

# Wireless Internet - Architecture, Services, and APIs

**Dr. Mehmet Unsoy**  
**Vice President**  
**Chief Wireless Architect**  
**BT Wireless**  
**[mehmet.unsoy@bt.com](mailto:mehmet.unsoy@bt.com)**

# Outline

- **Our Wireless Internet Vision**
- **Wireless Network Architecture**
- **Wireless Service Layer Architecture**
- **BT Wireless APIs for 3rd Parties**
- **3rd Party Application Development**
- **Summary**

# Our Mobile Internet Vision

- **Mobile domination**
  - Absolutely for voice services
  - Also for time-critical, personalized, location-sensitive (i.e. high-value) services
- **Second coming of Internet will be based on Mobile**
  - 80% of Internet appliances will be mobile devices by 2004
  - That's about 900 Million mobile devices, dwarfing the fixed Internet access
- **A hand-held device that combines WAP, Java, MeXe, GPRS, packet, IP, GPS, Bluetooth, Smart-card, etc**
  - Device limitation being overcome through new technologies
  - For remaining limitation, network-based solutions will be available
- **From (always-on / anywhere) To (between anything / everything)**
  - communication between any (limited!) intelligent entities
  - Devices, networks, systems to accommodate such explosion

**Always-on**  **Between Anything / Everything**

# Our Mobile Internet Vision (Cont'd)

- **Mobile penetration**
  - exceeding 100%, multiple devices per person, and all sorts of new entities communicating
- **Mobile applications**
  - all types, but mostly low to medium bandwidth requirements
  - Audio, vision, auto-based, location-based applications
  - Mobile driven, mobile aware applications, e.g. m-commerce
- **Seamless Applications**
  - Local area wireless (e.g. tetherless) and wide area wireless, e.g. Bluetooth / WLAN and Cellular networks
- **Addressing & numbering**
  - We need IP addresses for everything, (500M IP addresses for mobile by 2004)
  - IPv6 is essential IP technology for the growth of mobile communication

**3G + IPv6**



**Mobile Information Society**



# Why do we need IP?

- **Deliver high-value, high-margin mobile multimedia services**
  - IP is the protocol of choice for application developers
- **Faster time to market for new services**
  - tap into internet innovation life cycle
- **Major cost reduction**
  - use IP technology widely to replace expensive CS infrastructure

**IP enables Mobile Operators to ride on  
Innovation Cycle up and Cost Curve down**

# Key IP Principles for Mobile Network Evolution

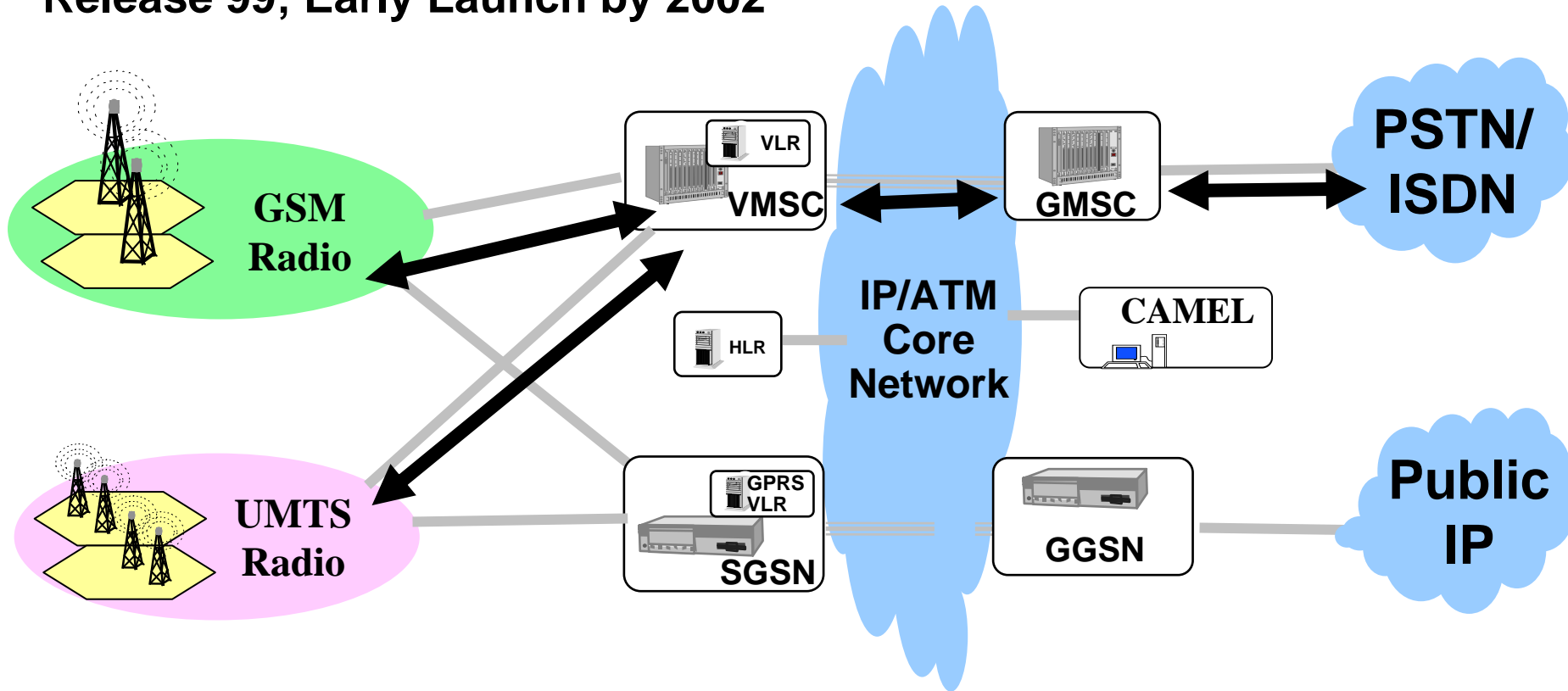
- **IP based services, voice over IP, multimedia over IP**
- **End-to-end IP at services:**
- **Air interface independence at the application level**
- **Harmonised multimedia services over IP across fixed & mobile access**
- **Support of IPv6 formats / addressing for networks, services and devices**
- **Single integrated multimedia network management**
- **Mobility-enabled core IP networks**
- **Application of IP technology to MSC (or disappearance of MSC as we know it)**
- **Single, simple & consistent user paradigm on the mobile device for all multimedia services**
- **Roaming to 2G and release 99 networks essential**

# Mobile Network Architecture

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## Voice Path

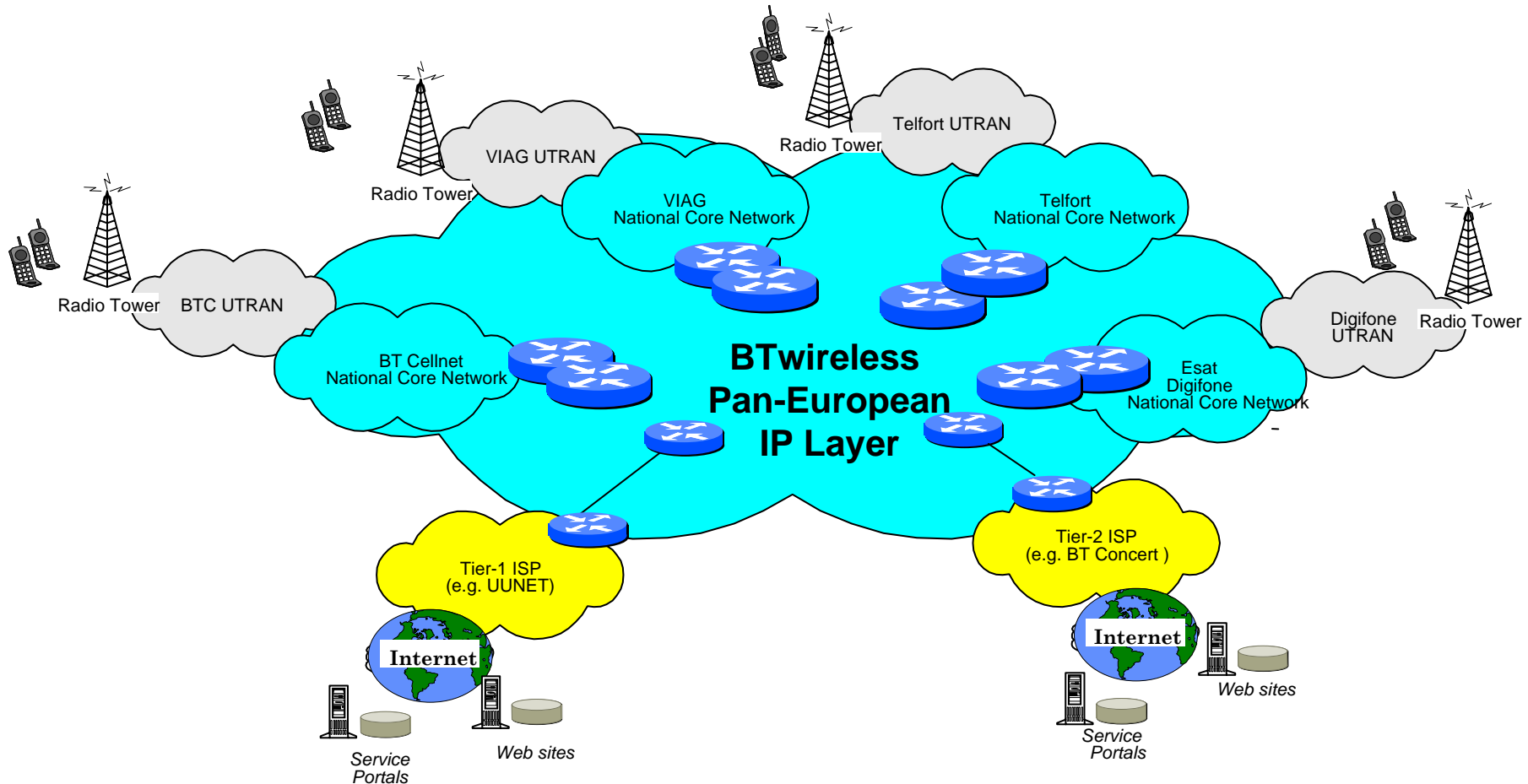
Release 99; Early Launch by 2002



**Voice Path - leverage IP/ATM transport**



# BTw IP Core Network Architecture



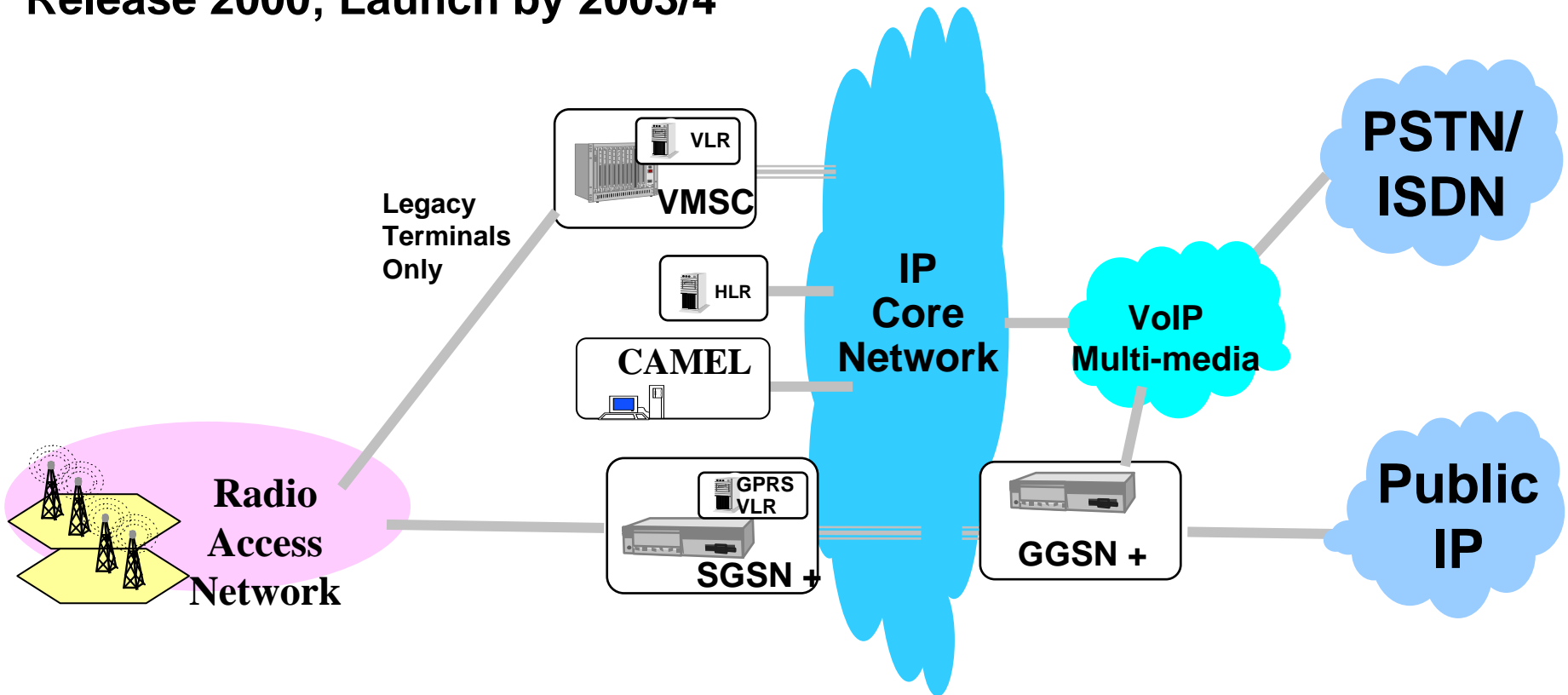
Deploy common & wireless-dedicated IP layer for Pan-European network, & leverage it for high-quality, differentiating services

# Mobile Network Architecture

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## Evolution

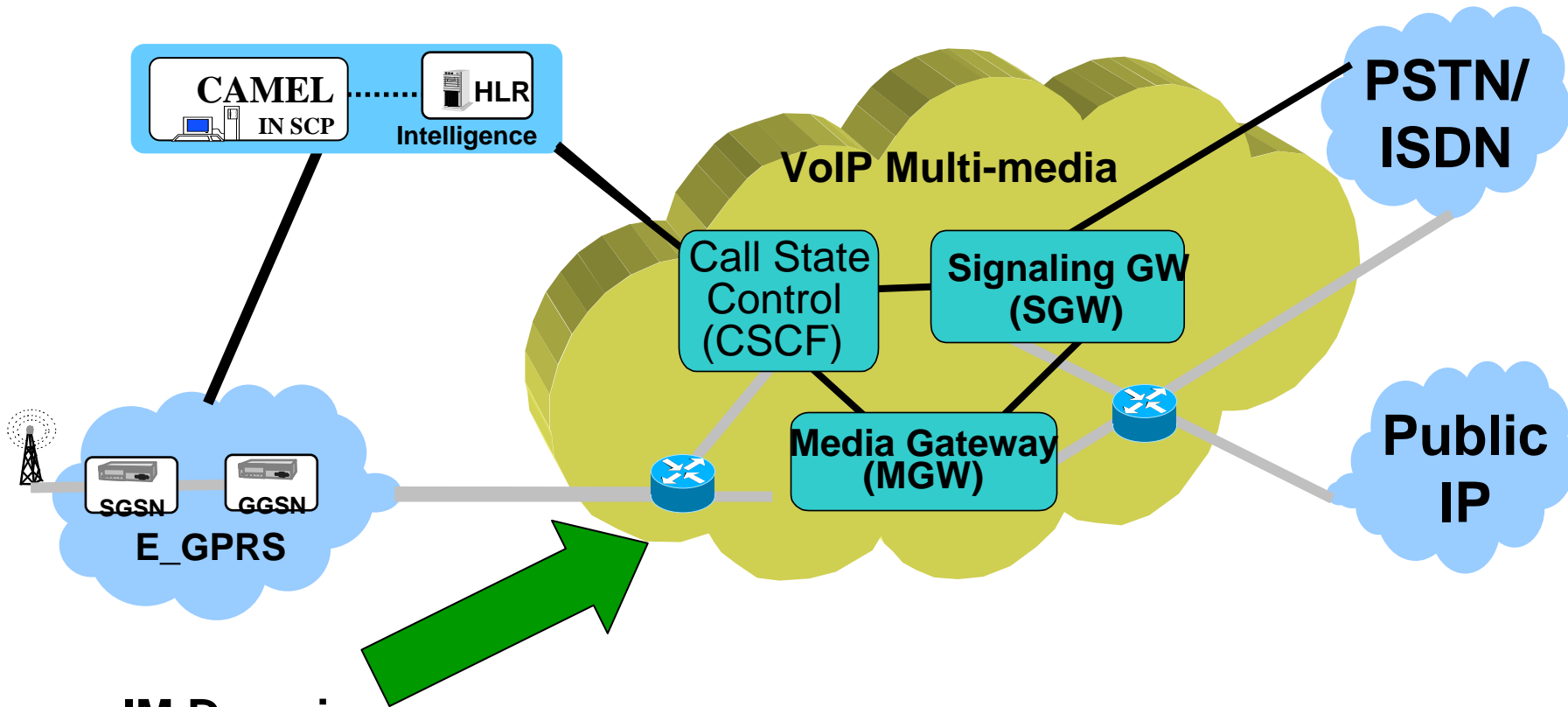
Release 2000; Launch by 2003/4



**Growth of Voice & Data over IP,  
Limit CS / MSC to legacy terminals only**

# 'Mobile' VoIP & Multi-Media

## IM Domain

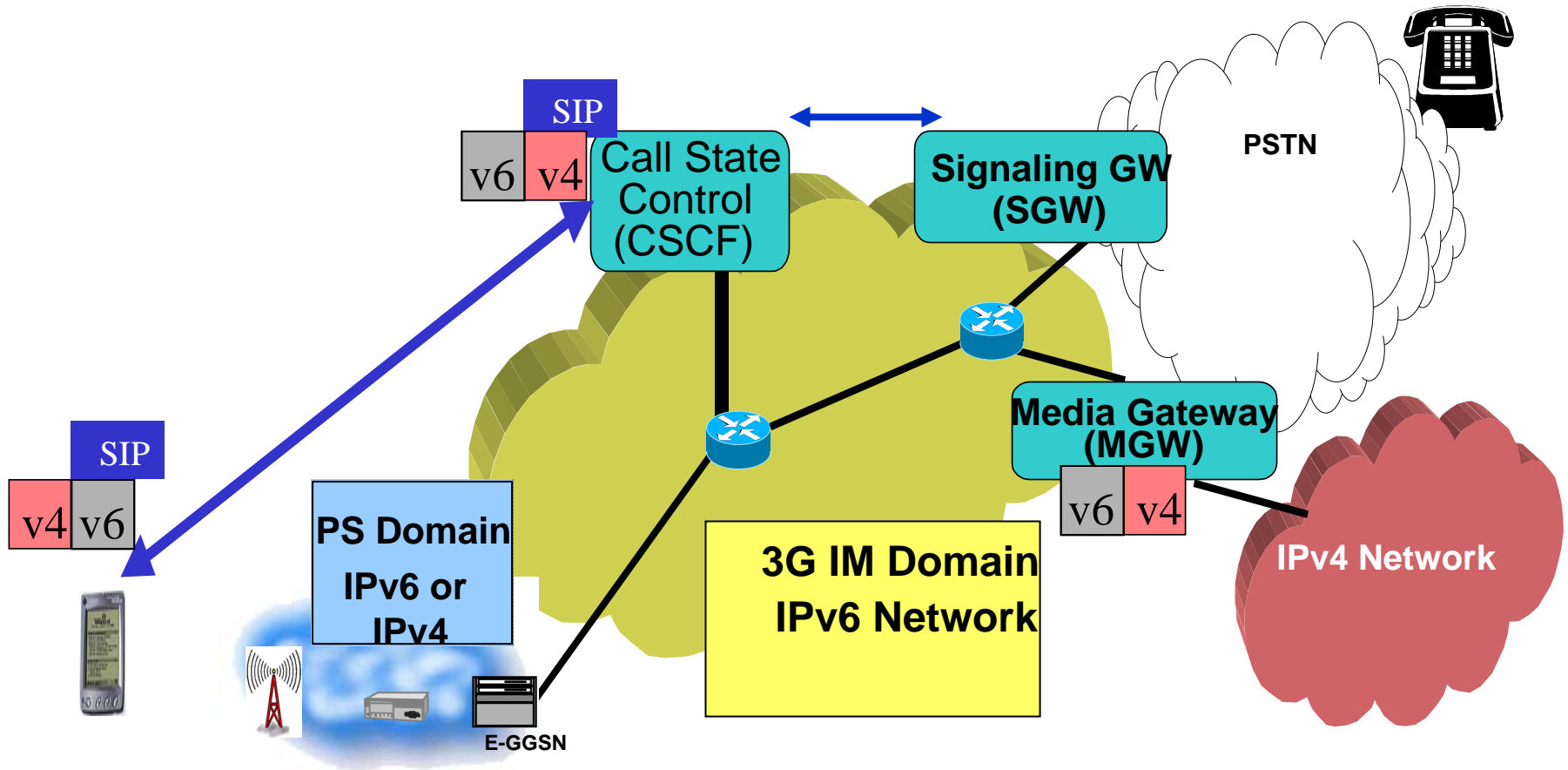


### IM Domain:

- 3G mobile network domain for real-time services
- Signaling is between mobile & CSCF
- User plane is between mobile & MGW

# IPv6 and SIP for IM Domain

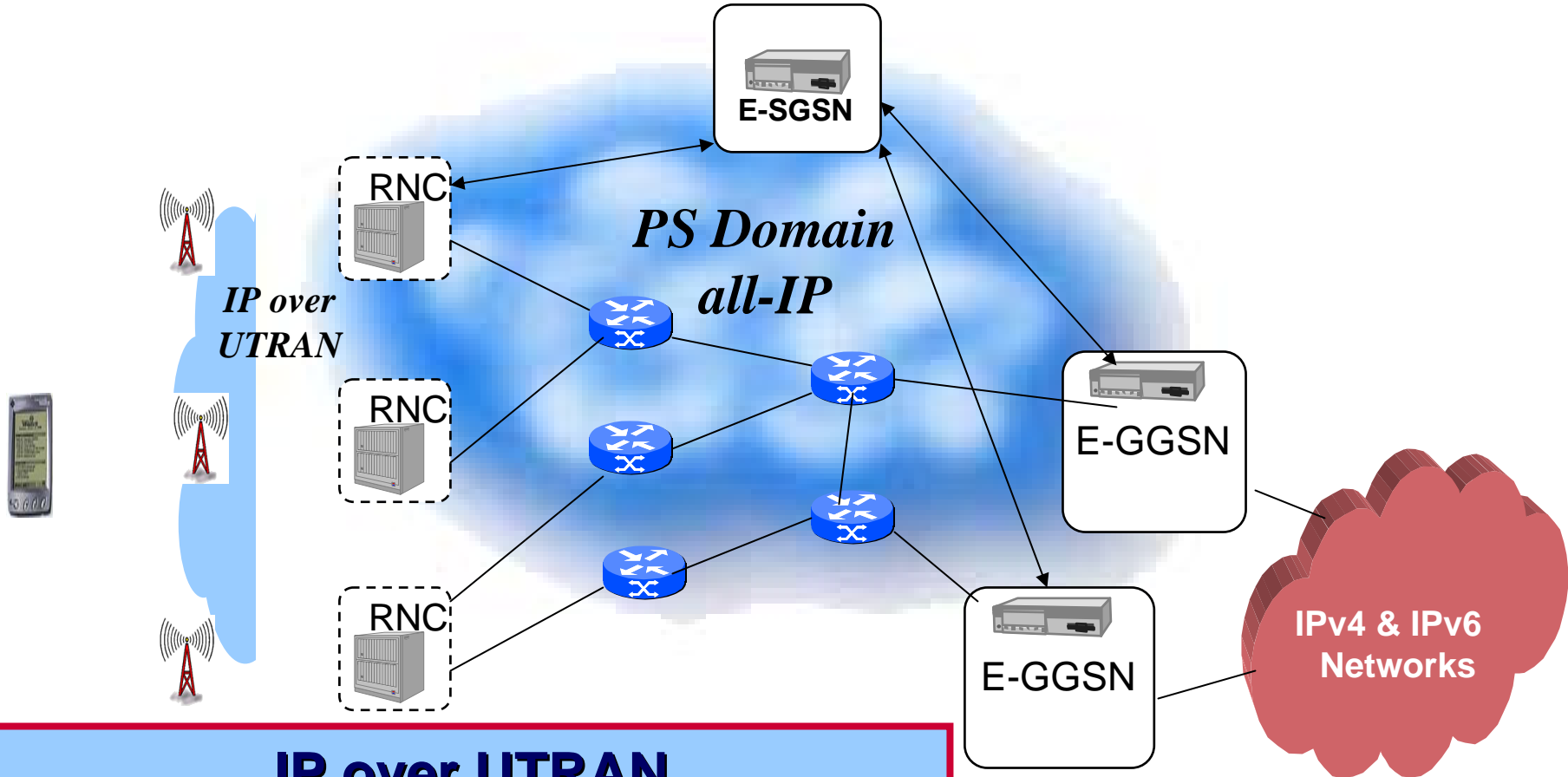
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- Since IM Domain is brand new, we want it to be IPv6 only
- PS Domain can transition from IPv4 to IPv6 depending on requirements / economics
- SIP is critical signaling protocol to realize the IP-based real-time mobile services

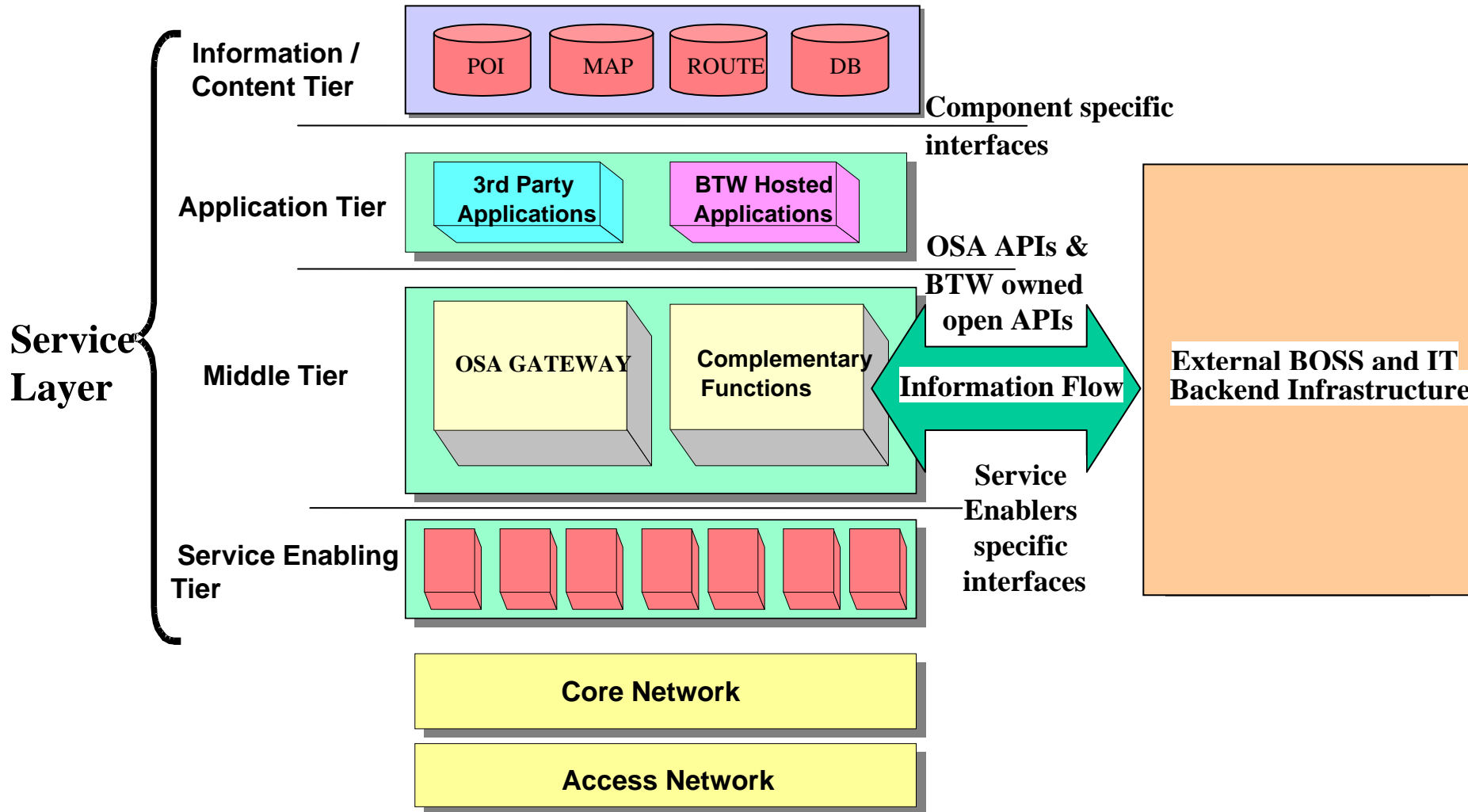
# Roadmap to All-IP Networks - **BT** wireless

## 3GPP R6 & beyond

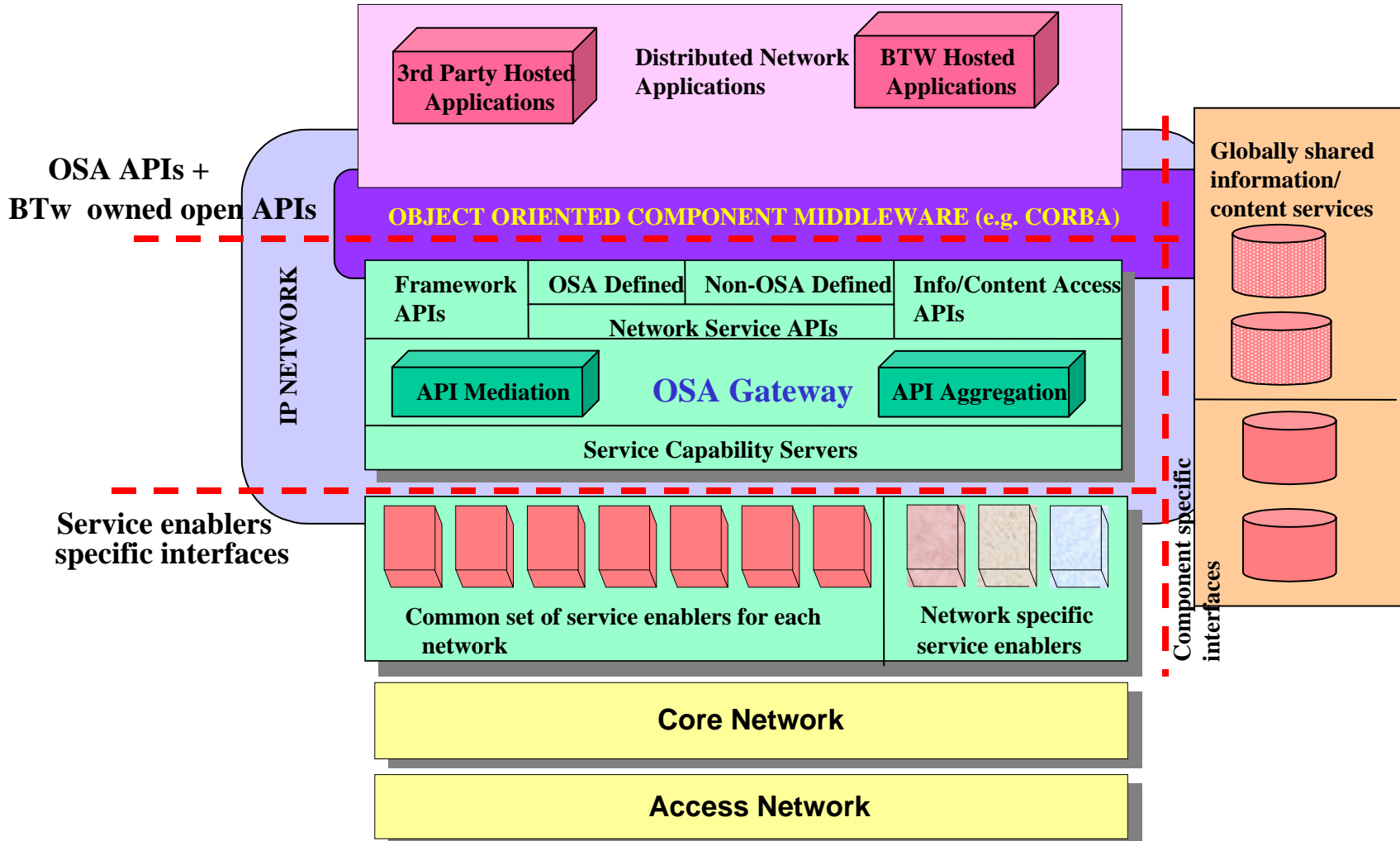


**IP over UTRAN**  
**Elimination of GTP Tunnels**  
**Mobility enabled Routers**  
**End-to-end IP**

# BT wireless Service Layer Architecture

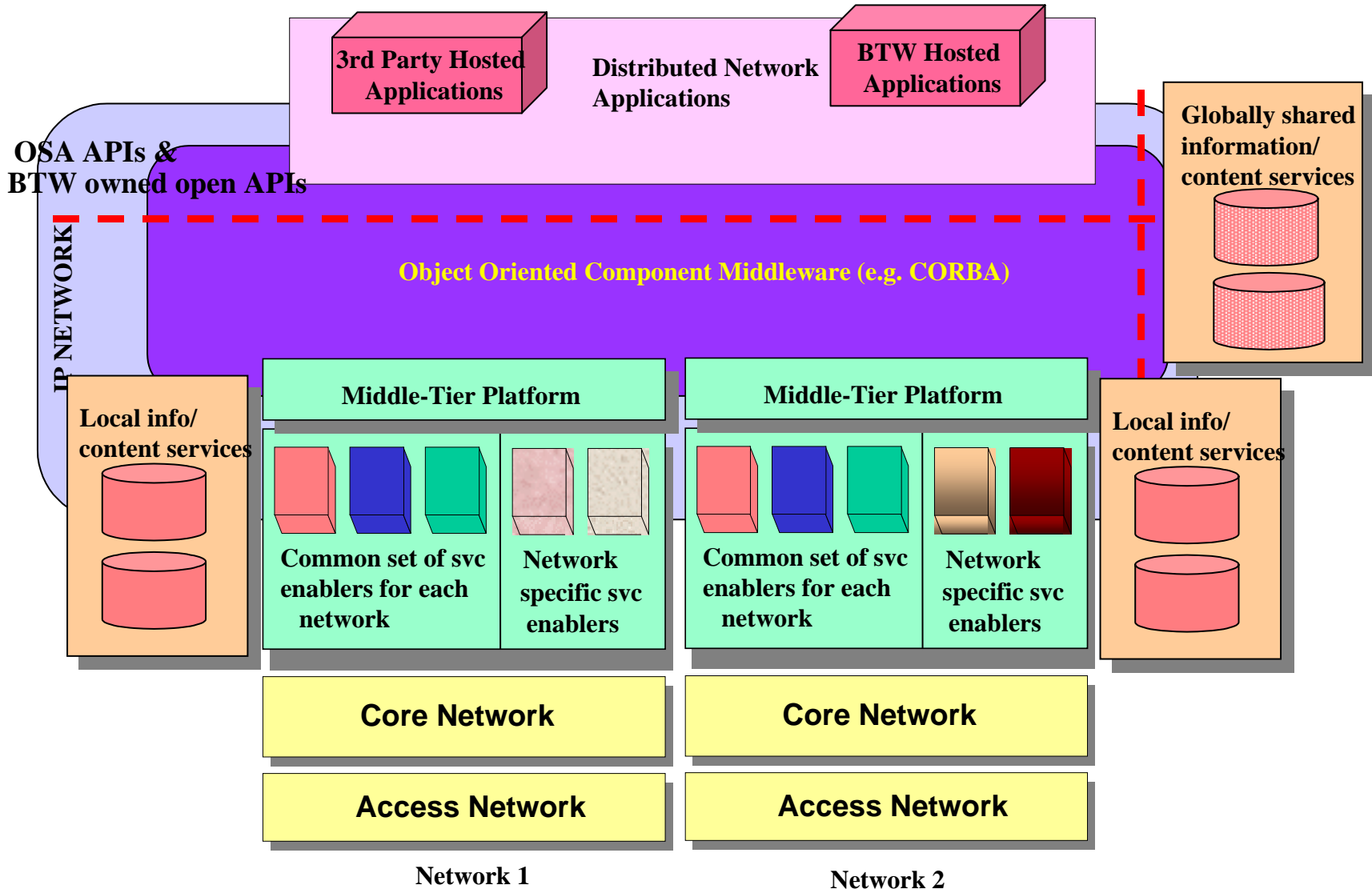


# Middle-Tier Functional Components



# Pan-European Service Layer Architecture

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# BT Wireless APIs for Application Development

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- BT Wireless to provide family of 3rd party APIs to Application Development Community
- Objective: flexibility & speed for new service / application creation
- Platform functionalities such as:
  - device location determination
  - advertising
  - ticketing
  - messaging
  - re-purposing
  - micro-payments
  - document / data management
  - personalisation

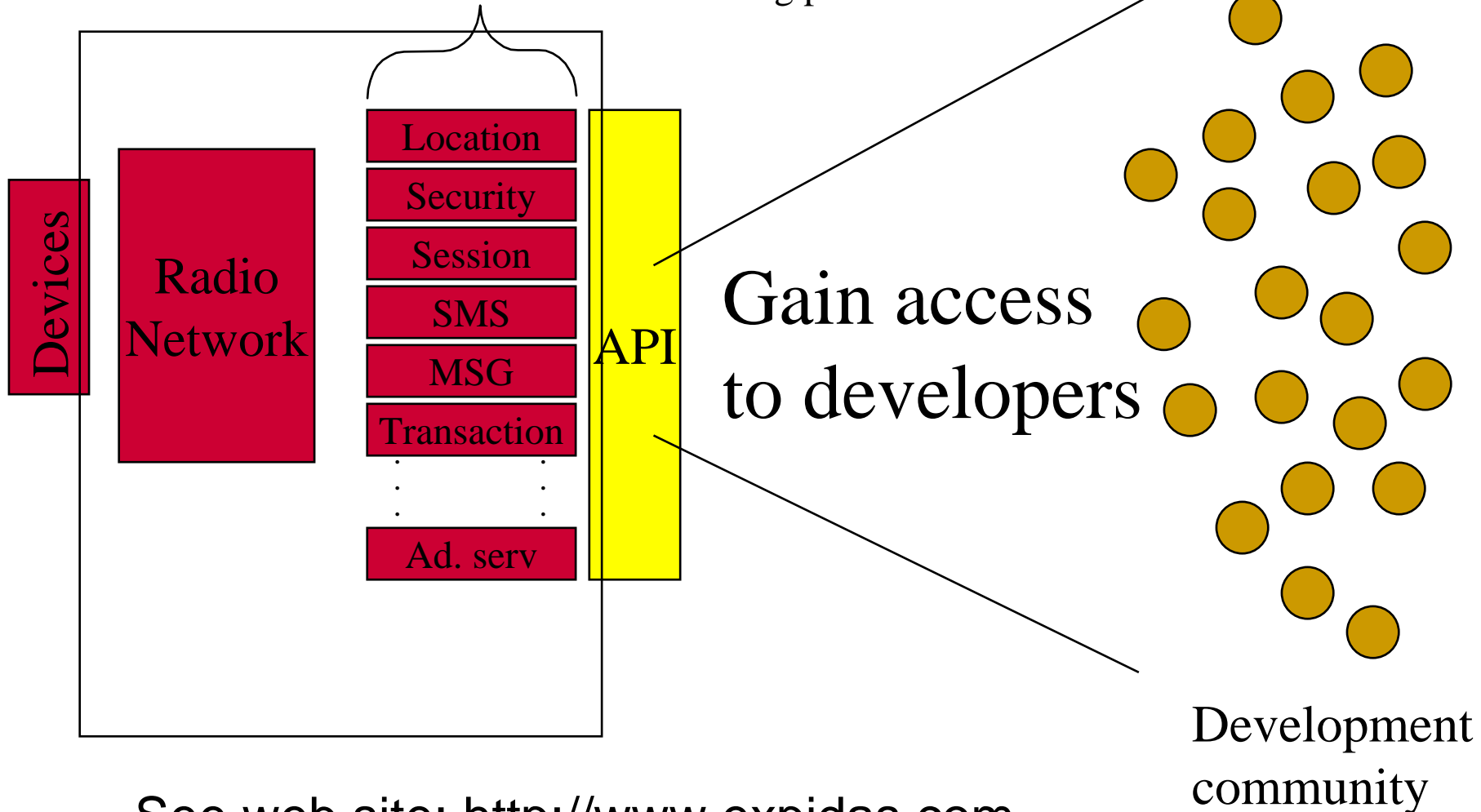
# Development Community Input

- We need input on specific requirements for access to network & service functionalities, in particular
  - scope & detail of functions accessible via APIs
  - the method of API provision, and
  - network and service performance
- Other topics of feedback sought:
  - API specifications: Parlay, JAIN,
  - 3GPP Open Service Architecture (OSA)
  - Client/server application communications (e.g. URL tags, values, HTTP headers)
  - Protocol interface specifications (e.g. XML over HTTP)
  - Application development environment: EJB / J2EE
  - Proprietary vs. open standard APIs
  - Application interconnections (e.g. ASP or WASP interconnects)

**See web site: <http://www.expidas.com>**

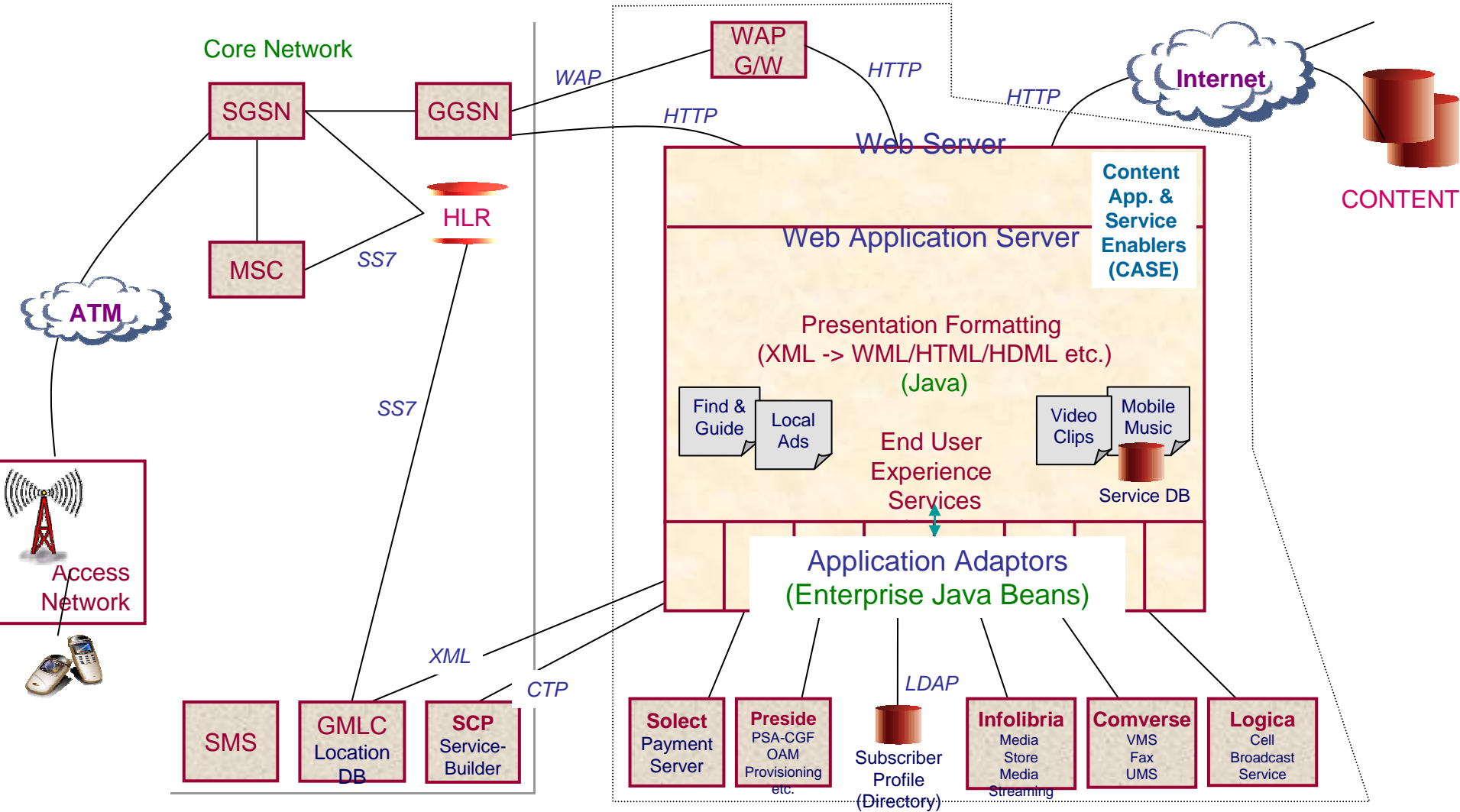
# BT wireless Application Development Business

Service Enabling platforms



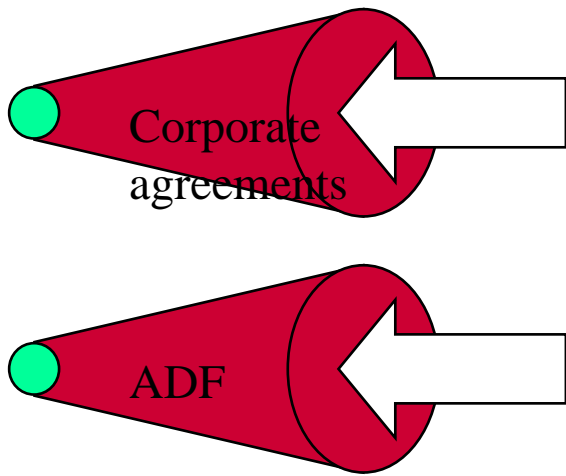
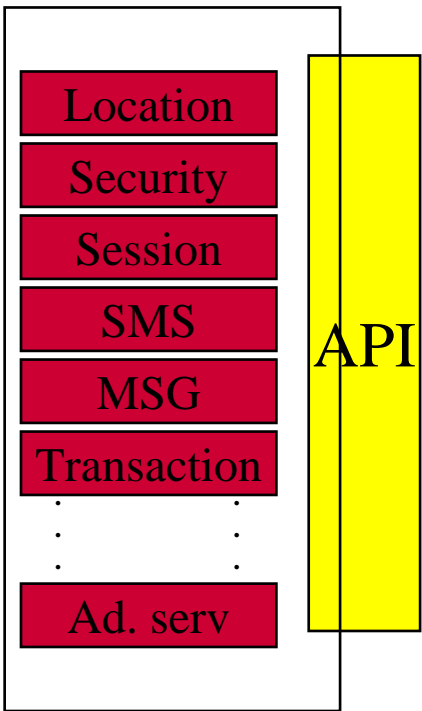
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# The complex bit

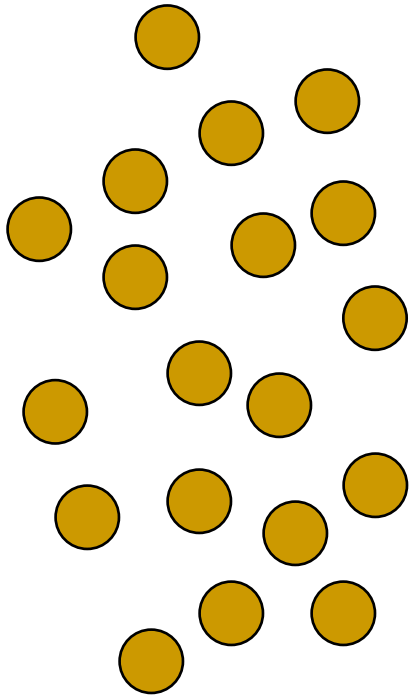


# Hothouse - Relationships

- 1. Publish API's to development communities
- 2. Nurture partnerships which seed and develop applications



Proposition development filters



Application developers

# A win-win situation

- **Operator**
  - **Speed to market**
  - **Consistent look and feel**
  - **Integration and testing**
- **End-User**
  - **Apps and Services to meet user needs**
  - **Immediate familiarity with new Apps & Services**
- **Third Party**
  - **Reliable service development and delivery environment**
  - **Rapid evaluation of new concepts**
  - **One-stop shopping**
- **Supplier/Vendor**
  - **Better understanding of end-user requirements**
  - **Expanded sales to operator to support successful network**

# Conclusions

- **Mobile Internet is the next major growth area in the communication field**
- **Critical Success Factors:**
  - **IP is one of the most critical technology for the development of Mobile Internet**
  - **Availability of compelling, cost effective and easy-to-use mobile devices and services**
  - **Effective partnerships across industries to bring high-value services to end users**
- **BT Wireless APIs for application development community and assistance with the development & testing**