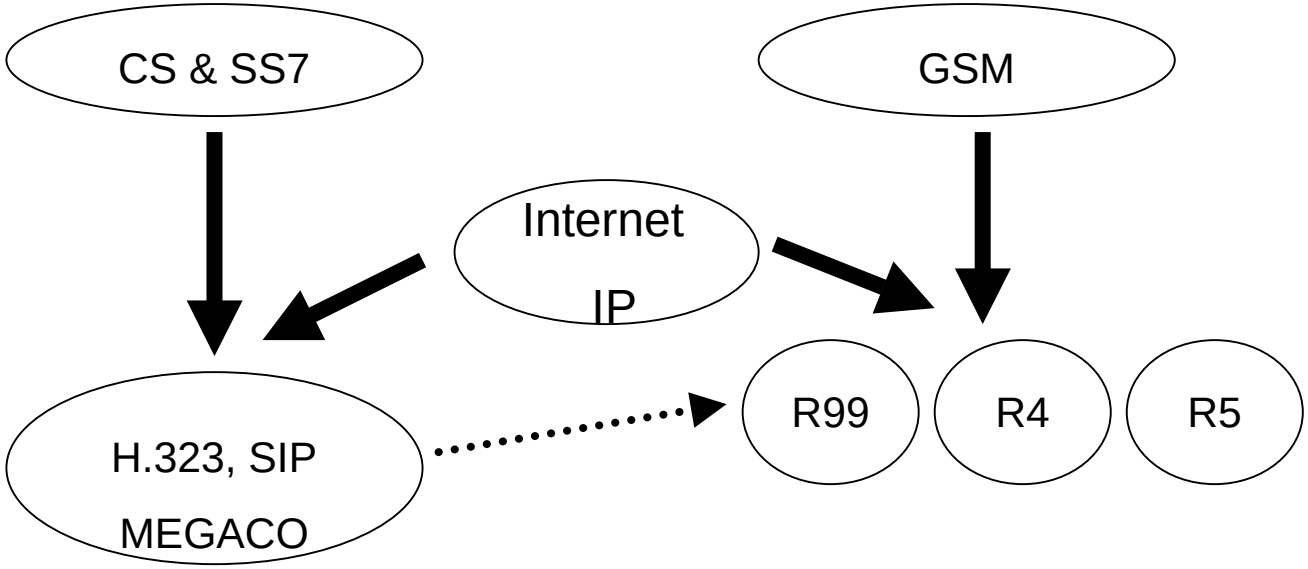
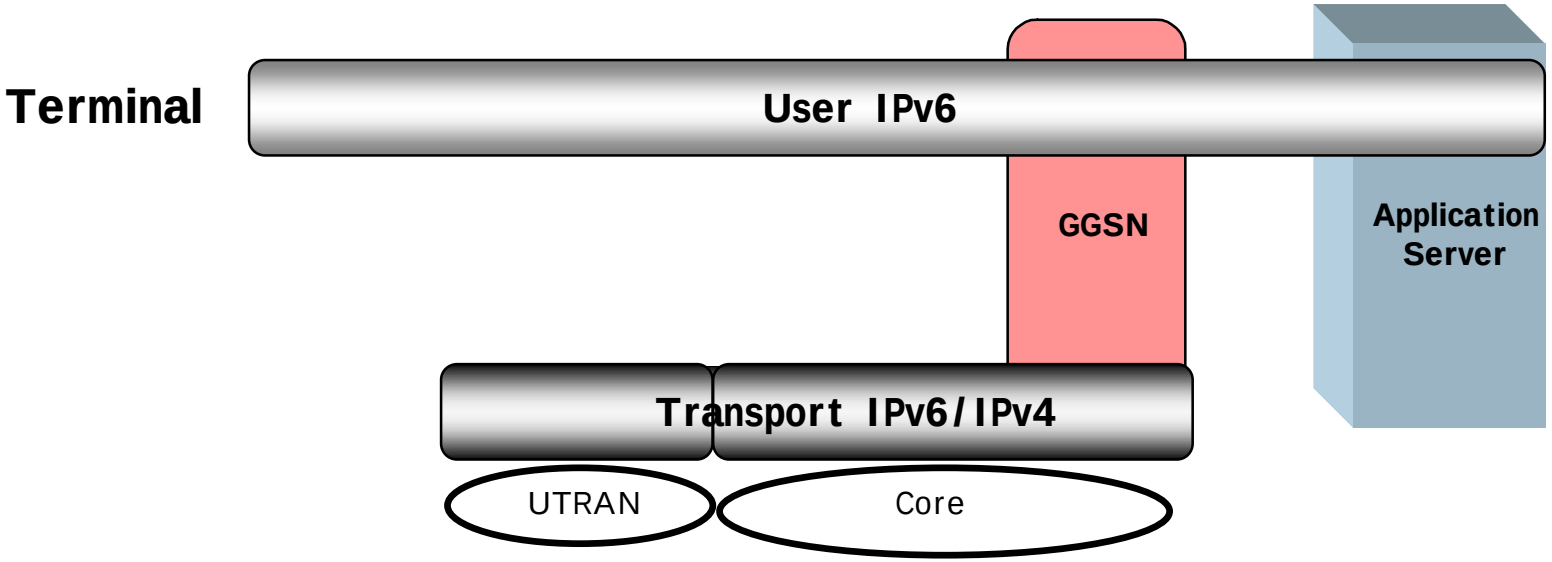
IPv6 impact on 3G Networks: An operator’s view

Why IPv6



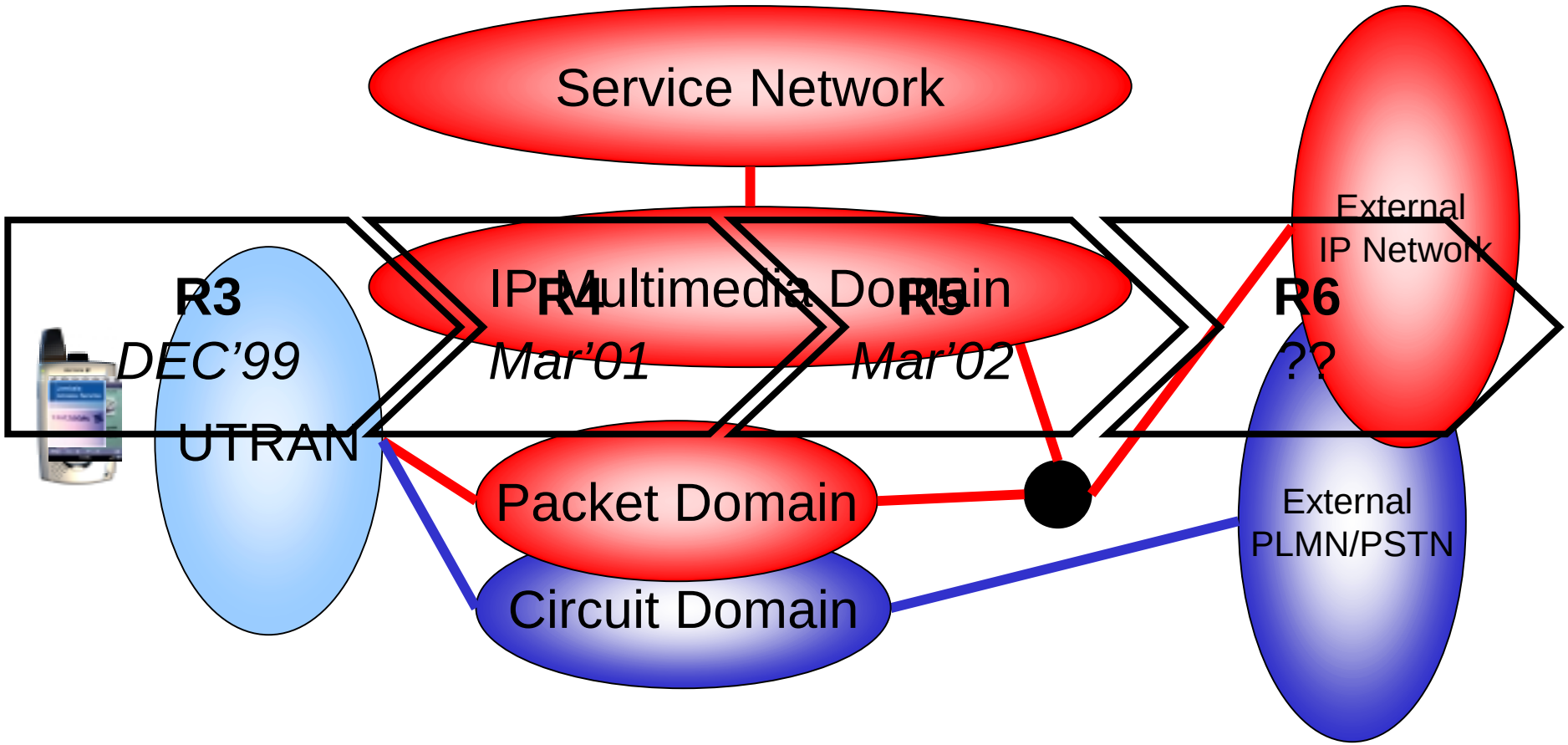
- Packetization of voice transports networks occurred first in fixed ones.
- 3GPP has recognized & incorporated technology in Mobile Net: starting with GPRS R97.
- Finally Mandated for IP Multimedia Subsystem (IMS) of R5.

Where IPv6: User & Transport Planes



- User Plane: Final services for users. GPRS.
- Transport Plane: As bearer services for signalling, voice & data traffic.
- Possibly different versions of IP in USER & Transport planes.
- Possibly different version of IP in UTRAN and Core Domains.

Where IPv6: Simple Network architecture & Releases Roadmap



Where IP: R3

- **Mobile Terminal:** Access to external IP Networks.
  - Both **IPv4** & **IPv6** can be used. Left to operators needs.
- **Core Network:** For transport of signalling & user data in GPRS.
  - **IPv4** Based

Where IPv6: R4

- **Mobile Terminal:** Same as R3.

- **Access Network:** Only in border between CN and UTRAN.
  - **IPv4** Mandatory **& IPv6** Optional ... But over ATM.

- **Core Network:**
  - **Packet Domain:** Same as R3 but ... **IPv6** Optional.
  - **Circuit Domain:** Bearer for voice & signalling & SS7 transport.
    - Either of them **IPv4/IPv6**. Left to operators needs.

Where IPv6: R5

- **Mobile Terminal:** For accessing external IP nets & for new **IMS** Services.
  - ➢ For IMS only **IPv6** can be used.

- **Access Network:** Transport among UTRAN nodes.
  - ➢ **IPv6** should be supported, **IPv4** can be.

- **Core Network:**
  - **Packet Domain:** Same as previous.
  - **Circuit Domain:** Same as previous.

- **IMS:** New subsystem. For servicing final users ala Internet.
  - ➢Based on SIP and IPv6.

Where IPv6: R6

- **Access Network:** Optimisation of UTRAN to carry IP.
- **IMS:** Enhanced QOS to allow massive deploy of voice and Video services.

When is IPv6 coming to real life in 3G.

- Difficult but ...
  - ➢experience says that deployments come 3 or 4 years after Release Standardization finishing date.
- IMS or perhaps GGSN will be first subsystem with IPv6.
- So IMS can be expected around 2005 but ...
  - development speed is fast in IP/Internet community.
  - light versions of IMS are expected to be ready for testing next year: 2003.

What are we doing

- Standardization Fora Tracking & contributing to 3GPP actively.
- IPv6 competence Group created for addressing the problem Globally inside Vodafone.
- Our attention should be focused in:
  - Header Compression Technologies.
  - Addressing: RIR NLA Assignments & DHCPv6,DNS tracking.
  - Transition Mechanism: Dual Stack & NAT-PT.
  - QOS: Real implementation behaviour in mixed transport environments; IPv6+IPv4+ATM+Ex/STM-x.
  - MobileIP: Important in 3GPP-3GPP2 CN interworking & WLAN integration.
  - Security: Track improvement in MobileIP, IPSEC Key Management should be deployed, investigate deeply security impacts in Transition mechanism.

Our vision

- IP will play a major role in 3G networks: Final services to users & transport in Core & UTRAN/GERAN networks
- There will be a mixture of IPv4, IPv6, ATM & MPLS alongside all networks: Interoperation among them is vital.
- IPv6 can be deployed around 2005 in 3G: Dependant on business needs & vendor roadmaps.
- IPv6 integration in Vodafone Networks has already started … Study phases finalised & about to start technological trials

Vodafone is the largest mobile telecommunications network company in the world. It has interests in mobile networks in 28 countries on five continents, through which it provides services to over 25% of the users worldwide, making up a total of **210 million customers.**

Thank you !