



3GPP Rel-12 SON Status

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Outline



Rel-12 SON Work Items and Study Items

- SA5: Enhanced Network Management (NM) Centralized Coverage and Capacity Optimization
- SA5: Multi-vendor Plug and Play eNB connection to the network
- SA5: Energy Efficiency related Performance Measurements
- SA5: Study on Enhancements of OAM aspects of Distributed Mobility Load Balancing (MLB) SON function
- Other SA5 and RAN3 Study Items

Annexes

- SA5 IRP framework
- 3GPP SON related specifications



NM Centralized CCO (1/2)



Objectives

- Check the use cases and requirements
- Check the status of current specifications (MDT, PM data collection, etc) with regard to use cases and requirements
- Identification of required (potentially new) UE and network based measurements
- Identification of the required configuration attributes

Target

- Study phase (TR 32.836): December 2013
- Normative aspects (TSs 28.627, 28.628, 32.425, 28.658, 28.659, 32.103): June 2014



NM Centralized CCO (2/2)

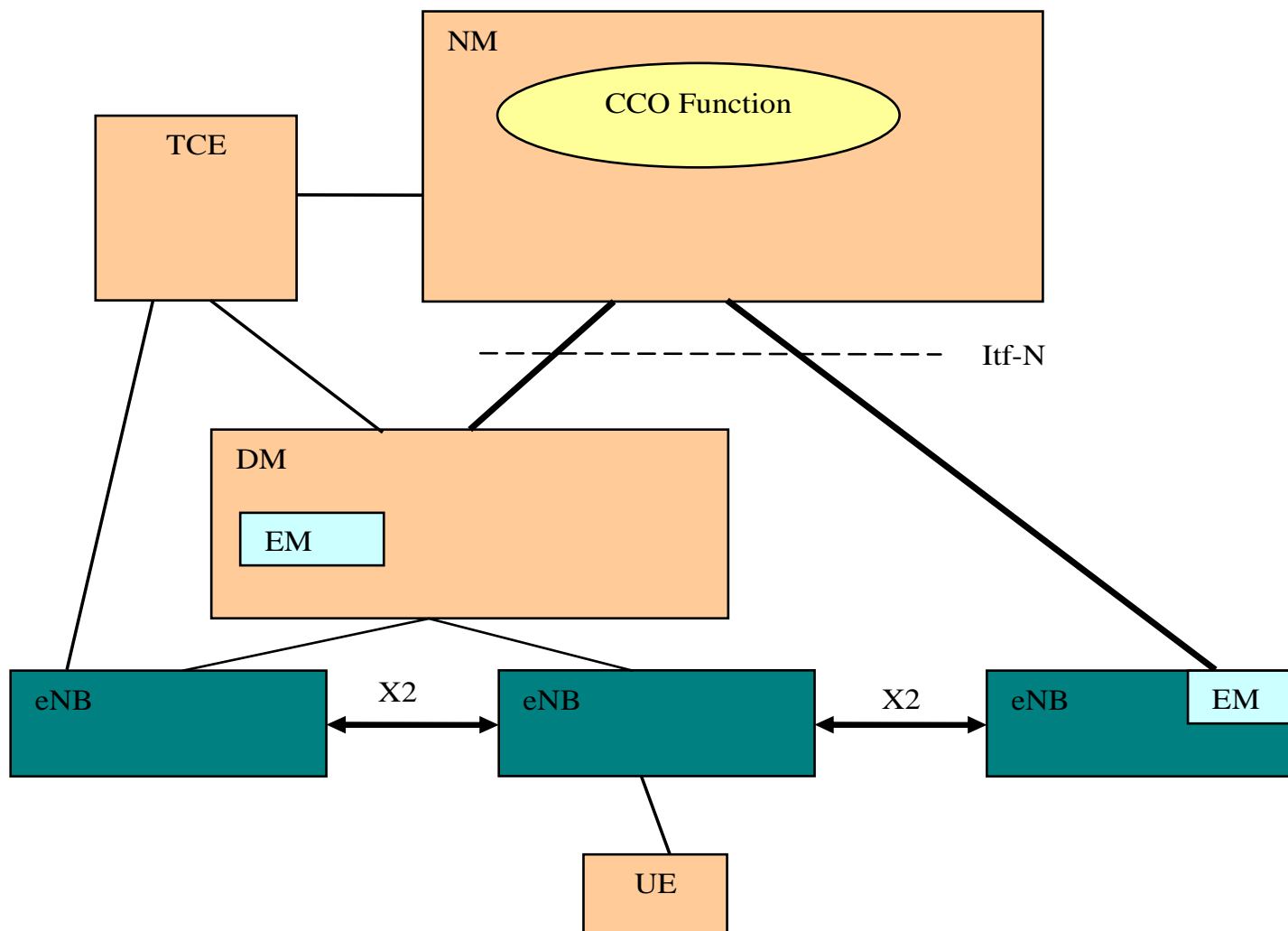


Progress (TR 32.836)

- Listed the use cases
- Listed required UE and network measurements for UTRAN and E-UTRAN
- Described user privacy and anonymization requirements
- Ongoing study on correlation of measurements coming from independent collection mechanisms e.g. MDT data and RLF data
- Required changes in normative specifications will be done based on the conclusions of TR 32.836



NM Centralized CCO function logical architecture





Multi-vendor P&P eNB connection (1/2)



Objectives

- Current specifications defined by 3GPP SA5 cover only the self-configuration of radio network element parameters
- The secure interconnection of a new eNB to the operator's network prior to self-configuration will be standardised to operate in a multi-vendor environment

Target

- Changes on TS 32.501 (Requirements): September 2013
- New specifications 32.508 (Stage 2) and 32.509 (Stage 3): December 2013



Multi-vendor P&P eNB connection (2/2)



Progress

- Specified the network deployment scenarios, use cases and requirements
- Specified the network entities involved in the multi-vendor plug & play process
- Specified the information needed in those network entities
- Ongoing specification of the messages exchanged between those network entities
- Ongoing specification of the data formats used to transfer the messages between those network entities
- Reuse of existing LTE backhaul security mechanisms already defined by SA3



Energy Efficiency related Performance Measurements



Objectives

- ETSI TC EE defines use cases, requirements and global KPIs to measure energy efficiency
- RAN2 checks which current L2 measurements/KPIs can be used to fulfil the requirements or which new definitions are needed (TS 36.314)
- SA5 provides the necessary additions to TS 32.425

Target

- June 2014

Progress

- Joint meeting held with ETSI TC EE in May 2013



Study on OAM aspects of Distributed MLB SON function



Objectives

- Study if D-SON Mobility Load Balancing (MLB) function can be improved in terms of operational efficiency
- Identify possible impacts on existing SA5 NRMs and measurement specifications

Target

- June 2014 (new TR)

Progress

- Study item was just approved



Other SA5 Study items



Study on Heterogeneous Networks management

- TR 37.835 was sent for information to SA plenary
- On demand management
- Approval of TR planned in March 2014

Study on OAM aspects of Network Sharing

- TR 32.851 was approved by SA plenary
- Defines the scenarios and use cases
- Identify impacts on FCAPS and management architecture
- Impacts on SON e.g. ANR identified for further work



RAN3 Study items



- 📶 Study on next generation Self-Optimizing Network (SON) for UTRAN and E-UTRAN (RP-122037)
 - TR 37.822 was sent for information to RAN plenary
- 📶 Study on Energy Saving Enhancement for E-UTRAN (RP-122035)
 - New TR not sent for information to RAN plenary yet



Annex A

3GPP SA5 IRP framework



- 3GPP Management Reference Model
- 3GPP SA5 IRP Concept
- Interface IRP & NRM IRP

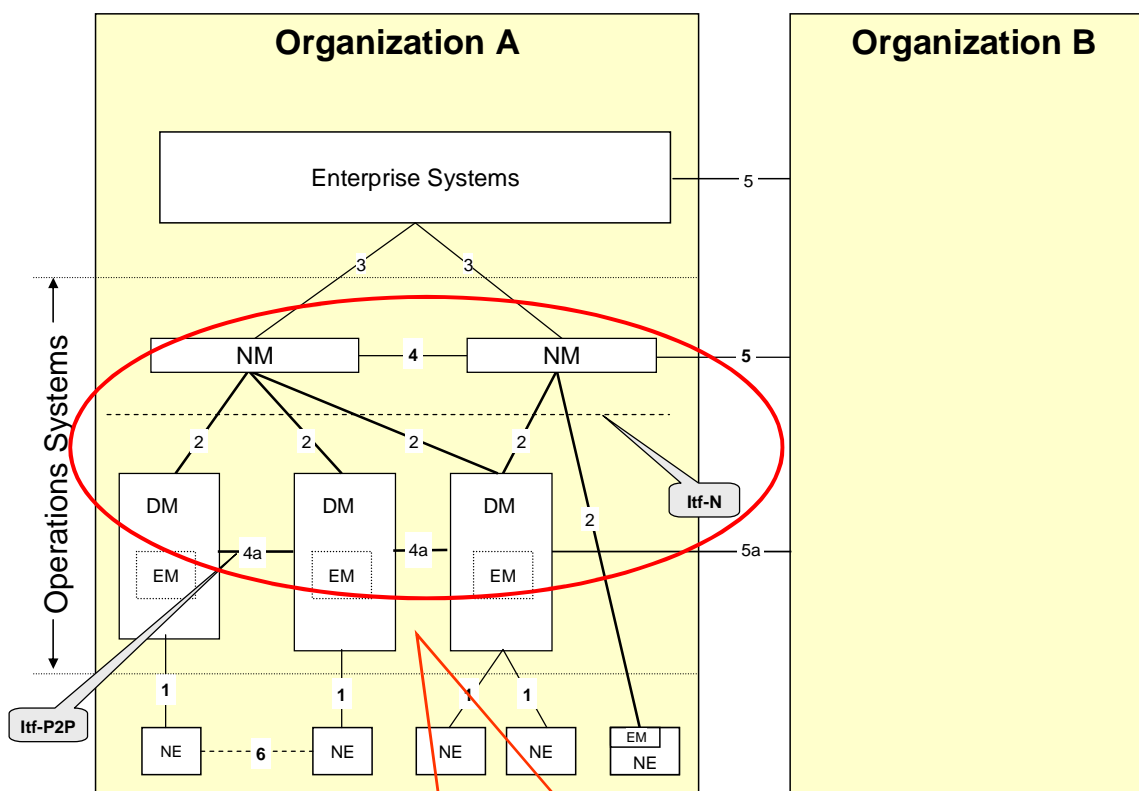


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3GPP Management Reference Model (TS 32.101)



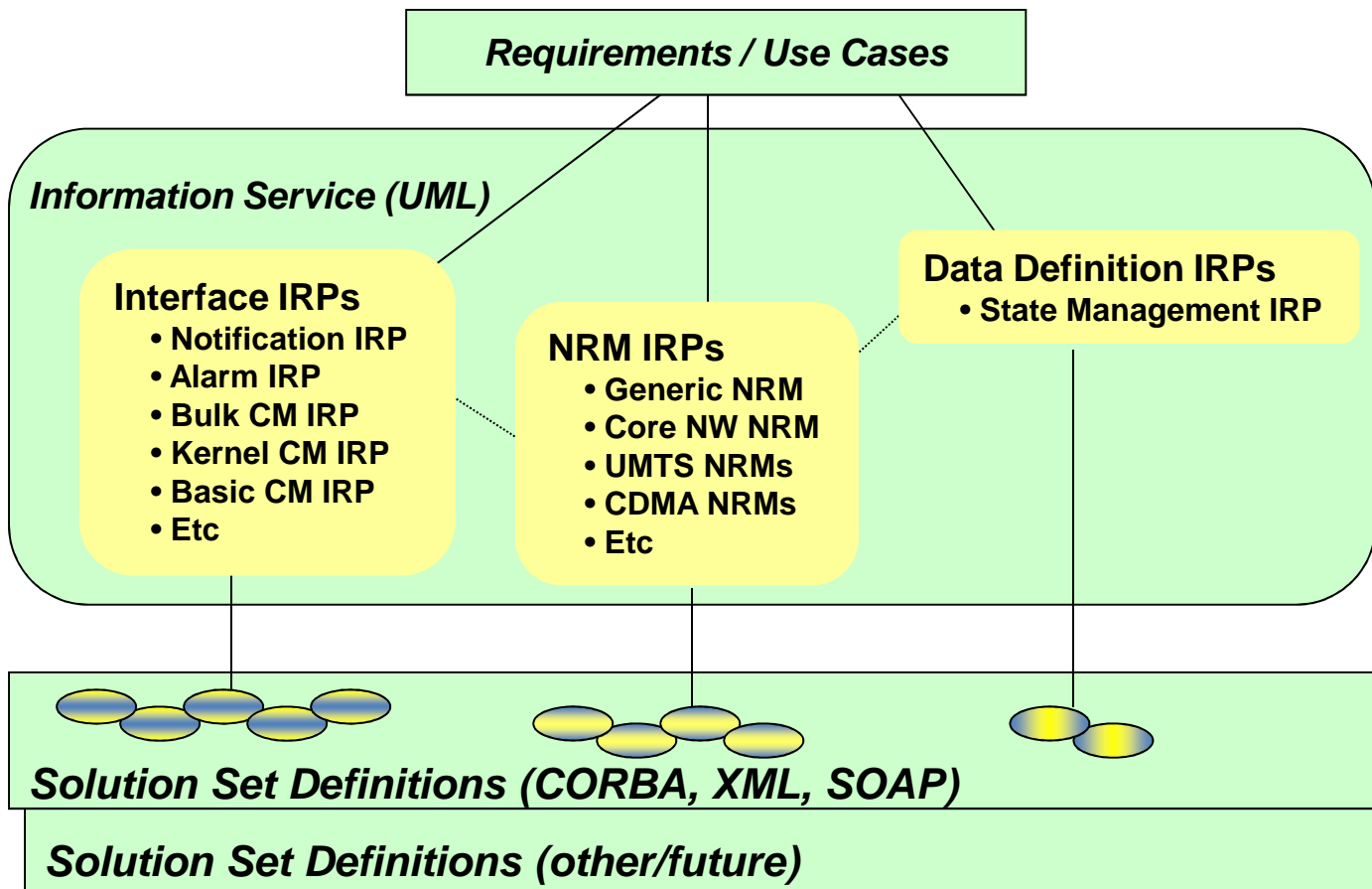
- 1: Between the Network Elements (NEs) and the Element Manager (EM) of a single broadband wireless network
- 2: Between the Element Manager (EM) and the Network Manager (NM) of a single broadband wireless network**
- 3: Between the Network Managers and the Enterprise Systems of a single broadband wireless network
- 4: Between the Network Managers (NMs) of a single broadband wireless network
- 4a: Between the Domain Managers (DMs) of a single broadband wireless network
- 5: Between Enterprise Systems & Network Managers of different broadband wireless networks
- 5a: Between the Domain Managers (DMs) of different broadband wireless networks
- 6: Between Network Elements (NEs)**





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3GPP SA5 IRP Concept



Relatively stable over long period of time

Change only with respect to functional addition and corrections

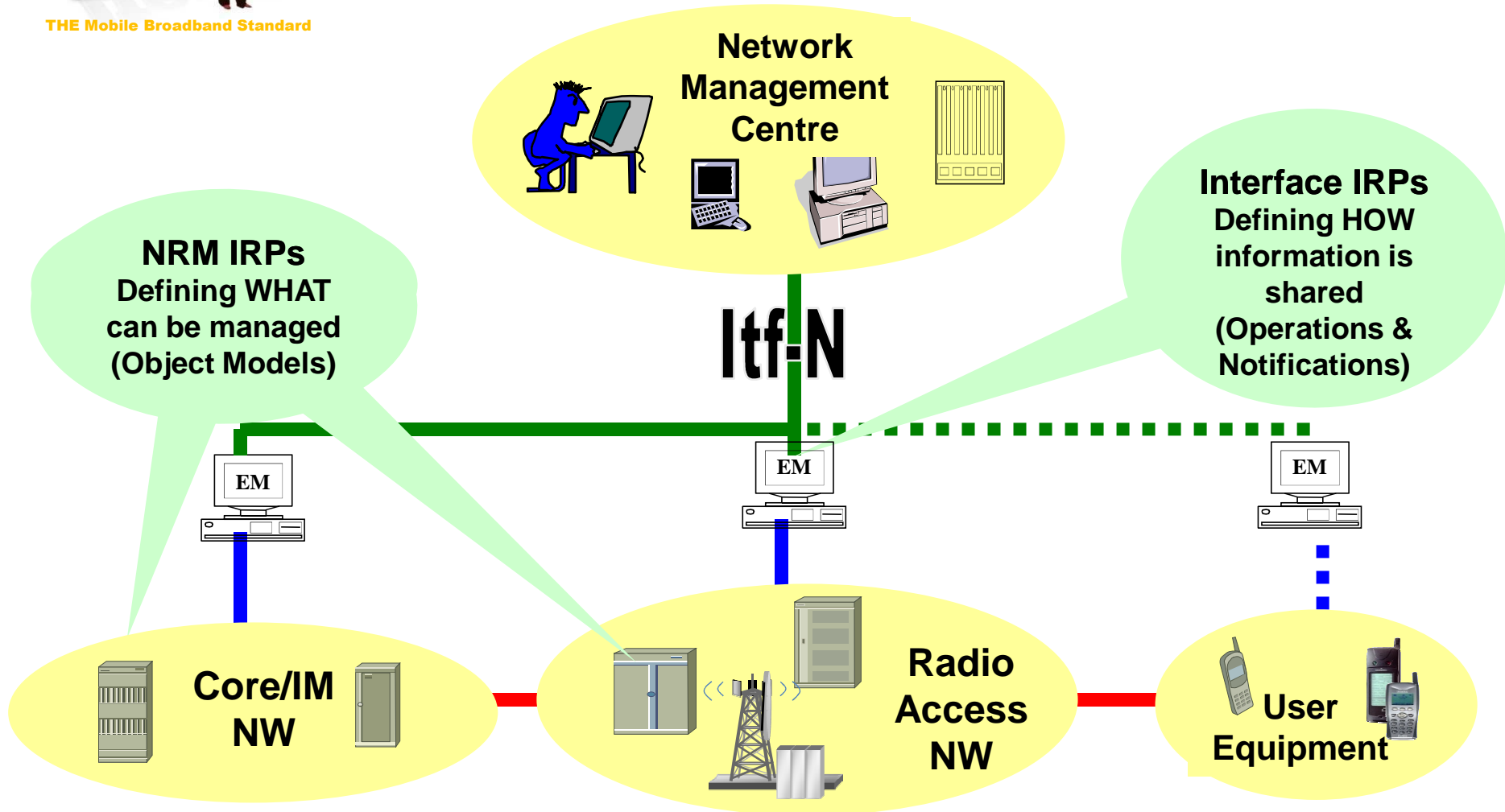
Change with new/better technologies



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Interface IRP & NRM IRP





Annex B

3GPP SON specifications



- 📶 General SON Specifications
- 📶 ANR Related Specifications
- 📶 Self-Configuration Related Specifications
- 📶 Self-Optimization Related Specifications
- 📶 Self-Healing Related Specifications
- 📶 Energy Saving Related Specifications

<http://www.3gpp.org/specifications>



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General SON Specifications



Number	Title
TR 32.821	Telecommunication management; Study of Self-Organizing Networks (SON) related Operations, Administration and Maintenance (OAM) for Home Node B (HNB)
TS 32.500	Telecommunication management; Self-Organizing Networks (SON); Concepts and requirements
TS 32.103	Telecommunication management; Integration Reference Point (IRP) overview and usage guide
TR 36.902	Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Self-configuring and self-optimizing network (SON) use cases and solutions
TR 37.822	Study on Next Generation SON for UTRA and LTE



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ANR Related Specifications



Number	Title
TS 32.511	Telecommunication management; Automatic Neighbour Relation (ANR) management; Concepts and requirements
TS 32.761	Telecommunication management; Evolved Universal Terrestrial Radio
TS 32.762	Access Network (E-UTRAN) Network Resource Model (NRM) Integration
TS 32.766	Reference Point (IRP)
TS 36.300	Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2
TS 25.423	UTRAN Iur interface Radio Network Subsystem Application Part (RNSAP) signalling
TS 25.484	Automatic Neighbour Relation (ANR) for UTRAN; Stage 2
TS 36.331	Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification



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Self-Configuration Related Specifications



Number	Title
TS 32.501 TS 32.502 TS 32.506	Telecommunication management; Self-configuration of network elements Integration Reference Point (IRP)
TS 32.531 TS 32.532 TS 32.536	Telecommunication management; Software management (SwM); Integration Reference Point (IRP)
TS 32.508	Procedure flows for Multi-Vendor Plug and Play eNB connection to the network
TS 32.509	Data Formats for Multi-Vendor Plug and Play eNB connection to the Network
TS 36.300	Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2
TS 36.331	Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification
TS 36.423	Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 Application Protocol (X2AP)



Self-Optimization Related Specifications



Number	Title
TS 32.521 TS 32.522 TS 32.526	Telecommunication management; Self-Organizing Networks (SON) Policy Network Resource Model (NRM) Integration Reference Point (IRP)
TS 32.425	Telecommunication management; Performance Management (PM); Performance measurements Evolved Universal Terrestrial Radio Access Network (E-UTRAN)
TS 32.761 TS 32.762 TS 32.766	Telecommunication management; Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP)
TR 32.838	Study on NM Centralized Coverage and Capacity Optimization (CCO) SON Function
TS 36.300	Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2
TS 36.413	Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 Application Protocol (S1AP)
TS 36.423	Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 Application Protocol (X2AP)
TS 36.314	Evolved Universal Terrestrial Radio Access (E-UTRA); Layer 2 - Measurements
TS 25.413	UTRAN Iu interface Radio Access Network Application Part (RANAP) signalling



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Self-Healing Related Specifications



Number	Title
TR 32.823	Telecommunication management; Self-Organizing Networks (SON); Study on self-healing
TS 32.541	Telecommunication management; Self-Organizing Networks (SON); Self-healing concepts and requirements
TS 32.521 TS 32.522 TS 32.526	Telecommunication management; Self-Organizing Networks (SON) Policy Network Resource Model (NRM) Integration Reference Point (IRP)
TS 32.761 TS 32.762 TS 32.766	Telecommunication management; Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP)



Energy Saving Related Specifications



Number	Title
TR 32.834	Study on Operations, Administration and Maintenance (OAM) aspects of inter-Radio-Access-Technology (RAT) energy saving
TS 32.551	Telecommunication management; Energy Saving Management (ESM); Concepts and requirements
TS 32.521 TS 32.522 TS 32.526	Telecommunication management; Self-Organizing Networks (SON) Policy Network Resource Model (NRM) Integration Reference Point (IRP)
TS 32.641 TS 32.642 TS 32.646	Telecommunication management; Configuration Management (CM); UTRAN network resources Integration Reference Point (IRP); Network Resource Model (NRM)
TS 32.761 TS 32.762 TS 32.766	Telecommunication management; Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP)
TS 32.405	Telecommunication management; Performance Management (PM); Performance measurements; Universal Terrestrial Radio Access Network (UTRAN)
TS 32.425	Telecommunication management; Performance Management (PM); Performance measurements Evolved Universal Terrestrial Radio Access Network (E-UTRAN)
TS 36.413	Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 Application Protocol (S1AP)
TS 36.423	Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 Application Protocol (X2AP)
TR 36.887	Study on Energy Saving Enhancement for E-UTRAN
TR 36.927	Evolved Universal Terrestrial Radio Access (E-UTRA); Potential solutions for energy saving for E-UTRAN



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Thank You !



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TSG Structure

Project Co-ordination Group (PCG)

TSG GERAN	TSG RAN	TSG SA	TSG CT
3GPP E-UTRA Radio Access Networks	Radio Access Network	Service & Systems Aspects	Core Network & Terminals
GERAN WG1	RAN WG1	SA WG1	CT WG1
Radio Aspects	Radio Layer 1 spec	Services	MM/CCSM (M)
GERAN WG2	RAN WG2	SA WG2	CT WG3
Protocol Aspects	Radio Layer 2 spec Radio Layer 3 RR spec	Architecture	Interworking with external networks
GERAN WG3	RAN WG3	SA WG3	CT WG4
Terminal Testing	UMTS spec, IMT spec, UTRAN OAM requirements	Security	MAP/GTP/BCH/SS
	RAN WG4	SA WG4	CT WG6
	Radio Performance Protocol aspects	Codecs	Smart Card Application Aspects
	RAN WG5	SA WG5	
	Mobile Terminal Conformance Testing	Telecom Management	

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