



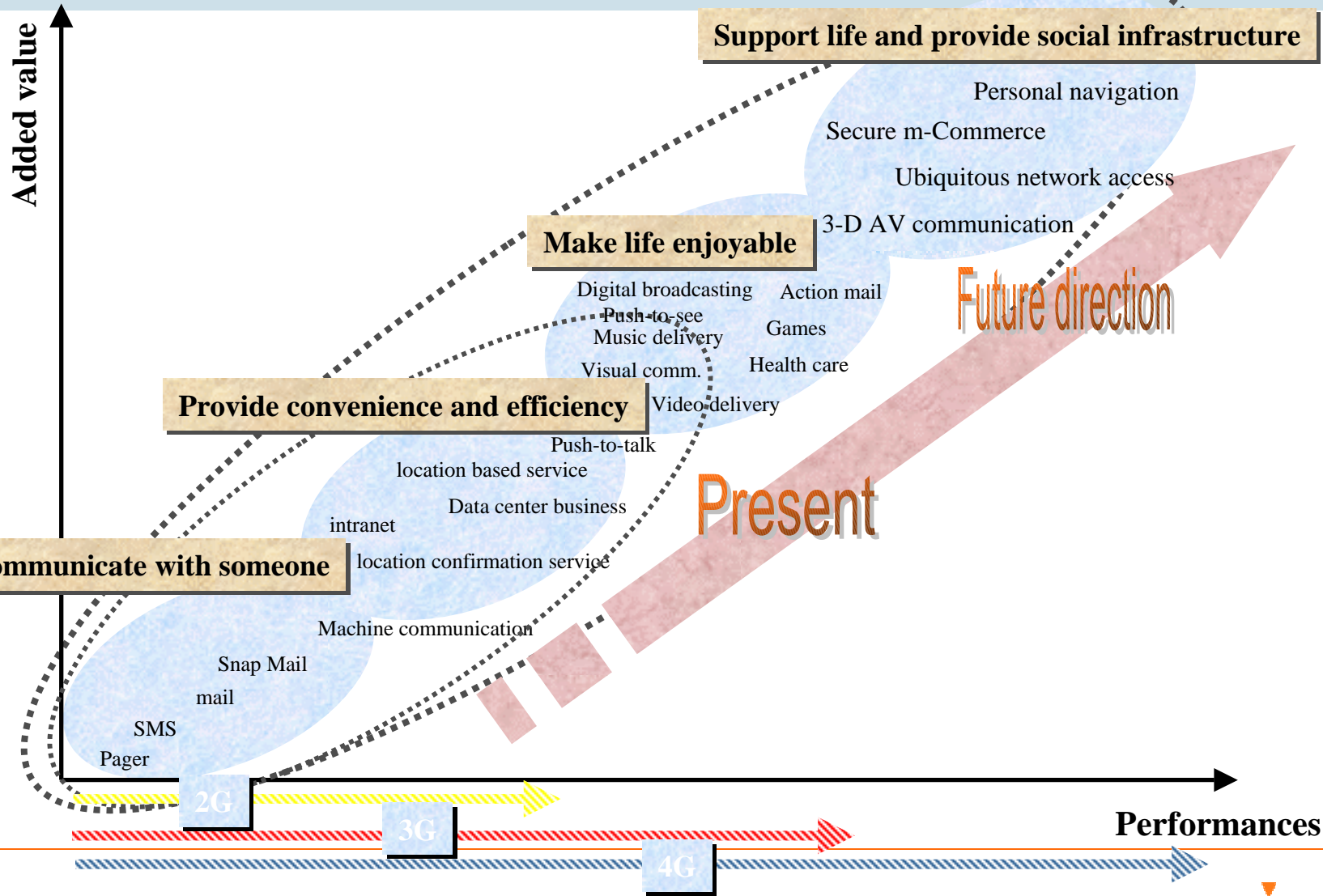
## La complementarietà delle reti wireless per una varietà di applicazioni



◀ **BROADEN YOUR LIFE** ▶

Flavio Boano  
Mobile Sales Support Director  
21 Giugno 2005

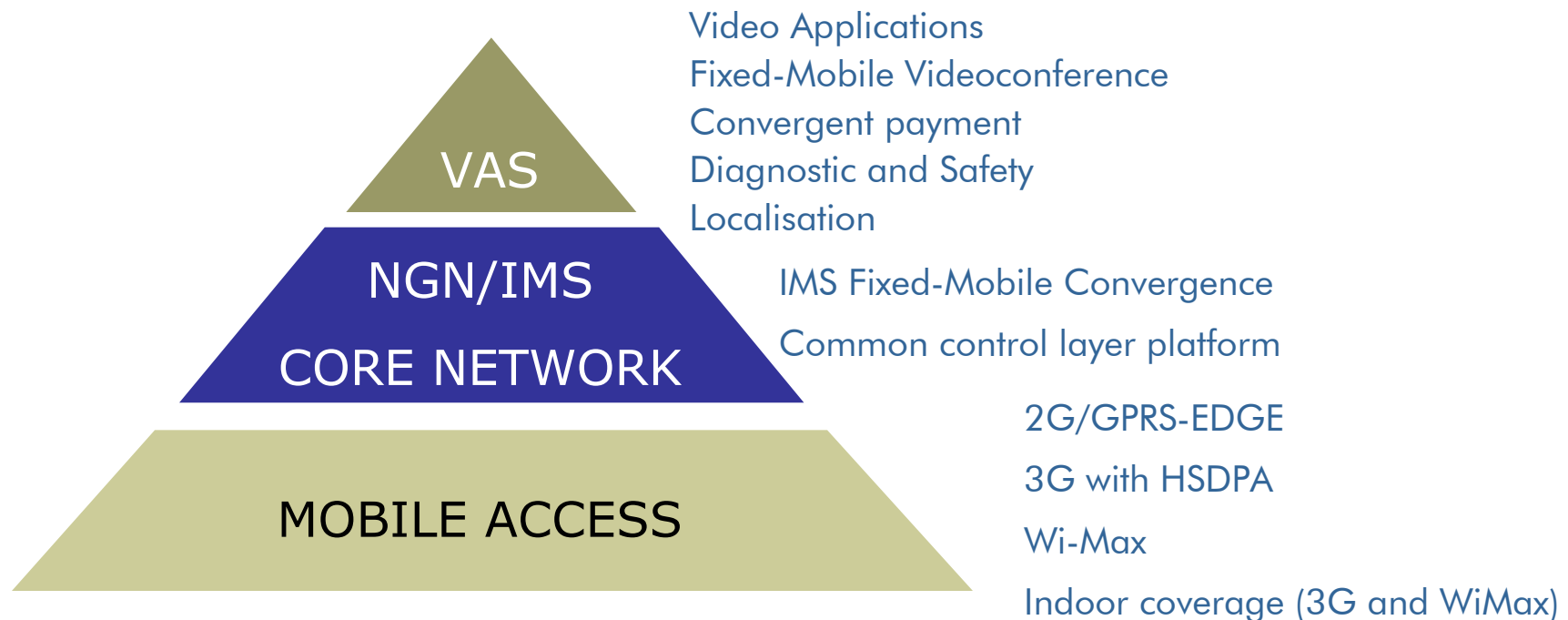
# Towards 4G Applications



The evolution towards 4G: how to evolve without disruptive changes in the complete Telco & IT structure

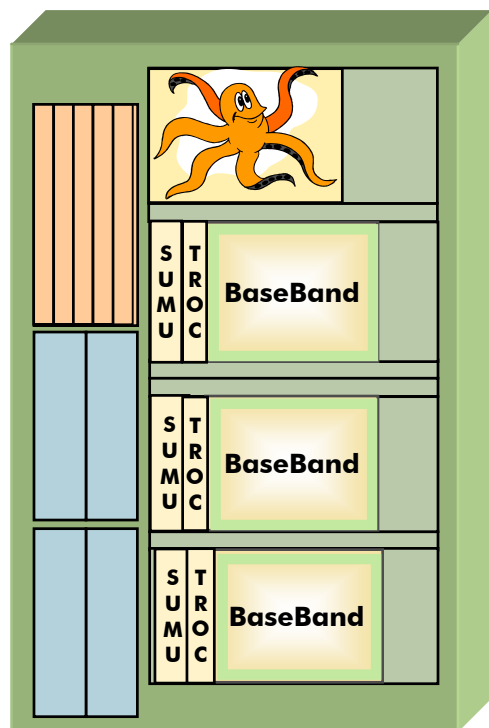
**Today the challenge is to enlarge a common suite of added value applications to a common layer of control and a variety of wireless access network, depending on user's need**

**Alcatel approach of User's Centric Broadband aims to that!**



# Alcatel mobile Base Station: a Single Radio Access Point

## The Multi-standard Platform GSM/EDGE, WCDMA/HSDPA, TD-SCDMA & WiMAX



**Multi-Standard &  
Multi-Access  
Base Station**



**Multi-standard base station (2G, 3G, Wi-  
Max)**



**Multi-band RF Front-end (Radio Over  
Fiber)**



**Multi-standard Base Band (HSDPA SW  
ready)**

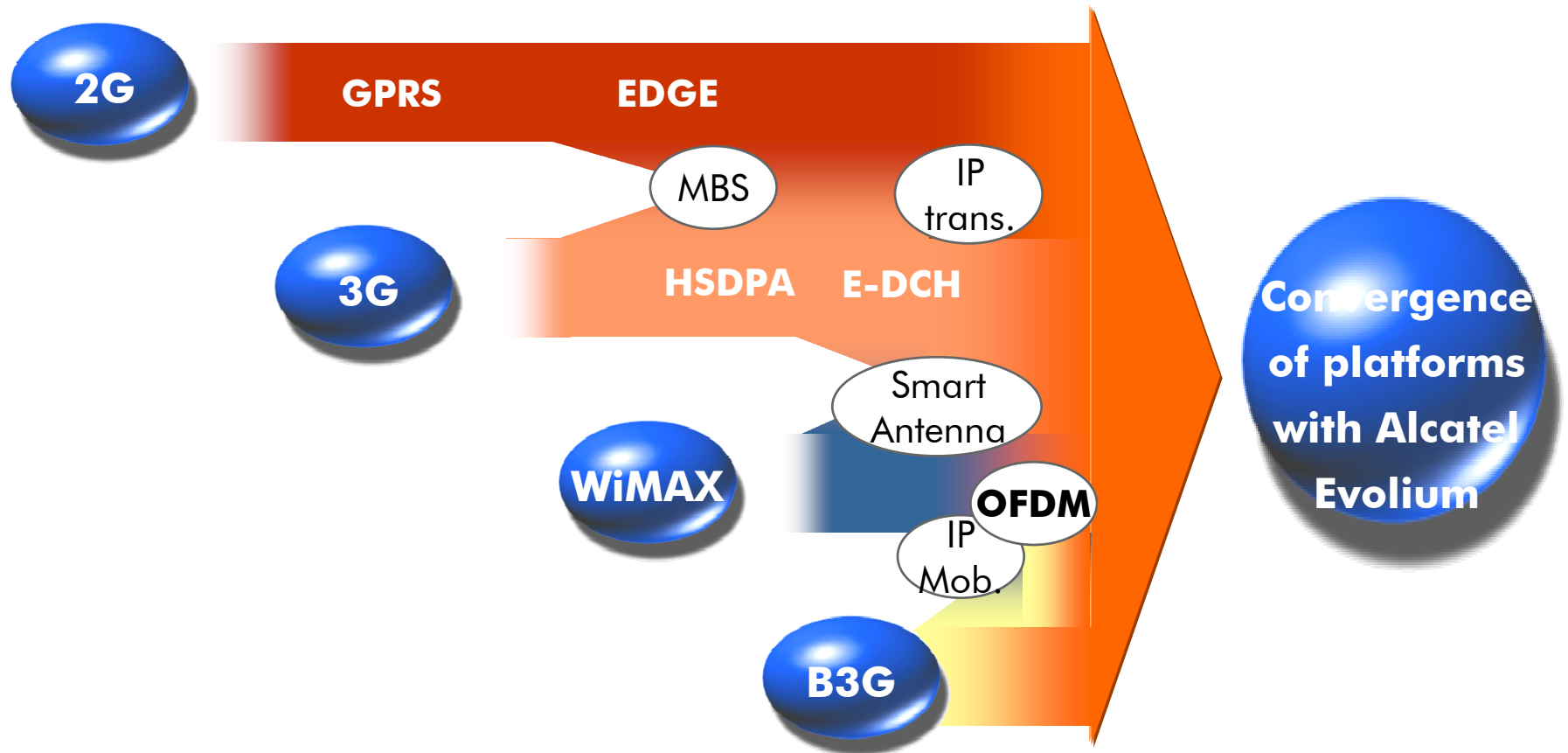


**Multi-standard Transceiver (GSM/EDGE)**

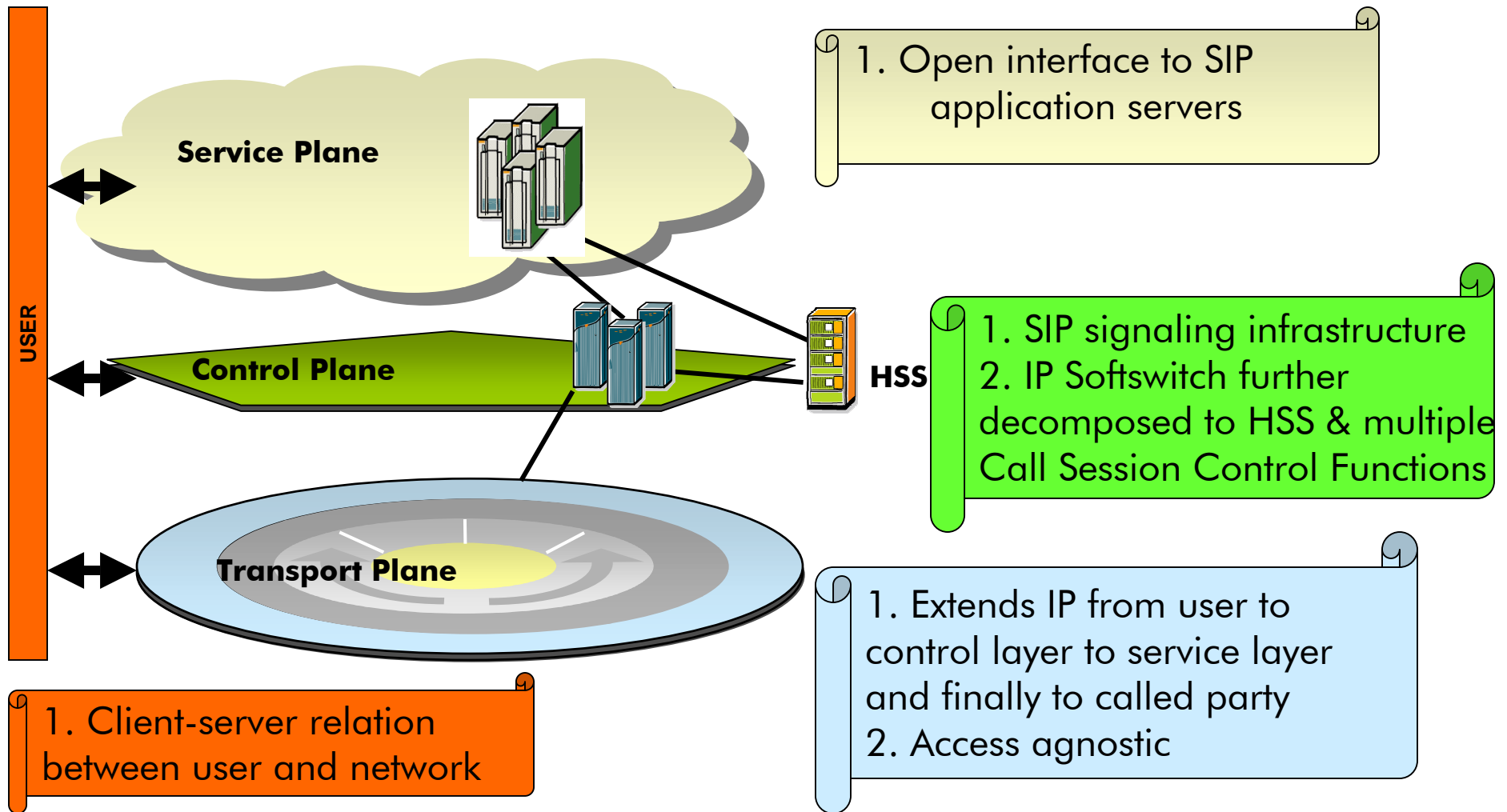


**Special solution for indoor coverage (Node  
I)**

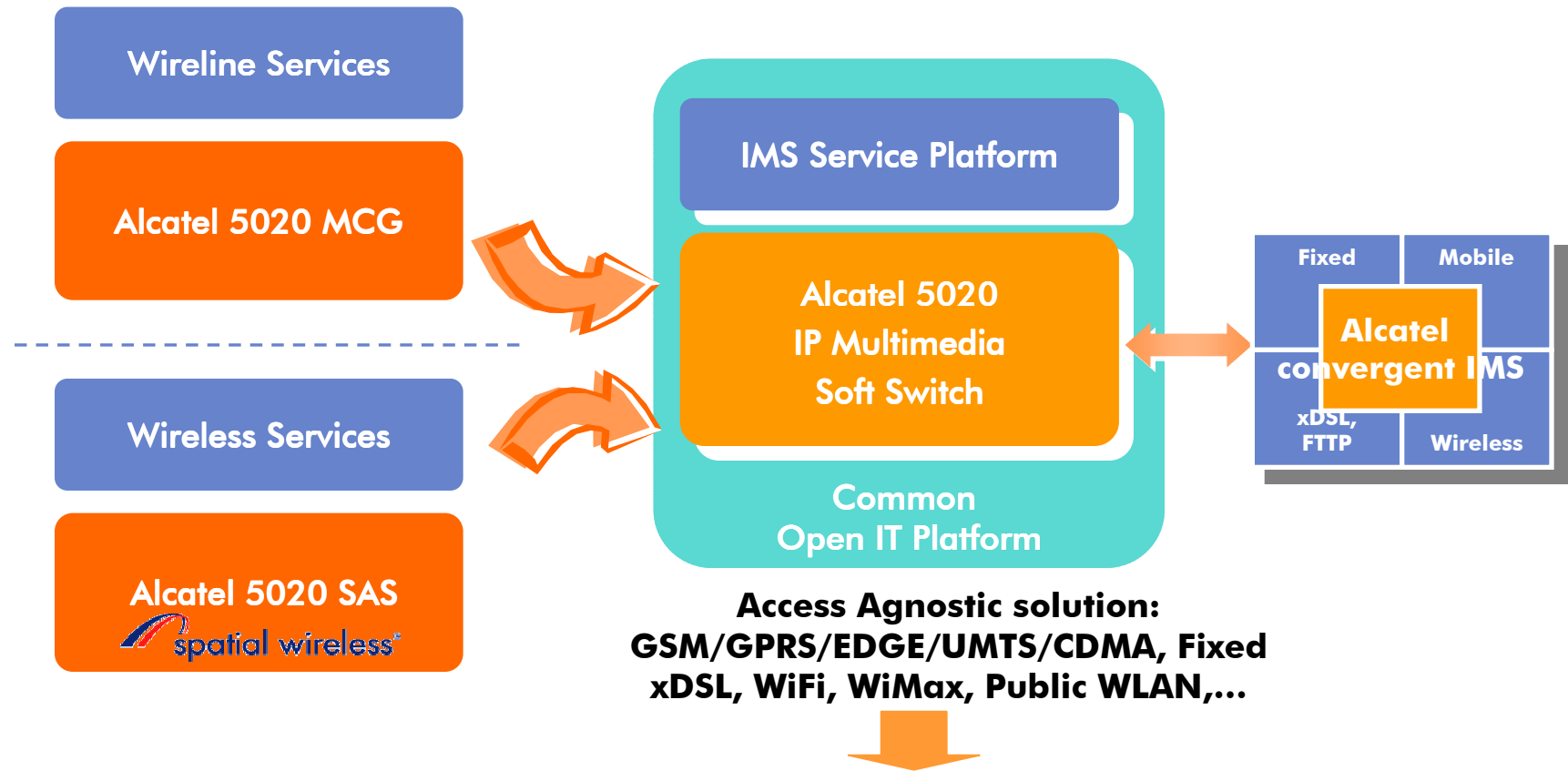
# 2G, 3G, WiMAX and beyond convergence



# IP Multimedia Services general overview

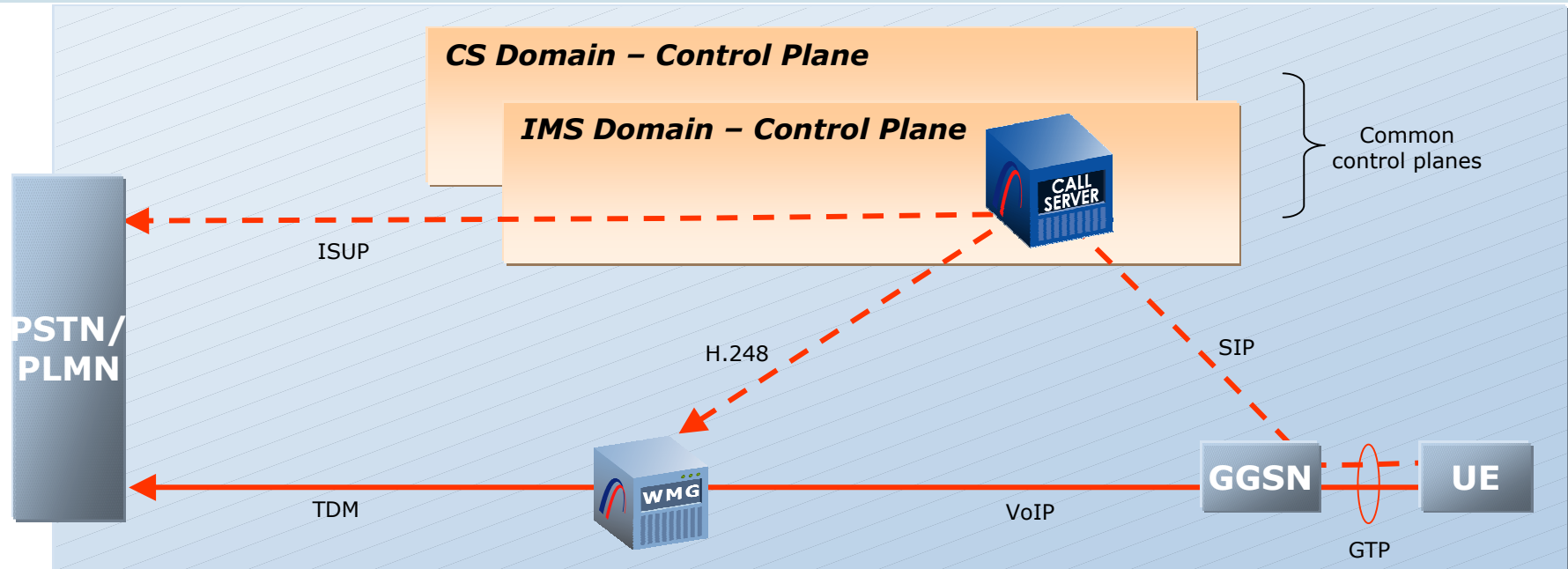


# Alcatel supports multi access and convergent IMS technology



**Economical benefits on multi access and convergent infrastructural investments and consequent faster time to market for multimedia services**

# Combined Control Network Infrastructure



**Maximum port usage efficiency**

**Maximum CPU efficiency**

**Simplified network architecture – single network intelligence layer**



# Business Drivers for IMS

## Accelerating Innovation

- ⇒ Reduce Time to market for new services introduction
- ⇒ Reduce cost of introducing new services
- ⇒ Leverage unused data network capacity

## Creating ubiquitous services in a converged landscape

- ⇒ Seamless Service Delivery regardless of Access Type
- ⇒ Service interoperability and multi-modal Operation
- ⇒ Optimized roaming

## Simplify Service Delivery

- ⇒ Common service provisioning
- ⇒ E2E service observation and management
- ⇒ Foundation for service partnering

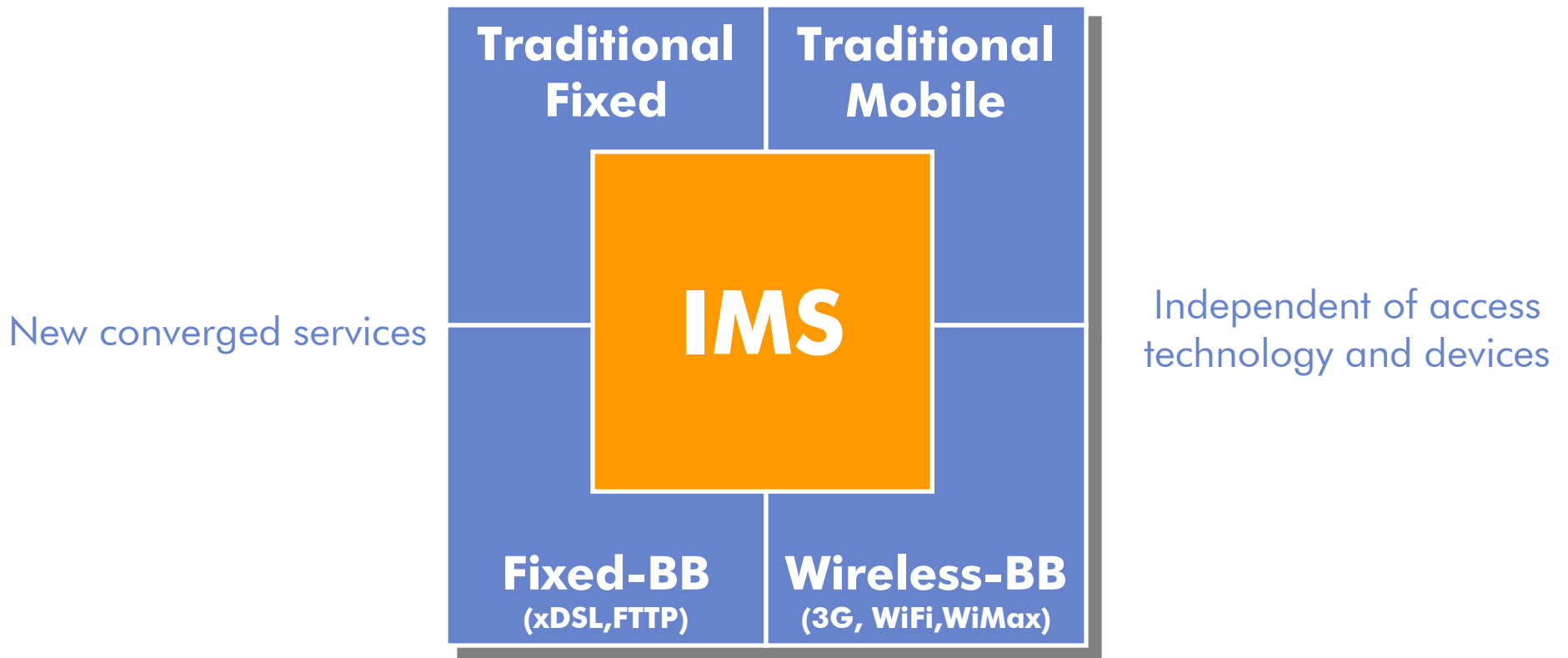
## Keeping value in the network

- ⇒ Stimulate 3<sup>rd</sup> party innovation under operator control
- ⇒ Add immediacy, personalisation and location awareness
- ⇒ Broaden the charging relationship with end-users



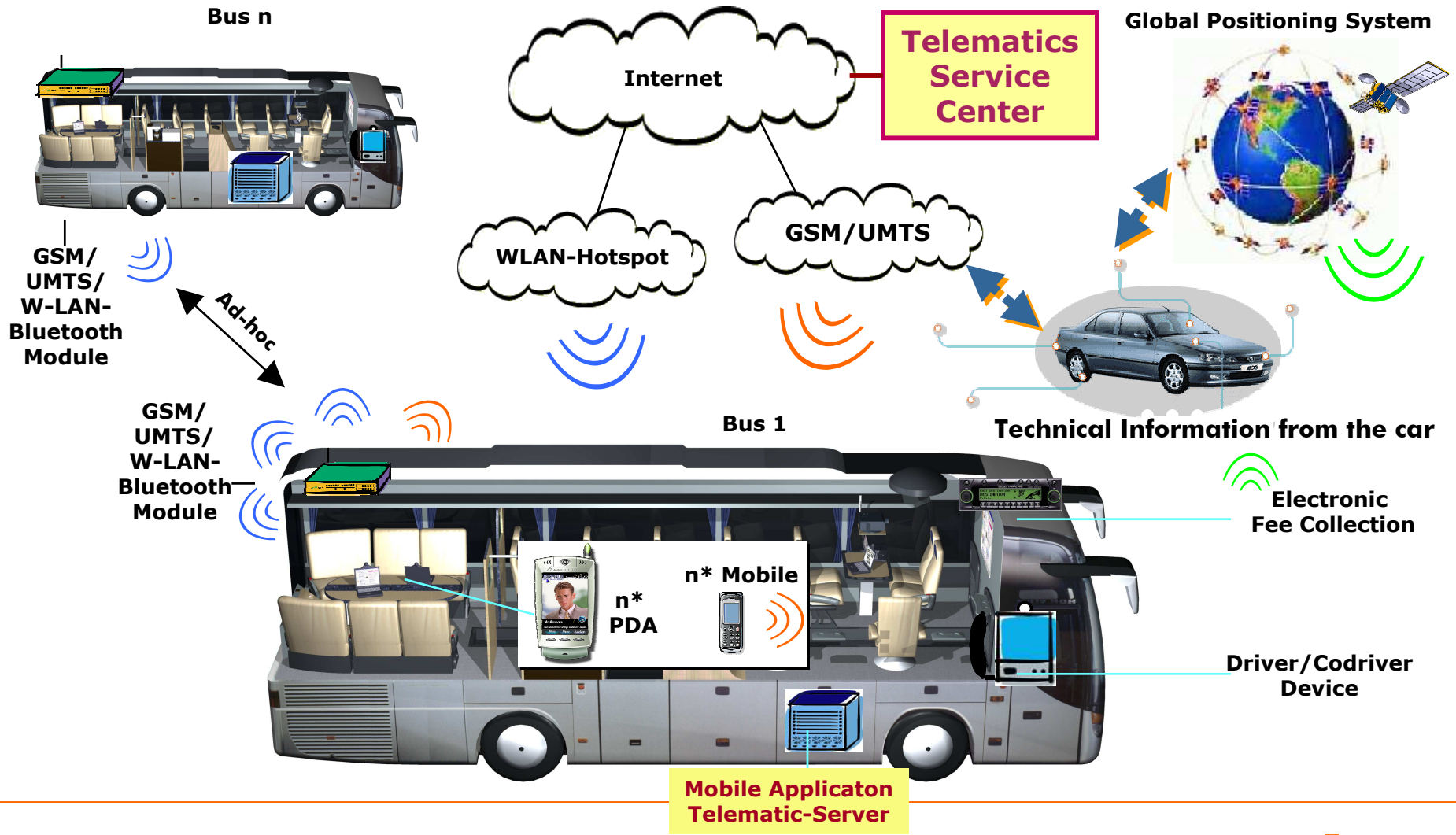
**Alcatel IMS ultimately makes the process of developing, managing, interconnecting services simpler and less expensive**

IMS is target for reaching convergence in infrastructure and services

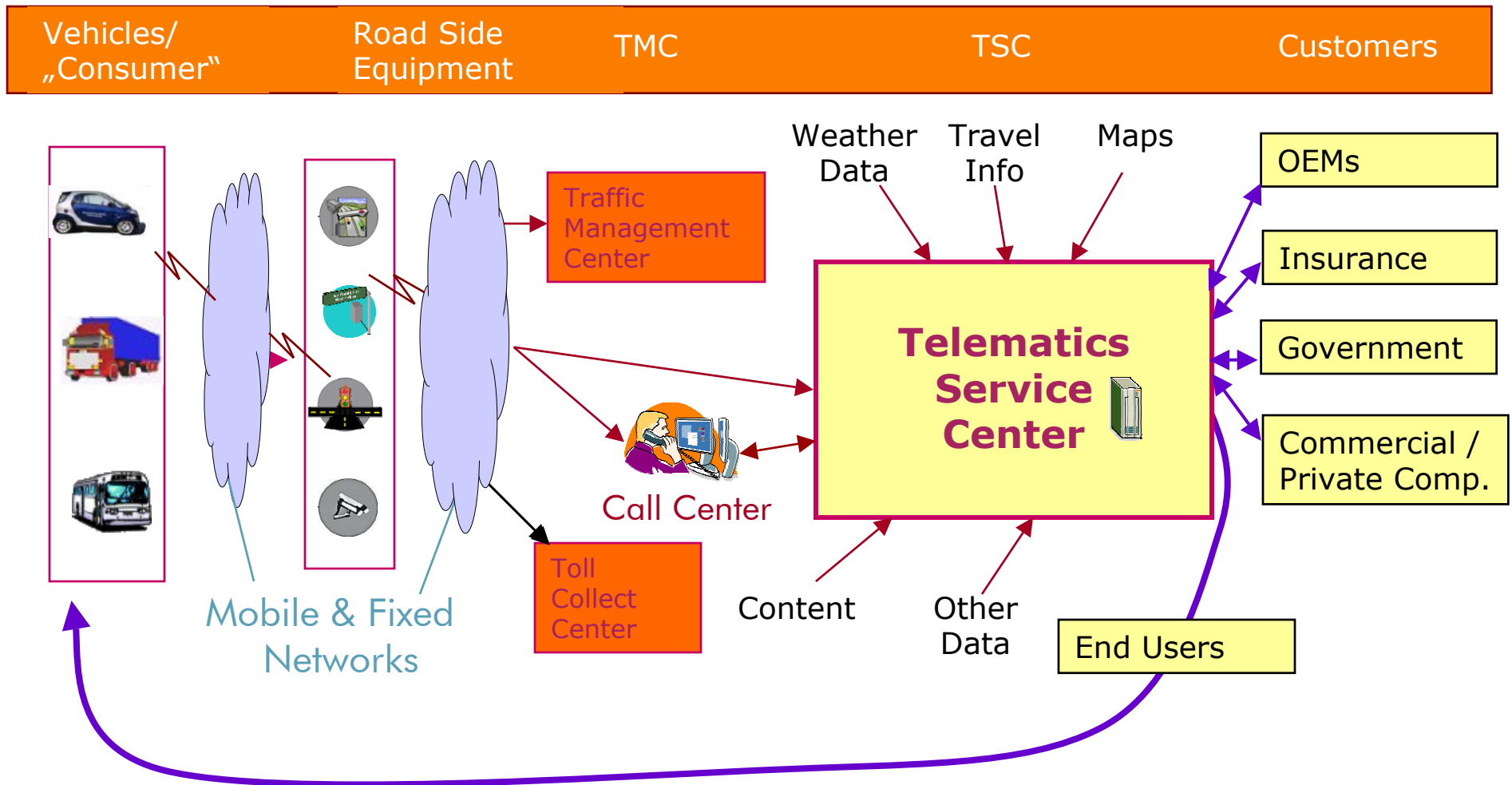


**IMS accelerates the convergence**

# Passenger Information System and Innovative Vehicle: Principle and Applications



# Telematics Architecture



## Way to the future with 4G: additional telematics service ideas

### Parking support

- **where is a free parking lot?**
- **pay per parking (automatic money transfer)**

### Driver and car authentication

### Identifying stolen cars

### Notification on approaching Emergency/Police cars

### Software download to vehicles

### Display of the present speed limit

### Alert on wrong driving direction

### Ticket sale and event support (linked with localisation)

# A-GPS provides high location accuracy anywhere

**Today,** GPS terminals already existing, **BUT:**

- **The terminal is responsible for its location estimate**
- **The terminal must search for satellites, acquire data needed for demodulation, then compute its position**
- **Issues:**
  - first position very long (more than 10 minutes) ⇒ not acceptable for emergency services
  - high influence of the reception conditions (no reception inside buildings)

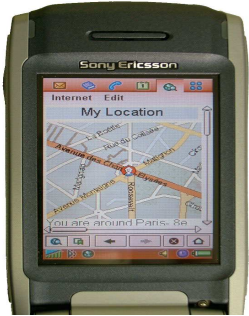
**While,** with Assisted-GPS:

- **Reception exists indoors**
- **Start-up and acquisition times reduced**
- **Sensibility increased**
- **Consumes less handset power**

Alcatel supports:

- *MS based mode*
  - ♦ location computed by the terminal with help of assistance data
- **But also** *MS assisted mode,*
  - ♦ location computed by the network with the GPS measurements reported by the terminal and with help of assistance data

# A-GPS enables high-accuracy Location Based Services that can provide enhanced value added services



## Consumer services

- **Navigation and orientation to find public places (send directions, maps),...**
- **Real Time distribution of road traffic information**
- **Entertainment: Friend Finder, LBS games**

## Corporate services

- **Fleet tracking, field force management, ...**
- **Enterprise Resource Planning, Logistics**
- **Worker protection (building sites, ...)**



## Emergency and Safety Services

- **Locate emergency call (E112 in Europe)**
- **Routing the call to the closest emergency center and dispatching it to the most appropriate emergency response teams**
- **Child tracker**



# Applications Scenarii Synthesis

| Usage scenario        | outdoor  | indoor   | pedestrian/<br>fixed | vehicular | audio    | HiFi     | Video<br>rT | Video<br>nrT | data<br>rT | data<br>nrT | session<br>rate |
|-----------------------|----------|----------|----------------------|-----------|----------|----------|-------------|--------------|------------|-------------|-----------------|
| Business use          | not much | mostly   | mostly               | not much  | not much | not much | mostly      | mostly       | not much   | mostly      | Mbps            |
| Work                  | not much | mostly   | mostly               | not much  | not much | not much | mostly      | mostly       | not much   | mostly      | Mbps            |
| Work                  | not much | mostly   | mostly               | not much  | not much | not much | mostly      | mostly       | not much   | mostly      | Gbps            |
| Daily life            | mostly   | mostly   | mostly               | mostly    | mostly   | mostly   | mostly      | mostly       | not much   | not much    | Mbps            |
| visual communications | mostly   | mostly   | mostly               | mostly    | mostly   | not much | not much    | not much     | not much   | not much    | <Mbps           |
| Education             | mostly   | mostly   | mostly               | not much  | not much | not much | mostly      | mostly       | not much   | not much    | <Mbps           |
| entertainment         | often    | mostly   | mostly               | often     | not much | mostly   | often       | mostly       | mostly     | often       | <Mbps           |
| mobile commerce       | often    | mostly   | mostly               | often     | not much | not much | not much    | mostly       | mostly     | mostly      | <Mbps           |
| emergency/disaster    | mostly   | often    | mostly               | not much  | mostly   | not much | mostly      | mostly       | not much   | not much    | <Mbps           |
| health care           | mostly   | mostly   | mostly               | not much  | often    | not much | often       | often        | mostly     | mostly      | <Mbps           |
| tag communications    | mostly   | not much | mostly               | not much  | not much | not much | not much    | not much     | not much   | mostly      | Mbps            |

- ⇒ **Need for bandwidth, ubiquity, and always-on connections**
- ⇒ **Service creation for everyone: new business models**
- ⇒ **Aggregation role of operators**

mostly  
often  
not much



# Trends towards wireless 4G

## **Consequences of new wireless radio accesses**

- Higher bandwidth (Mbps sessions)
- Better end user quality of experience (faster delivery and more robust multimedia transmission)
- Longer usage from minute/day to hour/day

## **Significant increase in number of services (from 1k to 100k..)**

- User to user, user to group, group to group (Push Over Cellular)
- Multi Media sharing

## **More complex and richer contents/exchanges**

- Ambiance, context awareness
- Secured and trusted exchanges, respect of privacy

## **Presence based service delivery**

- Ubiquity and delivery on any user terminal
- User data synchronization

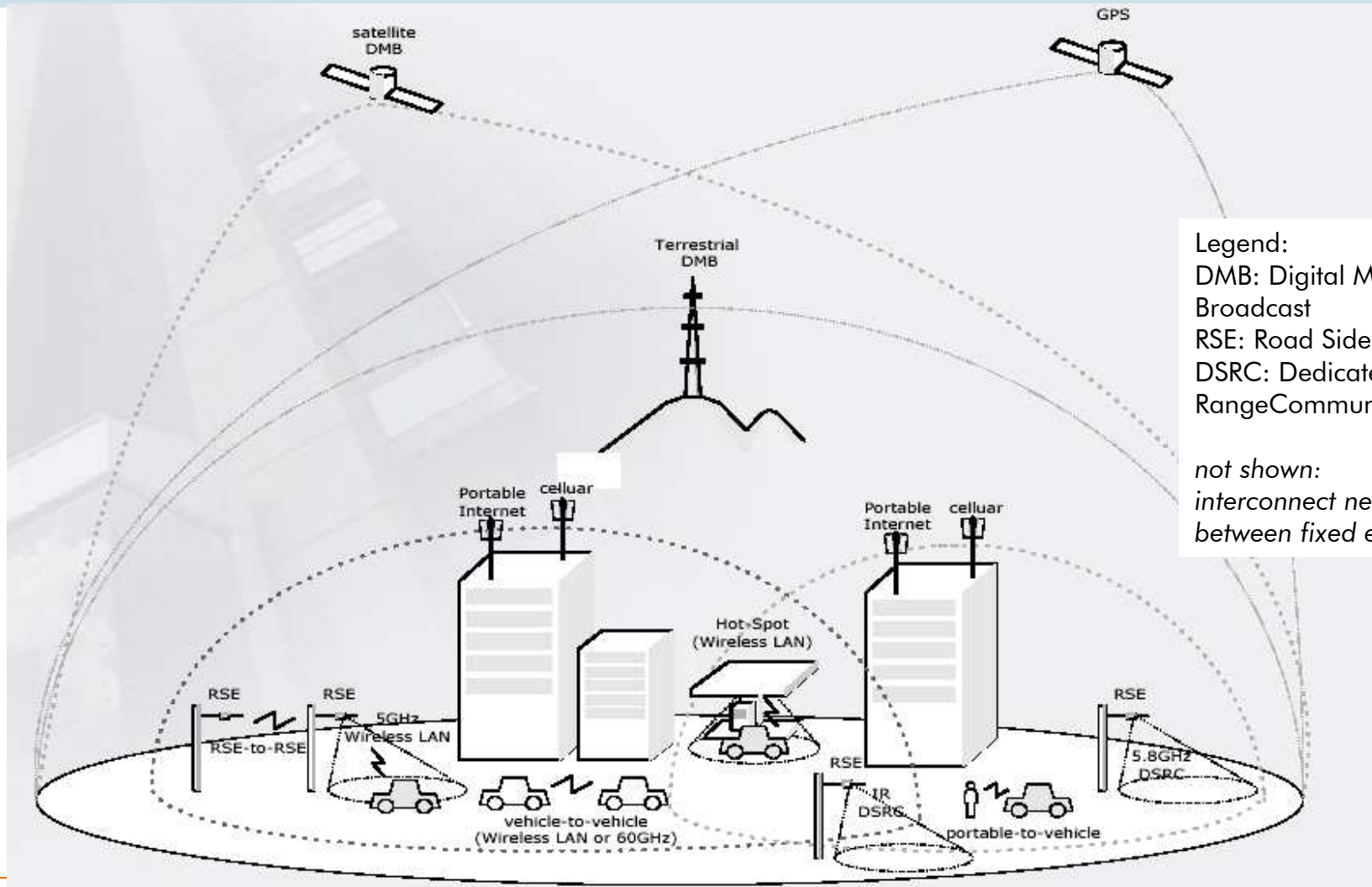
## **Personalization**

- Fast and intuitive access

# Wireless Technologies and Application Trade Off

|                                       | <b>Tracking Accuracy</b> | <b>R/W Capability</b> | <b>Info Storage</b> | <b>Range</b>  | <b>Battery Life</b> | <b>Size</b> | <b>Cost</b> |
|---------------------------------------|--------------------------|-----------------------|---------------------|---------------|---------------------|-------------|-------------|
| <b>GPS</b>                            | Globally Precise         | -                     | -                   | 10,000k       | Hrs/Days<br>Note3   | 10cm        | \$50-\$100  |
| <b>2G/2.5G/3G with A-GPS</b>          | Globally Precise         | Y/Y                   | MB                  | ~10km         | Hrs/Days<br>Note3   | 10cm        | \$100-\$200 |
| <b>Wireless Ethernet (WiFi/WiMAX)</b> | 100m                     | Y/Y                   | MB                  | <100m         | Hrs/Days<br>Note3   | 10cm        | \$20-\$75   |
| <b>RFID Active</b>                    | Locally Precise          | Y/Y                   | kB                  | ~10m<br><100m | Years               | cm          | \$5-50      |
| <b>RFID Passive</b>                   | Locally Precise          | Y/Y                   | 100B                | >1m           | ∞                   | mm          | \$0.10      |

# Communication channels for Wireless Network Evolution towards 4G



B R O A D E N Y O U R L I F E

[www.alcatel.com](http://www.alcatel.com)