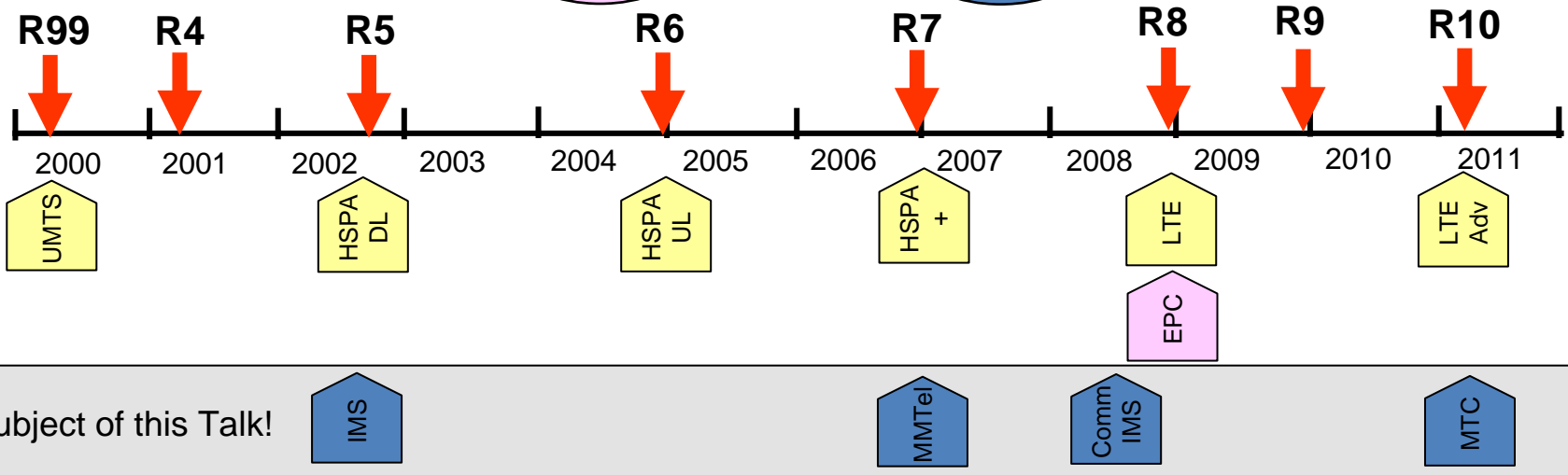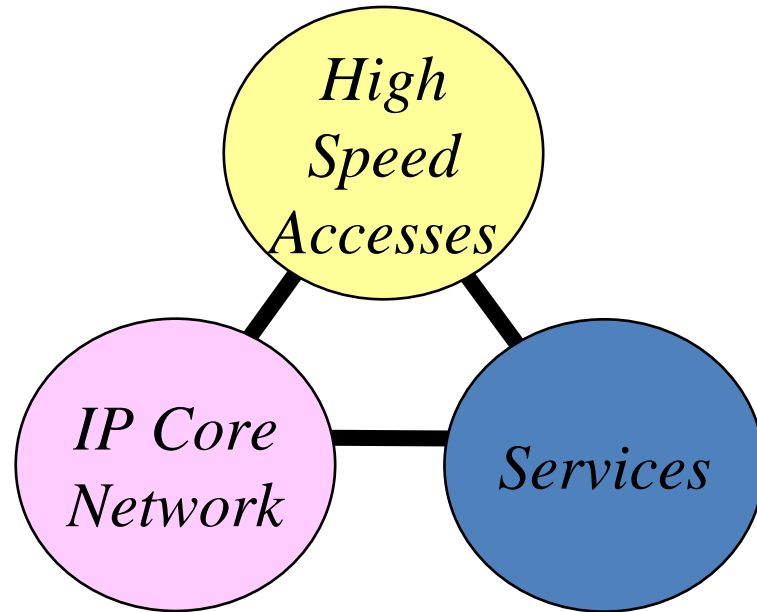# 3GPP Technology Standards Roadmap

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

High Speed Accesses

IP Core Network

Services

| R99 | R4 | R5 | R6 | R7 | R8 | R9 | R10 |

| 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |

UMTS — HSPA DL — HSPA UL — HSPA + — LTE / EPC — LTE Adv

Subject of this Talk!   IMS   MMTel   Comm IMS   MTC
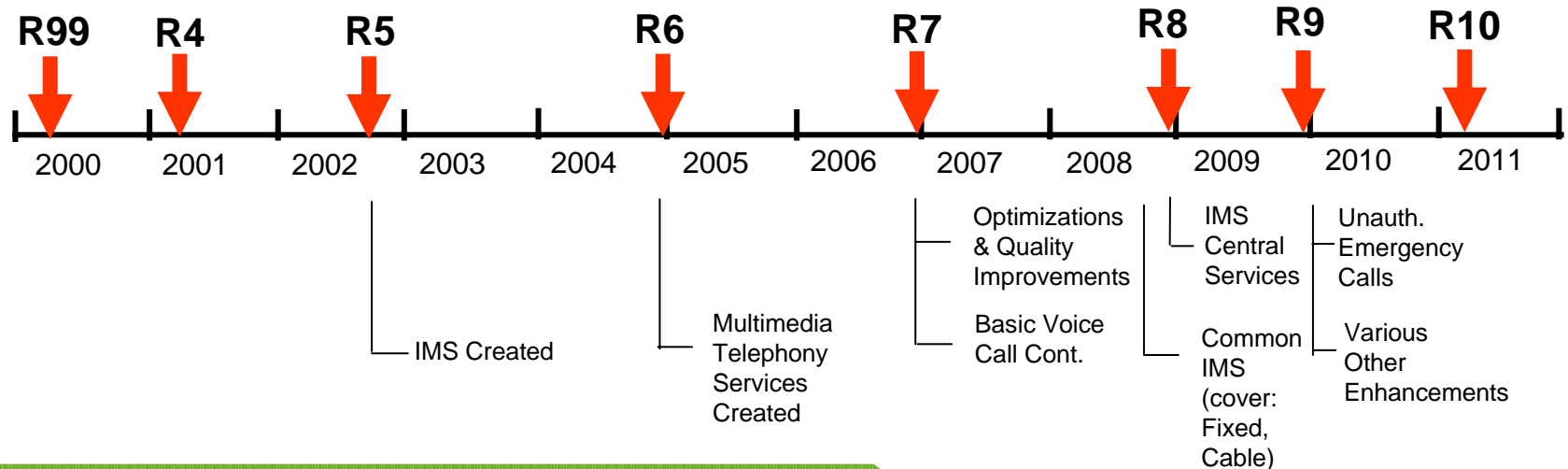
The 3GPP Services Story

- 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

R99   **R4**   **R5**   **R6**   **R7**   **R8**   **R9**   **R10**

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011

IMS Created

Multimedia
Telephony
Services
Created

Optimizations
& Quality
Improvements

Basic Voice
Call Cont.

IMS
Central
Services

Common
IMS
(cover:
Fixed,
Cable)

Unauth.
Emergency
Calls

Various
Other
Enhancements

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

- Telephony Services Defined for Multimedia
    - 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
  - Public Warning System (completed in Rel 9)
    - Extensible, but currently only Japan and US supported
  - 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 may 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: