

Fixed Mobile Convergence in Asia

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How the industry thinks – example from China Telecom

Promising Prospect



Maximize shareholders' value

Achieve robust financial results

"Triple-play" and "Fixed-Mobile Convergence"

Expand integrated information service
Enrich video communication business

Increase contribution of non-voice business
Strengthen development of Internet access & VAS

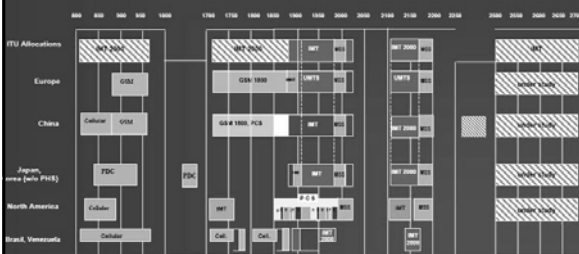
Fully leverage existing resources to consolidate traditional fixed line business

Stringent control on investment

High capacity growth
Technology advancement
Infrastructure investment
Diverse market demand for telecommunication



IMT-2000/UMTS Frequency Spectrum after WRC2000



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2 - 4 April 2003

Technological Convergence vs Business Synergy

- Technological convergence **enables** bits to be
 - combined (NGNs)
 - transmitted (multiplexed)
 - received (devices)
- Business synergies strengthen commercial performance
 - e.g. cross-selling, bundling, reduce churn, etc.
- Convergence: can it be supplier driven or need it be customer driven?
 - 3G flops vs. IPTV as an *extension* of existing demand
 - answer depends on aims and objectives, e.g. to cut costs or to grow the market?



Convergence Costs-Benefits

- Cost efficiencies lie in the opex – so question is when to commit to capex?
 - Legacy systems perfectly ok?
 - NGN technologies stable/mature?
 - Costs of transition = business restructuring, new skill sets, learning curves, etc.
 - Services and applications ready to go?
 - Billing and payment systems ready?
 - Customer relationship management (CRM) in place?
 - Is the market ready?
 - Is the supply of handsets/access devices ok at attractive prices?
 - What is the competition doing?
 - etc.....



Convergence Costs-Benefits

- Benefits are usually less easily estimated, but include
 - Economies of scope of services (previously mostly economies of scale) – so more spreading of costs (**cost side**)
 - Greater product mix to extend possibilities of cross-selling and bundling → reduce churn rates (**cost side**)
 - Stronger strategic market positioning and retention of market share for incumbents (**strategic**)
 - Drive up arpu (**revenue side**)
 - Explore new product and market opportunities (**revenue side**)
- Fixed – fight off FMS and capitalize advantages in
 - Bandwidth and access device screen size
- Mobile – accelerate FMS and capitalize advantages in
 - Faster wireless speeds (e.g. 3G+ at 50 Mbps?) and mobile access



Market Strategies for Convergence

- Defensive or Offensive? Is there a difference?
 - Unified billing – but does anyone want it?
 - Mixed opinions, it did not work in Australia, but will it work in Japan?
 - Bundling of fixed and mobile services – reduce arpu to reduce churn or to grow market share?
 - How price elastic is demand?
 - Who benefits the most, the fixed or the mobile side?
 - Who loses the most, the fixed or the mobile side?



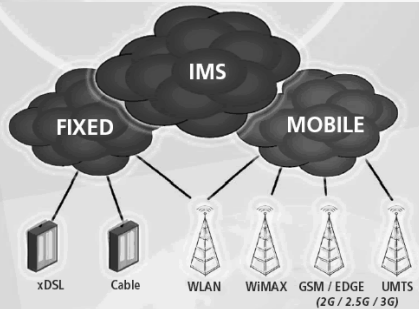
Market Strategies for Convergence

- Defensive or Offensive? Is there a difference?
 - Cross selling of broadband and IPTV bundling
 - Simple concept of complementary goods, but requires 'closed garden' model? What about 'naked DSL' which, eg, Telekom Austria is marketing with a tie-in contract to its mobile service
 - PCCW's IPTV model is more complex coz it combines a unique network architecture with a business case to content providers allowing *NowBroadband* to offer an attractive program package to customers = two-sided market?
 - 3G Closed Garden Model vs Open Access Model
 - Hutchison's 3G X-series (similar moves by Vodafone?) is beginning of the end of the failed 'closed garden' model? **When telecoms meets Internet, which model prevails?**
 - Pricing structure and levels and alternatives
 - Access charging, usage charging, revenue sharing (content, advertising, m-commerce, etc) – there are few rules, just experience

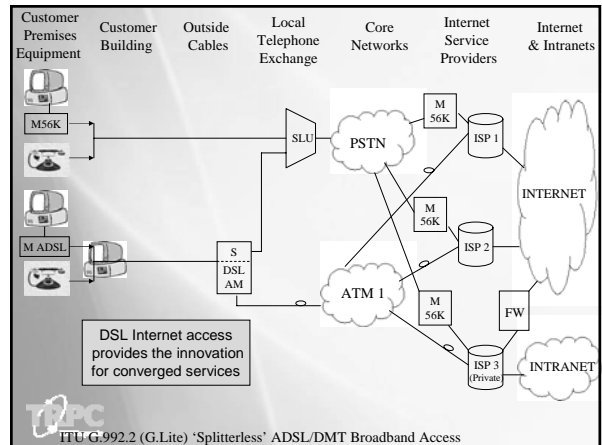


FMC Technologies - ETSI's TISPA

(Telecom & Internet Converged Services and Protocols for Advanced Network)



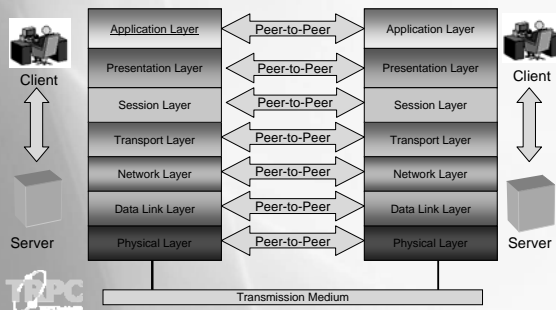
<http://www.etsi.org/tispan/>



ITU G.992.2 (G.Lite) 'Splitterless' ADSL/DMT Broadband Access

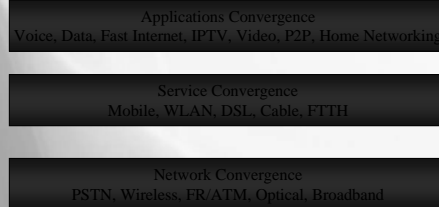
The 7 Layers 'Stack' Reference Model

The platform supports linear services delivery with limited convergence



Fully Converged Network 3-Layered NGN Stack

All-IP NGN (Cisco Version)



FMC Technologies

- NGN core **telecom** network transport layer is usually IP or Ethernet based
- NGN core **telecom** services layer migrates voice to VoIP and legacy services such as X.25, Frame Relay to IP VPN or 'emulates' them using **MPLS (Multi-Protocol Layer Switching)**
- NGN DS-LAMS replace all circuit switches in the local **telecom** exchanges
- NGN convergence in **cable** access networks migrate to CableLabs PacketCable standards to provide VoIP and SIP services riding over DOCSIS as the cable data layer standard.



FMC Technologies

- NGN engineering trade-offs for delivering Internet services to wireless as well as fixed line devices
 - **SIP (Session Initiation Protocol)** and the ITU standard H.323 (yet another re-run of IT and Internet 'Netheads' vs telecom 'Bellheads'?)
 - SIP was widely seen as being a 'local loop' protocol for FMC vs H.323 in the fibre backbone
 - If NGN operators choose **IMS (IP multimedia subsystem)** rather than the leaner approach of relying upon the Internet to make the FMC delivery connections then SIP will become widespread.
- NGN and voice – a Softswitch programmes VoIP traffic and provides the interface with PSTN systems through signaling gateways and media gateways



FMC Technologies

- Mobile technologies offering '3G' services
 - 2.5G (CDMA 1X-EV DO; GPRS) = IP (**IP is the key**)
 - 3G (WCDMA/CDMA2000/FOMA/TD-SCDMA) = broadband (384 Kbps – 2Mbps) (**after IP its all about speed/capacity**)
 - Edge (Enhanced Data Rates for GSM) = 475 Kbps = 2G or 3G?
 - HSDPA (High Speed Downlink Packet Access) = 3.5G = 2-3Mbps +
 - HSUDP (High Speed Uplink Packet Access) = 3.75G = 2-3Mbps +
 - SIP (Session Initiation Protocol) phones for P2P services such as VoIP, 'community' sites, etc
 - WiMax (**Worldwide Interoperability for Microwave Access**) operates in the 2.3/2.5 GHz, 3.5 GHz or 5 GHz frequency allocations
 - > 3.75G... = 50 Mbps +?
 - 4G fully meshed 'organic' networks?

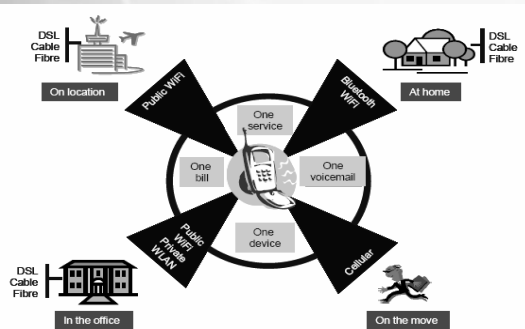


FMC Services Convergence

- Phase One:
 - Fixed-mobile service and pricing bundles offer single wireless handsets to roam between fixed/DSL, mobile and WiFi networks
 - **BT's** Fusion service offers the Bluephone using an MVNO on the Vodafone 3G network; **Deutsche Telekom** offers "T-One"; **Telecom Italia** offers "Unico"
 - **Korea Telecom** introduced *Onephone* in 2004, and replaced it in 2006 with *toest* which links KT's PDA-based *Nespot* (fixed wireless Internet) with *Nespot Swing*, a PCS to Wi-Bro download service for movies and music, etc
 - Japan's **NTT DoCoMo** offers Passage Duplex, Japan's Jupiter Telecommunications (largest cable TV Multiple Systems Operator or MSO) offers PCS/WiFi calling
 - In France, **Orange** offers free broadband to high-end post-paid mobile subscribers, but note:
 - **"Orange's unified brand does not translate to a unified strategy on convergence. Our approach is quite country specific... it is both FMC and FMS"** [Robert Swift, Head of Voice, Orange Business Services *Total Telecom* 1 July 2006]



IDC's Vision of Converged Services



FMC Network Convergence

- Phase 2
 - Next Generation Networks offering common all-IP platform supporting converged services/applications and content delivery to diverse access devices in a variety of formats
 - Incumbents have to deal with the legacy/accelerated depreciation/ upgrade/transformation issues = 5 years, 10 years, 15 years away?
 - For example, BT in the UK investing £10 billion in all-IP 21CN
 - New Entrants have to decide the which market segments to target issue



Market Demand for FMC?

- Moving markets from (a) basic requirements (utilities) to (b) mass consumption (commodities) to (c) value-added goods and services is the challenge for making a business case out of convergence
- The market is granulated, segmentation is the name of the game
 - 1a. Needs – basic communications e.g., voice, messaging, email = $f(\text{vanilla living})$
 - +
 - 1b. Desires – mobility, personal numbering, etc = $f(\text{\$}\$\$)$
 - 2a. Fashions – designs, brands, advertising, etc = $f(\text{pressure})$
 - +
 - 2b. Lifestyles – age group, peer group, occupation, etc = $f(\text{culture})$



Threats and Opportunities

- P2P (peer-to-peer) = by-pass of traditional gatekeepers/payments
 - SIP phone could by-pass call charging
 - Rich media content can use P2P for commercial distribution? Requires shift in the revenue model
- Closed Garden vs Open Access = telecoms world meets 10 ton Internet gorilla?
 - Open access excites (grows) the market
 - How do individual operators secure a share of that growing market? (prisoner's dilemma?)
- Services/Applications and Content = serving customers, but how to charge?
 - Google advertising model?
 - Channel distribution charges?



Regulation Convergence as a Boundary Issue

- Boundary between two highly regulated sectors: telecoms and media:
 - e.g. mobile TV; IPTV
- Boundary between unregulated and regulated sectors: IT vs. telecoms and media:
 - e.g. P2P applications to by-pass
 - telephone gateways (Skype)
 - TV gateways (PPLive; TVU)
- Boundary between different markets within a sector:
 - e.g. FMC



Regulation Convergence as a Policy Issue

- FMC requires changes in licensing
 - Unified licensing
 - Technology neutral licensing
 - Service neutral licensing
- FMC requires changes in interconnection and network charging
 - RPP, MPP, CPP vs BAK/SKA
 - On net and off net charging asymmetry problems?



Regulation Convergence as a Policy Issue

- FMC raises M&A challenges
 - Fixed acquisitions of mobile companies (or vice-versa) pose problems, especially where incumbents are involved
 - Cross-ownership issues in triple and quadruple play
 - Does acquisition of company imply acquisition of regulated assets such as spectrum?



Regulation Convergence as a Policy Issue

- FMC requires changes to spectrum policies
 - How to assign, and on what terms, frequencies to services that can compete with 3G? Or BWA that can compete with DSL?
 - How to allocate between licensed and unlicensed spectrum?
 - How to make sense of spectrum pricing with different FMC cross-elasticities of demand?
 - Spectrum trading facilitates FMC – what happens to licence conditions?
 - Service neutral trading facilitates FMC – what happens to international harmonization of allocations?

See also TIF Briefing Paper on FMC
http://www.trp.hku.hk/tif/papers/2006/oct/briefing_061010.pdf



Conclusions

- FMC is both near (services) and far away (networks)
- Technologies are enablers, but are also empower end users – e.g. blogs, wiki's, community sites, etc.
- Business case will drive network operators, but who drives the business case?
 - The industry? e.g. the Google search/advertising model, or the 'restricted' as opposed to a 'closed garden' model
 - The consumers?, e.g. an 'open access' model by default due to mass consumer behaviour by a youth culture?
 - Answer partly depends upon which market segment an operator is focused on – but generally the rule of the game is fast-forward to mass (subsidized) sales, then reap the cost benefits of scale, then try to manage the market
- Unlike old soldiers, regulations don't just fade away!



Thank You

The End

