Practical Aspects of Market and Project Development

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“Everything Matters”

Policy
Regulation & Market Entry
Risks
Market Opportunity
Financing Options
Technology Solutions
Viable Projects
Last Mile Access in Emerging Markets

Big burden … … or big potential?

The essential telecom market opportunity in low- and middle-income countries is to provide:

- low-cost, high-quality telephone service and
- reliable high-speed Internet connections
What we all want

• Last-mile networks that are dramatically less expensive to build, easier to deploy, and more flexible to operate than existing fixed line and mobile alternatives

• IP deployed as widely as possible

• Low or no radio spectrum costs

• Networks designed to provide both voice and data

• Positive ROI in an era of declining ARPU

• Open the “middle” of the market pyramid
Context

- **PSTN investment is comatose**
- **Governments still addicted to telecom taxes**
  - Spectrum remains expensive:
    - Pakistan $291M = 28x ARPU (future 15x)
- **GSM**
  - More affordable but still limited to wealthiest
  - Capex as low as $50 (av. $120)
  - Useless for data; 3G is a fantasy
- **CDMA / CDMA WLL**
  - More elegant but remains expensive for data
  - Devices, networks, spectrum, $/mbyte
- **The future is “all-IP”, but when?**
  - WiFi/SIP still exotic

[Graph showing capital expense per subscriber ($) from 2001 to 2005E]

Source: Network Dynamics Associates
Internet access options

• (Traditional PSTN and satellite)
• Broadband wireless islands
  – A lot of new, powerful and cheap solutions
  – WISP/VoIP for business
  – Primarily urban core, but links to remote areas via satellite
  – Terminal costs falling dramatically
• WiFi
  – Chips are evolving fast, especially for voice
  – Business model does not scale due to range
• WiMax
  – Standards-compliant, volume production in 2006/7
  – Initial systems will be consumed by “triple play” in mature markets – will delay introduction in small/poor markets
• IP networks are not easy to manage
  – Domain management, complexity and scalability
  – Managing bit storms over open protocols
So, what do we build?
Delian Architecture Summary

Vision: Hybrid network in near term
- Propagate IP to the network “edge”
- Proven, improved WLL – making Chinese “Little Smart” even smarter

- **IP core network with Broadband Wireless**
- Proven “edge” technology for voice (IP-PCS/PHS)
- **WLAN to “distribute IP” to IP-PCS nodes + business broadband**
- **Off-net voice and enhanced services through gateways**

Edge services  
IP-PCS WLL  
(Voice + low speed data)  
Broadband WLAN  
Core IP Network  
(Broadband Wireless and/or existing IP)  
Off-net Services  
Web Services + Internet  
PSSTN  
Legacy voice customers
Financing Options Vary Widely by Market

Developed Countries
Debt and equity derivatives, credit enhancement, mezzanine

China, India, Pakistan, ASEAN
Fixed income, international Equity Capital, DCM, M&A

Sri Lanka
Project Finance, International lending, Equity Capital, FDI

Bangladesh
Equity Capital, Structured Finance Domestic lending, FDI

LDCs - Afghanistan, Haiti, CIS
Multilateral debt and Equity, limited FDI

Source: ABN Amro
Financing Challenges

• Traditional international equity investors are cautious
  – Lack of understanding / Bigger fish to fry
  – Increasing awareness of emerging markets opportunity
  – Prefer (but will not get) control

• Informal market entry barriers are steep
  – Established families dominate market opportunity
  – “Market liberalization” does not mean “free market”
  – Transparent on paper vs. transparent in fact
  – Policy irregularities elevate investment risk

• Debt
  – Pegged to political volatility
  – Weak or immature debt markets
  – Changeable covenants
  – Only the largest get affordable bank rates
The Good News

- **Capitalization entry barriers have fallen**
  - IP and related technologies dramatically lower Capex
  - 10’s vs. 100’s million $
  - Broadens pool of potential investors

- **Local markets can capitalize good projects**
  - Emerging market telecom equity performance is strong
  - Local market liquidity

- **Regulatory swing toward opening local loop**
  - PSTN lags mobile investment
  - Natural monopoly argument catching up with market reality
  - Limited understanding of what is really possible with next-generation IP systems
Take aways

• Local loop is ripe for dramatic transformation

• Technology solutions do not exist in the abstract

• Politics matters most
  – 95/5 rule