A GLOBAL INITIATIVE

Update on 3GPP SA5

Self-Organising Networks Conference
1st - 2nd October 2014
Amsterdam, Netherlands

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SA5 Chairman
SA Vice-Chairman
Huawei Technologies

Contents

3GPP SA5 Telecom Management ToR

- SA WG5 will specify the requirements, architecture and solutions for provisioning and management of the network (RAN, CN, IMS) and its services. The WG will define charging solutions in alignment with the related charging requirements developed by the relevant WGs, and will specify the architecture and protocols for charging of the network and its services.

- The WG will ensure its work is also applicable to the management and charging of converged networks, and potentially applicable to fixed networks. The WG will coordinate with other 3GPP WGs and all relevant SDOs to achieve the specification work pertinent to the provisioning, charging and management of the network and its services.

http://www.3gpp.org/Specifications-groups/sa-plenary/56-sa5-telecom-management

3GPP SA5 leadership

SA5

Christian Toche (Huawei)	Chair	since 08/2005
Jean-Michel Cornily (Orange)	VC	since 08/2013
Thomas Tovinger (Ericsson)	VC	since 08/2007

Charging Sub-Working Group (SWG)

Maryse Gardella (Alcatel-Lucent)	Chair	since 08/2013
David Shrader (Ericsson)	VC	since 08/2013
Li Li (Huawei)	VC	since 08/2014

OAM&P Sub-Working Group (SWG)

Yizhi Yao (Nokia Networks)	Chair	since 01/2013

Converged Management Sub-Working Group (SWG)

Thomas Tovinger (Ericsson)	Chair	since 08/2013
Lan Zou (Huawei)	VC	since 05/2012

Ongoing SON activities in 3GPP SA5

- Study on Enhanced Network Management (NM) centralized Coverage and Capacity Optimization
  - Rel-12 study, completed in September 2014
  - Work Item Description (WID) in SP-140028
  - Technical Report (TR) 32.836 http://www.3gpp.org/DynaReport/32836.htm
- Study on enhancements of OAM aspects of D-MLB SON function
  - Rel-13 study, ongoing
  - WID in SP-130430
  - TR 32.860 http://www.3gpp.org/DynaReport/32860.htm
- Gap analysis of 3GPP SA5 specifications with the NGMN Top OPE Recommendations
  - Rel-13 study, ongoing
  - WID in SP-140538
  - TR 32.838 http://www.3gpp.org/DynaReport/32838.htm
- Enhanced Network Management (NM) centralized Coverage and Capacity Optimization
  - Rel-13 normative work, not started yet
  - WID in SP-140060

Study on Enhanced NM centralized Coverage and Capacity Optimization (1/2)

- NM centralized CCO function would help operators in reducing OPEX related to the maintenance and optimization of network coverage and capacity by automating these functions.

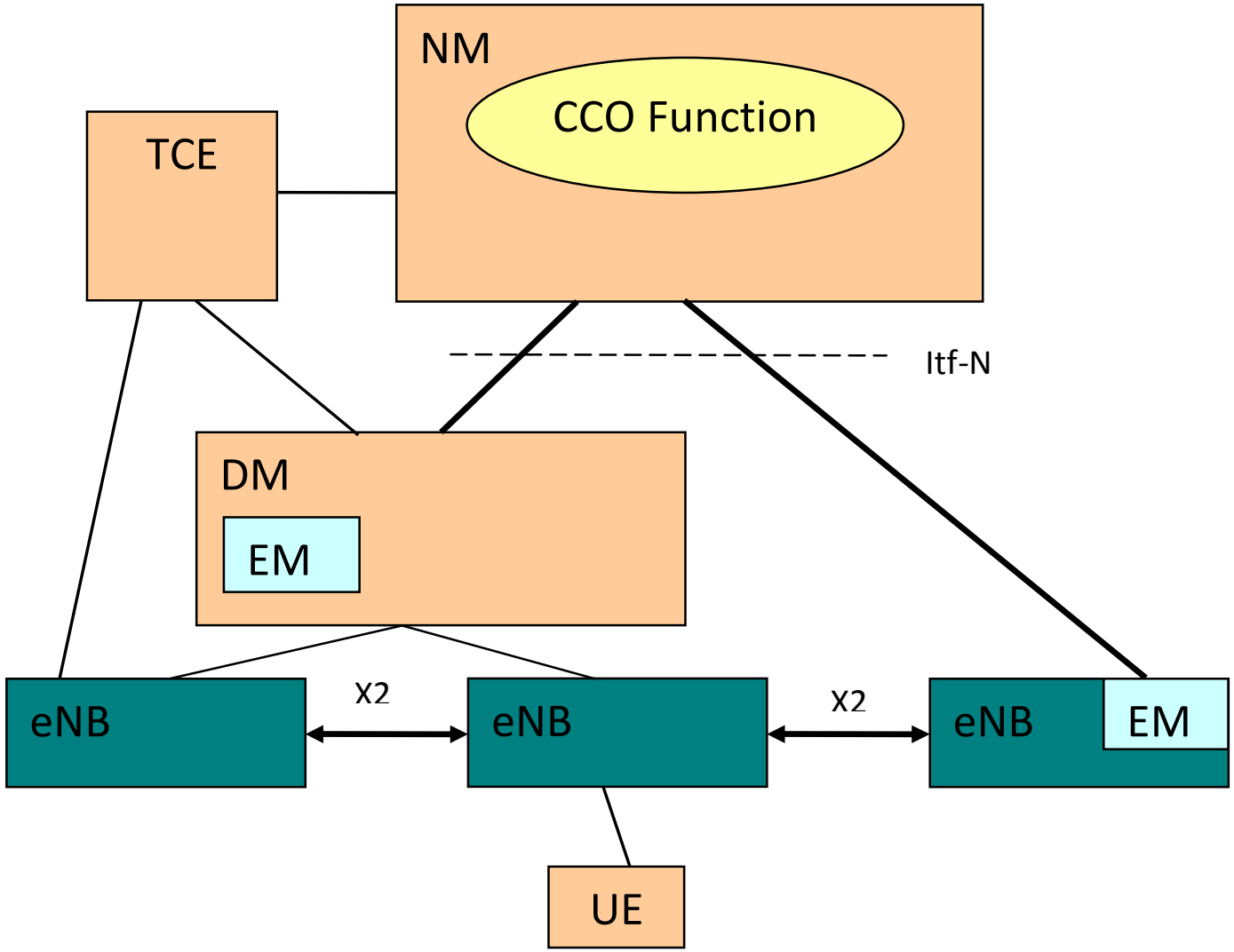
- NM centralized CCO function would observe network coverage and capacity performance, automatically detect problems and intervene with necessary actions or raise a notification toward the operator, when operator action is needed.

- NM centralized CCO function has some enablers defined in the 3GPP standard (e.g. MDT, PM data collection) but it is unclear whether these are sufficient for a complete solution
  - Study in Rel-12 (completed in September 2014).
  - Normative work based on the outputs of the study in Rel-13 (target December 2015).

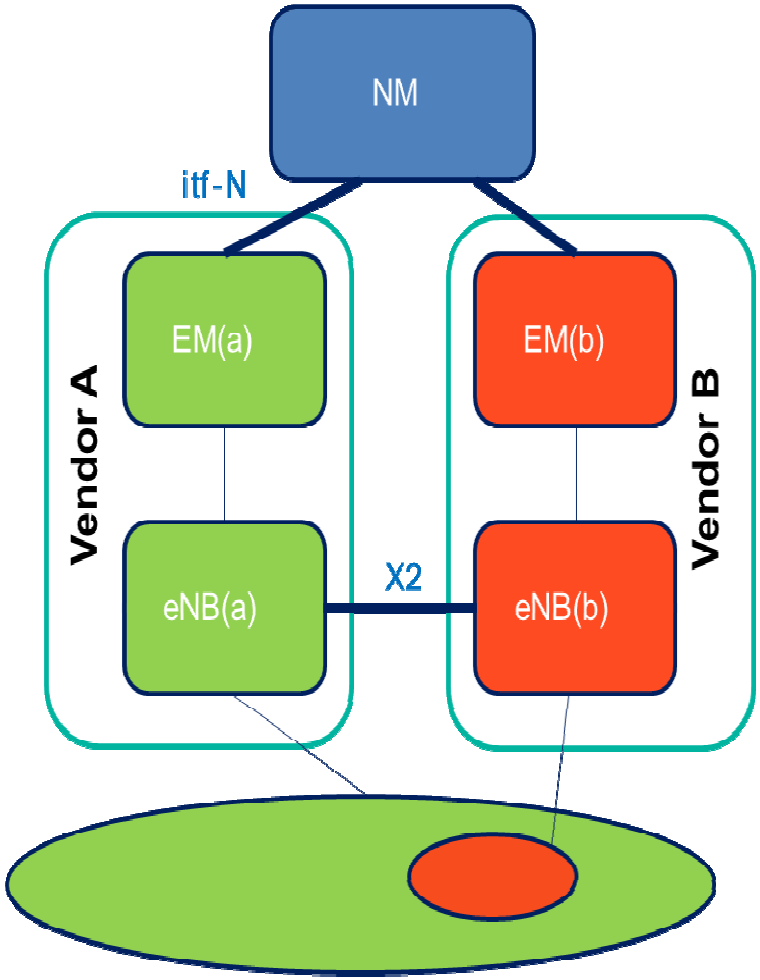
Study on Enhanced NM centralized Coverage and Capacity Optimization (2/2)

- Objectives:
  - Identify use cases for NM centralized CCO function.
  - Identify (potentially new) UE and network based measurements for NM centralized CCO function.
  - Identify the required configuration attributes for NM centralized CCO.
  - After the result of the study is agreed, define the necessary support on Itf-N to control the coverage and capacity related configurations in the network.
- Outcome:
  - Defined five typical NM centralized CCO use cases.
  - Specified the architecture of NM centralized CCO.
  - Specified required UE and network measurements (no new measurements needed).
  - Studied solutions for correlation of measurements.
  - Studied user privacy and anonymization.
  - Existing measurements collection mechanisms are considered to be sufficient.
  - No new configuration attributes identified.

NM centralized Coverage and Capacity Optimization architecture



Study on enhancements of OAM aspects of D-MLB SON function (1/2)



- 3GPP Distributed Mobility Load Balancing (D-MLB) was specified by RAN3 (see TS 36.300 and TS 36.423).
- Some load information exchange interoperability issues may happen especially in multi-vendor HetNet, where different layers of base stations are provided by different vendors.
- It should be highlighted that in a single vendor environment load balancing entities could be easily aligned, hence most of the above interoperability issues can be avoided.

Study on enhancements of OAM aspects of D-MLB SON function (2/2)

- Examples of areas to be studied are issues resulting from deployment irregularities, such as irregularities in sites location, in cell size (especially for HetNet), in inter-eNB physical neighbour relations, presence of equipment produced by different vendors .

- The scope of the study on Enhancements of OAM aspects of Distributed Mobility Load Balancing (MLB) SON function is to
  - Identify whether D-SON MLB as currently standardized in 3GPP can be improved
  - In case potential areas of improvement are identified propose possible solutions

- Two MLB use cases are currently discussed in SA5 (TR 32.860)
  - MLB algorithms misalignment
  - Non-uniform load distribution

Gap analysis NGMN Top Operational Efficiency (OPE) Recommendations (1/2)

- For each recommendation
  - Identify what is already covered by SA5 specifications
  - Identify what is remaining to be done in SA5 specifications
  - Identify what is out of scope of SA5 specifications
- The scope is NGMN Top OPE Recommendations (V1.0)
  - Quality and Quantity of Alarms
  - Automatic Software Management
  - Energy Saving
  - Self Organizing Networks
  - Performance Management Enhancements
  - Enhancement of Trace Functionality
  - eNodeB Plug & Play - Self Commissioning
  - OSS Standard Itf-N
  - OSS Tool Support for Optimization & Operation
  - Automatic Inventory
- Target for TR 32.838 Gap analysis Top OPE Recommendations is March 2015

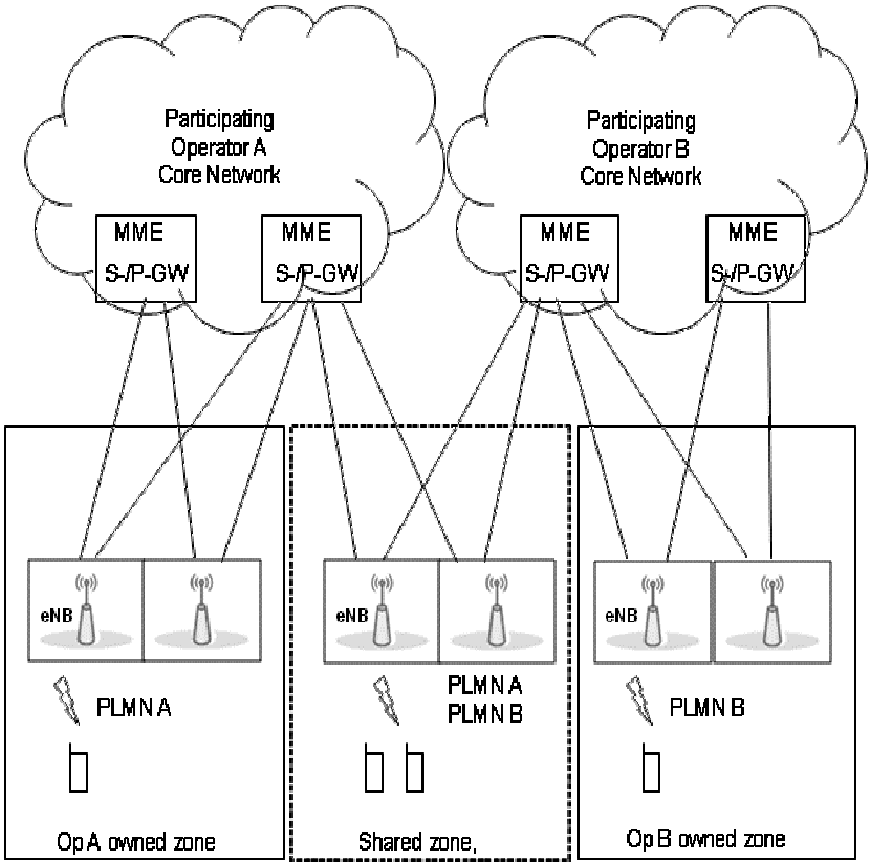
Gap analysis NGMN Top Operational Efficiency (OPE) Recommendations (2/2)

- Clause on Self Organizing Networks
  - OAM Support for SON
  - Generic optimization
  - Automatic Neighbour Relation (ANR)
  - Minimization of Drive Tests (MDT)
  - Handover (HO) optimization
  - Load Balancing (LB)
  - Cell Outage Compensation (COC)
  - Common Channel Optimization (CCO)
  - Interactions between Home and Macro BTS
  - SON in CN
  - QoS optimization
- Current focus on OAM support for SON (extract from NGMN Top OPE below)
  - "SON and related benefits are seen as an essential economical characteristic of LTE strongly asked for by all operators. As a consequence it has to be ensured that operator keep the control on all new SON functionality by implementation of appropriate policy control functions. An effective OAM support provides operator with network control in SON trust building and learning phase. It allows in all situations that a very good network quality can be assured."

Gap analysis NGMN Next Generation Converged Operations Requirements (NGCOR)

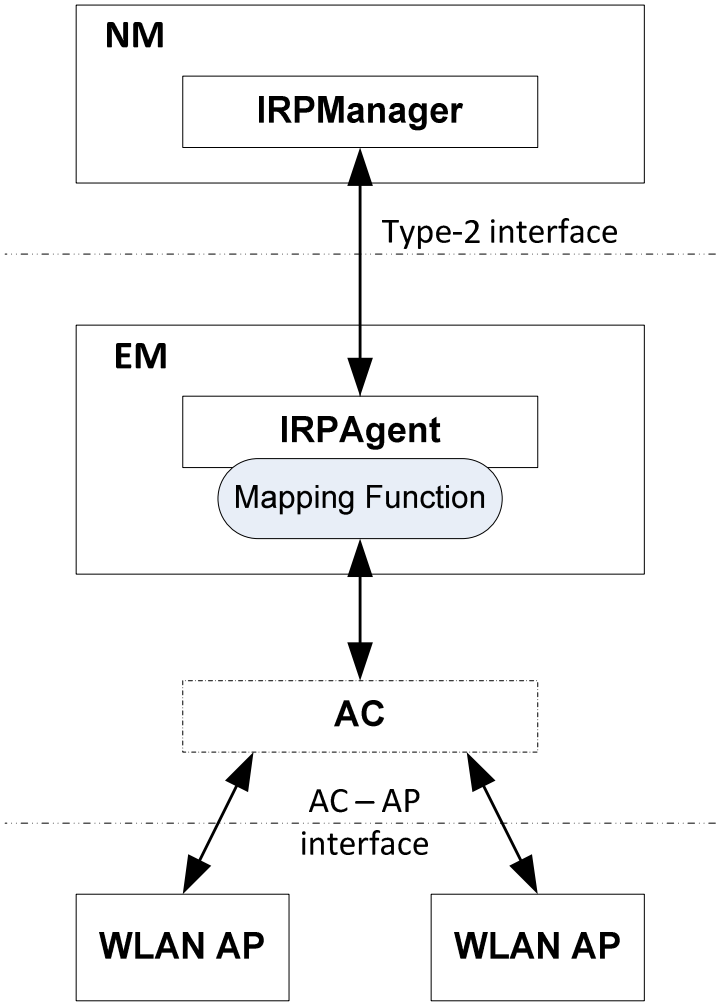
- For each requirement
  - Identify what is already covered by SA5 specifications
  - Identify what is remaining to be done in SA5 specifications
  - Identify what is out of scope of SA5 specifications
- The scope is NGMN NGCOR phase I and phase II (V1.4)
  - Generic Next Generation Converged Operational Requirements (GEN)
  - High level requirements for Converged Operations (CON)
  - Requirements for NGCOR Modelling and Tooling (MT)
  - Requirements for Fault Management Interface (FM)
  - Requirements for Configuration Management (CM)
  - Requirements for Performance Management (PM)
  - Requirements for Resource and Service Inventory Management (INVM)
  - Business Scenarios for Network Sharing (BSNS)
- The target for TR 32.837 Gap analysis NGCOR is September 2015

Management aspects of network sharing



- Network sharing enables mobile network operators to achieve important CAPEX and OPEX savings.
- Various scenarios of network sharing exist. One of them, called MOCN (Multiple Operator Core Network), relies on sharing frequencies at cell level.
- FCAPS to be available on a per operator basis for the shared RAN.
- SON support in the shared RAN is to be ensured, in particular at the frontier between the shared RAN and each sharing mobile network operators' own RAN.
- Potential impacts on PCI configuration, ANR, MLB, MDT.
- Ongoing normative work (TS 32.130 and existing specifications), target December 2014.

WLAN Management



- Study on WLAN impacts to Type-2 management in Rel-12 (completed in Sep 2014)
  - Enable the 3GPP OAM system to monitor WLAN performance measurements and alarms that are essential to evaluate the performance of WLAN offloading.
  - Focus on WLAN performance measurements and alarms that are sent to the NM via the Type-2 interface.
  - No impact to the Type-1 interface of WLAN NE and the WLAN MIB specified by other SDOs.
- Normative work in Rel-13 (target June 2015)
  - Specify the WLAN Network Resource Model for Type-2 interface (for support of fault and performance monitoring only)
  - Specify the solution set for WLAN performance measurements and alarms based on the existing IEEE and IETF MIB.

Study of Network management of Virtualized Networks

- Study the use cases and concepts for the network management of virtualized networks which are applicable to 3GPP SA5, taking into account the relevant use cases from ETSI NFV ISG.
- Analyse and classify the network management scenarios and identify the requirements for potential solutions
  - When all instances of 3GPP-defined network elements in a subsystem/domain are virtualized (fully virtualized networks).
  - When some instances of 3GPP-defined network elements in a subsystem/domain are virtualized (mixed networks).
- Identify the potential impacts on the existing 3GPP Management reference model and SA5 solutions (re-use, adapt, extend, new)
- Provide recommendations for the standardization of the network management of fully virtualized networks and mixed networks, based on the result of the analyses and the potentially identified impacts, enhancements or extensions.
- Study the need for a single management system for mixed networks.
- The target is to finalize the TR 32.842 in June 2015.

Other ongoing SA5 OAM activities

- Alarm quality improvements
  - Rel-12 normative work, target December 2014
- Radio Planning Tool interface
  - Rel-12 normative work, target December 2014
- Study on Application and Partitioning of Itf-N
  - Rel-13 study, target December 2014
- Energy Efficiency related Performance Measurements
  - Rel-13 normative work, target June 2015
- Converged management Performance Management Interface Definitions
  - Rel-13 normative work, target December 2015

3GPP Releases

- Rel-12 stage 3 was frozen in September 2014
- Some Rel-12 exceptions granted until December 2014

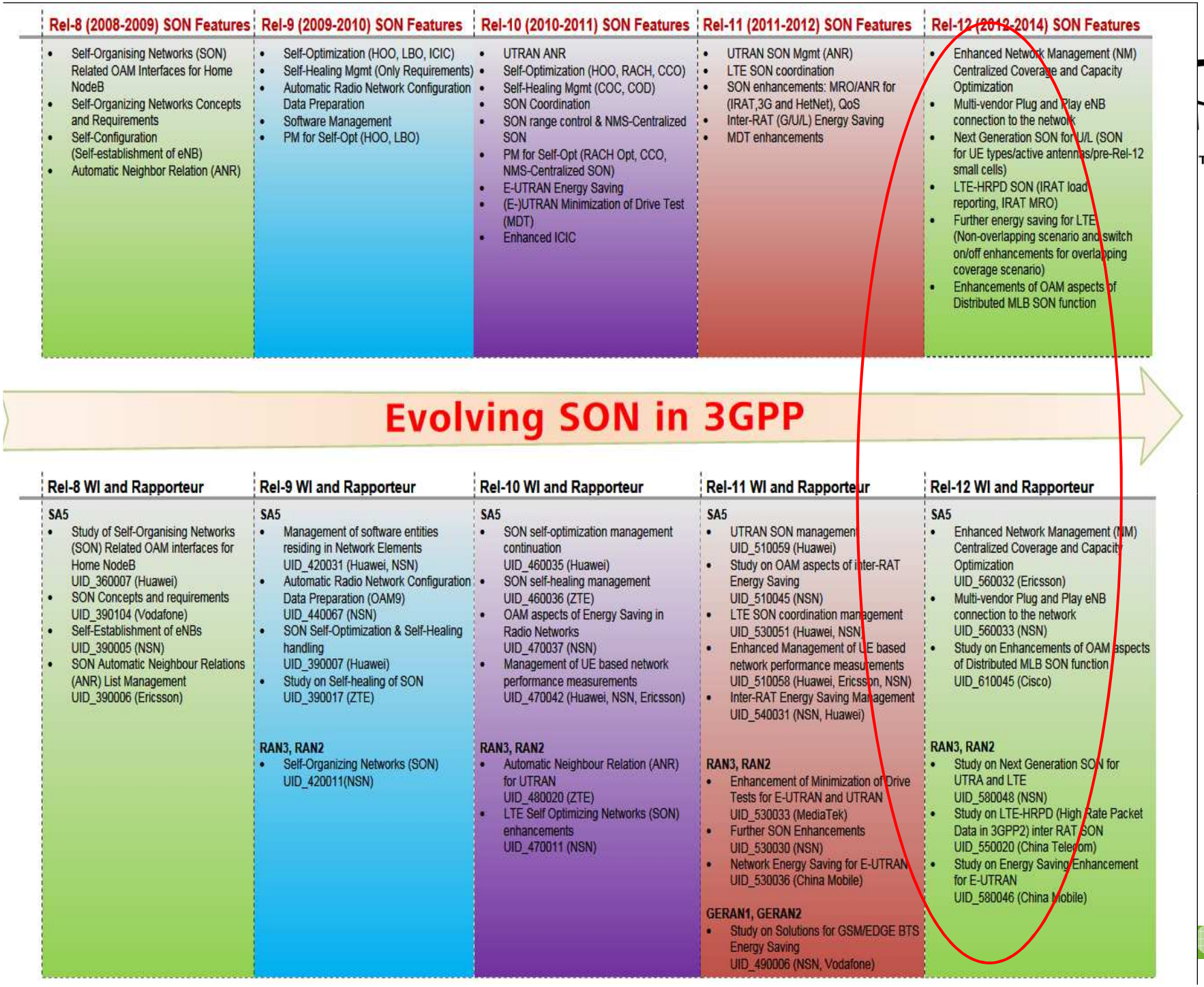
- Rel-13 Stage 1 freezing September 2014
- Rel-13 Stage 2 freezing target June2015
- Rel-13 Stage 3 freezing target December 2015

- Rel-14 circa 2016-2017
- Rel-15 circa 2018-2019

Annex

Some links

- TR 32.836 Study on Network Management (NM) centralized Coverage and Capacity Optimization (CCO) Self-Organizing Networks (SON) function http://www.3gpp.org/DynaReport/32836.htm
- TR 32.837 Gap analysis between 3GPP SA5 specifications and NGMN Next Generation Operations Requirements (NGCOR) http://www.3gpp.org/DynaReport/32837.htm
- TR 32.838 Gap analysis between 3GPP SA5 specifications and NGMN Top Operational Efficiency (OPE) Recommendations http://www.3gpp.org/DynaReport/32838.htm
- TR 32.841 Study on Wireless Local Area Network (WLAN) management http://www.3gpp.org/DynaReport/32841.htm
- TR 32.842 Study on network management of Virtualized Networks http://www.3gpp.org/DynaReport/32842.htm
- TR 32.860 Study on enhancement of OAM aspects of distributed Self-Organizing Network (SON) functions http://www.3gpp.org/DynaReport/32860.htm
- TR 32. 851 Study on Operations, Administration and Maintenance (OAM) aspects of Network Sharing http://www.3gpp.org/DynaReport/32851.htm
- TS 32.130 Network sharing; Concepts and requirements http://www.3gpp.org/DynaReport/32130.htm



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3GPP SON Roadmap

3GPP SA5 2014 meeting calendar

Meeting	Date	City	Country	Host	Collocation
SA5#93	20-24 Jan 2014	Guangzhou	China	Huawei	CT WGs
SA5#94	24-28 Mar 2014	Oranjestad	Aruba	NAF	
SA5#94bis CH	15-16 Apr 2014	Paris	France	Orange	
SA5#94bis OAM	15-17 Apr 2014	Paris	France	Orange	
SA5#95	12-16 May 2014	Sapporo	Japan	JF3	SA1
SA5#95bis CH	12-14 Aug 2014	Paris	France	Orange	
SA5#96	18-22 Aug 2014	Sophia Antipolis	France	EF3	SA1
SA5#97	20-24 Oct 2014	Venice	Italy	Telecom Italia/EF3	
SA5#98	17-21 Nov 2014	San Francisco	USA	NAF	Mega meeting

3GPP SA5 2015 meeting calendar

Meeting	Date	City	Country	Host	Collocation
SA5#99	2-6 Feb 2015	Taipei	Taiwan	Chunghwa Telecom	
SA5#100	13-17 Apr 2015	Dubrovnik	Croatia	EF3	
SA5#101	25-29 May 2015	Istanbul	Turkey	P.I. Works	
SA5#102	24-28 Aug 2015	TBD	China	Huawei	RAN WGs
SA5#103	12-16 Oct 2015	TBD	North America	NAF	
SA5#104	16-20 Nov 2015	TBD	North America	NAF	Mega Meeting

Thank you!

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