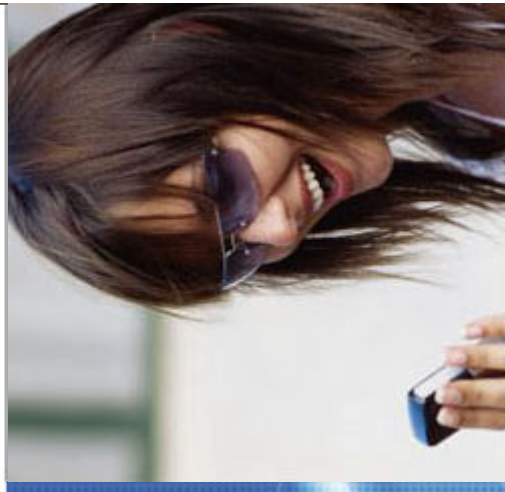


# One step ahead towards full IP network transformation

IEEE GCC Conference



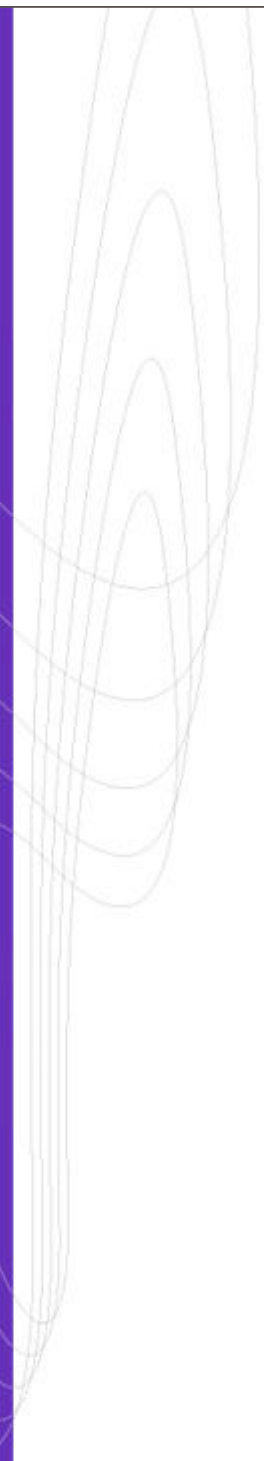
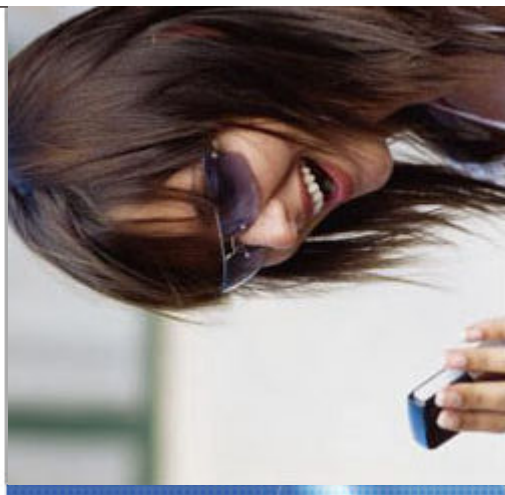
Pierre Tournassoud  
VP Network & Technology Strategy, Alcatel-Lucent  
November 13, 2007

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# Agenda

1. Global Trends
2. IP Transformation of Fixed Networks
3. IP Transformation of Mobile Networks
4. Growing importance of the Home Network
5. Conclusion

# 1 Global trends



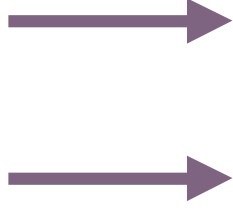
# Transformation of the Business Environment

## Structural

Ongoing industry consolidation  
Sharing of network elements  
Outsourcing  
New enterprise business processes

## Technological

Broadband displacing traditional revenue  
Personalized content to any device  
Fixed-mobile convergence  
IP transforming enterprises & gov'ts



## Macro Trends



Content proliferation

Real-time distribution of personalized content



Emergence of "Prosumer"

Growing need for mission critical communications



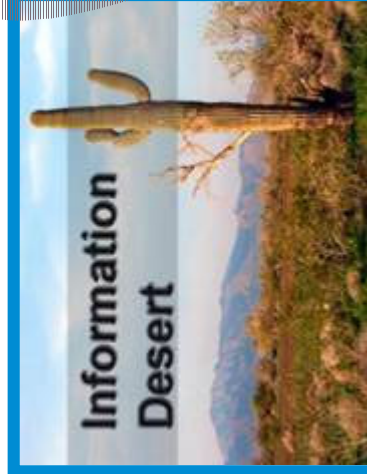


# Networks Derive Their Value from Meeting the Needs of the End-User

- Metcalfe's Law: The value of a network increases with the square of its nodes
- The goal of our industry is to transform *POTENTIAL* value into *ACTUAL* value



Fire hose / Massive  
Connectivity & Bandwidth



Too Little / Too Late



True Value

# Network Value

- Providing infrastructure and bandwidth
  - *Content proliferation will drive 10-fold increase in traffic by 2010\**
- Interconnecting people to the “right” content and to one another any time in any place
  - *Ever-increasing need for network intelligence and service-aware routing*
- Effectively conveying content across multiple platforms and devices when and where its needed
  - *Increased need for billing, location and presence services for service providers; fixed-mobile convergence for enterprises*
- Supporting business models built on content management and delivery
  - *Increase in advertising-supported services for service providers; call center optimization for enterprises*
- Enabling secure, reliable business-critical communications
  - *Enterprise business processes increasingly reliant on communications*

\* SOURCE: IDC, March 2007

6 | Full IP Network Transformation | November 2007

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## Key Enabling Technologies



*ADSL and its evolution (VDSL 2, ...), GPON and other  
Fiber Technology*



*New Flexible Optics*



*“4G” radio: WiMAX, 3GLTE...*

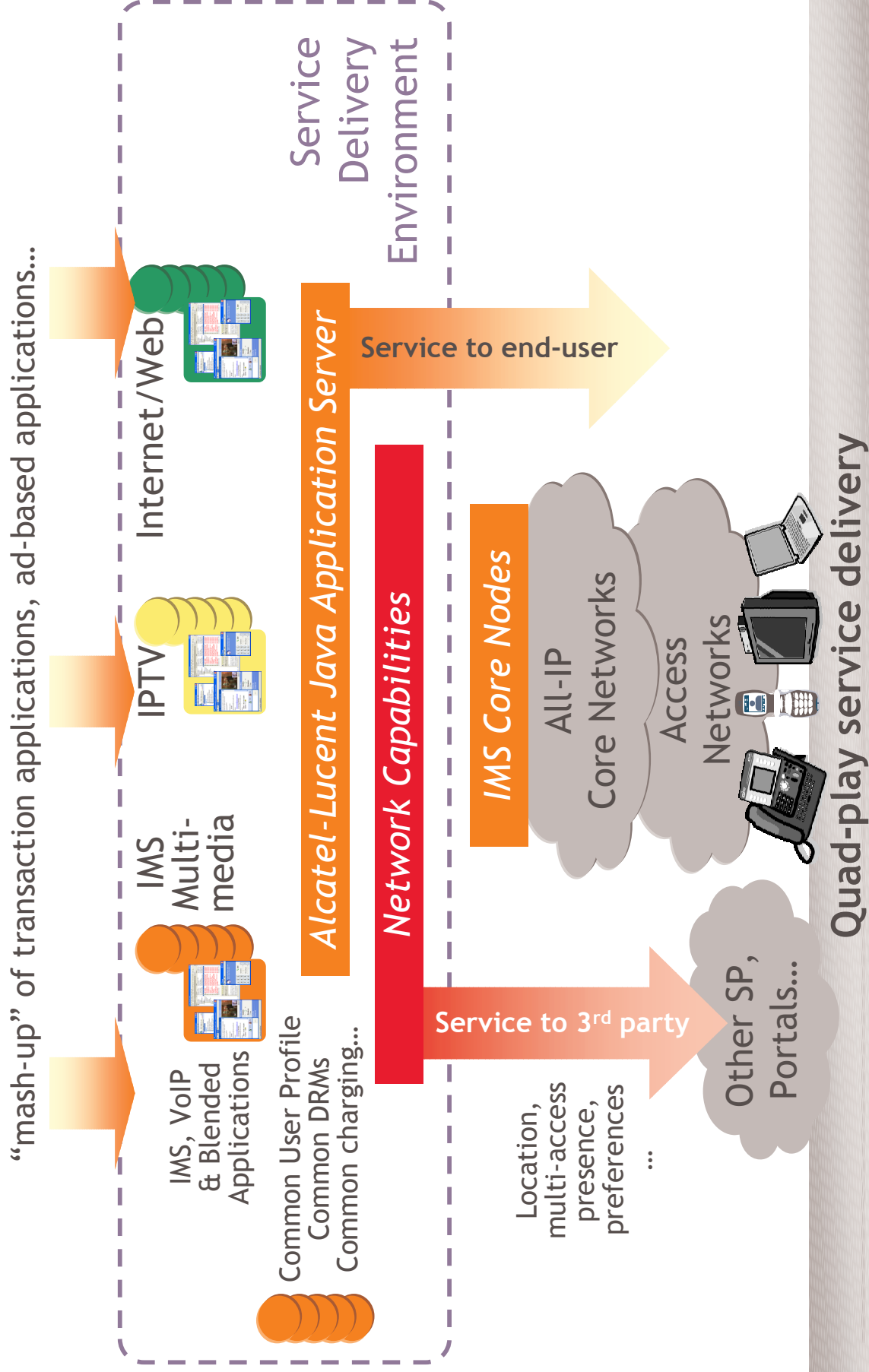


*IP to support fixed Triple Play Service Delivery with  
enhanced IP service routing, evolving to support Mobile*



*Open Service Delivery Environment (Telecom x IT)*

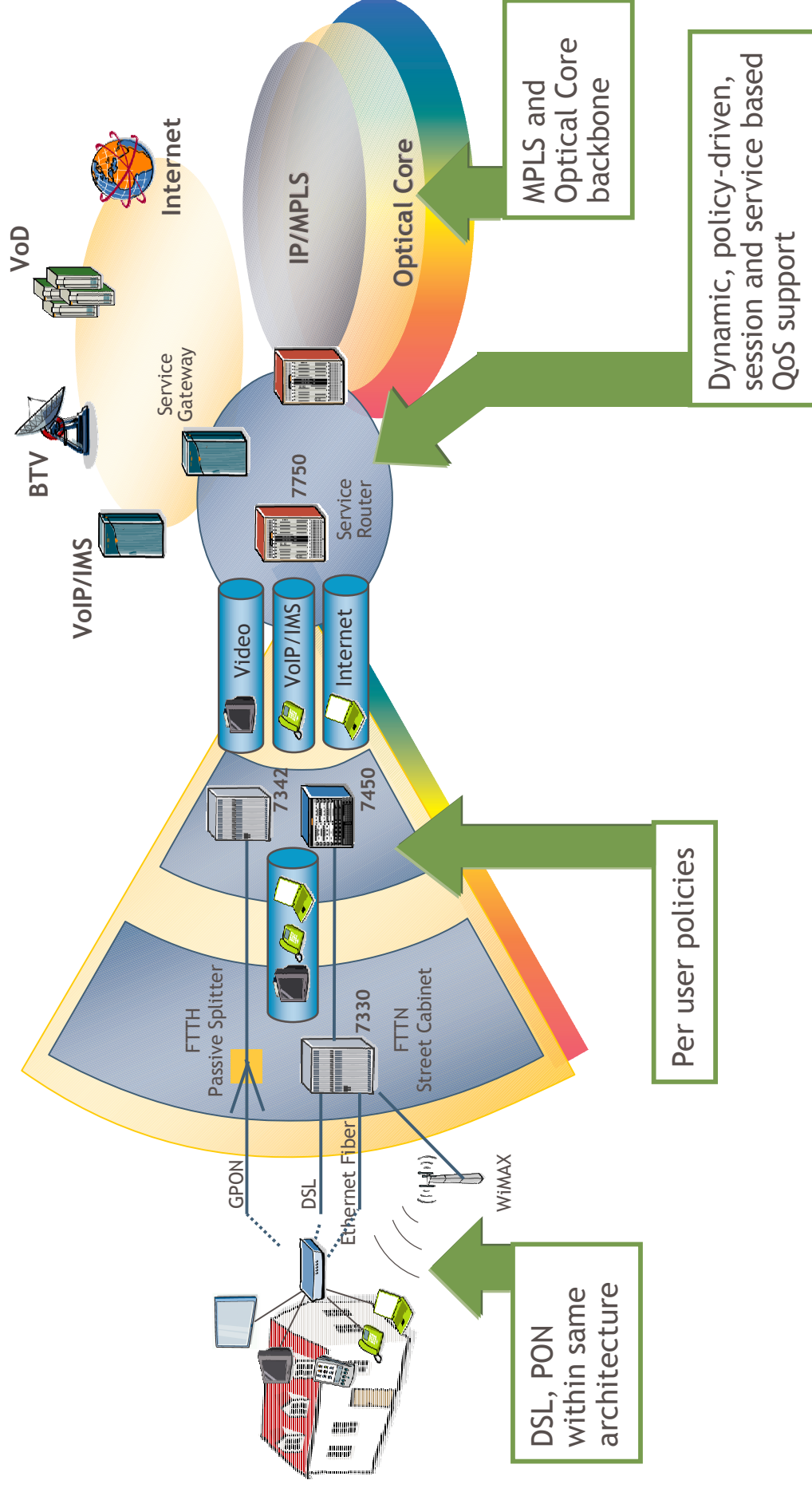
# Service Delivery Environment and role of IMS





# 2 IP Transformation of Fixed Networks

# TPSDA (Triple Play Service Delivery Architecture) - today



# TPSDA and evolution

## **All-IP network transformation targeting delivery of VoIP, IPTV and Internet**

- New IPTV and Video applications driving network capacity needs
- Quality of Service differentiated per application

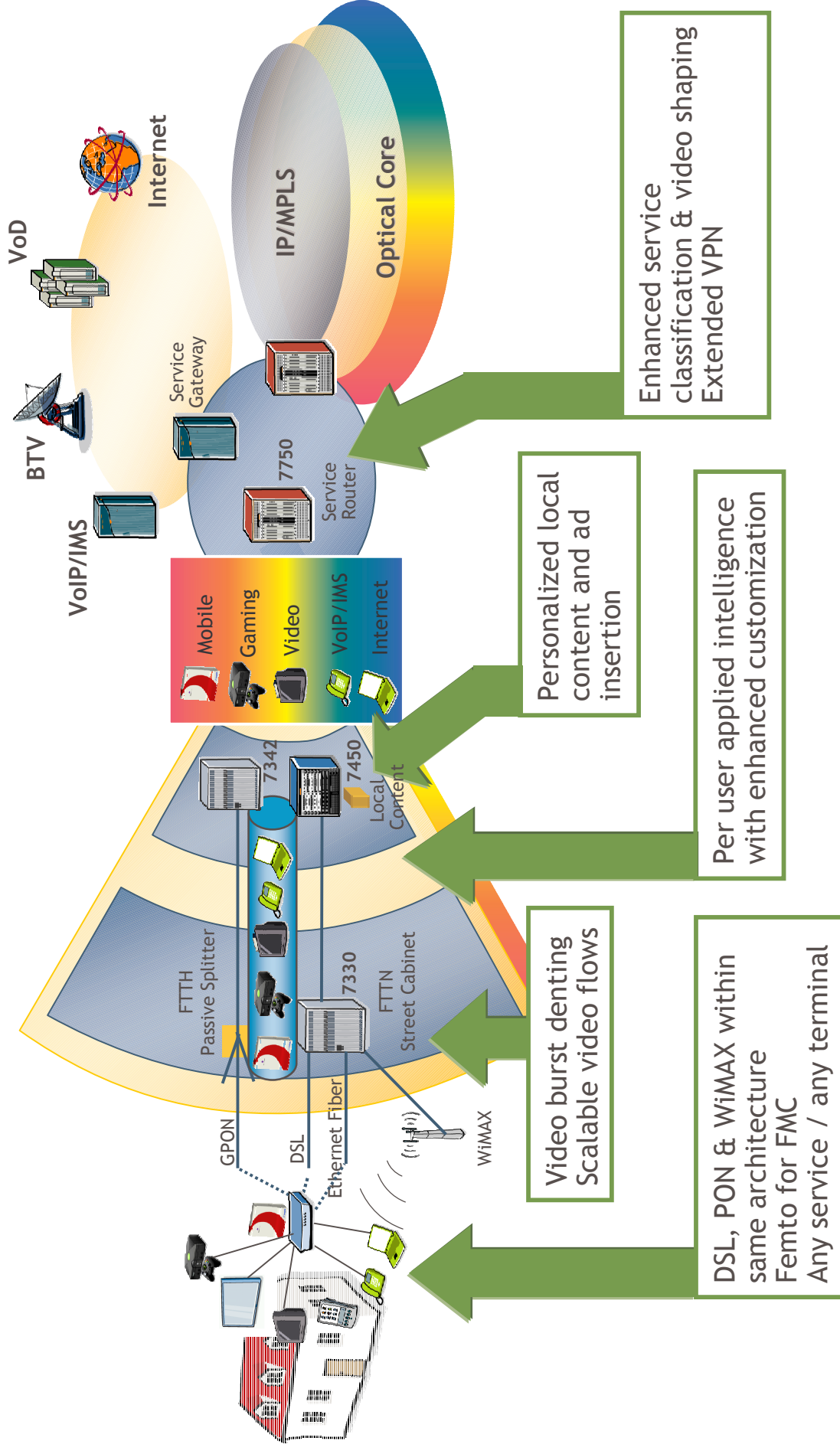
## **Next step: From Triple Play to blended services**

- More refined QoS classification based on content type and tariffing agreements with content owners
- Enhanced support for internet-based services, including video: migration from Best Effort to QoS Enhanced Internet Services

## **Advertisement-paid service delivery**

- Based on enhanced user profiling and local advertisement insertion

# TPSDA - tomorrow

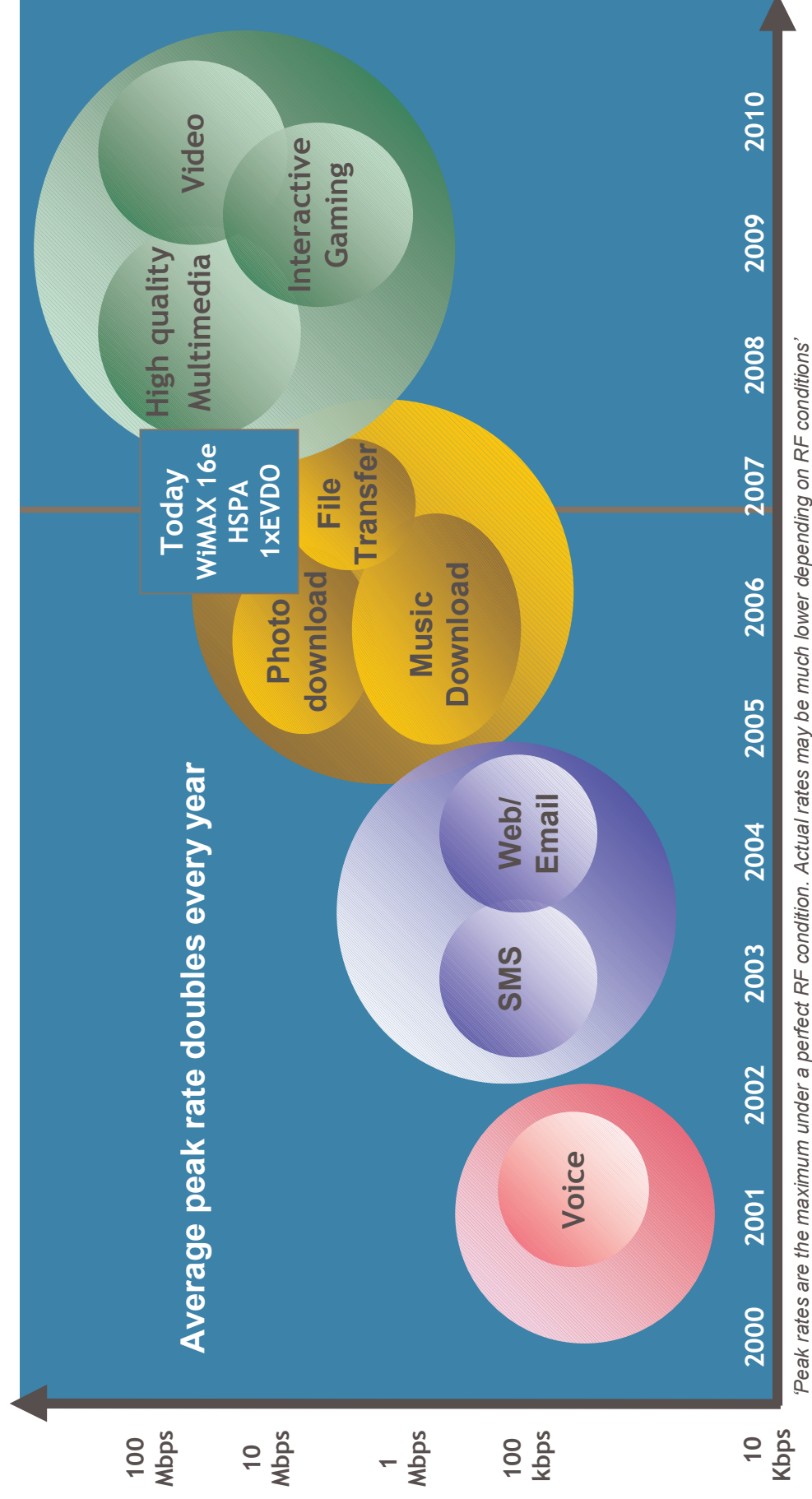


# 3

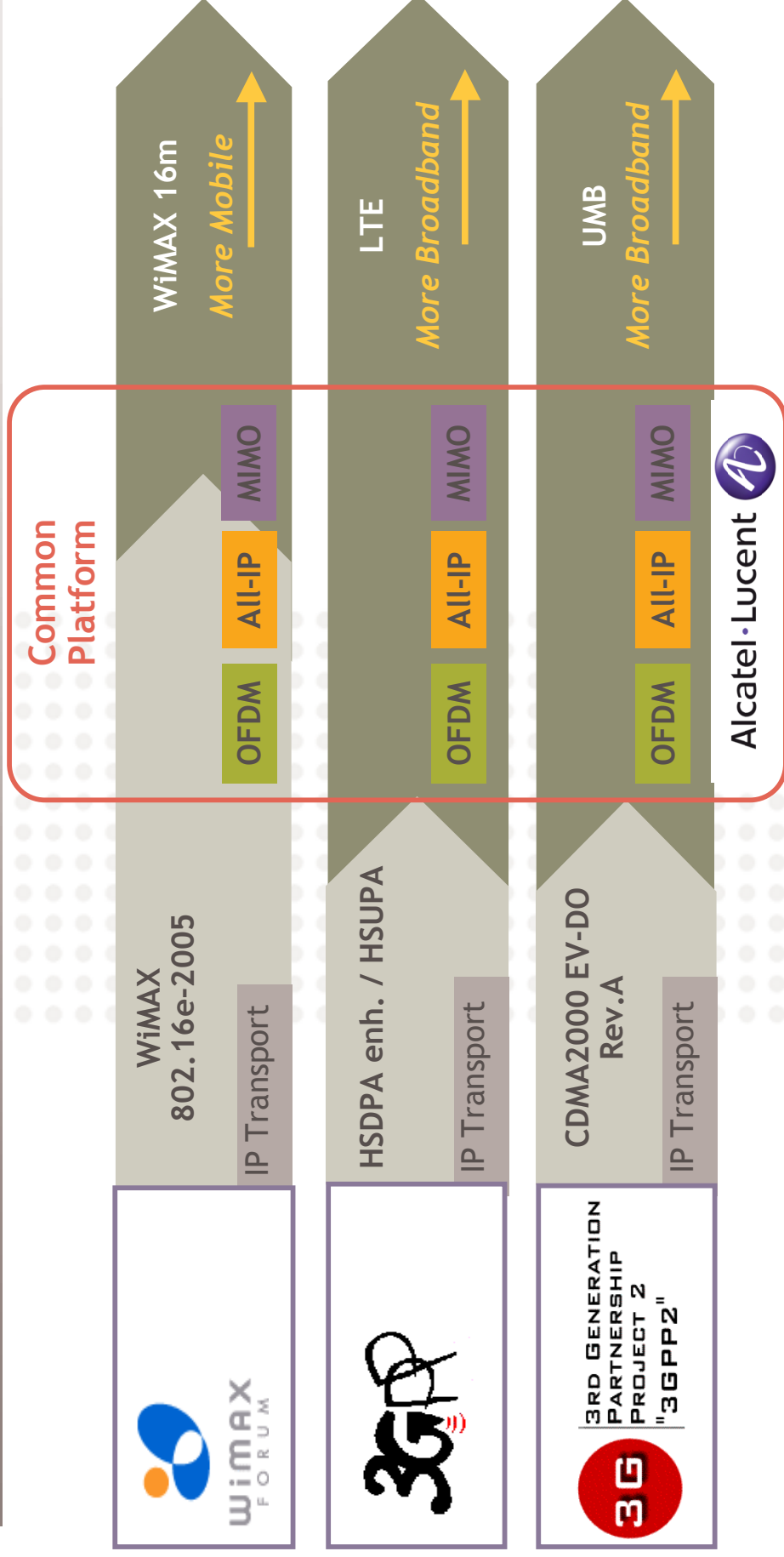
## IP Transformation of Mobile Networks



# Data rates needs driven by new service usage



# Common technology building blocks



*Next Generation radios all rely on similar standards / techniques.  
Alcatel-Lucent is leading in development of these enabling technologies.*

# Mobile networks going IP

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## Bandwidth push

- As in Fixed, new data and video-centric applications drive bandwidth and session length up

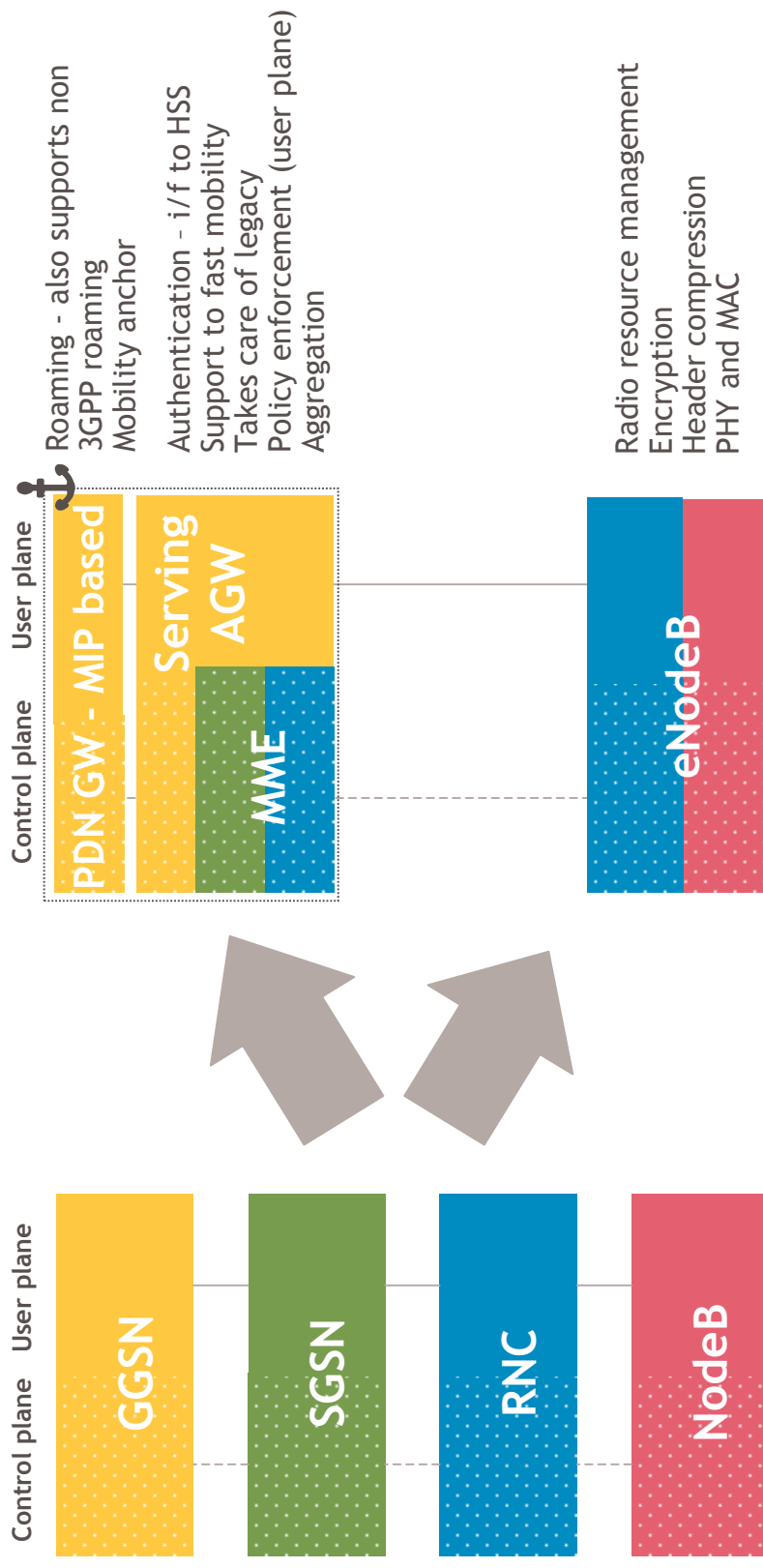
## Technology push

- Adoption of OFDM (WiMAX, LTE and UMB) reduces network complexity
- Layer 2 and 3 functionality in base stations simplifies aggregation network
- Multi-access networks call for common backhauling approach based on Ethernet and IP transport

## Operator push

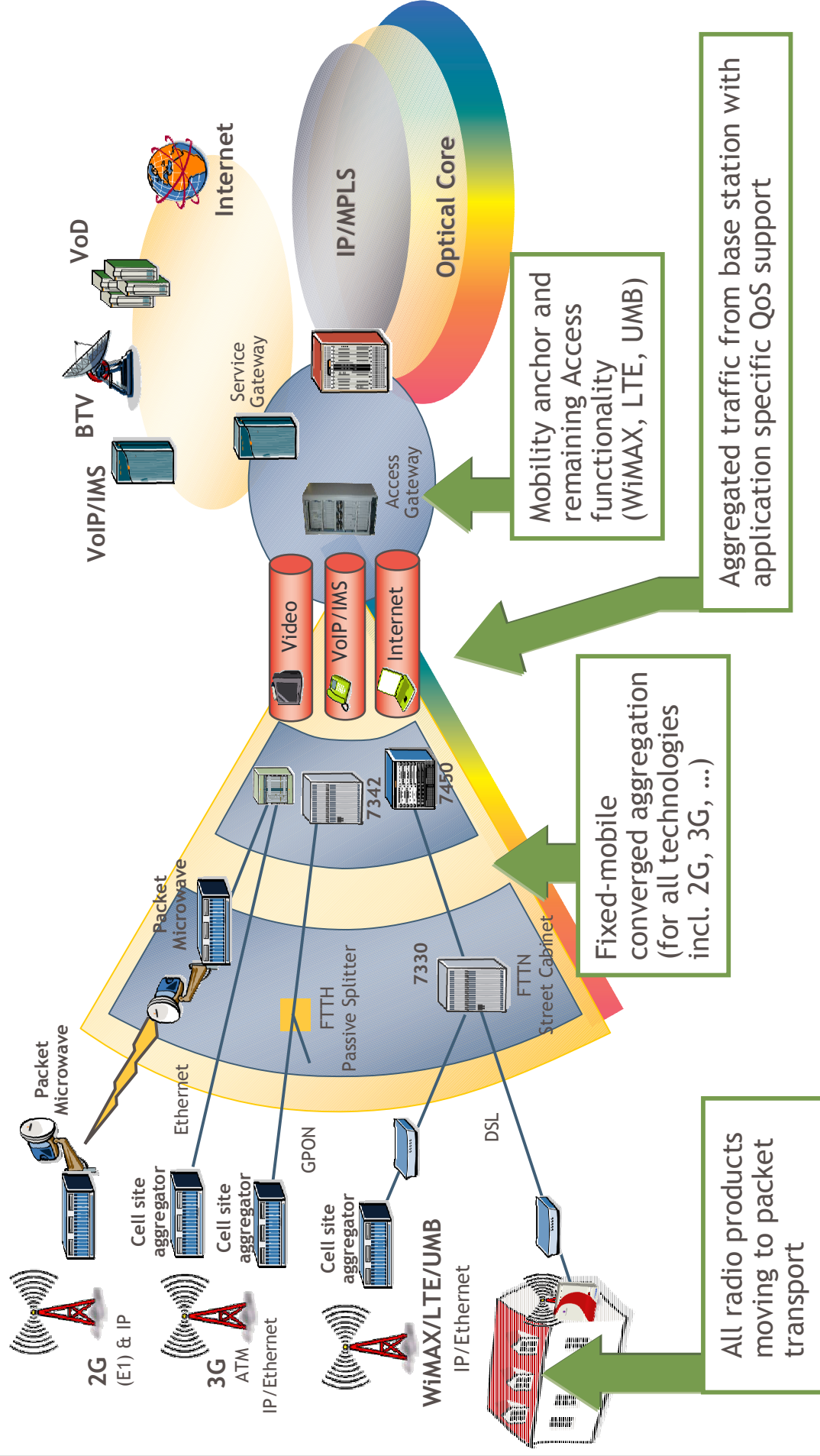
- Femto (home base stations) offer a realistic solution for FMC
- Re-merger of mobile and fixed operators encourages common networking

# “Flat-IP” mobile network architecture



# META (Mobile Evolution Transport Architecture)

## - opening the path to “Flat-IP”

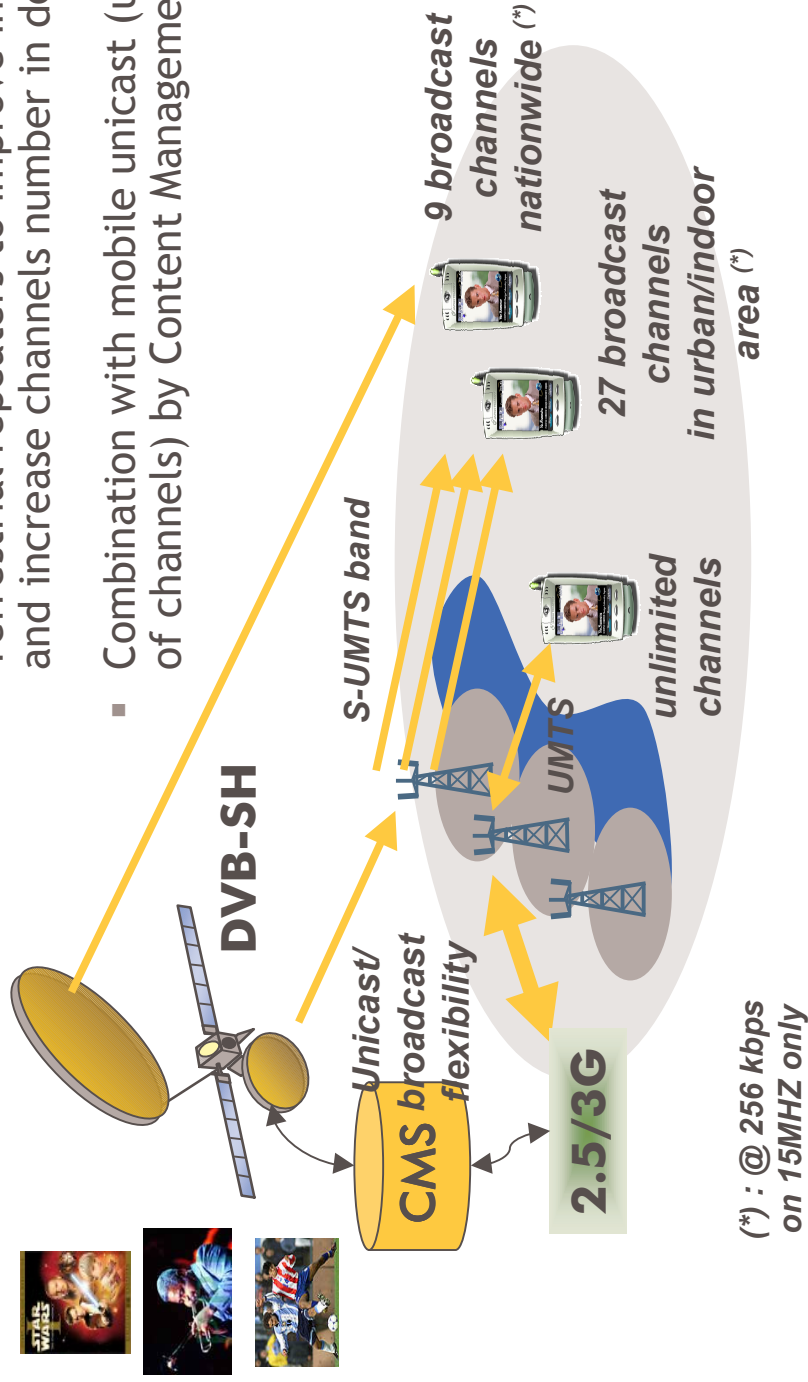




# Unlimited Mobile TV

## Hybrid system: DVB-SH standard

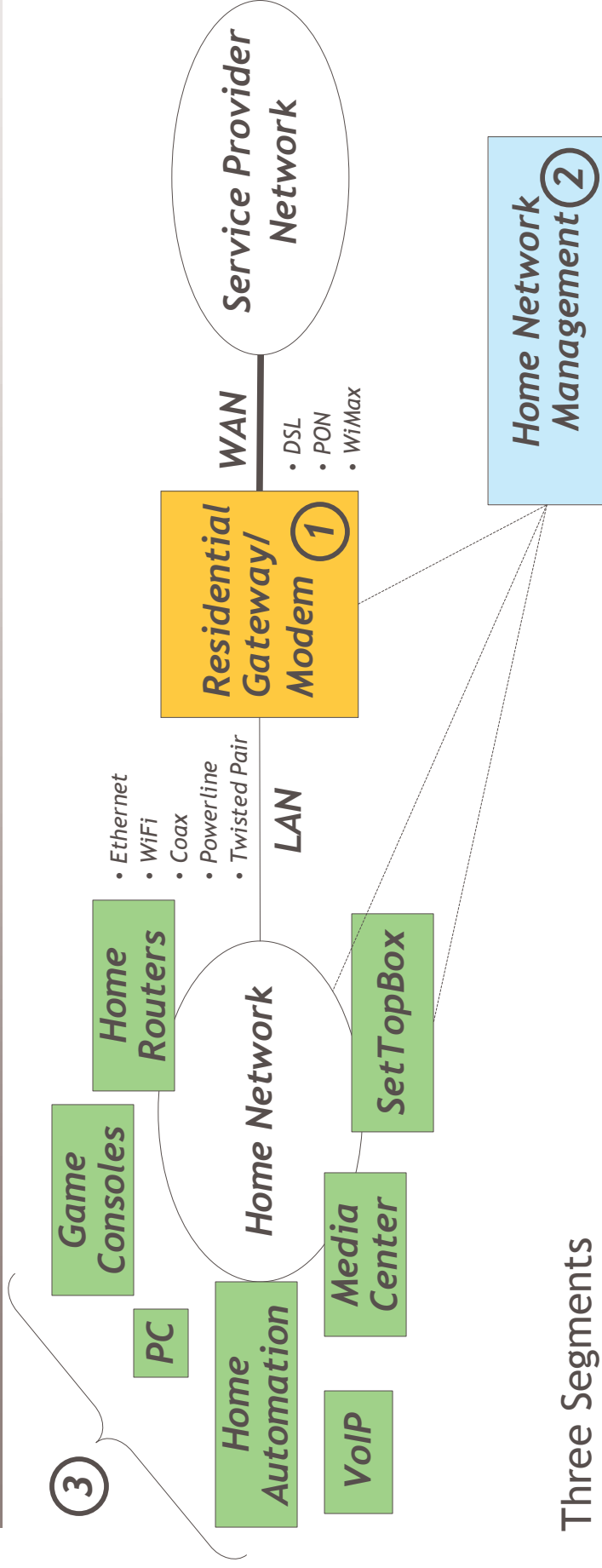
- Direct broadcast from satellite
- Terrestrial repeaters to improve indoor reception and increase channels number in dense area
- Combination with mobile unicast (unlimited number of channels) by Content Management System



# 4

## Growing importance of the Home Network

# Interests of Operators in Digital Home



## Three Segments

### 1. Residential Gateway/Modems: Beach-head of Operators in home

- Gateways and Modems - with a variety of Home (LAN) and Network (WAN) Connections

### 2. Home Network Management

- Management of RGW, Home Network and Devices

### 3. Home Devices

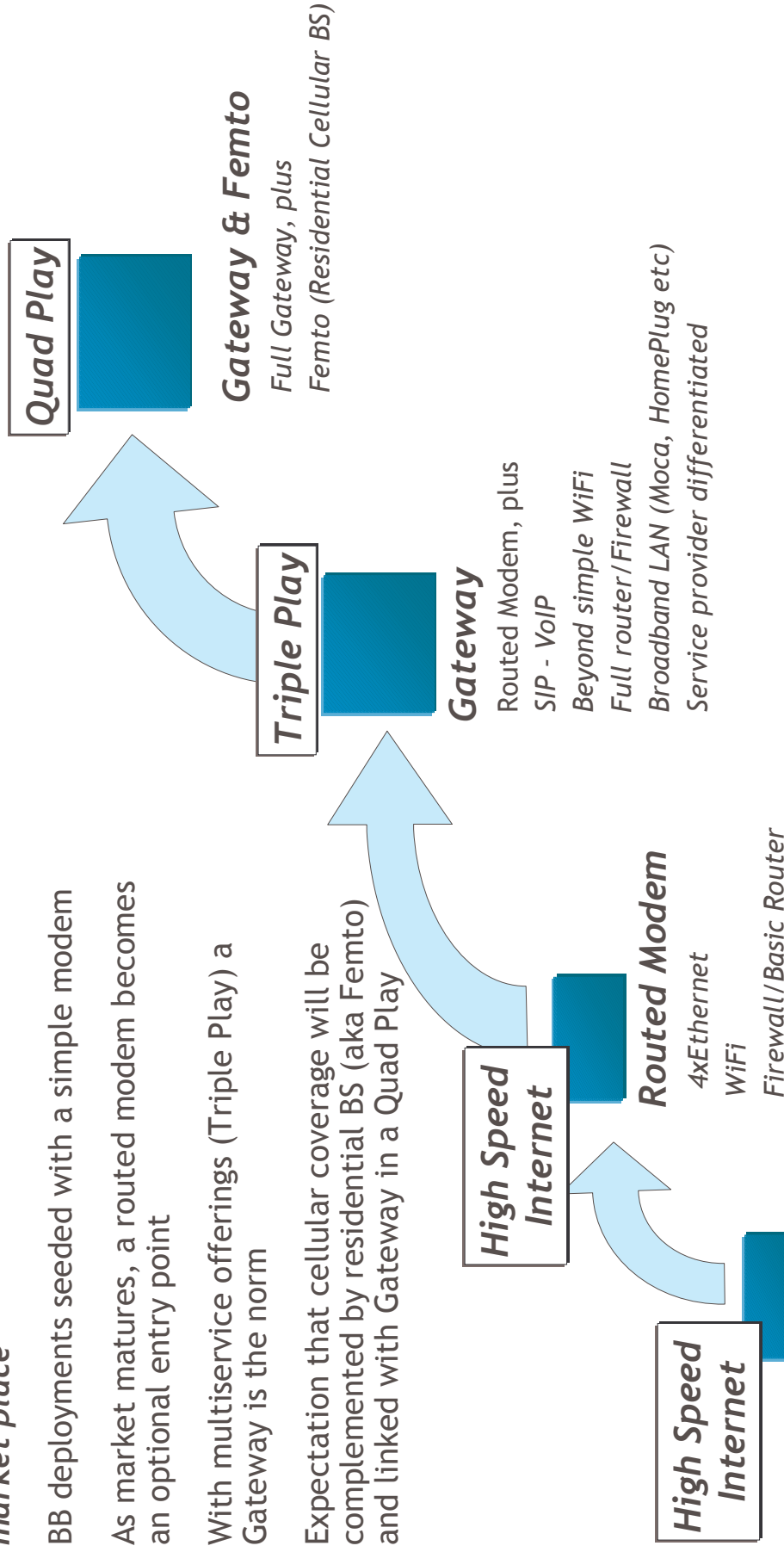
- STB, PC, Home Routers, Media Center, Game Consoles, VoIP, Mobile terminal

# The Residential Gateway

## - from Modem to Triple Play and beyond

*There is a natural evolution in the broadband market place*

- BB deployments seeded with a simple modem
- As market matures, a routed modem becomes an optional entry point
- With multiservice offerings (Triple Play) a Gateway is the norm
- Expectation that cellular coverage will be complemented by residential BS (aka Femto) and linked with Gateway in a Quad Play



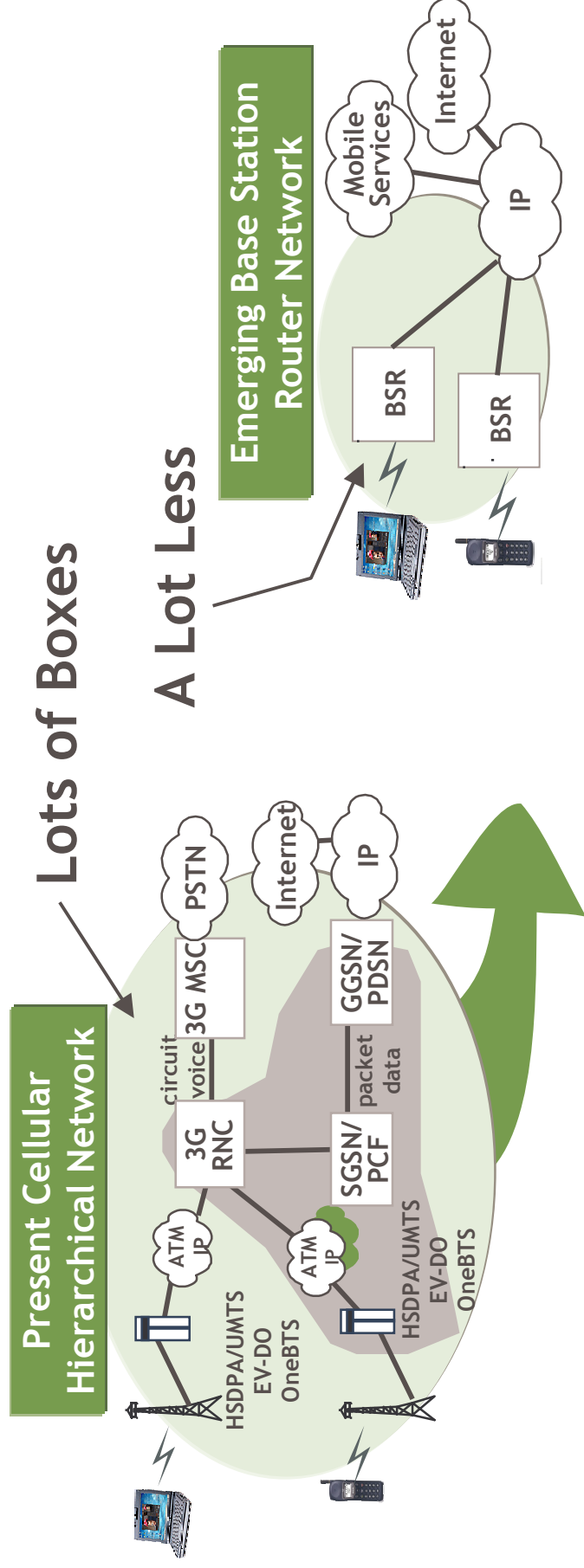
## Femto for in-home mobile service

Femto delivering enhanced mobile service from/to the home

- Special tariff plan, enhanced service, FMC enabler

Alcatel-Lucent “Base Station Router” approach

- All-in-one radio network in femto





# Emergence of Vertical applications tied to Sensors

## Security:

Video surveillance  
Technical security  
Gaz or Fire alert

Tele-assistance:  
Health monitoring  
Eldery support



Tele-metering:  
Power, water ...



Home energy management  
& Climate control:  
Remote monitoring and control  
Of heating, A/C,  
appliances, ligths,  
Shutters and shades motors ...

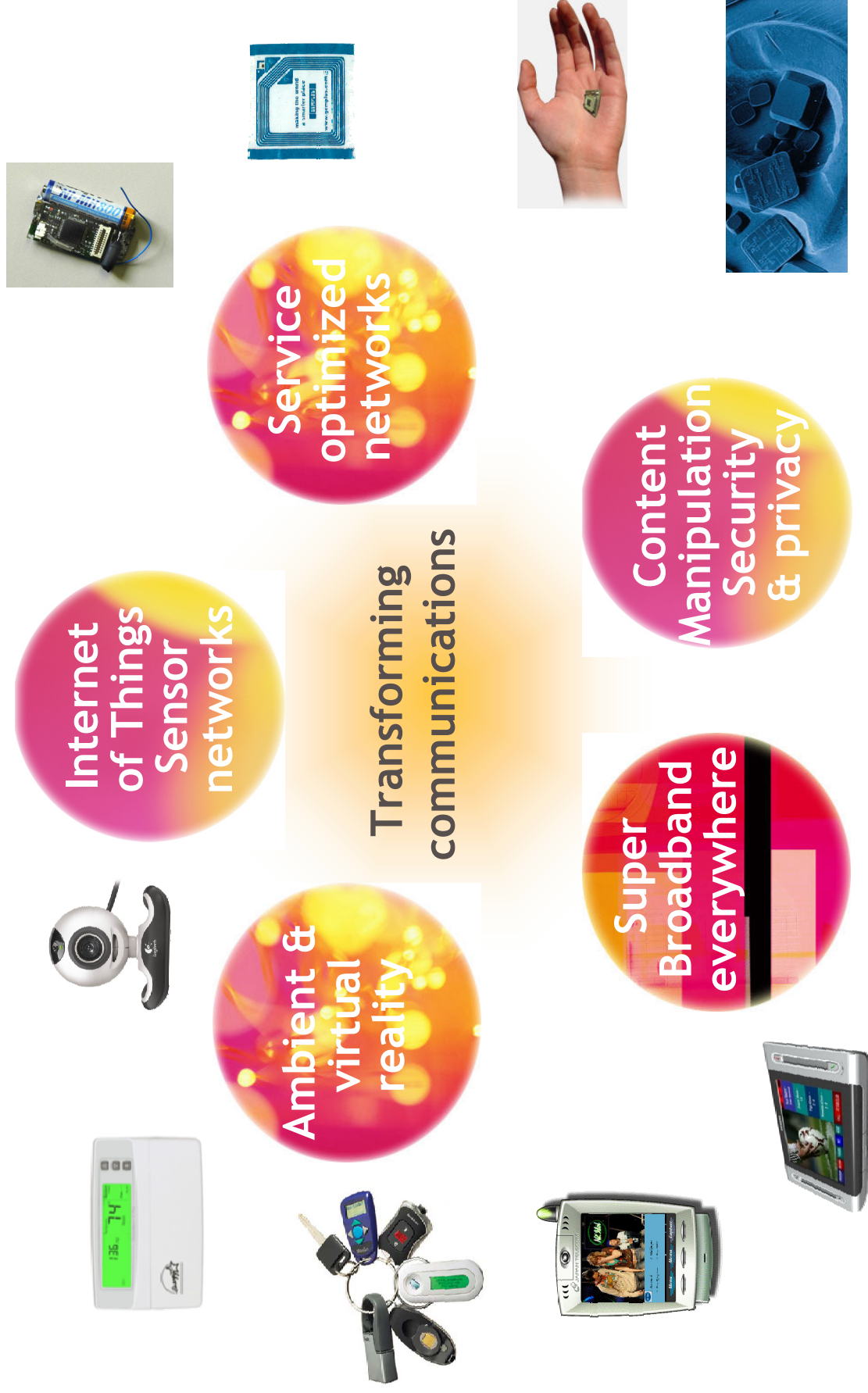
Home automation  
& User remote control:  
Full control of  
domotic devices

# Conclusion

# 5

# Preparing the future

## - major challenges for 2015 and beyond



The background is a solid blue color with a fine, light-colored grid pattern. Overlaid on this are several white, wavy, vertical lines that create a sense of motion or fluidity. The lines are more pronounced on the right side of the image.

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