

Services Evolution and the Impact of IMS





Stephen Hayes

Chair 3GPP-SA

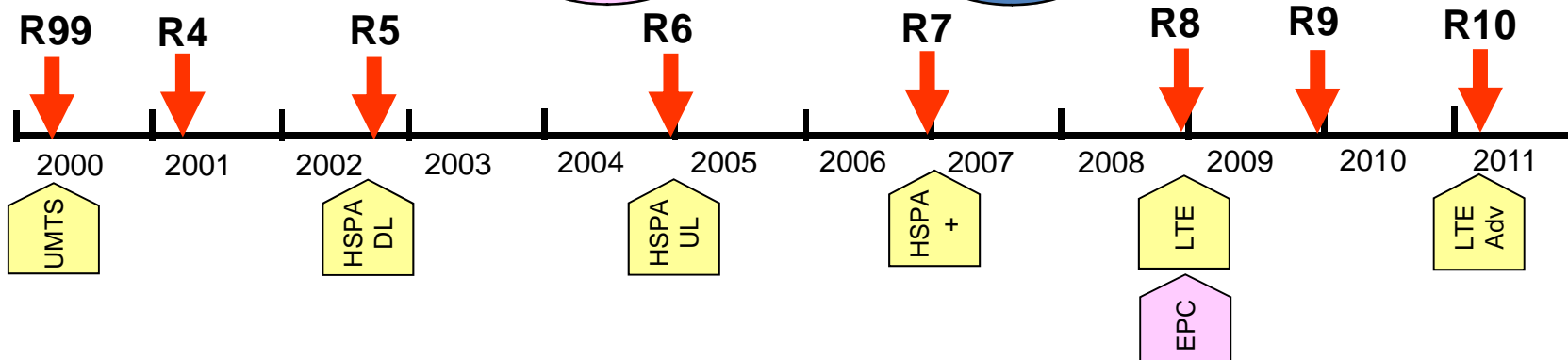
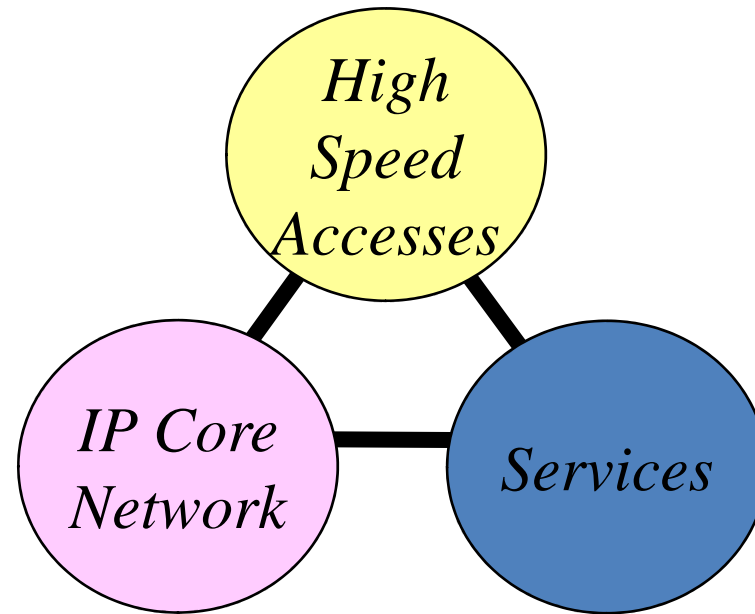
stephen.hayes@ericsson.com

Contents



-  3GPP and IMS Services
-  3GPP and non-IMS Services
-  3GPP work related to Services
-  More information

Areas that 3GPP Works On



The 3GPP Services Story

IMS

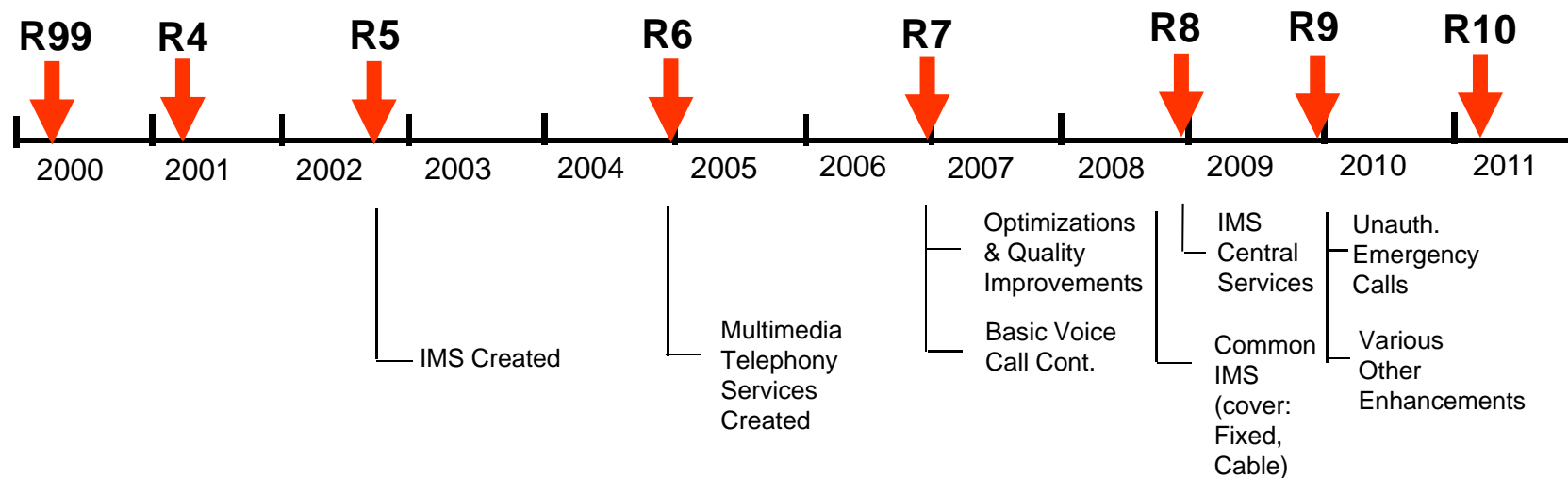
- IMS is the goal for voice over LTE
 - VoLTE
- IMS allows a transition to Multimedia
 - Multimedia Telephony
- Transition capabilities developed to allow transition to IMS
 - CS Fallback
 - SRVCC
 - IMS Centralized Services

Non-IMS

- Regulatory Services
- Machine Type Communications

3GPP IMS Timeline

- 📶 3GPP specified IMS as part of Rel 5 with improvements in Rel 6
- 📶 3GPP added Voice Call Continuity in Rel 7
- 📶 Many IMS based optimizations in Rel 7
- 📶 Common IMS developed in Rel 8
- 📶 Transition services (VCC, SRVCC, ICS) started in Rel 7 and continue today
- 📶 Ability to make unauthenticated IMS emergency calls added in Rel 9



Dispelling some Myths about LTE and IMS



Myth 1: LTE is Data only

Reality: Support of voice was one of the key considerations in designing LTE. The voice solution for LTE is IMS VoIP and it is fully specified.

Myth 2: SMS isn't supported over LTE

Reality: LTE and EPS will support a rich variety of messaging applications - including SMS. The solution is twofold, covering both the full IMS case and a transition solution for those networks that do not support IMS.

Myth 3: IMS isn't ready for prime time

Reality: IMS was first developed as part of Rel 5 in 2002. It is based on IETF protocols such as SIP and SDP that are very mature. These technologies have been embraced by the industry as the signalling mechanism for multimedia applications.

Myth 4: LTE doesn't support emergency calls

Reality: VoIP support for emergency calls (incl. location) in Rel 9. A transition solution fall back to 3G/2G - has existed since IMS was introduced (Rel 5).

Multimedia Telephony Services



- Originating Identification Presentation (OIP)
- Originating Identification Restriction (OIR)
- Terminating Identification Presentation (TIP)
- Terminating Identification Restriction (TIR)
- Communication Diversion (CDIV)
- Communication Hold (HOLD)
- Communication Barring (CB)
- Message Waiting Indication (MWI)
- Conference (CONF)
- Explicit Communication Transfer (ECT)
- Communication Waiting (CW)
- Completion of Communications to Busy Subscriber (CCBS)
- Completion of Communications on No Reply (CCNR)
- Customized Alerting Tone (CAT)
- Customized Ringing Signal (CRS)
- Personal Network Management (PNM)
- Malicious Communication Identification (MCID)
- Anonymous Communication Rejection (ACR)
- Advice Of Charge (AOC)
- Reverse charging
- Closed User Group (CUG)
- Three-Party (3PTY)
- Flexible Alerting (FA)

BLUE = Applicable to mobile only

RED = Applicable to fixed only

Multimedia Telephony Services are defined in 3GPP TS 22.173

Transition Mechanisms in 3GPP



Voice

- Voice Call Continuity (VCC) – Allows a basic voice call to be handed over from IMS to circuit switched and vice-versa (Rel 7) – Primarily focused on WiFi-GSM handover
- CS Fallback – CS Voice provided over GSM or UMTS if no LTE IMS voice available (Rel 8)
- SRVCC – Provides voice continuity with only a single radio (Rel 8)
- IMS Centralized Services – Your services also work seamlessly between CS and IMS (Rel 8)

Messaging

- CS Fallback – SMS carried over LTE signalling – no need to switch radio I/F (Rel 8 – improvements ongoing)
- SMS over IP – Enhancements to the gateway to integrate with OMA CPM (being defined in Rel 10)

Video

- SRVCC for video being defined in Rel 10

Other IMS related work ongoing



- 📶 Enhancements to Inter-Device Transfer
- 📶 IMS based Home Node B
- 📶 Non-voice Emergency Services
- 📶 Enhancements for supporting Streaming and MBMS using IMS
- 📶 Enhancements to IMS to support video

Non-IMS Services



Regulatory

- E-Call (completed in Rel 8)
- Public Warning System (completed in Rel 9)
 - Extensible, but currently only Japan and US supported
 - European alerts being added
- Prioritized packet communications

Enhancements to the Codec

- Rate adaptation for LTE allowed in Rel 9
- Enhanced Voice Codec in Rel 10

MTC – Machine Type Communication

- Focusing on network optimizations
- 14 Features identified
- Rel 10 work will focus on general functionality to allow priorities for features to stabilize

Machine Type Communications

- Work started on this in Rel 10
- 14 MTC Features identified
 - Low Mobility
 - Time Controlled
 - Time Tolerant
 - Packet Switched (PS) Only
 - Small Data Transmissions
 - Mobile Originated Only
 - Infrequent Mobile Terminated
 - MTC Monitoring
 - Priority Alarm Message (PAM)
 - Secure Connection
 - Location Specific Trigger
 - Network Provided Destination for Uplink Data
 - Infrequent Transmission
 - Group Based MTC Features
- In Rel 10, 3GPP will focus on the general functionality required to support these features
 - Overload control (Radio Network Congestion use case, Signalling Network Congestion use case and Core Network Congestion use case)
 - Addressing
 - Identifiers
 - Subscription control
 - Security

Not Quite Services – But Related

- 📶 The Rel 8 Evolved Packet Core allows mobility at the IP level, so mobility between accesses is possible without use of IMS
 - Currently working with BBF to integrate BBF accesses
- 📶 Home Node B (and Home e Node B) – No new services, but support of closed subscriber groups and provisioning
- 📶 Traffic offload – As internet traffic grows, there is a need to offload the radio accesses and the core network
 - Local IP Access (LIPA) is used from a Home Node B to access local network resources (such as a printer)
 - IP Flow Mobility and Seamless Offload (IFOM) is used to carry some of a UE's traffic over wifi to offload Home Node B access.
 - Selected IP Traffic Offload (SIPTO) is used to offload the mobile core network by breaking traffic out of the network early.
 - SIPTO for Home Node B will be deferred to a later release

Fixed Mobile Convergence



 3GPP is working with BBF to support FMC with convergence using EPC

- Convergence addresses IP session mobility, authentication, and policy

 3 Phase plan adopted

- Phase 1 is basic interworking between fixed and wireless
- Phase 2 provides offloading of traffic
- Phase 3 provides convergence of network nodes

 Phase 1 target is Rel 10.

More Information

www.3gpp.org
contact@3gpp.org



Or contact one of the Partners:

