



VOLGA FORUM

*Bringing voice and
SMS services to LTE*



Voice over LTE

T-Mobile International and VoLGA Forum

Franz Seiser, May 2009



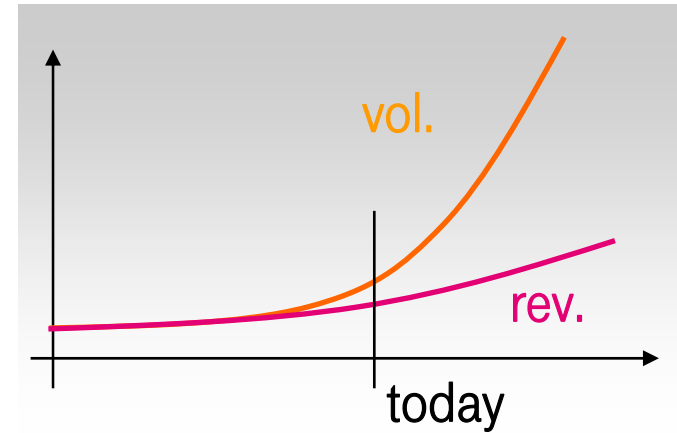
Voice/SMS remain to be key factors for LTE

Ensure Customer Acceptance, Avoid Price Competition

- In order to ensure LTE will be used as much as possible, voice- and messaging services need to be supported on LTE networks in high quality as early as possible

- Drivers:

- Ensure acceptance of LTE as a possible next generation PLMN
- Shift traffic to new network as fast as possible
- Avoid price competition with DSL



⇒ The industry needs a stable, scalable voice and SMS solution for LTE

⇒ delivering a seamless user experience (voice hand-over to existing 2G/3G networks)

⇒ with proven, commercial quality

⇒ availability in 2010 (SMS) /2011 (voice) latest



Specified 3GPP solutions for Voice/SMS in LTE do not meet all requirements

⇒ CS Fallback ruled out due to customer experience and non-LTE usage

- issues with customer experience
(call set-up time increase >1.5sec., no parallel voice/data if legacy network is 2G w/o DTM)
- not using LTE radio for voice
- requires changes to Rel-4 architecture MSC-Servers
- has much more impacts than originally envisaged

⇒ IMS based solution has very high complexity; availability and stability not feasible in time, roaming eco-system is not yet existent

- solution would consist of IMS platform, various application servers and a major upgrade/change to Rel-4 architecture MSC-Servers
- no eco-system in place yet for IMS voice/SMS roaming and interconnect
(only GPRS data or CS eco-systems are available today)
- solution requires updates/changes to quite many IT systems and processes as well



Key Objectives for Voice/SMS over LTE Solution

Re-use as much as possible and minimise the impacts

- Re-use as much as possible of existing systems, mechanism and eco-system while avoiding proprietary extensions to 3GPP nodes
 - build upon existing Rel-4 CS network and investments
 - “do not touch the MSC”
 - build upon fully 3GPP compliant Rel-8 EPC/LTE network
 - re-use existing CS roaming/inter-connect regime
 - minimise impact on UE, especially on user-interface
- **Solution:**
 - “Voice over LTE Generic Access” = VoLGA



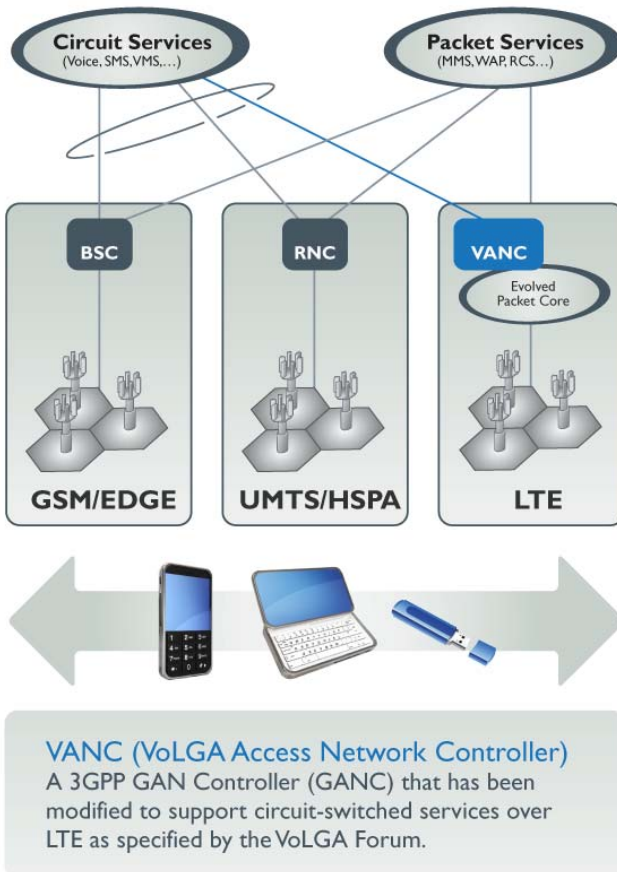
VoLGA

Voice over LTE via Generic Access

<http://www.volga-forum.com>

What is VoLGA?

VoLGA: Voice over LTE via Generic Access



Voice over LTE via Generic Access

- A technological approach for delivering voice and SMS services over LTE access networks
- Leverages a mobile operator's existing core voice network
- Derived from the existing 3GPP GAN standard

What is the VoLGA Forum?



- A group of companies working to...
 - Leverage collective technical skills to define VoLGA specifications
 - Publish proposed specifications via the VoLGA Forum web site (coming soon)
 - Facilitate the easy adoption of VoLGA technology by other vendors and operators
- The group is open to interested parties in the mobile community
 - See www.VoLGA-Forum.com for more information about joining

VoLGA Highlights

- Full service transparency
 - Supports all circuit services over LTE
 - Supports IMS RCS and combinational services (CS+IMS) over LTE
 - Supports handover of active calls between LTE and GSM/UMTS
 - Supports expected LTE femtocell deployments
- Low risk, low investment
 - Based on well proven 3GPP GAN standard
 - Requires no change to existing MSCs and operational systems
 - Conserves existing, extensive voice interconnection regime

Industry consensus on future voice solution is key

Fragmentation is coming from IMS

- CS is today's world-standard for voice calls
 - used by 3bn+ customers every day
 - CS voice solution (incl. terminals) will be around for next 10+ years
 - VoLGA, by its nature, would be part of the CS terminal client and not visible to the customer



- IMS shall support a variety of communication services, including voice
 - ⇒ fragmentation of terminal clients (CS and IMS) and user experience
 - ⇒ RAT-dependent user experience
- unless MMTEL is reduced to the feature level of CS clients (cf. TISPAN)
 - ⇒ introduction of the new platform could hardly be justified then, waste of the potential of IMS

⇒ As operators intend to use IMS to offer more than just plain CS voice to their customers, the fragmentation challenge needs to be solved!



Conclusion: Severe risk of no industry consensus on how to implement voice and SMS in LTE early.

Starting point

- LTE designed as all-IP system without build-in basic network services voice / SMS.
- LTE to substitute 2G/3G systems in long-term.
- **Assumption:** Majority of “classic” 2G/3G services and functions will be required also in LTE.

Main examples

Voice



Required when handsets become available (Q4/2011)

SMS



Required for commercial data-only devices (Q4/2010)

Current situation



No industry consensus on how to do early implementation of voice and SMS services in LTE.

Basic requirements

- Same/better user experience as 3G
- Full interoperability and international roaming support
- Healthy eco-system
- Time-to-market
- Support of existing / profitable business models.
- Enable long-term service evolution.
- Reasonable cost impact and high efficiency

VoLGA offers by far the best combination of simplicity and functionality



Thank you!



Target Solution: VoLGA

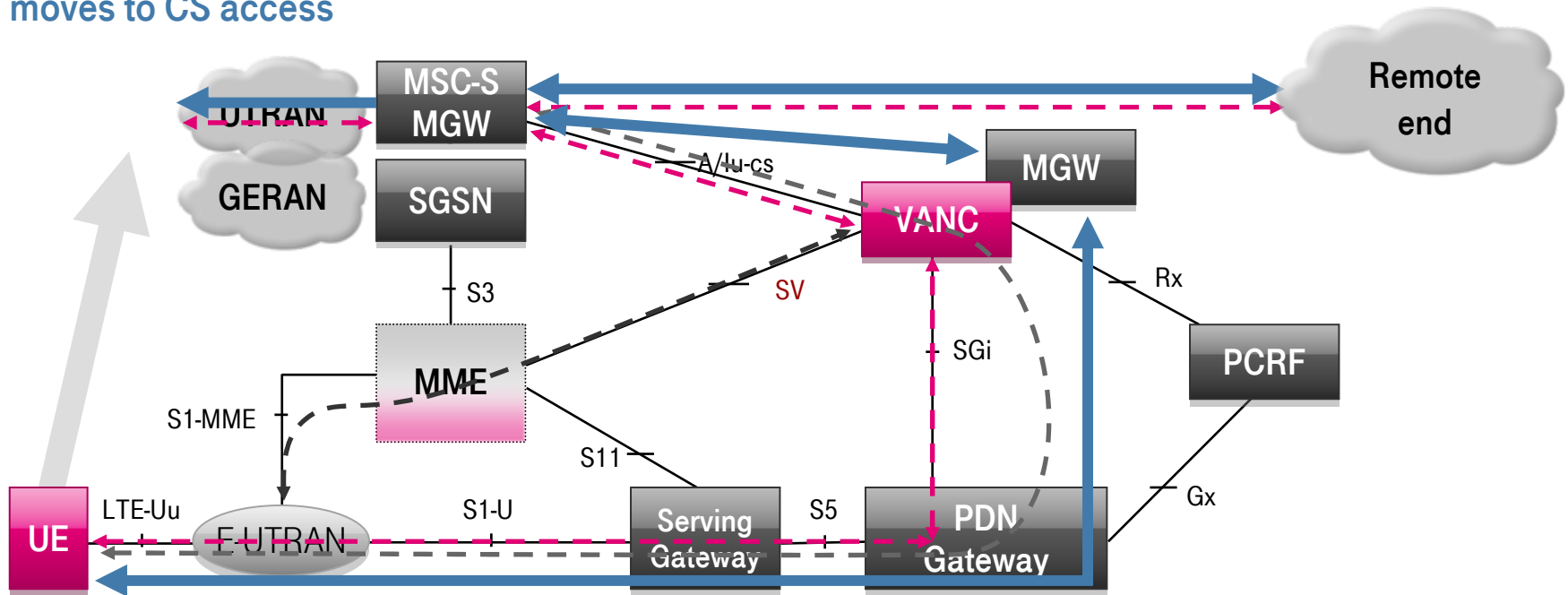
Voice over LTE Generic Access

UE registers call over EPS

E-UTRAN initiates HO

VANC triggers Intra/Inter-MSC HO

UE moves to CS access





Wireless Industry Leaders Launch Voice over LTE Initiative Based on 3GPP Generic Access Network Standard

09 March, 2009 – Today, a group of leaders in the wireless industry comprised of Alcatel-Lucent, Ericsson, Huawei, Kineto Wireless, LG Electronics, Motorola, Nortel, Samsung, Starent Networks, T-Mobile and ZTE announced a joint effort, referred to as the Voice over LTE via Generic Access (VoLGA) Forum. The joint effort aims to define a set of specifications within the forum for enabling delivery of voice services over LTE access networks based on the current 3GPP Generic Access Network (GAN) standard.

The VoLGA Forum seeks to enable mobile operators to deliver voice and messaging services over upcoming LTE radio access networks using the same core networks they use today to support voice services on 2G/GSM and 3G/UMTS radio access networks.

VoLGA Forum participants are currently working together to create the initial set of VoLGA specifications, which they intend to complete and publish by mid-2009.

For more information about VoLGA, please visit www.volga-forum.com. For companies interested in participating in the VoLGA Forum, please contact us at info@volga-forum.com.

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VoLGA Press Release March 9 received very positive reflection in media

- VoLGA Forum (<http://www.volga-forum.com/>) officially launched March 9th with a press release (see backup)
- Reception by media and analysts is very positive
- Few quotes:
 - *Rethink Wireless*: "T-Mobile's leading role shows how determined the operators are to direct and influence the progress of standards, rather than leaving it to the vendors."
 - *Disruptive Wireless*: "Regular readers will know that I've been a huge skeptic of UMA (Universal Mobile Access) versions of dual-mode WiFi+cellular for more than 4 years. ... But most of my original objections to UMA do not apply to its recent incarnation ... Consequently, I'm generally a believer in the new VoLGA concept advanced by T-Mobile and various vendors like Ericsson and Kineto"
 - *WirelessMoves*: "A very interesting move, and I think it's good to see that things are moving forward!"



More echo from independent press

- The following publications picked up the VoLGA announcement that crossed the wire today:
 - Yahoo! Finance, MarketWatch, Bristol Link, Denton Record-Chronicle, EuroInvestor UK, FML eXchange, FinanzNachrichten.de, Greater Richmond Technology Council, HIPL0ID.com, HollywoodReporter.com, Morningstar, OpticalKeyhole.com, Quote.com, Quoteline, San Jose Mercury News, SecuritySales.com, Silicon Valley, TelecomWeb.com, The Dallas Morning News, Earthtimes, Ad-Hoc News, PR-Inside.com, Stockhouse, SYS-CON Media, Trading Markets, TechWhack, Centre daily Times, Consumer Electronics Net, TMCnet, Cellular News, Telecompaper.
- Articles and commentary:
 - Vendors propose plugging LTE voice problem with GAN – By Ian Scales, Telecom TV
 - Industry leaders plan to launch voice over LTE using Generic Access Network standards – By Brian James Kirk, Mobile Burn
 - 4G LTE Wireless To Get A Voice – By Joseph Palenchar, Twice
 - Vendors Lead Voice-Over-LTE Forum – By Monica Allevan, Wireless Week
 - T-Mobile, vendors establish forum to enable voice over LTE – By Lynnette Luna, Fierce Broadband Wireless
 - VoLGA - reinventing UMA for Voice-over-LTE – By Dean Bublely, Disruptive Wireless

Press Release Pick Ups:

- [Wireless Industry Leaders Launch Voice over LTE Initiative Based on 3GPP Generic Access Network Standard](#)

Business Wire – March 9, 2009

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