

# Telecom Industry Trends

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# Mega Trends in Telecom

Convergence

Network Capacity  
& Economics

Mobile Internet

Role of Femtocells

Telecom and  
Content Delivery

Smarter Devices

Video Explosion

Year of Google?

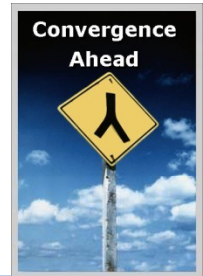
New Services,  
Apps & App Stores

Cloud Computing  
& Services

Innovation!

Globalization &  
Consolidation

# Convergence



- Not just network convergence but also access convergence, device convergence, service convergence
- Role of IP Telephony, VoIP, Video over IP, anything over IP
- Various regulatory issues / challenges
- Wireless / mobile is the huge growth market
- But also broadband, cable, satellite growth opportunities
- Home is a major battle ground
  - Home gateways, Femtocells, home automation
  - Various verticals: “entertainment”, “healthcare”. “energy”, etc
- Personal Communication is a major battle ground
  - Mobile handsets, Smartphones
  - Consumers, prosumers, and enterprises
- Internet of Things – Next Frontier!
  - Major opportunities for telecom operators in M2M market growth, e.g. Smart Grid

# Network Capacity and Economics

- Bandwidth demand is growing almost exponentially
- Video is the major contributor, impacting both wireless and broadband networks
- More spectrum will be needed for mobile networks; but also more efficient use of the spectrum; LTE is one of the answers
- More network capacity will need to be deployed, but network economics will be very critical
- Network optimization and backhaul / access optimization will be a major area of focus
- Cloud Computing will be part of the answer – more on this later!
- Also need better distribution of content , better allocation of processing between network and devices
- Need better tools for policy management, and
- Need regulatory flexibility re Net Neutrality, etc.

# Mobile Internet



- Next phase of Internet, ubiquitously available, from any device, anywhere and anytime
- HSPA, LTE technologies for wireless networks, Smartphones, browsers, Apps, and Services
- Content is King, but content delivery is and will continue to be very critical as well; Content Delivery will be the “King Maker”
- Advertising will be very important element of the new business models
- Battles between Apps and Browsers
- Battles for Smartphone Operating Systems
- Pervasive and Trustworthy Network and Service Infrastructures, including virtualized infrastructures
- Lots of room for innovation on both the technology and the business models – more on this later

# Role of FemtoCells



- There are various rationales for Femtocells; but most critical one is not coverage, but rather bandwidth explosion and network economics
- Cost of Femtocells has been a major bottleneck for wide-scale deployment; but expect the cost/price points to come down
- Should be a key element of future Mobile Internet and convergence strategy
- Part of the battle for the home and the office
- Room for lots of innovation in merging / integrating Femtocells
  - Into home and office environment, but also
  - Into the telecom networks
- Major opportunities might be on new apps / services offered through Femtocells,
  - Remote healthcare, Smart Grid, Content Delivery to Home

# Telecom & Content Delivery

- They say Content is King, but timely, cost-effective and high-quality delivery of this content is equally as important. Otherwise, content is not worth anything!
- Telecom operators are in an ideal position to offer
  - timely, cost-effective and high-quality delivery of content,
  - to users at home, at work and on mobile
- Already started with services like IPTV, home entertainment, etc.
- Partnerships and JVs, especially with content owners and distributors
- M&As, especially for content delivery platforms/networks
- Business model challenges, but requires business innovation!
  - Advertising will be an important component of new business models

# New Smarter Devices



- Smartphones are growing; 500 Million Smartphones by YE 2009; most likely 30% of all handsets globally by 2012
- Mobile Internet is the key driver for Smartphones; Internet Access in developing market will be primarily through mobiles & Smartphones will have a major role
- Apple, iPhone and iTunes revolutionized the mobile world in the last 2 years
- But Google and Android is coming strong; potentially major challenger to iPhone; giving more choices to users / operators;
- Google's new Nexus One has several revolutionary elements
- App Stores are a very critical element for Smartphone business
- Smart edge – dumb pipe dichotomy; networks need to fight back
- Network as a Service (NaaS) concept helping operators to regain / maintain services and fight back on the value chain battle

# Video Explosion



- It is not just YouTube, IPTV, or Mobile TV,
- Video will be very prominent in almost all aspects of TMT sector
  - Expect to see video as part of data streams triggered by most Smartphones,
  - Expect to see video as part of the fabric of all or almost all future Apps
- Major verticals such as Entertainment (inc., Games), Social Networking, Healthcare, Education, Security, Military
- Three Screen Strategies for TV, PC and Handset – numerous new business opportunities
- More capacity, more optimization, more service bundling, but also need new business models
- Continuous technology innovation around Video (3D TV was the hot item at 2010 CES show in Las Vegas)
- We also need innovation around business models, including new advertising paradigms

# Year of Google?



- Huge commitment to telecom, from voice to video, search, advertising, mobile, OS, browser, apps, services, location, as well as new areas (Energy)
- Targeting consumers, prosumers, and all sizes of enterprises
- Pushing for “open” & “net neutrality” but also working verticals, with & without operators
- Recent launch of Nexus One is a good example
  - Lots of technology innovations, e.g. speech, touch-screen, processing, storage, etc
  - Sold with operators, but un-locked version to be used with any operator (new for USA)
- Will continue to have far more influence than Microsoft on telecom sector
- Telecom operators need to
  - Collaborate (not confront Google), e.g. potential partnerships
  - But also stand their ground in the value chain with their own strategy, capabilities, services and business models

# New Services, Apps & App Stores

- Network as a Service (NaaS) concept – hybrid services / apps; may open up new opportunities
- Cloud Computing services → next page
- App Stores – there are 3-4 different types , pursued by different players;
  - operators need to find their niche market to succeed in App Store business
- LBS services will be very important , and critical for telecom operators to leverage their assets
- Unified Communication (UC) services are the current focus for Enterprise
- Security services / apps will be very relevant for telecom operators to play in different vertical markets, e.g. finance / banking, healthcare, etc.
- NaaS and Cloud Computing can come together and enable operators to maintain their position in the value chain, i.e. avoid being a dumb pipe!

# Cloud Computing & Services



- Availability of software, processing power & storage on a “as needed” basis
- Reduces CAPEX, provides agility, reduced cost, device independence, reliability, scalability, security, reduced maintenance
- Includes Infrastructure as a Service (IaaS) + Platform as a Service (PaaS), + Software as a Service (SaaS); High strategic fit with telecom industry assets
- Already \$16B business in 2009, and will grow to \$43B business by 2012
- Early examples of Operators: Orange = “flexible computing”; Verizon= “Computing as a Service”; Vodafone= services such as “PC backup”; O2= “O2 Bluebook”; BT= global hosted UC services
- Will be transformative for the telecom industry for the next 3-5 years
- Key questions for telecom operators are
  - How to establish strong role and not let the Internet companies to steel the show
  - How to leverage key assets to leverage Cloud computing & services and become a “Smart Pipe”

# Innovation

- Innovation is the lifeblood of any growth industry, including Telecom sector
- Technical innovation is very critical; however business innovation in the telecom sector is lagging behind; it is slow and difficult to achieve!
- How to stimulate innovation, how to coach / steer innovation, and how to commercialize innovation? These are some of the key questions!
- Significant drop in Venture Capital (VC) investments recently, especially telecom is losing appeal fast; also developing markets like Turkey is lacking VC infrastructure
- We need:
  - Angel investing, VCs and Private Equity firms re-engaged and interested in the sector
  - Telecom eco-system players may need more emphasis on R&D as well as working with entrepreneurs at promising start-ups
  - Operators need to explore and innovate at new business models

# Globalization & Consolidation



- Globalization
  - Not a new trend, but increased emphasis now, due to liberalization and economies of scale
  - No artificial boundaries; operators are expanding their reach geographically, wherever it makes “sense” for them to go
  - This trend will continue, especially into the developing countries / markets
  - Organizations could be geographical, segment based, functional or product based
  - Group functions and collaborations with regional organizations, etc.
- Consolidations
  - Related to globalization of telecom companies
  - Significant consolidation already at the telecom equipment suppliers level
  - Economies of scale will also trigger further consolidation of telecom operators
  - This will most likely accelerate in the next 3-5 years