



Dipartimento
Elettronica
Informazione

Disruptive Network Applications

Maurizio Dècina
Politecnico di Milano

Cisco Expo 2008
Technology Day
Milano, 26 Febbraio 2008



Topics

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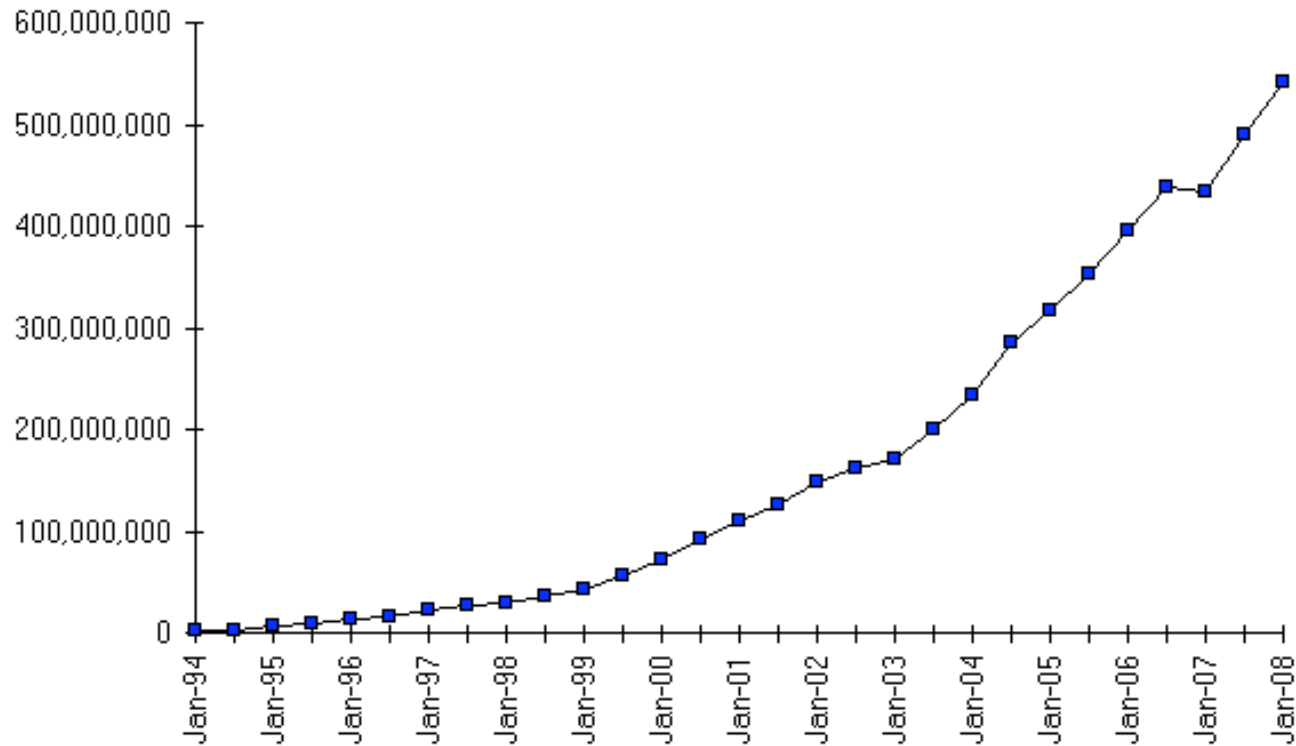
- Identity, Web Services & Pervasive Networking
- Broadband Convergent Access & Personal Communications
- Web 2.0 & Enterprise 2.0 Applications
- Net Centric Platforms & Pervasive Applications



ISC Internet Domain Survey. January 2008

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Internet Domain Survey Host Count



Source: Internet Systems Consortium (www.isc.org)

541,677,360 Host Counts ~ 1.2 Billion Internet Users



Identity Management

Federated Solutions to
combact Identity Thefts
and Frauds

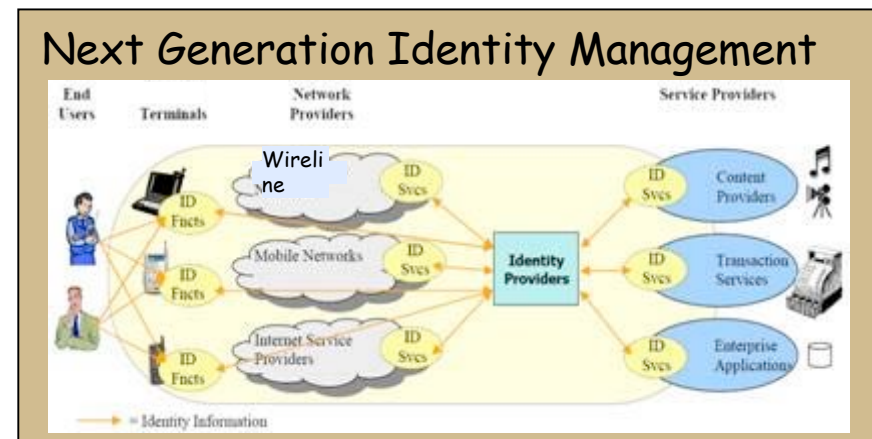
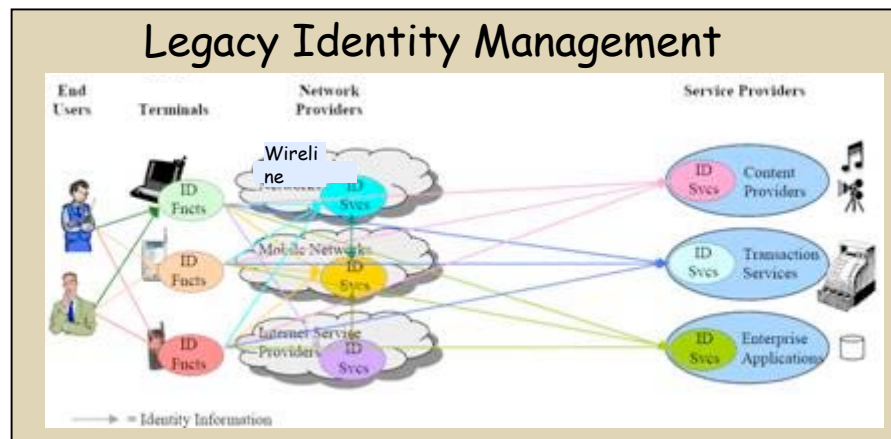


OpenID emerged as a lar-
scale, open, nor-proprietary
means to implement IdM as
a fully decentralized system
A light cost structure

See Focus Group
WWW.ITUWIKI.COM



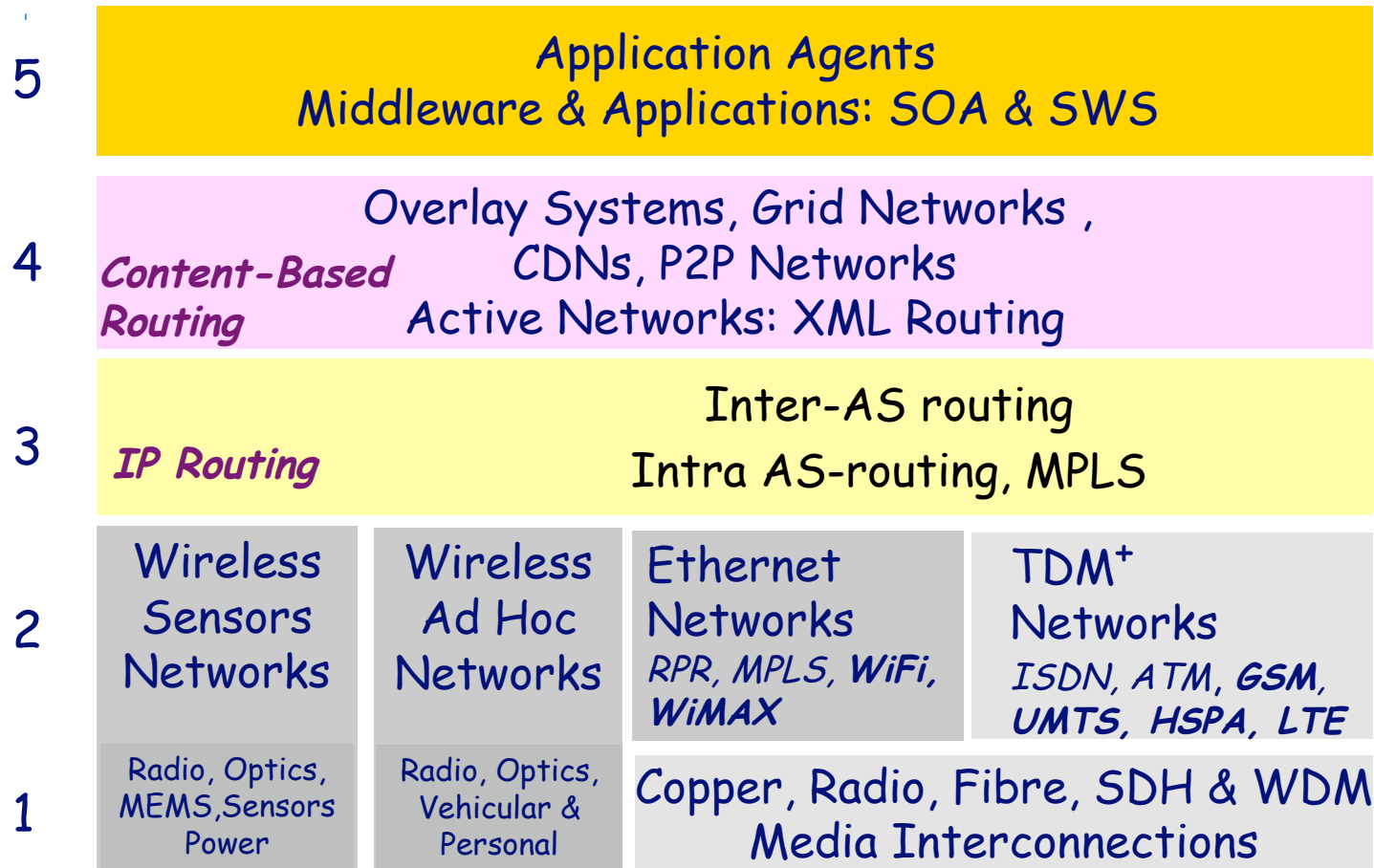
InfoCard (also known as
CardSpace) emerged as a
large-scale, open,
proprietary (Microsoft)
means to implement IdM on
a large-scale with ubiquitous
computer/ commercial
wireless operating systems





Multilayer Networks & Web Services

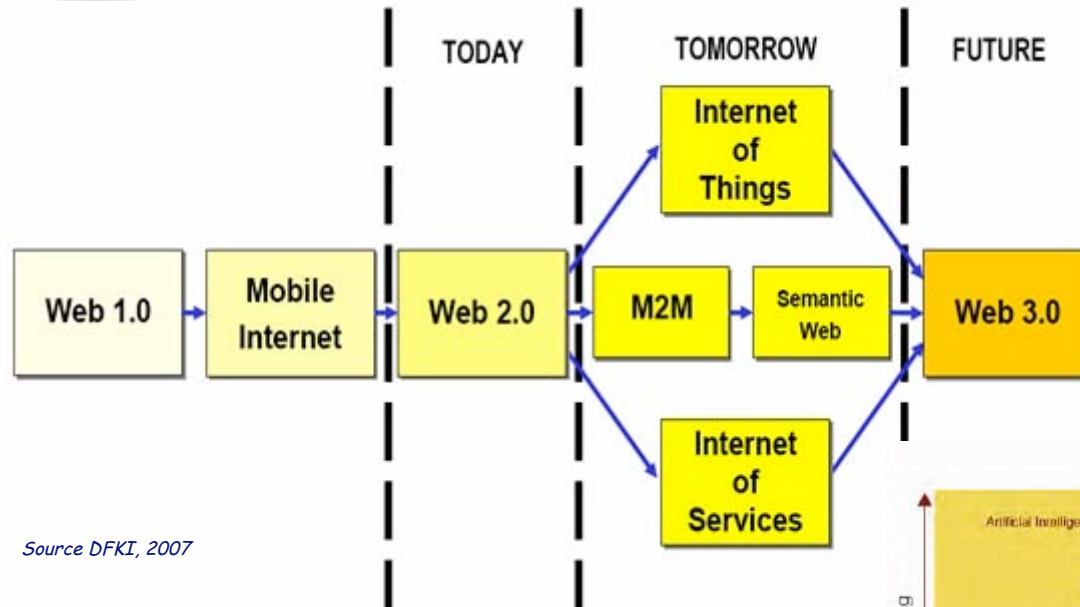
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e2e-QoS: Performance, Reliability, Availability, Privacy, Security, Maintainability, ...

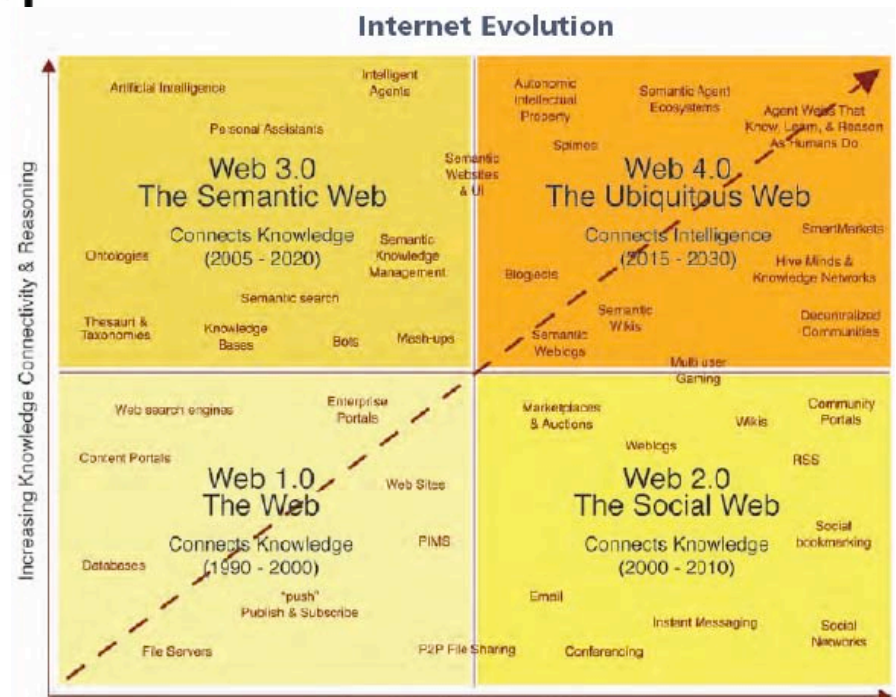


The Internet of the Future



Source DFKI, 2007

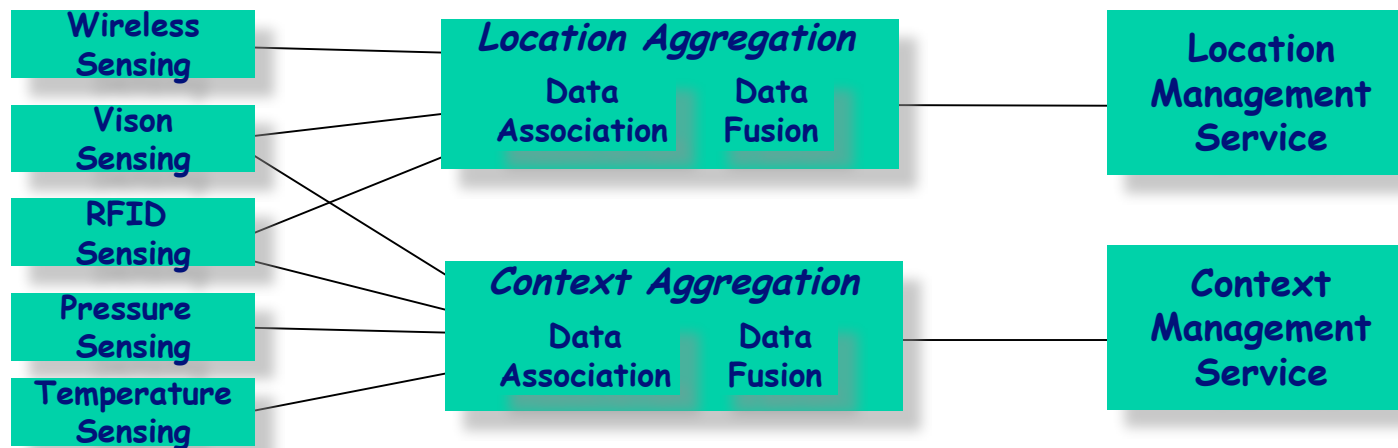
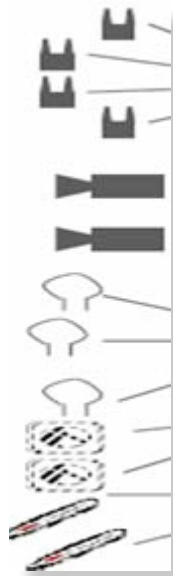
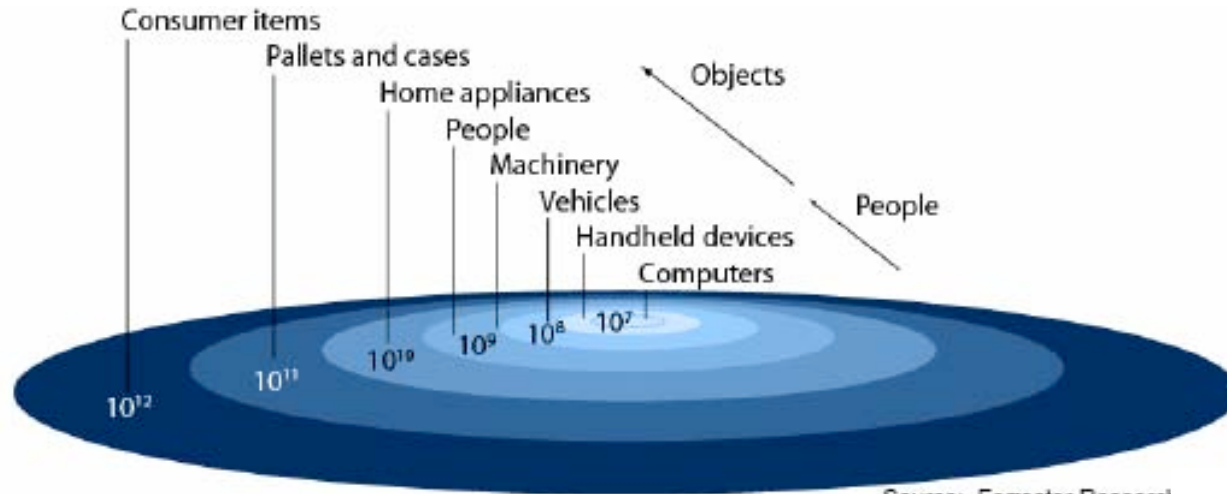
Web Services
Social Networks
Internet of Things (M2M)
Semantic Web





Internet of Things & Context-Aware Applications

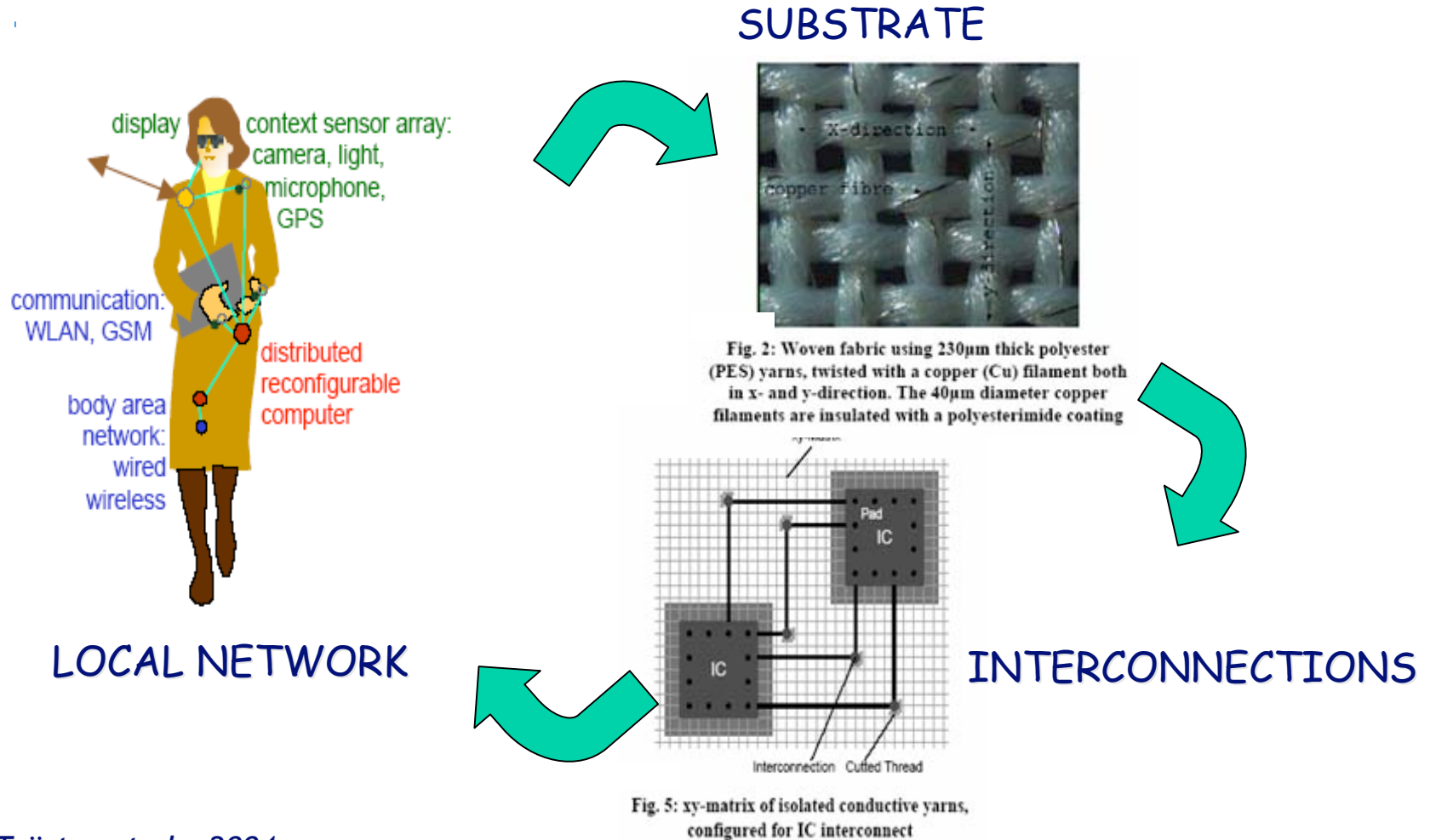
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Weareable Computing

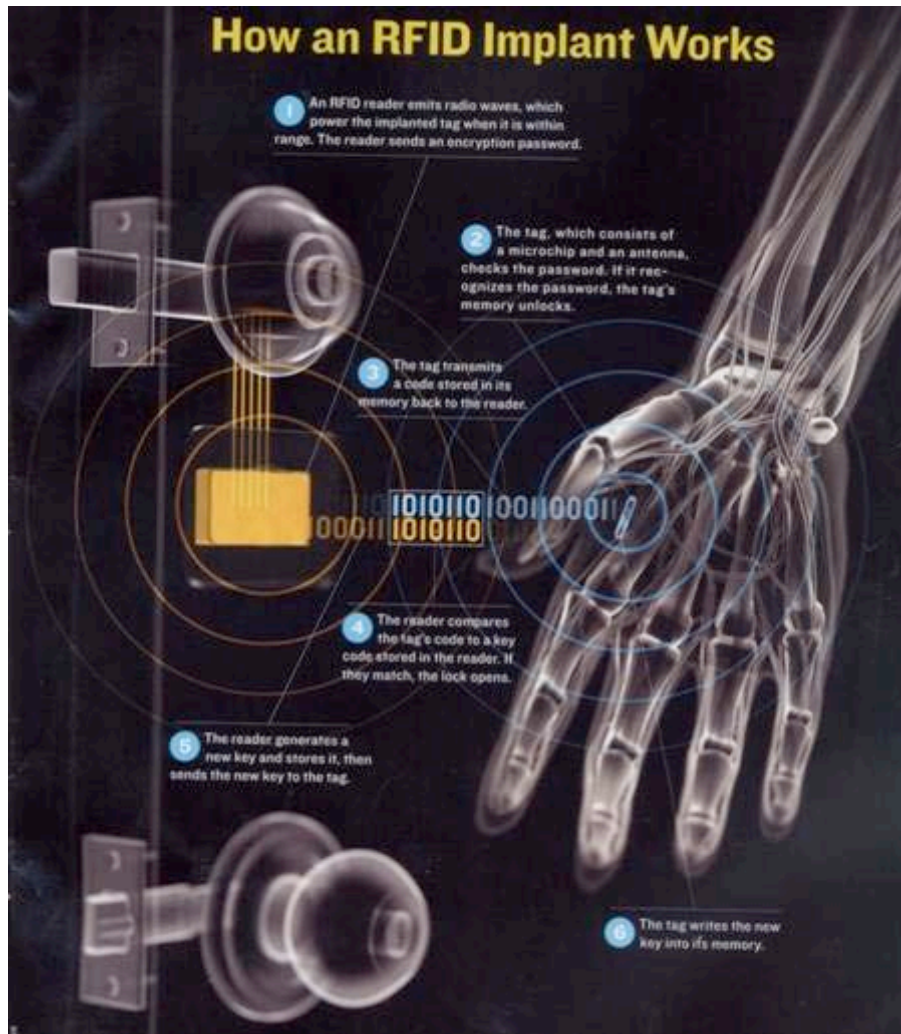
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Body Implanted RFID

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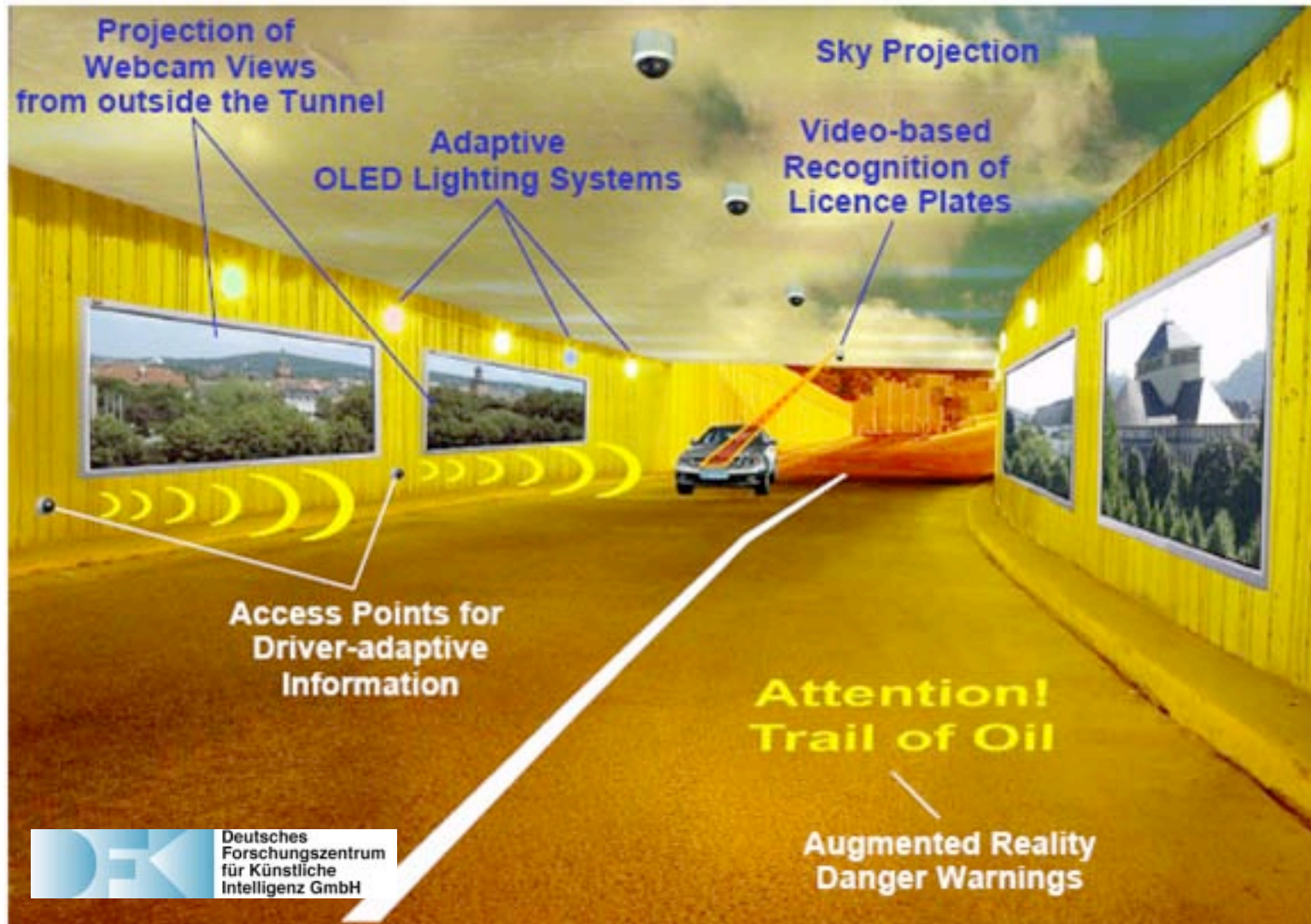


Source: IEEE Spectrum, 2007



Ambient Intelligence: Traffic Tunnel

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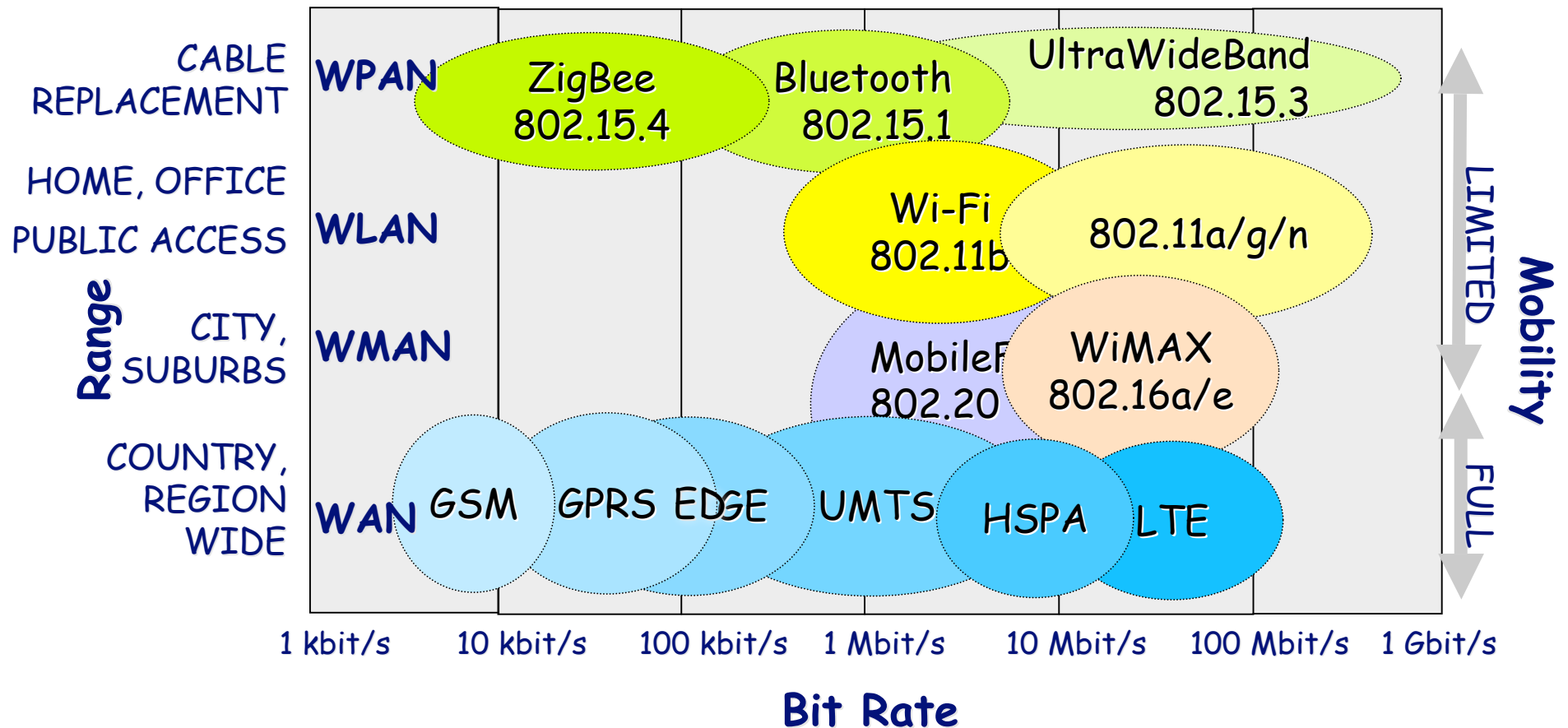
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Wireless Communications

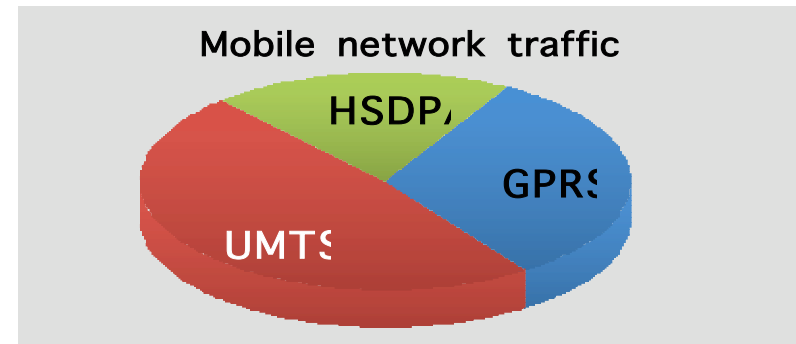
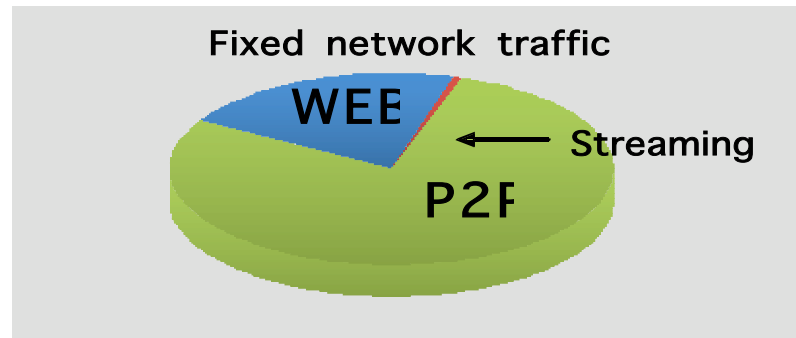
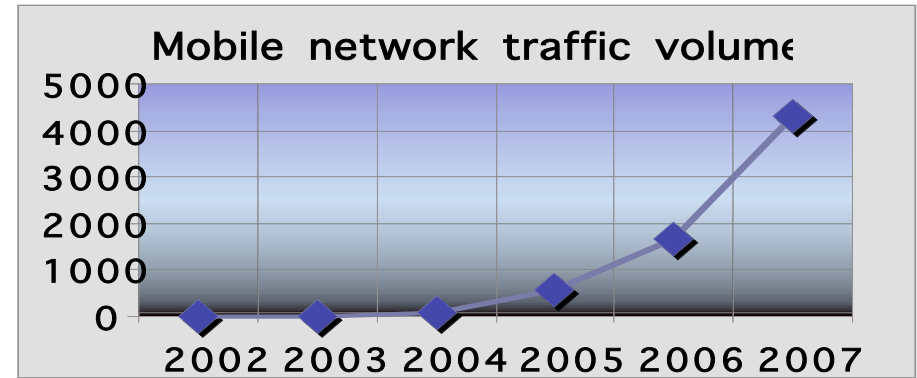
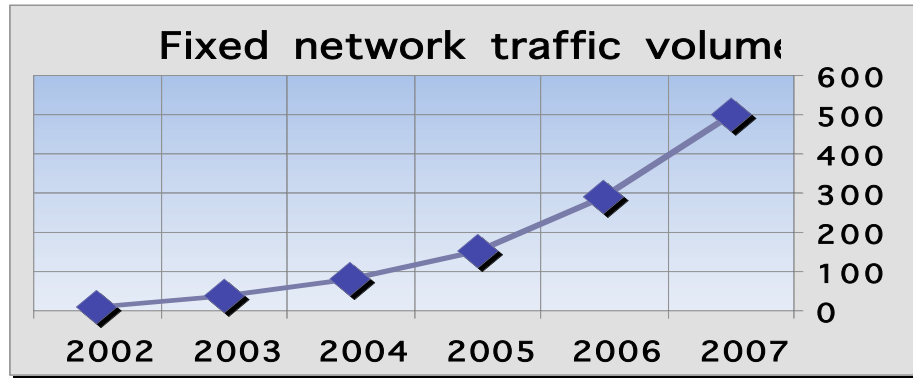
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Network Bandwidth in Italy

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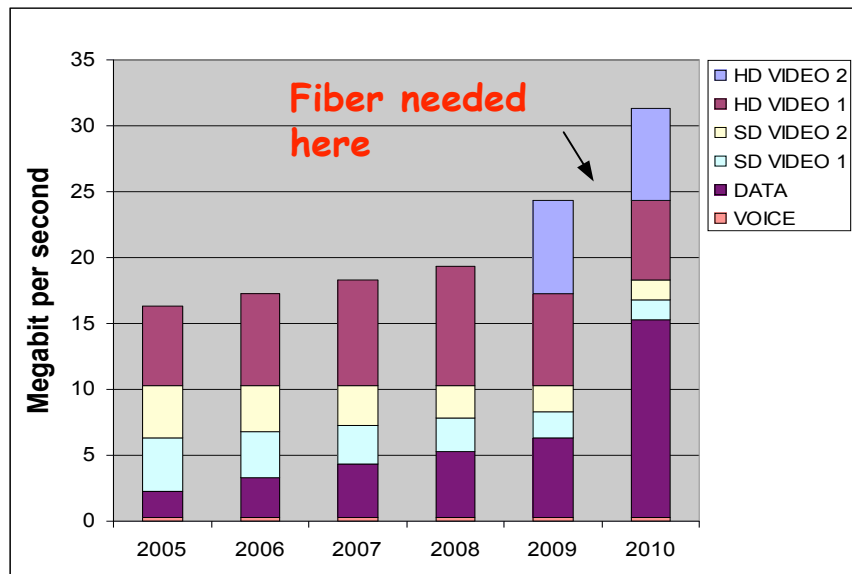


Telecom Italia domestic networks data



Bandwidth Requirements

Bandwidth requirements of the Electronic Home/Business



Yankee Group (2007)

SDTV	2 Mbit/s
HDTV (MPEG-4)	8-12 Mbit/s
HSI	3-10 Mbit/s
Gaming	2 Mbit/s sessione
Multimedia surfing	8 Mbit/s media
Videoconferenza	3 Mbit/s sessione
Home working	4 Mbit/s media

Downstream increase drivers

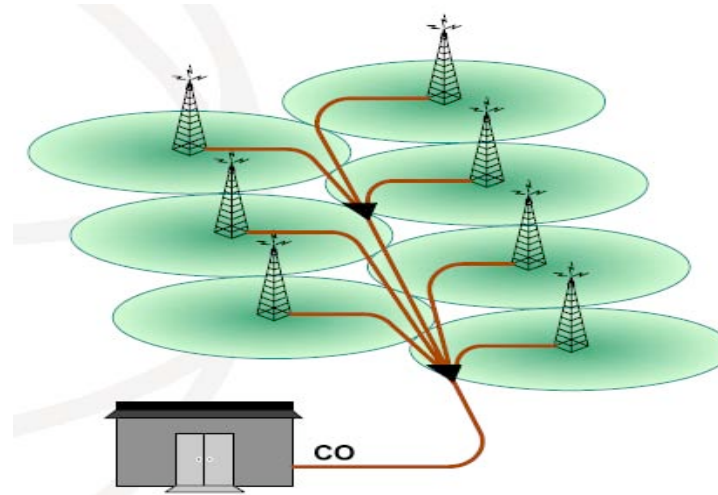
Upstream increase drivers	
SDTV	0,2 Mbit/s
HSI	2 Mbit/s media
HDTV (MPEG-4)	0,5 Mbit/s
Personal content upload	3 Mbit/s
Gaming	2 Mbit/s sessione
Multimedia surfing	2 Mbit/s sessione
Videoconferenza	3 Mbit/s sessione
Remote home monitoring	0,5 Mbit/s chiamata
Home working	1 Mbit/s media

Alcatel (2007)

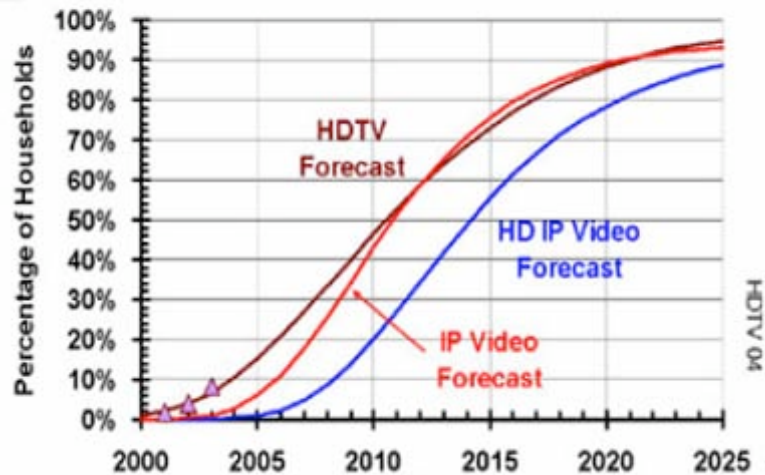


Towards 10 Gbit/s

- Radio Access Network Backhauling
 - ▶ 802.11
 - ▶ 802.16
 - ▶ LTE



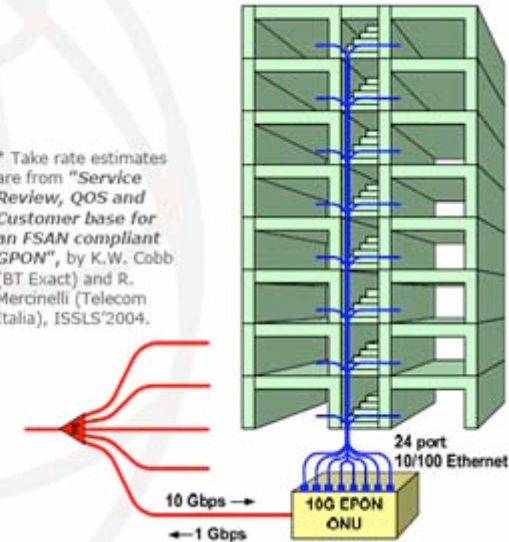
Forecast of US Households Using HDTV



Reproduced with permission from Technology Futures, Inc.

Broadcast Video	100 channels x 10 Mbps/channel	= 1.0 Gbps
Video on Demand	10 Mbps/channel x 2 channels/user x 24 users/ONU x 16 ONUs/PON x 30% take rate*	= 2.3 Gbps
Video Conferencing & Surveillance	10 Mbps/user x 24 users/ONU x 16 ONUs/PON x 10% take rate	= 0.4 Gbps
Internet	5 Mbps/user x 24 users/ONU x 16 ONUs/PON x 50% take rate	= 1.9 Gbps
Gaming	10 Mbps/user x 24 users/ONU x 16 ONUs/PON x 30% take rate	= 1.2 Gbps
Required PON bandwidth		= 6.8 Gbps

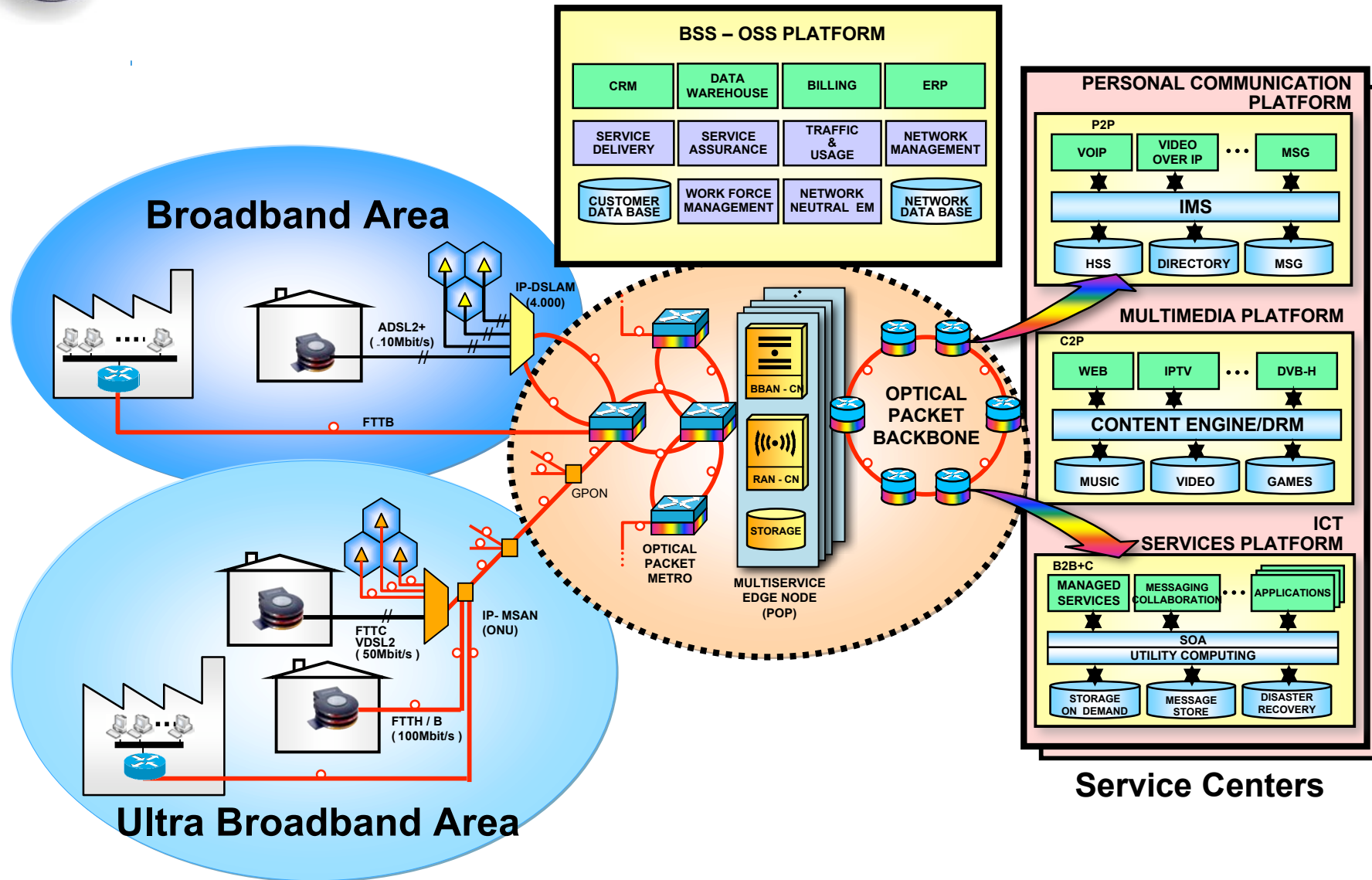
* Take rate estimates are from "Service Review, QoS and Customer base for an FSAN compliant GPON", by K.W. Cobb (BT Exact) and R. Mercinelli (Telecom Italia), ISSLS'2004.





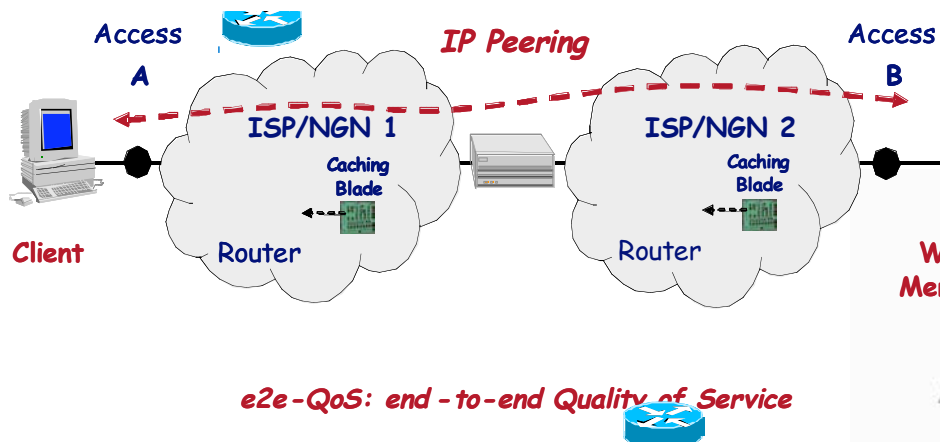
NGN2: High Level Architecture

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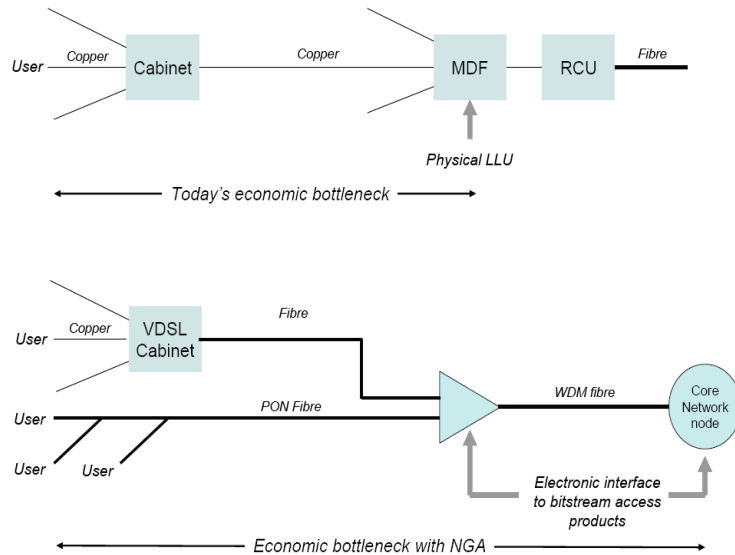




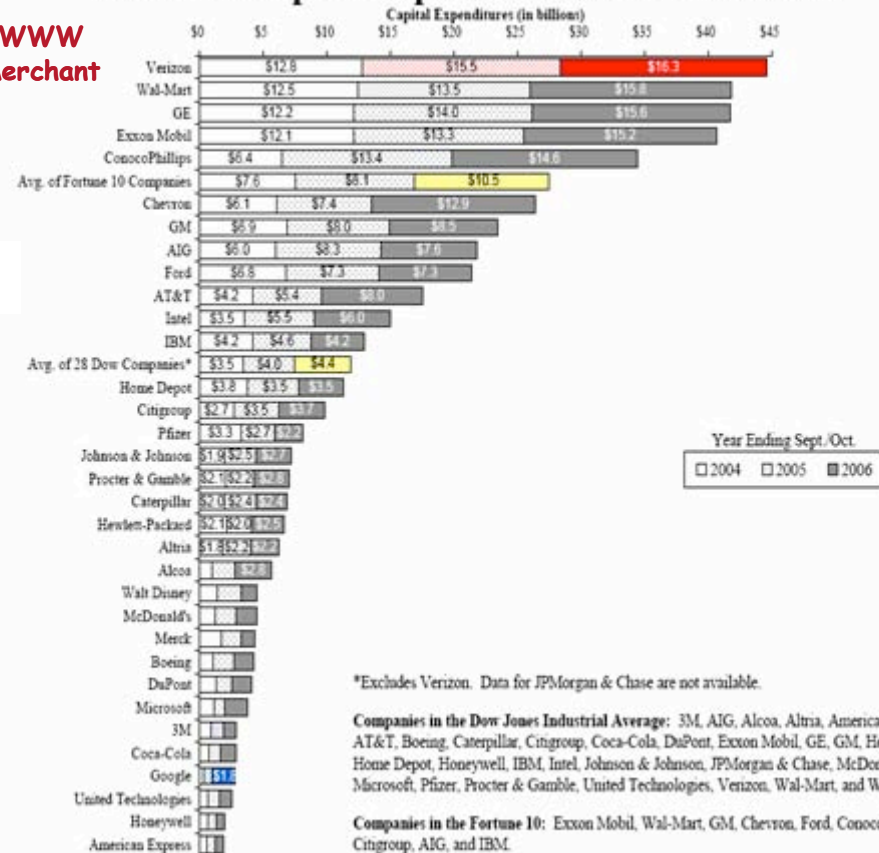
NGN: Who is going to Invest?



Subloop unbundling vs Bitstream



Verizon's Capital Expenditures Lead the Nation

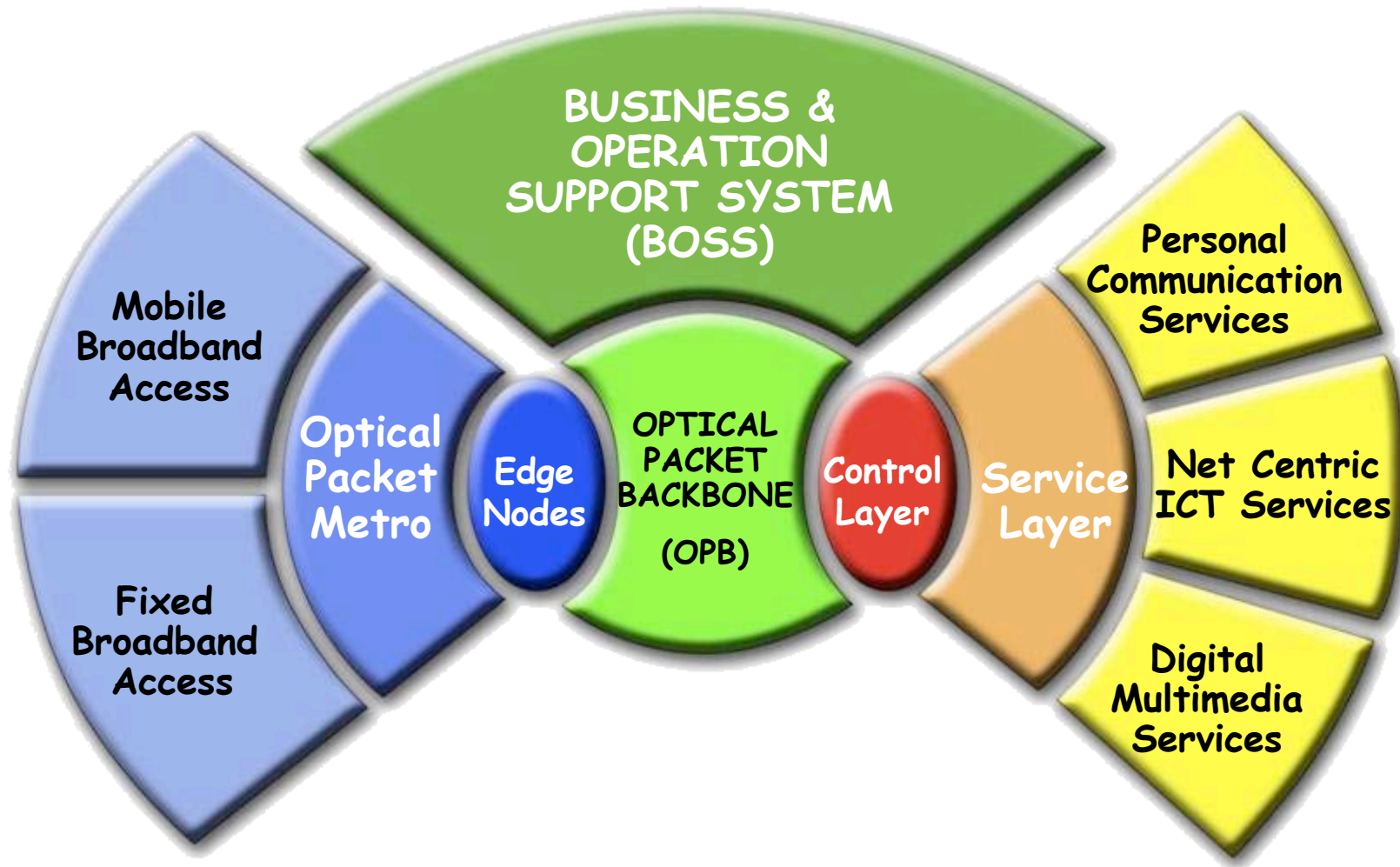


Sources: Reuters data, company reports.



Convergence: The NGN2 Model

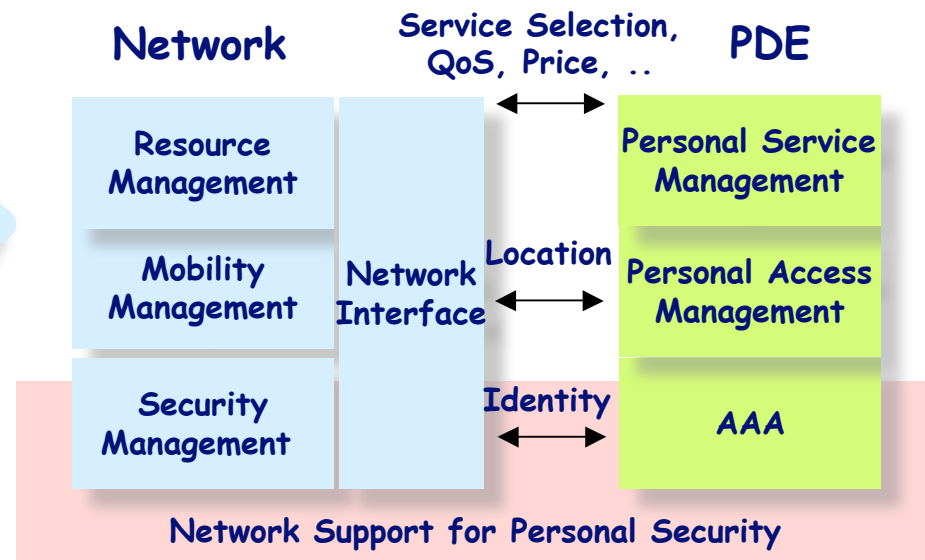
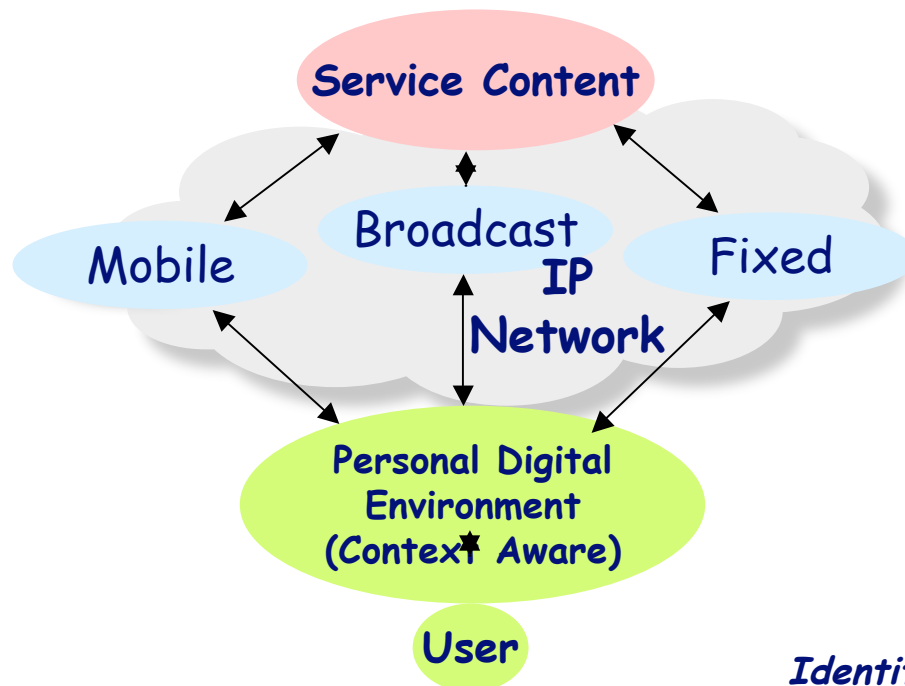
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Network-based Tools for Service Differentiation

- Ownership and control of the underlying fixed broadband network infrastructure, enabling end-to-end QoS guarantees
- Knowledge of customer terminals (enriched by subscriber identity), enabling seamless service access scaled to any device
- Knowledge of customer presence and geographical location, enabling context aware service differentiation



Identity, Location, Service Selection, Security & Privacy



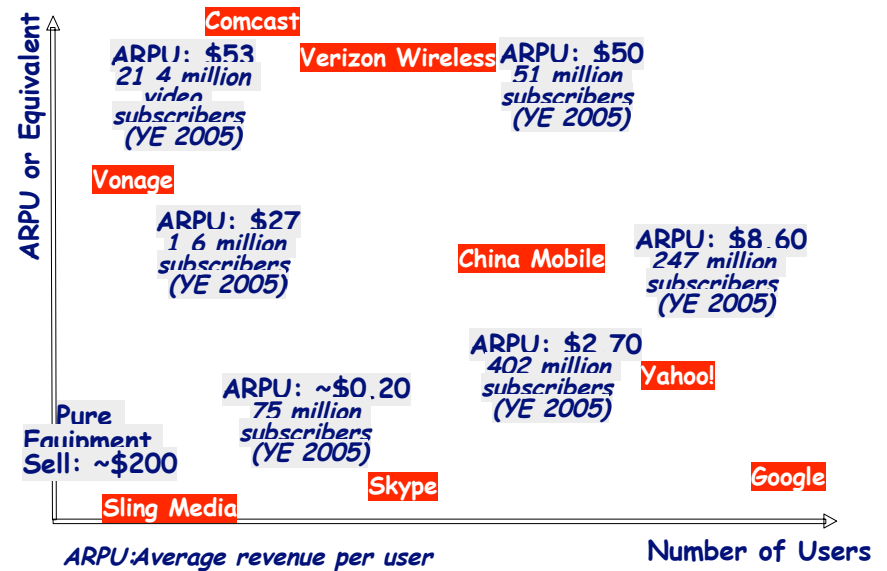
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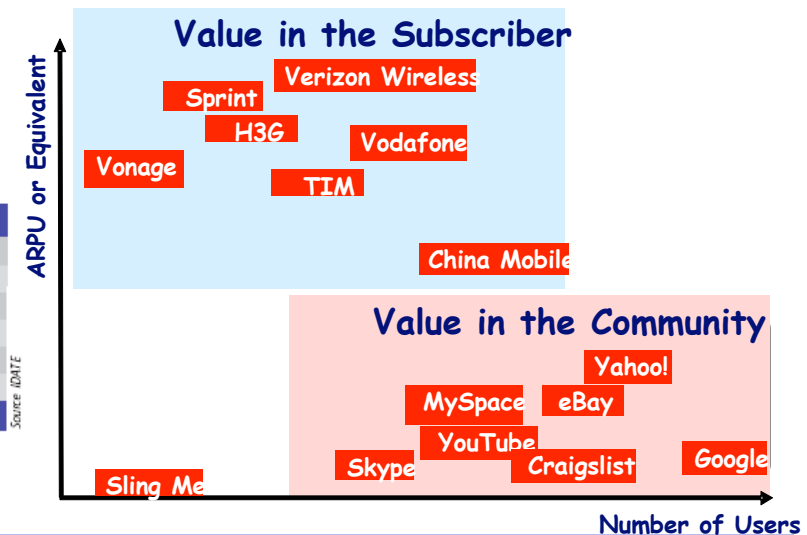
Traditional Business Models Under Pressure



Worldwide DigiWorld markets by sector

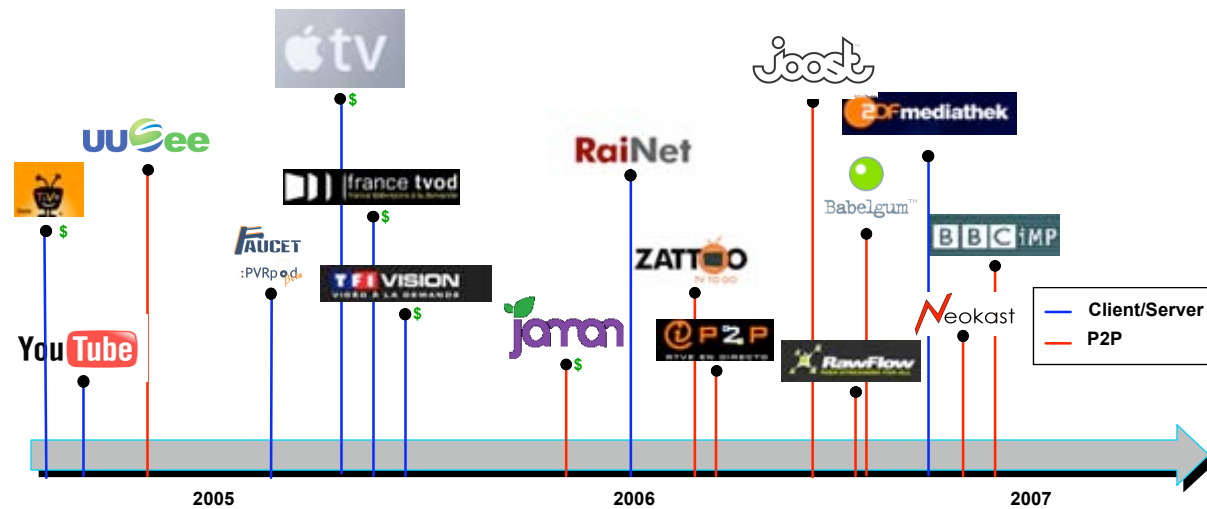
(billion €)	2003	2004	2005	2006	2007
Telecom services	819	874	924	971	1020
Telecom equipment	166	189	204	216	223
Software and computer services	546	550	582	614	652
Computer hardware	258	262	275	288	302
TV services	207	223	236	250	263
Consumer electronics	184	206	235	259	279
Total	2179	2304	2457	2598	2739

Source: IDATE



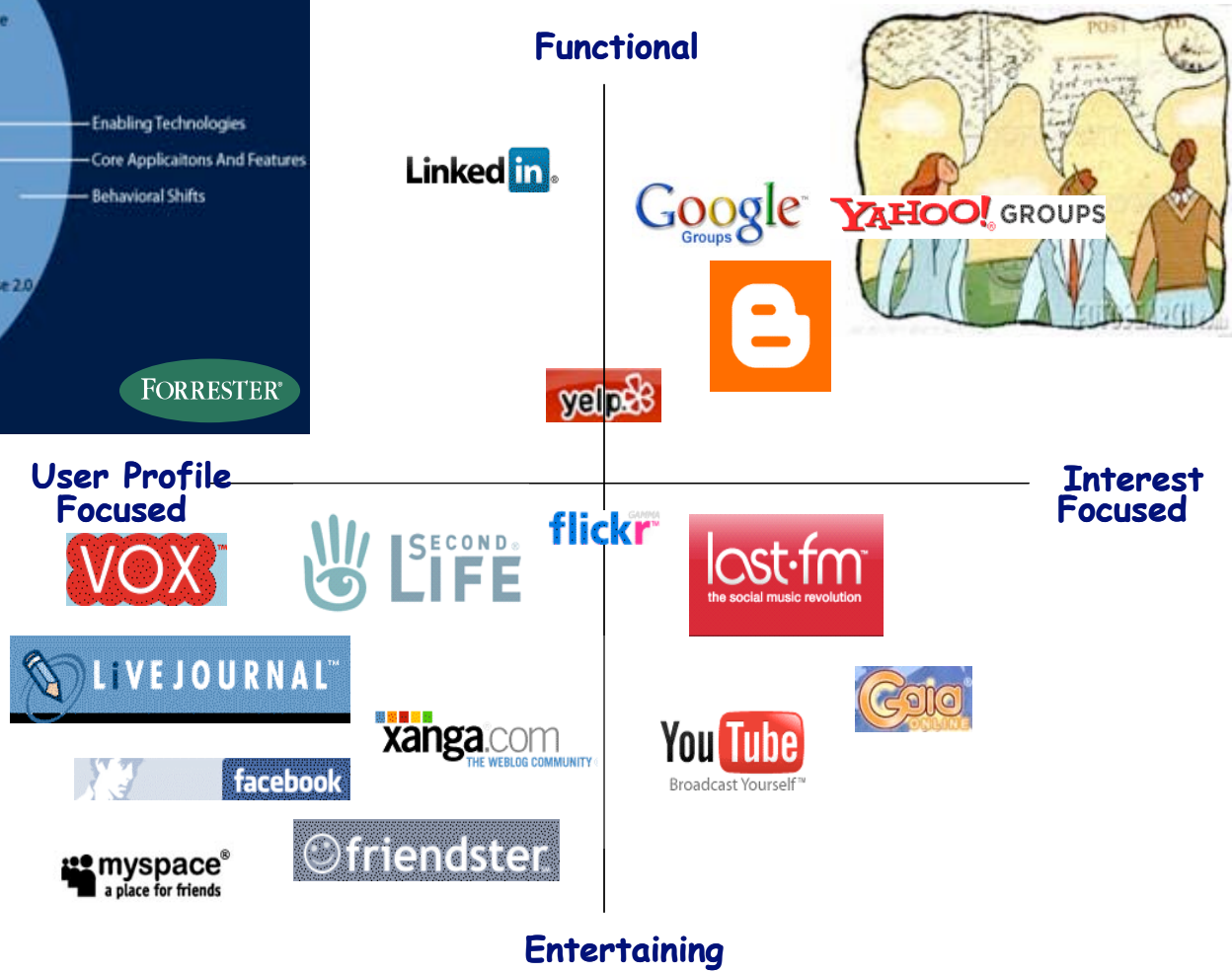
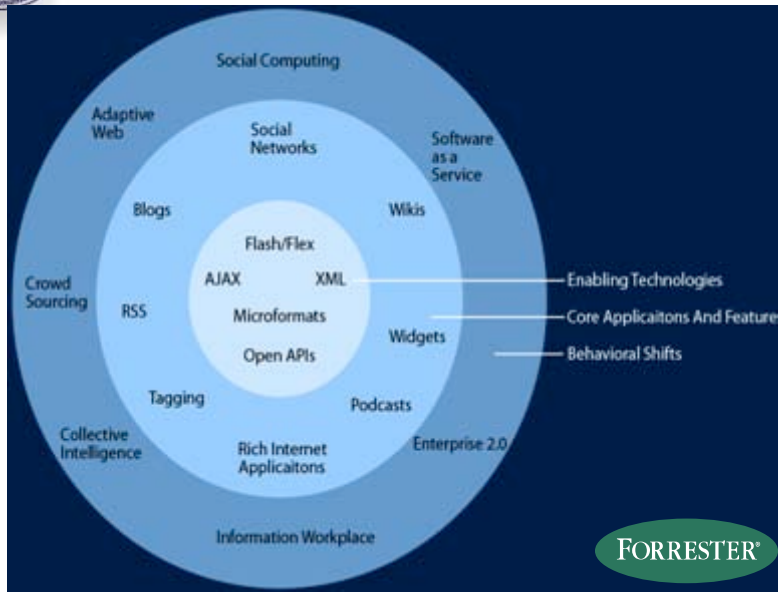


P2P Video Streaming





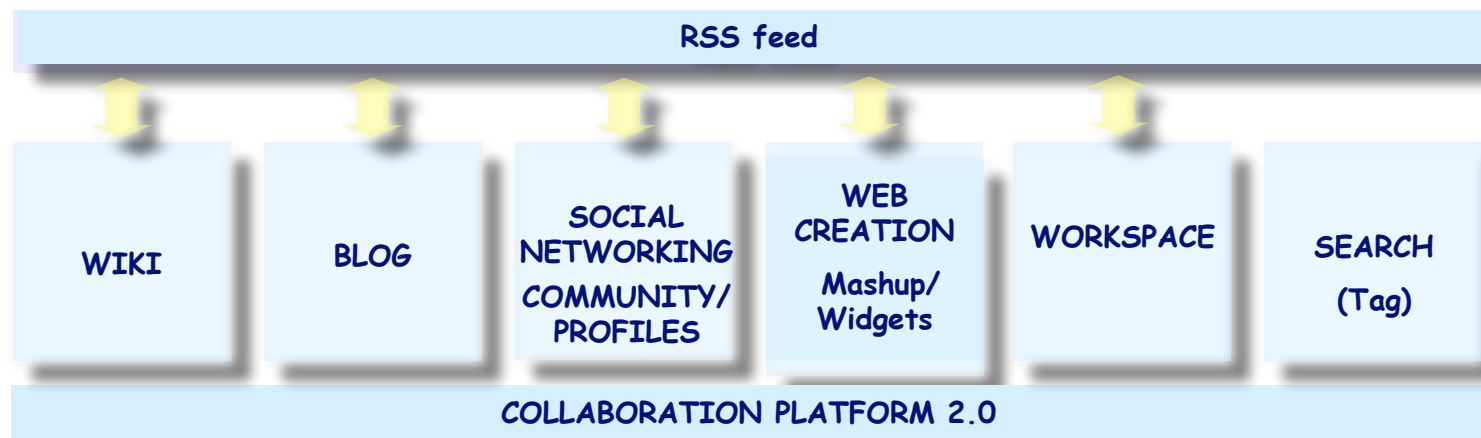
Web 2.0: Behavioral Shifts





Web 2.0 & Enterprise 2.0 Collaboration Services

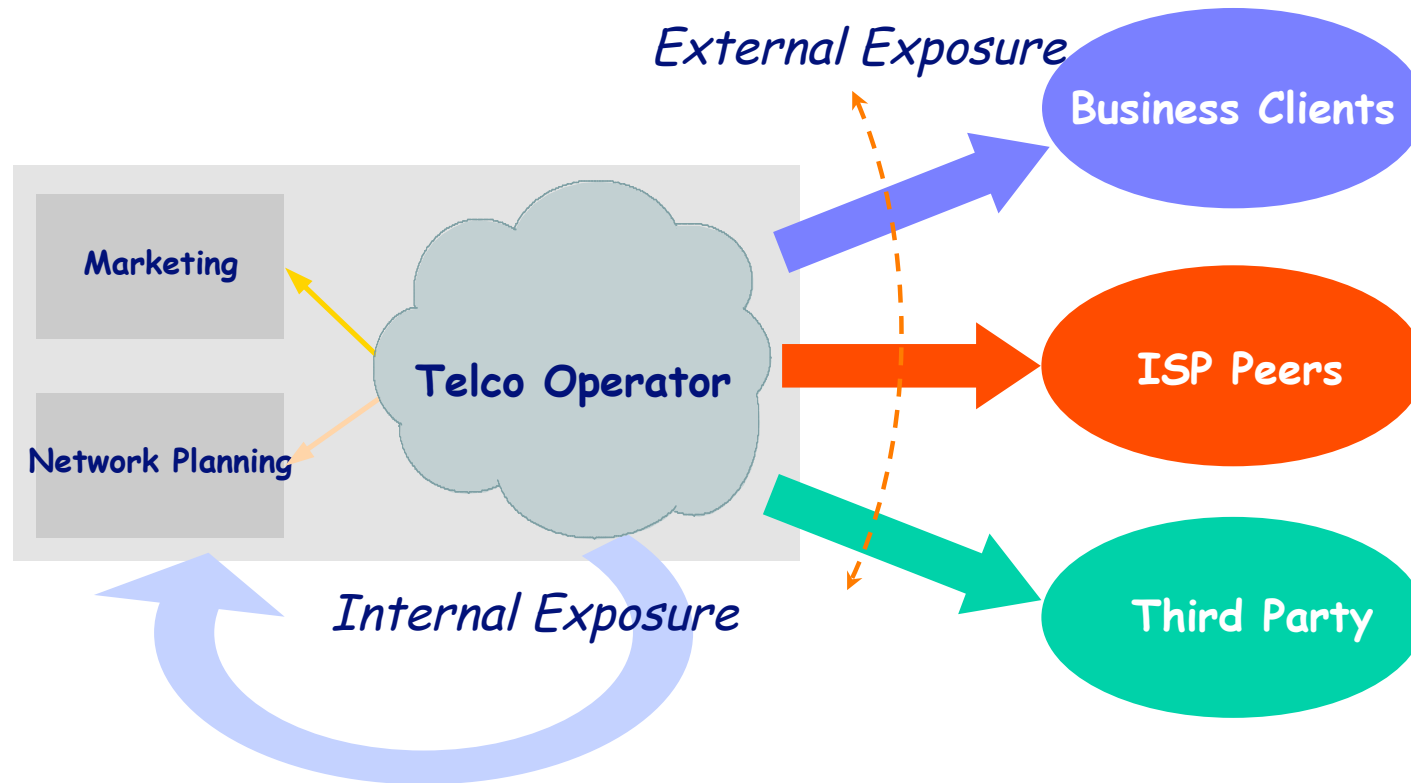
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Telco's Service Exposure & Overlay Services

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Information Exposure Model



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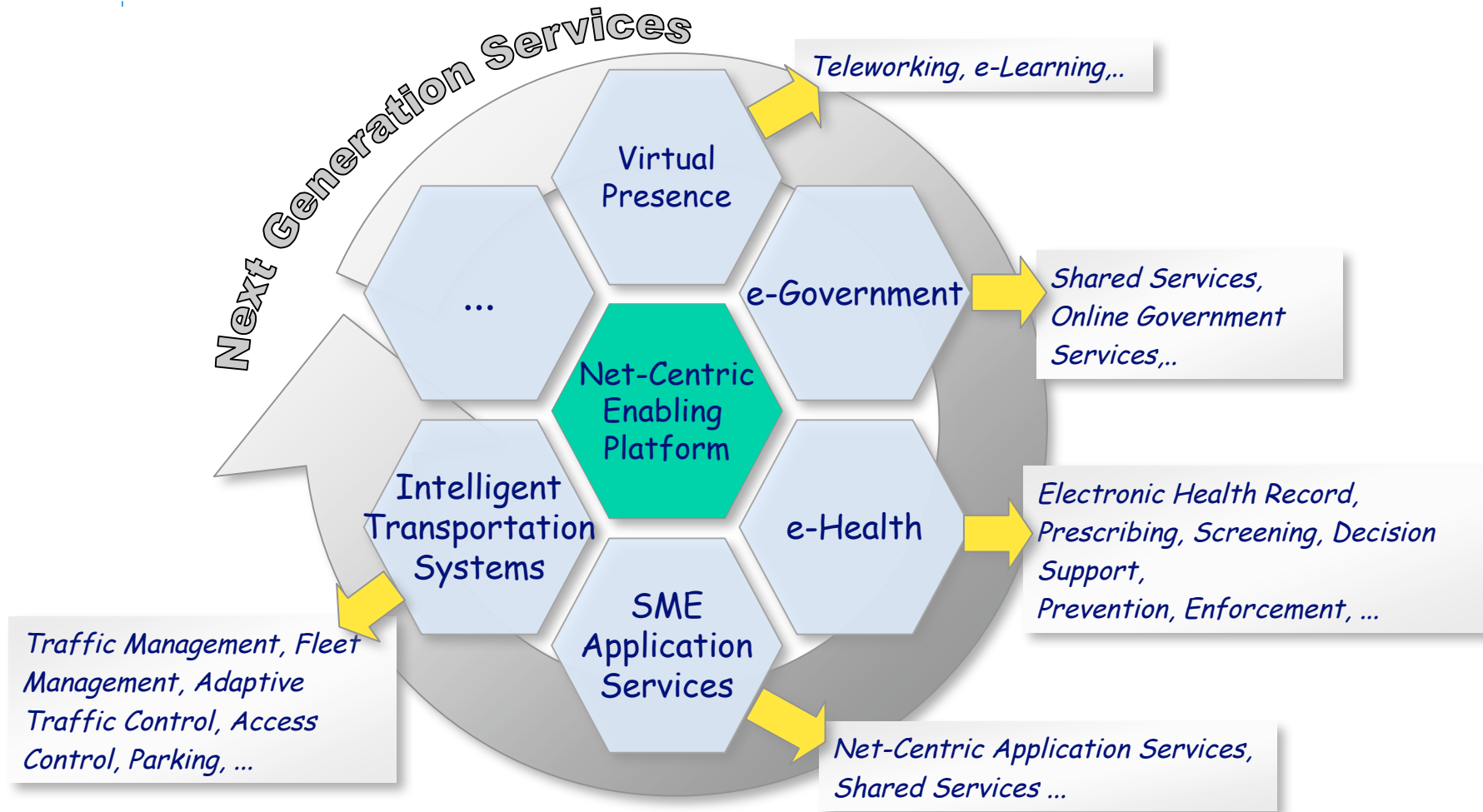
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Network Centric ICT Applications

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e-Health Platform



Citizen Information Services

On-line medical reports, Multi-channel Booking, Virtual Community,...

HL7

Privacy & Security

Confidentiality, Privacy, Security and tracking of access, persistency and data transfers

Reporting

KPI Dashboard about
health and Administrative Data

HL7

Data Layer
Repository &
Registry
MPI
Reconciliation

HL7

Services Container

Service module containers

Booking Service
Archiving GW

Health



Adaptive Communication Layer

ERPCoop

SOA compliant, SPCoop compliant, Enhanced Interoperability

SPCoop

Domain Entry Point



Administrative systems
(Back Office)



ASL



Hospital



118 Emergency



Hospital





Infomobility Platform

Local Government companies Final Customers Carmakers Insurance Service Provider



Multichannel access Portal
 InfoTraffic real time, Mobile Payment, Point Of Interest, Conceirge
 FN

Privacy & Security
 AAA, Confidentiality, Privacy, Security and access tracking, Personal and sensitive data management
 FN

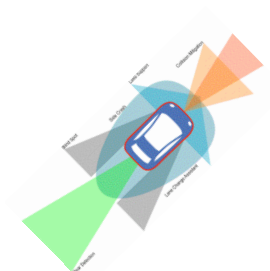
Service Desk
 CRM services, Contact Center and billing

INFOBASE FN

Services Creation Env.
 Vertical Solutions Environment
Vehicle Tracking
 ...

Infomobility Proxy
 SOA compliant

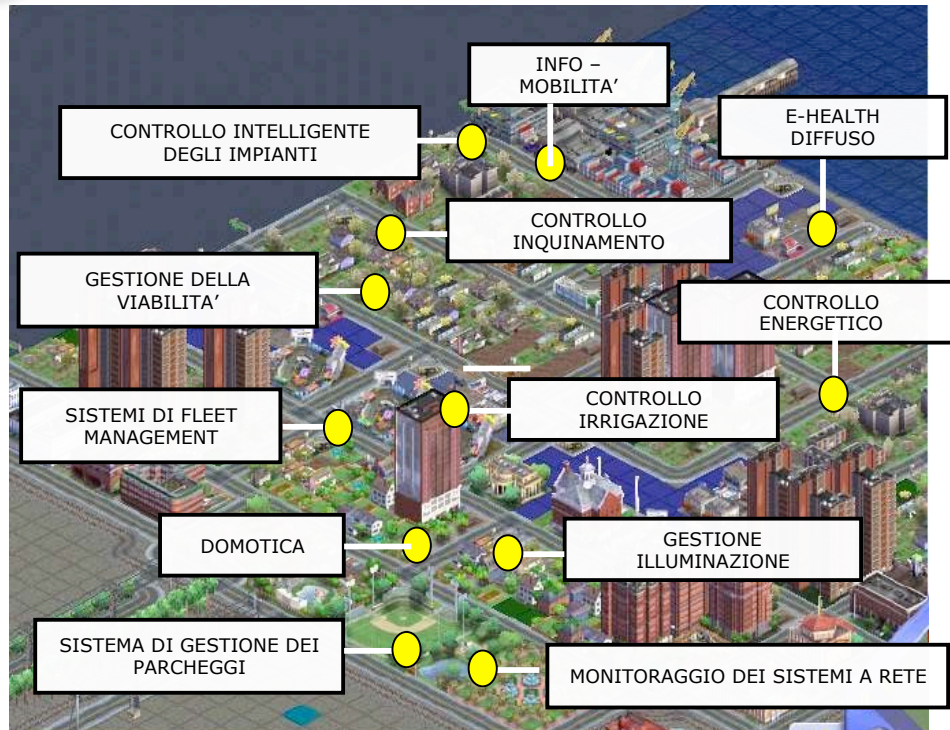
GPS D-GPS A-GPS Cell Based OBU Galileo





MuniWireless: Milano Città Digitale

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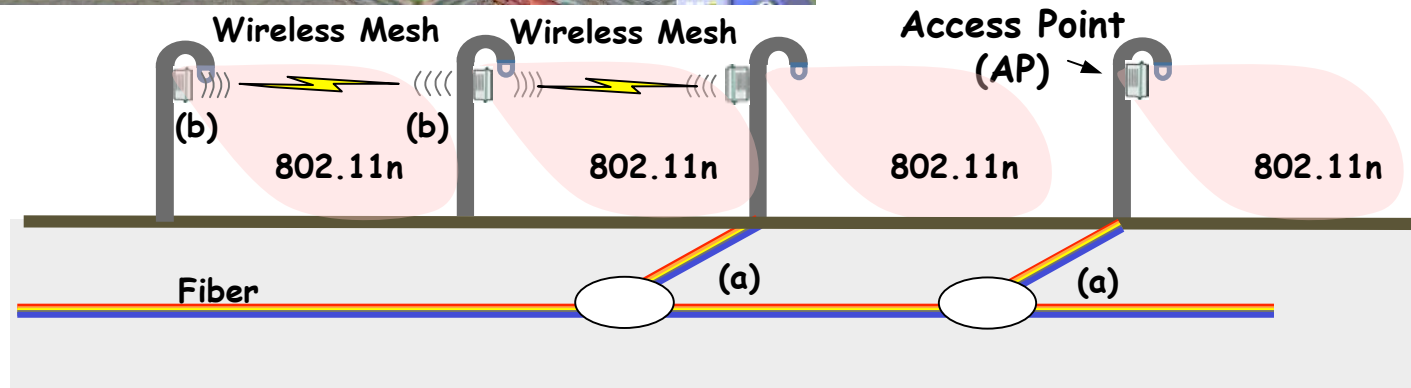
2015
ITALIA - MILANO CANDIDATE CITY

Nutrire il pianeta, energia per la vita

- L'Expo
- Il Tema
- Perché Milano?
- Expo in città
- Proposta di sito
- News
- Vota per l'Expo
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- Bandi
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- Video
- Comitato Scientifico

Parigi - December 19th 2006
Share your meal with your neighbors
by Lucie Marini
L'Etat et l'Etat sont représentés à cette occasion par le Ministre du Commerce extérieur, Mme Emma Bonino. [Vai >>](#)

→ English questions and answers
→ Contact
→ Link





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