunion in around 10 days. Accordingly, operators offer roaming service discounts and ensure that subscribers can still enjoy services outside of Shenzhen without changing SIM cards. New Year's Eve sees long-distance telecom traffic quadruple as residents who stay in Shenzhen call relatives in their hometowns. Unsurprisingly, operators compete for a share of the associated revenues by offering incentives such as discount packages for long distance calls.

According to World Bank statistics, global migrant workers sent about USD93 billion back to their homelands in 2003. This figure describes the second largest capital flow in developing countries, second only to direct foreign investment. Research in Mexico, reveals that USD1 remitted from abroad creates USD3 worth of domestic. In addition to promoting domestic economic development, migrant workers also create massive international communications demands, and some multinational operators have customized solutions to seize this opportunity and expand the telecom operation space.

In countries such as the United Arab Emirates and Saudi Arabia, the number of migrant workers exceeds the native populations. The strong drive to regularly communicate with those back home has been broadly restricted by high tariffs. However, a middle-eastern multinational operator who provides services mainly to Muslim countries realized the mutually beneficial opportunity and, already in possession of decent network coverage, implemented a tariff package for migrant workers. They offered a low-cost evening charge 50% cheaper than the similar services of other operators, recognizing the fact that people are more likely to call friends and family at night, and networks are also less congested during this time. The multinational network has assisted the operator to reduce settlement fees and lower costs, and a secure competitive edge has been obtained by targeting a market segment that combines a relatively low income with enormous communications needs.

In some countries, multinational telecom traffic and services are generated via large-scale religious activities and travelling to popular tourist destinations. For example, Ramadan and Hajj are two of the most important events in the Muslim calendar, and the latter sees about four million pilgrims gather in Mecca annually. Saudi Telecom launches telecom service promotions for each Hajj festival and, thanks to the equipment provided by Huawei, subscribers can obtain a local number after roaming to their own networks, meaning SIM card changes are unnecessary to enjoy usual phone services charged at local rates. Subscribers benefit from user-friendly prepaid services for telecom and recharging services, and no multinational settlement fee is required since local numbers are used.

To explore the huge opportunity that population mobility can bring to telecom operations, Huawei has developed a series of solutions tailored for multinational and trans-regional operations, such as:

Multinational service solutions, which include multinational roaming for voice and data services, multinational platforms for SMS and data delivery, and next generation call centers.

Multinational core network solutions, which include softswitch-based comprehensive international gateway offices, multinational core network that is based on R4 softswitch architecture, and signaling networks oriented to All-IP evolution.

Multinational bearer network solutions, which help operators bear all voice and data-based traffic and services on a multinational backbone IP network.

Huawei's holistic IP based network solutions extend to intelligent networks as well as core and bearer networks, and have been successfully deployed by China Mobile and many other global operators in a variety of locations world-wide. Domestically, Huawei equipment is employed during traditional Chinese festivals to smoothly process 10 times the amount of normal traffic by using just 20% device redundancy and, abroad, Huawei's softswitch solution has successfully sustained peak traffic during Hajj for three consecutive years. The proven performance capabilities of Huawei's solutions fully demonstrate their maturity and reliability.

**Population dividend benefits**

A population dividend occurs when the percentage of working age individuals rises while the birth rate falls. It is characterized by relatively rich labor-force resources and a light burden from senior citizens, and represents a golden period for a country's economic development. Many developing countries are currently benefiting from a population dividend which is spurring both consumption and progress.

China, for example, has about 300 million people under 30 years old who form both the catalyst for economic development and its main beneficiary group. During the past three years, the average...
income for 20-29 year olds has increased by 34%. Youthful vitality combined with a high disposable income and intrinsic optimism creates a demographic group with the largest consumption potential in China. In terms of the telecom market, this group are not only trend setters, but more readily acceptant of new telecom services - especially data - and are thus the key consumers responsible for promoting innovation and development in the communications field.

Some operators target young people by assessing their purchasing power and behaviors, and customizing their solutions to maximize revenue. This is illustrated by China Mobile’s M-ZONE brand which was launched in 2001 and specialized in providing youth-oriented services. The number of M-ZONE subscribers to date has exceeded 100 million, and statistics by the discovery and exploitation of large oil and gas reserves and the recent launch of mass infrastructure construction including railways, highways and health, sponsored by EU and UN.

Though developing countries possess low average GDPs, they have large populations and rapid GDP growth which is swiftly expanding their middle classes. According to an approximate calculation regarding purchase power parity (PPP), around 1.7 billion people globally earn an average income exceeding USD7,000, and nearly half of these live in developing countries, with more than 240 million in China alone.

This burgeoning middle class possesses immense purchasing power, and their telecom service demands are running parallel with their equivalents in developed countries. If telecom operators can seize the opportunity afforded by the rapid technologies.

An international telecom operator in Africa, for instance, has deployed WiMAX on a large scale, covering numerous countries including Namibia, Botswana, and Angola since 2006. The market has reacted favorably to WiMAX Internet access, and WiMAX subscribers now greatly outnumber fixed network ADSL subscribers. Operators in countries such as South Africa, Nigeria, Uganda, and Russia have adopted EV-DO data cards for Internet surfing through wireless broadband. Their ARPU values remain over USD60, with some reaching USD100. According to Huawei’s 2006 research in Namibia, over 30% of broadband users shopped online, second only in volume to web browsing.

Nevertheless, technologies and applications that have proven successful in developed countries often fare badly in developing countries. One South African operator imitated a European model for 3G service deployment and subscriber expansion. However, unsatisfactory commercial gains resulted from unsuitable terminals, coverage, services and tariffs. The operator then shifted its business direction by prioritizing data card service development and won some success.

Another example exists with the smaller, power-efficient distributed base stations that have been widely applied in Europe. When deployed in Africa, these base stations exert less obvious advantages because the continent features sparse local

Middle class strength

Recent years have healed the Asia-Pacific economy following 1997’s financial turmoil with rapid, sustained economic growth averaging 8% in the world’s two largest countries, China and India. Africa has in turn enjoyed an economic upturn exceeding 5%, which has been stimulated expansion in developing regions and meet these communications requirements, their commercial potential will be greatly extended.

Telecom solutions for developing countries should differ from those in developed countries. It is unnecessary to deploy the most advanced technologies firstly in developed countries’ markets since the existence of a complete networking infrastructure brings with it an overweight historical burden that hinders the application of new technologies. Conversely, developing countries benefit from relatively less legacy network features, and it is more viable to smoothly and cheaply apply the latest

The burgeoning middle class possesses immense purchasing power, and their telecom service demands are running parallel with their equivalents in developed countries.
populations and base station locations are easily acquired. Moreover, frequent power interruptions enhance the suitability of base stations that use solar or biological energy instead.

The gold at the bottom of the pyramid

Low-income individuals form the wide base in the pyramid of wealth and great possibilities are offered by their large numbers and potential communications demands, especially rural dwellers. In order to effectively serve the masses who rank at the lower end of the financial league and to make a profit, a tailored and appropriate strategy is essential. Both China Mobile and Sri Lanka’s Dialog recognize that reaching a nation's rural poor requires more than simply offering “an existing portfolio of products and services”. The challenge rests with identifying the pivotal point where market access is gained by transforming limitations into opportunities.

With the help of the right vendor, operators are able to re-invent themselves and their products to take advantage of opportunities presented by low-income groups.

China Mobile: exploring the green fields

Mobile services in China’s large and medium-sized cities are going saturated and so China Mobile has recently focused upon the development of the rural market. 90% of China’s landmass is rural and is occupied by 745 million - or 57% - of the nation’s 1.3 billion people. In September 2007, China Mobile acquired approximately 6.1 million new subscribers, of whom a great many derived from the rural areas. The total number of subscribers reached 350 million, winning China Mobile the largest subscriber base among all global mobile operators. The growth of the rural market is emerging as a new fountain for China Mobile’s revenue stream and, according to its interim report in 2007, the rural market now accounts for over 50% of new subscribers.

Yang Wenbin, a farmer in Hubei, was quick to offer praise to China Mobile rural service: “The village service is great for me. I earn more thanks to the simple messages that give me the information I need.” While Mr. Yang cultivates cotton across 15,000m² of farmland, he has tended to under price his yields due to limited access to market information. After China Mobile’s services penetrated his village in 2006 and Mr. Yang joined the village service platform, he was able to sell his cotton at a 20% higher price than before due to a more up-to-date understanding of market conditions.

Mr. Yang’s village is one of 30,000 villages that have been covered by China Mobile’s wireless service during the past three years. China Mobile invested about USD1.65 billion in rural market expansion to provide universal communications services to China’s remote areas by the end of 2006.

The village service platform mentioned by Mr. Yang is one of many customized services offered by China Mobile in its effort to assist farmers improve their livelihood. Besides providing market information, the platform also supplies the latest information regarding agricultural modernization, health care and education. Considering the low literacy level among farmers, China Mobile has gone as far as establishing special contact centers where farmers can call in to submit or update their agricultural products’ information, which is then transmitted to buyers.

In terms of accessibility, China Mobile cooperates with terminal manufacturers to provide low-priced customized mobile phones ranging from USD27 to USD67, some of which are even free given a certain amount of tariff is prepaid. China Mobile’s thorough planning and inception has successfully promoted the popularity and use of mobile phones among farmers. Clay Chandler, a senior writer for Fortune comments: “The company’s strategy reflects the wisdom of C.K. Prahalad, a famous corporate management guru who believes that inspiring the mass poor can be rewarding; dubbed as the fortune at the bottom of the pyramid.”

These efforts have resulted in remarkable success as shown in China Mobile’s fiscal year 2006 (FY2006) report which attributes the year’s bullish growth to three main reasons, one of which is the rural market’s rapid development. This helped boost its number of subscribers by 22.1% to 301 million. Half of the new subscribers hailed from China’s vast countryside. The average revenue per user (ARPU) increased in the fourth quarter (4Q) of FY2006 to USD12.00, up from the 3Q level of USD11.60.

Compared with the previous year and despite its increased investment in developing rural mobile telecommunications, China Mobile has managed to maintain high profitability with only a slight dent in earnings before interest, taxes, depreciation and amortization margins (EBITDA). This takes into consideration huge asset write-offs and one-off promotion campaigns aimed at existing customers in FY2006’s 4Q. However, the slight fall in EBITDA was well off-set by China Mobile’s higher than expected net income, which recorded a 23.3% rise. This demonstrates that the huge addition of the rural population with low ARPU has not adversely affected China Mobile’s profits, but has in fact instigated a valuable growth source.
COVER STORY
The fruit of emerging markets

Dialog: serving the 1-minute subscribers

Despite being the last entrant to Sri Lanka’s mobile telecom market, Dialog has managed to surpass its competitors and become the market leader, commanding an impressive 60% market share in the mobile arena and a staggering 73% of total industry revenues. To date, Dialog’s network provides the widest coverage in Sri Lanka, spanning 70% of its land mass and 90% of its inhabited areas.

Innovative tariff plans and services combined with the rapid expansion of coverage areas across all Sri Lankan provinces resulted in the company reaching the milestone subscriber base of 3 million by November 2006, which rose to 3.11 million by the end of the year.

At the end of FY2005, Dialog’s blended and prepaid ARPU were USD6.71 and USD4.10 respectively. FY2006 saw its blended ARPU drop by 5% to USD6.36, while its prepaid sector grew by 1.5% to USD4.16. Dialog’s strategy to “transform mobile telephony to a broad-based commodity affordable and available to citizens from all walks of life” has clearly helped position them as the fuel to drive rural market development.

In order to compete in a more intensified market setting and to stimulate the adoption of mobile services in rural areas, Dialog adopted the investment philosophy of “serving the 1-minute subscriber”. Dialog has since regarded “profit per minute” and “profit per subscriber” as lead guidance parameters when designing their solutions’ packages.

Implementation of this philosophy led Dialog to alter its cost structure to ensure profitability, as evidenced by their OPEX-to-revenue performance ratio which described a 1% increment over FY2005 by the end of FY2006. In July 2006, Dialog introduced an aggressive tariff reduction of up to 30%, but still chalked up a 54% EBITDA margin in FY2006’s 4Q, a 5% improvement over the same period in FY2005.

Huawei: a partner in accessing the fortune

China Mobile and Dialog have both proven that profits are not compromised after investing in and developing the rural market. Both operators have identified that rural subscribers are as capable contributors as their richer urban counterparts, despite an income gap of up to 300%.

In terms of its valuable contribution to China Mobile’s and Dialog’s rural successes, Huawei shares the belief that unlocking the huge potential of a rural population is best achieved by providing scalable, state-of-the-art solutions that hammer down OPEX. This goes far beyond merely offering ad-hoc equipment boxes for simple voice services, which some may view as more appropriate for poors and rural areas. In Tibet, Huawei helped China Telecom to save USD1.6 billion by providing customized wireless solutions as opposed to conventional cabled access. Moreover, Indonesian STI realized its nationwide wireless coverage of 13,677 dispersed islands with assistance from Huawei.

Customized for rural communications, Huawei’s solutions prioritize low investment requirements, short construction times, simple maintenance, wide signal coverage and a variety of value-added services. With increasing numbers of operators adopting Huawei’s solutions in rural market development, Huawei has managed to become a strategic partner in finding the gold at the bottom of the pyramid.

Village Phone: a telecom model tailored for the poor

The Village Phone (VP) model demonstrates an exemplary method of providing telecom service to the poor. Many enterprises, such as banks, hesitate when confronted with doing business with the poor. Muhammad Yunus, the 2006 Nobel Peace Prize winner, founded a bank named Grameen Bank that is specially oriented to those on low incomes. His bank has challenged inherent banking ideas across the industry via its successful results, as illustrated by non-performing loan (NPL) statistics in Bangladesh. With the banking system as a whole plagued by a very high NPL rate, Grameen Bank’s hovers around the extremely low level of 5%, despite the fact that its loan volume equals that of Bangladesh’s largest commercial bank. The success of Grameen Bank is defined by its adherence to a series of key premises:

Belief that the poor are trustworthy: Bank loans are granted based on trust, not on assets.

Simplified process: People can pay back their loans by smaller installments, such as weekly payments for a one-year loan, which can help mitigate pressure and risks for debtors.

Organizational innovation: To guarantee that small credit loans can be paid back, Grameen Bank requires that each loan applicant a support team consisting of people who have the same income. His bank has challenged inherent banking ideas across the industry via its successful results, as illustrated by non-performing loan (NPL) statistics in Bangladesh. With the banking system as a whole plagued by a very high NPL rate, Grameen Bank’s hovers around the extremely low level of 5%, despite the fact that its loan volume equals that of Bangladesh’s largest commercial bank. The success of Grameen Bank is defined by its adherence to a series of key premises:

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When providing communication services to the poor, operators may encounter the following problems: Can those on a low income afford to buy and use a mobile phone? Can investment be protected given low traffic flow?

The Grameen Bank holding company, Grameen Telecom, incorporated with the Norwegian operator, Telenor, to jointly establish GrameenPhone. Based on the successful experience of Grameen Bank and through VP's, GrameenPhone has created a multi-win business model for VP operators, subscribers and telecom operators.

Devolved responsibility places the members of a poor community as its VP operators, who approach Grameen Bank for loans to purchase telephones and call traffic from Grameen Telecom. The latter gets favorable wholesale discount from GrameenPhone. VP operators then use profits gained from the price differential to pay back their loans plus relevant administrative fees. After these costs, they still make a decent profit. It thus achieves low-cost operations under the concepts of "no subscriber acquisition cost (No SAC)" and "no subscriber retention cost (No SRC)".

A VP operator fulfills the roles of both a sales channel and business center by serving the villages in which its staff live, and surrounding districts. Subscribers can go to a VP operator’s house to make phone calls and, if there is an incoming call for a subscriber, a VP operator can take the telephone to the subscriber’s house. For reserved calls at an appointed time, subscribers can wait at a VP operator’s house. During market time, a VP operator can sell telephone services to market attendees. Although each subscriber’s traffic and ARPU are very low, one telephone - specifically one SIM card - actually accumulates the traffic of many subscribers, giving rise to a relatively high ARPU.

To date, there are more than 260,000 VP operators in over 50,000 villages who generate over USD200 million in revenue for the company, and women operating phones through GrameenPhone earn a daily income of at least USD2 from this business. In addition to helping these women achieve economic self-sufficiency, the GrameenPhone network, which virtually spans the whole of Bangladesh, has brought its citizens closer to each other. Telephones, which were a rarity 15 years ago are now everywhere in urban areas, and a commonplace in rural areas as well.

This model has been copied and adopted by other countries. In general, it embodies the following features:

**Low-cost networking**: including low-cost network coverage and transmission.

**Low-cost channel**: learning from the VP and Grameen Bank models, so as to adopt low-cost channels and encourage subscribers to become operators.

**Low tariff within the community**: switching local calls directly through the same base station, thus lowering the tariff for subscribers.

**Low-cost recharge**: reducing the cost of scratch cards by electronic recharging, and reducing recharge costs by balance transfer.

**Low-cost promotion**: adopting word-of-mouth, message and family marketing accompanied by advertisements using mobile publicity units, walls and mountain plains.

**Stimulating demand**: using low-cost, small-unit recharges measured in seconds; implementing recharge rewards; promoting wireless public phones and mobile phone bars to accumulate traffic.

Editor: Zhou Huajiao zhouhj@huawei.com
Winning in emerging markets

The characteristics of emerging and mature markets differ greatly. Subscribers in an emerging market generally receive lower incomes and many of them opt for prepaid services, causing low ARPU. To help stimulate development in emerging markets and to ensure a foothold in terms of market share, operators tend to implement a low tariff strategy. Obviously, this must be supported by a cost control tactic, and as such operators are forced to identify sustainable TCO reduction methods.

By He Zhichao & Feng Li

As the dominant source of new mobile subscribers over the past few years, emerging markets in the Asia-Pacific region, Latin America and Africa have attracted increasing attention from operators. EMC Consulting Services forecasts that the global number of mobile subscribers will exceed 3.7 billion by 2010, and that emerging markets will account for 85% of the new subscribers.

Based on its rich experience in emerging markets, Huawei believes that any meaningful strategy to realize rapid development not only requires high-grade network products, but also holistic end-to-end solutions that span network construction, technology selection, operation mechanisms and robust financial analysis in terms of investment and profit.

As an industry pioneer in the 3G field, Huawei has already introduced its cutting-edge 3G and softswitch technologies to GSM networks. Via innovative product features and solutions, we have assisted operators to significantly reduce TCO, enhance their competitive ability and achieve success in emerging markets.

Survival of the fittest

Globalization is fuelling the inexorable removal of international commercial barriers. Not only are numerous multinational operators keen to exploit emerging markets, but many new and upcoming operators have acquired licenses. Each operator possesses a unique background, status, set of objectives and market prospects. This necessitates individually applicable network strategies, architectures and technologies.

For example, if a multinational operator enters an emerging market, such as Etisalat in Egypt, it may expect a rapid subscriber increase that will result in a large scale market share. Adoption of a radical and aggressive strategy, however, must firstly consider subsequent development, and as such a scalable and hierarchical network architecture that avoids frequent future network adjustments must be designed. Additionally, the deployment of an optical network must be prioritized in order to sustain a large subscriber base and accommodate data service demands.

On the other hand, operators who lack funds,
but who are active in a relatively saturated market with a small subscriber base, need to reduce investment during earlier phases, focus on key area coverage, deploy equipment centrally, and realize network coverage quickly through leasing and microwaves.

Different operators must select a suitable network deployment strategy since the fiercely competitive environment ensures that only the fittest survive. In emerging markets, successful operators will scientifically employ business planning, conduct analyses and make forecasts based on actual conditions, accurately determine market positioning, and perform detailed TCO/ROI analyses and comparisons. Only by undertaking such rigorous planning can an operator select the network strategy and architecture that deliver a high performance to price ratio and provide the capability for seamless future evolution.

**TCO reduction methods**

Table 1 illustrates Huawei’s highly successful advanced technologies designed to help operators reduce OPEX and auxiliary civil work (CW) costs, and which includes introducing new technologies to 2G products.

**Fewer BTSs but wider coverage**

BTSs adopt technologies that include dynamic power boost technology (PBT), transmission/receiver diversity, and dual time slots and dual carriers. These greatly enhance transmission power and receiver sensitivity and, in comparison with the number required by similar products currently on the market, BTS on-site numbers can be reduced by 20% - 30%.

**CW and auxiliary cost reductions**

The all-in-one BTS offers built-in transmission devices and batteries. The distributed BTS is small and easy to deploy, thus greatly reducing CW costs while lowering expenditure in terms of power supply, transmission, air-conditioning, site rent and manual maintenance. Designed with IP55 and direct air cooling technologies, the small capacity BTS can be adapted to a given environment such as H poles and guyed towers. Considerable savings are made in power consumption, towers, shelters and other auxiliary CW equipment.

The dual-mode base station supports both 2G and 3G services on the same platform, enabling smooth and dynamic evolution, and greatly reducing the CW costs.

**Transmission savings**

High transmission costs pose one of the largest obstacles for new operators’ service development plans, with transmission rental comprising an increasingly large percentage of OPEX. When implemented across the service network, Huawei’s transmission and IP technologies significantly reduce this cost by realizing multi-layer local call local switch. Based on traffic and call analyses, Huawei has launched a range of solutions including HUB-BTS, Abis transmission optimization and IP BSS in order to achieve

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**Table 1 Innovative solutions to reduce TCO**

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<td>Power management technologies</td>
<td>Advanced power management technologies save power consumption for BTS</td>
<td></td>
<td>30% - 40%</td>
</tr>
<tr>
<td>HUB BTS (with IP over TDM)</td>
<td>LCLS + IP over TDM + MUX + cRTP saves long haul transmission</td>
<td></td>
<td>30% - 50%</td>
</tr>
<tr>
<td>IP over TDM in CN</td>
<td>IP over TDM+ cRTP + VAD saves transmission inter-MGW</td>
<td></td>
<td>50% - 60%</td>
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<tr>
<td>BSC-MGW co-cabinet</td>
<td>LCLS saves long haul transmission</td>
<td></td>
<td>20% - 50%</td>
</tr>
<tr>
<td>Networking microwave products</td>
<td>Advanced MW product save TCO Seamlessly integration with ON and radio network ASON transmission solution greatly reduces maintenance costs</td>
<td></td>
<td>80% transmission O&amp;M cost</td>
</tr>
<tr>
<td>All-in-one BTS (BTS3006C, 3002E, BTS3012AE)</td>
<td>Save civil work (save shelter, conditioner, site acquisition)</td>
<td></td>
<td>20% - 30%</td>
</tr>
<tr>
<td>Wide coverage BTS</td>
<td>Reduce BTSs by 25% - 30%</td>
<td></td>
<td>20% - 30% radio cost</td>
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<tr>
<td></td>
<td>Reduce corresponding civil work</td>
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<td>about 30%</td>
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<tr>
<td>2G/3G unified network</td>
<td>2G/3G unified core network</td>
<td>Reserved</td>
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<tr>
<td>Advanced IP bearer network</td>
<td>IPv4: smooth evolution to IPv6</td>
<td>Reserved</td>
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savings in microwave construction costs and side MAN transmission rental. Huawei also provides customized solutions such as its MGW-BSC co-cabinet and IP over E1, which saves long-distance transmission rental. These solutions fully embody the local call local switch and IP transmission concepts that greatly reduce required bandwidth for long-distance transmission.

**Power savings**

Huawei has introduced its leading 3G technologies for GSM products. Its indoor and outdoor BTSs reduce power consumption by 30% to 40% via advanced power management, chipsets, heat dissipation, and BTS/TRX dynamic closing technologies. The power consumption of the latest distributed BTSs is less than 500W (S444).

**Leading softswitch technologies**

Traditional TDM networks’ complex architecture and high maintenance costs contribute to poor capacity and efficiency, and they lack the flexibility to deploy new services. IP-based softswitch technologies solve the problems associated with traditional TDM networks and are recognized as the next-generation core network technologies capable of facilitating smooth future evolution. The use of distributed deployment systems, advanced IP compression, and combined MGW/BSC technologies not only reduce costs related to power, transmission and maintenance, but can also accomplish 60% to 70% network OPEX savings.

Return on investment and smooth future network evolution are key concerns for all operators. Huawei’s core and IP bearer networks and service platform support 2G and 3G network coexistence, and expedite the dynamic adjustment of 2G/3G network resources according to subscriber requirements, while realizing smooth service evolution. The next generation BSC supports seamless evolution to 3G with 100% hardware reuse that sees 2G and 3G devices located in the same cabinet. The BTS dual-mode IP design can ensure the entire GSM network’s complete evolution to 3G, thus protecting an operator’s existing investment.

Huawei’s specialist products and customized solutions have been successfully applied in several projects. Etisalat, for instance, employed Huawei’s BTSs in which 80% were outdoor BTSs to reduce CW and auxiliary equipment costs, and by doing so had improved both their service provision and competitive capabilities. Moreover, complete 2G/3G co-site, co-antenna and IP access technologies can help operators reduce TCO by 15% - 25%.

**Guaranteeing a competitive edge**

Emerging markets are highly attractive to companies who wish to secure a valuable market share. A competitive edge can only be obtained if operators continuously seek to raise ARPU via an unceasing ethos for innovation and a sustained, high-grade performance.

The GSM public phone describes an innovative service model that integrates both fixed and mobile phone features. For remote and low-ARPU areas that are further restricted by the high costs of fixed network construction, a fixed mobile station can be put in place to ameliorate call difficulties. Several aspects are factored into this solution.

Networking must be both flexible and low cost. For areas with macro BTSs nearby, an RF repeater can be installed at a remote location to transmit BTS signals to villages and isolated areas. Places without macro BTSs can utilize outdoor pico cells to achieve coverage and employ HUB-BTS and microwave solutions to realize transmission. Equipment room, transmission equipment and power resources are thus saved, greatly reducing investment in early phase development and OPEX and maintenance during the latter phases.

Operating features local recharging coupled with a GSM fixed station. Firstly, a GSM fixed station is deployed in a given remote area to provide call and message services, and each local mobile subscriber is provided with a SIM card that supports local recharging via an individual’s unique number. To make a call, a subscriber simply inserts his or her own SIM card into the GSM fixed station. This operational mode provides a solution not only for low-end subscribers for whom a mobile phone is financially unviable, but also for operators in terms of service development, achieving an enlarged subscriber base, higher revenues, reduced network construction costs, and lowered OPEX.

Emerging markets are replete with challenges. The two major concerns involve retaining subscribers in an aggressively competitive environment while generating profits in a low ARPU level. Thus operators are in great need of a long-term partner to assist their future growth. Based on its rich experience accumulated in emerging markets and underpinned by continuous investment in the GSM sector, Huawei is ready to help operators lower TCO and garner profits in a low ARPU setting via scientific business planning, innovative product implementation, and holistic end-to-end solutions.

**Editor: Chen Yuhong chyhong@huawei.com**
Why “matching is king”?

Content, applications, users and terminals/PCs are all integral aspects of holistic service provision, and a variety of viewpoints exist regarding which is the most important.

Content, for instance, is obviously intrinsic to service experience, yet a large proportion of available content remains out of reach for most users given that the information overload characterizing today’s era. Content, therefore, is difficult to be processed and applied. This can be illustrated by NTT DoCoMo’s diversified i-mode services - 70% remains not only under promoted, but also broadly untouched by subscribers.

Users are the lifeblood of profits and an operator may lose its dominant market position should it not provide the right content package. Further exacerbating this problem for fixed network operators is the rapid emergence of SPs and CPs.

More and more operators are realizing that the delivery of an appropriate information bundle to a given user represents the sole means of escaping the information maze. Specifically, this type of matching enables users to access desired content easily. A clear reduction in transaction costs coupled with improvement of user potential can increase profits for operators. So, in the information era, matching has emerged as a king.

Core capabilities of matching

The value chain of the telecom information service comprises several important roles: telecom operator, SP/CP, terminal provider, and operating system provider. Moreover, SPs and CPs are further sub-divided into GAMEY, which includes Google, AOL, MSN, eBay, Skype, and Yahoo!. Increased value chain openness and fierce competition demand that any positional dominance depends upon the value that an enterprise can convey to end users. In-depth needs’ analyses and a coherent reactive strategy are prerequisite to accomplish successful value delivery.

Content aggregators, telecom operators and operating system providers are aggressively competing to prevail in the industry’s value chain. Legacy conditions, standards and the nature of competition have created completely different situations in fixed and mobile networks. Content aggregators dominate the fixed field, while telecom operators lead in the mobile arena. Nevertheless, these current positions lack
any meaningful stability.

Dominance can be maintained in the long-term by giving users access to services at minimal transaction costs, including those associated with information, study, searches, and credit. Dominance is maintained also by gaining subscribers at the front layer, aggregating content at the rear layer, and matching content with users.

**Attracting users**

The key to securing subscribers is to cultivate their habits. Competition in this field mainly focuses upon terminals and desktops. A variety of roles in the value chain are active, and content aggregators have launched browser plugins such as the Google search toolbar, and desktop tools, including shortcuts for QQ, IM and games. Telecom operators are customizing terminals and presenting their portals on desktops such as China Mobile's Monternet and China Telecom's ChinaVnet. At the same time, operating system providers are setting their websites as default homepages for users.

In terms of gaining subscribers, mobile operators seem to have more advantages than fixed operators disadvantaged when negotiating prices with Microsoft. In terms of mobile phones' operating systems, Symbian, Windows Mobile and Linux are currently competing for a leading position in a constantly changing market. Consequently, terminal and operating system providers are in turn competing to customize mobile phones for telecom operators.

Mobile operators seem to be better positioned than fixed operators to control users due to differences in their abilities to customize terminals coupled with users’ ability to bypass terminals. However, home gateway combined with IPTV services has provided an excellent opportunity for fixed operators because it ameliorates the two key weaknesses, integrates Femto and Wi-Fi access, and can smoothly evolve to FMC.

France Telecom, for example, launched its Livebox service in July 2004 and achieved great success. Livebox integrates and unifies the ADSL modem, Ethernet, Wi-Fi, and blue tooth interfaces to provide access to various services including web surfing, IPTV, VoIP, video-phoning, and games. To promote sales, France Telecom has customized service packages at different levels and has bundled services such as wireless broadband, VoIP, and mail.

**Aggregating contents**

Terminal and desktop competition will eventually culminate in a unified portal from which users can purchase all the services they need. To achieve this, the portal must aggregate and effectively organize as much content as possible. Many operators have already begun cooperating with leading content aggregators, such as BT with Yahoo!, SBC with Yahoo!, and Verizon with MSN.

**Matching powers**

Excluding technological factors, the matching-based value proposition conveyed to users can be divided into the following four phases: Universal search is represented by the services provided by Google and Baidu; and professional search by KooXoo; similarity recommendation is employed to predict users’ consumption trends based on previous habits, and gives recommendation accordingly; cross-domain recommendation derives users’ deep-level preferences for a number of reasons.

**User characteristics**

The voice and data terminals used in mobile networks are mobile phones, and they provide a consistent operation mode and help users transfer from voice service to data service. Mobile data users possess greater requirements for convenience and intelligent operation, and mobile operators cater to users' needs via customized terminals and portals that feature step-by-step operations.

Fixed data terminals on the other hand consist of PCs other than fixed phones, which presents an obstacle for fixed data users, because users have to learn basic IT knowledge, gain sufficient information resources, and process an ability to bypass the portal.

**Competition in operating systems**

Microsoft Windows has been enjoying a position of absolute dominance in the PC operating system field. Other parties in the value chain are severely
and requirements from previous behavior and makes corresponding predictions and recommendations.

On a higher level, quantitative, multiple layer consumption analysis can be conducted to anticipate needs of which users themselves are unaware, thus further bridging the relationship between providers and consumers.

In general, matching is developed from the passive “pull” of users’ search requests and the active “push” of content and services towards users by predicting their needs through intelligent algorithms. This trend has resulted in targeted advertising as opposed to the random bombardments seen in previous years. Consumers are expected to exit the mire of information overload, and it is anticipated that providers will invest their limited resources in potential users, thus increasingly blurring the boundary between advertisements and information.

Some telecom operators have come to realize the considerable power that matching exerts and have initiated cooperation with search providers. Best Tone is a comprehensive information service platform launched by China Telecom through access code 114 and it provides users with various types of information closely related to their daily lives, including clothing, food, housing, travel and recreation. The objective of Best Tone is to fully explore and consolidate information concerning subscriber numbers, and to extend and develop traditional directory enquires in order to meet users’ real and potential needs. If the service is accessed in order to obtain travel directions regarding companies based on unit name, service scope, branch office, website, e-mail, real name, and industry, the platform will broadcast the companies and routes of the relevant businesses under signed contracts.

In 2006, China Telecom and Microsoft officially began their cooperation in Internet searching for services, thus allowing Best Tone to be transferred from voice to Internet. Best Tone now provides its users with a one-stop Internet searching service that covers web pages, yellow pages, music, video, pictures, blogs, and forums.

Operators themselves enjoy a range of unique advantages in terms of matching, specifically, user databases and BOSS systems. Through data mining and user action analyses, operators can design more effective customized services and create a favorable environment for precision marketing aimed at targeted users.

Seizing opportunities to create value

Telecom operators must fully realize the strategic significance of matching in the context of transaction cost saving and value creation, thus improving their core capabilities. Firstly, opportunities from IPTV deployment have to be exploited to maximize the attraction to users by introducing home gateways to households. Secondly, telecom operators need to construct core services and cooperate with GAMEY to provide one-stop content services. Thirdly, telecom operators must take full advantage of user databases, BOSS systems and content and service data in order to connect providers and consumers via search services and push/pull activities.

With the establishment of core matching capabilities, operators are sure to regain their strength and vitality from the innate non-duplicable “one bill for one login” feature in conjunction with flexibly designed tariff packages.

Editor: Pan Tao pantao@huawei.com
Mining for user resource gold

In a mature market characterized by a high telecom penetration rate, the availability of new users is becoming increasingly narrow. The popularity of the Internet and the emergence of non-traditional communication methods such as Skype have resulted in considerable damage to operator value. How can traditional operators continue to make profits? "Super Girl", a Chinese TV show, illustrates that user resources offer huge possibilities to be exploited.

By Wang Deqian & Yang Weijun
Super Girl’s super business model in China

Innovative services and business models can retain users, and accessing user resources can deliver tremendous profits. “Super Girl” was successfully launched by Hunan Satellite Television (HST) in 2005, and has not only emerged as a model in the television entertainment circle, but has also become a paradigm of success for the telecom industry.

Now held annually, “Super” Girl adopts a similar format to American Idol and the show is opened to all young female who want to be pop stars. The response is predictably huge and, in 2005 alone, over 500,000 participants signed up.

HST is a local Chinese television station that competes with the giant China Central Television (CCTV) as well as dozens of other local stations. Like most of its rivals, HST primarily generates revenue from advertisements. Viewers attract advertisers, and the key to securing both is to effectively target an audience segment. In just six months, Super Girl elevated HST’s prime time viewing figures from under 4% up to a peak of 31% during the competition final. This was the highest in the whole country, leaving even CCTV trailing. Moreover, the Happy China brand it created is widely recognized and increasing number of viewers has adopted HST as their favorite channel.

Unsurprisingly, HST made decent profits during the airing of Super Girl thanks to an increase in advertising demand that allowed the station to charge a higher premium. Statistics revealed that revenue from spot announcements totaled over RMB50 million (USD6.67 million) and that HST made RMB14 million from Mengniu’s title sponsorship. The show invited viewers to select their favorite singers via short messages (SMs) that were charged at a higher than normal rate, which in turn gave HST a share of the RMB30 million revenue made by telecom operators.

The consistent customer group yielded large profits for all enterprises cooperating with HST during Super Girl. In addition to SM voting revenue, telecom operators further increased their profits by launching Super Girl Express, a monthly information service that sent relevant news to subscribers. The dairy manufacturer, Mengniu, not only invested RMB14 million in title sponsorship, but also spent a further RMB100 million to market its newly launched products, which was consolidated by using the competition winner for promotion.

Super Girl’s eye-catching logo on Mengniu’s products stimulated a consumer rush that raised the company’s market share by 8%, positioned it as the market leader, and increased its share value significantly. Equally, other advertisers on HST also enjoyed a remarkable rise in their sales figures.

Enlightenment from Super Girl

Using the innovative business model of Super Girl that combines multiple profit models, HST has captured a wide market segment and...
created a now legendary business model by successfully tapping the potential of user resources.

**Web 2.0 model**

As Super Girl’s participants come from ordinary households, they give a closer feeling to audience; meanwhile, the repeated slogan “every spectator is a director” creates the intimacy between audience and participants. This is accentuated by canvassing, participant blogs, fan sites, and other network modes. The emotional element of the show that sees fans cheering, screaming and crying translates well into the home, inspiring viewers to determine a singer’s fate via SMs. Thus Super Girl is a fully interactive representative of the Web 2.0 model that effectively wins and locks user loyalty.

**Maximizing user resources**

The target audience of Super Girl is consistent with the target market for the vast majority of advertised products such as mobile phones, food and beverages, media, clothes, sports shoes and cosmetics. The value of the same user group is shared by different manufacturers, thus realizing maximum user resource potential.

**Tapping user resources**

Other famous brand names also illustrate the potential of user resources. Since its inception, Alibaba has attracted a great number of customers by constructing a credit assurance and safe delivery system based on user information and transaction history. Covering B2B, B2C and C2C, the company has emerged as one of the largest e-business service providers in the world. Its enormous user resources have delivered huge substantial profits. Baidu is the leading Chinese search engine that has encapsulated a huge number of users. It also provides an advertisement push service based on users’ search habits, which adds value for both advertisers and users.

These two cases in addition to HST’s Super Girl evidence that immeasurable value can be obtained if user retention is achieved through innovative service provision based on effectively collating user behavior information. In this area, telecom operators already possess significant advantages. For example, boasting 300 million subscribers, China Mobile is the world’s largest operator and it benefits from two key advantages: user perception derived high value and low cost channel building. The core driver, of course, remains its huge user base.

The high value brought by user perception arises from network coverage, network quality, service experience and the company’s marketing mix. By ascertaining subscriber characteristics, China Mobile has amassed immense user resources which are essential precursors to successful market segmentation and targeted marketing activities. Furthermore, China Mobile’s channel building costs are low because it owns massive user resources and delivers a customer penetration rate that no other Chinese enterprises can even come close to touching. This minimizes marketing cost per user and gives China Mobile absolute superiority in equipment procurement, service introduction, channel building, terminal customization and other value chain activities.

Operators’ user base and information resources are envied by other industries and doubtlessly represent a gold mine waiting to be tapped. A vast advertisement and information platform can be supplied to different industries to promote their products, and this is further enhanced by customer group segmentation which in many cases matches various industries’ products. For example, the high-end customer group is targeted for cars, real estate, personal financing, air tickets and luxury goods. The young represent potential consumers for fashionable consumables, media sources, entertainment and education.

The development of China Mobile in terms of mobile value added services also illustrates the value of user base. China Mobile provides music service by cooperating with a number of recording companies including EMI and Sony. Based on the M-ZONE customer group, China Mobile’s partnership with Channel V facilitates entertainment service deployment such as the shows American Idol and Super Girl. Activities including original music and music charts can also form the source for ringback tones and music downloads. M-ZONE
greatly influences its 100 million users, the vast majority of whom are young people. In fact, it is impossible to find another business organization that exerts such influences on its customers.

**Technical support of FMC**

Creation of an operational model centered on user resource development requires appropriate technical support from IP-based FMC under IMS architecture. For operators, the FMC integrates mobile, fixed and Internet users into one network; for users, it converges voice, data and video services; for the industry as a whole, it is set to change the pervading operational model by interweaving TV, media, entertainment and advertising. Specifically, FMC provides the following support features:

**Synergy of competitive strategies**

Michael E. Porter proposed two competitive but contradictory strategies centering on low cost and diversification. However, FMC can achieve both with respect to telecom operations. Compared with TDM, the IP bearer layer can save TCO by over 70%. In the control layer, low network costs are achieved since IMS architecture redefines the same functional components of fixed networks, mobile networks and the Internet, divides clear interfaces, and enables 80% component reuse.

The service platform under IMS architecture is simple and open. There are 10 times more IT application developers than telecom service developers, and the former can easily develop telecom services, greatly reducing development costs. This is similar to the IT industry's free operating system Linux and database MySQL. Service innovation speeds will rise exponentially and, with abundant and rapidly launched services, telecom services will possess diversification and unique features that meet the varied requirements of both users and applications.

**Synergy of user experience**

Statistics indicate that 70% of voice services and 90% of data services are accessed indoors. Fixed communication dominates the time when people are located in offices and homes, while mobile phones' portability allows continuous contact. When fixed to one network via an IMS-based FMC service, users can experience services with a unified number and account. The growth in FMC-generated user numbers can deliver benefits to operators; while increased service penetration in user's daily life encourages user loyalty.

**Synergy of user value**

Underpinned by FMC and the increase in online service types, users leave many traces of their activity including instant location information, historical service usage information (HSS), and user information and communication characteristics (BSS). Analysis yields an individual's behavioral patterns, thus creating a low-cost marketing database which can form the foundation for an operator to further realize commercial potential.

The misuse of such information, however, infringes user privacy. For example, junk mail represents an unwelcome intrusion into most users' email inboxes, thus a filtering function is required. In contrast, customized information is welcome.

When living in Europe, I would receive supermarket promotions on Saturday mornings and then compare discounts. The cost of each leaflet including paper, printing and postage was around EUR0.3. The city I stayed in had 200,000 households that thus required an advertising expenditure of over EUR3 million a year. On one occasion, I wanted to buy a discounted pan, but this of course could not be directly conveyed to a supermarket, despite their substantial advertising investment. However, the operator-owned local customer information coupled with a customer willingness to reveal their buying intentions can clearly facilitate cost savings by focused advertisement provision. As user information can be used by multiple advertisers, this value synergy can bring considerable revenues to operators.

IMS-driven FMC represents people's expectations for future telecom networks. Communications will be easy, and be released from time, place and network constraints. If telecom services represent an information platform to support users work, studies, entertainment and communications, the construction of a user-centered value chain that prioritizes tapping the wealth of user resources will reflect the direction of future telecom operations.

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The beginning of this century witnesses a wave of mergers and acquisitions (M&As) which considerably impacts the commercial composition of the telecom industry. A positional analysis can be used to illuminate the industry’s current developmental status in the context of the following questions relating to future consolidation.

What are the decisive factors influencing telecom consolidation over the short term? What are the possible directions that consolidation can follow? Which should be selected?

Entering into the M&A stage

Fig. 1 illustrates the four developmental stages proposed by A.T. Kearney that an industry experiences from either formation or decontrol. Spanning a time cycle averaging 20 to 25 years, most industries experience a period of relatively predictable consolidation during these four stages.

The first stage describes startup and inception, during which a new or monopolistic enterprise enters an industry that has just been decontrolled or privatized. With the rapid emergence of competitors who are eager to carve up the market and secure their share, industry concentration is subsequently reduced.

The second stage features scale and accumulation in what is essentially a reversal of the first stage. Market diversification intensifies the importance of size as it soon becomes apparent that economies of scale and collaboration can realize cost savings and allow an larger scale organization to protect itself against aggressive takeovers.

Stage three shifts towards exclusive operation and concentration. Enterprises devote themselves to core business expansion in order to surpass competitors. Generally, the top three companies in an industry will control about 60% of the markets.

The fourth stage is characterized by balance and alliances, and is a time when industry giants reinforce their market shares. Industry concentration becomes relatively stable after rising to a given level, antitrust laws inhibit further M&As, and alliances are established by the major players at each level of the value chain. Moreover, the industry hierarchy’s nascent maturity effectively controls future acquisitions.

In terms of this model, the telecom industry has reached the latter part of the second stage and is moving into the third stage; consolidation is reflected by the prevalent tide of large-scale acquisitions. Analysts have expressed that the optimum strategy for telecom operators involves the smooth and rapid consolidation of acquired companies in which the corporate culture of the acquisition is assimilated and retained, and its talent is recognized and developed for future application. Obviously, only companies possessing the
capability and resources to acquire major competitors in key markets possess the features necessary for third stage entry, and thus the telecom field is currently seeing the emergence of industry giants.

During the third stage operators should focus on their core competencies and profit mechanisms. Mergers between operators are more likely to involve selective business unit exchanges rather than holistic acquisitions. Given this, operators can strengthen their core competitive abilities and refine or simplify their asset portfolios. An operator that has secured its footing must remain highly attentive to its rising competitors and decide whether to imitate their advantages, implement an acquisition strategy, or employ restraints that inhibit their development. Small operators who focus upon regional or local markets have to deeply penetrate market segments in order to garner long-term survival, and in turn aggressively seek to promote brand equity and sustainable pricing strategies.

Factors driving short-term M&As

According to analysis by industry observers, short term M&As are based mainly upon control regulations, rule changes and the industry environment. Moreover, new technologies and financial capital are the major catalysts that both promote M&As and create growth bubbles. The more visionary leaders will balance scales and concentration level via rational strategies, principles, judgments and skills.

There are three major factors related to telecom industry M&As: capital will, technical innovation, and strategy model. An analysis of their current status and trends is detailed below.

Capital will

Capital will in the telecom industry indicates the desire of shareholders who control a given telecom enterprise. The capital will has been controlled by interest groups with different legacy stakes in its history. At the moment, the capital will that is predominantly stimulating M&As includes enterprise groups, the petroleum industry, financial capital, and government capital. This varied capital will has different positions and potential with respect to future industry consolidation.

• Enterprise groups

The core thinking of an enterprise group is defined by the Boston Consulting Group (BCG) matrix. They emphasize a financial collaboration effect that utilizes the abundant cash flow derived from “cash cow” ventures, which is subsequently invested in promising business sectors. However, each sector targeted by a given group lacks the full attention and focus of feasible management of the top decision-makers, culminating in relatively low management and operational efficiency.

Developed markets are replete with competition, which encourages enterprise
groups to restructure and re-orient themselves towards embracing core competitiveness as a precondition for future development. In less developed markets in which enterprise groups possess diversified commercial interests, their capital may still be sufficient to realize M&As. In fact, emerging and immature telecom markets provide ideal platforms for capital injection into M&As. The elevated competition levels in developed telecom markets tend to mean that group controlled enterprises are content with a secure financial position and a satisfactory performance, rather than a drive to become an industry leader.

• Petroleum industry

If the mature petroleum sector becomes a primary capital source for the telecom industry, it is likely to derive from a diversified operational strategy based on two theoretical possibilities.

The first is that petroleum enterprises are undergoing a strategic transformation that is directing their focus upon establishing new areas of core competitiveness via nascent and emerging industries such as telecommunications and electronics. This phenomenon initially appeared when petroleum enterprises began to diversify, but it soon faded away after core competitiveness theory matured.

The second possibility centers on group diversification. Since 2002, the gas price has been rising and petroleum companies’ profits have been increasing. However, the petroleum industry remains unsuitable to dominate investment in other industries since political issues can impact negatively on cash flow. Moreover, both the petroleum and telecom fields require huge amounts of capital so that tend to be mutually exclusive and lean away from any meaningful integration in view of capital allocation and investment decision-making.

Petroleum enterprises probably lack the capital necessary for imposing direct control on the telecom industry. However, an enormous amount of state-owned capital is generated through the redistribution and reinvestment of wealth accumulated in oil producing countries, and this may in fact contain the potential and momentum to emerge as a significant body offering capital will.

• Financial capital

An increasingly prosperous global economy coupled with a robust finance industry is instigating a more powerful and independent financial capital system in terms of M&As. Investment management organizations have accumulated significant social capital and currently enjoy an extremely strong investment capacity. Their advantageous positions inspire a capital will that can neither be underestimated nor ignored by any industry, the telecom field included. Private equity firms, for example, seek investment opportunities in burgeoning telecom enterprises and implement management and control systems to increase their value. Investments of this nature are relatively long-term as substantial gains in value must precede the conversion of accrued assets into cash over the medium or long-term. The financial sector, therefore, describes a key area that is likely to offer significant capital will to assist the development of the telecom industry.

Over the last few years, the financial sector has enjoyed a prominence equal to the telecom field with respect to M&As, further developing the concept of an all-business financial supermarket. Given the inexorable march of both sectors towards globalization, their dual involvement in network operations, and the integration of wider network customer groups, the prospects for collaboration between the two industries are bright. Moreover, E-commerce such as e-banking, and mobile-banking, cannot develop without cooperation between the finance and telecom industries. Vertical holdings of two industries may not happen due to control factors. However, horizontal ownership by a single group is likely to arise and optimize the range of advantages from collaboration.

• Government capital

With decontrol and globalization pervading commercial development in the telecom industry, privatization and competition are increasing in most countries. Statistics demonstrate that at least three operators are active in approximately 30% of nations. Government capital is gradually withdrawing from its position as the mainstream telecom capital in global markets, although for some operators - UAE’s Etisat and China Mobile to name two - the continuance of government capital inhibits their potential as acquisitions. For such companies, subsequent privatization is more likely to lead to mergers.

Technical innovation

Technical evolution in the telecom industry has promoted multi-sector integration across the mobile, fixed broadband, media and Internet fields, and this spans platforms, businesses and user groups. The result is not only tighter cooperation between parties with overlapping services, but also the inevitable occurrence of further M&As.

Strategy model

Various theories are reaching maturation after evaluating the range of successes and failures associated with M&As. During the fifth M&A wave of the 1990s, players realized that financial and capital games were negative in the long run. A burst financial bubble was exacerbated by increased competition, and this set the stage for M&As to regain their position as a favorable strategy when mature profit growth and strategic leverage buy outs (LBO) finally rose.

With respect to the factors that promote M&As, strategy and scale considerations are of paramount importance. Given this, continued research and innovation have culminated in numerous theories that are adapted and applied according to actual conditions. There are currently three popular strategy models guiding M&As.

The first embodies the core competitiveness theory proposed by Gary Hamel and C. K. Prahalad. It holds that a strategy must be resolute, and must utilize a company’s major powers to realize its objectives. Strategic focus should rest with either restructuring an existing industry or creating a new one, and a company should not define its core advantages too narrowly. For example, if a company that
manufactures horsewhips limits its core advantage to horsewhip quality only, it would immediately become bankrupt if horse-drawn carriages become obsolete. However, if the company defines itself as one that produces a series of manual tools, and has a drive to establish its brand equity, then greater stability, strength and development will be realized.

A second strategy model describes globalization via M&As. It views that saturated, developed markets lead to a developmental standstill, and that enterprises’ declining profits are inversely matched by the need to increase investment to win further market share. However, low growth amplifies the adverse effects of excessive or incorrect investments. The best strategy for an enterprise that enjoys a relatively large market share in the mature telecom market is to obtain greater profits from existing, mature services. This profit can then be employed in two ways: firstly, to extend core competence through innovation and new product lines targeted at existing customer groups; secondly, to explore overseas markets and seek new customer groups. Presently, the trend in the telecom industry is to follow the latter path.

The third strategy model involves diversified operations. It assumes that the human response mechanism always lags behind economic development and the commercialization of new technologies. Since control is loosened to accelerate development, the vagaries and direction of markets, and the speed at which they change, become more uncertain after the boundaries of an industry’s related sectors are continuously broken, shifted and restructured. To meet circumstantial and structural changes, business operators should form a “net” to encapsulate as many products and customer groups as possible in order to establish a series of brands that serve segmented markets, thus forming a supermarket. In doing so, restructuring resources designated to meet nascent industry trends will be more flexible. An all-business mode is considered to be an effective way to retain customers and prevent competition. Currently, the telecom industry has already witnessed a shift to all-business operations.

**Making the right decision**

Operators’ M&A strategies vary considerably given the range of factors that need to be taken into account, for example, current industry status, short-term telecom consolidation factors, and applicable financial, technical and strategic theories. In developed telecom markets, operators can decide the following five dimensions in the decision making process.

**Internationalization**

At the beginning of the 21st century, the telecom industry has seen a tendency of internationalization through M&As, the importance of which varies with operators’ viewpoints. If deemed a priority, operators will opt for transnational M&As to reinforce their regional footing. Major operators lead M&As, and this has been the means through which Asia-Pacific operators have entered the European markets. If internationalization is not considered extremely important, operators will further rationalize their investment portfolios, explore the hidden value in their own groups and either strip or sell a portion of their investment holdings. As major operators have accumulated considerable experience and skills in international M&As over the past few years, they will continue along the path of internationalization and optimize their own portfolios.

**Business integration**

Dependent upon a given operator’s perception regarding the importance of integration, a high emphasis will drive the convergence of different business sectors, including mergers between fixed and mobile operators. Operators may obtain control over key content and VAS through M&As, and integration between the telecom and media industries might ensue. However, operators that view the conditions for integration as immature or unsuitable may begin to strip, sell or segment non-core businesses and even discard triple-play strategy. This will reduce the threat to existing operators who are dedicated to a single field.

**Longitudinal extension or lateral expansion**

This revolves around the extent to which operators value the collaboration among networks, users and network control. If prioritized, the vertical integration of network ownerships and user services will be strengthened. If operators focus upon services and agree that the collaboration effect between networks and users is limited, developed telecom markets will undergo structural separation due to work division and non-core business outsourcing. This will culminate in the development of Mobile Virtual Network Operator (MVNO) and other business models that feature fewer assets and higher service focus.

**Market positioning**

Market positioning is determined by how operators judge collaboration between segmented customer groups. If operators agree that it is significant, they will adjust customer groups and restructure organizations accordingly through M&As. By introducing subscriber services to enterprise user groups, or vice versa, operators can realize collaboration between different user groups and business-centered operations. If operators do not agree that collaboration between different customer groups is significant, they will divide their own segmented markets and organize operations in a user-centric manner. If this strategic direction is followed, operators need to identify their own advantages in the context of their markets, and decide whether to target individual or enterprise users. In this instance, M&As can primarily be described as the selective exchanges of operators’ segmented markets based on market focus and portfolio consolidation.

Finally, control pressures can exert a great influence upon an operator’s M&A strategic direction. High control levels determine whether operators can obtain resources fairly, and this may lead to the neutralization of low-layer networks and structural separation in the levels detailed previously. On the other hand, low control levels may create further consolidation in domestic industries, and operators may decide to control the entire value chain.

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Fixed mobile substitution trend

It is interesting to note that the global trend is showing a very rapid decline in the fixed voice market revenue. This is contributed by the spiraling use of cheap Voice over Internet Protocol (VoIP) and Instant Messaging (IM) calls using Skype, Vonage, Google Talk, Gizmo Project and many other similar solutions. However, in certain geographies especially the Third World countries, fixed voice market is still growing and is far from reaching the saturation point unlike in many developed countries. Due to difficulty in providing infrastructure in these countries, wireless voice is seen as the cheaper alternative besides future proof in anticipation of the coming communication technologies.

In Japan, the substitution from fixed to mobile started since 2003 and ever since mobile revenue has skyrocketed and surpassed the fixed voice business. This trend is observed by the two biggest operators in Japan: NTT and KDDI. In Malaysia, this is also faced by Telekom Malaysia (TM), an incumbent telecommunication operator. Its fixed voice revenue remains sizeable but the number of subscribers keeps on declining.

Looking at these trends, the challenges of fixed line operators are basically on executing the best strategy in order to arrest the drop in voice business.

Operators have recognized that the future of network is indeed in broadband which capitalizes on higher speed to cater for new generation services and supports on mobility needs of its users. Mobile broadband, being easily reached anywhere anytime beyond the traditional means will further attract the users to abandon their fixed-line subscriptions. This trend is known as “fixed mobile substitution”.

Two main factors in driving the transformation in the business models of the operators are the needs for operators to simplify their complex networks for enhanced operational efficiency and to be the first on the market with new services.

This rapid transformation is currently happening with the migration of legacy network to IP-based Next Generation Network (NGN). In Malaysia, this is done not only due to business consideration but also the need to support government’s ICT agenda namely the MyICMS 886 (Malaysia’s ICT 5-Year Roadmap) and by observing and adhering to the global technology trend.

Technology transition

As mentioned earlier, mobile and wireless broadband is the order of the day making the aging copper network deemed insufficient to cater for the demand for next generation services such as IPTV, VOD, quad play and digital home applications.
These services are currently and mostly running on the Time Division Multiplexing (TDM), a technique used for transmitting a number of separate data, voice and/or video signals simultaneously over one communications medium by quickly interleaving a piece of each signal one after another. However, TDM is seen by the industry as nearing its obsolescence and would no longer be supported by vendors.

The replacement of TDM by IP-based NGN in the sunsetting of PSTN is happening around the world with British Telecom (BT) leading the way with its ambitious 21st Century Network (21CN) initiatives. Most of the other incumbent operators in many countries are also following this lead. For instance, Telecom Italia has completed their IP trunk layer and has indicated this has saved them 75% of their operating costs. Bell Canada’s Galileo initiative which was launched in 2004 was to migrate 100% of data traffic to IP/MPLS by last year. The total annual cost reduction is between USD1 billion to USD1.5 billion in 2006. Meanwhile, Deutsche Telekom has completed its NGN overlay backbone network. Their core network is already IP/MPLS ready and carries traffic for both fixed and mobile businesses.

What the operators need to offer the consumers (both residential and enterprise) is the new NGN platform with various services, the same that should be offered to the existing TDM subscribers. Hence, TDM and IP integration is the immediate response by the operator to address this need using softswitches.

Looking at this technology trend, it can be surmised that R&D in this area offers huge opportunities especially to first mover companies.

Market trend

Further fueling the decline in fixed voice revenue is the lack of attractiveness of the PSTN phones as it does not support mobility as demanded by the modern users. The market is also assailed with convergence devices such as the iPhone, smartphones, and PDA phones running on mobile operating systems such as Windows Mobile 6, Symbian OS, Palm OS, Mobile Linux, and Motion eXperience Interface (MXI).

These new devices need applications running on top of it such as mobile TV, VOD, streaming audio and video, real-time video surveillance, digital home solutions and to most extent, mobile banking and access to corporate network.

Many of future and modern home appliances will be designed to provide IP-based connection to allow future applications and services between machine-to-man or machine-to-machine communications. Some of them are expected to be bandwidth hungry as it requires P2P applications as contents are streamed to these multimedia terminals.

To maximize the average revenue per user (ARPU) on both fixed voice and mobile voice businesses, operators are offering their products on bundling and ala-carte modes. This is to optimize their products portfolio offerings, to reduce the churn rate as well as to enhance the customer experience.
One of the challenges of NGN lies in the heated market pressure. This includes the emergence of new entrants never before considered by the operators.

For operators and users alike, NGN would enable a plethora of new generation telecom services.

### Challenges and opportunities

NGN promises many facets of challenges which could be turned into opportunities if addressed wisely. One of the challenges of NGN is in terms of the heated market pressure. This includes the emergence of new entrants never before considered by the operators. Skype and the likes have assaulted the traditional voice revenue by commoditizing voice to almost free for all. In term of media, content providers’ distribution channels have expanded and even multiplied. They are no longer locked to any operator in their distribution channels. The Internet and the rise of Web2.0 have expanded their choice of distribution even further. The proliferation of new technologies and evolution towards All-IP further intensify the pressure to the carriers.

The challenges above need to be addressed by the operators by being more responsive and improve their time to market. While R&D is crucial in producing innovative products to support the agenda of next generation services, the nature of the R&D undertaken must be those of applied research and product development as compared to fundamental research. Innovative contents provision such as premium contents for IPTV services could also be aggregated or produced through partnerships with content providers.

Developing a future safe solution is another opportunity with regards to NGN. Research works on open network must always be kept in mind. In its entirety, NGN must be able to improve cost effectiveness of operators.

At the macro level, i.e. on regulatory issue, the government regulatory needs to mandate TDM network upgrading or modification via fixed and mobile number portability, support emergency calls, enable interconnection of PSTN, Public Land Mobile Network (PLMN) and other NGN networks, and lastly interconnection of voice, data and video services.

### Key principles for NGN

From financial perspective especially for revenue justification, NGN must be able to generate new revenue to compensate for the existing declining business due to mobile substitution and competition from Application Service Providers (ASPs). NGN must also ensure further cost savings realization from the current equipment maintenance, spares, space and electricity, obsolescence, and other related factors.

In terms of commercial value, especially for investment and risk protection purposes, NGN should be flexible enough for the operators to offer various business models, i.e. vendor financial, BOT, and so on, NGN also includes the skills and knowledge transfer program factor that the operators must consider.

For consideration of system integrator with multiple equipment vendors, we believe it would be better if the operator were to appoint only one system integrator with multiple vendors’ equipment environment. Besides that, the best of breed vendors’ equipment must be acquired with the ability to segment existing network infrastructure and phase the migration plan. The ability to integrate all network elements and systems, which ensures proper project management for end-to-end delivery, and ability to perform seamless migration are added values that operators would like to see in the vendor it appoints. Another important dimension is the local presence and excellent post sales support of the system integrator and vendors.

In terms of products and services, migration to NGN must ensure continuous support for existing, traditional products and services to our customers. Above all, the ability to offer new IP-based products and services to all customer segments i.e. consumer, SME and corporate are crucial. Not forgetting the current trend of demand for convergence services, NGN migration must also be able to offer services in converged fixed, mobile and wireless access technologies.

From technology standpoint, the implementation of NGN by operators must comply with the standards set by ITU and aligned with the evolving NGN architecture and provide roadmap to full multimedia fixed mobile convergence (FMC). Industry best practices where trials and interoperability tests of NGN conducted by other carriers and as prescribed by the ITU-T must be part of the TM’s NGN implementation strategy. The convergence at all levels and divergence at the access network level must be given equal consideration.

In anticipation of IPv6 deployment in replacing the aging IPv4, any migration to IP-based NGN is a mandatory consideration. The provision of traffic QoS and SLA management is crucial. The ability to support IP security on service provider’s network and enterprise segment is also important. As NGN is scalable, easiness...
for scalability is vital especially during the traffic migration period.

The last perspective that operators must consider in migrating its TDM network to NGN is on operation and execution. The NGN must be able to integrate the existing BSS and OSS. New tools must also be acquired for the field and technical teams in ensuring the NGN is operating accordingly. As NGN is to enable new generation services, it must be supported by a reliable billing system. Investment in NGN also requires the operators to look at the acquisition of technical skills by relevant staff to support this new platform. The frontline teams must be trained and equipped to support customers’ interfacing activities.

TMR&D roles

Telekom Research & Development Sdn Bhd (TMR&D), a wholly-owned subsidiary of TM, began its operation on January 1, 2001. It is at the forefront for research and development activities in TM. The company plays a leading role in designing and developing innovative products and application for telecom services. As the research and development arm of TM, it plays a very important role in ensuring NGN at TM is tested before being implemented nationwide.

To this end, TMR&D is conducting research on ensuring smooth migration from TDM to NGN solution development for Mobile/Fixed Number Portability, Integrated Network Management System (INMS) and value added application based on IPMS.

NGN infrastructure covers the evolution of NGN → IMS → FMC; where the main aim is to provide ubiquitous experience to the consumer. With this in mind, TMR&D contributes to each layer of NGN architecture where it can be summarized as below:

Application layer: Mostly the attribute here is on the involvement of SIP based protocol. Here, TMR&D’s researchers are creating a platform that will ride on top of future IMS system to support applications for next generation services in the future. Our researchers also research on creating Multimedia Content based on SIP and P2P with element of future FMC.

Control layer: Through collaboration with other technology partners, TMR&D is also involved in softswitch integration and development of application that run on IMS.

Core and metro layer: A group of researchers is also working on IPv6 Network Device, Digital Cross Connect, Fast Router, Future Optical Network and Fiber Optic Transport.

Access layer: A group of researchers is currently supporting broadband initiative to bridge the gap in digital home.

Service layer: The focus is more on value added service to broadband customer.

TMR&D currently collaborates with world renowned technology companies on research works related to NGN including Smart Home Location Register and the development of IPTV infrastructure (VOD over IMS-based IPTV).

TMR&D is also actively involved in the trial and the possible deployment of GEPON network in TM. This research is the starting point for deployment of high speed broadband utilizing fiber directly to the customers’ premises as part of TM’s NGN initiative.

Conclusion

Fixed network is experiencing rapid transformation. This is clearly indicated by the decline in the fixed voice revenue and the migration to All-IP network as it is more cost effective in the long run. Operators must strategize in order to survive the fall in their traditional revenue generator by cushioning it via planned migration to NGN and start offering new generation services as demanded by consumers. The quick win strategy could be by equipping the current network with softswitches that are IMS-capable to support multimedia oriented contents.

NGN has brought forward architectural and access network changes which create new challenges to the industry. NGN also fuels stiffer competition, growing end user expectations, increasing complexity of traffic movement and high cost of investment and uncertainty in service and application demand.

The regulators must also provide a balanced role in facilitating the journey via an effective regulatory framework that encompasses issues such as interconnection and QoS in All-IP network. They also need to help in fostering innovation and investment in NGN, facilitating migration to NGN, and constantly updating the citizens with awareness programs and protection schemes alike.

NGN as mentioned earlier requires novel innovation and investment. Research and development in many areas under the umbrella of next generation services are abundant. The innovative ideas and new product development would perhaps become the most strategic asset the operators would have in ensuring their continuity as being relevant in the telecom business.

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Operators’ investment in network and bandwidth expansion does not necessarily increase their value, but instead spawns SP and CP millionaires. In order to mitigate this essentially embarrassing commercial outcome, what transformation steps are necessary for operators? H3G provides some enlightenment regarding this issue.

By Li Changwei

Operational innovation of H3G

Development in 3G

H3G’s development in the 3G arena describes an operator’s experience in compliance with industry rules.

Closed value chain development: After selling Orange, H3G entered into the European market as a new operator in 3G’s early phases. At that time business users represented the most important user group, but the major strategic market positions were already occupied by operators such as Vodafone, T-Mobile, and O2 via a “mature 2G network + WCDMA/HSDPA data cards” mode. Consequently, H3G was forced to seek new methods to accomplish market breakthrough.

Based on the experience in Japan, Korea and other Asian-Pacific markets, H3G targeted fashion conscious young people and low-end users. Its dual aims were to realize market access through small-screen data services, and to glean an advantage over traditional operators providing 2G coverage by supplying low-price 3G voice packages. In order to achieve these aims, H3G purchased significant amount of exclusive media content, most notably football, which formed the largest service demanded by young users. H3G invested over £60 million to secure sole rebroadcasting rights on mobile phone for the UEFA and FA Cup Finals over three years. This was complemented by their purchase of tens of thousands of songs for their mobile phone ringback tone.

However, the preferences of young Europeans remained firmly with face to face interaction.

Customer interface management

Fig. 1 H3G’s “pipe+ channel” operational model
face and more natural modes of experience, which mobile phones failed to replace. The market success anticipated by H3G had thus far from arrived.

3G value and strategy transition:
Market surveys revealed to H3G that the most popular mobile phone of its channel partner, Carphone Warhouse, was a non-video terminal that supported customized, low-price voice packages, but not a video terminal as H3G expected. H3G immediately adjusted its strategy and shifted its marketing focus to deliver low-priced voice services and subsequently launched competitively priced high-traffic packages. Its user base grew rapidly from 2004, and by 2006 exceeded 8 million.

Open value chain development: H3G believes that 3G's core value is to provide low-price voice services to guarantee revenue. While innovative data services can attract subscribers, it cannot really compete with traditional free-of-charge access via the Internet. Moreover, operators cannot exclusively bear data service innovation and production costs, and thus transparent cooperation is essential. Initially operators may have to focus service orientation before gradually developing content and application channels and, in this context, only an open value chain can achieve the potential of 3G.

X-Series services launch
November 2006 heralded the UK launch of H3G's meticulously planned X-Series and April 2007 saw its release in Hong Kong. After close partnerships with the top SP/CPs, the X-Series reflects the first true application of the Internet onto mobile phones, realizing the coverage of mainstream Internet and some Web2.0 application. New users were attracted by X-Series, and converged services from the dominant SP/CPs were highly successful in increasing traffic derived revenues. H3G secured its role as the prevalent pipe for the leading SP/CPs. The broadly similar services offered by X-Series in the UK and Hong Kong versions include:

- **Skype VoIP** is the largest P2P VoIP service and is deemed as a breakthrough technology in traditional voice communication, and a main pipe-based application for operators.
- **Google Search** represents the Internet's most comprehensive and powerful search engine.
- **eBay** is the biggest online trading service website that also realizes mobile online e-business.
- **Yahoo! Go** provides, amongst other services, information browsing, queries, searches and IM communication, and has

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**as seen from H3G X-Series**

![Diagram of H3G's "pipe+ channel" operational model](image-url)
emerged as one of the top three portal websites.  
Microsoft MSN is another of the top three IM communication service websites that provides comprehensive online community services with IM at its core.

Mobilecast delivers an online video live broadcast service.

Sling Home TV P2P home TV rebroadcasting allows users to use Finder ID and password to connect the home Sling Box to the Internet and watch customized TV programs.

Orb Home PC’s server achieves P2P management and home PC sharing. Users can utilize the Orb ID and password to connect a home PC to the Internet, and thus manage and interactively share PC content.

E-mail gives 3G mail application.

In the UK and Hong Kong, most X-Series services are subject to monthly charges without traffic limits. In Hong Kong, the charge is HK$138, but customized monthly packages are also available. Single service is primarily provided in the form of a traffic-based package such as HK$68 per 60 hours for 3 HOME TV, HK$88 per 500Mb for 3 HOME PC, HK$28 per month for MSN without traffic limits and HK$28 per month for 3Xplorer without traffic limits.

Service features

As shown in Fig. 1, the service features of X-series are:

Channelization of network operations: Premium resources are converged and integrated, and services include all popular Internet applications, including P2P VoIP, portal websites, search engines, community, online trading, P2P home video, and P2P sharing. See Me TV content can be uploaded via Web2.0 mode to create an open center for gathering premium resources.

Supermarket mode application: All-service operation, content and application trading centers provide solutions for communication, information, entertainment and trading, as well as home and industry solutions to meet the one-stop needs of users.

User interface control: The X-Series’ enhanced and uniform user interface enables unified user access authentication and control, unified user information management, consumer model analysis and application planning.

Value chain win-win cooperation scenario: Only the top three SPs enjoy sufficient room to survive and grow in the current application markets, meaning success is garnered only by selecting mutually beneficial partnerships. H3G’s partners are leading service providers in different application fields, including Google, Yahoo!, eBay, Skype, Microsoft, Orb, Sling Media and Sony Ericsson.

Pipe + channel”business model: Operators provide optimum network platforms, the best customer portals, and the widest customer resource channels, while service providers supply the best content and applications, and deliver the leading service experience. Operators open premium resources and create profits via a “network channel fees + content and application service revenues” mode. User channel competitiveness is enhanced through the best content and application resources, and thus a positive cycle is created.

X-Series has increased user numbers for H3G, and more importantly, has created a business model with unrivaled competitive advantages. The dispute on the core value of 3G and broadband is continuing, but one thing for sure is that 3G and broadband are the bridges for operators to advance from communication service providers to information media providers.

The core value of 3G and broadband is recognized by end users if a high price performance ratio is delivered in terms services for traditional communication coupled with innovative media information, and H3G has succeeded in providing both. Since operators own the largest charge-based user group (the channel) and a unified communication network (the pipe), it is most expedient to optimize these advantages through value chain cooperation.

What can we learn?

H3G’s X-Series promotes the “pipe + channel” operational model industry-wide, inspiring many operators to rethink future value positioning and transformation.

The real competitiveness of operators lies with the locking of user groups, guaranteed service capability and experience controls.

The value of a user group to service providers can be demonstrated by new users and the premium resource accumulation throughout the value chain.

Operators need to create a service innovation center, although not necessarily alone as the effective use of the industry chain should generate resources. More important is the creation of a service trading center and a business mechanism in which operators, SP/CPs and users can flourish under a win-win cooperation mode.

Service capability and experience controls are determined by innovation across the entire customer service process and portal, and the effective integration of innovative content and applications.

Next generation operation embodies all-service and experience oriented, the development of which is underpinned by increasingly higher requirements and greater operational challenges and risks. Future all-service operations cannot be solely supported by operators, but require all value chain stakeholders to work together to exert complementary advantages.

The core value of future operators lies in user groups, service channel/portal capabilities and value chain resource convergence. Traditional operators possess advantages with respect to user group marketing channels, network pipes, premium CRM services and AAA management. SP/CPs in turn offer content and application innovation benefits. If operators can cooperate with SP/CPs through an open value chain and instigate development by enhancing the channel using pipe, a bright future can be anticipated.

Viewed from the long-term, the development of All-IP will expedite free-of-charge pipe progress, reinforcing the need to strengthen the channel.

The telecom industry has different characteristics and rules during different developmental stages. The key for operators to unlock future development necessitates close adherence to industry rules and trends. H

Editor: Liu Zhonglin liuzhonglin@huawei.com
The personal touch
 Tariff packages

By Hu Ming & Zhou Jing

The emergence of tariff packages reflects the development of innovative marketing strategies in telecom services. Tariff packages can be tailored to meet differentiated service requirements in various market segments, thus enhancing user satisfaction and loyalty. Numerous world-leading operators including China Telecom, China Mobile, Vodafone and KDDI have launched a variety of group-specific tariff packages with considerable commercial success.

Then, what are the general principles for tariff package design? How can a tariff package guarantee a personal touch in terms of an end user’s needs?

The seven principles

Busy/idle hours and on-net/off-net calls

Tariff strategy can partly be decided by key price differentiators. For instance, discounts during idle hours seek to increase network utilization and offer preferences and incentives to price-sensitive subscribers, who usually access more services and require greater pricing flexibility during idle hours. Conversely, customers requiring telecom services during peak times are mostly business people who are less sensitive to inflexible pricing.

China Telecom Guangdong recently launched its idle-hour preferential package, China Wind, with a preferential period operating from midnight to noon at a uniform per minute rate of RMB0.09 (about USD0.012), 50% cheaper than from noon to midnight. Similarly, China Mobile Shanghai has launched its idle-hour preferential package, Happy Nine to Nine, under which subscribers benefit from a RMB0.1 per minute rate for basic local calls between 9p.m and 9 a.m.
A common strategy among operators is to adopt differentiated pricing for on-net and off-net calls so as to utilize a large network to retain subscribers. For example, O2 UK’s Talkalot package is specially designed for prepaid subscribers who commonly use large traffic volumes, and offers an on-net rate of 0.4 pound per minute (p/min), with a 37.5% lower off-net rate of only 0.25 p/min.

Low, middle and high-end subscribers

Traffic that is generated during busy hours, roaming and national and international toll calls predominantly stimulates ARPU increases. Middle and high-end subscribers use larger service volumes during busy hours and a higher percentage of toll and roaming calls. Tariff package design needs to incorporate these statistics in order to attract all user groups. China Mobile Beijing, for example, began offering a preferential toll package for its GoTone subscribers from November 27, 2006. The package consists of two sub-packages, the first features a monthly fee of RMB20 which covers 180 minutes of national toll calls, while the second covers 300 minutes for RMB30.

Exchanging higher discounts for higher ARPU

Vodafone has launched two monthly packages valued at £50 and £75. The former gives 400 call minutes at 0.125 p/min, and the latter 1,000 call minutes at 0.075 p/min. Subscribers, of course, are more likely to choose the latter package given the higher discount rate.

Differentiating consumption behavior at the same ARPU level

User groups who give the same ARPU vary greatly in consumption behaviors. A simple study and package design that are based on averages will fail to fulfill the demands of a specific group. A group-based analysis, however, categorizes subscribers according to their behaviors. Tariff packages can then be designed in response to distinctive consumer patterns, and special packages can be employed to address a core differential characteristic. This effectively increases subscribers’ special preference perceptions. Via its Anytime tariff package, Vodafone UK designed four schemes: £20 and under, £21-25, £26-30, and £30 and above. Under each, different combinations of call time, short messages and other VASs are applied. Furthermore, two options for a £35 monthly package are available: best for talkers and best for texters. A subscriber can choose a combination of 750 call minutes and 200 text messages or 500 minutes of calls and unlimited text messages. In addition to the free services covered in a package, subscribers can select extra paid services according to their needs.

Segmenting customers by selective bundling

Football is the favorite sport for 61.5% of British people and statistics demonstrate that a UK football fan spends an average of 76 hours a month and 681 hours per season watching football matches and news - or 2.5 hours per day. Given this, Hutchinson-3 UK designed its £30 Football 500 package specifically with fans in mind. Launched at the end of 2003, the package offered 500 call minutes and unlimited soccer related messages and video clip downloads. This targeted solution allowed Hutchinson-3 to capture a large share of this market segment.

After customer groups are identified, a basic package can be designed to meet their fundamental requirements, and selective service/data packages can be added in order to satisfy more diverse demands. For example, an additional RMB1 might be charged for a toll discount, or an extra RMB10 might enjoy a commercial data package. Selective bundling
addresses more specific needs, such as long call times or a high toll call levels. It also allows subscribers to receive low-priced selective packages after they have committed to a basic consumption, while attracting other subscribers who do not enjoy the package.

**Preventing subscriber loss or increasing value?**

Subscriber group may loss due to competition or a large difference between a particular tariff package and actual consumption amount. In this case, operators need to sacrifice some income for subscriber retention and the preference should focus on services that a subscriber consumes most, including services like toll call and calls in busy hour. For example, a discount package for roaming and toll calls for high-end subscribers.

Packages for relatively stable user groups are designed to increase contributions to consumption “blind spots”, such as idle-hour discounts for high-end subscribers to increase non-peak hour usage, and intra-cell preferences for low-end subscribers to win fixed-line traffic.

**Providing more dedicated incentives and services**

To effectively cover the needs of different user groups, Japan’s KDDI has designed 11 discount types including wireless rolling, personal, annual, family, designated number and student, and KDDI also offers customized preferential packages for disabled subscribers. The annual discount, for example, offers reductions in monthly fees that increase with service usage years and, in conjunction with the personal and family discounts, can achieve monthly savings of up to 50%. The family discount not only covers monthly rental, but also calls and even emails between family members. It sets an upper limit for family communication consumption that, when reached, bans all outgoing calls. Family members, however, can continue communications by using their remaining free minutes. This type of marketing intensifies user loyalty by positioning the consumption of individual family members as a collective behavior pattern that will see a price increase should any member quits.

Operators hope that loyal subscribers contribute a higher ARPU, and different incentives are used to encourage this. Long-term subscriber plans can include a point system based on the number of years a subscriber uses a given service, and bill discounts and tailored packages and services can be provided as part of the reward mechanism. The ARPU incentive is realized by preferential rates’ provision, increased service bundling options and larger points’ variance.

Subscribers with call reimbursement tend to be less price sensitive and consume more. Mobile benefits via call time and toll card presentation, however, are not usually high enough incentives. An alternative can be realized by benefit transfers to other mobile products such as points, or transfers to other family members.

**One platform**

However, a simple awareness of principles is far from enough. Flexible package design requires a powerful billing system that must support the rapid new product launch, real-time customer care systems, credit control, flexible payment methods, customizable uniform user interfaces, open network architecture and high system reliability.

Huawei CBS describes a convergent billing solution that is based on the next-generation independent rating and billing engine. Its deployment allows operators to construct flexible, open and convergent network architecture to fully enhance billing capability, thus improving competitiveness, increasing ARPU, lowering operation costs, and improving customer loyalty. In July 2006, Huawei CBS was commercially launched for China Telecom Shandong and was later deployed by China Mobile Guangdong and Indonesia Mobile-8. In May 2007, Huawei signed a CBS contract with Telfort, the largest Dutch telecom operator under KPN. According to the contract, Telfort will use Huawei CBS to construct a convergent rating and billing platform, which will help Telfort shorten its 2G and 3G service deployment time.

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Smooth channels for mobile operations

By Zhang Junting & Zeng Liuqiu

As the division of labor in society becomes increasingly precise, channels are playing an important role in connecting producers and consumers, especially in the mobile communications field. Channels affect the speed and efficiency of commodity delivery, and those who can establish and manage them in a quicker, more effective way are more likely to attain a leading market position.

**Table 1  Channel system of mobile operators**

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
<th>Function</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General agent</strong></td>
<td>Top layer of the vertical marketing system</td>
<td>Focusing on SIM cards, High credit points based on high-value deposits, Large-scale marketing activities and inventory control</td>
<td>Discount, Commission, Bonus, Income share</td>
</tr>
<tr>
<td></td>
<td>Exclusive to the entire country or region</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contacting and trading with lower-layer channels</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Wholesaler or exclusive agent</strong></td>
<td>Replacing channel agents in some cases</td>
<td>Transferring corporate identity (CI) and visual identity (VI), High loyalty, Sales and service center</td>
<td>Discount, Income share, Commission</td>
</tr>
<tr>
<td></td>
<td>Exclusive in local region</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Communicating with both retailers and consumers</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Requiring sufficient subscriber support</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Retailer</strong></td>
<td>Ends of channels</td>
<td>Selling SIM cards and recharge cards, Selling products provided by all operators, Hard to control price, Fewer service types</td>
<td>Discount, Bonus</td>
</tr>
<tr>
<td></td>
<td>With the largest number</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Including grocery stores and bazaars</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fulfilling daily supply through scheduled visit plans</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pursuing maximum profit</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Sales channels and operator’s options

As Table 1 illustrates, mobile operators’ channels can be divided into three vertical layers. Operators mainly distribute their SIM cards, recharge cards, and mobile phones through channels. They can choose either to establish their own customer service centers or cooperate with social exclusive stores. Table 2 shows the advantages and disadvantages of both modes. For instance, exclusive stores benefit from rapid inception and low costs, while customer service centers ensure brand effectiveness and QoS. When distributing via exclusive outlets, operators need to construct an effective management mechanism and implement a holistic marketing strategy to guarantee and enhance brand equity.

Product features are a major factor to be considered when operators select a channel, and the variety of SIM cards, recharge cards and mobile phones necessitates the employment of different channels for effective distribution. Recharge cards, for instance, possess a short life cycle and therefore operators need to allow subscribers to conveniently purchase the cards at locations such as small stores and book/newspaper stands that offer other Fast Moving Consumer Goods (FMCGs).

In emerging markets, most mobile subscribers require fewer services and use prepaid cards. Given this, operators generally implement “best value for money” and low tariff policies in order to seize opportunities and acquire customers. The main competitive areas revolve around voice and short message services, the requirements for which can basically be met by exclusive stores. Meanwhile, fierce competition means that operators need to invest much in advertising and brand image consolidation. Competitive local exchange carriers (CLECs) and incumbent local exchange carriers (ILECs) invariably choose social channels to develop sales networks and thus attract subscribers in these markets.

Social channels do not conflict with channels established by operators, especially for an ILEC or a given CLEC that boasts a relatively huge user base. Customer service centers can enhance operators’ brand image and service

Table 2 Comparison between customer service centers and exclusive stores

<table>
<thead>
<tr>
<th>Compared item</th>
<th>Customer service center</th>
<th>Exclusive store</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment</td>
<td>Large investment wholly born by operators</td>
<td>Exclusive agents invest much, while operators invest little.</td>
</tr>
<tr>
<td>Construction period</td>
<td>Long</td>
<td>Short (initiated in different regions simultaneously)</td>
</tr>
<tr>
<td>Management</td>
<td>Powerful management and quick response</td>
<td>Relies on the channel management by operators.</td>
</tr>
<tr>
<td>Marketing</td>
<td>Intensive marketing</td>
<td>Achieves intensive marketing by connecting sales volume to profits</td>
</tr>
<tr>
<td>Service</td>
<td>All-round service and customer care</td>
<td>Limited services</td>
</tr>
<tr>
<td>Brand</td>
<td>Good brand presentation</td>
<td>Relies on operators’ promotions to enhance brand equity</td>
</tr>
<tr>
<td>Profit</td>
<td>Profits solely belong to the operators</td>
<td>Shares profits with operators</td>
</tr>
</tbody>
</table>
smooth channels for mobile operations

quality, while lowering subscriber churn rate. China Mobile, for example, with an enormous number of subscribers, has combined several marketing channels to promote its brand image and successfully achieved competitive market positioning. In customer dense areas, it has established its own customer service centers and sales locations, and in less populous suburbs and rural areas, it has adopted cooperative sales channels for good promotion.

**How to plan channels?**

Channel density and channel conflict describe the two most important factors in terms of channel planning.

**Channel density**

Intensive distribution: FMCGs such as soft drinks, candies, and cigarettes are distributed market-wide via as many channels as possible. Recharge cards should be distributed in intensive channels as they are a type of FMCG to subscribers.

Selective distribution: Operators select a limited number of retailers to distribute products in each region, so as to effectively control prices. SIM cards are distributed through selective channels.

Exclusive distribution: Operators choose a general agent to distribute all their products in a region. In this case, the operator works closely with the agent in terms of marketing and advertising.

Currently, a number of mobile communication services and products already possess some FMCG features. The recharge card, which features high sales volume, repeated consumption, and fast churn rate, is a typical kind of FMCG. For FMCG consumers, it’s an essential thing that is that they can make easy purchase. Therefore, to ensure that subscribers can buy recharge cards anywhere and anytime, mobile operators need to adopt the intensive distribution channel.

**Channel conflicts**

Channel design must incorporate a management mechanism that implements controls to obviate both horizontally and vertically occurring conflicts.

**Horizontal conflicts** refer to same level agents who compete for the same market share. An effective means of ameliorating this is to define non-overlapping marketing areas for each. In addition, operators need to enhance agent management and prevent trans-regional marketing. Based on location, they can provide agents with SIM and recharge cards with unique serial numbers, and can collect sales volume and activated subscriber statistics via systems applied to networking sales and billing. Moreover, in the same region, pricing for identical products needs to be consistent, in order to avoid conflict between retailers and exclusive stores.

**Vertical conflicts** relate to problems between agents operating at different levels. Operators, especially those who are newly established or are just entering a given market, lack sufficient channels to distribute SIM and recharge cards. While these products are attractive at a national channel level, conflicts may occur between regional agents and national level agents. To avoid this, operators can encourage national agents to establish exclusive stores, or operators can directly control the exclusive stores and thus enable fine operation of each region.

**How to operate and manage channels?**

Establishing an effective channel mechanism is the first step for an operator to ensure success. Only when the channel system functions properly, can it become a genuine base for rapid development.

**Profit sharing and incentive mechanism**

Operators utilize standard tools to implement channel control and incentive methods:

Discounts describe the difference in purchase and selling price for SIM or recharge cards, and are offered at the time of selling.

Commission represents the reward given by operators for bulk selling.

Bonuses are the premium and monetary incentives offered by operators over a set time period, the total usually relating to time-specific sales volumes.
Profit sharing derives from newly developed subscribers, and encourages agents to help expand an operator’s business.

Operators can in turn punish or disqualify agents who violate contracted rules given that they need to introduce competition in which only the most successful survive and flourish. If an existing channel performs badly, operators need to introduce a new channel to revitalize the whole system and achieve dynamic development through daily monitoring. Indices for evaluating the monthly performance of an exclusive agent, for example, may include SIM card sales volume, activated SIM card quantity, total tariff figures, subscriber churn rate, and customer lifetime value.

For sales locations offering terminals and for regions retailing customized terminals, various performance indices can also apply. Comparisons between different agents can instigate varied commission and supporting policies that encourage competent agents to further consolidate their performances and leading positions, while driving less successful agents to catch up. The timely disqualification of failing agents must occur in order to guarantee a cohesively effective sales environment.

Low-cost operation

In the current, aggressively competitive market, low-cost channel operations is vital to ensure rapid mobile service growth, a competitive channel system and channel scalability. This in turn depends on cost efficiency regarding channel management, subscription, and subscriber payment and service access.

To lower operation costs, one operator in Pakistan has built an effective channel system consisting of 15 customer service centers, 220 exclusive stores, and over 100,000 retail points. The retail points are provided with free signboards with unified advertisements and include grocery and food stores, newsstands, gas stations, and clothing stores. Their frequent contact with end users guarantees a high market penetration rate.

Low-cost subscriptions, payments, and service access for the subscribers represent an unchanging focus of operators, and a number of measures can be taken to optimize each. For example, electronic recharging adds speed and convenience when compared with traditional modes, and low amount and paper recharge tickets can increase flexibility, reduce costs and attract subscribers.

Making and implementing coherent channel routine plan that guide operators to regularly visit their channels can help lower operation costs. According to the routes and visit frequencies specified in the plan, channel managers periodically visit different agents of a region, and eventually improve daily management and logistics efficiency.

As competition becomes increasingly fierce, brands and services have emerged as critical factors stimulating market success. Operators should ensure the sustainable development of both their own sales channels and social channels, coordinate and obviate conflicts between different channels in a way that is underpinned by optimizing costs and results. Operators can enhance their competitiveness only by establishing a coherent channel that features a rapid market response coupled with low-cost daily operations and management.

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Securing ARPU while managing new applications

By Matt Bancroft from Mformation

Mobile operators are facing increasing pressure on average revenue per user (ARPU) as the markets they operate are mature. As a result, it has become widely accepted that they must look beyond the two traditional revenue streams of voice and SMS to new data services, in order to drive growth and boost profits.
This is a prime opportunity for mobile operators to offer an important value-added service and open the door to new revenue streams. Mobile operators can offer application and device management services or capabilities to businesses, ensuring that the tools are available for everything, from deploying and updating applications, to providing remote diagnostic support to users and backing up critical data.

Another avenue operators can look at to increase revenue is supporting CRM and sales force applications. Research has shown that businesses are looking at these applications for people who work on the move, in order to compile orders and have data at their fingertips.

While this is vastly useful, there are several potential problem areas that businesses must consider; storing customer data on a mobile device, for example, opens up the business to risks relating to both security and regulatory issues. In addition, any mobile application will need to be managed and updated regularly, otherwise businesses could end up creating more problems than they solve. Therefore, it is imperative that devices are kept up to date through remotely administered updates and support, and that they are subject to the same stringent security checks as any other computer on the corporate network.

By developing solutions to aid businesses with these issues, mobile operators can not only build new revenue streams, but also encourage mobile application usage.

But with increased use of applications comes an increased need for support from the operator. Now that we are seeing just such an increase in application use, it is important that operators are able to provide tools that meet the needs of mobile operators effectively, in order to avoid high support costs for both the enterprise IT department and the operators themselves. This can be achieved by looking at capabilities like remote diagnostic support, over-the-air (OTA) updates, and automated management systems, which will afford them the ability to provide effective application support, without driving costs through the roof.

Applications will continue to develop, and demand from mobile users will continue to increase. It is vital that operators lead the way with the ability to support these applications, not only in order to drive uptake of new applications, but also to secure those all important data revenues.

(From Telecoms.com)
In their book, *Strategy Maps*, Robert S. Kaplan and David P. Norton divide the value of stockholders into productivity and growth. The two basic paths through which an enterprise can create sustainable value and improve financial performance are increasing revenue and improving productivity, the former requiring a greater time investment. Enterprises need to balance these two contradictory forces by employing a strategy that is unique to a given situation and responds equally to short and long-term objectives.

The loss of traditional service advantages is forcing operators to seek new growth points and re-establish a competitive edge through transformation. Incumbent Local Exchange Carriers (ILECs) across the globe have begun researching and taking their first steps towards doing so, with BT, Verizon, Deutsche Telekom, France Telecom, and China Telecom all having announced their varied and individual strategies regarding future transformation.

After many years of cooperation with major global operators coupled with a detailed analysis and summary of ILECs’ transformation strategies, Huawei has proposed three steps to achieve fixed network transformation. Firstly, the consolidation of existing resources can improve efficiency. Secondly, continual innovation is accomplished through an active operational ethos. Finally, convergence embodies the means to actualize a leading market position. To date these three steps have been widely acknowledged by ILECs, and proven in practice many times over.

Three steps in ILEC transformation

By Huang Ying & Wang Zhenwen
Step 1: existing resources consolidation to improve efficiency

Aggressive competition from mobile and Internet services has culminated in the decline and, in some cases, obsolescence and replacement of traditional fixed network services. This has directly reduced the value space which ILECs can occupy, and negated the relevance of previously dominant business and operational models.

Basically, ILECs need to sharpen “the tools of their trade”. The first key issue is to improve efficiency and solve internal problems. Traditional PSTNs are facing a range of difficulties including outdated equipment, limited service support capabilities, inherent service and control separation, and an unwieldy service development mechanism that remains based on multiple vertical service networks. The increasing prominence of these problems is weighing heavily on ILECs. TCO reductions and the provision of customized voice value-added services (VAS) have become an industry-wide focus in order to ease pressures from declining markets and reduced revenue streams.

Huawei has invested years in conducting detailed and valuable market research in order to help ILECs solve their long-term legacy problems, and to equip them with two effective tools they need to flourish in the modern, rapidly changing communications era. The first involves Huawei’s flat All-IP and IMS-based NGN architecture that neatly and holistically offers unified three centers (control, data and service), centralized operations and maintenance; seamless PSTN/ISDN service inheritance, capacities of WLL support and smooth evolution to IMS. The nature of this architecture can fundamentally lower TCO, protect and optimize investment, and deliver short-term profits to ILEC shareholders via productivity increases.

In addition, the unified three centers have solved the deployment difficulties regarding traditional PSTN services; service development and test processes are simplified, service release time shortened, and customers’ voice VAS requirements are effectively satisfied.

The second aspect of Huawei’s solution revolves around broadband access development. Easy broadband access, flexible charging and service bundling can quickly attract and increase broadband subscribers. Broadband access, which gives ILECs high ARPU and profits, represents a new highlight in the transformation. Therefore, numerous operators have already formulated corresponding broadband strategies.

For example, Venezuela’s largest telecom operator, CANTV, has just launched its broadband services. In a market already saturated with voice services, CANTV’s revenue has suffered a sustained decline in recent years, in addition to numerous other problems. Switches of different vendors led to management difficulties and rampant fraud, and complex network architecture and outdated equipment prolonged the launch time of new services and incurred ever higher upgrade and maintenance costs. Thus, CANTV urgently required network transformation to enhance operation efficiency, meet modern telecom service demands and lead it out of impending crises.

The IP-based NGN has helped CANTV upgrade its traditional analog network to NGN that has inherited all services from the original PSTN. On the basis of a uniform service platform, CANTV is able to provide a variety of voice VAS to increase revenue. Meanwhile, the three centers and the centralized network management help CANTV to enhance operation efficiency and substantially reduce TCO.

Step 2: continual innovation through active operation

Productivity increases have somewhat slowed down fixed ILECs’ revenue decreases, but the declining trend of voice services remains irreversible. Only by taking their unique advantages in QoS control, bandwidth on demand (BOD), service awareness, convergent billing, security, and reliability, can ILECs bring broadband into full play and explore its potential for growth.

Controlling the value chain

Revenue from initial broadband inception phase mainly derives from an access fee, when attracting customers and achieving price reductions compose ILECs’ major marketing
measures. Poor and dispersed online broadband resources combined with the lack of a service integration platform obviate the ability to satisfy customers’ increasingly stringent requirements for content and applications, and this is contradicting with the rapid development and popularization of broadband services. SP/CPs, such as MSN, Google and Tencent, have developed in line with a market trend which emphasizes integration, diversification, customization and simplicity. They have created a variety of services and business models and offered basic services required by market for free in order to establish a subscriber base and brand equity. The SP/CPs then seek revenue from subscribers through VAS and from manufacturers through advertising. This business model has usurped the telecom industry’s basic operational parameters and has instigated the redistribution of values step by step. ILECs have been gradually confined to channels due to lack of control; although unable to get high profit share of content and service, they still have to invest considerably to expand the bandwidth occupied by P2P services.

Therefore, a new concern for the fixed ILECs is to implement control measures across the value chain, in addition to integrating and enriching broadband resources and applications. ILECs’ inherent network and operational advantages raise their potential as a leading force in the value chain. By establishing a uniform portal and integrating vertical portals, SP/CPs will be able to provide services to all subscribers through one access point, and conveniently settle fees with ILECs. In terms of service provision, ILECs can follow the leading integrated SP/CPs to subcontract channels to vertically aligned SP/CPs and provide popular services such as information, entertainment, e-commerce, virtual reality, and blogs. ILECs can also fully utilize their networks, operational advantages and the rapid duplication and transportation nature of the Internet to realize a virus marketing effect.

Furthermore, through categories (the so-called channels) and search services, ILECs can connect buyers and sellers to reduce the transition costs greatly, and then transfer the benefits to both parties. By providing subscribers with different level services, ILECs can collect a service fee share, commission, or membership fees. This can be consolidated by some free service provision to increase subscriber loyalty.

Besides providing communication services, an ILEC can become an integrated media operator by extending the industry chain and by cooperating with traditional information, entertainment, and e-commerce providers. ILECs can also introduce third parties such as advertising agents to redistribute value and enhance overall competitiveness by exploring broadband potential via TV and Multi-Play services.

Some services are uniquely available for mobile subscribers, for example, those based on location and short messaging services, which are closely related to individuals’ privacy. Moreover, limited by terminals and bandwidth, mobile operators may lack innovative services and thus may have to transplant a number of services from fixed networks. Therefore, the gap between fixed and mobile networks does not lie with service availability, but in value chain and terminal controls. Mobile operators have already fulfilled perfect control of the value chain through customized terminals and WAP gateways. However, due to their open nature, PCs are not likely to be customized for operators. The increase in broadband subscribers is to some extent limited by other factors including a PC’s restricted penetration rate, location and the skills required for the use. However, if a PC’s services can be extended to a living room and provided via TV + home gateway (HGW), common subscribers can enjoy the services more conveniently and increase their on-line time. In this way, fixed network operators can expand their subscriber base. By customizing HGWs and strengthening the control to value chain, fixed ILECs become the preferred portal for leading customers to network and can use HGWs as sensors for service awareness, and thus support Multi-Play and other interactive services.

**FTTX + WiMAX: the ultimate objective**

Networks form the foundation of services, providing wider bandwidth, better mobility and ease of management to enable richer information, entertainment, and e-commerce services. In order to enhance subscriber experience, access network becomes the key to network transformation. FTTX and WiMAX represent the ultimate objectives of access network transformation, as they satisfy subscribers’ requirements for mobility and high bandwidth while greatly reducing ILECs’ CAPEX and OPEX.

China Telecom is moving towards an integrated information service provider and has launched its information integration and value chain transformation strategies. It is focusing on fixed-network VAS, ICT and broadband services and seeks to achieve transformation through services such as Best Tone and Biz Navigator. China Mobile aims to therefore supply a range of innovative services and business modes based upon enhancing users’ experience and building up their reliance.

Best Tone (also called Voice Google), with its foundation in the telephone
number information service, it has expanded its traditional number search function to provide customers with a service related to facilitating “clothing, dining, housing, traveling” and other consumptions. Through the service access number 114, China Telecom presents a comprehensive service platform to subscribers and provides differentiated services. The business mode of Best Tone has also shifted from simply charging subscribers to second sale of users’ attention.

Biz Navigator provides “full process” and “one-stop” services to small and medium-sized enterprises. Compared with simple network connections, Biz Navigator focuses on enterprise customers’ needs by becoming involved with the internal information process of enterprise production and organization. In addition, Biz Navigator places higher requirements on China Telecom’s industry chain management, partnership capabilities, and channel service capacity.

In a word, China Telecom no longer limits itself to traditional voice or data service provision and instead integrates its resources and establishes business modes based on its own operational features and manageable resources. Meanwhile, the company has extended its industry chain both upstream and downstream, and cooperates with information sources to realize a win-win situation.

**Step 3: visualize a leading position through convergence**

ILECs have harvested much from the significant development of interactive Multi-Play services and value chain, service and profit model maturity. However, separated service networks such as IPTV, voice and data services make it impossible to effectively share ILEC resources. Different services are carried out via different subscriber accounts, thus complicating the management of subscribers. The distributed control centers for a variety of services also negatively impact the value chain. The IMS-based IPTV network supplies a complete solution for ILECs and offers an expedient blueprint for network development. This solution not only solves the above problems, but also introduces a mobile access mode that enables ILECs to enjoy the same subscriber and profit increases as mobile operators. Convergent networks and terminals stimulate ILECs’ competitive ability with respect to mobile and cable operators, and provide an FMC service experience for subscribers. This elevates their revenues and lowers cost in a sustainable manner. Furthermore, by cooperating with traditional media and encouraging user-generated content development, ILECs can extend their value chain and adjust services such as service bundling and packing according to subscribers’ needs. To obtain a leading position in the telecom industry, ILECs need a foundation to provide integrated information services, promote a customer-first enterprise approach to meet their diversified and individualized demands, and enhance value chain control.

By exploring PSTN potential, ILECs can reduce TCO and raise efficiency. Value chain control gives them the opportunity to enrich broadband resources for revenue growth, and FMC facilitates a converged service experience that improves competitiveness, reduces cost and increases revenues. All of these features are included in the three steps promoted by Huawei that encapsulate an ILEC’s transformation. As mentioned in *Confronting Reality: Doing What Matters to Get Things Right*, “It’s not cyclical change. It’s structural change, and it means total change in how this business will make money in the future.” Therefore, in the era of telecom transformation, ILECs can capture their leading positions only through continual changes and active construction of their transformation capabilities.

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In the era of telecom transformation, ILECs can capture their leading positions only through continual changes and active construction of their transformation capabilities.
Green telecom for a green world

In the past decade, the strong growth of the telecom industry, and increased equipment obsolescence have caused a dramatic rise in the amount of electronic waste worldwide.

A study for the European Commission by a United Nations University-led consortium predicts that, across the EU27, e-waste will rise 2.5% - 2.7% per year - from 10.3 million tonnes generated in 2005 (about one-quarter of the world’s total) to roughly 12.3 million tonnes per year by 2020. Today, environmental issues have become one of the most important factors to be considered in the telecom industry. Operators are paying increasing attention to their environmental performance, and are cooperating more closely with telecom equipment manufacturers.

China Mobile is one example. In December 2007, they launched the “Green Initiative” program, which aims to save energy and reduce emissions for its outsourcing system and complementary equipment. The “Green Initiative” will also be implemented to reduce the quantity of materials used for equipment, decrease the weight of each piece of equipment, increase equipment integration capacity, and lower power consumption and cost.

In the “Green Initiative” program, China Mobile has established a strategic partnership with fifteen telecom equipment manufacturers, including Huawei, Ericsson, etc. The strategic partnership focuses on four major aspects:

First, establish a collaborative team to exchange ideas regularly on energy conservation, environmental protection, and further promotion of telecom network IP transformation.

Second, China Mobile will cooperate with manufacturers in product research and development, production, and testing, to enhance the environmentally friendly features of the product design, choice of parts, and production techniques.

Third, realize an electronic flow for the purchase and management of telecom equipment, which will enable equipment information to be recorded during the order process, production, and delivery.

Fourth, establish a system for evaluating the environmental aspects of telecom products. China Mobile plans to establish a green value chain by cooperating with manufacturers in the next two or three years, while achieving the objectives of lower resource consumption and enhanced efficiency.

China Mobile’s strategic partnership with manufacturers represents the increasing concerns about environmental issues with operators around the world. What measures can be taken to balance operation and environmental protection, while increasing revenue? What manufacturers should an operator select to best implement their green strategy?

Effective measures for a green telecom

With years of practice, the telecom industry has taken many effective measures to minimize negative environmental impact. These measures are summarized as follows:

International regulations

International regulations on environmental protection, especially those for telecom operations and manufacturing, are widely recognized and followed.

ISO 14004:2004 provides guidelines on the elements of an environmental management system and its implementation, and discusses principal issues involved. ISO 14001:2004 specifies the requirements for such an environmental management system.

OHSAS 18000 is an international occupational health and safety management system specification. It is comprised of two parts, 18001 and 18002. It embraces BS8800 and a number of other publications.

WEEE: The directive 2002/95/EC on Waste Electrical and Electronic Equipment (WEEE) focuses on the restriction of the use of certain hazardous substances in electrical and electronic equipment, and 2002/96/EC focuses on waste electrical and electronic equipment. These directives...
Waste reduction and recycling

To minimize the amount of wastes and hazardous materials for landfills, wastes are reduced, reused, and recycled. For example, Vodafone Germany successfully ended its campaign of recycling handsets for a cleaner environment at the end of March 2007. Up to 100 thousands handsets are collected between April 1, 2006 and March 31, 2007, successfully promoting the idea of using valuable materials to reduce pollution and environmental impact. Besides making a donation to 13 organizations in Germany for each returned handset, Vodafone also helped its recycling partners to reuse or break down the handset component parts in an environmentally friendly manner.

Energy conservation

Conservation efforts include improving energy efficiency in building design and construction, such as the implementation of airflow cooling instead of air conditioning for base stations, and optimization of the battery back-up times. Also, the size and weight of products should be properly designed for more environmentally friendly transport, and manual drive testing should be replaced by a database to manage and optimize networks.

Environmentally friendly networking

This includes choosing the proper products and networking solutions to reduce negative impact on the environment. While ensuring product quality and reliability, environmental sustainability should also be a factor. Methods should be evaluated and applied to help understand, measure, and lessen the environmental impact.
For example, in October 2007, Huawei was selected by China Mobile to install a new generation GSM base station on Mt. Everest to construct a mobile telecom network that covers the base camp on Mt. Everest and the main route to the summit. As the base station needed to be built on Mt. Everest at an altitude of 6500 meters, it was a big challenge for China Mobile to reduce the negative impact on the fragile environment to a minimum level. After careful deliberation, China Mobile finally chose Huawei as its partner to build the base station. Huawei’s equipment complies with the environment protection standard, Restriction of the Use of Certain Hazardous Substances (RoHS), which means it is able to cope with the extreme environment and weather conditions of Mt. Everest. Huawei has also designed the new base station to get power from a solar system, effectively solving the problem of power at such a high altitude.

**You need a green partner**

Huawei is a company committed to providing innovative and customized telecom products, services and solutions, and has always embraced environmental protection as a crucial part of its sustainable development. With the motto of “Green Huawei, Green Communication, Green World”, Huawei has raised its understanding of how to be a green company, in the areas of work environment, environmental health and safety issues, green products and production, and adhering to the international standards of environmental protection.

**A green company**

Believing that the working environment is crucial to ensuring overall job satisfaction, and is systematically organized to meet employee needs, Huawei has established workplace environmental monitoring to guarantee a better and healthier working environment for all employees.

To provide a safe and healthy working environment, Huawei has implemented the Environment, Health and Safety (EHS) management system based on international standards. This program aims at systematically identifying potential environmental risks and occupational hazards in design, production, and operation. Implementation of the EHS system also helps to lay down specific EHS requirements for purchasing strategies, and promote EHS throughout the whole supply chain. To ensure thorough implementation, Huawei also performs internal audit and management review of EHS on a regular basis.

**Green products & solutions**

Huawei has been engaged in the research and development of environmentally friendly products for several years and emphasizes the importance of eco-design throughout the entire IPD process, from concept development to product launch. The three main goals to achieve through eco-design are: environment conservation, quality enhancement, and the rational and efficient use of resources.

Considering customer needs and environmental concerns, Huawei has spent considerable effort in the research and development of telecom equipment that significantly lowers TCO. Huawei’s Distributed Node B, for example, was designed to lower operational costs by effectively reducing the cost of leasing, electricity, air-conditioning, and manpower. It has been statistically shown to reduce operation costs in terms of peripheral facilities, equipment room, and electricity consumption. In a UMTS network of 2000 sites, compared with a conventional Node B, Huawei’s Distributed Node B can save enough energy to power about 3,200 ordinary houses. Moreover, Huawei’s Distributed Node B is dust-tight, waterproof, small, and light, allowing it to be installed at minimal cost. It also complies with the IP65 standard and is suitable for use in harsh environmental conditions.

In addition, Huawei has obtained the certificates on ISO 14001:2004 and OHSAS 18001:1999. Huawei’s products and components in the European market also comply with the restrictions of the RoHS and WEEE.

Huawei is currently preparing to comply with the directive on the eco-design of Energy-using Products (EuP) by 2008. The EuP is a new regulation that sets eco-design requirements for energy-using products. The impact on the environment will be considered at every stage of the product life cycle and assessed in the aspects of resource and energy consumption, waste, recycling, etc., so as to ensure product quality and environmental protection.

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Reach for the sky and transform your vision into reality. 

Realize Your Potential

Just as the idea of taking flight can become a reality, Huawei helps you realize your bigger business goals. We deliver results by listening to your needs and responding with fast product and solution implementation.

As one of the leaders in UMTS, mobile softswitch, IMS, IP DSLAM and optical networks, Huawei has deployed its solutions in over 100 countries, serving over a billion users worldwide. Many of the world’s leading telecom network operators are now enjoying the benefits of our expertise. So let Huawei unleash your potential and help you quickly soar to greater success.

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A great “leap” forward for 3G in the home of CDMA.

Looking to fly higher?

Realize your potential.

In the country that’s home to CDMA, LEAP’s Cricket Communications has selected Huawei for deploying one of the world’s first ALL IP CDMA 3G solutions.

Why?

Because Huawei could deliver the world’s most advanced technology (CDMA2000 1x EV-DO Rev. A) in an ALL IP format right through the system, from radio access to core networks.

Cricket customers will enjoy access to Huawei-enabled top quality voice and multi-media services while Cricket makes significant savings on its transmission rental and manpower.

If you’re looking to fly higher, catch the wave, the Huawei wave.

We’re the one who continuously innovates to meet our customers’ needs.
And we meet them fast.

We’re the one who can help you realize your potential and enter the age of convergence.

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