

Architectural Trends in Future Communications Systems

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Are we heading for Convergence?



CableNET '94 flips convergence switch.

From: [Telephony](#) | Date: November 28, 1994 | Author: Bernier, Paula
| More results for: [atm convergence](#) | [Copyright information](#)



TV meets the Web: the latest tech trend is 'convergence.' (WebTV Networks)

From: [Newsweek](#) | Date: September 29, 1997 | Author: Hather, Katie
| More results for: [network convergence](#) | [Copyright information](#)



'Full service net' grabs spotlight.

From: [Telephony](#) | Date: June 14, 1993 | Author: O'Shea, Dan
More results for: [network convergence](#) | [Copyright information](#)



Convergence yes, submission no. (cable television industry)

From: [Broadcasting & Cable](#) | Date: December 15, 1997 | Author: Colman, Price
| More results for: [network convergence](#) | [Copyright information](#)

What About Now?



IMS enables wireless convergence, Part 2

Benefits of IMS

[Convergence & VoIP Newsletter](#) By Steve Taylor and Larry Hettick, [Network World](#), 09/01/04

Fixed-mobile Convergence: The dress rehearsal is over, it's time for the real thing!

Equipped with a sturdy IP backbone, providers mature into the world of multiservice

Jun 1, 2004
By John G. Tanner
[America's Network](#)



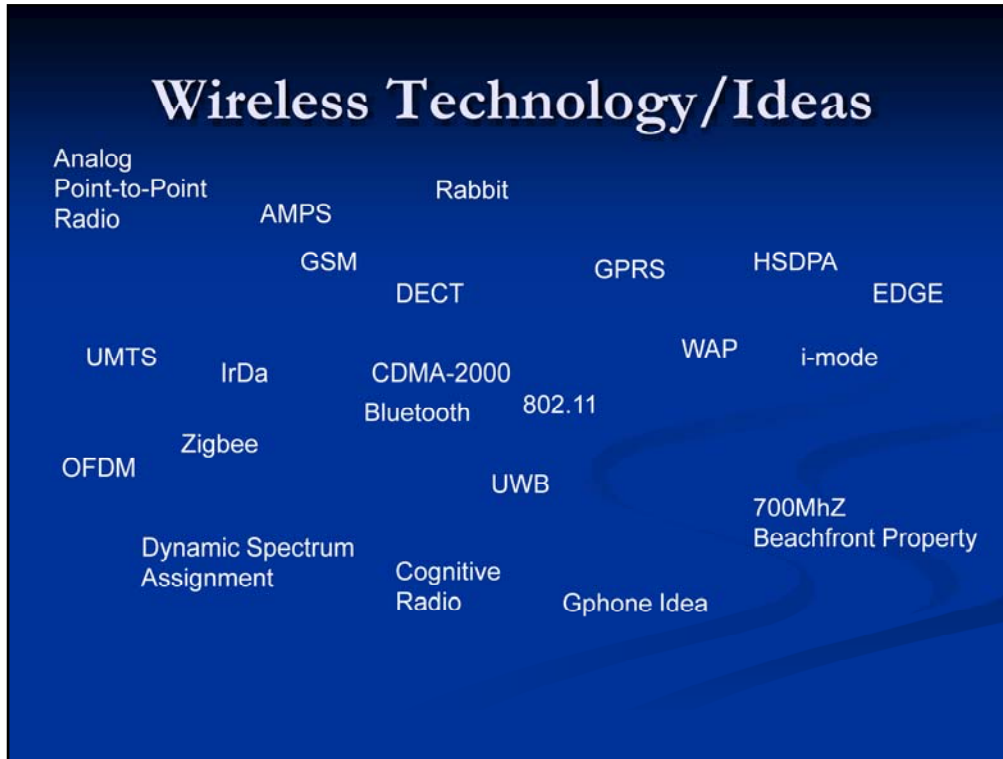
July 11th, 2007

Tivo swivels its way closer to convergence

Posted by Ed Burnette @ 9:04 am
Categories: [General Java](#)
Tags: [Amazon.com Inc.](#), [Tivo Inc.](#), [Episode](#), [Convergence](#), [Ed Burnette](#)

Factors Shaping Architectures

- Technology & Ideas
 - Good & Bad
- Consumer Appetite & Inertia
- Revenue Generation Potential
- Agents of Change
- Resistive Forces



Wireless technology requires Spectrum – licenced by governments – limits the number of innovators – Need for coordination to achieve critical mass – GSM was a great success at that – but leads to innovation by committee.

The introduction of the Industrial Scientific & Medical (ISM) band loosened things up a bit – led to 802.11, Bluetooth – innovations starting to appear in products – 802.11 radio set. Software and Cognitive Radio will loosen things up further.

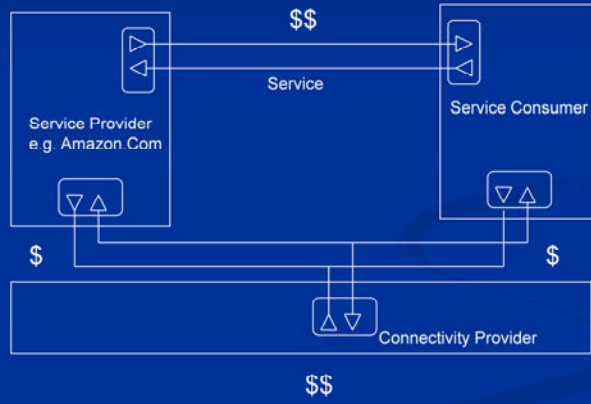
User Inertia

- Most users continue to do what they are doing.....How many customers still have a phone connected to traditional PTT
- Settle into a stable mode of behaviour and can only be dislodged by:
 - clearly perceivable large increase in quality of service
 - Stark price differential
 - customer dissatisfaction event

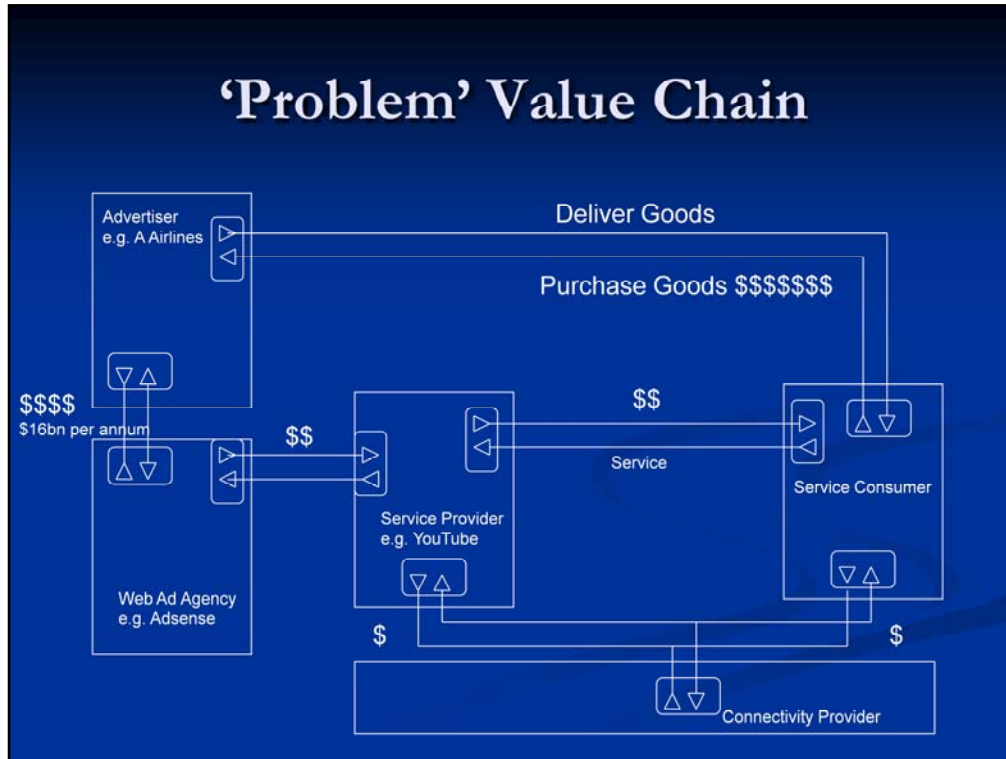
Influence of Changing Value-Chains

- Historically the telecommunications industry has taken a sophisticated approach to charging for their services
- But the Internet is Free!
 - all-you-can-eat encouraged innovation
 - ad-supported models allowed the illusion of 'Free' to thrive

Typical Web Value Chain



'Problem' Value Chain



Scenario shows a consumer looking at video content on YouTube or engaging in some other service that involves advertising. Small amounts of cash flow to the connectivity provider, and possibly to the web site operator. If the user is presented with an ad for a high-cost item like a flight, this causes a large financial transfer where everyone except the connectivity provider (who takes the resource hit) does well.

Leads to argument for non-Net Neutrality or (in the extreme case) dedicated last-mile networks

Innovators & Incumbents

- Incumbents seek to:
 - Initially downplay the new service benefit
 - offer somewhat similar offering to bolster user inertia
 - acquisitions allow this to be done quickly
 - Ultimately use their scale to compete aggressively on price
- Innovators
 - Evangelize the new service benefits
 - Compete on price to diminish user inertia
 - Try to survive aggressive price competition
 - Need to get big quick or be absorbed

Strong Architectural Trends – Conventional Internet

- Internet
 - Does traditional data services (web, e-mail) best
 - acquiring Voice capability, Video Distribution services
 - Constantly struggling to do things for (marginal) free
 - Terabits per fibre now happening in the deep core network
 - 10Mbps..100mpps with advanced DSL, FTTH, WiFi, WiMax
 - Mobile not well covered
 - Typically plays innovator role
 - Not that many users!

Strong Architectural Trends – TV Industry

- Cable into many homes
- incorporating key technologies into set-top-box
- Can leverage base TV service to provide more
- IMS architecture can add sophistication to the infrastructure but user does not need to know
- May be implemented with Internet technology, but will be distinct from the Internet

Strong Architectural Trends – Cellular

- Huge user base - typically plays incumbent role
- Voice handling is superb- the revenue base for everything else
- Failed with WAP, recovering with imode, better portals
- faster data speeds with 3G, EDGE, HSDPA
- More reasonable approach to pricing data
- able to offer comparable offerings for Flickr, YouTube, etc
- Dipping toes in video distribution

Strong Architectural Trends – Fixed Line Voice

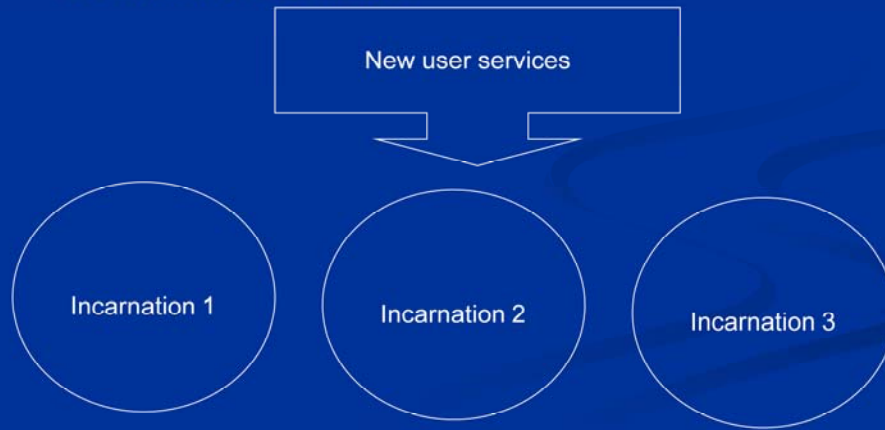
- Huge user base – but ageing
- Wire into every home – bill into every home... inertia factor is huge
- Poor service provision infrastructure - Pinning hopes to IMS to achieve parity with cellular community

Are we heading towards a unified converged architecture?

- Short Answer is NO
 - Technology is enabling convergence
 - technology can and will be adopted and used in different architectural configurations
 - Many other forces are at work

What does the future hold

- Diversity & Competition in the delivery of Networked Services



Thank you for your attention

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