



Evolving the GSM System

IMS and SAE/LTE

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GSM...younger than ever

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GSM after 20 years: Different, but still the same

Much of the original GSM technology has been or is being replaced

- > Radio: GSM/GPRS -> WCDMA, HSPA, LTE
- Mobility: 24.008 and MAP -> SAE
- Services: CS voice, supplementary services and CAMEL -> IMS based services

But driving concepts have remained

- The GSM family is a system, not just a bunch of protocols
- Strong standards produce a well populated ecosystem

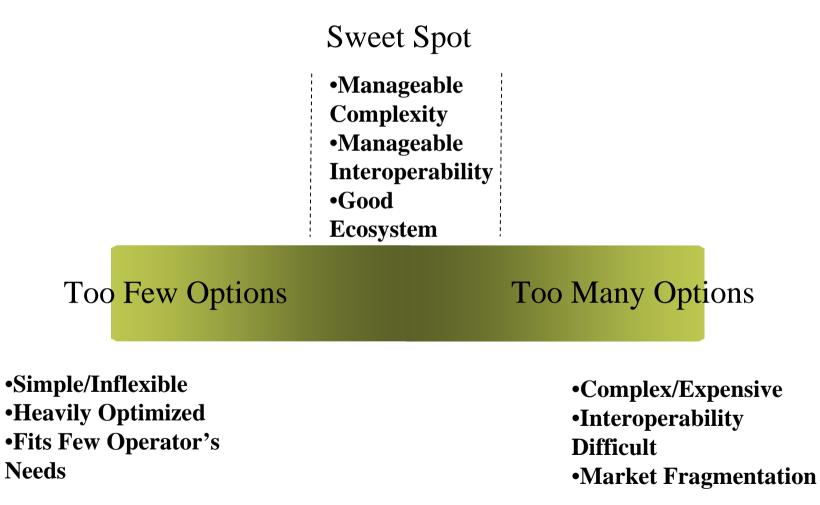


Success Brings New Challenges

Less Homogeneous Set of Players in 3GPP > Operators with Differing Business Models > Vendors with Differing Backgrounds Heavier Legacy support penalty Bigger IPR target Greater Push for Access Independence in Core More Advanced Services are Expected

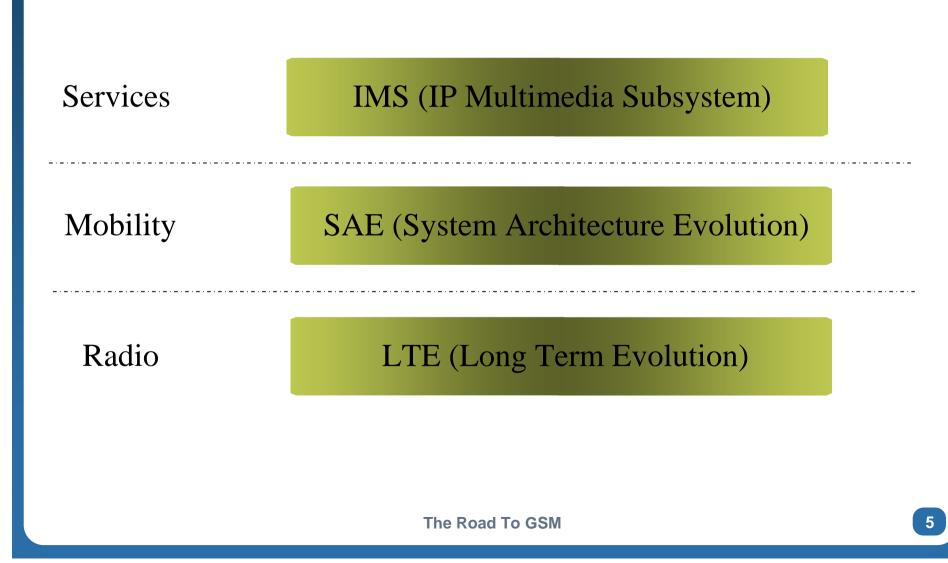


Finding the Right Balance





Not One Balance, But Three





IMS – Status

- □ IMS is an environment for deploying Services
- □ IMS originally envisioned as a way to utilize expected bandwidth
- □ IMS is access and IP transport independent
- □ IMS now the basis of multimedia telephony
- □ 3GPP committed to a single IMS specifications
- Several workshops held to promote reuse of IMS in various industries
 - > April 3-4, 2002 (Toronto, Canada) 3GPP2 to reuse IMS
 - > March 30-31, 2005 (Washington, DC) TISPAN to base NGN R1 on IMS
 - > Sept 28-29, 2006 (Palm Springs, California) Cablelabs to use IMS
- Discussions ongoing on
 - > Including IMS related activities in 3GPP (Common IMS)
 - > Opening up the IMS requirements process
- □ GOAL: Ensure there is a single set of IMS Specifications



IMS - Challenges

- Avoid IMS Fragmentation Engage all Industries in IMS specification
- IMS Applications Ensure ease of developing 3rd party IMS applications
- IMS and IMS Application Interoperability Test Specifications Needed



SAE – Status

Upgraded core network needed for LTE

Requirements

- Improvement in latency, capacity, throughput, cost/bit
- Simplification of the core network
- > Optimization for IP traffic and services
- Support roaming and service continuity to non-3GPP access technologies
- Differing views
 - > Optimized for LTE/3GPP Family vs More access independent
 - Centralized vs Distributed Functionality
- □ Study Phase slow to complete
 - > Workable Compromise finally achieved
 - Normative work finally started



SAE – Challenges

Meet LTE Timelines
Maintain the System Concept

Avoid Market Fragmentation

□ Provide a transition path for other technologies to LTE



LTE – Status

Drivers

- Improvements in spectral efficiency, user throughput, latency, cost/bit
- Simplification of the radio network
- > Efficient support of packet based services: MBMS, IMS, etc.
- □ Minimum performance targets met
- **Normative Work Progressing Well**
- Early versions of LTE concept demonstrated at 3GSM Congress



LTE – Challenges

- □ Meet the minimum performance goals
- Meet the timelines
- □ Keep device complexity low and battery life long
- Additional performance enhancements can always be specified later



Conclusions

How to Continue the GSM Success

- Continue to specify "Systems"
- > Produce Quality Technical Standards
- Make the hard compromises necessary to avoid market fragmentation
- Embrace the reality of more diverse business models and interests