

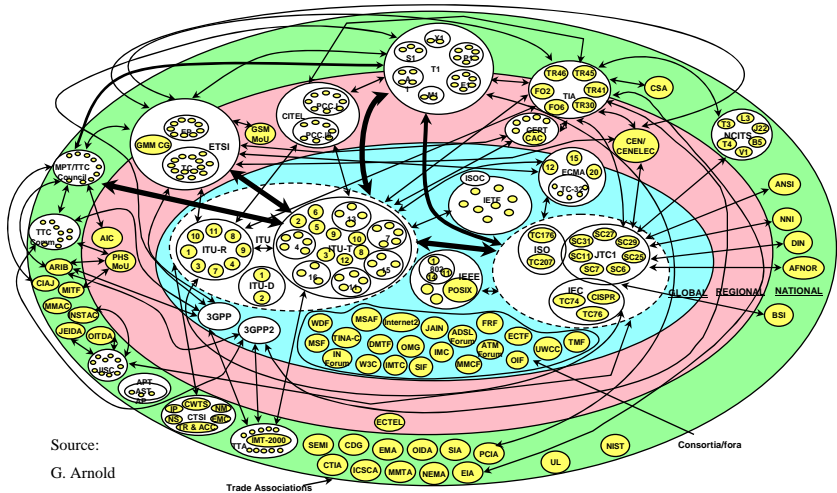
The State of Telecom Technology: Europe and North America

Ralph Ballart, VP Technology Strategy | October 2006



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Standardisation Economy Is Quite Complex

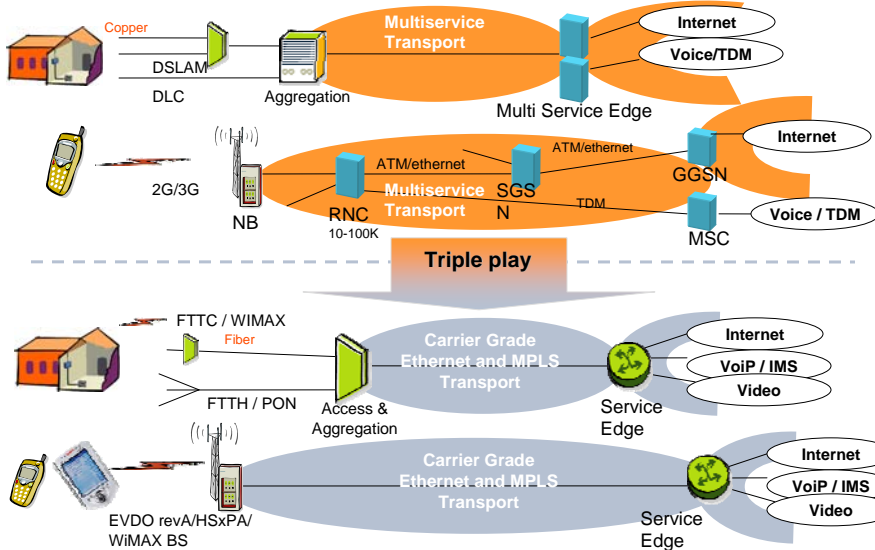


Talk Outline

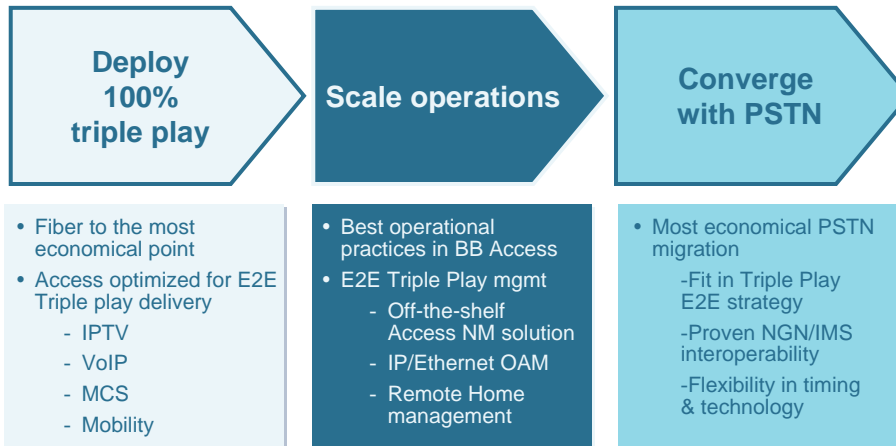
Key Technology Issues for Telecom

- Common Network with Triple Play (IPTV)
 - Telecom Access (ubiquity)
 - Telco vs. MSO competition
- Wireless Evolution
- Convergence and IMS
- Standards

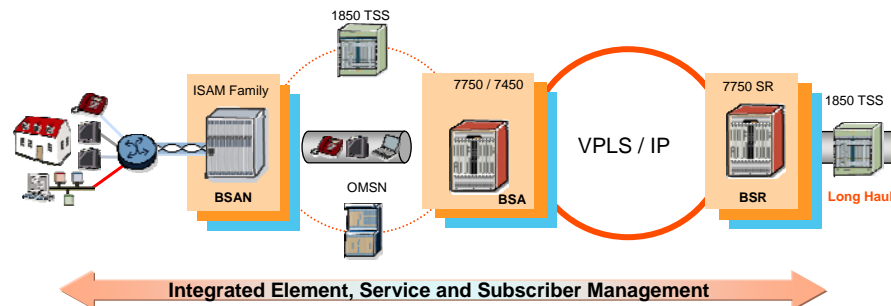
Broadband network transformation



Triple (Quad) Play drives fast network transformation



Alcatel's Triple Play Service Delivery Architecture - TPSDA



Common architecture across all access types for residential services

- VoIP, VoD, IPTV, HSI

Full L3 solution with all IPoE subscriber management functions

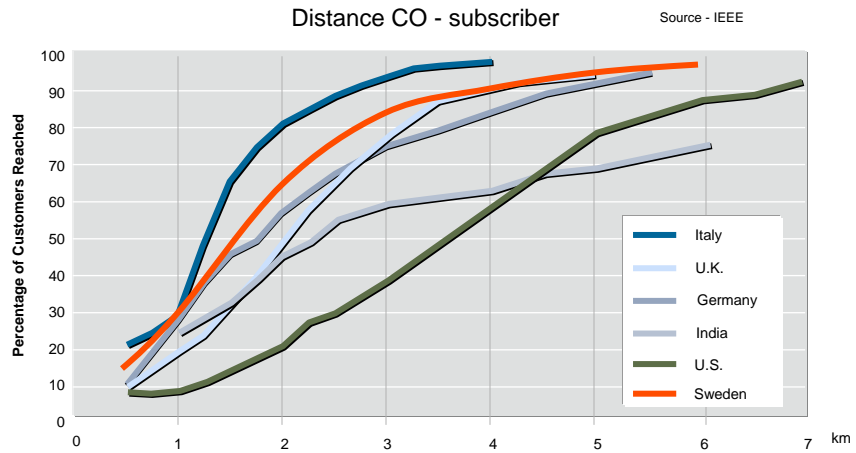
- Per-service & per-subscriber queuing, security, accounting, dynamic policy change

One Network for business and residential service delivery

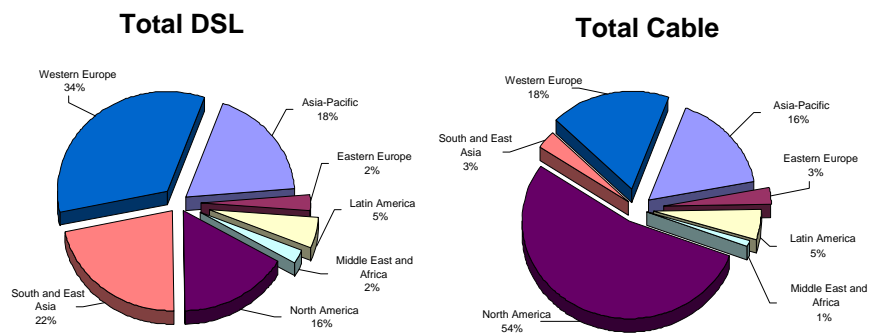
- Point-to-point services, L2 VPNs (VPLS), IP-VPNs, DIA, etc

Customer Access Still Depends on Copper

Illustration: loop length distribution



Cable vs. DSL

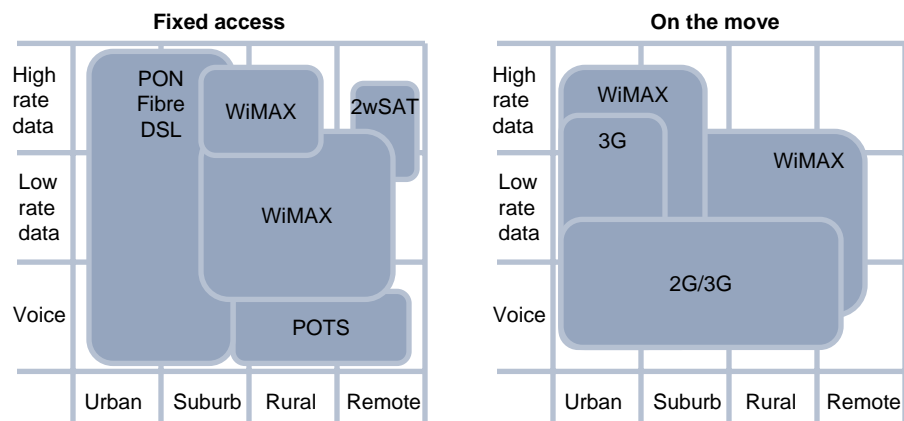


Point Topic 2006

Key Issues on Business Access

- “Catch 22” – Customers buy TDM because it is available
 - Need ubiquitous Ethernet service availability and deployment
- Transition from ATM to Ethernet
 - Europe ahead (less legacy ATM/frame relay)
- N.A. PON build outs will take many years
 - Copper access still essential
 - Europe less interested because of shorter loops
- Symmetric Services
 - Bonded multi-pair copper solutions are available

Positioning wireline & wireless access technologies



**Technology mix to deliver services at best cost,
with the flexibility to adapt to changes in demand**

Wireless technology in Europe and N.A.

- Europe has followed the GSM track
 - Economies of scale
- N.A. had free local fixed-line calling
 - Higher mobile penetration and fixed line substitution in Europe
- Incoming mobile calls are free in Europe
 - Greater SMS use
- Private lines not deregulated in Europe
 - Greater microwave backhaul in Europe for business services

HSDPA/HSUPA/DORA/WiMAX

		2004...2005	2006...2007	2007...2008	2008...10
Cellular Access	EDGE	UL 100-200 kbit/s DL 200-300 kbit/s			
	WCDMA	UL 384 kbit/s DL 384 kbit/s	HSDPA DL 3.6 Mbit/s	HSUPA/HSDPA DL 14Mbit/s UL 2 Mbit/s	HSDPA/HSUPA UL 5 Mbit/s
	CDMA2000	1xEV-DO DL 2.4Mbs UL 153kbs		EV-DO RA DL 3.1 Mb UL 1.8 Mbs	
	WiMAX	802.16e DL 32 Mbits/s UL 4 Mbit/s			

HSDPA networks are live (NA leading the way)
 EV-DO RA testing is under way at some carriers
 HSUPA technology is under development
 LTE design and standards are in progress

Mobile TV & DVB-H+: combining satellite and 3G / WiMAX

Broadcast with satellite & repeaters:

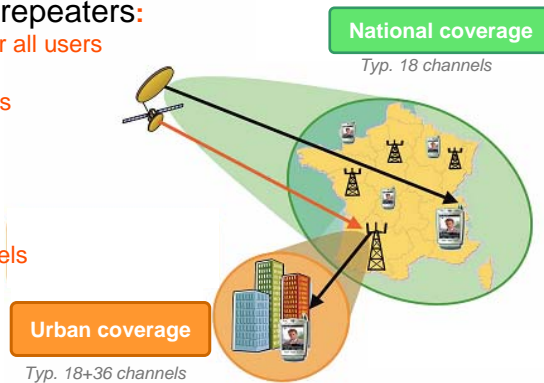
- Same high-quality signal for all users
- 18 channels everywhere
- 54 channels when repeaters
- Unlimited number of users

Unicast with 3G / WiMAX:

- One signal per user
- Unlimited number of channels
- Limited number of users

Combination of both:

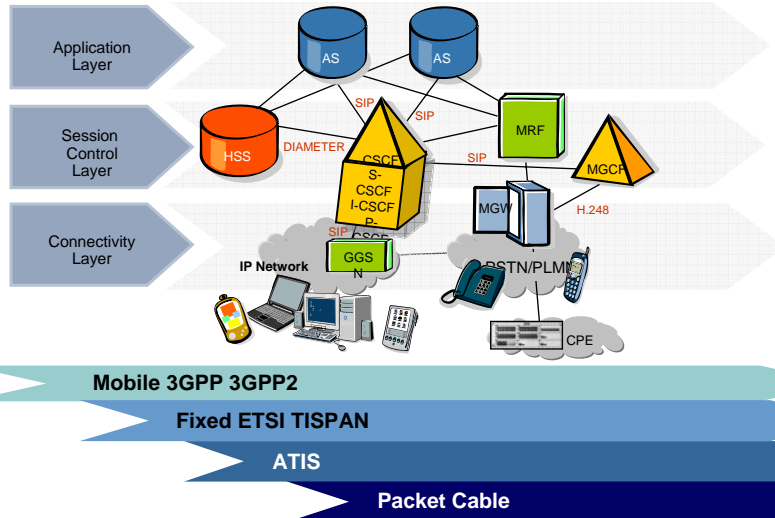
- transparent to the user
- unlimited offer, everywhere



Comparison of the main Mobile TV technologies

Technology	Frequency band	Number of TV broadcast channels (@ 256 kbits/s)	Number of TV unicast channels (@ 256 kbits/s)	Remarks
DVB-H in UHF	UHF or L-band	20 to 30	-	Use of the L-band requires an evolution of the DVB-H standard
DVB-H in S-band	2.2 GHz MSS	9 (satellite only) 9 + 18 (satellite + repeaters)	-	Evolution of the DVB-H standard
MediaFLO	UHF	30 (source Qualcomm)	-	Proprietary end-to-end technology
T-DMB	VHF or L-band	12 (with 3 carriers)	-	
UMTS	2 GHz	6 (MBMS)	3 (Release 99) (2-3x capacity increase with HSDPA)	Adapted to broadcasting local contents
WiMAX	3.5 GHz 2.5 GHz	12 (MBS) 16 (MBS)	40 50	Currently unicast mode only. Evolution towards broadcast

IMS – consistent new services & faster delivery



Converging NA and ETSI Telecom ?

- Converging building blocks: radio OFDM...
- Converging service platforms
- IEEE strong convergence driver:
 - Enterprise markets: Ethernet, WiFi
 - Now carrier markets: Ethernet, WiMAX
- Still, timing, eco-systems and market forces will ensure that no full convergence will happen (even if we want it!)



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