(MINISTERE DE L'INTERIEUR)		
Ministère Economie et Finances **(Ministère de l'Economie et des Finances)**	FRANCE	ETSI
Ministry for Digital - Spain **(Ministry for Digital Transformation and of Civil Service)**	SPAIN	ETSI
Ministry of Transport SR **(Ministry of Transport of the Slovak Republic)**	SLOVAKIA	ETSI
MITRE Corporation **(MITRE Corporation)**	UNITED STATES	ETSI
MITRE-FFRDC **(MITRE-FFRDC)**	UNITED STATES	ATIS
Mitsubishi Electric Co. **(Mitsubishi Electric Co.)**	JAPAN	ARIB
Mitsubishi Electric Corp **(Mitsubishi Electric Corporation)**	JAPAN	TTC
Mitsubishi Electric RCE **(Mitsubishi Electric R&D Centre Europe)**	FRANCE	ETSI
Motorola Mobile Com Technology **(MOTOROLA MOBILE COMMUNICATION TECHNOLOGY LTD.)**	CHINA	CCSA
Motorola Mobility España SA **(Motorola Mobility España SA)**	SPAIN	ETSI
Motorola Mobility France S.A.S **(Motorola Mobility France S.A.S)**	FRANCE	ETSI
Motorola Mobility Germany GmbH **(Motorola Mobility Germany GmbH)**	GERMANY	ETSI
Motorola Mobility UK Ltd. **(Motorola Mobility UK Ltd.)**	UNITED KINGDOM	ETSI
Motorola Solutions Germany **(Motorola Solutions Germany GmbH)**	GERMANY	ETSI
Motorola Solutions UK Ltd. **(Motorola Solutions UK Ltd.)**	UNITED KINGDOM	ETSI
MTCC **(Mobile Technology Convergence Center)**	KOREA (REPUBLIC OF)	TTA
Murata Manufacturing Co Ltd. **(Murata Manufacturing Co Ltd.)**	JAPAN	ARIB
MVG Industries **(MVG Industries)**	FRANCE	ETSI
Nanjing vivo Software Tech. **(Nanjing vivo Software Technology Co., Ltd.)**	CHINA	CCSA
Nanjing Weibo **(Nanjing Weibo Software Technology Co., Ltd.)**	CHINA	CCSA
National Instruments Corp. **(National Instruments Corporation)**	UNITED STATES	ETSI
National Radio Research Agency **(National Radio Research Agency)**	KOREA (REPUBLIC OF)	TTA
National Spectrum Consortium **(National Spectrum Consortium)**	UNITED STATES	ATIS
National Technical Assistance **(National Technical Assistance Centre)**	UNITED KINGDOM	ETSI
nbn co Limited **(nbn co Limited (ABN 86 136 533 741))**	AUSTRALIA	ETSI
NCI Agency **(NATO Communication and Information Agency)**	NETHERLANDS	ETSI
NCIS **(National Criminal Investigation Service)**	NORWAY	ETSI
NCSC **(National Cyber Security Centre)**	UNITED KINGDOM	ETSI
NDRE **(National Defence Radio Establishment)**	SWEDEN	ETSI
NEC Corporation **(NEC Corporation)**	JAPAN	ARIB
NEC Corporation **(NEC Corporation)**	JAPAN	ETSI
NEC Corporation. **(NEC Corporation)**	JAPAN	TTC
NEC Europe Ltd	UNITED KINGDOM	ETSI

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(NEC Europe Ltd)		
NEC Telecom MODUS Ltd. **(NEC Telecom MODUS Ltd.)**	UNITED KINGDOM	ETSI
NEMERGENT **(NEMERGENT SOLUTIONS SL)**	SPAIN	ETSI
NERCDTV **(Shanghai National Engineering Research Center of Digital Television Co.,Ltd.)**	CHINA	CCSA
Netherlands Police **(Netherlands Police, Division MDC)**	NETHERLANDS	ETSI
Netscout Systems Inc. **(Netscout Systems Inc.)**	UNITED STATES	ETSI
Network Rail **(Network Rail infrastructure limited)**	UNITED KINGDOM	ETSI
New H3C Technologies Co., Ltd. **(New H3C Technologies Co., Ltd.)**	CHINA	CCSA
NextNav **(NextNav)**	UNITED STATES	ATIS
NHK **(NHK (Japan Broadcasting Corporation))**	JAPAN	ARIB
NICT **(National Institute of Information and Communications Technology)**	JAPAN	ARIB
Niral **(Niral Networks Private Limited)**	INDIA	TSDSI
NIST **(National Institute of Standards and Technology)**	UNITED STATES	ATIS
Nkom **(Norwegian Communications Authority)**	NORWAY	ETSI
Nokia **(Nokia)**	UNITED STATES	ATIS
Nokia Belgium **(Nokia Bell N.V.)**	BELGIUM	ETSI
Nokia Corporation **(Nokia Corporation)**	FINLAND	ETSI
Nokia Denmark **(Nokia Denmark A/S)**	DENMARK	ETSI
Nokia France **(Nokia Networks France)**	FRANCE	ETSI
Nokia Germany **(Nokia Solutions and Networks GmbH & Co. KG)**	GERMANY	ETSI
Nokia Hungary **(Nokia Solutions and Networks Kft.)**	HUNGARY	ETSI
Nokia Japan **(Nokia Japan)**	JAPAN	ARIB
Nokia Korea **(Nokia Korea)**	KOREA (REPUBLIC OF)	TTA
Nokia Poland **(Nokia Solutions and Networks Sp. z.o.o.)**	POLAND	ETSI
Nokia Shanghai Bell **(Nokia Shanghai Bell Co., Ltd)**	CHINA	CCSA
Nokia Solutions & Networks (I) **(Nokia Solutions and Networks India Pvt. Ltd.)**	INDIA	TSDSI
Nokia UK **(Nokia UK Ltd.)**	UNITED KINGDOM	ETSI
Nordic Semiconductor ASA **(Nordic Semiconductor ASA)**	NORWAY	ETSI
NOVAMINT **(NOVAMINT)**	UNITED KINGDOM	ETSI
NPL **(National Physical Laboratory Management Ltd)**	UNITED KINGDOM	ETSI
NTIA **(National Telecommunications and Information Administration)**	UNITED STATES	ATIS
NTPU **(National Taipei University)**	TAIWAN, PROVINCE OF CHINA	ETSI
NTT **(Nippon Telegraph and Telephone Corporation (NTT))**	JAPAN	TTC
NTT corporation	JAPAN	ETSI

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(Nippon Telegraph and Telephone Corporation)		
NTT DOCOMO INC. **(NTT DOCOMO INC.)**	JAPAN	TTC
NTT DOCOMO INC.. **(NTT DOCOMO INC.)**	JAPAN	ARIB
NTT-AT Corp. **(NTT Advanced Technology Corporation)**	JAPAN	TTC
NTU **(National Taiwan University)**	TAIWAN, PROVINCE OF CHINA	ETSI
Nubia Technology Co.,Ltd **(Nubia Technology Co.,Ltd)**	CHINA	CCSA
NUFRONT **(Nufront (Beijing) Technology Co., Ltd.)**	CHINA	CCSA
NVIDIA **(NVIDIA Corporation)**	UNITED STATES	ATIS
NXP Semiconductors Netherlands **(NXP Semiconductors Netherlands B.V.)**	NETHERLANDS	ETSI
NYCU **(National Yang Ming Chiao Tung University)**	TAIWAN, PROVINCE OF CHINA	ETSI
Obvios **(Obvios)**	FRANCE	ETSI
Odido **(Odido Netherlands B.V.)**	NETHERLANDS	ETSI
Ofcom (CH) **(Ofcom (CH))**	SWITZERLAND	ETSI
Ofcom (U.K.) **(Ofcom - Office of Communications (U.K.))**	UNITED KINGDOM	ETSI
Oki Electric Industry Co. Ltd. **(OKi Electric Industry Co., Ltd)**	JAPAN	TTC
Omnispace **(Omnispace)**	UNITED STATES	ATIS
ONE Media 3.0 LLC **(ONE Media 3.0 LLC)**	UNITED STATES	ATIS
one2many B.V. **(one2many B.V.)**	NETHERLANDS	ETSI
OnePlus **(OnePlus (Shenzhen) Technology Co., LTD)**	CHINA	CCSA
OPPO **(Guangdong OPPO Mobile Telecommunications Corp.,Ltd.)**	CHINA	ETSI
OPPO (chongqing) Intelligence **(OPPO (chongqing) Intelligence Technology Limited)**	CHINA	CCSA
OPPO Beijing **(Beijing OPPO Telecommunications Corp., ltd.)**	CHINA	CCSA
OptM Media **(OptM Media Solutions Private Limited)**	INDIA	TSDSI
OQTEC **(OQ TECHNOLOGY)**	LUXEMBOURG	ETSI
Oracle Corporation **(Oracle Corporation)**	UNITED STATES	ETSI
Orange **(Orange)**	FRANCE	ETSI
Orange Romania **(Orange Romania)**	ROMANIA	ETSI
Orange Spain **(France Telecom España S.A.U.)**	SPAIN	ETSI
Orange UK **(Orange Brand Services Ltd)**	UNITED KINGDOM	ETSI
ORS **(Österreichische Rundfunksender GmbH & Co KG)**	AUSTRIA	ETSI
OTD_US **(OTD_US)**	UNITED STATES	ATIS
OTE S.A **(OTE S.A)**	GREECE	ETSI
P.I. WORKS **(P.I. WORKS TR BILISIM HIZMETLERI A.S.)**	TÜRKIYE	ETSI
Pairpoint	UNITED KINGDOM	ETSI

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(DABCO Ltd)		
Panasonic Holdings Corporation **(Panasonic Holdings Corporation)**	JAPAN	ARIB
PANASONIC R&D Center Germany **(PANASONIC R&D Center Germany GmbH)**	GERMANY	ETSI
PCCW Global B.V. **(PCCW Global B.V.)**	FRANCE	ETSI
PCI **(Philips (China) Investment Co., Ltd.)**	CHINA	CCSA
Peking University **(Peking University)**	CHINA	CCSA
Pengcheng laboratory **(Pengcheng laboratory)**	CHINA	CCSA
Peraton Labs **(Peraton Labs)**	UNITED STATES	ATIS
Philips International B.V. **(Philips International B.V.)**	NETHERLANDS	ETSI
PHY Wireless **(PHY Wireless)**	UNITED STATES	ATIS
PIDS **(PIDS)**	NETHERLANDS	ETSI
PKUSZ **(Peking university shenzhen graduate school)**	CHINA	CCSA
Plan-S **(Plan S Uydu ve Uzay Teknolojileri A.S)**	TÜRKIYE	ETSI
PML **(Purple Mountain Laboratories: Networking, Communications and Security)**	CHINA	CCSA
Polaris Wireless **(Polaris Wireless)**	UNITED STATES	ATIS
Polisen **(Polismyndigheten)**	SWEDEN	ETSI
POST Luxembourg **(POST Luxembourg)**	LUXEMBOURG	ETSI
Prasar Bharati **(Prasar Bharati)**	INDIA	TSDSI
Proximus Plc **(Proximus Plc)**	BELGIUM	ETSI
PSCE **(Public Safety Communication Europe Forum)**	BELGIUM	ETSI
PT PORTUGAL SGPS SA **(PT Portugal SGPS SA)**	PORTUGAL	ETSI
PTS **(Swedish Post and Telecom Authority)**	SWEDEN	ETSI
Public Safety Canada **(Public Safety Canada)**	CANADA	ETSI
Qihoo 360 **(Qihoo 360 Technology Co., Ltd.)**	CHINA	CCSA
Qorvo **(Qorvo)**	UNITED STATES	ETSI
Qualcomm Atheros, Inc. **(Qualcomm Atheros, Inc.)**	UNITED STATES	ATIS
QUALCOMM Europe Inc. - Italy **(QUALCOMM Europe Inc. - Italy Branch Office)**	ITALY	ETSI
QUALCOMM Europe Inc. - Spain **(QUALCOMM Europe Inc. - Spain Branch Office)**	SPAIN	ETSI
Qualcomm France **(Qualcomm France SARL)**	FRANCE	ETSI
Qualcomm Germany **(Qualcomm Germany GmbH)**	GERMANY	ETSI
Qualcomm Incorporated **(Qualcomm Incorporated)**	UNITED STATES	ATIS
Qualcomm India Pvt Ltd **(Qualcomm India Pvt Ltd)**	INDIA	TSDSI
Qualcomm Innovation Center Inc **(Qualcomm Innovation Center, Inc.)**	UNITED STATES	ATIS
QUALCOMM JAPAN LLC.	JAPAN	ARIB

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(QUALCOMM JAPAN LLC.)		
Qualcomm Korea **(Qualcomm Korea)**	KOREA (REPUBLIC OF)	TTA
Qualcomm Tech. Netherlands B.V **(Qualcomm Technologies Netherlands B.V.)**	NETHERLANDS	ETSI
Qualcomm Technologies **(Qualcomm Technologies)**	UNITED STATES	ATIS
Qualcomm Technologies Int **(Qualcomm Technologies International, Ltd)**	UNITED KINGDOM	ETSI
Qualcomm Technologies Ireland **(QT Technologies Ireland Limited)**	IRELAND	ETSI
Quanray **(Shanghai Quanray Electronics Co., Ltd.)**	CHINA	CCSA
Quectel **(Quectel Wireless Solutions Co., Ltd.)**	CHINA	CCSA
QWCT **(QUALCOMM Wireless Communication Technologies (China) Limited)**	CHINA	CCSA
RadiSys **(RadiSys Inc.)**	CANADA	ETSI
Rakuten Mobile, Inc **(Rakuten Mobile, Inc)**	JAPAN	ARIB
RATEL **(Regulatory Authority For Electronic Communications and Postal Services)**	SERBIA	ETSI
Realme (Shenzhen) **(Realme Mobile Telecommunications (Shenzhen) Co., Ltd.)**	CHINA	CCSA
Reflection B.V. **(Reflection Investment B.V.)**	NETHERLANDS	ETSI
Reliance Jio **(Reliance Jio)**	INDIA	TSDSI
RICHTEK KOREA **(RICHTEK KOREA)**	KOREA (REPUBLIC OF)	TTA
RISE **(RISE Research Institutes of Sweden)**	SWEDEN	ETSI
ROBERT BOSCH GmbH **(ROBERT BOSCH GmbH)**	GERMANY	ETSI
Rogers Communications Canada **(Rogers Communications Canada Inc.)**	CANADA	ETSI
ROHDE & SCHWARZ **(ROHDE & SCHWARZ GmbH & Co.KG)**	GERMANY	ETSI
Ruijie Network Co. Ltd **(Ruijie Network Co. Ltd)**	CHINA	CCSA
SageRAN **(Guangdong Sageran Technology Co., Ltd)**	CHINA	CCSA
SAICT **(Shenzhen Academy of Information and Communication Technology)**	CHINA	CCSA
Samsung Electronics Co., Ltd **(Samsung Electronics Co., Ltd.)**	KOREA (REPUBLIC OF)	TTA
Samsung Electronics Czech **(Samsung Electronics Czech)**	CZECH REPUBLIC	ETSI
Samsung Electronics France SA **(Samsung Electronics France SA)**	FRANCE	ETSI
Samsung Electronics GmbH **(Samsung Electronics GmbH)**	GERMANY	ETSI
Samsung Electronics Iberia SA **(Samsung Electronics Iberia SA)**	SPAIN	ETSI
Samsung Electronics Nordic AB **(Samsung Electronics Nordic AB)**	SWEDEN	ETSI
Samsung Electronics Polska **(Samsung Electronics Polska)**	POLAND	ETSI
Samsung Guangzhou Mobile R&D **(Samsung Guangzhou Mobile R&D Center)**	CHINA	CCSA
Samsung Nanjing **(Samsung Electronic (China) R&D Center)**	CHINA	CCSA
Samsung R&D Institute India **(Samsung R&D Institute India - Bangalore Pvt. Ltd)**	INDIA	TSDSI
SAMSUNG R&D INSTITUTE JAPAN	JAPAN	ARIB

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(SAMSUNG R&D INSTITUTE JAPAN)		
Samsung R&D Institute UK **(Samsung R&D Institute UK)**	UNITED KINGDOM	ETSI
Samsung Research America **(Samsung Research America)**	UNITED STATES	ATIS
Samsung Shenzhen **(Samsung Network R&D Center-Shenzhen)**	CHINA	CCSA
Sanechips **(Sanechips Technology Co. , Ltd.)**	CHINA	CCSA
Sateliot **(Satelio IoT Services)**	SPAIN	ETSI
Schindler **(Schindler Elevator Ltd)**	SWITZERLAND	ETSI
SDI Squared **(SDI Squared LLC)**	UNITED STATES	ETSI
Sectra Communications AB **(Sectra Communications AB)**	SWEDEN	ETSI
Security Service **(Swedish Security Service)**	SWEDEN	ETSI
Semtech Neuchatel SA **(Semtech Neuchatel SA)**	SWITZERLAND	ETSI
Sennheiser electronic SE **(Sennheiser electronic SE & Co. KG)**	GERMANY	ETSI
Sensus UK **(Sensus UK Systems Limited)**	UNITED KINGDOM	ETSI
Sepura Ltd **(Sepura Limited)**	UNITED KINGDOM	ETSI
Sequans Communications **(Sequans Communications)**	FRANCE	ETSI
SES S.A. **(SES S.A.)**	LUXEMBOURG	ETSI
SETS **(Society for Electronic Transactions and Security)**	INDIA	TSDSI
SEU **(Southeast University)**	CHINA	CCSA
SGDSN **(Secrétariat Général de la Défense et de la Sécurité Nationale (SGDSN))**	FRANCE	ETSI
SGITG **(State Grid Information & Telecommunication Group Co., Ltd.)**	CHINA	CCSA
SGS Wireless **(SGS Wireless)**	UNITED KINGDOM	ETSI
Shanghai Chen Si Electronics **(Shanghai Chen Si Electronics Technology Co., Ltd)**	CHINA	CCSA
Shanghai Jiao Tong University **(Shanghai Jiao Tong University)**	CHINA	CCSA
Shanghai Tejet Com Technology **(Shanghai Tejet Communications Technology Co., Ltd.)**	CHINA	CCSA
SHARP Corporation **(SHARP Corporation)**	JAPAN	ARIB
Shenzhen Heytap **(Shenzhen Heytap Technology Corp.,Ltd.)**	CHINA	CCSA
ShenZhen Zhongxing Shitong **(ShenZhen Zhongxing Shitong Tech. Co.,Ltd.)**	CHINA	CCSA
SIA **(Shenyang Institute of Automation, Chinese Academy of Sciences)**	CHINA	CCSA
Siemens AG **(Siemens AG)**	GERMANY	ETSI
Signalchip Innovations Pvt. **(Signalchip Innovations Pvt. Ltd.)**	INDIA	TSDSI
SIST **(Slovenian Institute for Standardisation)**	SLOVENIA	ETSI
Sisvel **(Sisvel International S.A.)**	LUXEMBOURG	ETSI
SK Telecom **(SK TELECOM)**	KOREA (REPUBLIC OF)	TTA
SKY Perfect JSAT Corporation	JAPAN	ARIB

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(SKY Perfect JSAT Corporation)		
Skylo Technologies **(Skylo Technologies)**	UNITED STATES	ATIS
Skyworks Solutions Inc. **(Skyworks Solutions Inc.)**	UNITED STATES	ETSI
Smart Internet Lab **(Smart Internet Lab, University of Bristol)**	UNITED KINGDOM	ETSI
SmarterMicro Inc. **(Smarter Microelectronics(Guangzhou) Co.,Ltd)**	CHINA	CCSA
SnT - University of Luxembourg **(Interdisciplinary Centre for Security, Reliability and Trust/University of Luxembourg)**	LUXEMBOURG	ETSI
SoftBank Corp. **(SoftBank Corp.)**	JAPAN	ARIB
Softel Systems **(Softel Systems Pty Ltd)**	AUSTRALIA	ETSI
Softil Ltd **(Softil Ltd)**	ISRAEL	ETSI
Sony Corporation **(Sony Corporation)**	JAPAN	ARIB
Sony Europe B.V. **(Sony Europe B.V.)**	UNITED KINGDOM	ETSI
Sony Group Corporation **(Sony Group Corporation)**	JAPAN	ARIB
Sooktha Consulting Pvt Ltd **(Sooktha Consulting Pvt Ltd)**	INDIA	TSDSI
Soongsil University **(Soongsil University)**	KOREA (REPUBLIC OF)	TTA
SOS Alarm **(SOS Alarm Sverige AB)**	SWEDEN	ETSI
Southern Linc. **(Southern Linc.)**	UNITED STATES	ATIS
Southwest Jiaotong university **(Southwest Jiaotong university)**	CHINA	CCSA
SpaceX **(SpaceX Netherlands B.V)**	NETHERLANDS	ETSI
Spark NZ Ltd **(Spark NZ Ltd)**	NEW ZEALAND	ATIS
Spirent Communications **(Spirent Communications)**	UNITED STATES	ETSI
Sporton International Inc **(Sporton International Inc.)**	TAIWAN, PROVINCE OF CHINA	ETSI
Spreadtrum Communications **(Spreadtrum Communications (Shanghai) Co., Ltd.)**	CHINA	CCSA
SRTC **(The State Radio_monitoring_center Testing Center)**	CHINA	CCSA
SS8 **(SS8 Networks Inc.)**	UNITED STATES	ETSI
SSNS **(Special Service for the National Security of Hungary)**	HUNGARY	ETSI
Starpoint **(Beijing Starpoint Technology Company Limited)**	CHINA	CCSA
STE IDIRECT IRELAND LTD **(ST ENGINEERING IDIRECT (IRELAND) LIMITED)**	IRELAND	ETSI
STMicroelectronics **(STMicroelectronics International NV)**	SWITZERLAND	ETSI
Sumitomo Elec. Industries, Ltd **(Sumitomo Electric Industries, Ltd.)**	JAPAN	ARIB
SUNGKYUNKWAN UNIVERSITY **(SUNGKYUNKWAN UNIVERSITY)**	KOREA (REPUBLIC OF)	TTA
SUTD **(Singapore University of Technology and Design)**	SINGAPORE	ETSI
Swift Navigation **(Swift Navigation)**	UNITED STATES	ATIS
SWISSCOM **(SWISSCOM SA)**	SWITZERLAND	ETSI
SWR	GERMANY	ETSI

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(Südwestrundfunk)		
SyncTechno Inc. **(SyncTechno Inc.)**	KOREA (REPUBLIC OF)	TTA
Syniverse **(M/s Syniverse Technologies Services India Pvt. Ltd.)**	INDIA	TSDSI
TA **(Tantra Analyst)**	UNITED STATES	ETSI
Tait Europe Limited **(Tait Europe Limited)**	AUSTRIA	ETSI
TATA Communications Ltd **(TATA Communications Ltd)**	INDIA	TSDSI
Tata Elxsi Limited. **(Tata Elxsi Limited.)**	INDIA	TSDSI
TCL **(Shenzhen TCL New Technology Company Ltd.)**	CHINA	CCSA
TCS **(TATA Consultancy Services)**	INDIA	TSDSI
TD Tech Ltd **(TD Tech Ltd)**	CHINA	CCSA
TDF **(TDF SAS)**	FRANCE	ETSI
Tech Mahindra Limited **(Tech Mahindra Limited)**	INDIA	TSDSI
Tejas Network Limited **(Tejas Network Limited)**	INDIA	TSDSI
Tektronix GmbH **(Tektronix GmbH)**	GERMANY	ETSI
TELECOM ITALIA S.p.A. **(Telecom Italia S.p.A.)**	ITALY	ETSI
Telefonica Germany GmbH **(Telefónica Germany GmbH & Co OHG)**	GERMANY	ETSI
TELEFONICA S.A. **(TELEFONICA S.A.)**	SPAIN	ETSI
Telekom Deutschland GmbH **(Telekom Deutschland GmbH)**	GERMANY	ETSI
TELENOR ASA **(Telenor ASA)**	NORWAY	ETSI
Telesat International Limited **(Telesat International Limited)**	UNITED KINGDOM	ETSI
Telia Company AB **(Telia Company AB)**	SWEDEN	ETSI
Telit Communications S.p.A. **(Telit Communications S.p.A.)**	ITALY	ETSI
Telstra Limited **(Telstra Limited)**	AUSTRALIA	ETSI
TELUS **(TELUS)**	CANADA	ATIS
Tencent **(Shenzhen city Tencent computer system Co. Ltd.)**	CHINA	CCSA
Tencent Cloud **(Tencent cloud computing Beijing Co., Ltd)**	CHINA	CCSA
Teradyne **(Teradyne)**	UNITED STATES	ATIS
TerreStar Solutions Inc. **(TerreStar Solutions Inc.)**	CANADA	ATIS
Texas A&M University **(Texas A&M University)**	UNITED STATES	ETSI
TEXAS Instruments **(Texas Instruments France)**	FRANCE	ETSI
THALES **(THALES)**	FRANCE	ETSI
THURAYA TELECOM CO. **(THURAYA TELECOMMUNICATIONS COMPANY)**	UNITED ARAB EMIRATES	ETSI
Tiami Networks **(Tiami Networks)**	UNITED STATES	ATIS
TII	UNITED ARAB EMIRATES	ETSI

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(Technology Innovation Institute)		
T-Mobile Austria GmbH **(T-Mobile AUSTRIA GmbH)**	AUSTRIA	ETSI
T-Mobile Polska S.A. **(T-Mobile Polska Spolka Akcyjna)**	POLAND	ETSI
T-Mobile USA **(T-Mobile USA, Inc.)**	UNITED STATES	ETSI
T-Mobile USA Inc. **(T-Mobile USA Inc.)**	UNITED STATES	ATIS
TNO **(TNO)**	NETHERLANDS	ETSI
Tomorrow's Creation Labs **(Tomorrow's Creation Labs)**	JAPAN	ARIB
Tongji University **(Tongji University)**	CHINA	CCSA
Toshiba **(Toshiba)**	UNITED KINGDOM	ETSI
TOWE Wireless **(Sushi TOWE Wireless Testing (Shenzhen) Co.,Ltd.)**	CHINA	ETSI
TOYOTA Info Technology Center **(TOYOTA Info Technology Center USA, Inc.)**	UNITED STATES	ETSI
TOYOTA MOTOR CORPORATION **(TOYOTA MOTOR CORPORATION)**	JAPAN	TTC
TRAFICOM **(The Finnish Transport and Communications Agency)**	FINLAND	ETSI
Trafikverket **(Trafikverket)**	SWEDEN	ETSI
Transsion Holdings **(Transsion Holdings)**	CHINA	CCSA
TransUnion **(TransUnion)**	UNITED STATES	ATIS
Trimble **(Trimble)**	UNITED STATES	ATIS
Tron Future Tech Inc. **(Tron Future Tech Inc.)**	TAIWAN, PROVINCE OF CHINA	ETSI
TTP plc **(TTP plc)**	UNITED KINGDOM	ETSI
Turk Telekomunikasyon A.S. **(Turk Telekomunikasyon A.S.)**	TÜRKIYE	ETSI
TURKCELL **(Turkcell Iletisim Hizmetleri A.S.)**	TÜRKIYE	ETSI
U.S. Department of Defense **(U.S. Department of Defense)**	UNITED STATES	ATIS
U.S. Department of Transport. **(U.S. Department of Transportation)**	UNITED STATES	ATIS
U.S. National Security Agency **(US National Security Agency)**	UNITED STATES	ATIS
Uangel **(Uangel Corporation)**	KOREA (REPUBLIC OF)	TTA
Ubiik **(Ubiik SAS)**	FRANCE	ETSI
ubinexus **(Beijing Ubinexus Technology Development Co., Ltd)**	CHINA	CCSA
u-blox AG **(u-blox AG)**	SWITZERLAND	ETSI
UESTC **(University of Electronic Science and Technology of China)**	CHINA	CCSA
UL VS Ltd **(UL VS Ltd)**	UNITED KINGDOM	ETSI
UMA **(Universidad de Malaga)**	SPAIN	ETSI
umlaut **(umlaut communications GmbH)**	GERMANY	ETSI
UNIBO **(ALMA MATER STUDIORUM Università di Bologna)**	ITALY	ETSI
UniBw M	GERMANY	ETSI

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(University of the Bundeswehr Munich)		
Unicom Broadband Online **(Unicom Broadband Online Co., Ltd.)**	CHINA	CCSA
Unicompay **(Unicompay Co., Ltd.)**	CHINA	CCSA
Union Inter. Chemins de Fer **(Union Internationale des Chemins de Fer)**	FRANCE	ETSI
Union Telephone Company **(Union Telephone Company)**	UNITED STATES	ATIS
Unisoc **(Unisoc (Shanghai) Technologies Co., Ltd.)**	CHINA	CCSA
Unisoc Beijing **(Beijing Unisoc Communications Technology Co., Ltd.)**	CHINA	CCSA
UPV/EHU **(Universidad del País Vasco/Euskal Herriko Unibertsitatea)**	SPAIN	ETSI
US Cellular Corporation. **(US Cellular Corporation/TDS.)**	UNITED STATES	ATIS
US DHS Science & Technology **(US DHS Science & Technology)**	UNITED STATES	ATIS
UTIMACO TS GmbH **(UTIMACO TS GmbH)**	GERMANY	ETSI
UTokyo **(The University of Tokyo)**	JAPAN	ETSI
Vaan Megam **(Vaan Megam Networks)**	INDIA	TSDSI
Valeo **(Valeo Telematik und Akustik GmbH)**	GERMANY	ETSI
VALID SOLUCIONES TECNOLÓGICAS **(VALID SOLUCIONES TECNOLÓGICAS S.A.U)**	SPAIN	ETSI
Valid8 **(Valid8.com, Inc.)**	UNITED STATES	ETSI
Vanchip **(Vanchip (Tianjin) Technology Co., Ltd.)**	CHINA	CCSA
Verizon Denmark **(Verizon Denmark A/S)**	DENMARK	ETSI
Verizon Finland **(Verizon Finland Oy)**	FINLAND	ETSI
Verizon France **(Verizon France SAS)**	FRANCE	ETSI
Verizon Netherlands **(Verizon Nederland B.V)**	NETHERLANDS	ETSI
Verizon Spain **(Verizon Spain S.L.)**	SPAIN	ETSI
Verizon Sweden **(Verizon Sweden Aktiebolag 2116)**	SWEDEN	ETSI
Verizon Switzerland AG **(Verizon Switzerland AG)**	SWITZERLAND	ETSI
Verizon UK Ltd **(Verizon UK Ltd)**	UNITED KINGDOM	ETSI
Vestel **(Vestel Elektronik Sanayi ve Ticaret A.S)**	TÜRKIYE	ETSI
ViaSat Satellite Holdings Ltd **(ViaSat Satellite Holdings Ltd)**	UNITED KINGDOM	ETSI
VIAVI Solutions **(Viavi Solutions UK Ltd.)**	UNITED KINGDOM	ETSI
vivo Mobile Com. (Chongqing) **(vivo Mobile Communication (Chongqing) Co., Ltd)**	CHINA	CCSA
vivo Mobile Communication (H) **(vivo Mobile Communication (Hangzhou) Co., Ltd.)**	CHINA	CCSA
vivo Mobile Communication (S) **(vivo Mobile Communication (Shenzhen) Co., Ltd.)**	CHINA	CCSA
vivo Mobile Communication Co., **(vivo Mobile Communication Co., Ltd)**	CHINA	CCSA
vivo Software Technology **(vivo Software Technology (Xi'an) Co., Ltd.)**	CHINA	CCSA
VIVO TECH GmbH	GERMANY	ETSI

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Case No. IPR2025-00036; U.S. Patent No. 11,627,631
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(VIVO TECH GmbH)		
vivo Wisdom Technology **(vivo Wisdom Technology Co., Ltd.)**	CHINA	CCSA
Vodafone GmbH **(Vodafone GmbH)**	GERMANY	ETSI
VODAFONE Group Plc **(Vodafone Group Plc)**	UNITED KINGDOM	ETSI
Vodafone Ireland Plc **(Vodafone Ireland Plc)**	IRELAND	ETSI
Vodafone Italia SpA **(Vodafone Italia SpA)**	ITALY	ETSI
Vodafone Romania S.A. **(Vodafone Romania S.A.)**	ROMANIA	ETSI
Vodafone Telekomünikasyon A.S. **(Vodafone Telekomünikasyon A.S.)**	TÜRKIYE	ETSI
VoiceAge Corporation **(VoiceAge Corporation)**	CANADA	ETSI
Volkswagen AG **(Volkswagen AG)**	GERMANY	ETSI
VSENS **(Unicom Vsens Telecommunications Co., Ltd)**	CHINA	CCSA
VTT **(VTT Technical Research Centre of Finland)**	FINLAND	ETSI
WE Certification Oy **(WE Certification Oy)**	FINLAND	ETSI
Wiliot Ltd. **(Wiliot Ltd.)**	ISRAEL	ETSI
WILUS Inc. **(WILUS Inc.)**	KOREA (REPUBLIC OF)	TTA
Wipro **(Wipro Limited)**	INDIA	TSDSI
Wipro GE **(Wipro GE Healthcare Private Limited)**	INDIA	TSDSI
Wisig Networks Pvt Ltd **(Wisig Networks Pvt Ltd)**	INDIA	TSDSI
Wuhan Hongxin Technology **(Wuhan Hongxin Technology Development Co., Ltd.)**	CHINA	CCSA
XGN **(XGen Network LLC)**	UNITED STATES	ETSI
Xiamen Sanan Integr. Circuit **(Xiamen Sanan Integrated Circuit Co., Ltd.)**	CHINA	CCSA
Xiaomi Communications **(Xiaomi Communications)**	CHINA	CCSA
Xiaomi Digital Technology **(Beijing Xiaomi Digital Technology Co., Ltd.)**	CHINA	CCSA
Xiaomi Electronic Software **(Beijing Xiaomi Electronic Software Co., Ltd.)**	CHINA	CCSA
Xiaomi EV Technology **(Xiaomi EV Technology Co., Ltd.)**	CHINA	CCSA
Xiaomi Technology **(Xiaomi Technology)**	CHINA	CCSA
Xiaomi Technology (Polska) sp. **(XIAOMI TECHNOLOGY (POLSKA) SPOLKA Z OGRANICZONA ODPOWIEDZIALNOSCIA)**	POLAND	ETSI
Xiaomi Technology France **(Xiaomi Technology France)**	FRANCE	ETSI
Xiaomi Technology Germany GmbH **(Xiaomi Technology Germany GmbH)**	GERMANY	ETSI
Xiaomi Technology Italy srl **(Xiaomi Technology Italy srl)**	ITALY	ETSI
Xiaomi Technology Netherlands **(Xiaomi Technology Netherlands B.V.)**	NETHERLANDS	ETSI
Xiaomi Technology Spain S.L **(Xiaomi Technology Spain S.L)**	SPAIN	ETSI
Xiaomi Technology UK Limited **(Xiaomi Technology UK Limited)**	UNITED KINGDOM	ETSI
Xidian University	CHINA	CCSA

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(Xidian University)		
Xilinx Ireland **(Xilinx Ireland)**	IRELAND	ETSI
XNET **(ZGC Institute of Ubiquitous-X Innovation and Applications)**	CHINA	ETSI
X-Net **(ZGC Institute of Ubiquitous-X Innovation and Applications)**	CHINA	CCSA
Yonsei University **(Yonsei University)**	KOREA (REPUBLIC OF)	TTA
Zhejiang Lab **(Zhejiang Lab)**	CHINA	CCSA
Zhejiang University **(Zhejiang University)**	CHINA	CCSA
ZITiS **(Central Office for Information Technology in the Security Sector)**	GERMANY	ETSI
Zollkriminalamt (ZKA) **(Zollkriminalamt (ZKA))**	GERMANY	ETSI
ZONSON **(ZONSON SAMRT AUTO CORPORATION)**	CHINA	CCSA
ZTE **(ZTE Telecom India Pvt Ltd)**	INDIA	TSDSI
ZTE Corporation **(ZTE Corporation)**	CHINA	CCSA
ZTE Corporation **(ZTE Corporation)**	CHINA	ETSI
ZTE Deutschland **(ZTE Deutschland GmbH)**	GERMANY	ETSI
ZTE FRANCE SASU **(ZTE FRANCE SASU)**	FRANCE	ETSI
ZTE Italia **(ZTE Italia S.R.L)**	ITALY	ETSI
ZTE JAPAN K.K. **(ZTE JAPAN K.K..)**	JAPAN	TTC
ZTE Japan K.K. **(ZTE Japan K.K.)**	JAPAN	ARIB
ZTE Korea Limited **(ZTE Korea Limited)**	KOREA (REPUBLIC OF)	TTA
ZTE Photonics **(ZTE Photonics Technology Co.,Ltd.)**	CHINA	CCSA
ZXNE **(ZXNE CORPORATION)**	CHINA	CCSA

Total : 835 Individual Members

Any comments or problems with this application? Please let us know...

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APPENDIX 10

The Wayback Machine - https://web.archive.org/web/20170510190630/http://www.3gpp.org:80/about-3gpp/3gpp-faqs

3GPP FAQs

3GPP FAQs

Questions about 3GPP Membership
Questions about 3GPP email exploder lists
Questions about Legal Matters
Questions about 3GPP Specifications
Questions about Technical Specification Group/Working Group
Questions about Documents and TSG/WG Meetings
Questions about Work Items and Deliverables
Miscellaneous
Technical topics

Questions about 3GPP Membership

Who can become an Individual Member of 3GPP and how much does it cost?
Who may participate in 3GPP meetings?
Who shall fill in the 3GPP Individual Member Application form?
What shall I do if a 3GPP company or official contact details change?
What are the different membership categories?
Who may become an observer?
Who may become a Guest Member and do guests have to pay any fees?
Who can apply for market representative Partnership?
Can an ETSI Observer become an Individual Member of 3GPP?
Can an ETSI Applicant apply for 3GPP Membership?
Can an ETSI Member apply for 3GPP Guest status?

Questions about 3GPP email exploder lists

Are there discussion archives for the 3GPP exploder lists?
How do I subscribe to the 3GPP exploder lists?

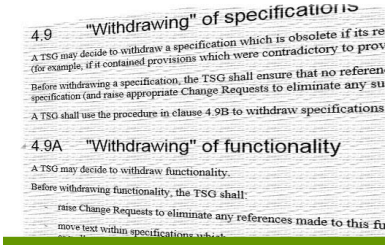
Questions about Legal Matters

What is the 3GPP IPR Policy?
What is the 3GPP policy on licensing?
Who owns the Technical Specifications and the Technical Reports approved by 3GPP?
Are meeting contributions to ETSI TC SMG publically available?
Is permission needed to use the 3GPP logo in marketing collaterals or on a web site?
Can I use computer code included with a 3GPP TS to implement a product?

Questions about 3GPP Specifications

How do I create the next Release version of a TS or TR?
Where can the rules, protocols or software needed to develop applications for UMTS be found?
What is the correlation between Stage 1, Stage 2 and Stage 3?
Are the 3GPP specifications produced only in word?
Which group works with specifications covering the use of the GSM codec (either in C or Java based)?
Where can I find documents produced by the GSM MoU Group / GSM Association?
Where would I find a document (e.g. UMTS 30.03 version 3.1.0) which does not appear on the status list?
Where are all the Change Requests (CRs) located?
Where are all the current ETSI SMG specs located?
Which group works on Physical Layer aspects of UMTS/LTE?
Where can I find the list of Abstract syntax notation (ASN.1) object identifiers?
Where can I find the 3GPP Confidentiality and Integrity algorithms?
What is a Release - how does specification version numbering work?
Where can I find information on the current status of 3GPP specifications?
What is the system for numbering specifications?
What is the meaning of the text at the foot of the TS/TR cover page?

Questions about Technical Specification Group/Working Group



Proposal to withdraw TR 38.900 (channel model for spectrum above 6GHz) at RAN#76

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Who are the TSG/WG Officials and Support team and where can I find their contact details?
Where can I find the Terms of Reference for my TSG/WG?
May I become an Official?
Where are my TSG/WGs documents stored?

Questions about Documents and TSG/WG Meetings

How do I register for a meeting?
Who can submit a change proposal on any 3GPP specifications to 3GPP?
If a change proposal is submitted how long does it take for it to get approved?
How to get a user name and password for "Reserve a Document Number"?
How do I obtain a document number for my contribution?
Where can I download documents for an upcoming meeting?
Where can I find a temporary document template?

Questions about Work Items and Deliverables

What is my role when my TSG/WGs has to approve a deliverable?
What are the different types of deliverables?
Can I write an 3GPP Document myself?
Do I and my company have to support my TSG/WGs Work Items?

Miscellaneous

Do I need a password and user name to access the 3GPP Web site ?
Can you give me information about which companies manufacture particular types of equipment. (...)
How can I determine when a meeting contribution document (TDoc) became publicly available?
Is it possible to determine the date and time of publication of a particular version of a 3GPP specification?

Technical topics

What formalities do I have to go through to get type approval for terminal equipment in Europe? Is there a single point of contact? What standards does my equipment need to conform to in order that I can place it on the market?
Where can I find a list of technical terms and abbreviations used in 3GPP documents?
What is the difference between a SIM and a USIM? What is a UICC?
I have transferred a video file from my phone to my PC. Where can I find a player for 3gp files?
Where can I find the specification of the SIM Lock feature?

Who can become an Individual Member of 3GPP and how much does it cost?

Individual Members are by definition members of the Organizational Partners of 3GPP. This means that members of standardization bodies such as ETSI, ARIB, TTA, TTC, ATIS and CCSA have a right to take part in 3GPP. If your company becomes an ETSI member, please be informed that for participation in 3GPP you need to pay 3 units of contribution as a minimum except SMEs, Users, Universities, Public Research Bodies who should pay 2 units (instead of 1).

ETSI Members' and associate members' fees are calculated by class. The class is derived from the member company's annual ECRT band (Electronics Communications Related Turnover) – see ECRT definition.
Each class corresponds to a number of units. This number determines the contribution payable.

Example: If your organization declares an annual ECRT of up to 135€ million, you would need to pay 2 Units of Contribution (corresponding to 9380€ per year) plus an additional UoC for participation in 3GPP of 3380€ (see fees table). Members joining ETSI during the 2nd half of the year benefit from a 50% rebate on the membership fee of the current year. In this case, you would pay 12760€ minus 50% = 6380€ for yyyy.

Who may participate in 3GPP meetings?

To attend a 3GPP meeting, you must be a 3GPP Individual Member (i.e., you must be a Member of one of the Organizational Partners involved in the project; ARIB, CCSA, ETSI, ATIS, TTA , TTC or TSDSI). A non-member company should seek membership with one of the above partners to be eligible to contribute and participate at 3GPP Meetings.

Who shall fill in the 3GPP Individual Member Application form?

The person legally responsible for the requesting company shall fill in the form.

What shall I do if a 3GPP company or official contact details change?

All changes of correspondence should be notified to ETSI Membership and 3GPPMembership.
In case of change of official contact an ETSI Online (EOL) account will be created for the new contact.
Please note that as official contact person you can view and modify your personal and organization's contact details via the "Manage my membership" web interface.

What are the different membership categories?

The different membership categories of 3GPP are described in Article 4 of the 3GPP Working Procedures.

Who may become an observer?

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The status of Observer may be granted by the Organizational Partners to an entity which has the qualifications to become a future Partner (see also 3GPP Working Procedures Article 10)

Who may become a 3GPP Guest Member and do guests have to pay any fees?

The 3GPP Guest status is for potential Individual Members who may be granted permission to participate in 3GPP for a maximum period of 6 months. Guest status is granted on a case-by-case basis by the Organizational Partners (see also 3GPP Working Procedures Article 10). If you like to apply for a Guest status, please complete the on-line 3GPP Application form.

No membership fees are requested for Guest applications. The Guest status is a one time only membership which is used to enable a company to decide whether or not they wish to become a full member (by joining one of the Partners).

Who can apply for market representative Partnership?

Organisation who have the ability to offer market advice to 3GPP and to bring into 3GPP a consensus view of market requirements (e.g., services, features and functionality) falling within the 3GPP scope (see also 3GPP Working Procedures, Article 7).

Can an ETSI Observer become an Individual Member of 3GPP?

An ETSI Observer cannot become an Individual Member of 3GPP. An ETSI Observer may "observe" all activities, but their participation is limited to the ETSI General Assembly only. Therefore, ETSI Observers have no participation rights in 3GPP. ETSI Observers have access to ETSI documentation and of course to 3GPP documentation since that is openly published on the web.

3GPP does have it's own category called "Observer" but that is entirely different and is used for potential Partners.

Can an ETSI Applicant apply for 3GPP Membership?

YES, an ETSI Applicant means that your request to become an ETSI Member will be addressed (and normally approved) at the next General Assembly and that the company has specified they want to participate in 3GPP activities. See also above regarding 3GPP fees.

Can an ETSI Member apply for 3GPP Guest status?

Yes, any ETSI Member can apply for a 3GPP Guest status by filling in the on-line 3GPP Application form.

Are there discussion archives for the 3GPP exploder lists?

Yes! To see the complete list please have a look here: Home page of listserv and scroll down until you find the list you are interested in. For example, the archives for the main RAN email list.

How do I subscribe to the 3GPP exploder lists?

All 3GPP email exploder lists can be found at list.3gpp.org. In order to subscribe to any of the lists, scroll down until you find the list you are interested in, then click on the link and on the right side of the page you will find Subscribe or Unsubscribe. Click on the link and follow the simple instructions. Delegates who already have an ETSI username and password should use the list management application on the ETSI site.

What is the 3GPP IPR Policy?

The 3GPP Organizational Partners have agreed that their IPR policies should be respected and that their respective members should be encouraged to declare "their willingness to grant licenses on fair, reasonable terms and conditions and on non discriminatory basis" (Article 3.1 of the Third Generation Partnership Project). For more information, look here >>>

The above-mentioned principles are further reflected in Article 55 of the 3GPP Working Procedures which request that each Individual Members should declare "at the earliest opportunity, any IPR which they believe to be essential, or potentially essential, to any work ongoing within 3GPP".

What is the 3GPP policy on licensing?

Some aspects of 3GPP systems are covered by essential Intellectual Property Rights (IPR) - that is, patented technologies without which equipment cannot be implemented. The IPR vests in - i.e. the patents are held by - individual companies, and not by 3GPP itself or any of its Organizational Partners (OPs). All Individual Members of 3GPP abide by the IPR policies of the OP to which they belong; all such policies are broadly similar see also "What is the 3GPP IPR Policy", and require IPR holders to make licences available to all third parties, whether or not they are 3GPP Individual Members, under fair, reasonable and non-discriminatory (FRAND) terms.

Neither 3GPP nor its component OPs offer an IPR search service. It is the responsibility of each manufacturer / system implementor to seek and obtain its own licenses from the individual IPR holders. For more information, and a guide to the IPRs declared to each 3GPP OP, look here>>>

Who owns the Technical Specifications and the Technical Reports approved by 3GPP?

According to the Article 3.2.2 of the Third Generation Partnership Project Agreement, the 3GPP Organizational Partners jointly own copyright on the Technical Specifications and the Technical Reports approved by 3GPP.

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Are meeting contributions to ETSI TC SMG publically available?

ETSI TC SMG meeting documents can be found on the ETSI docbox file server. Access is limited to bona fide representatives of ETSI member organizations. These, together with early versions of the GSM specifications, have been gathered together into a set of DVDs "A Technical History of GSM" available to ETSI members via the ETSI WEB store.

The GSM standardization work was transferred from CEPT to ETSI in 1991. TC SMG was closed at meeting #32 and TC MSG created to continue the work. Like almost all ETSI Technical Committees, participation in TC SMG and its working groups was open to all ETSI member organizations. That is, any bona fide representative of an ETSI member was free to participate. Exceptionally, other individuals could participate by express invitation of the chairman. Each meeting report contains a list of participants with their corporate affiliations.

Until the late 1990s, all meeting documents were circulated in paper form. Electronic files started to take over from paper in around 1997. Meeting documents ("TDocs") were distributed by post (later, by fax) in batches prior to the meeting, to those persons registered as regular participants in SMG or the appropriate working group, and many more documents were produced during the course of the meeting itself. Although a provision existed (and still exists) in the context of the IPR Policy for contributors to place restrictions on the distribution of TDocs via a formal notification at the time the document was provided, this was seldom if ever invoked. In the absence of such a condition, all TDocs were free of any restriction on subsequent distribution. Thus no restriction has ever been placed on how meeting participants dispose of the documents subsequent to their distribution before, during, or after the meeting. There were no non-disclosure agreements.

ETSI maintains a paper archive of the SMG TDocs, and bona fide representatives of current ETSI members can, by appointment, make an accompanied search of the archives. This facility extends to members which may not have been members at the time the document was originally produced.

TC-approved versions of ETSI “deliverables” (see ETSI Directives for formal definition of this term) would have been transferred by the support officer of the committee to the secretariat team responsible for publishing ETSI deliverables. That team would have made cosmetic (non-technical) modifications to the draft deliverables before issuing them. Depending on the type of “deliverable”, those documents would have been issued via National Standards Organizations (NSOs) either for immediate publication, or first via either a one-step or two-step national public enquiry and vote process prior to final publication by ETSI. In ETSI parlance, “publication” of a deliverable is the final step in the development cycle of a technical standard, and has a precise meaning. That meaning is not “making publically available”, since draft deliverables released for public enquiry or for vote are "publically available" but not yet "published".

If the confidentiality conditions described above had been imposed on a TDoc by its authors, if the text of that TDoc was in due course incorporated into an ETSI "deliverable", then those conditions are regarded as annulled from the date on which the deliverable is published.

Collections of TDocs / meeting reports have from time to time been made available to ETSI members in CD or DVD form, look here >>>

Is permission needed to use the 3GPP logo in marketing collaterals or on a web site?

ETSI (European Telecommunications Standards Institute) is the sole owner of the following acronyms:

ETSI,
DECT,
UMTS,
3GPP and
TIPHON,

as well as the ETSI, TIPHON, 3GPP and LTE logos. ETSI Members are authorized to use these Trade Marks in accordance with Collective Letter 1943. Authorization is needed to use the above mentioned acronyms and logos.

For further information contact the ETSI Legal Team or see http://www.3gpp.org/about-3gpp/legal-matters/logo-use.

Can I use computer code included with a 3GPP TS to implement a product?

Yes, but read this clause carefully. Some 3GPP Technical Specifications include computer code such as ASN.1 or XML (protocols), ANSI-C language (codecs), ...; and some include test vectors (codecs) for verifying implementations. These are published to allow users of these TSs to implement real-world products. No permission is required from 3GPP or its Organizational Partners (OPs) to use this code in the design of products - e.g. to compile the C to implement a codec in machine code.

Nevertheless, there may be essential IPR involved with such a design, and implementers are obliged to seek licences from IPR owners to use that technology. See also What is the 3GPP policy on licensing?

Moreover, the copyright of all 3GPP TSs and TRs vests jointly by all the 3GPP OPs. Other than for in-house copies for the purpose of further development of the 3GPP standard or for product design purposes, etc. you may not reproduce any part of a 3GPP TS or TR without seeking permission from 3GPP (e.g. from the ETSI Legal Team): use the procedure described on the legal area of this site. This means that you must not provide verbatim copies of source code (or lightly modified copies) without seeking permission from 3GPP.

Finally, you are reminded that 3GPP TSs and TRs have no legal status, and you should not design products directly to them. See the advice notice on the cover page of every 3GPP TS and TR. Instead, use the technically identical publication of one of the OPs.

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How do I create the next Release version of a TS or TR?

There are three ways of upgrading a Release X spec to Release X+1:

1. Write a CR to the latest Release X version to incorporate technical changes to satisfy a Release X+1 work item, and on the cover sheet showing the WI code for that work item and the Release code for Release X+1. If the CR is approved at TSG level, this will automatically create the first instance of the next Release of the spec.
2. Make a specific request to the TSG to upgrade the latest version of the spec from Release X to Release X+1. This might be needed if the functionalities of the two Releases diverge, though backwards-incompatibility is to be avoided if possible.
3. Do nothing. If a spec has survived unchanged throughout the period during which Release X+1 was developed, when Release X+1 is frozen, all such specs will automatically be upgraded from Release X to Release X+1 without technical change.

Where can the rules, protocols or software needed to develop applications for UMTS be found?

A good place to start is on the 3GPP website, and particularly the specifications list.

What is the correlation between Stage 1, Stage 2 and Stage 3?

A three-stage methodology as defined in ITU T Recommendation I.130 is applied in 3GPP according TR 21.900 clause 4.1:

Stage 1 is an overall service description from the user's standpoint.
Stage 2 is an overall description of the organization of the network functions to map service requirements into network capabilities.
Stage 3 is the definition of switching and signalling capabilities needed to support services defined in stage 1.

Are the 3GPP specifications produced only in word?

The 3GPP specs are published as ETSI deliverables, and these are available in PDF form http://www.etsi.org/standards-search. But you can download a free Word viewer (i.e. read only) from the Microsoft web site. PDF is inherently secure (more so than html, in fact), and because WordViewer is very simple (it can not handle macros, for example), it is pretty safe too. ETSI has no plans at present to publish specifications in plain text or in html.

Which group works with specifications covering the use of the GSM codec (either in C or Java based)?

The SMG STC SMG11 and 3GPP SA4 specifications, available from http://www.3gpp.org, respectively deal with this. It gives you a list of specifications via the status list (look for the GSM specs in the MS-Access database at : http://www.3gpp.org/ftp/Information/Databases/Spec_Status/)

and you can then download the specs you need. If you do not have an ETSI EOL account, you can download the ETSI equivalent standards from http://www.etsi.org/standards-search.

Where can I find documents produced by the GSM MoU Group / GSM Association?

These documents are not available via 3GPP or its Organizational Partners. You must address this question to the GSM Association.

Where would I find a document (e.g. UMTS 30.03 version 3.1.0) which does not appear on the 3GPP Status List?

Look at http://www.3gpp.org/DynaReport/3003U.htm. It is a document stemming from the initial TC-SMG studies on UMTS, not a product of 3GPP. It was, in fact, published as an ETSI deliverable, TR 101 112, and this may be downloaded via http://www.etsi.org/standards-search.

Where are all the Change Requests (CRs) located?

The CR database can be downloaded under: http://www.3gpp.org/ftp/Information/Databases/Change_Request/

Or you select the specification under:
http://www.3gpp.org/specifications/79-specification-numbering

The information is classed by series so it is very easy to locate the particular specification which interests you. After selecting a series and a specification you will find a line "Change Requests for this spec: click here." which provides a web list of the CRs for this specification.

If, for example, you are looking for CRs on GSM 08.18 then you would use this link:
http://www.3gpp.org/ftp/Specs/html-info/0818-CRs.htm
http://www.3gpp.org/DynaReport/0818http://www.3gpp.org/ftp/Specs/html-info/0818-CRs.htm
-CRs.htm

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Where are all the current ETSI SMG specs located?

All the ETSI SMG specs are located here archives for the GSM documentation. An ETSI On-Line account is needed to access these documents. You can apply for an ETSI online account.
In general, the cross-referencing between GSM and ETSI deliverables, and between 3GPP and ETSI deliverables may be found at http://webapp.etsi.org/key/queryform.asp

Which group works on Physical Layer aspects of UMTS/LTE?

The radio aspects are standardised in TSG-RAN. The technical work is done in the 5 Working Groups of RAN (WG1 radio layer 1, WG2 radio layer 2/3, WG3 interfaces, WG4 RF measurements, WG5 Mobile Terminal Conformance Testing).
So Physical Layer aspects are addressed by TSG RAN WG1. Their UMTS specifications are numbered 25.2xx and their LTE specifications are numbered 36.2xx.
The temporary documents (meeting documents etc.) of WG1 are stored on ftp://ftp.3gpp.org/TSG_RAN/WG1_RL1.

Where can I find the list of Abstract syntax notation (ASN.1) object identifiers?

The expandable list of object identifiers is available here >>>. To see the formal definition of the object identifiers, see the document cited on the right. The tree is not necessarily complete; further extensions may be included in the referenced document. For more information look here >>>.

Where can I find the 3GPP Confidentiality and Integrity algorithms?

The 3GPP Confidentiality and Integrity algorithms F8 & F9 (KASUMI) have been developed through the collaborative efforts of the 3GPP Organizational Partners. For more information and in order to download the algorithms look here >>>.

What is a Release - how does specification version numbering work?

To meet new market requirements, 3GPP specifications are continually being enhanced with new features. In order to provide developers with a stable platform for implementation while at the same time allowing the addition of new features, the 3GPP uses a system of parallel "releases". For more information look here >>>.

Where can I find information on the current status of 3GPP specifications?

New versions of many 3GPP specifications are made available shortly after the 3GPP TSG plenary meetings which take place four times a year (March, June, September and December). In order to identify what the current version is or and how to find information about older versions of specifications look here >>>.

What is the system for numbering specifications?

All 3G and GSM specifications have a 3GPP specification number consisting of 4 or 5 digits. (e.g., 09.02 or 29.002). For a more complete description and examples look here >>>.

Who are the TSG/WG Officials and Support team and where can I find their contact details?

Each TSG/WG has a Chairman, up to two Vice-Chairmen (three Vice-Chairmen) in the case of TSGs and a secretary who is a member of the support team. From the 3GPP structural organization page, click on the TSG or WG of interest to reach its home page. From there, click on the "officials" entry in the table.

Where can I find the Terms of Reference for my TSG/WG?

The current Terms of Reference for each TSG/WG appear on the web pages of each TSG/WG.

May I become an Official?

The TSG Chairman and Vice Chairmen are elected by the Technical Specification Group from amongst the Individual Member representatives. Each TSG can elect a maximum of two Vice Chairmen. Once elected, these candidates are proposed to the PCG for appointment.
The Working Group Chairman and Vice Chairmen are elected by the Working Group from amongst the Individual Member representatives. Each Working Group can elect a maximum of two Vice Chairmen.
A candidate for TSG or Working Group election shall provide a letter of support from his Organization and nominations may be made up to the point when an election takes place.
The TSG Chairman and Vice-Chairmen shall be appointed by the PCG on the proposal of the TSG.
The Chairman and the Vice-Chairmen shall be appointed for a two year term of office. The Chairman and Vice-Chairmen may be appointed for one further consecutive term. If, at the end of a Chairman or Vice Chairmans second term, no other candidates are available, the Chairman or Vice Chairmen may be appointed for a further term.
Chairman and Vice Chairmen should not be from the same region, Organizational Partner, or from the same group of companies, unless no other candidate is available.
Successive Chairmen should not be from the same Organizational Partner, the same region or from the same group of companies, unless no other candidate is available

How do I register for a meeting?

To register to any 3GPP TSG/WG meeting, please go to the Meetings tab on the 3GPP Ultimate portal (3GU) at https://portal.3gpp.org/, log in with your EOL credentials, and click "Not registered" in the Registration column of the meeting in question. When registration is complete, you will receive a confirmation email. Keep this email, it contains important information,

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without which you will not be able to confirm your presence!

Once you are at the meeting you have to "Check-in" to confirm your presence at the meeting itself. To check in, open the registration confirmation email and click on the check-in URL. This will take you to a page on the local meeting server (not the Internet). After you have checked in, your token will be sent to the main 3GPP server, and the web-based participants list will now show "yes" in the Participated column. Obviously you must be physically present at the meeting venue to be able to reach the local server.

Who can submit a change proposal on any 3GPP specifications to 3GPP?

Any bona fide representative of any 3GPP Individual Member (see list via the first sentence at http://www.3gpp.org/membership) can present a technical contribution - for example, a Change Request - to any 3GPP TSG or WG meeting.

If a change proposal is submitted how long does it take for it to get approved?

The usual procedure is that the responsible Working Group will examine a CR and agree it (or revise it until such time as it be agreeable - or not!). Having been agreed at WG level, it is packaged with related CRs and sent to the TSG plenary, where it will be discussed if necessary and then - if appropriate - formally approved. Within a matter a few weeks at most, a new version of the Specification is produced, which includes the contents of the TSG-approved CR.

TSGs meet every three months, and WGs meet at least once between each TSG meeting (sometimes two or occasionally even more times). Thus from inception of a CR to its approval is normally a matter of a few weeks, depending on the point in the meeting schedule of the WG and TSG concerned.

How to get a user name and password for "Reserve a Document Number"?

You need to request an EOL account via: http://webapp.etsi.org/createaccount/form.asp (username and password will then be sent to you by separate email).

How do I obtain a document number for my contribution?

Delegates wishing to make contributions must first obtain a document number either from the secretary or automatically via an on-line application "Automatic Document Numbering (ADN)" which is used by some groups.

You need a user name and password to "Reserve a Document Number" (see above).

Where can I download documents for an upcoming meeting?

Each TSG/WG has a specific area allocated on the 3GPP ftp server. For example TSG SA look here ftp://ftp.3gpp.org/tsg_sa/TSG_SA/. It is advisable for delegates attending a meeting to download the documents available prior to the meeting from the ftp server and onto their personal computers.

Where can I find a temporary document template?

The document template is made available by each TSG/WG in the meeting respective folder on the ftp server (see above).

What is my role when my TSG/WGs has to approve a deliverable?

Approval of Technical Specifications and Technical reports by a TSG shall normally be by consensus. Where consensus cannot be achieved in the TSG a vote may be taken.
When Technical Specifications and Technical Reports become sufficiently stable, they shall be put under change control of the relevant TSG. The further elaboration of these Technical Specifications and Technical Reports shall be achieved by Change Requests (CRs) to be approved by the TSG.

What are the different types of deliverables?

3GPP shall prepare, approve and maintain documents known as Technical Specifications and Technical Reports. Such documents shall be drawn up by the TSGs and shall, following approval at that level, be submitted to the participating Organizational Partners to be submitted to their respective standardization processes.

Can I write an 3GPP Document myself?

Why not?! If you wish to propose a deliverable then bring it to the attention of your chairman and the other members of the TSG/WG in order to discuss the subject.
Each proposed new Work Item shall be supported by at least four Individual Members, and their names shall be recorded in the Work Item definition prepared for the TSG approval. One or more persons shall be named as Rapporteur for the proposed Work Item, and the Rapporteur shall act as the prime contact point on technical matters and for information on progress throughout the drafting phases. The supporting Individual Members are expected to contribute to and progress the new work item throughout the drafting phases.
In addition to the above, TSGs shall approve new Work Items, giving all essential parameters. The proposal shall be entered into the 3GPP work programme, clearly marked as a new entry, for which a unique reference identity shall be allocated.

Do I and my company have to support my TSG/WGs Work Items?

Neither you or your company is obliged to support the work items of your TSG/WG, however it is normal that if you and your company are supporting members of a Work Item that you be in agreement with their work and will normally support the production of the related deliverable.

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Do I need a password and user name to access the 3GPP Web site ?

No password is needed to access any information on the 3GPP Web site, all information is openly published.

Can you give me information about which companies manufacture particular types of equipment. Or about what services are available on particular networks?

No. The 3GPP Support Team must remain neutral and must not show bias to any of its Individual Members. Such information may be available from the Global Mobile Suppliers Association (www.gsacom.com) where you will find a statistics area which could be of help.

How can I determine when a meeting contribution document (TDoc) became publicly available?

TDoc numbers start to be allocated some weeks before a 3GPP meeting, and the authors then create them and they or the group's secretary uploads them to the public file server as soon as possible. Some may have been distributed to the group's members in draft form for review, using the email exploder, in advance of the final one becoming available, and for some groups, it is normal to distribute even the final TDoc via the exploder, where the secretary picks it up and copies it to the public server. Typically, at the start of a meeting, around 50% of the TDocs are available.

This distribution on the group's email exploder is important, because once that happens, the document is effectively in the public domain, since membership of the exploder is open to all and is unpoliced.

During the meeting, further TDocs are created, mostly revisions of ones available before the meeting, but probably some brand new ones too – for example, outgoing liaison statements. These are uploaded to the meeting server, but (until recently) may or may not be uploaded to the public server during the meeting. (Since 2014, for most meetings, meeting server contents have been mirrored to a folder on the public server, but these copies are deleted shortly after the end of the meeting.)

Soon after the end of the meeting – same day, or at worst within a few days – the TDocs created during the meeting are uploaded by the secretary to the public server. Occasionally, some matters from the meeting cannot be resolved until maybe one week later, and these might result in some very late TDocs which are produced well after the end of the meeting, and thus uploaded onto the public server correspondingly late.

When the secretary copies from the meeting server (or from his own PC) to the public server, he may opt to only copy the missing files (i.e. the new ones), which is the best approach; or he may decide to overwrite everything and thus do a complete refresh of the files on the public server, which will now get an upload date/time-stamp of the new upload. This latter approach is now deprecated but has sometimes happened; you can detect this most easily when a meeting shows the same date/time-stamp for all TDoc files.

In cases such as this, one has to descend to greater subterfuge to narrow down the likely "public availability" moment. The zip file for a TDoc typically contains a Word file which has a particular date/time-stamp, which puts an absolute limit on the earliest moment that the TDoc could have become available in that form.

Searching the group's email exploder archive (http://list.etsi.org/scripts/wa.exe?INDEX) on or about the suspected production date gleaned from the file date/time-stamp may well reveal the message in which the TDoc was first distributed, or perhaps the message by which the group's secretary announced that it was available on the server. Note however that this technique does not reveal any earlier versions of the TDoc which might have been circulated, either as draft versions of the identified TDoc or as other Tdocs which were ultimately revised into the actual TDoc of interest. In order to identify this latter case, it is necessary to refer to the official secretary's report of the meeting, where the train of revisions will be evident.

Is it possible to determine the date and time of publication of a particular version of a 3GPP Spec?

During the drafting phase (versions lower than 3.0.0), 3GPP TSs and TRs ("Specs") are under the control of their authors ("rapporteurs") and are handled like normal meeting contributions (see above). Revised versions incorporating text agreed by the responsible working group are often made available by the rapporteur via the group's email exploder shortly after the end of the meeting at which such text was discussed. Again, consultation of the exploder archives can reveal this. Alternatively, a revised draft may be sent directly to the 3GPP Support Team, and it will be uploaded to the public file server (specs archive directory) shortly afterwards. Again, the time stamp of the Zip file can be relied upon to indicate when the upload occurred.

After formal approval by the TSG (versions 3.0.0 or greater), Specs are edited only by the Support Team. The first approved version is based upon the draft version formally approved by the TSG, and thereafter versions are generated whenever Change Requests are approved by the TSG. These versions are made available shortly after the TSG meeting at which such approval occurred. The date (year and month) shown at the top of the Spec's cover page indicates either the date of (the last day of) the meeting, or the month in which the new version was prepared. However a more precise indication of the date of availability can be obtained from the Spec's web page (via the table at http://www.3gpp.org/specifications/) where a precise date is shown in the "available" column.

More information on the procedures relating to Spec handing can be found in 3GPP TR 21.900.

Note that, in accordance with the statement at the foot of the cover page of all 3GPP Specs, 3GPP does not "publish" its Specs per se. Formal publication is the responsibility of the individual Standards Development Organizations which comprise the Organizational Partners of 3GPP. For further information, see http://www.3gpp.org/specifications/63-official-publications.

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What formalities do I have to go through to get type approval for terminal equipment in Europe? Is there a single point of contact? What standards does my equipment need to conform to in order that I can place it on the market?

The legal requirements for the marketing of electrical products in Europe are governed by various EU Directives, depending on the nature of the equipment. Conformity with any of these Directives can be demonstrated by the use of Harmonized Standards, whose title has been cited in the Official Journal of the European Union. The lists of relevant standards can be found on the Commission web site which can be accessed via http://www.newapproach.org/Directives/DirectiveList.asp.

General electrical equipment is covered by the EMC Directive & Low Voltage Directives, see http://ec.europa.eu/enterprise/sectors/electrical/documents/index_en.htm.
The harmonized standards are listed at http://ec.europa.eu/enterprise/policies/european-standards/harmonised-standards/index_en.htm
More general information on procedures to declare conformity and how equipment should be marked are contained on the web sites related to the two Directives.

Radio Equipment and Telecommunications Terminal Equipment is covered by the Radio and Telecommunications Terminal Equipment Directive, see http://ec.europa.eu/enterprise/policies/european-standards/harmonised-standards/rtte/index_en.htm, which also includes a link to the one-stop procedure for "placing on the market" (http://ec.europa.eu/enterprise/sectors/rtte/documents/guidance/one-stop-procedure_en.htm).

Further information on EU harmonized standards relevant to telecommunications can be found on the ETSI site at http://www.etsi.org/standards/looking-for-an-etsi-standard/list-of-harmonized-standards, and the published standards themselves can be downloaded via http://pda.etsi.org/pda/queryform.asp.

Where can I find a list of technical terms and abbreviations used in 3GPP documents?

Individual terms are defined in each 3GPP Technical Specification and Technical Report. A compendium of terms and abbreviations can be found in 3GPP TR 21.905. ETSI maintains a list of all terms and abbreviations defined in its publications in "TEDDI".

What is the difference between a SIM and a USIM? What is a UICC?

The Universal Integrated Circuit Card (UICC) is the removable card bearing a silicon chip which holds 3GPP system subscriber information. The UICC is a general purpose card having both non-volatile memory and a general-purpose processor. Thus while it is used, in a 3GPP terminal, to hold (U)SIM information / applications, it is can also be used for other purposes, possibly unrelated to telecommunications. A common use of UICCs is in the well-known credit card format, and there is no reason why a single card could not hold (U)SIM functionality in addition to electronic purse / credit card functionality, or indeed any other application / data.

The Subscriber Identity Module (SIM) is the collection of functions which personalize a 3GPP terminal. The SIM contains static information about the services subscribed to, the phone number, the identity of the home network, a list of preferred roaming networks, and so on. The SIM also contains storage capacity for the subscriber's contacts' phone numbers. The term "SIM" is often misused for "UICC". The SIM concept was created during the early development of the GSM standards, and second-generation (based on GERAN) terminals up to and including Release 4 use SIM functionality.

For third generation systems (based on UTRAN), more complex functionality was called for, and the SIM evolved into the USIM or Universal Subscriber Identity Module. Release 99 3rd generations onwards use USIMs rather than SIMs. From Release 5 onwards, both second and third generation terminals use USIMs (though to maintain backwards compatibility with older networks and terminals, later Release 2nd generation USIMs are likely to implement Rel-4 SIM functionality in addition to Rel-5 or later USIM functionality).

For further information on the 3GPP Release system, see the Release page.

I have transferred a video file from my phone to my PC. Where can I find a player for 3gp files?

The 3gp file format is defined in 3GPP TS 26.244 and in 3GPP TS 26.412. However, 3GPP has not defined a specific decoder. Your phone manufacturer may have supplied a player (check the CD-ROM which came with your phone) or look on its web site. Alternatively, search the Internet: a number of commercial players exist, and trial versions of some may be downloaded without charge.

Where can I find the specification of the SIM Lock feature?

In clause 8 of 3GPP TS 22.022.

What is the meaning of the text at the foot of the TS/TR cover page?

> The present document has been developed within the 3rd Generation Partnership Project (3GPP TM) and may be further elaborated for the purposes of 3GPP..
> The present document has not been subject to any approval process by the 3GPPOrganizational Partners and shall not be implemented.
> This Specification is provided for future development work within 3GPPonly. The Organizational Partners accept no liability for any use of this Specification.

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Specifications and Reports for implementation of the 3GPP TM system should be obtained via the 3GPP Organizational Partners' Publications Offices.

3GPP is not a legally incorporated body, and its technical work is conducted under the auspices of its Organizational Partners, each of which transposes relevant 3GPP specifications as its own publications. Thus the "raw" 3GPP TSs and TRs have no legal status per se. Under an agreement with the ITU at the time 3GPP was created, the ITU would not publish the output of 3GPP but would make reference to the publications of the participating Organizational Partners from its Recommendations; this state of affairs accounts for the text found on the cover of each 3GPP TS and TR. More information can be found here.

Revision histoory:

2016-11-16: Correction of minor typo. (JMM)

ABOUT RELEASES

Release 15
Release 14
Release 13
Release 12
Release 11
Release 10
Release 9
Release 8
Release 7
Release 6
Release 5
Release 4
Release 1999

FULL MEETING CALENDAR

GERAN	74		15-19 May 2017
CT	76	West Palm Beach, Florida	05-06 Jun 2017
RAN	76	West Palm Beach, Florida	05-08 Jun 2017
SA	76	West Palm Beach, Florida	07-09 Jun 2017
GERAN	75	Berlin (TBC)	21-25 Aug 2017
CT	77	Sapporo	11-12 Sep 2017
RAN	77	Sapporo	11-14 Sep 2017
SA	77	Sapporo	13-15 Sep 2017
GERAN	76	US	27 Nov-01 Dec 2017
CT	78	Lisbon	18-19 Dec 2017
RAN	78	Lisbon	18-21 Dec 2017
SA	78	Lisbon	20-22 Dec 2017
CT	79	India	19-20 Mar 2018
RAN	79	India	19-22 Mar 2018
SA	79	India	21-23 Mar 2018

BROWSE TECHNOLOGIES

LTE-Advanced
LTE
Carrier Aggregation Explained
HetNet/Small Cells
NAS
The Evolved Packet Core
HSPA
UMTS
W-CDMA
GPRS & EDGE

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APPENDIX 11

The Wayback Machine - https://web.archive.org/web/20170509045639/http://www.3gpp.org:80/specifications/specifications

The Mobile Broadband Standard

A GLOBAL INITIATIVE

Specifications Home

3GPP specifications are published - free of charge - up to four times a year following the quarterly Technical Specification Group (TSG) plenary meetings. At each TSG round, specs can be

- Newly brought under change control (i.e. at least 80% complete)
- Unchanged from their previous versions
- Revised as a result of incorporating approved Change Requests (either in existing Releases or in the latest Release)
- At Release-freeze time, upgraded to that Release with no technical change

The 3GPP Mobile Competence Centre (MCC) aims to make all Specs available following a TSG round as soon as possible. The target dates are shown in the table below. Where very many CRs have to be implemented, or very many specifications are to be produced, a further week beyond the above deadlines may be required. These dates are agreed by the TSG Chairmen. Over the Christmas and New Year period, when the winter TSG round finishes shortly before the holiday period, an extra week or so is normally added to the final deadlines.

Quick link to the specifications file server area

The link above takes you straight to the specifications, but you need to know what you are looking for.

To find a particular specification by series, look at the Numbering page.

3GPP specifications

The term "3GPP specification" covers all GSM (including GPRS and EDGE), W-CDMA (including HSPA) and LTE (including LTE-Advanced and LTE-Advanced Pro) specifications, and the emerging 5G specifications.

Revised versions of many of these specifications are produced up to four times a year following the quarterly TSG plenary meetings.

The table below leads to information about:

- Specifications arising from each plenary TSG meeting, including the latest versions of each specification that was not changed at that meeting. i.e. each directory holds a complete set of specifications.
- The month of the meeting and the meeting number
- The Status List (ZIPped RTF or Word format) summarizing the current version number for every release of every 3GPP specification following each TSG plenary meeting.
- Details of each specification (working group, rapporteur, the Project Manager in MCC (Mobile Competence Centre), the meeting at which it was, or is expected to be, "frozen" (i.e. the point after which only corrections are allowed) - all are in the Status lists.

Full details of the Specifications, their history and current status can be found in the 3GPP Specifications Status database.

year-month	remark click here to see list of specs awaiting upload	latest status	specs directory	TSG CN #	TSG RAN* #	TSG T #	TSG SA #	TSG GERAN #	TSG CT #
2017-03	Target for availablilty of all new/revised specs: TSG CT, SA = 2017-03-24 TSG RAN = 2017-03-31	StatusList	2017-03		75		75		75
2016-12		StatusList	2016-12		74		74		74
2016-09		StatusList	2016-09		73		73		73
2016-06		StatusList	2016-06		72		72	70	72

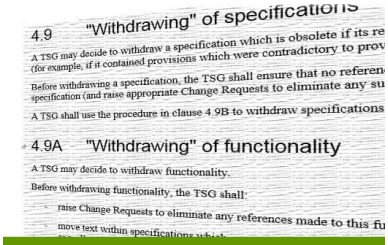
Search

3GPP Website: Search for...

Search and download specs, docs, CRs and more from the 3GPP FTP Server:

ADVANCED FTP SEARCH

More news...



Proposal to withdraw TR 38.900 (channel model for spectrum above 6GHz) at RAN#76

News Feeds

- 3GPP News
- 3GPP tweets

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year-month	remark click here to see list of specs awaiting upload	latest status	specs directory	TSG CN #	TSG RAN* #	TSG T #	TSG SA #	TSG GERAN #	TSG CT #
2016-03		StatusList	2016-03		71		71	69	71
2015-12		StatusList	2015-12		70		70	68	70
2015-09		StatusList	2015-09		69		69	67	69
2015-06		StatusList	2015-06		68		68	66	68
2015-03		StatusList	2015-03		67		67	65	67
2014-12		StatusList	2014-12		66		66	64	66
2014-09		StatusList	2014-09		65		65	63	65
2014-06		StatusList	2014-06		64		64	62	64
2014-03		StatusList	2014-03		63		63	61	63
2013-12		StatusList	2013-12		62		62	60	62
2013-09		StatusList	2013-09		61		61	59	61
2013-06		StatusList	2013-06		60		60	58	60
2013-03		StatusList	2013-03		59		59	57	59
2012-12		StatusList	2012-12		58		58	56	58
2012-09		StatusList	2012-09		57		57	55	57
2012-06		StatusList	2012-06		56		56	54	56
2012-03		StatusList	2012-03		55		55	53	55
2011-12		StatusList	2011-12		54		54	52	54
2011-09		StatusList	2011-09		53		53	51	53
2011-06		StatusList	2011-06		52		52	50	52
2011-03		StatusList	2011-03		51		51	49	51
2010-12		StatusList	2010-12		50		50	48	50
2010-09		StatusList	2010-09		49		49	47	49
2010-06		StatusList	2010-06		48		48	46	48
2010-03		StatusList	2010-03		47		47	45	47
2009-12		StatusList	2009-12		46		46	44	46
2009-09		StatusList	2009-09		45		45	43	45
2009-06		StatusList	2009-06		44		44	42	44
2009-		StatusList	2009-03		43		43	41	43

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year-month click here to see list of specs awaiting upload 03	remark	latest status	specs directory	TSG CN #	TSG RAN* #	TSG T #	TSG SA #	TSG GERAN #	TSG CT #
2008-12		StatusList	2008-12		42		42	40	42
2008-09		StatusList	2008-09		41		41	39	41
2008-06		StatusList	2008-06		40		40	38	40
2008-03		StatusList	2008-03		39		39	37	39
2007-12		StatusList	2007-12		38		38	36	38
2007-09		StatusList	2007-09		37		37	35	37
2007-06		StatusList	2007-06		36		36	34	36
2007-03		StatusList	2007-03		35		35	33	35
2006-12		StatusList	2006-12		34		34	32	34
2006-09	GERAN henceforward meets synchronously with other TSGs, so no further "delta" directories necessary.	StatusList	2006-09		33		33	31	33
2006-06	New at GERAN only.		2006-06					30	
2006-06		StatusList	2006-06		32		32		32
2006-04	New at GERAN only.		2006-04					29	
2006-03		StatusList	2006-03		31		31		31
2006-01	New at GERAN only.		2006-01					28	
2005-12		StatusList	2005-12		30		30		30
2005-11	New at GERAN only.		2005-11					27	
2005-09		StatusList	2005-09		29		29		29
2005-08/09	New at GERAN only.		2005-09					26	
2005-06	New at GERAN only.		2005-06					25	
2005-06		StatusList	2005-06		28		28		28
2005-04	New at GERAN only.		2005-04					24	
2005-03	RAN closed and RANnew opened, CN and T closed, CT opened.	StatusList	2005-03	27	27bis, 27	27	27		27
2005-01	New at GERAN only.		2005-01					23	
2004-12		StatusList	2004-12	26	26	26	26		
2004-11	New at GERAN only.		2004-11					22	
2004-		StatusList	2004-09	25	25	25	25		

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year-month click here to see list of specs awaiting upload 09	remark	latest status	specs directory	TSG CN #	TSG RAN* #	TSG T #	TSG SA #	TSG GERAN #	TSG CT #
2004-08	New at GERAN only.		2004-08					21	
2004-06	New at GERAN only.		2004-06					20	
2004-06		StatusList	2004-06	24	24	24	24		
2004-04	New at GERAN only.		2004-04					19	
2004-03		StatusList	2004-03	23	23	23	23		
2004-02	New at GERAN only.		2004-02					18	
2003-12		StatusList	2003-12	22	22	22	22		
2003-11	New at GERAN only.		2003-11					17	
2003-09		StatusList	2003-09	21	21	21	21		
2003-09	New at GERAN only.		2003-09					16	
2003-06	New at GERAN only.		2003-06					15	
2003-06		StatusList	2003-06	20	20	20	20		
2003-04	New at GERAN only.		2003-04					14	
2003-02		StatusList	2003-03	19	19	19	19		
2003-02	New at GERAN only.		2003-02					13	
2002-12, 2002-11		StatusList	2002-12	18	18	18	18	12	
2002-09		StatusList	2002-09	17	17	17	17	11	
2002-06	Rel-5 GERAN features content functionally frozen		2002-06					10	
2002-06	Rel-5 features content functionally frozen (remainder, non-GERAN)	StatusList	2002-06	16	16	16	16		
2002-04			2002-04					9	
2002-03	Rel-5 features content functionally frozen (part)	StatusList	2002-03	15	15	15	15		
2002-02								8	
2001-12		StatusList	2001-12	14	14	14	14		
2001-11								7	
2001-09		StatusList	2001-09	13	13	13	13		
2001-08								6	
2001-06		StatusList	2001-06	12	12	12	12	5	

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year-month	remark click here to see list of specs awaiting upload	latest status	specs directory	TSG CN #	TSG RAN* #	TSG T #	TSG SA #	TSG GERAN #	TSG CT #
2001-06	Rel-4 GERAN features content functionally frozen							4	
2001-03	Rel-4 non-GERAN features content functionally frozen	StatusList	2001-03	11	11	11	11		
2001-01								3	
2000-12, 2000-11		StatusList	2000-12	10	10	10	10	2	
2000-11									
2000-09		StatusList	2000-09	9	9	9	9	1	
2000-06		StatusList	2000-06	8	8	8	8		
2000-03				7	7	7	7		
1999-12	R99 features content functionally frozen			6	6	6	6		
1999-10				5	5	5	5		
1999-06					4	4	4		
1999-05				4					
1999-04				3	3	3	3		
1999-03				2	2	2	2		
1998-12				1	1	1	1		

** TSG RAN was closed at the end of meeting 27 and re-opened for meeting 27 bis.*

If you plan to download a large number of specifications we recommend using an FTP client software tool such as:

- Ipswitch WS_FTP Pro
- FTPSync
- Filezilla

For additional information relating to 3GPP Specifications, their creation and maintenance, etc. go here.

Confidential Algorithms

3GPP confidentiality and integrity algorithms The 3GPP Confidentiality and Integrity algorithms F8 & F9 (KASUMI) have been developed through the collaborative efforts of the 3GPP Organizational Partners. They may be used only for the development and operation of 3G Mobile Communications and services. Every Beneficiary must sign a Restricted Usage Undertaking with a Custodian and (...)
more »

ASN.1

ASN.1 Object Identifiers Abstract syntax notation (ASN.1) object identifiers maintained by ETSI. ETSI is a recognized organization under the ITU-T (formerly CCITT) arc. The formal rules governing assignment of object identifier values are given in ETSI EG 200 351. Since the 3GPP technical specifications are based on GSM specifications, which use object identifiers under the ETSI node, it (...)
more »

Drafting Rules

The Specification drafting rulesTR 21.801 are the rules for the structure and drafting of documents intended to become a 3GPP Technical Specification or Technical Report. These rules are intended to ensure that such documents are drafted in as uniform a manner as is practicable, irrespective of the technical content. 21.801 is based on the ISO/IEC Directives, Part 3, but is a self-contained (...)
more »

Official Publications

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The 3GPP Technical Specifications and Technical Reports have, in themselves, no legal standing. They only become "official" when transposed into corresponding publications of the Partner Organizations (or the national / regional standards body acting as publisher for the Partner). At this point, the specifications are referred to as UMTS within ETSI and FOMA within ARIB/TTC. Some TRs (...)
more »

Page reviewed and updated every 3 months

ABOUT RELEASES

- Release 15
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- Release 13
- Release 12
- Release 11
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- Release 1999

FULL MEETING CALENDAR

GERAN	74		15-19 May 2017
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CT	79	India	19-20 Mar 2018
RAN	79	India	19-22 Mar 2018
SA	79	India	21-23 Mar 2018

BROWSE TECHNOLOGIES

- LTE-Advanced
- LTE
- Carrier Aggregation Explained
- HetNet/Small Cells
- NAS
- The Evolved Packet Core
- HSPA
- UMTS
- W-CDMA
- GPRS & EDGE

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APPENDIX 12

The Wayback Machine - https://web.archive.org/web/20170422110018/http://www.3gpp.org:80/specifications/79-specification-numbering

Specification Numbering

All 3GPP specifications have a specification number consisting of 4 or 5 digits. (e.g. 09.02 or 29.002).

The first two digits define the series, followed by 2 further digits for the 01 to 13 series or 3 further digits for the 21 to 55 series.

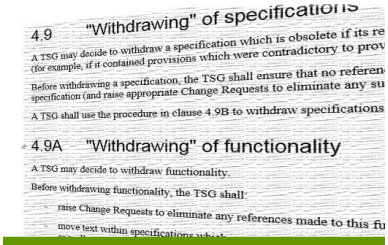
The full title, specification number and latest version number for every specification can be found in the current status list (warning: large file!).

An automated list of Specification numbers - with the Title and details of the Specification Group responsible.

Subject of specification series	3G and beyond / GSM (R99 and later)	GSM only (Rel-4 and later)	GSM only (before Rel-4)
General information (long defunct)			00 series
Requirements	21 series	41 series	01 series
Service aspects ("stage 1")	22 series	42 series	02 series
Technical realization ("stage 2")	23 series	43 series	03 series
Signalling protocols ("stage 3") - user equipment to network	24 series	44 series	04 series
Radio aspects	25 series	45 series	05 series
CODECs	26 series	46 series	06 series
Data	27 series	47 series (none exists)	07 series
Signalling protocols ("stage 3") -(RSS-CN) and OAM&P and Charging (overflow from 32.- range)	28 series	48 series	08 series
Signalling protocols ("stage 3") - intra-fixed-network	29 series	49 series	09 series
Programme management	30 series	50 series	10 series
Subscriber Identity Module (SIM / USIM), IC Cards. Test specs.	31 series	51 series	11 series
OAM&P and Charging	32 series	52 series	12 series
Access requirements and test specifications		13 series (1)	13 series (1)
Security aspects	33 series	(2)	(2)
UE and (U)SIM test specifications	34 series	(2)	11 series
Security algorithms (3)	35 series	55 series	(4)
LTE (Evolved UTRA), LTE-Advanced, LTE-Advanced Pro radio technology	36 series	-	-
Multiple radio access technology aspects	37 series	-	-
Radio technology beyond LTE	38 series	-	-

Note (1): The 13 series GSM specifications relate to European-Union-specific regulatory standards. On the closure of ETSI TC SMG, responsibility for these specifications was transferred to ETSI TC MSG, (Mobile Specification Group) and they do not appear on the 3GPP file server.

Note (2): The specifications of these aspects are spread throughout several series.



Proposal to withdraw TR 38.900 (channel model for spectrum above 6GHz) at RAN#76

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Note (3): Algorithms may be subject to export licensing conditions. See the relevant 3GPP page. See also the relevant ETSI pages.

Note (4): The original GSM algorithms are not published and are controlled by the GSM Association.

Technical Reports are of two classes:

> Those intended to be transposed and issued by the Organizational Partners as their own publications; and
>
> Those not intended for publication but which are simply 3GPP internal working documents, used, for example, for documenting planning and scheduling of work, or for holding the interim results of feasibility studies.

The first category have numbers of the form: xx.9xx

The second category have numbers of the form:
xx.8xx (feasibility study reports, etc) or, more rarely,
30.xxx / 50.xxx (planning and scheduling)
For some spec series, the stock of xx.8xx TRs has been exhausted, and in these cases, further internal TRs are allocated xx.7xx numbers.

Missing Specs: Click here to see those Specs not yet available following the most recent round of TSG meetings.

The 3GPP Specifications are stored on the file server as zipped MS-Word files. The filenames have the following structure:

SM[-P[-Q]]-V.zip

where the character fields have the following significance ...

S = series number - 2 characters (see the table above)
M = mantissa (the part of the spec number after the series number) - 2 or 3 characters (see above)
P = optional part number - 1 or 2 digits if present
Q = optional sub-part number - 1 or 2 digits if present
V = version number, without separating dots - 3 digits (6 digits when any component of the three-digit range has been exhausted - see the fifth example below)

So for example:

> 21900-320.zip is 3GPP TR 21.900 version 3.2.0
> 0408-6g0.zip is 3GPP TS 04.08 version 6.16.0
> 32111-4-410 is 3GPP TS 32.111 part 4 version 4.1.0
> 29998-04-1-100 is 3GPP TS 29.998 part 4 sub-part 1 version 1.0.0
> 29898-133601 is 3GPP TR 29.898 version 13.36.1

Further information:

Latest version
The latest versions of the approved specifications in the "latest" directory. The latest version of draft specs (i.e. those not yet under change control) are in the "latest-drafts" directory. See also the page on version numbering.

Particular version
All older versions of specifications (where available) are stored in the archive subdirectory. All versions of all releases of a given specification are placed directly under the name of the specification.

Title or subject
If you only know the title or the subject, but not the specification number, the best place to start looking is the complete list of all 3GPP specification numbers and titles. This list also shows the most recent version in each Release.

Specs related to a particular working group
Each 3GPP TSG Working Group has a home page, which lists the specifications under its responsibility. Follow the links from here, or use the main menu item "Specification Groups".

Official versions published by recognized Standards Development Organizations
The 3GPP Technical Specifications (and Technical Reports) which are publicly available from this site have, in themselves, no legal standing. They only become "official" when transposed into corresponding publications of the Partner Organizations. If you are looking for the official versions, see the official publications page.

Yet more information:

Work plan
The 3GPP Work plan describes the new functionality currently being elaborated in the TSG working groups. It also indicates the expected timescales for their finalization.

Releases (and phases, stages)
An introduction to the 3GPP mechanism for specifications releases can be found here.

Historical information
If you need to look for old / superseded specifications or change requests, start here.

TSG working methods
The procedures for creating, enhancing and maintaining specifications are described in TR 21.900. A presentation outlining the release and change request process can be found here.

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3GPP Drafting rules
The rules for drafting specifications are described in TR 21.801.

Change Requests
The change request mechanism is used when a correction or new functionality is required for an existing specification.

Version numbering
More information on the version numbering page.

Issuing new TS/TR numbers. More information on this page.

Page updated:

2016-12-08: Spec file structure caters for the six-character version format used for specs where the three-character limit has been exhausted.
2016-01-12: Mention of TRs numbered xx.7xx as overflow of xx.8xx allocations (JMM)
2015-10-01: Fix broken link to specification groups (JMM)

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BROWSE TECHNOLOGIES

LTE-Advanced
LTE
Carrier Aggregation Explained
HetNet/Small Cells
NAS
The Evolved Packet Core
HSPA
UMTS
W-CDMA
GPRS & EDGE

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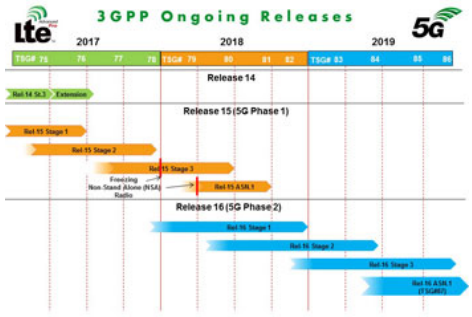
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APPENDIX 13

Releases

3GPP uses a system of parallel "Releases" which provide developers with a stable platform for the implementation of features at a given point and then allow for the addition of new functionality in subsequent Releases. You can learn more about 3GPP Releases by looking in to the following resources:

- A brief description of each Release can be found in the footer of this page, in the 'About Releases' section.
- Full details of the specifications needed for each 3GPP Release can be found in the "Release Description" folder of the ftp site.
- A table of the features, by Release, can also be found in the 3GPP Work Plan.
- There is also a 3GPP Specification Release version matrix which is a listing (with links) of the Specifications - showing the Release in which each specification was first developed.



Click to enlarge this view...

Start, Freeze and End dates:

The table below is extracted from the data on the 3GPP Ultimate portal at https://portal.3gpp.org/ "Releases" tab. Please refer to that data for the most up-to-date information.

Future dates are proposals, subject to change.

Name	Status [Note 3]	Start date [Note 2a]	End date	Closure date
Release 15	Open	2016-06-01	2018-09-14 (SA#81)	
Release 14	Open	2014-09-17	2017-06-09 (SA#76)	
Release 13	Frozen	2012-09-30	2016-03-11 (SP-71)	
Release 12	Frozen	2011-06-26	2015-03-13 (SP-67)	
Release 11	Frozen	2010-01-22	2013-03-06 (SP-59)	
Release 10	Frozen	2009-01-20	2011-06-08 (SP-52)	
Release 9	Frozen	2008-03-06	2010-03-25 (SP-47)	
Release 8	Frozen	2006-01-23	2009-03-12 (SP-43)	
Release 7	Closed	2003-10-06	2008-03-13 (SP-39)	2014-09-17 (SP-65)
Release 6	Closed	2000-03-28	2005-09-28 (SP-29)	2014-09-17 (SP-65)
Release 5	Closed	2000-05-01 [Note 2a]	2002-09-12 (SP-17)	2014-09-17 (SP-65)

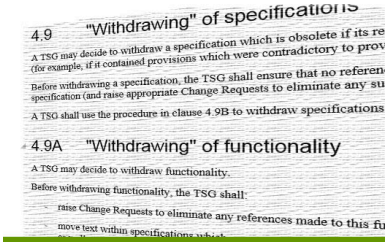
Search

3GPP Website: Search for...

Search and download specs, docs, CRs and more from the 3GPP FTP Server:

ADVANCED FTP SEARCH

More news...


4.9 "Withdrawing" of specifications

A TSG may decide to withdraw a specification which is obsolete if its re
(for example, if it contained provisions which were contradictory to prov

Before withdrawing a specification, the TSG shall ensure that no referen
specification (and raise appropriate Change Requests to eliminate any su

A TSG shall use the procedure in clause 4.9B to withdraw specifications

4.9A "Withdrawing" of functionality

A TSG may decide to withdraw functionality.

Before withdrawing functionality, the TSG shall:

- raise Change Requests to eliminate any references made to this fu
- move text within specifications whic

Proposal to withdraw TR 38.900 (channel model for spectrum above 6GHz) at RAN#76

News Feeds

- 3GPP News
- 3GPP tweets

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Release 4	Closed	1998-08-01	2001-06-21 (SP-12)	2014-09-17 (SP-65)
Release 2000 [Note 1]	Closed	1999-03-30 [Note 2a]		1999-12-17 (SP-06)
Release 1999	Closed	1996-11-01	1999-12-17 (SP-06)	2008-06-05 (SP-40)
UMTS	Closed	1994-08-18	1999-02-12 (SMG-28)	2005-06-08 (SP-28)
Release 1998	Closed	1996-03-26	1999-02-12 (SMG-28)	2005-06-08 (SP-28)
Release 1997	Closed	1996-04-15 [Note 2a]		2005-06-08 (SP-28)
Release 96 / Phase 2+	Closed	1995-07-20		2004-09-16 (SP-25)
Phase 2	Closed	1993-03-25		2004-09-16 (SP-25)
Phase 1 extension	Closed	1994-10-01		
Phase 1 DCS-1800	Closed	1992-12-03		
Phase 1	Closed	1987-01-01		

GSM Phases and Version numbers

GSM Release	TS/TR version [Note 2, 4]	3GPP Release	TS/TR version
GSM Phase 1	3.x.y		
GSM Phase 2	4.x.y		
GSM Phase 2+	5.x.y		
GSM Phase 2+ Release 97	6.x.y		
GSM Phase 2+ Release 98	7.x.y		
GSM Phase 2+ Release 99	8.x.y	UMTS Release 99	3.x.y
GSM Phase 2+ Release 00	*9.x.y*		

3GPP Releases and Version numbers

Release	TS/TR version
Release 4	4.x.y
Release 5	5.x.y
Release 6	6.x.y
...	
Release 14	12.x.y
...	

Other associated terms

Stages

The term "Stage" derives from the ITU-T (originally CCITT) method for categorizing specifications (Recommendation I.130).

"Stage 1" refers to the service description from a service-user's point of view.
"Stage 2" is a logical analysis, devising an abstract architecture of functional elements and the information flows amongst them across reference points between functional entities.

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"Stage 3" is the concrete implementation of the functionality and of the protocols appearing at physical interfaces between physical elements onto which the functional elements have been mapped.

In addition, 3GPP often performs feasibility studies the results of which are made available in Technical Reports (normally 3GPP-internal TRs, numbered xx.8xx, not intended for transposition by the Organizational Partner SDOs). The feasibility study might be considered as a sort of "Stage 0". Furthermore, some Stage 3 specifications require test specifications to be prepared: effectively a "Stage 4".

Phases

This term has two distinct usages within the 3GPP:

in reference to GSM specifications, Phase 1, Phase 2 and Phase 2+ referred to releases of specifications (see table above);
some features within GSM/3G specifications have been enhanced over the years. For example, enhancements to the original CAMEL functionality are referred to as CAMEL phase 2, CAMEL phase 3 and CAMEL phase 4.

Further information

The mechanisms for creating and maintaining specifications are described in TR 21.900. A presentation outlining the release and change request process can be found here.

Note 1: The term "Release 2000" was used only temporarily and was eventually replaced by "Release 4" and "Release 5" (most elements originally in Release 2000 were renamed Release 4, but some were deferred until Release 5).

Note 2: A Specification with a version number of 0.x.y, 1.x.y or 2.x.y indicates that it is a new, draft, specification which has not yet been approved. The anticipated release is normally shown on the cover of the document.

Note 2a: The start date for a Release is an indication of when the first work item for that Release was approved at TSG level. In fact, it is somewhat approximate because often work items started in an earlier Release, but not completed, are "promoted" to the next Release. The end date for a Release is an indication of when the detailed protocols become stable. However, see Note 3 below.

Note 3: After "freezing", a Release can have no further additional functions added. However, detailed protocol specifications (stage 3) may not yet be complete. "Freezing" is applied successively for each of the three stages (see below), with stage 3 normally being frozen one or two TSG meetings earlier than the "end" date. The "end" date shown on the 3GU portal is indicative only, since for each Release, a considerable number of refinements and corrections can be expected for at least two years following this date. In addition, OA&M specs and test specs may lag by some considerable time. A "frozen" Technical Specification is one which can have no further category B or C (new or modified functionality) Change Requests, other than to align earlier stages with later stages. The individual stage freeze dates can only be seen by 3GU account holders (delegates, officials, secretariat).

Note 4: In the version number of a 3GPP TS or TR, the first field (before the first dot) indicates the Release number according to the table below. The field "x" is incremented at each change in the spec resulting from one or more Change Requests approved by the responsible TSG. Field "y" is incremented whenever an editorial change is made to a specification; editorial changes are those which cannot in any way change the technical interpretation of the spec, and are introduced at the discretion of the Support Team. Exceptionally, field "y" is incremented when a newly-provided version of a spec is found to be flawed due to, for example, misimplementation of a newly-approved CR; however, this circumstance is only permitted during the three-week period following the end of a TSG plenary round, during which new versions of specs are produced. Every change of version is documented in the "change history" annex of the spec. When "x" is incremented, field "y" is reset to zero. When the Release field (the first digit) is incremented, fields "x" and "y" are reset to zero. Version numbering was unified from Release 4 onwards, regardless of radio access technology. This implied a renumbering of the GSM-only specifications (see the Specification Numbering page).

ABOUT RELEASES

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Release 14
Release 13
Release 12
Release 11
Release 10
Release 9
Release 8
Release 7
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SA	77	Sapporo	13-15 Sep 2017
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RAN	78	Lisbon	18-21 Dec 2017
SA	78	Lisbon	20-22 Dec 2017
CT	79	India	19-20 Mar 2018
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SA	79	India	21-23 Mar 2018

BROWSE TECHNOLOGIES

LTE-Advanced
LTE
Carrier Aggregation Explained
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APPENDIX 14

The Wayback Machine - https://web.archive.org/web/20170509032857/http://www.3gpp.org:80/specifications-groups/ran-plenary/ran3-iu,-iub,-iur,-s1,-x2-and-utran-e-utran

RAN3 - Iu, Iub, Iur, S1, X2 and UTRAN/E-UTRAN

<<NEW 2017-04-06>> Elections for RAN WG3 Chairman and 1 Vice Chairman wil be held in May 2017.

RAN WG3 is responsible for the Overall UTRAN/E-UTRAN architecture and the specification of protocols for the Iu, Iur, Iub, S1 and X2 interfaces.

Terms of Reference

The latest terms of reference were approved at RAN#71
in document RP-160060.

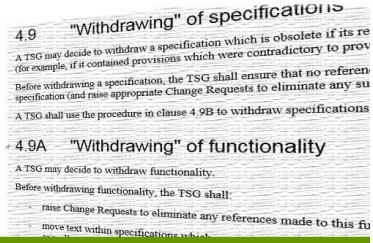
Within the scope of TSG RAN, RAN WG3 is responsible for the development of specifications dealing with UTRA, Evolved UTRA, and beyond, and in particular for:

- Overall UTRAN and E-UTRAN architecture
- Synchronisation in UTRAN and E-UTRAN
- Stage 2 work of Work Items allocated by TSG RAN to RAN WG3
- UTRAN and E-UTRAN O&M requirements
- Iu interface protocol specifications, i.e. access stratum protocols over the Iu reference point
- Iur and Iub interface protocol specifications
- Iupc interface protocol specifications
- Iubc interface protocol specifications
- Transport of implementation specific O&M between the Management System and Node B
- Application of the RANAP on the E-interface
- Iu-ant interface protocol specifications (RF-parts of the layer 1 specification are under the responsibility of RAN4)
- Parts of Iu and Iur protocols common to GERAN and UTRAN (Iu-g and Iur-g)
- S1 and X2 interface protocol specifications
- M1, M2 and M3 interface protocol specifications
- Iuh, and Iurh interface protocols specification
- LTE Positioning Protocol A (LPPa)
- Xw interface protocol specifications

Useful links and information

About RAN WG3	List of elected officials
Documents	Meeting documents
	Specifications
	Work items
Meetings	Next meeting information & previous meeting reports and documents
	Liaisons Statements
	Full RAN WG3 meeting calendar
General info	Email exploder lists

RAN Working groups and Ad Hoc groups	
TSG RAN Plenary	
TSG RAN WG1	Radio Layer 1 specification
TSG RAN WG2	Radio Layer 2 and Radio Layer 3 RR specification
TSG RAN WG3	Iub Iur and Iu specification - UTRAN O&M requirements



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RAN Working groups and Ad Hoc groups	
TSG RAN WG4	Radio performance and protocol aspects (system) - RF parameters and BS conformance
TSG RAN WG5	Mobile terminal conformance testing
TSG RAN WG6	Legacy RAN radio and protocol
TSG RAN AHG1	Ad-hoc group on ITU (internal) co-ordination

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GERAN	**74**		15-19 May 2017
CT	**76**	**West Palm Beach, Florida**	05-06 Jun 2017
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GERAN	**75**	**Berlin (TBC)**	21-25 Aug 2017
CT	**77**	**Sapporo**	11-12 Sep 2017
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BROWSE TECHNOLOGIES

LTE-Advanced
LTE
Carrier Aggregation Explained
HetNet/Small Cells
NAS
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APPENDIX 15

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A GLOBAL INITIATIVE

The Mobile Broadband Standard
HSPA

Cover Story

5GAA Automotive A

...rket Representation Partner
...of vehicle manufacturers and a
...tor, to the 3GPP environment.

...eneral of 5GAA,
...3PP Organizational
Partner's meeting in West Palm Beach today, to complete the signing of the Partnership Agreement.



The 5GAA application for 3GPP MRP status stated: "It is important to connect the telecom industry and vehicle manufacturers, to develop end-to-end solutions for future mobility and transportation services." Dino Flore told the 3GPP OP meeting: "The access part is vitally important and we will work on that with 3GPP. In addition to that, we will look at the other pieces required – including the work on upper layers (SDOs including ETSI-ITS, ISO, SAE and IEEE) and security aspects - to develop the system as a whole."

A lot of the work is already happening in 3GPP, with an initial version of the V2X access specifications in Release 14 and active discussions to define next generation V2X capabilities on-going.

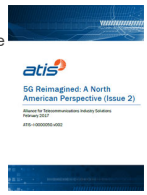
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Recent News

atis

5G paper highlights VR capabilities

April 7, 2017



ATIS have updated and published the second issue of their '5G Reimagined' White Paper, which gives the North American Perspective on deployment scenarios and use cases for 5G networks.

This 68 page paper provides a lot of detail on some of the use cases that will drive the introduction of 5G and the continued development of LTE functionality - to meet that need.

Download the paper ...here

READ MORE...

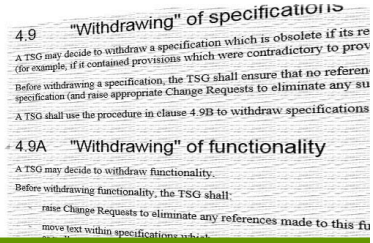
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4.9 "Withdrawing" of specifications

A TSG may decide to withdraw a specification which is obsolete if its re
(for example, if it contained provisions which were contradictory to prov

Before withdrawing a specification, the TSG shall ensure that no referen
specification (and raise appropriate Change Requests to eliminate any su

A TSG shall use the procedure in clause 4.9B to withdraw specifications

4.9A "Withdrawing" of functionality

A TSG may decide to withdraw functionality.

Before withdrawing functionality, the TSG shall:

- raise Change Requests to eliminate any references made to this fu
- move text within specifications

Proposal to withdraw TR 38.900
(channel model for spectrum above 6GHz)
at RAN#76

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5G Communication for Automation in Vertical Domains

March 14, 2017

By Joachim W. Walewski, Siemens AG, rapporteur of the FS_CAV study item.

A new SA1 study item on requirements for automation in verticals focuses on critical communications as an enabler for wireless control loops. Once complete, the group will have identified the normative 3GPP work needed to deliver 5G for automation in a variety of industries.

The Study item description is in 3GPP SA Plenary document SP-170169.

READ MORE...

ABOUT RELEASES

Release 15
Release 14
Release 13
Release 12
Release 11
Release 10
Release 9
Release 8
Release 7
Release 6
Release 5
Release 4
Release 1999

FULL MEETING CALENDAR

GERAN	**74**		15-19 May 2017
CT	**76**	**West Palm Beach, Florida**	05-06 Jun 2017
RAN	**76**	**West Palm Beach, Florida**	05-08 Jun 2017
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LTE-Advanced
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HetNet/Small Cells
NAS
The Evolved Packet Core
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Nokia of America Corp., et al. v. KT Corporation, et al.
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7 items.

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APPENDIX 20

3GPP_TSG_RAN_WG3 Archives

July 2017, Week 5

3GPP_TSG_RAN_WG3@LIST.ETSI.ORG

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Subject: Draft Agenda for RAN3 #97
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Reply To: Gino Masini <gino.masini@ERICSSON.COM>
Date: Mon, 31 Jul 2017 08:10:34 +0000
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Parts/Attachments: text/plain (1594 bytes) , text/html (4 kB) , RAN3_97_Agenda_20170731_1004.zip (442 kB)

Hi everyone,

here is the draft agenda for RAN3 #97 in Berlin. Some highlights:

- I have added sub-AIs where it made sense, also looking at contribution topics from the June AdHoc.
- Topics with no TU allocation at this meeting are greyed out.
- AI 6: Elections for 1 RAN3 Vice-Chair will take place on Monday during the 1st coffee break – 1 known candidate: Mrs. Yin Gao (ZTE)
http://www.3gpp.org/news-events/elections/1872
- AI 33: New task for RAN3 from RAN. We need to remove references to GERAN Iu-mode TSs 44.118 and 44.160, since those specs will be withdrawn from Rel-12 at RAN #77. See RAN6 Chairman's Report to RAN #76 (RP-170869) and RAN #76 Meeting Report. RAN3 Rapporteurs are kindly asked to check their specifications and submit the appropriate CRs (if any) to RAN3 #97.
- Milan Zoric will offer additional "World Class Standards" seminars at the Berlin venue. There will not be any dedicated seminars for RAN3 (we already had one in Athens, which was very much appreciated); any interested delegates (e.g. people who missed the Athens seminar for whatever reason) should contact him directly.
- There is no need to submit a discussion paper and a pCR on the same topic; a pCR, which contains a discussion section, is sufficient.

More updates will follow.

Best regards,
/Gino

ATOM RSS1 RSS2

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R3-172702.zip	2017/08/11 15:30	45,4 KB
R3-172703.zip	2017/08/11 15:30	24 KB
R3-172704.zip	2017/08/11 15:30	23,5 KB
R3-172705.zip	2017/08/11 10:55	17,3 KB
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R3-172707.zip	2017/08/11 10:55	16 KB
R3-172708.zip	2017/08/11 10:55	15,7 KB
R3-172709.zip	2017/08/11 10:55	15,7 KB
R3-172710.zip	2017/08/11 13:36	19,9 KB
R3-172711.zip	2017/08/11 13:36	44,8 KB
R3-172712.zip	2017/08/11 13:36	63,8 KB
R3-172713.zip	2017/08/11 13:36	46,9 KB
R3-172714.zip	2017/08/10 19:47	45,1 KB
R3-172715.zip	2017/08/10 19:47	756,7 KB

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sort by name/desc	sort by date/desc	sort by size/desc
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R3-172717.zip	2017/08/11 9:42	312 KB
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R3-172719.zip	2017/08/11 9:42	26,6 KB
R3-172720.zip	2017/08/11 9:42	92,9 KB
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R3-172723.zip	2017/08/11 9:42	11,7 KB
R3-172724.zip	2017/08/11 9:42	25,8 KB
R3-172725.zip	2017/08/11 9:42	25,3 KB
R3-172726.zip	2017/08/11 9:42	18,6 KB
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R3-172728.zip	2017/08/11 21:39	20,8 KB
R3-172729.zip	2017/08/11 21:39	30,4 KB
R3-172730.zip	2017/08/11 21:39	30,4 KB
R3-172731.zip	2017/08/11 21:39	111,6 KB
R3-172732.zip	2017/08/11 21:39	31,8 KB
R3-172733.zip	2017/08/11 21:39	43,4 KB
R3-172734.zip	2017/08/11 21:39	17,5 KB
R3-172735.zip	2017/08/11 21:39	33,1 KB
R3-172736.zip	2017/08/11 9:58	175,8 KB
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R3-172741.zip	2017/08/11 9:57	15,9 KB
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R3-172747.zip	2017/08/11 9:56	77,5 KB
R3-172748.zip	2017/08/11 10:00	36,4 KB
R3-172749.zip	2017/08/11 10:00	40,2 KB

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sort by name/desc	sort by date/desc	sort by size/desc
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R3-172751.zip	2017/08/11 23:57	67,5 KB
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R3-172753.zip	2017/08/11 21:39	17,7 KB
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R3-172763.zip	2017/08/11 10:33	16,4 KB
R3-172764.zip	2017/08/11 10:33	16 KB
R3-172765.zip	2017/08/11 10:33	34,6 KB
R3-172766.zip	2017/08/11 10:31	33,1 KB
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R3-172771.zip	2017/08/11 10:32	10 KB
R3-172772.zip	2017/08/11 10:33	17,5 KB
R3-172773.zip	2017/08/11 10:33	15,9 KB
R3-172774.zip	2017/08/11 10:33	29,3 KB
R3-172775.zip	2017/08/11 10:32	18 KB
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R3-172783.zip	2017/08/11 10:32	16 KB
R3-172784.zip	2017/08/11 10:32	21,6 KB
R3-172785.zip	2017/08/11 10:32	33,7 KB
R3-172786.zip	2017/08/11 10:32	16,3 KB

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R3-172791.zip	2017/08/11 7:21	48 KB
R3-172792.zip	2017/08/11 7:21	28,1 KB
R3-172793.zip	2017/08/11 7:21	18,2 KB
R3-172794.zip	2017/08/11 7:21	40,6 KB
R3-172795.zip	2017/08/11 7:21	18,9 KB
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R3-172797.zip	2017/08/11 7:21	28,2 KB
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R3-172799.zip	2017/08/11 9:55	53,3 KB
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R3-172820.zip	2017/08/11 23:47	200,2 KB

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sort by name/desc	sort by date/desc	sort by size/desc
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R3-172822.zip	2017/08/11 23:47	46,7 KB
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R3-172826.zip	2017/08/12 4:58	21,8 KB
R3-172827.zip	2017/08/11 9:15	17,3 KB
R3-172828.zip	2017/08/11 9:15	17,5 KB
R3-172829.zip	2017/08/09 14:59	13,1 KB
R3-172830.zip	2017/08/09 14:59	21,9 KB
R3-172831.zip	2017/08/09 14:59	14,7 KB
R3-172832.zip	2017/08/09 14:59	32,2 KB
R3-172833.zip	2017/08/09 14:59	16,3 KB
R3-172834.zip	2017/08/09 14:59	9,3 KB
R3-172835.zip	2017/08/09 14:59	41,3 KB
R3-172836.zip	2017/08/09 14:59	11,3 KB
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R3-172838.zip	2017/08/09 14:59	10,6 KB
R3-172839.zip	2017/08/09 14:59	19,3 KB
R3-172840.zip	2017/08/09 14:59	10,2 KB
R3-172841.zip	2017/08/09 14:59	23,7 KB
R3-172842.zip	2017/08/09 14:59	50,4 KB
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R3-172844.zip	2017/08/09 14:59	10,6 KB
R3-172845.zip	2017/08/09 14:59	15,5 KB
R3-172846.zip	2017/08/09 14:59	16 KB
R3-172847.zip	2017/08/09 14:59	18,1 KB
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R3-172854.zip	2017/08/09 14:59	10,7 KB

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R3-172859.zip	2017/08/11 13:16	73,8 KB
R3-172860.zip	2017/08/11 13:16	48,5 KB
R3-172861.zip	2017/08/11 13:16	44,6 KB
R3-172862.zip	2017/08/09 18:36	2364 KB
R3-172863.zip	2017/08/09 18:37	1780,1 KB
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R3-172867.zip	2017/08/11 11:55	21,3 KB
R3-172868.zip	2017/08/11 11:56	251,7 KB
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R3-172870.zip	2017/08/11 21:58	31,4 KB
R3-172871.zip	2017/08/11 21:58	9,6 KB
R3-172872.zip	2017/08/11 21:58	34 KB
R3-172873.zip	2017/08/11 21:58	31,2 KB
R3-172874.zip	2017/08/11 21:59	19,2 KB
R3-172875.zip	2017/08/11 21:59	737,4 KB
R3-172876.zip	2017/08/11 21:59	758,1 KB
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R3-172878.zip	2017/08/11 21:56	31,6 KB
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R3-172881.zip	2017/08/11 21:59	31,4 KB
R3-172882.zip	2017/08/11 21:58	30,5 KB
R3-172883.zip	2017/08/11 21:57	25,3 KB
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R3-172886.zip	2017/08/11 21:56	29,7 KB
R3-172887.zip	2017/08/11 21:56	9,6 KB
R3-172888.zip	2017/08/11 21:56	33,9 KB

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sort by name/desc	sort by date/desc	sort by size/desc
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R3-172894.zip	2017/08/11 21:57	82,7 KB
R3-172895.zip	2017/08/11 21:57	62,9 KB
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R3-172902.zip	2017/08/11 9:14	241,4 KB
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R3-172904.zip	2017/08/11 8:37	28 KB
R3-172905.zip	2017/08/11 10:33	25 KB
R3-172906.zip	2017/08/11 9:06	26,4 KB
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R3-172990.zip	2017/08/11 14:15	64,8 KB

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R3-173027.zip	2017/08/12 2:23	50,5 KB

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R3-173199.zip	2017/08/12 4:18	84,6 KB

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R3-173340.zip	2017/08/25 14:35	28,4 KB
R3-173341.zip	2017/08/25 14:35	139,6 KB
R3-173342.zip	2017/08/25 14:35	13,1 KB

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sort by name/desc	sort by date/desc	sort by size/desc
R3-173343.zip	2017/08/22 10:21	15,7 KB
R3-173344.zip	2017/08/22 10:21	16 KB
R3-173345.zip	2017/08/22 10:21	15,7 KB
R3-173346.zip	2017/08/22 10:21	15,8 KB
R3-173347.zip	2017/08/25 14:35	23,2 KB
R3-173348.zip	2017/08/25 14:35	17,7 KB
R3-173349.zip	2017/08/25 14:35	119,8 KB
R3-173350.zip	2017/08/25 14:35	79 KB
R3-173351.zip	2017/08/25 14:35	53,5 KB
R3-173352.zip	2017/08/23 21:42	178,7 KB
R3-173353.zip	2017/08/25 14:35	17 KB
R3-173354.zip	2017/08/23 21:42	11,9 KB
R3-173355.zip	2017/08/23 21:42	38,6 KB
R3-173356.zip	2017/08/23 21:42	58 KB
R3-173357.zip	2017/08/25 14:35	12,4 KB
R3-173358.zip	2017/08/25 14:35	59,9 KB
R3-173359.zip	2017/08/25 14:35	59 KB
R3-173360.zip	2017/08/25 14:35	25,3 KB
R3-173361.zip	2017/08/25 14:35	18,1 KB
R3-173363.zip	2017/08/25 14:35	16,6 KB
R3-173364.zip	2017/08/23 21:42	15,2 KB
R3-173365.zip	2017/08/25 14:35	30,9 KB
R3-173366.zip	2017/08/25 14:35	43 KB
R3-173367.zip	2017/08/25 14:35	19 KB
R3-173369.zip	2017/08/25 14:35	41,7 KB
R3-173370.zip	2017/08/25 14:35	24,3 KB
R3-173371.zip	2017/08/25 14:35	783,5 KB
R3-173372.zip	2017/08/25 14:35	700,1 KB
R3-173373.zip	2017/08/25 14:35	11,3 KB
R3-173374.zip	2017/08/25 14:35	46,1 KB
R3-173376.zip	2017/08/25 14:35	82,9 KB
R3-173377.zip	2017/08/25 14:35	27,9 KB
R3-173378.zip	2017/08/25 14:35	26 KB
R3-173379.zip	2017/08/25 14:35	42,5 KB

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sort by name/desc	sort by date/desc	sort by size/desc
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R3-173381.zip	2017/08/25 14:35	153,5 KB
R3-173382.zip	2017/08/25 14:35	66 KB
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R3-173385.zip	2017/08/25 14:35	55,9 KB
R3-173386.zip	2017/08/25 14:35	45,4 KB
R3-173387.zip	2017/08/23 21:42	10,3 KB
R3-173388.zip	2017/08/25 14:35	28,4 KB
R3-173389.zip	2017/08/25 14:35	27,7 KB
R3-173390.zip	2017/08/23 21:42	33,2 KB
R3-173391.zip	2017/08/25 14:35	168,2 KB
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R3-173394.zip	2017/08/23 21:42	10 KB
R3-173395.zip	2017/08/25 14:35	20,2 KB
R3-173396.zip	2017/08/25 14:35	39,9 KB
R3-173397.zip	2017/08/23 21:42	15,2 KB
R3-173398.zip	2017/08/23 21:42	11,3 KB
R3-173399.zip	2017/08/25 14:35	261 KB
R3-173400.zip	2017/08/25 14:35	45,3 KB
R3-173401.zip	2017/08/25 14:35	10,3 KB
R3-173402.zip	2017/08/25 14:35	160 KB
R3-173403.zip	2017/08/25 14:35	86,8 KB
R3-173404.zip	2017/08/25 14:35	68,1 KB
R3-173405.zip	2017/08/25 14:35	20,5 KB
R3-173406.zip	2017/08/25 14:35	62,9 KB
R3-173407.zip	2017/08/25 14:35	131,5 KB
R3-173408.zip	2017/08/25 14:35	10 KB
R3-173409.zip	2017/08/25 14:35	47,9 KB
R3-173410.zip	2017/08/25 14:35	27,9 KB
R3-173412.zip	2017/08/25 14:35	27,7 KB
R3-173413.zip	2017/08/25 14:35	21 KB
R3-173414.zip	2017/08/25 14:35	18,8 KB

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sort by name/desc	sort by date/desc	sort by size/desc
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R3-173418.zip	2017/08/25 14:35	45,5 KB
R3-173419.zip	2017/08/25 14:35	149,3 KB
R3-173420.zip	2017/08/25 14:35	12,4 KB
R3-173421.zip	2017/08/25 14:35	10,8 KB
R3-173422.zip	2017/08/25 14:36	10 KB
R3-173423.zip	2017/08/25 14:36	59,1 KB
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R3-173425.zip	2017/08/25 14:36	18,3 KB
R3-173426.zip	2017/08/25 14:36	10,4 KB
R3-173427.zip	2017/08/25 14:36	10 KB
R3-173428.zip	2017/08/25 14:36	42,5 KB
R3-173429.zip	2017/08/25 14:36	47,7 KB
R3-173430.zip	2017/08/25 14:36	86,9 KB
R3-173431.zip	2017/08/25 14:36	168,5 KB
R3-173432.zip	2017/08/25 14:36	261,3 KB
R3-173433.zip	2017/08/25 14:36	28 KB
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R3-173435.zip	2017/08/25 14:36	228,9 KB
R3-173436.zip	2017/08/25 14:36	46,2 KB
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R3-173439.zip	2017/08/25 14:36	87 KB
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R3-173442.zip	2017/08/25 14:36	24,4 KB
R3-173443.zip	2017/08/25 14:36	34,8 KB
R3-173444.zip	2017/08/25 14:36	19,4 KB
R3-173445.zip	2017/08/25 14:36	21,1 KB
R3-173446.zip	2017/09/04 2:21	1496,4 KB
R3-173447.zip	2017/09/04 2:21	3214 KB
R3-173448.zip	2017/09/04 2:25	225,1 KB

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sort by name/desc	sort by date/desc	sort by size/desc
R3-173449.zip	2017/09/04 2:21	2526,8 KB
R3-173450.zip	2017/09/04 2:21	1489,9 KB
R3-173451.zip	2017/09/04 2:21	1571,2 KB
R3-173452.zip	2017/09/01 5:59	2757,1 KB
R3-173454.zip	2017/09/04 2:21	37,3 KB
R3-173455.zip	2017/09/04 2:21	395,2 KB
R3-173456.zip	2017/09/04 2:21	83 KB
R3-173457.zip	2017/09/04 2:21	264,4 KB
R3-173458.zip	2017/09/04 2:21	1369 KB
R3-173459.zip	2017/09/04 2:21	4406,4 KB
R3-173460.zip	2017/09/04 2:21	1700,2 KB
R3-173462.zip	2017/09/27 0:17	2541,2 KB
TDoc_List_Meeting_RAN3#97.xlsm	2017/09/27 0:17	253,8 KB
TDoc_List_Meeting_RAN3#97.xlsx	2024/02/13 12:23	194,7 KB

792 items.

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APPENDIX 22

3GPP TSG-RAN WG3#97BIS R3-173466
Prague, Czech Republic, 9-13 October 2017

Agenda Item:	3
Source:	ETSI MCC
Title:	Report of 3GPP TSG RAN meeting #97,
	Berlin, Germany, Aug 21 - 25, 2017
Document for:	Approval

3GPP

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Keywords
RAN, UTRA, LTE, NR, NG-RAN

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Meeting Organisation

To be added

Executive Summary

To be added

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1 Opening of the meeting (Monday 9:00)

TSG RAN WG3 chairman Mr. Gino Masini (Ericsson) opened the meeting 3GPP TSG RAN WG3 #97 on Monday August 21st, 2017 at 9am.

On behalf of the host, the European Friends of 3GPP, Mr. Andreas Neubacher (T-Mobile Austria GmbH) welcomed the delegates to Berlin, Germany and explained organisational issues of the meeting.

2 Reminder

2.1 IPR declaration

The RAN3 chairman drew the delegate's attention to their obligations under the 3GPP Partner Organizations' IPR policies. Every Individual Member organization is obliged to declare to the Partner Organization or Organizations of which it is a member any IPR owned by the Individual Member or any other organization which is or is likely to become essential to the work of 3GPP.

Delegates were asked to take note that they are thereby invited:
• to investigate whether their organization or any other organization owns IPRs which were, or were likely to become Essential in respect of the work of 3GPP.
• to notify their respective Organizational Partners of all potential IPRs, e.g., for ETSI, by means of the IPR Information Statement and the Licensing declaration forms (http://www.3gpp.org/Call-for-IPR-Meetings).

Reference: http://www.3gpp.org/3gpp-calendar/89-call-for-ipr-meetings

2.2 Statement of antitrust compliance

The RAN3 chairman also drew the delegate's attention to the fact that 3GPP activities are subject to all applicable antitrust and competition laws and that compliance with said laws is therefore required of any participant of this TSG/WG meeting including the Chairman and Vice Chairman. In case of question it was recommended that delegates contact their legal counsel.

The leadership shall conduct the present meeting with impartiality and in the interests of 3GPP.

Furthermore, the RAN3 chairman reminded delegates that timely submission of work items in advance of TSG/WG meetings is important to allow for full and fair consideration of such matters.

Reference: http://www.3gpp.org/about-3gpp/legal-matters/21-3gpp-calendar/1616-statement-of-antitrust-compliance

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2.3 Responsible IT behavior

We must all share meeting IT resources with one another. Using bandwidth-hogging applications for personal use during the meeting is essentially an abuse of the system.
Delegates should restrict their IT usage to things which are essential for the meeting.
Delegates must respect the law of the hosting country, and should not visit prohibited Internet sites.
In case of persistent abuse of the internet bandwidth, MCC may restrict an individual's use of the service.

The PCG has laid down the following network usage conditions:

1. Users shall not use the network to engage in illegal activities. This includes activities such as copyright violation, hacking, espionage or any other activity that may be prohibited by local laws.
2. Users shall not engage in non-work related activities that consume excessive bandwidth or cause significant network performance degradation.
Network is a shared resource: users should exercise some basic etiquette when using the 3GPP network at a meeting. It is understood that high bandwidth applications such as downloading large files or video streaming might be required for business purposes. Delegates are strongly discouraged from engaging in these activities for personal use, since this essentially wastes bandwidth needed by everyone for an effective meeting. E-mail and attachments already take up significant bandwidth (certain e-mail programs are not very bandwidth-efficient).

1.DON'T place your WiFi device in ad-hoc mode;
2.DON'T set up a personal hotspot in the meeting room;
3.DO try 802.11a if your device supports it;
4.DON'T manually allocate an IP address;
5.DON'T be a bandwidth hog by streaming video, playing online games, or downloading huge files;
6.DON'T use packet probing software (e.g., packet sniffers or port scanners) which clogs the local network.

Reference: http://www.3gpp.org/Delegates-Corner#outil_sommaire_14

2.4 Additional reminder

1. All agreed CRs must be provided during the meeting week, that is, BEFORE the end of the meeting. In order to continue with the principle of "agreed unseen" CRs, please ensure that all CRs are uploaded in time.

2. Prefer face-to-face offline discussion to e-mail discussion.

3. Come-Backs (CB), server, reflector and e-mail discussions:
When a CB is set up, e.g.:
CB # 1_Name
- topics of the offline discussion
(Company Owner)
Rev in R3-xxxxxx

a. Create a folder in "Inbox/Drafts/1_Name" with the assigned CB number (1) and name;
b. Upload all drafts, corrections, revisions, etc. in the same folder "Inbox/Drafts/1_Name";
c. Avoid sending drafts via e-mail or on the reflector!
d. When sending e-mails, do not attach any document, and please minimize e-mail discussion (e.g. it is enough to announce start of discussion, availability of drafts on server, support for a document, discussion conclusion).

In addition, some suggestions for better RAN3 meetings can be found in R3-172219.

3 Approval of the Agenda

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R3-172650 **RAN3#97 Meeting Agenda** ***MCC***
Replaces

The document was approved.
Replaced by

4 Approval of the minutes from previous meetings

R3-172651 **RAN3#96 Meeting Report** ***MCC***
Replaces

The document was approved.
Replaced by

R3-172652 **RAN3-NR#2 Meeting Report** ***MCC***
Replaces

The document was approved.
Replaced by

5 Documents for immediate consideration

6 Organizational topics

Election for 1 Vice-Chair for TSG RAN WG3 will be held on Monday 21.08.2017 during the first coffee break in the morning (10:30-11:00).

There is only one candidate: Mrs. Yin Gao (ZTE Corporation, CCSA)

Mrs. Yin Gao (ZTE Corporation, CCSA) is elected as RAN3 vice-chairman by acclamation

7 General, protocol principles and issue

Reminder: Work Plan and Working Procedures - RAN WG3 TR 30.531

8 Incoming LSs

Note: Other incoming LSs that are not listed under this agenda item are treated under their corresponding other agenda

8.1 New Incoming LSs

R3-172829 **Reply LS on eDRX Configuration and IMSI-paging** ***TSG CT WG1, Nokia***
Replaces Postponed from NR#2 Adhoc meeting

conclusion: no LS answer

The document was noted.
Replaced by

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R3-172830 **Reply LS on Applying Extended NAS timers based on UE's operation in CE Mode B** ***TSG CT WG1, Intel***

Replaces Postponed from NR#2 Adhoc meeting

presented by RAN3 chair
conclusion: no LS answer

The document was noted.
Replaced by

R3-172832 **LS on the conclusions for the SI on a simplified HS-SCCH for** ***TSG RAN WG1, Ericsson***

Replaces Postponed from NR#2 Adhoc meeting

conclusion: no LS answer

The document was noted.
Replaced by

R3-172833 **LS on enhanced scheduling for UMTS** ***TSG RAN WG1, Huawei***

Replaces Postponed from NR#2 Adhoc meeting

conclusion: no LS answer

The document was noted.
Replaced by

R3-172834 **Reply LS on security for RLF for DoNAS Ues** ***TSG RAN WG2, Vodafone***

Replaces Postponed from NR#2 Adhoc meeting

conclusion: no LS answer

The document was noted.
Replaced by

R3-172835 **LS on UE-AMBR support for NB-IoT UE** ***TSG RAN WG2, NTT Docomo***

Replaces Postponed from NR#2 Adhoc meeting

conclusion: no LS answer

The document was noted.
Replaced by

R3-172836 **LS reply to CT1 on GERAN redirection** ***TSG RAN WG2, Nokia***

Replaces Postponed from NR#2 Adhoc meeting

conclusion: no LS answer

The document was noted.
Replaced by

R3-172837 **LS on EUTRAN sharing enhancement** ***TSG SA WG2, Ericsson***

Replaces Postponed from NR#2 Adhoc meeting

conclusion: no LS answer

The document was noted.
Replaced by

R3-172838 **Reply LS on Reply LS to RAN3 on support of redirection for VoLTE** ***TSG SA WG2, Nokia***

Replaces Postponed from NR#2 Adhoc meeting

RAN3 chair: so option1 is preferred choice
conclusion: no LS answer

The document was noted.
Replaced by

R3-172839 **Reply LS on on providing WT MAC address to the UE using eNB signalling** ***TSG SA WG3, Intel***

Replaces Postponed from NR#2 Adhoc meeting

conclusion: no LS answer

The document was noted.
Replaced by

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R3-172840 **Reply LS on LTE call redirection to GERAN** ***TSG SA WG3, Ericsson***
Replaces Postponed from NR#2 Adhoc meeting

conclusion: no LS answer

The document was noted.
Replaced by

R3-172841 **LS on eVoLP parameters** ***TSG SA WG4, Qualcomm***
Replaces Postponed from NR#2 Adhoc meeting

conclusion: no LS answer

The document was noted.
Replaced by

R3-172842 **Liaison Statement from NGMN Alliance to 3GPP on Test Results of Technology Building Blocks phase of the Trial and Testing Initiative** ***NGMN Alliance, telecom Italia***
Replaces

Telecom Italia: can we come back on this later?
RAN3 chair: ok
conclusion: no LS answer

The document was noted.
Replaced by

R3-172844 **LS on support of multi-TRP transmission in NR** ***TSG RAN WG1, Intel Corporation***
Replaces

conclusion: no LS answer

The document was noted.
Replaced by

R3-172847 **LS on default DRB establishment for PDU session** ***TSG RAN WG2, Huawei***
Replaces

Nokia: is touching default DRB, is addressed in 10.1.2, has a reply in R3-172871
conclusion: LS answer drafted in R3-172871

The document was replied to.
Replaced by

R3-173383 **Response LS to R2-1707506 = R3-172847 on default DRB establishment for PDU session (S2-176475; to: RAN2; cc: RAN3; contact: Interdigiital)** ***SA2, Interdigital***
related to LSin R3-172847

LS arrived on Wed morning of RAN3 #97
Nokia: SA2 is open to provide such indication of default QoS profile , related to CB13/CB14;
Ericsson: no functional reason from SA2, so RAN2 has to discuss
RAN3 chair: RAN3 has no action from this LS
conclusion: no LS answer from RAN3

The document was noted.

R3-172849 **Reply LS on UE capabilities for MBMS** ***TSG SA WG2, Qualcomm***
Replaces

Qualcomm: is transparent and we do not need to respond to anything
conclusion: no LS answer

The document was noted.
Replaced by

R3-172851 **Reply LS on the need for EPS Bearer ID knowledge in NG-RAN for (inter-RAT) inter-system handover** ***TSG SA WG2, NTT DOCOMO***
Replaces

conclusion: no LS answer

The document was noted.
Replaced by

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R3-172852 **Reply LS on Supported features by 5GC for E-UTRA connected to 5G CN** ***TSG SA WG2, Nokia***

Replaces

conclusion: no LS answer

The document was noted.

Replaced by

R3-172855 **Reply LS to RAN3 on MBMS bearer event notification** ***TSG SA WG6, Motorola Solutions***

Replaces

Motorola: suggests to postpone discussion to next RAN3 meeting
Huawei: do you expect new information by next meeting? We had discussions in the past
Motorola: failures could happen at any time not just at session start
Nokia: SA6 has already notifications from UEs, no need for further solutions
Motorola: SA6 does not think this is sufficient
Nokia: SA2/SA6 should clarify their scenarios if further need is seen
conclusion: no LS answer, discussion can continue but we need to have information why this is not enough

The document was noted.

Replaced by

R3-173309 **Reply LS on eDRX Configuration and IMSI-paging** ***CT4, Nokia***

Replaces

conclusion: no LS answer

The document was noted.

Replaced by

R3-173313 **MEF Forum Work on 5G** ***MEF***

Replaces

presented by RAN3 chair
conclusion: no LS answer

The document was noted.

Replaced by

R3-173397 **LS on RAN3 signaling support for LTE-NR coexistence feature (R1-1715041; to: RAN3; cc: -; contact: AT&T)** ***RAN1, AT&T***

LS arrived on Wed afternoon of RAN3 #97
conclusion: no LS answer

The document was noted.

R3-173405 **LS on Support of early contention resolution in NB-IoT (R1-1714719; to: RAN2; cc: RAN3; contact: Qualcomm)** ***RAN1, Qualcomm***

LS arrived on Thu evening of RAN3 #97

The document was not treated.

R3-173412 **LS response to R4-1706974 on spectrum utilization (R1-175184; to: RAN4, RAN2, RAN3; cc: -; contact: Huawei)** ***RAN1, Huawei***

R4-1706974 was sent just to RAN1, RAN2

LS arrived on Thu evening of RAN3 #97

The document was not treated.

8.2 LSin received during the meeting

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8.3 Left over LSs / pending actions

R3-172831 **LS on Solution 9 (Option 2) for CN overload control for CP data** ***TSG CT WG1, Huawei***
Replaces Postponed from NR#2 Adhoc meeting

Huawei drafted an LS answer in R3-172723
conclusion: no LS answer

The document was noted.
Replaced by

R3-172722 **CN overload control for CP data** ***Huawei***
Replaces

Proposal: reply LS to CT1 by suggesting to change the mapping between NAS and AS cause values for UEs supporting CP optimisation only and configured as NAS signalling low priority, i.e., use "mo-signaling" for NAS signalling transmission and SMS delivery, instead of "delayTolerantAccess".

Qualcomm: problem statement not clear and does not align with CT1 LS, section 3.1 b. unclear; description of the problem is not correct
RAN3 chair: coming back this week or next meeting?
Huawei: would like to come back this meeting
NEC: LS is also sent to SA2, Motorola may be correct, we can check SA2 discussion
RAN3 chair: ok, discuss this further offline whether there is a problem and we need to send an LS and we will come back later this week

The document was noted.
Replaced by

R3-172723 **[DRAFT] Reply LS on Solution 9 (Option 2) for CN overload control for CP data** ***Huawei***
Replaces

The document was not treated.
Replaced by

9 Corrections to Rel-13 or earlier releases

9.1 3G

R3-173205 **Correction to make band extensions applicable also for TMAAP** ***Ericsson***
Replaces

Huawei: do we need to fix this for every band again?
Ericsson: is not related to bands

The document was agreed.
Replaced by

R3-173206 **Correction to make band extensions applicable also for TMAAP** ***Ericsson***
Replaces

The document was agreed.
Replaced by

9.2 LTE

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R3-173308 **Reply LS on defining a GTP container for the Xw interface** ***CT4, Nokia***
Replaces

conclusion: no LS answer

The document was noted.
Replaced by

R3-172705 **Introduction of the Xw GTP container** ***Nokia, Nokia Shanghai Bell***
Replaces Related to the LS from CT4 on the GTP container for Xw

The document was noted.
Replaced by

R3-172706 **Change of the name of the GTP container** ***Nokia, Nokia Shanghai Bell***
Replaces

conclusion: WI code will be corrected to REL-13 WI code LTE_WLAN_radio-Core

The document was revised.
Replaced by R3-173343

R3-173343 **Change of the name of the GTP container** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172706

conclusion: agreed unseen

The document was agreed.

R3-172707 **Change of the name of the GTP container** ***Nokia, Nokia Shanghai Bell***
Replaces

conclusion: WI code will be corrected to REL-13 WI code LTE_WLAN_radio-Core

The document was revised.
Replaced by R3-173344

R3-173344 **Change of the name of the GTP container** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172707

conclusion: agreed unseen

The document was agreed.

R3-172708 **Change of the name of the GTP container** ***Nokia, Nokia Shanghai Bell***
Replaces

conclusion: WI code will be corrected to REL-13 WI code LTE_WLAN_radio-Core

The document was revised.
Replaced by R3-173345

R3-173345 **Change of the name of the GTP container** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172708

conclusion: agreed unseen

The document was agreed.

R3-172709 **Change of the name of the GTP container** ***Nokia, Nokia Shanghai Bell***
Replaces

conclusion: WI code will be corrected to REL-13 WI code LTE_WLAN_radio-Core

The document was revised.
Replaced by R3-173346

R3-173346 **Change of the name of the GTP container** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172709

conclusion: agreed unseen

The document was agreed.

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R3-173284 **Introduce a specific S1AP cause value for nonstandard UEs** ***CMCC***
Replaces

Qualcomm: non-standard UEs because of standard is ambiguous or it is a bad implementation?
CMCC: spec is not so clear which results in different implementations
Ericsson: also for roaming cases?
CMCC: often UEs from other operators coming to CMCC network
RAN3 chair: is this band related? so they add a CMCC SIM into a UE that supports other bands?
CMCC: correct
Huawei: what information is expected from the MME? You should give appropriate info to the UE
CMCC: cause value to instruct UE to attach to the correct cell/band/freq

The document was noted.
Replaced by

10 NR Radio Access Technology (RAN1-led) WI

WID [NR_newRAT-Core]: RP-171485 (target: RAN#80)

R3-173446 **TS 38.472 v0.3.0 covering agreements of RAN3 #97** ***Interdigital***
based on last RAN3 agreed v0.2.1 in R3-172715

The document was Agreed.

R3-173447 **TS 38.413 v0.3.0 covering agreements of RAN3 #97** ***Nokia***
based on last RAN3 agreed v0.2.0 in R3-172604

The document was Agreed.

R3-173448 **TS 38.410 v0.4.0 covering agreements of RAN3 #97** ***Nokia***
based on last RAN3 agreed v0.3.0 in R3-172632

The document was Agreed.

R3-173449 **TS 38.401 v0.3.0 covering agreements of RAN3 #97** ***NEC***
based on last RAN3 agreed v0.2.0 in R3-172634

The document was Agreed.

R3-173450 **TS 38.470 v0.3.0 covering agreements of RAN3 #97** ***Huawei***
based on last RAN3 agreed v0.2.0 in R3-172639

The document was Agreed.

R3-173451 **TS 38.473 v0.3.0 covering agreements of RAN3 #97** ***Huawei***
based on last RAN3 agreed v0.2.0 in R3-172640

The document was Agreed.

R3-173452 **TS 38.423 v0.2.0 covering agreements of RAN3 #97** ***Ericsson***
based on last RAN3 agreed v0.1.1 in R3-172548

The document was Agreed.

R3-173462 **TS 38.423 v0.3.0 covering agreements of RAN3 #97** ***Ericsson***
based on last RAN3 agreed v0.2.0 in R3-173452

The document was Agreed.

R3-173453 **TS 38.420 v0.3.0 covering agreements of RAN3 #97** ***Qualcomm***
based on last RAN3 agreed v0.2.0 in R3-172636

The document was Agreed.

R3-173457 **Baseline CR to RAN2 TS 36.300 covering agreements of RAN3 #97** ***Nokia, ZTE***
draft CR to RAN2 TS 36.300 covering RAN3 #97 agreements e.g. from R3-172654, R3-172698, R3-173341

The document was Endorsed.

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R3-173458 **Baseline pCR to RAN2 TS 37.340 covering agreements of RAN3 #97** ***ZTE***

pCR to RAN2 TS 37.340 covering RAN3 #97 agreements e.g. from R3-173187, R3-173380, R3-173381, R3-173384, R3-173386, R3-173388, R3-173390

The document was Endorsed.

10.1 QoS

Focus on RAN3 topics before topics Pending RAN2 and SA2 …
Whether RAN needs to be aware of which NAS-level QoS profile is to be regarded as the default profile
Any impact on RAN from reflective QoS
The content of a QoS profile rules, A-type and B-type, needs to be determined
The format and content of the NG-U encapsulation header is to be discussed

R3-172854 **LS on EPC QoS aspects for TSG RAN's lower latency features** ***TSG SA WG2, Ericsson***

Replaces

conclusion: no LS answer

The document was noted.

Replaced by

R3-173398 **LS on response to S2-175276 = R3-172854 on EPC QoS aspects for TSG RAN's lower latency features (R1-1715089; to: SA2, RAN2; cc: SA1, CT1, RAN, SA, RAN3; contact: Ericsson)** ***RAN1, Ericsson***

RAN1 LS answer to SA2 LS in R3-172854

LS arrived on Wed afternoon of RAN3 #97
conclusion: no LS answer

The document was noted.

10.1.1 Content QoS Flow Level Parameters

R3-173207 **QoS – Continuation of stage 3 work** ***Ericsson***

Replaces

Observation 1 A QFI (QoS Flow ID) is included in the encapsulation header on NG-U and is equal to the 5QI value. For GBR and non-GBR QoS flows, QFI of a QoS flow is provided to the (R)AN over N2.
Observation 2 Reflective QoS needs support on NG-U, a "Reflective QoS Indication" (RQI) needs to be included in the NG-U encapsulation header.
Observation 3 QFI/RQI could be specified as a (further) extension header in GTP-U.

Proposal 1: It is proposed to update stage 3 to include QFI.
Proposal 2: It is proposed to update stage 3 for Non-standardised QoS Flow descriptor accordingly
Proposal 3: It is proposed to update stage 3 for ARP accordingly
Proposal 4: It is proposed to discuss how to specify the (QoS) encapsulation header on NG-U
Proposal 5 : It is proposed to update stage 3 to include RQA.
Proposal 6: It is proposed to move the Notification Control IE into GBR QoS Flow Information.
Proposal 7 : It is proposed to update stage 3 for Maximum bit rate.

MCC: Please do NOT merge multiple pCRs in one Tdoc
Huawei: has related Tdoc in R3-172999

The document was revised.

Replaced by R3-173336

R3-173336 **QoS – Continuation of stage 3 work** ***Ericsson***

Replaces R3-173207

will include also aspects of R3-173001

The document was agreed.

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R3-172999 **Overall Update of QoS Flow Level Parameters** ***Huawei***
Replaces

Observation 1: The Notification Control should be included in the GBR QoS flow parameters only.
Observation 2: The RQA should be included in the non-GBR QoS flow parameters only.
Observation 3: The Averaging Window should be included in the GBR QoS flow parameters only and will be determined by SA2.
Observation 4: The default ARP for non-GBR QoS flows with standardized 5QIs or pre-configured 5QIs will be sent to RAN at PDU Session establishment/modification.
Observation 5: The non-standardized 5G QoS Flow Descriptor consist of Resource Type (GBR or Non-GBR), Priority level, Packet Delay Budget and Packet Error Rate.
Observation 6: The 5QI value together with the non-standardized 5G QoS characteristics are signalled to RAN during PDU session establishment or modification procedure.
Observation 7: The subscribed UE-AMBR and PDU Session Resource AMBRs should be included in the Xn Handover Request message.

Ericsson: does not agree to observation 4 (default ARP is outside of QoS parameters)
Nokia: does not support observation 4, no change needed

The document was noted.
Replaced by

R3-173001 **Text Proposal of QoS Flow Level Parameters** ***Huawei***
Replaces

conclusion: merged into R3-173336

The document was merged.
Replaced by

R3-173003 **Text Proposal of QoS Flow Level Parameters** ***Huawei***
Replaces

The document was revised.
Replaced by R3-173337

R3-173337 **Text Proposal of QoS Flow Level Parameters** ***Huawei***
Replaces R3-173003

Ericsson: why is 5QI changed from mandatory to optional?

The document was agreed.

R3-172897 **Discussion on Notification Control** ***CATT***
Replaces

Proposal 1: When CN decides to perform notification control for a QoS flow, 5GC provides a candidate GFBR of the QoS flow to RAN along with the notification control. When the QoS target can't be fulfilled at RAN, RAN directly downgrades the QoS flow to the candidate GFBR.
Proposal 2: For DC SCG option, in case QoS target cannot be fulfilled for a QoS flow configured with Notification Control, the SgNB may send S-node Notification Control message to the MgNB.
Proposal 3: It's proposed to agree the corresponding TP for stage3 TS in [2] and [3]

ZTE: to proposal 1: not easy for AMF to send GFBR in advance
Ericsson: similar view for proposal 1, too early for proposal 2
Samsung: some values cannot be used for standardized QoS

The document was noted.
Replaced by

R3-172898 **Stage3 Update for NG-AP Notification Control** ***CATT***
Replaces

The document was rejected.
Replaced by

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R3-172899 **Stage3 Update for Xn-AP Notification Control** ***CATT***
Replaces

The document was rejected.
Replaced by

10.1.2 Default QoS

R3-173278 **QoS profile for Default DRB and Default QoS profile** ***Intel Corporation, Nokia, Nokia Shanghai Bell, LGE***
Replaces

Proposal 1: 5GC to indicate the reference QoS profile among the NAS-level QoS profiles configured to RAN at the PDU session set-up which can be used by RAN to establish default DRB tailored to the PDU session characteristics.

Proposal 2: RAN to decide which NAS-level QoS profile is to be regarded as the default profile, for the case when RAN does not know how to treat a received packet (e.g. receiving a NG-U packet with an unrecognizable QFI).
Proposal 3: RAN does not need to be aware of which NAS-level QoS profile is the profile of the default QoS rule.

The document was noted.
Replaced by

R3-172870 **Text Proposal for Reference QoS profile** ***Nokia, Nokia Shanghai Bell, Intel Corporation, LG Electronics***
Replaces

Huawei: has a paper on this with a different solution
Intel: our proposal is about reference profiles agreed by SA2 and not default QoS profile
ZTE: still not needed as up to gNB implementation
Nokia: we had an incoming LS on Monday morning and this is also discussed in RAN2; we need a reference so "most likely QoS flow"
RAN3 chair: if gNB can decide why do we need to signal
Nokia: because it would be a blind guess

RAN3 chair: if gNB receives multiple QoS flow requests what should it do?
Nokia: RAN2 agreement: default DRB is mandatory (so gNB sets up at least one DRB)
ZTE: but there is no relation between default DRB and QoS profile

The document was revised.
Replaced by R3-173338

R3-173338 **Text Proposal for Reference QoS profile** ***Nokia, Nokia Shanghai Bell, Intel Corporation, LG Electronics***
Replaces R3-172870

The document was agreed.

R3-173055 **Support of Default QoS** ***Huawei***
Replaces

The document was noted.
Replaced by

R3-173057 **Text Proposal for Default QoS** ***Huawei***
Replaces

Ericsson: why is a need for default QoS profile?
ZTE: same view, no need for default QoS profile from AMF
conclusion: aspects will be merged into R3-173338

The document was merged.
Replaced by

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R3-172871 **Reply LS on default DRB establishment for PDU session** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-172900 **Discussion on default NAS-level QoS profile** ***CATT***
Replaces

The document was noted.
Replaced by

10.1.3 Reflective QoS

R3-172691 **Discussion on the Reflective QoS and QoS related IEs over NG-C** ***ZTE Corporation***
Replaces Discussion, Rel-15,NR_newRAT

The document was noted.
Replaced by

R3-172692 **Correction of TS38.413 about Reflective QoS** ***ZTE Corporation***
Replaces pCR, Rel-15,NR_newRAT

conclusion: RQA aspects could be merged into R3-173338 (if feasible)

The document was merged.
Replaced by

R3-172872 **RAN Impact from NAS Reflective QoS** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was noted.
Replaced by

R3-172873 **Text Proposal for Reflective QoS** ***Nokia, Nokia Shanghai Bell***
Replaces

conclusion: at first revised in R3-173339 but finally it will be merged into R3-173338

The document was merged.

R3-173339 **Text Proposal for Reflective QoS** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172873

conclusion: finally withdrawn

The document was withdrawn.

R3-173007 **Support of Reflective QoS** ***Huawei***
Replaces

The document was noted.
Replaced by

10.1.4 NG/Xn/F1 UP Encapsulation Header

R3-172736 **Data forwarding in HO** ***Qualcomm Incorporated***
Replaces

Samsung: GTP-U will be used in NR and LTE, no need for a RAN3 spec, we could reference CT4 spec
Nokia: we need to separate TNL and RNL, if we change transport tomorrow, we lose this information

The document was noted.
Replaced by

R3-172737 **Data forwarding in HO (P-CR 38.300)** ***Qualcomm Incorporated***
Replaces

The document was not treated.
Replaced by

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R3-172874 **Format of NG-U Encapsulation Header** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was noted.
Replaced by

R3-172875 **Skeleton for NG user plane format** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was noted.
Replaced by

R3-172876 **Specification of the NG user plane format** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was noted.
Replaced by

R3-172877 **LS on defining GTP extension header for 5G** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

10.1.5 Others

R3-173006 **UE-AMBR derivation in RAN** ***LG Electronics***
Replaces

The document was not treated.
Replaced by

R3-173009 **Text Proposal for NG tunnelling to support dual Connectivity** ***Samsung***
Replaces

The document was not treated.
Replaced by

R3-172878 **Text Proposal for QoS Handling in Dual Connectivity 5GC** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-173044 **QoS Flow Level Offloading in DC** ***Huawei***
Replaces

The document was not treated.
Replaced by

10.2 Realization of Network Slicing

Indication of default AMF…
Intra- and inter-RA mobility…
NSSAI duplication issue...
WA: Exchange info on slice associated with PDU session(s) over Xn HO signaling and NG HO signaling

R3-173197 **Considering slice related information during mobility** ***LG Electronics***
Replaces

The document was noted.
Replaced by

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R3-172675 **Further Discussion on Leftover Mobility Issues with NW Slice** ***ZTE Corporation***
Replaces Discussion, Rel-15,NR_newRAT

Proposal 1: To configure default AMF set for each gNB with O&M approach.
Proposal 2: To remove the slice information (FFS) from path switch procedure, since no slice remapping is done in target node.

Proposal 3: To support UE transferring NSSAI info both in RRC and NAS layer.
Proposal 4: Add up descriptions of exchanging supported slice information in Xn Setup and gNB update procedures.

Proposal 5: Source gNB should carry slice information for each ongoing PDU session towards target gNB during Xn based Handover procedure.

Proposal 6: AMF should also carry slice information for each ongoing PDU session towards target gNB during NG based Handover procedure.

The document was noted.
Replaced by

R3-172676 **Correction of TS38.413 Due to Leftover Issues with NW Slice** ***ZTE Corporation***
Replaces pCR, Rel-15,NR_newRAT

The document was not treated.
Replaced by

R3-172677 **Correction of TS38.423 Due to Leftover Issues with NW Slice** ***ZTE Corporation***
Replaces pCR, Rel-15,NR_newRAT

The document was not treated.
Replaced by

R3-173158 **Slicing information transfer** ***Huawei***
Replaces

Proposal 1: The S-NSSAI list IE should be included in the NG-RAN node configuration update procedure.
Proposal 2: The S-NSSAI should be included in the HANDOVER REQUEST message for each PDU session in order for slice-specific differentiated handling at the target NG-RAN node.
Proposal 3: the S-NSSAI should not be included in the HANDOVER REQEUST ACKNOWLEDGE message.
Proposal 4: Remove the FFS and confirm S-NSSAI carried in the PATH SWITCH REQUEST and PATH SWITCH REQUEST ACKNOWLEDGE message.
Proposal 5: The S-NSSAI should be included in the HANDOVER REQUEST message for each PDU session sent from the AMF to the target NG-RAN.

The document was noted.
Replaced by

R3-173159 **TP on slicing information for Xn messages** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173160 **TP on slicing information for NG messages** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-172879 **Configuration of Network Slicing** ***Nokia, Nokia Shanghai Bell***
Replaces

Proposal 1: For TS 38.413, agree the flexible format of the Network Slice Support IE as in Text Proposal [6] in order to allow an optimized coding over NGAP and algorithm in gNB and not necessarily always send the plain full list of supported S-NSSAI(s).
Proposal 2: For TS 38.423, agree the Text Proposal [7] which uses the same flexible format of the Network Slice Support IE in order to allow an optimized coding over XnAP and algorithm in the gNB.
Proposal 3: For TS 38.413, agree to add a code-point for being part of the set of default AMFs.

The document was noted.
Replaced by

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R3-172880 **Text Proposal for Configuration of Network Slicing over NG** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was postponed.
Replaced by

R3-172881 **Text Proposal for Configuration of Network Slicing over Xn** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-173208 **Discussion on Temp ID and NSSAI duplication** ***Ericsson***
Replaces

Observation 1: Assistance information for AMF selection is provided in MSG5 of the RRC connection establishment at network registration (initial or mobility triggered).

Proposal 1: For service request, when the UE is already registered to the network and remains within the same registration area, the 5G-S-TMSI is used to locate the serving AMF.
Proposal 2: 5G-S-TMSI is provided in MSG3 of the RRC connection establishment, similar to S-TMSI in LTE/EPC.
Proposal 3: No assistance information needs to be provided by UEs in inactive mode as this information is already available from the UE context stored in RAN.
Proposal 4: We should consider reducing the size of MSG5 by including NSSAI only at the RRC level and not duplicating the information at NAS level.
Proposal 5 : RAN3 should send an LS to CT1 (cc RAN2) to confirm the feasibility of this approach.

The document was noted.
Replaced by

R3-173209 **Draft LS on Transmission of NSSAI over AS (To: CT1, Cc: RAN2)** ***Ericsson***
Replaces

The document was not treated.
Replaced by

R3-173152 **Xn based mobility across RA** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173153 **5GC involved Inter registration area mobility** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173154 **TP: 5GC involved Inter registration area mobility** ***Huawei***
Replaces

The document was not treated.
Replaced by

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R3-173144 **Slice impact on multi-connectivity** ***CMCC***
Replaces

Observation 1: UE may be simultaneously associated to different RAN nodes for one or more slices. On the one hand, UE is associated to e.g. two or more RAN nodes, each supporting a different slice; on the other hand, UE is associated to multiple RAN nodes for traffic offloading of a single slice.
Proposal 1: For NG Core based Multi-Connectivity when adding a secondary node, slice availability in the candidate secondary nodes should be considered.
Proposal 2: For NG Core based Multi-Connectivity, slice information associated with PDU sessions should be exchanged between Master Node and Secondary Node for RRM handling.
Proposal 3: Capture following text proposal in TS 38.300.

RAN3 chair:
The slice associated to each signaled PDU session is signaled in SN Add Req?

Ericsson: CMCC proposals are already included
ZTE: no sure about latest 38.420 status

RAN3 chair: it seems people are fine with stage 2 so questions are more on stage 3

The document was postponed.
Replaced by

R3-172901 **Slice temporarily unavailable** ***CATT***
Replaces

The document was noted.
Replaced by

R3-172903 **Stage2 TP for temporarily unavailable** ***CATT***
Replaces

The document was not treated.
Replaced by

R3-172904 **Stage3 TP for temporarily unavailable** ***CATT***
Replaces

The document was not treated.
Replaced by

R3-173161 **Temporary slicing unavailability** ***Huawei***
Replaces

Proposal 1: Remove the FFS sentence regarding the temporally unavailable status of S-NSSAI from NG setup and Configuration update message.

Nokia: what does temporarily unavailable mean? node failure?
Huawei: no node failure but it is also not 100% clear from SA2
Nokia: we have other mechanisms for congestion
Huawei: there may be other cases
RAN3 chair: do we need clarification from SA2? Or do we simply decide on our own (if SA2 does not care about this anymore)?
Huawei: we can check offline per company and bring an input to next RAN3 meeting

The document was noted.
Replaced by

R3-173162 **TP on Temporary slicing unavailability** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173163 **Network slicing isolation** ***Huawei***
Replaces

The document was not treated.
Replaced by

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R3-173155 **Clarification on Allowed NSSAI** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173156 **TP for TS 38.413 on Allowed NSSAI** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173157 **[DRAFT] LS on Allowed NSSAI** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173210 **Handling slice availability in connected mode** ***Ericsson***
Replaces

RAN3 chair: topics to discussed among the presented previous documents (together):
Signalling aspects
- S-NSSAI list in Xn HO request
- S-NSSAI list in NG HO request
- S-NSSAI list in path switch
- Receiving node behaviour (intra-RA? inter-RA?)
  1. it rejects procedure in case it does not support any of the slices signalled
  2a. Xn HO: it rejects slides not supported (in HO request response)
  2b. NG HO: it rejects slides not supported (in HO request response)
- Signalling the "tenant" (SD info)
- transfer of NSSAI info from UE in b oth RRC and NAS

conclusions:
agreements:
- Configuration of RAN nodes with a set of default AMF nodes may be done e.g. via O&M.
- The slice associated to each signalled PDU session is signaled in Xn and NG HO request.
- Info on the slice associated to each PDU session signaled in the SN add req is needed for the candidate SN

The document was postponed.
Replaced by

10.3 Support of Self-Organising Network (SON) functions

TNL address discovery and X2/Xn/NG interface setup/update
F1 Setup will be discussed in AI 10.10

R3-172845 **LS on changing the Neighbour cell Relation acronym to “NCR”** ***TSG RAN WG2, Nokia***
Replaces

conclusion: no LS answer

The document was noted.
Replaced by

10.3.1 TNL Address Discovery for Option 3

R3-173061 **Considerations for TNL address discovery in 5G network** ***KT Corp.***
Replaces

- Proposal 1: TNL address discovery solutions that can work in the NSA Option 3 as well as mixed deployment scenarios are highly desirable for seamless 5G network migration and forward compatibility.
- Proposal 2: The solution of TNL address discovery through inter-CN-inter-system interface should be deprioritized.
- Proposal 3: TNL address discovery solution for 5G network should be selected and specified to minimize

The document was noted.
Replaced by

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R3-173010 **TNL address discovery in Option 3/3a/3x** ***Samsung***
Replaces

The document was noted.
Replaced by

R3-172822 **TNL address discovery for Option 3** ***LG Electronics UK***
Replaces

The document was noted.
Replaced by

R3-173211 **On X2 TNL Address discovery for option 3** ***Ericsson***
Replaces

The document was noted.
Replaced by

R3-172996 **RAN supported TNL discovery for EN-DC** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was noted.
Replaced by

R3-172727 **Further details on TNL address discovery for option 3** ***Qualcomm Incorporated***
Replaces

conclusion: agreement: QAM configuration and DNS query are always possible

The document was noted.
Replaced by

R3-172728 **Support of TNL address discovery for option 3** ***Qualcomm Incorporated***
Replaces

The document was not treated.
Replaced by

R3-172729 **Support of TNL address exchange during X2 Removal** ***Qualcomm Incorporated***
Replaces

The document was not treated.
Replaced by

10.3.2 TNL Address Discovery for NG-RAN

10.3.3 X2/NG/Xn Setup

R3-172798 **Discussion on X2/Xn setup procedure** ***CATT***
Replaces

The document was noted.
Replaced by

R3-172799 **TP for 36.423 on EN-DC X2 setup procedure** ***CATT***
Replaces

The document was postponed.
Replaced by

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R3-172800 **TP for 38.423 on Xn setup procedure** ***CATT***
Replaces

The document was postponed.
Replaced by

R3-173074 **X2 setup and configuration update for option 3** ***Huawei***
Replaces

The document was noted.
Replaced by

R3-173075 **Stage 2 CR of X2 setup and configuration update for option 3** ***Huawei***
Replaces

The document was postponed.
Replaced by

R3-173076 **Stage 3 CR of X2 setup and configuration update for option 3** ***Huawei***
Replaces

The document was postponed.
Replaced by

R3-172992 **X2 setup following en-gNB deployment** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was noted.
Replaced by

R3-172993 **Introduction of inter-RAT ANR towards NR cells** ***Nokia, Nokia Shanghai Bell***
Replaces

Ericsson: would have expected a separate chapter
Nokia: not so eager to have this, major changes expected?
Ericsson: having option 3 in a separate chapter for better readability

Huawei: editor's note unclear
Nokia: was intended to be removed by the end of REL-15

The document was revised.
Replaced by R3-173341

R3-173341 **Introduction of inter-RAT ANR towards NR cells** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172993

Ericsson: search list: already existing text?
conclusion: will NOT be sent to RAN2, is just a baseline

The document was endorsed.

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R3-172994 **Selection of served cell info on Xn and Xx/X2** ***Nokia, Nokia Shanghai Bell***
Replaces

Observation: Up-to-date information about carrier frequencies and neighbour cells served by peer nodes is crucial for system operation, and must be ensured by the specification.

Proposal 1: If inclusion of all served NR cells can't be mandated, a request-based approach for served cell information is needed for NR cells on X2, and for LTE cells and NR cells on X2/Xx.

Proposal 2: On X2/Xx, introduce a mechanism (flag) to request all served NR cells.

Proposal 3: On Xn, introduce a mechanism (flag) to request all served LTE cells and NR cells.

Proposal 4: A selective request mechanism is also needed, by which the eNB/gNB/en-gNB shall transfer served cell information for at least one cell per NR carrier (DL EARFCN for FDD or EARFCN for TDD).

RAN3 chair: how to handle served cell info (today it's mandatory) is the question here, it may not work in 5G scenarios

discussion of CATT/Huawei/Nokia proposals:
1. gNB-initiated X2 SETUP procedure?

RAN3 chair: what about: Working assumption X2 setup by a gNB is not precluded?
Ericsson: would like to discuss this offline
RAN3 chair: ok, can discuss this offline (rapporteur: CATT, report in R3-173340)

The document was noted.
Replaced by

R3-172995 **Support for inter-RAT ANR towards NR cells** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-173340 **Report of offline discussion on X2 setup by gNB** ***CATT***

conclusion:
agreement: gNB may intiate X2 setup procedure towards Enb via OAM configuration

The document was noted.

R3-172697 **Discussion on gNB-eNB interface setup** ***ZTE Corporation***
Replaces Discussion, Rel-15,NR_newRAT

The document was noted.
Replaced by

R3-172758 **Discussion on X2/Xn setup procedure** ***CATT***
Replaces

The document was withdrawn.
Replaced by

R3-172759 **TP for 36.423 on EN-DC X2 setup procedure** ***CATT***
Replaces

The document was withdrawn.
Replaced by

R3-172760 **TP for 38.423 on Xn setup procedure** ***CATT***
Replaces

The document was withdrawn.
Replaced by

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R3-173342 **Report of offline discussion on neighbour cell list for way forward** ***Nokia***

proposals:
Take the following working assumptions:
WA: Xn/X2 shall support means to reduce the number of cells to be exchanged/processed by peer nodes.
WA: The eNB will as per legacy X2AP mandatorily include all its served E-UTRA cells and send them to the gNB.

Agree on requirements for Rel-15 served NR cell info received by the eNB on X2:
- Req. 1: Enable the receiving eNB to look up cell specific information.
- Req. 2: Enable the receiving eNB to constitute the Frequency Search list for inter-RAT UE measurements of NR cells.

Ericsson: Req.1 unclear
Nokia: see purpose 4 (May be used to look up cell specific information (e.g. TAC, broadcast PLMNs, radio-related information for FDD/TDD, MBSFN subframe info, MBMS Service Area info, additional supported frequency bands, …))
Samsung: any spec impact from Req.1/2?

conclusions:
- Working assumption: Xn/X2 shall support protocol; functions to reduce the number of cells to be exchanged/processed by peer nodes.
- Working assumption: The eNB will as per legacy X2AP mandatorily include all its served E-UTRA cells and send them to the gNB.

The document was noted.

10.4 Support for PWS

R3-173077 **Support of PWS in NR** ***Huawei, Nokia, Nokia Shanghai Bell***

Replaces

Proposal 1: PWS restart indication procedure is needed for PWS in NR.
Proposal 2: The current handling principle for eNBs for receiving duplicate PWS messages can be applied for ng-eNBs to the case of receiving duplicate PWS messages from MME and AFM.

Nokia: no intention to change legacy handling

The document was noted.
Replaced by

R3-172866 **Stage 2 for PWS support** ***Nokia, Nokia Shanghai Bell, Huawei***

Replaces

RAN3 chair: come back on the pCR
Ericsson: is it not a bit early if we are not yet clear how it should work, esp. 6.y.2 and 6.y.3

open issues:
- PWS handlingl via lists of cells (like legacy case)? Impact on potential size of cell list?
- Alternatives: TAI? Emergency area list?
- Whether to keep the legacy handling for partial failure?

The document was postponed.
Replaced by

R3-173078 **Stage 3 TPs for support of PWS in NG-RAN** ***Huawei, Nokia, Nokia Shanghai Bell***

Replaces

The document was postponed.
Replaced by

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10.5 Radio Access Network connected to 5G-CN

NR connected to 5G-CN (Option 2)
Functionalities for a Radio Access Network connected to 5G-CN, supporting NR access and E-UTRA (Option 2 and Option 5)
Roaming and Access Restrictions
Whether the AMF controls the number of SCTP associations on NG-C, either indicating additional remote IP addresses to be set up, or remote IP addresses to be released, or both, to the NG-RAN node in NG SETUP RESPONSE or in AMF CONFIGURATION UPDATE?
Whether there shall be one or more SCTP associations established between one AMF and NG RAN node pair (TP to TS 38.412 Sec. 7)?
WA: The standard shall allow implementations supporting multiple SCTP associations within one gNB/eNB/NG RAN node-AMF pair
Prior to NG Setup, the NG-RAN node is configured with remote IP endpoint address(es) of the AMF and initiates the SCTP association establishment
The AMF shall be able to request the 5G AN node to add or remove TNL associations to the AMF. (SA2 St2 text, as per SA2 LS).
WA: It is under the NG RAN node's control which of the SCTP associations shall be used for common NGAP procedures.
FFS on how this is implemented, e.g. by issuing a GNB CONFIGURATION UPDATE on NG-C with e.g. an explicit IE over existing SCTP association, or over a different SCTP association. Otherwise, the SCTP association via which NG SETUP REQUEST was issued is kept for common NGAP procedures. (pending checking in SA2)
Handling of SCTP stream is based on principles specified in 36.412: A single pair of SCTP streams within the SCTP association selected by the NG-RAN node is used for common signaling
A single pair of SCTP streams within the same SCTP association is used for UE associated signalling and shall not be changed, unless the NGAP UE-TNLA-binding update is performed by the AMF
The current definition of the UE NGAP IDs is valid also in case multiple SCTP associations are established

10.5.1 Multiple SCTP Associations and Related Mechanisms

See WF (R3-172613) and Chairman's Notes

R3-172732 **Discussion of open issues on support of multiple SCTP associations in NG-C** ***Qualcomm Incorporated***

Replaces

Recommendation 1: Support optional signalling of additional AMF addresses by the AMF.
Recommendation 2: Consider defining a new procedure to initialize unambiguously a new TNL.
Recommendation 3: Agree on having a single SCTP association to support common procedures, and discuss further (perhaps involving SA2) how this can be changed.
Recommendation 4: Agree on implicit case for binding update, and discuss further on need for explicit (describe this in SA2 LS response and seek confirmation).
Recommendation 5: Discuss further the use case and details for supporting paging TNL separation.
Recommendation 6: On handover, assume the following items and use in reply to SA2 to gather feedback
- Handover can proceed if SCTP association cannot be established to same IP endpoint
- RAN nodes can exchange SCTP association configuration, and may use this to initiate SCTP associations before handover
- SCTP association matching at target may be done based on signalled ID rather than IP address comparison

The document was noted.
Replaced by

R3-172882 **Text Proposal for multiple SCTP for TS 38.412** ***Nokia, Nokia Shanghai Bell***

Replaces

The document was not treated.
Replaced by

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R3-173042 **Multiple SCTP associations over NG-C** ***Huawei***
Replaces

Proposal 1: It is should be clarified by SA2 whether the primary association could be released by AMF.
Proposal 2: the AMF Configuration Update message should be used to configure TNL address for additional SCTP associations.
Proposal 3: an explicit UE-associated NGAP message should be used to notify RAN node to update the UE-TNLA-binding.
Proposal 4: It should be confirmed that the source UE-TNLA-binding should be send to target node during Xn-based HO.
Proposal 5: An index should be configured per association, which could be done with the initial TNL addresses informed to RAN node.

The document was noted.
Replaced by

R3-172985 **Discussion on multiple TNLA and TNLA Binding** ***Samsung***
Replaces

<TNLA setup/update/remove>
Observation1: Each TNLA can include multiple IP paths and TNLA is identified by < AMF Port Number, AMF TNL Addr List, RAN TNL Port Number, RAN TNL Addr List>.
Proposal 1:TNLA Setup is totally performed at SCTP layer. The RAN node setup 1st TNLA(s) with the AMF based on the AMF addresses preconfigured by the OAM. The RAN node selects one of the TNLA(s) for NG Setup Request message. The AMF knows the RAN's address from the 1st TNLA(s) establishment. The AMF requests RAN node to setup additional TNLA at SCTP layer, if needed.
Proposal 2: If AMF want to remove a TNLA, The AMF requests RAN node to shut down the existing TNLA at SCTP layer.

<TNLA binding add/update>
Proposal 3: Implicit way is proposed to add/update a TNLA binding for common signaling.
Proposal 4: Implicit way is proposed to add/update a TNLA binding for a UE.

<TNLA binding release for UE>
Observation 2: It is no harm to let RAN to keep the TNLA for UE when AMF has released the TNLA for UE.
Observation 3: Release & setup TNLA binding is frequent and repeated release & setup TNLA binding bring in a lot of NGAP signaling overhead.
Proposal 5: It is propose RAN3 to consider the two alternatives for TNLA binding release.

<Xn handover>
Proposal 6: It is propose RAN3 to consider the two alternatives for Xn handover.

The document was noted.
Replaced by

R3-172906 **Discussion on multiple SCTP associations** ***ZTE Corporation***
Replaces

Proposal 1: In order to fullfil the dynamic and realtime adjustment of Core network, Option2) the AMF controls the number or SCTP associations on NG-C is preferred.
Proposal 2: If AMF initiates to remove an SCTP association, all related NGAP-UE-TNLA-bindings are released. If AMF initiates to remove an NGAP UE-TNLA-binding, implicit way is preferred.
Proposal 3: If AMF initiates to update an NGAP UE-TNLA-binding, implicit way is preferred.
Proposal 4: The handling of the common NGAP procedures related NGAP nonUE-TNLA-binding is similar as NGAP-UE-TNLA-binding, and there is no need to tie the NGAP nonUE-TNLA-binding and NGAP UE-TNLA-binding into one SCTP association.
Proposal 5: From RAN3 point of view, there is no need that a source NG-RAN node sends the TNL address of the AMF to a target NG-RAN node in order to establish a TNL association towards the AMF with this received TNL address of the AMF .

The document was noted.
Replaced by

R3-172907 **Multiple SCTP associations support for TS38.300** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

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R3-173046 **Analysis on NGAP multiple-SCTP associations** ***Nokia, Nokia Shanghai Bell***
Replaces

Proposal 1: enhance the NG Setup Procedure, and AMF Configuration Update Procedure to allow the AMF to inform NG-RAN node to add/remove TNL associations.
Proposal 2: in normal cases, only one SCTP association is used for common procedures. In abnormal cases, e.g. SCTP failure, the transmitter shall be allowed to reselect another SCTP association, and the receiver shall expect the NGAP message over any SCTP association.
Proposal 3: to switch the SCTP association, the NG-RAN node initiates gNB Configuration Update procedure over the new SCTP association.
Proposal 4: It is unclear about the benefit to systematically treat Paging differently than other non-UE-associated procedures regarding the SCTP association.
Proposal 4bis: It may be useful to consider the option of a parallel dedicated SCTP association for additional paging when needed
Proposal 5: Update Stage-2 to support triangular redirection. FFS on how to support redirection via RAN.
Proposal 6: the AMF initiates UE-associated NGAP signalling to inform the NG-RAN to release the UE-TNLA-binding.
Proposal 7: check with SA2 regarding the Xn-HO scenario, and the necessity to transfer the AMF's TNL adr during Xn-HO preparation procedure.

The document was noted.
Replaced by

R3-173047 **TP for TNL Association Selection function (TS38.401)** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-173048 **TP for supporting N2 requirements from SA2 (TS38.413)** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-173049 **Draft Reply to LS on N2 requirements and procedures** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was revised.
Replaced by R3-173357

R3-173357 **Draft Reply to LS on N2 requirements and procedures** ***Nokia, Nokia Shanghai Bell***
Replaces R3-173049

The document was revised.
Replaced by R3-173420

R3-173420 **Reply to LS S2-174053 = R3-172099 on N2 requirements and procedures (to: SA2; cc: -; contact: Nokia)** ***RAN3***
Replaces R3-173357

The document was approved.

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R3-173212 **Support of multiple signalling TNL associations per AMF** ***Ericsson***
Replaces

Proposal 1: Confirm the working assumption that the standard shall allow implementations supporting multiple SCTP associations for one NG interface instance
Proposal 2: The possibility to pre-configure NG-RAN nodes with more than one IP address is not ruled out, however, this is not explicitly described or mentioned in stage 2 and left for implementation.
Proposal 3: The AMF triggered update procedure shall be able to request the addition or removal of signalling TNL associations.
Proposal 4: Finally acknowledge that it is the NG-RAN node the decides which TNL association is used for common signalling. This TNL association is denoted as the "primary" TNL association.
Proposal 5: The primary TNL association is chosen by the NG-RAN node either implicitly by issuing the NG Setup procedure or by explicitly indicating the change within the Configuration Update procedure.
Proposal 6: Text from 36.412 on usage for SCTP streams for UE associated signalling is re-used for 38.412.
Proposal 7: No updates for the definition of UE NGAP IDs is necessary due to the introduction of multiple SCTP associations on NG-C.
Proposal 8: Follow the approach where the AMF is allowed to reply to the NG-RAN node on a different SCTP association. Whether the request to change the SCTP association can be done in a stand-alone fashion, i.e. without any actual UE context related signalling might be further discussed.
Proposal 9: Do not realise a per NGAP UE associated signalling connection release of NGAP UE TNLA-binding. It should be sufficient to allow the AMF to release a (complete) SCTP association.
Proposal 10: It is proposed to indicate at Xn HO the IP address of the SCTP association via which the source NG-RAN node communicates with the AMF. If the target node has not yet established the signalling TNL association it should use any established SCTP association to execute the NGAP Path Switch and may request the AMF to confirm the establishment of the additional SCTP association.
Proposal 11: Allow UE related NGAP signalling utilising non-UE associated signalling to make use of all established SCTP associations.

Samsung: not happy to take a working assumption
Huawei: we need to send an LS to SA2 from this meeting and we can clarify the working assumption there, if SA2 is objecting then we can revisit
Nokia: you could change the working assumption next time if there are some reasons
Samsung: you need to prove that your solution has benefits

conclusion:
Working assumption:
- AMF Config Update procedure is used to trigger SCTP associations addition/removal

It it minuted that SCTP associations addition/removal via SCTP layer signaling without assistance info in NGAP is not precluded

Nokia will draft an LS to SA2 in R3-173357 (as revision of R3-173049)

The document was noted.
Replaced by

R3-173213 **Multiple SCTP associations on NG-C** ***Ericsson***
Replaces

The document was not treated.
Replaced by

R3-173214 **Introducing the use of SCTP for NG-C** ***Ericsson***
Replaces

The document was not treated.
Replaced by

R3-173215 **Introducing the use of SCTP for NG-C** ***Ericsson***
Replaces

The document was not treated.
Replaced by

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R3-173216 **Introducing the use of SCTP for NG-C** ***Ericsson***
Replaces

The document was not treated.
Replaced by

R3-173217 **[DRAFT] Reply LS on N2 requirements and procedures (To: SA2, Cc:-)** ***Ericsson***
Replaces

The document was not treated.
Replaced by

10.5.2 RRC_ACTIVE Mode Mobility (Handover)

R3-173060 **QoS flow based admission control during mobility** ***Huawei***
Replaces

The document was noted.
Replaced by

R3-173063 **Text Proposal for QoS flow based admission control in mobility** ***Huawei***
Replaces

The document was postponed.
Replaced by

R3-173064 **Text Proposal for QoS flow based admission control in mobility** ***Huawei***
Replaces

The document was revised.
Replaced by R3-173358

R3-173358 **Text Proposal for QoS flow based admission control in mobility** ***Huawei***
Replaces R3-173064

Ericsson: for Trace and MDT we should check with SA5 whether something changed
Nokia: all pCRs are pending SA5
Ericsson: are we triggering anything?
Huawei: we can have a short LS to SA5 tomorrow
Samsung: MDT main LTE impact was in RAN2 and RAN2 will not include this feature in RAN2
Huawei: we could send an LS to RAN2 & SA5
Samsung: S-NSSAI is not needed in HO req ack message

conclusion: S-NSSAI in section 9.2x will be set to FFS

The document was revised.
Replaced by R3-173416

R3-173416 **Text Proposal for QoS flow based admission control in mobility** ***Huawei***
Replaces R3-173358

The document was agreed.

R3-172883 **Mobility and Path Switch Request** ***Nokia, Nokia Shanghai Bell***
Replaces

conclusion:
- keep FFS for NSSAI,
- MDT and TRACE was in init ctxt setup - include it in NGAP, pending SA5

The document was revised.
Replaced by R3-173360

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R3-173360 **Mobility and Path Switch Request** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172883

The document was agreed.

R3-173268 **Handover Resource Allocation and use of containers** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was revised.
Replaced by R3-173359

R3-173359 **Handover Resource Allocation and use of containers** ***Nokia, Nokia Shanghai Bell***
Replaces R3-173268

Samsung: paging should be mandatory? name is misleading and IE type to be updated
Nokia: there were some papers which we did not manage to treat which suggested to change the name and we can discuss this in the future
ZTE: problem with inactive mode
RAN3 chair: ok, then FFS for Paging Assistance Information should have presence M [FFS]
Ericsson: we should also have "pending RAN2"

The document was revised.
Replaced by R3-173423

R3-173423 **Handover Resource Allocation and use of containers** ***Nokia, Nokia Shanghai Bell***
Replaces R3-173359

conclusion: agreed unseen

The document was agreed.

R3-173417 **Draft LS on MDT and TRACE support in 5G system (to: RAN2, SA5; cc: -; contact: Huawei)** ***Huawei***

RAN3 chair: remove space between feed and back
Ericsson, Nokia: some further things to modify (e.g. title)
RAN3 chair: yes, title should say "5G system"
Qualcomm: we also look at LTE
Huawei: cc SA and RAN? or better just report it in RAN3 chairman's report
conclusion: edited online as shown in R3-173421

The document was revised.
Replaced by R3-173421

R3-173421 **Draft LS on MDT and TRACE support in 5G system (to: RAN2, SA5; cc: -; contact: Huawei)** ***Huawei***
Replaces R3-173417

conclusion: title still to be fixed

The document was revised.
Replaced by R3-173422

R3-173422 **LS on support of Trace and MDT in NG-RAN in rel-15 (to: RAN2, SA5; cc: -; contact: Huawei)** ***RAN3***
Replaces R3-173421

The document was approved.

10.5.3 NG-RAN Node Identification on NG and Xn

R3-172730 **On NG-RAN node identifiers** ***Qualcomm Incorporated***
Replaces

The document was noted.
Replaced by

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R3-172731 **Multi-RAT node IDs in NG-RAN** ***Qualcomm Incorporated***
Replaces

The document was noted.
Replaced by

R3-172865 **NR node and cell identifiers** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was noted.
Replaced by

R3-173095 **Discussion on Node Identifiers** ***Huawei***

also R3-172947 of AI 10.10.1.2 was handled in connection with this Tdoc

China Telecom: in R3-173059 we suggest 24 bits for for lower bound for gNB ID
Huawei: suggesting 18 bits as lower bound (LTE baseline)
Samsung: 20bits should be one of the choices
Qualcomm: LTE baseline may not be a strong argument as things are changing in NR
ZTE: we should indeed look at LTE because of NG-RAN deployments
RAN3 chair: upper bound was proposed to be 26 bits
Ericsson: no urgency to fix this now

Qualcomm: should we have an LS to RAN2?
RAN3 chair: we can couple this with the check from NTT DOCOMO and CMCC

conclusions:
Multi-RAT Node ID discussion has to continue

agreements:
- gNB ID (contained in the NCI) can be of variable length (whether it is a discrete set or a range is FFS)
- Nokia will draft an LSout on NR cell ID to RAN2 in R3-173362
- ng eNBs have same eNB ID format (as Global eNB ID IE in S1AP) and Cell ID format (as E-UTRAN CGI IE in S1AP) with eNBs

working assumption:
- Length of cell ID is 32 bits
(NTT DOCOMO & CMCC will check until Wed afternoon whether this can be turned into an agreement)

Nokia: Got the request from an operator to go for 36 instead of 32 bits for the cell ID. There is also no urgency to send an LS to RAN2 from this meeting.
Ericsson, Huawei:: Then rather remove the working assumption than going now for 36 (because it may be even more).
Nokia: cell ID: 26+10-12 bits realistic

further conclusion: The working assumption is modified:
- Length of cell ID is 36 bits.

The document was noted.
Replaced by

R3-172864 **Global RAN Node ID** ***Nokia, Nokia Shanghai Bell***
Replaces

RAN3 chair: further offline discussion to see whether this is agreeabke

The document was revised.
Replaced by R3-173361

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R3-173361 **Global RAN Node ID** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172864

Qualcomm: Nokia wanted to mention an open issue?
Nokia: will be captured in rapporteur's open issue list "Impact ion NGAP a node supporting both E-UTRAand NR, if agreed"

Ericsson: no reference to section 9.3.1.z?
Nokia: one IE not yet included

NEC: E-UTRA CGI is defined in 36.300 and not 38.300
RAN3 chair: yes, ref. should be to 36.300

The document was revised.
Replaced by R3-173425

R3-173425 **Global RAN Node ID** ***Nokia, Nokia Shanghai Bell***
Replaces R3-173361

conclusion: agreed unseen

The document was agreed.

R3-173362 **Draft LS on lenght of NR cell ID (to: RAN2; cc: -; contact: Nokia)** ***Nokia***

conclusion: Finally LS was withdrawn (too early to send LS) but a summary of the discussion will be provided in R3-173395

The document was withdrawn.

R3-173395 **Way forward and status of discussion of CELL ID length and Node B ID length** ***Nokia***

Way Forward is proposed for RAN3#97bis:
1) Confirm that 36 bits for NCI is OK => convert the Working Assumption into an Agreement.
2) Send an LS to RAN2 to inform them of the agreement, so that they can take it into account when designing system information.
3) Discuss whether gNB ID length is a discrete set or a range, i.e. what values of gNB ID length should be supported?
4) Discuss what should be the maximum number of cells per gNB.

Ericsson: 1) should say "intend to agree" instead of just "confirm" otherwise we could do this now
Nokia: LS is for next time
Huawei: we could just accept 1)

conclusion: 1) corrected: ... attempt to convert ....; rest is to be continued

The document was noted.

10.5.4 Roaming and Access Restrictions for Intra-System Mobility

R3-172653 **Further Consideration on Roaming and Access Restriction** ***ZTE Corporation***
Replaces Discussion, Rel-15,NR_newRAT

The document was not treated.
Replaced by

R3-172654 **Correction of 36.300 about Roaming and Access Restriction** ***ZTE Corporation***
Replaces DraftCR, Rel-15,NR_newRAT

conclusion: This draft CR will not be provided to RAN2 after RAN3 #97 but will modify the baseline CR.

The document was endorsed.
Replaced by

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R3-172655 **Correction of 38.300 about Roaming and Access Restriction** ***ZTE Corporation***
Replaces pCR, Rel-15,NR_newRAT

The document was endorsed.
Replaced by

R3-172656 **Correction of 37.340 about Roaming and Access Restriction** ***ZTE Corporation***
Replaces pCR, Rel-15,NR_newRAT

RAN3 chair: you have different alternatives

conclusion: going for pointers to 36.300 and 38.300 (1st option, remove dupliicate text)

The document was revised.
Replaced by R3-173390

R3-173390 **Correction of 37.340 about Roaming and Access Restriction** ***ZTE Corporation***
Replaces R3-172656

The document was endorsed.

10.5.5 Data Forwarding Aspects for Intra-System Mobility

R3-172884 **Lossless Handover and Data forwarding of QoS Flows** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-173011 **Data Forwarding in intra-system Handover** ***Samsung***
Replaces

The document was not treated.
Replaced by

R3-173012 **Text Proposal for Data Forwarding in Handover to Xn** ***Samsung***
Replaces

The document was not treated.
Replaced by

R3-173013 **Text Proposal for Data Forwarding in Handover to NG** ***Samsung***
Replaces

The document was not treated.
Replaced by

R3-173218 **Data forwarding at handover** ***Ericsson***
Replaces

The document was not treated.
Replaced by

R3-173021 **Data forwarding in NR** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173022 **Text Proposal for Data Forwarding** ***Huawei***
Replaces

The document was not treated.
Replaced by

10.5.6 Others

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R3-173219 **PDU session vs PDU session resource** ***Ericsson***
Replaces

The document was not treated.
Replaced by

R3-173220 **PDU session split at UPF** ***Ericsson***
Replaces

The document was not treated.
Replaced by

R3-173221 **How to design NG-RAN to fulfil tight interworking requirements** ***Ericsson***
Replaces

The document was not treated.
Replaced by

R3-173311 **Response to R3-173221** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

10.6 Intra NG-RAN mobility in RRC_INACTIVE (mode)

WA: Xn should be available in RAN notification area
RAN paging area is a subset of TA, hence RAN notification area is a subset of the registration area

R3-173032 **On configuration of RNA as subset of the registration area** ***NEC***
Replaces

The document was noted.
Replaced by

R3-173030 **RAN Notification Area Configuration in NR** ***NEC***
Replaces

Observation 1: The configuration of RAN-based notification area, to a UE in RRC_INACTIVE state, using the list of cells option, provides higher flexibility in the configuration of the size of the RAN-based notification area.
Observation 2: The configuration of RAN-based notification area, to a UE in RRC_INACTIVE state, using the RAN area IDs option, is more suitable for large size RAN-based notification area and/or high mobility UEs.
Observation 3: The configuration of RAN-based notification area, to a UE in RRC_INACTIVE state, using the list of TAIs option, may not be feasible considering the need for Xn interface availability in RNA (WA RAN3).
Observation 4: RAN-based notification area configuration, to a UE in RRC_INACTIVE state, using both list of cells and RAN area IDs, could provide the benefits of flexibility and signalling efficiency. However, the drawback of additional overhead due to broadcasting a new RAN tracking area ID as well as cell ID and TAC still exists.

Proposal 1: RAN3 should support both options the list of cells and the RAN Area IDs for RAN-based notification area configuration to a UE in the RRC_INACTIVE state.
Proposal 2: RAN3 to agree the corresponding Text Proposal in [5] for TS 38.300.

The document was noted.
Replaced by

R3-173031 **Text Proposal for RAN Notification Area** ***NEC***
Replaces

The document was not treated.
Replaced by

R3-172739 **RRC_INACTIVE with MR_DC** ***Qualcomm Incorporated***
Replaces

RAN3 chair: looks like an optimization to me

The document was noted.
Replaced by

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R3-172740 **Context Retrieval for RRC_INACTIVE** ***Qualcomm Incorporated***
Replaces

The document was not treated.
Replaced by

10.6.1 NG-RAN Area Concepts for RRC_INACTIVE Mode

R3-173145 **Discussions on configuration of RNA for RRC_inactive UE** ***CMCC***
Replaces

CMCC: in line with Nokia proposal in R3-172739

The document was noted.
Replaced by

R3-173272 **Further Consideration on RAN-based Notification Area** ***Intel Corporation***
Replaces

The document was noted.
Replaced by

R3-172791 **Discussion on Periodic RLAU** ***CATT***
Replaces

The document was noted.
Replaced by

R3-172788 **Considerations on NG RAN Area** ***CATT***
Replaces

The document was noted.
Replaced by

R3-172789 **Stage 2 TP for NG RAN Area** ***CATT***
Replaces

The document was not treated.
Replaced by

R3-172790 **Stage 3 TP for NG RAN Area** ***CATT***
Replaces

The document was not treated.
Replaced by

R3-173222 **On Xn connectivity for RRC_INACTIVE** ***Ericsson***
Replaces

The document was noted.
Replaced by

R3-172885 **RAN-based Notification Area** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was noted.
Replaced by

R3-172886 **Text Proposal for RAN Notification Area** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was revised.
Replaced by R3-173411

R3-173411 **Text Proposal for RAN Notification Area** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172886

The document was withdrawn.

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R3-172887 **LS on definition of RAN Notification Area in inactive state** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was rejected.
Replaced by

R3-173365 **Way forward in RAN3 on RAN Notification Area** ***Nokia***

Ericsson: risk of Xn connectivity missing for other options?
Nokia: reluctant to add this
Qualcomm: intended to be put in a spec?
Nokia: no, this text is preparing for an LS to RAN2

RAN3 chair: What about adding: Impact of availability of Xn connectivity on RAN notification area should be further discussed.
Nokia: not applying to all options

Huawei: wants to add "(if supported)"
RAN3 chair: idea was to either take the whole as a package or to not accept the way forward

RAN3 chair: general question: 3 options in the standard for the same?
Ericsson: it's reflecting the current discussion status, we can put the text in an LS and ask RAN2 for comments

The document was noted.

R3-173408 **Draft LS on definition of RAN-based notification Area (to: RAN2; cc: -; contact: Nokia)** ***Nokia***
related to R3-173365

Nokia: LS was written under the assumption that we could agreed the way forward in R3-173365, as this is not the case we need to adapt the tone of the LS
conclusion: edited online as shown in R3-173426

The document was revised.
Replaced by R3-173426

R3-173426 **Draft LS on definition of RAN-based notification Area (to: RAN2; cc: -; contact: Nokia)** ***Nokia***
Replaces R3-173408

The document was revised.
Replaced by R3-173427

R3-173427 **LS on definition of RAN Notification Area in inactive state (to: RAN2; cc: -; contact: Nokia)** ***RAN3***
Replaces R3-173426

conclusion: approved unseen

The document was approved.

10.6.2 Assistance Information for RAN Paging and RRC_INACTIVE Handling

R3-172848 **Reply LS on RAN2 agreements on NR paging** ***SA WG2, LGE***
Replaces

conclusion: no LS answer

The document was noted.
Replaced by

R3-172850 **Reply LS on NR Idle Mode procedures** ***TSG SA WG2, Qualcomm***
Replaces

conclusion: no LS answer

The document was noted.
Replaced by

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R3-172792 **Handling of DL signallings** ***CATT***
Replaces

The document was not treated.
Replaced by

R3-172793 **Stage 2 TP for DL signalling handling** ***CATT***
Replaces

The document was not treated.
Replaced by

R3-172794 **Stage 3 TP for DL signalling handling(Xn)** ***CATT***
Replaces

The document was not treated.
Replaced by

R3-172795 **Stage 3 TP for DL signalling handling(NG)** ***CATT***
Replaces

The document was not treated.
Replaced by

R3-173199 **Discussion on paging assistance information in RRC-inactive state** ***LG Electronics***
Replaces

The document was not treated.
Replaced by

R3-172978 **Disc & Stage2 TP on RRC Inactive Assistant Information** ***Samsung***
Replaces

The document was not treated.
Replaced by

R3-172979 **Stage3 TP on RRC Inactive Assistant Information** ***Samsung***
Replaces

The document was not treated.
Replaced by

R3-173079 **Correction to 38.413 on paging assistance information** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173200 **Discussion on paging assistance information in RRC-inactive state** ***LG Electronics***
Replaces

The document was withdrawn.
Replaced by

R3-173201 **Discussion on paging assistance information in RRC-inactive state** ***LG Electronics***
Replaces

The document was withdrawn.
Replaced by

10.6.3 NG-RAN Paging

R3-172888 **Paging Priority in Inactive State** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

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R3-172796 **Discussion on Content of RAN Paging** ***CATT***
Replaces

The document was not treated.
Replaced by

R3-173273 **Consideration on RAN paging failure handling** ***Intel Corporation***
Replaces

The document was not treated.
Replaced by

R3-172797 **Discussion on RAN Paging failure** ***CATT***
Replaces

The document was not treated.
Replaced by

R3-173080 **RAN paging with UE context transfer** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173081 **RAN paging triggered inactive mode UE release** ***Huawei***
Replaces

The document was not treated.
Replaced by

10.6.4 UE Context Transfer

R3-173082 **NG context fetch for inactive mode UE** ***Huawei, Intel Corporation***
Replaces

The document was not treated.
Replaced by

R3-173083 **RAN notification area update** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173084 **Stage 2 TP for support of RAN notification area update** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173085 **Stage 3 TP for support of RAN notification area update** ***Huawei***
Replaces

The document was not treated.
Replaced by

10.6.5 Others

R3-173086 **Data forwarding for inactive UEs** ***Huawei***
Replaces

The document was revised.
Replaced by R3-173355

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R3-173355 **Data forwarding for inactive UEs** ***Huawei***
Replaces R3-173086

The document was not treated.

R3-173202 **Considering CN selective awareness for RRC-inactive state** ***LG Electronics***
Replaces

The document was not treated.
Replaced by

10.7 NR parts of inter-RAT mobility between NR and E-UTRA

Both 5GS->EPS and EPS->5GS, as agreed in SA2

10.7.1 Roaming and Access Restrictions for Inter-System Mobility

10.7.2 Basic Inter-System Handover Aspects

R3-172972 **Principle for Inter-RAT handover between NR and E-UTRA** ***Samsung***
Replaces

Ericsson: SA2 discusses that mapping is always done in 5G
Samsung: data forwarding can be discussed separately but we should at first agree a principle
Ericsson: prefers to look at the whole picture

The document was noted.
Replaced by

R3-172973 **TP for Inter-RAT handover with E-UTRA** ***Samsung***
Replaces

Ericsson: the pCR is quite ok but proposal does not cover all aspects, was thinking about whether to encode the HO type in target ID
Nokia: 2 editor's notes needed (on RRC container and list of RAB IDs)
RAN3 chair: let's have an offline discussion about this (is RAN2 endorsement needed?)

The document was revised.
Replaced by R3-173351

R3-173351 **TP for Inter-RAT handover with E-UTRA** ***Samsung***
Replaces R3-172973

The document was agreed.

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R3-172694 **Discussion on inter-RAT mobility** ***ZTE Corporation***
Replaces Discussion, Rel-15,NR_newRAT

Proposal 1: NG based intra-RAT HO to gNB (case3) and NG based inter-RAT HO to ng-eNB (case4) should use the same NGAP procedures/messages.
Proposal 2: Different types of inter-RAT HO should be explicitly indicated in the NGAP HANDOVER REQUIRED message.
Proposal 3: Xn based intra-RAT HO to gNB (case1) and Xn based inter-RAT HO to ng-eNB (case1) should use the same XnAP procedures/messages.
Proposal 4: To await RAN2 progress about how to guarantee in-sequence and lossless handover under Full configuration.
Proposal 5: In case of inter-RAT HO between gNB and ng-eNB either via Xn or NG, the "PDU session information", "QoS flow information" and "QoS flow to DRB mapping information" should be also transferred to target node outside the RRC container "Source to Target Transparent Container".
Proposal 6: RAN3 is kindly asked to discuss and approve the proposed stage3 CR in [4], [5].

ZTE: proposal 5 is already covered by Samsung
Ericsson: we are talking about inter-system HO so intra-system HO is out-of-scope of this agenda item

The document was noted.
Replaced by

R3-172695 **Inter-RAT mobility for TS38.413** ***ZTE Corporation***
Replaces pCR, Rel-15,NR_newRAT

The document was not treated.
Replaced by

R3-172696 **Inter-RAT mobility for TS38.423** ***ZTE Corporation***
Replaces pCR, Rel-15,NR_newRAT

The document was not treated.
Replaced by

R3-172970 **Support of Inter-system Inter-RAT handover between NR and E-UTRA** ***Samsung***

Replaces

The document was not treated.
Replaced by

R3-172971 **Correction on handover procedures to support inter-system mobility** ***Samsung***
Replaces

Ericsson: applicability of HO notify procedure? HO notify should not be sent for a Xn-HO
Nokia: no need for a special condition, we used notify for S1-based HO
Huawei: this is a stage 3 spec, system behaviour should be put in stage 2

Samsung: first part (change target gNB to target side) may be agreeable
Huawei: we are addressing stage 3 before we are clear about stage 2?

The document was postponed.
Replaced by

10.7.3 Data Forwarding Aspects for Inter-System Mobility

R3-173223 **Inter System Data Forwarding** ***Ericsson***
Replaces

Observation 1: Only indirect data forwarding, i.e. via the 5GC, can be achieved at inter-system HO from the 5GS to the EPS.
Observation 2: It is not practical to aim at preservation of PDCP SN and HFN during inter-system HO.
Proposal 1: It is proposed that RAN3 to discuss and agree that "during Inter-RAT handover, it is not practical to preserve PDCP SN and HFN, thus lossless handover is not practical"

The document was noted.
Replaced by

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R3-172974 **Data forwarding for Inter-system Inter-RAT handover from 5GS to EPS** ***Samsung***

Replaces

RAN3 chair:
- Which node proposes forwarding?
a. source gNB (Samsung proposal)
b. target eNB

- Data forwarding granularity?
1. per E-RAB
2. per PDU session
3. per QoS-flow

- Tunnel granularity between gNB and UPF:
1. per PDU session tunnel (is Samsuing/Huawei proposal)

Nokia: it will be more complex as not all these combinations may not fit together
Ericsson: prefers the systematic approach above
CATT: does not understand b.
Samsung: we proposed a., granularity and who proposes forwarding are related
Nokia: source proposes and target decides? what's the value to have a proposal from the source?
Ericsson: mutual decision, the source must follow the decision of the target
Ericsson: Could we agree "The source NG-RAN node is allowed to propose data forwarding."?
Samsung: This may cause more discussion later
Nokia: lossless HO: too early

conclusions:
agreements:
- Tunnel granularity between gNB and UPF is per PDU session tunnel.
- The source NG-RAN node proposes data forwarding and the target node confirms

The document was noted.
Replaced by

R3-172975 **Support of data forwarding for inter-system handover from 5GS to EPS (Alt. 1)** ***Samsung***

Replaces

The document was not treated.
Replaced by

R3-172976 **Support of data forwarding for inter-system handover from 5GS to EPS(Alt. 2)** ***Samsung***

Replaces

The document was not treated.
Replaced by

R3-172977 **Support of data forwarding for inter-system handover from 5GS to EPS(Alt. 2)** ***Samsung***

Replaces

The document was not treated.
Replaced by

R3-173167 **Data forwarding during inter-RAT HO** ***Huawei***

Replaces

The document was rejected.
Replaced by

10.7.4 Others

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R3-173090 **Discussion on the scenarios for the CN relocation within eLTE** ***China Telecommunications***
Replaces

The document was not treated.
Replaced by

R3-172693 **Discussion on inter RAT HO path selection** ***ZTE Corporation***
Replaces Discussion, Rel-15,NR_newRAT

The document was not treated.
Replaced by

10.8 Dual Connectivity Options

R3-172843 **LS on Single UL transmission** ***TSG RAN WG1, NTT DOCOMO***

Replaces

conclusion: no LS answer

The document was noted.
Replaced by

R3-172988 **Supporting 1Tx UE in NR** ***Nokia, Nokia Shanghai Bell***
Replaces Related to the LS from RAN1 on Single UL transmission (R3-172843)

Proposal: Since the solution is not yet ready in RAN2 and RAN4, we propose to wait for the details before RAN3 makes final decisions on actual mechanism

The document was noted.
Replaced by

10.8.1 E-UTRA-NR DC via EPC where the E-UTRA is the master

Option 3/3a/3x
Procedures for 3/3a/3x
List of open issues in R3-171409
Whether SN is allowed to release MCG split SRB?
It is the MN who proposes the SCG / SCG split bearer option and indicates total per-GBR-bearer QoS; SN can accept or reject; if SN accepts, it decides on the split (i.e. it accepts the sum or more)?
Whether MN should be able to say whether SCG-related RRC signaling should go via its own resources?
Possible enhancements for RLC UM mode (if any)
Data forwarding is needed for SCG split bearer (e.g. in case of SN change procedure triggered by source SgNB)
Wait for RAN2 progress on counter check and KeNB refresh issues
Apply same logic as F1: transfer SRBs over CP (i.e. PDCP-C PDUs sent from MN to SN)
WA: X2AP signaling is needed for MCG split SRB establishment/release; SN is allowed to reject request

10.8.1.1 BL CRs (Stage 2 and Stage 3)

R3-172698 **Addition of a reference to the EN DC procedures** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172626 Stage-2 BL CR

conclusion: This draft CR will not be provided to RAN2 after RAN3 #97 but will modify the baseline CR.

The document was endorsed.
Replaced by

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R3-173168 **Stage-3 of Option 3/3a/3x** ***Huawei, LG Electronics Inc., CATT, ZTE***

Replaces

Samsung: reference to 37.340 not correct
Huawei: but from there it is referring to 38.300, so it is ok
Huawei: CR should not go to RAN, we used type "CR" to trace the revisions

conclusion: endorsed as baseline CR; later revised to include additional RAN3 #97 agreements

The document was revised.
Replaced by R3-173455

R3-173455 **Baseline CR to TS 36.413 covering agreements of RAN3 #97** ***Ericsson, Huawei, LG Electronics Inc., CATT, ZTE***

Replaces R3-173168 based on R3-173168

The document was Endorsed.

R3-173283 **Introduction of option 3** ***Ericsson***
Replaces R3-172494

Noikia: in 3.2: NR should not be expanded?
Ericsson: can remove NR abbreviation
Nokia: has another input which is not in conflict with this baseline
ZTE: 3.1: SCG split bearer is not defined in TS 36.300
Samsung: prefers to split figures into 2 figures as otherwise it will be difficult to refer to it
Huawei: supports Ericsson that this is not needed
Nokia: we should see a proposal
MCC: why has this CR no CR number in the Tdoc list???
RAN3 chair: on the CR cover it says CR0009 rev4

conclusion: NR abbreviation will be removed, SCG split bearer definition will be fixed, the revision will also include other agreements of RAN3 #97

The document was revised.
Replaced by R3-173376

R3-173376 **Introduction of option 3** ***Ericsson***
Replaces R3-173283

conclusion: endorsed as baseline CR; later revised to include further RAN3 #97 agreements

The document was revised.
Replaced by R3-173456

R3-173456 **Baseline CR to TS 36.425 covering agreements of RAN3 #97** ***Ericsson***
Replaces R3-173376 based on R3-173376

The document was Endorsed.

R3-172678 **Further Discussion on P-approved 36.425** ***ZTE Corporation***
Replaces Discussion, Rel-15,NR_newRAT

The document was noted.
Replaced by

R3-172679 **Introduction of EN-DC in 36.425** ***ZTE Corporation***
Replaces DraftCR, Rel-15,NR_newRAT

Ericsson: we should rather stop work on 36.425 until we know which UP spec is applicable for option 3

The document was rejected.
Replaced by

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10.8.1.2 General

R3-172674 **Shared LTE and Non-Shared NR: Aspects of Option 3 and 3X Architecture** ***Vodafone GmbH***

Replaces

Observation 1: The shared eNodeB need to support at least Release 12 Dual Connectivity Standards.
Observation 2: Option 3 Architecture seems to be able to be applied to the case of MOCN shared LTE and non-shared NR resources.
Observation 3: The resource allocation (and scheduling) algorithms in the Master Cell Group are likely to need modification.
Observation 4: The Master Cell Group needs firmware/software upgrades, e.g. (in line with RAN 2 LS to SA3) to support the NR-PDCP, and (in line with ongoing SA2 work) to optionally report to the MME the data volume sent across NR. Consequently the PDCP-U shown in Figure 1 will need upgrading.
Observation 5: Option 3X architecture seems able to be applied to the case of MOCN shared LTE and non-shared NR resources, and, compared to Option 3, it offers additional transmission network flexibility.
Observation 6: The resource allocation (and scheduling) algorithms in the Master Cell Group are likely to need modification.
Observation 7: as the Master Cell group does not provide the NR-PDCP functionality, the Master Cell Group is likely to only need software upgrades.
Observation 8: For the 3X Architecture, a new Flow Control mechanism would be required between the eNodeB and the NR Node to control the flow of user data from the NR Node to the eNodeB

Huawei: we also understand that network sharing is mandated from day1

The document was noted.
Replaced by

R3-173014 **Discussion and Text Proposal for HRL in option 3** ***Samsung***

Replaces

Proposal 1: The forbidden RAT IE in handover Restriction List is extended by adding NR-RAT as one of the access restrictions

Ericsson: does it work like this? we need to go through all permutations, we should have had a bit string
Nokia: has a similar proposals in CRs

MCC: it seems this is actually a pCR to TS 38.413 (and the spec is wrong, should be 36.413)

conclusion:
agreement: NR access restriction needs to be provided in Handover Restriction List,

ffline discussion needed to solve signalling details, Nokia CRs in R3-172889 and R3-172890 will be revised for this

The document was noted.
Replaced by

R3-173264 **NR access restriction to eNB** ***Nokia, Nokia Shanghai Bell***

Replaces

The document was noted.
Replaced by

R3-172889 **NR access restriction to eNB** ***Nokia, Nokia Shanghai Bell***

Replaces

The document was revised.
Replaced by R3-173377

R3-173377 **NR access restriction to eNB** ***Nokia, Nokia Shanghai Bell***

Replaces R3-172889

Huawei: is there a baseline CR?
conclusion: endorsed as baseline CR, revised to cover additional agreements of RAN3 #97

The document was revised.
Replaced by R3-173454

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R3-173454 **Baseline CR to TS 38.413 covering agreements of RAN3 #97** ***Nokia, Nokia Shanghai Bell***
Replaces R3-173377 based on R3-173377 (including also R3-173322)

The document was Endorsed.

R3-172890 **NR access restriction to eNB** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was revised.
Replaced by R3-173378

R3-173378 **NR access restriction to eNB** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172890

conclusion: will be included in baseline CR

The document was endorsed.

R3-172827 **TP on access restriction for NR in EN-DC** ***HTC Corporation***
Replaces

The document was not treated.
Replaced by

R3-172828 **TP on access restriction for NR in EN-DC** ***HTC Corporation***
Replaces

The document was not treated.
Replaced by

R3-173225 **Transport of RRC messages for LTE-NR interworking** ***Ericsson***
Replaces

Proposal 1: Reliable and robust transport of split SRB data between the MN and the UE shall be enabled by using X2-CP, for both UL (SN to MN) and DL (MN to SN) directions.
Proposal 2: Split SRB data is sent via a new X2AP procedure capable of transferring a PDCP-C PDU in UL and DL direction in a transparent manner.
Proposal 3: Reliable and robust transport of embedded RRC data between the SN and UE is realised by providing RRC PDUs in transparent containers in respective existing X2AP procedures (e.g. in SgNB Modification Required).

Proposal 4: Employ the same mechanism for the transfer of RRC messages over the Xn interface.

The document was noted.
Replaced by

R3-172820 **Issues on SN Change Procedure** ***LG Electronics UK***
Replaces moved from AI 10.8.1.4 to AI 10.8.1.2

The document was noted.
Replaced by

R3-172663 **Exchange Measurement Results Info for MR-DC** ***ZTE Corporation***
Replaces Discussion, Rel-15,NR_newRAT

The document was not treated.
Replaced by

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R3-172801 **Discussion on SN change procedure** ***CATT***
Replaces

CATT: proposal 1 is already agreed (by RAN2)
RAN3 chair: is an alternative to what LG is proposing
CATT: LG only proposes node ID, we propose target S-node list
RAN3 chair: there seems to be no majority for a list so far but we can have an extensible Node ID IE so that we can extend it in the future if needed
Ericsson: is this not a stage 3 detail

conclusion: discuss offline whether we should
- add Target Node ID, extensible, to SN change req message
will result into R3-173381 and R3-173382 from LG

The document was noted.
Replaced by

R3-173381 **pCR for 37.340 on Addition of Target Node ID to S-Node Change Procedure** ***LG***

Ericsson: still needs to review it
conclusion: finally agreed

The document was endorsed.

R3-173382 **Change to TS 36.423 on Addition of Target Node ID to S-Node Change Procedure** ***LG***

is modifying a draft CR to TS 36.423

The document was agreed.

R3-172802 **TP for 37.340 on SN change procedure** ***CATT***
Replaces

Nokia: RAN2 should decide on this level of details, no reason to have 2 containers
ZTE: supports Nokia that it would be up to RAN2 to have another container but also thinks that no other container is needed
Ericsson: we have a procedure for this already so no new procedure needed
CATT: would we include the measurements results as well?
Ericsson: new procedures for every inter-node RRC messages is not a good idea as we may have more
RAN3 chair: there is no support for this

The document was rejected.
Replaced by

R3-172803 **TP for 36.423 on SN setup procedure** ***CATT***
Replaces

wrong Tdoc type pCR in Tdoc request

The document was rejected.
Replaced by

R3-172804 **[Draft] LS to RAN2 on SN change procedure** ***CATT***
Replaces

The document was not treated.
Replaced by

R3-173224 **Race conditions in case of SgNB release** ***Ericsson***
Replaces

The document was not treated.
Replaced by

10.8.1.3 Stage 2 Issues

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R3-172670 **X2 Signalling for Energy Efficiency of NR Node Transmitter** ***Vodafone GmbH***
Replaces

Proposal 1: In order to minimise power consumption, NR cell's RF Transmitter to be turned off during the quiet traffic periods and only to turn on during high traffic periods.
Proposal 2: to introduce X2 signalling to enable Secondary Cell Group RF transmitter on and off
Proposal 3: An indicator to be included in the LTE eNodeB' DL-SCH SIB5 message block to indicate that NR neighbour cell's ARFCN to the UE and for the UE to scan for the ARFCN.

RAN3 chair: can existing energy saving work help here?
Nokia: SA5 has decided some thresholds for LTE and maybe this mechanism may be reused
RAN3 chair: potential impact on intra-LTE DC needs to be checked as well
ZTE: also for standalone
Vodafone: SON is a network wide feature but here we look rather at a localized feature

The document was noted.
Replaced by

R3-172671 **NR Node's Power Efficiency** ***Vodafone GmbH***
Replaces

The document was not treated.
Replaced by

R3-172672 **A Solution for Detecting Radio Link Failure in Secondary Cell Group with 3X Architecture** ***Vodafone GmbH***
Replaces

RAN3 chair: more in RAN2 scope because it is talking about UE timers
Ericsson: timers are implementaiton specific issue

The document was noted.
Replaced by

R3-172673 **Inactivity Detection in Option 3 and 3X Architecture** ***Vodafone GmbH***
Replaces

The document was not treated.
Replaced by

R3-172699 **Correction of the SN initiated SN Modification with MN involvement** ***Nokia, Nokia Shanghai Bell***
Replaces Alignment of a figure and the description

Nokia: to be clarified whether we correct the figure or the text
RAN3 chair: can we say: fig. 10.3.1-2 needs to be corrected?
Nokia: ffs whether SgNB can send this message

conclusion: further offline discussion needed

The document was revised.
Replaced by R3-173384

R3-173384 **Correction of the SN initiated SN Modification with MN involvement** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172699

The document was endorsed.

R3-173170 **Add SgNB Counter Check procedure** ***Huawei***
Replaces

The document was postponed.
Replaced by

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R3-172846 **LS to RAN3 on MN-initiated SN change for delta signalling** ***TSG RAN WG2, HTC***
Replaces

presented by RAN3 chair
conclusion: no LS answer

The document was noted.
Replaced by

R3-172902 **MN-initiated SN change considerations for delta configuration** ***HTC Corporation***
Replaces

conclusion: no new procedure needed for MN-initiated SN change with delta signaling

The document was noted.
Replaced by

R3-173169 **Support of delta signalling during MN initiated SN change** ***Huawei***
Replaces

conclusion: no consensus on new procedure so far, but can discuss further offline, also may have a corresponding reply LS to R3-172846

The document was noted.
Replaced by

R3-173413 **Way Forward on support of delta signaling** ***Huawei***
related to R3-173169

HTC: solution 3: SN modification instead of SN change
Huawei: wouild be ok
Ericsson: "we will downselect" is a bit optimistic, we need to compare the 3 solutions

The document was noted.

10.8.1.4 Control of Various EN-DC DRB Options

R3-172700 **QoS configuration for SCG split bearers** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172078

CATT: has a related proposal in R3-173071

The document was noted.
Replaced by

R3-172701 **QoS information transfer for SCG-split bearers** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172079 TP for BL CR

The document was revised.
Replaced by R3-173385

R3-173385 **QoS information transfer for SCG-split bearers** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172701

this is a request to modify the baseline CR to 36.423

The document was agreed.

R3-172702 **QoS information transfer for SCG-split bearers** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was revised.
Replaced by R3-173386

R3-173386 **QoS information transfer for SCG-split bearers** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172702

The document was endorsed.

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R3-173071 **Considerations on SCG split bearer** ***CATT***
Replaces

conclusion: will go for the Nokia pCRs in R3-172701 and R3-172702

The document was noted.
Replaced by

R3-173072 **Stage 2 TP on SCG split bearer** ***CATT***
Replaces

Ericsson: difficult to handle bearer type change separately from the rest of the pCR
Nokia: has RAN2 already agreed on these changes

The document was rejected.
Replaced by

R3-173073 **Stage 3 TP on SCG split bearer** ***CATT***
Replaces

The document was rejected.
Replaced by

R3-172664 **Further Consideration SRB/DRB Duplication** ***ZTE Corporation***
Replaces Discussion, Rel-15,NR_newRAT

The document was not treated.
Replaced by

R3-173089 **S-RLF handling for MR-DC** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

10.8.1.5 Control of EN-DC SRB Options

R3-172750 **Reliable RRC Delivery over Split SRB** ***Qualcomm Incorporated***
Replaces

Proposal 1: For MCG split SRB, define mechanism for SN to feedback RLC delivery status information to PDCP in MN over X2/Xn.
Proposal 2: RAN3 to decide MCG split SRB feedback mechanism from “RAN container” and “RRC non-delivery indication”.
Proposal 3: RAN3 to decide the protocol stack for MCG split SRB from option A, B and C.

Nokia: unclear in which scenario this would be needed
Ericsson: proposal 3 can be skipped?
Qualcomm: yes

The document was noted.
Replaced by

R3-172710 **RRC tunnelling in MR-DC scenarios** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172075

The document was not treated.
Replaced by

R3-172711 **Addition of a procedure for RRC tunneling** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172076 TP for BL CR

The document was revised.
Replaced by R3-173379

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R3-173379 Replaces R3-172711 — **Addition of a procedure for RRC tunneling** — ***Nokia, Nokia Shanghai Bell***

is a modification of the baseline CR for TS 36.423
Ericsson: RRC tranfer proc text: PDCP-C should say PDCP-C PDU
conclusion: revised to add "PDU"

The document was revised.
Replaced by R3-173428

R3-173428 Replaces R3-173379 — **Addition of a procedure for RRC tunneling** — ***Nokia, Nokia Shanghai Bell***

The document was agreed.

R3-172712 Replaces R3-172077 — **Addition of a procedure for RRC tunneling** — ***Nokia, Nokia Shanghai Bell***

The document was revised.
Replaced by R3-173380

R3-173380 Replaces R3-172712 — **Addition of a procedure for RRC tunneling** — ***Nokia, Nokia Shanghai Bell***

The document was endorsed.

R3-173171 Replaces — **Solutions for MCG split SRBs** — ***Huawei***

The document was not treated.
Replaced by

R3-173172 Replaces — **TP on establishment and release of MCG split SRBs** — ***Huawei***

The document was not treated.
Replaced by

R3-173173 Replaces — **TP on Transmission of MCG split SRBs** — ***Huawei***

The document was not treated.
Replaced by

R3-173068 Replaces — **Discussion on remaining issues for SRB in EN-DC scenario** — ***CATT***

The document was not treated.
Replaced by

R3-173069 Replaces — **Stage 2 TP on remaining issues for SRB in EN-DC scenario** — ***CATT***

The document was not treated.
Replaced by

R3-173070 Replaces — **Stage 3 TP on remaining issues for SRB in EN-DC scenario** — ***CATT***

The document was not treated.
Replaced by

R3-173174 Replaces — **Support of SCG SRB** — ***Huawei***

The document was not treated.
Replaced by

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R3-173175 **TP on support of SCG SRB** ***Huawei***
Replaces

The document was not treated.
Replaced by

10.8.1.6 Change between EN-DC DRB Options (Bearer Type Change)

R3-173176 **Support of bearer type change** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-172818 **Bearer type change between SCG bearer and SCG Split bearer** ***LG Electronics UK***
Replaces

The document was not treated.
Replaced by

R3-173177 **Considerations on container for common PDCP** ***Huawei***
Replaces

The document was not treated.
Replaced by

10.8.1.7 Data Forwarding

R3-172680 **User data forwarding for SCG split bearer** ***ZTE Corporation***
Replaces Discussion, Rel-15,NR_newRAT

The document was noted.
Replaced by

R3-173178 **Data forwarding for SCG split bearer** ***Huawei***
Replaces

The document was noted.
Replaced by

R3-173179 **TP on data forwarding for SCG split bearer** ***Huawei***
Replaces

The document was revised.
Replaced by R3-173388

R3-173388 **TP on data forwarding for SCG split bearer** ***Huawei***
Replaces R3-173179

Ericsson: avoid / notation in the future "either.. or .. or both" should be used

The document was endorsed.

10.8.1.8 UE AMBR

R3-173015 **AMBR control for SCG Split Bearer** ***Samsung***
Replaces

The document was postponed.
Replaced by

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R3-173180 **UE-AMBR enforcement in EN-DC** ***Huawei***
Replaces

Proposal: The UE AMBR enforcement for SCG split bearer of EN-DC could be:
For DL:
- Based on DL MN UE AMBR, MeNB controls the DL rate enforcement for MCG bearer;
- Based on DL SN UE AMBR, SgNB controls the DL rate enforcement for SCG bearer and SN leg of SCG split bearer;
- Based on DL SCG split UE AMBR, SgNB controls the DL rate enforcement for MN leg of SCG split bearers;
For UL:
- Based on UL MN UE AMBR + SCG split UE AMBR, MeNB controls the UL rate enforcement for MeNB path;

The document was noted.
Replaced by

R3-173181 **TP on UE-AMBR enforcement in EN-DC** ***Huawei***
Replaces

conclusion: revised to simplify text and MN gives recommendation and SN obeys it (maybe not for SCG split)
The document was revised.
Replaced by R3-173389

R3-173389 **TP on UE-AMBR enforcement in EN-DC** ***Huawei***
Replaces R3-173181

Samsung: ULnegotiation needs further study, DL not needed
Huawei: DL is needed (legacy etc.)
Nokia: what is missing in TS 36.300 is needed

The document was postponed.

10.8.1.9 Others

R3-173314 **Reply LS on algorithm selection in E-UTRA-NR Dual Connectivity** ***SA3, Ericsson***
Replaces

moved from AI 8.1 to AI 10.8.1.9
conclusion: no LS answer

The document was noted.
Replaced by

R3-173183 **S-KeNB related issues for EN-DC** ***Huawei***
Replaces

conclusion: from RAN3 piut of view this scenario is supported is supported with the current spec text and no need to capture this in stage 2

The document was noted.
Replaced by

R3-173039 **Inter Master Node handover with Secondary Node change** ***NTT DOCOMO INC.***
Replaces proposes that This paper points out that a deployment case of inter master node handover with secondary node change is considered valid and the relevant procedures to be captured in 37.340.

The document was rejected.
Replaced by

R3-172681 **Further Consideration on Counter Check procedure in MR-DC** ***ZTE Corporation***
Replaces Discussion, Rel-15,NR_newRAT

ZTE: discussion took place in RAN2

The document was not treated.
Replaced by

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R3-173182 **Counter check for EN-DC** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-172825 **UE capability coordination between Master node and Secondary node** ***LG Electronics UK***
Replaces

The document was not treated.
Replaced by

10.8.2 E-UTRA-NR DC via 5G-CN where the E-UTRA is the master

Option 7/7a/7x
GTP-U container for Xn?

10.8.2.1 General

Including harmonization aspects between EN-DC and NG-RAN

R3-173016 **Discussion and Text Proposal for HRL in option 4** ***Samsung***
Replaces

ZTE: why is it only for option 4? This applies to options 3/4/7
ZTE: we have pCRs for option 3 in R3-172654, R3-172655 and R3-172656 (AI 10.5.4)

Qualcomm: "proper" => "appropriate

The document was revised.
Replaced by R3-173391

R3-173391 **Discussion and Text Proposal for HRL in option 4** ***Samsung***
Replaces R3-173016

Ericsson: still wants to check this
ZTE: in 8.3.1.2: change dual connectivity to MR-DC as there are separate functions, in 38.300 DC is only related to intra
Samsung: AI is not there so no problem
RAN3 chair: in 8.3.1.2: remove "during DC operation"

The document was revised.
Replaced by R3-173431

R3-173431 **Discussion and Text Proposal for HRL in option 4** ***Samsung***
Replaces R3-173391

The document was agreed.

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R3-173226 **Further Considerations on Xn for Options 7/7a/7x** ***Ericsson***
Replaces

Proposal 1: Maintain the use of the DC timers (e.g. TDCprep, TDCoverall) in NR.
Proposal 2: Take the Working Assumption that local traffic offload (per-PDU-session) is supported in NR, further checking on this approach as the work on NR progresses.
Proposal 3: Continue checking RAN2 progress on the actual RRC message(s) to be signaled in the M-Node-to-S-Node (and vice versa) containers.
Proposal 4: Take the Working Assumption that "Expected UE activity behavior" as currently defined, is not supported in NG-RAN.
Proposal 5: Take the Working Assumption that "BBF optimization" is not supported in NR.

conclusion:
proposal 1 agreed (Maintain the use of the DC timers (e.g. TDCprep, TDCoverall) in NR)
proposal 2: we can wait
proposal 3: this is already common understanding
proposal 4: postponed until we progress on NGAP
proposal 5: agreement: "BBF optimization" is not supported in NR

The document was noted.
Replaced by

10.8.2.2 Stage 2

R3-172666 **Further Discussion on TS38.423 with 5GC based MR-DC** ***ZTE Corporation***
Replaces Discussion, Rel-15,NR_newRAT

The document was withdrawn.
Replaced by

R3-172667 **Correction of TS38.423 with 5GC based MR-DC** ***ZTE Corporation***
Replaces pCR, Rel-15,NR_newRAT

The document was withdrawn.
Replaced by

10.8.2.3 Control of Various EN-DC DRB Options

R3-172853 **Reply to LS on Dual Connectivity with 5GC** ***TSG SA WG2, Nokia***
Replaces

conclusion: no LS answer

The document was noted.
Replaced by

R3-172823 **Discussion on flow offloading for Option 7 family** ***LG Electronics UK***
Replaces

Nokia: was confused about title "offloading" and contents talks about handover

The document was noted.
Replaced by

R3-173029 **PDU Session Split and its signalling impact** ***NEC***
Replaces

Samsung: thinks that this will be covered in R3-173327

The document was noted.
Replaced by

R3-172682 **NGAP Impacts due to PDU Session Split over NG-U** ***ZTE Corporation, China Telecom***
Replaces Discussion, Rel-15,NR_newRAT

The document was noted.
Replaced by

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R3-172683 **Correction of TS38.413 due to PDU Session Split over NG-U** ***ZTE Corporation***
Replaces pCR, Rel-15,NR_newRAT

The document was not treated.
Replaced by

R3-173184 **Support of QoS and Slice for Option 7** ***Huawei***
Replaces

The document was noted.
Replaced by

R3-173185 **TP on support of QoS and Slice for Option 7** ***Huawei***
Replaces

The document was revised.
Replaced by R3-173392

R3-173392 **TP on support of QoS and Slice for Option 7** ***Huawei***
Replaces R3-173185

Ericsson: why flow information only? Suggests to continue further discussion; allso related to data forwarding discussion;
Nokia: had also problems to understand the pCR;

The document was postponed.

R3-173017 **5G QoS model Support in Xn for Dual Connectivity** ***Samsung***
Replaces

The document was withdrawn.
Replaced by

R3-173018 **Text Proposal for 5G QoS model Support for 38.423** ***Samsung***
Replaces

The document was withdrawn.
Replaced by

10.8.2.4 Control of EN-DC SRB Options

R3-172713 **Addition of a procedure for RRC tunneling** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172124 Corresponds to the X2 change proposed in R3-172711

The document was revised.
Replaced by R3-173393

R3-173393 **Addition of a procedure for RRC tunneling** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172713

conclusion: add PDU

The document was revised.
Replaced by R3-173429

R3-173429 **Addition of a procedure for RRC tunneling** ***Nokia, Nokia Shanghai Bell***
Replaces R3-173393

The document was agreed.

R3-173186 **Secondary node change for MR-DC** ***Huawei***
Replaces

The document was noted.
Replaced by

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R3-173187 **TP on stage 2 for SN change** ***Huawei***
Replaces

The document was endorsed.
Replaced by

10.8.2.5 Change between EN-DC DRB Options (Bearer Type Change)

10.8.2.6 Data Forwarding

10.8.2.7 UE AMBR

R3-173062 **Consideration on UE-AMBR for Option 7 family** ***LG Electronics UK***
Replaces

The document was noted.
Replaced by

R3-172738 **Flow QoS impact to DC** ***Qualcomm Incorporated***
Replaces

The document was noted.
Replaced by

R3-172690 **Discussion on Session-AMBR and UE-AMBR for DC** ***ZTE Corporation***
Replaces Discussion, Rel-15,NR_newRAT

The document was noted.
Replaced by

10.8.2.8 Others

10.8.3 User Plane Aspects for DC

Same FC mechanism and procedures in F1, X2, Xn; possible enhancements for F1-U are not precluded

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R3-173409 **Way forward on flow control** ***NTT DOCOMO, INC., Intel, Altiostar, Nokia, Nokia Shanghai Bell, Vodafone, Huawei, SK Telecom, Deutsche Telekom, TIM, KDDI, China Unicom, CMCC, KT***

related to R3-173315

moved from AI 10.8.3.1 to AI 10.8.3
Ericsson: proposing enhancements where justification does not even fill a page is not acceptable; we would be fine with working assumption for polling
Nokia: there are references to papers of the past which have a justification
Qualcomm: no need for polling or timer
Ericsson: way forward was coming up as surprise, we could compromise on one feature as a working assumption
Nokia: there were papers provided beforehand
RAN3 chair: we would have to go through 9 papers
Nokia: polling inherently provides timer feature
Huawei: we need some enhancements for the UP
NTT: take a working assumption but we should then treat the topic next time as it was postponed for some time

conclusion:
working assumption: Define polling as trigger for DL data delivery status.

The document was noted.

10.8.3.1 General

Specification and architecture aspects

R3-173227 **Discussion on specification of XnUP/X2UP/F1UP** ***Ericsson***
Replaces

The document was noted.

R3-173037 **Flow control: Further consideration on potential issues and possible enhancements** ***NTT DOCOMO INC.***
Replaces In this contribution, potential issues of LTE dual connectivity flow control and possible enhancements to resolve those issues are explained.

moved from AI 10.8 to AI 10.8.3.1
Note: The contents of R3-173037 and R3-173301 is actually the same.

The document was revised.
Replaced by R3-173301

R3-173301 **Flow control: Further consideration on potential issues and possible enhancements** ***NTT DOCOMO INC.***
Replaces R3-173037 place of In this contribution, potential issues of LTE dual connectivity flow control and possible enhancements to resolve those issues are explained.
R3-173037 is withdrawn since Teruaki (who obtained the Tdoc is unavailable to submit it, and I will be submitting the contribution in him).

The document was revised.
Replaced by R3-173315

R3-173315 **Flow control: Further consideration on potential issues and possible enhancements** ***NTT DOCOMO INC.***
Replaces R3-173301

The document was noted.

R3-172746 **U-plane flow control** ***Qualcomm Incorporated***
Replaces

The document was noted.
Replaced by

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R3-173188 **Downlink Flow control for EN-DC** ***Huawei***
Replaces

The document was noted.
Replaced by

R3-173189 **Consideration of DL Data Delivery Status triggering** ***Huawei, Intel Corporation***
Replaces

conclusions:
working assumption:
- For EN-DC UP MCG split bearers, it is allowed for MeNB to directly communicate to the SgNB-DU.
- For 5G-DC UP MCG split bearers, it is allowed for MgNB to directly communicate to the SgNB-DU.

The document was noted.
Replaced by

R3-173363 **Way forward on capturing UP in a single spec** ***Ericsson***
offline discussion summary

single or multiple specs? (if feasible)
if single, 36 or 38 series?

proposal: We conclude to specify the flow control related UP protocol functions applicable to X2-U (EN-DC), Xn-U and F1-U in a single place. It is also concluded that enhancements specific for an interface are not precluded. Details how to specify are FFS.

Nokia: way forward has nothing to do with discussions we had
Samsung: option 1 is a good way forward
KT: objects the unified approach
China Telecom: same view as Samsung
Verizon: supports Samsung
ZTE: granularity of PDCP over UP is different, so maybe we can start with separate specs and see later whether we can merge
SKT, CATT: also support separate specs
Ericsson: same protocol functions on separate interfaces requires one place to specify them
Intel: description should be different
RAN3 chair: is it possible to endorse R3-173363 without the conclusion?
Samsung: we spend time on this without talking about the actual flow control

conclusion: no consensus to endorse anything

The document was noted.

R3-172935 **Discussion on F1-U flow control for UM RLC** ***ZTE Corporation, China Unicom***
Replaces

The document was not treated.
Replaced by

R3-172703 **PDCP flow control for split bearers mapped on RLC UM** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-172704 **Support for RLC UM** ***Nokia, Nokia Shanghai Bell***
Replaces TP for BL CR

The document was not treated.
Replaced by

R3-172987 **Support for reporting with RLC UM** ***Nokia, Nokia Shanghai Bell***
Replaces Related to R3-172703; TP to BL CR

The document was not treated.
Replaced by

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R3-173190 **Flow control to support RLC UM** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173191 **Support of flow control for RLC UM** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173192 **TP on support of flow control for RLC UM** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173291 **F1 User Plane Enhancement for Flow Control** ***Altiostar Networks, Intel Corporation***

Replaces

The document was not treated.
Replaced by

R3-173292 **TP to TS 38.475 for Flow Control** ***Altiostar Networks, Intel Corporation***

Replaces

The document was not treated.
Replaced by

R3-173288 **F1 User Plane Enhancement for Flow Control** ***Altiostar Networks, Intel Corporation***

Replaces

The document was withdrawn.
Replaced by

R3-173289 **TP to TS 38.475 for Flow Control** ***Altiostar Networks, Intel Corporation***

Replaces

The document was withdrawn.
Replaced by

R3-173146 **Correction of the node naming** ***Nokia, Nokia Shanghai Bell***
Replaces TP for BL CR

The document was not treated.
Replaced by

R3-173147 **Correction of the node naming** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

10.8.3.2 Fast Retransmission

R3-173036 **Mechanism of centralized retransmission of lost PDUs for LTE-NR** ***NTT DOCOMO INC.***
Replaces In this contribution, the applicability of mechanism of centralized retransmission of lost PDUs to X2 and Xn interface was discussed.

moved from AI 10.8 to AI 10.8.3.2
Note: The contents of R3-173036 and R3-173303 is actually the same.

The document was revised.
Replaced by R3-173303

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R3-173303 **Mechanism of centralized retransmission of lost PDUs for LTE-NR** ***NTT DOCOMO INC.***

Replaces R3-173036

In this contribution, the applicability of mechanism of centralized retransmission of lost PDUs to X2 and Xn interface was discussed.R3-173036 is withdrawn since Teruaki (who obtained the Tdoc is unavailable to submit it, and I will be submitting the contribution in place of him).

The document was revised.

Replaced by R3-173316

R3-173316 **Mechanism of centralized retransmission of lost PDUs for LTE-NR** ***NTT DOCOMO INC.***

Replaces R3-173303

The document was noted.

R3-172747 **Fast retransmission and UP switching** ***Qualcomm Incorporated***

Replaces

The document was noted.

Replaced by

R3-172936 **Centralized retransmission of lost PDUs** ***ZTE Corporation, China Telecom***

Replaces

The document was noted.

Replaced by

R3-172857 **Enhancements to the X2 UP** ***Nokia, Nokia Shanghai Bell, KDDI, Vodafone, Deutsche Telekom***

Replaces R3-172069

treated in connection with AI 10.8.3.1

The document was noted.

Replaced by

R3-172858 **Reporting of the achievable throughput** ***Nokia, Nokia Shanghai Bell, KDDI***

Replaces R3-172070

TP for BL CR

The document was not treated.

Replaced by

R3-172859 **UP enhancement for X2-based DC** ***Nokia, Nokia Shanghai Bell, KDDI***

Replaces R3-172072

TP for BL CR

The document was not treated.

Replaced by

R3-172860 **Reporting of the achievable throughput** ***Nokia, Nokia Shanghai Bell, KDDI***

Replaces R3-172071

The document was not treated.

Replaced by

R3-172861 **UP enhancement for Xn-based DC** ***Nokia, Nokia Shanghai Bell, KDDI***

Replaces R3-172122

The document was not treated.

Replaced by

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10.8.3.3 PDCP Duplication

R3-173193 **Support of PDCP duplication for EN-DC** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173276 **Flow Control enhancements for PDCP duplication** ***Intel Corporation, Altiostar Networks***
Replaces

The document was not treated.
Replaced by

R3-173277 **TP for Flow Control enhancements for PDCP duplication** ***Intel Corporation, Altiostar Networks***
Replaces

The document was not treated.
Replaced by

10.8.3.4 Others

10.8.4 NR-E-UTRA DC via 5G-CN where the NR is the master

Option 4/4A in TR 38.801 section 10.1.3
Work on Option 4/4A will start after the work on Option 2, 3 and 7 families is completed

10.8.5 Others

10.9 Void

10.10 High layer functional split

Identify F1 interface features (if any) which are essential for Opt. 3 family, to be prioritized until Dec. 2017, see endorsed WF (RP-171502)

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10.10.1 CU-DU interface principle and definition

The details of intra-gNB mobility scenario, etc …
Topics cover multiple TSs

10.10.1.1 Scenarios, Architecture, Cardinality

Multiple SCTP associations (if any)...

R3-172817 **Introduction to gNB-CU architecture for information exchange** ***IAESI, Thales, Fairspectrum***
Replaces

Vodafone: this is already enabled by our current status (we agreed on a split RRM table)
IAESI: it's related to control and not to SA5

The document was noted.
Replaced by

R3-173139 **Discussion on the scenarios of multiple SCTP associations between CU and DU** ***CMCC***
Replaces

The following text was considered as working assumption:
Multiple SCTP associations between CU and DU are not precluded
but finally this working assumption was cancelled.

The document was noted.
Replaced by

R3-173228 **Resiliance and scalability in a dis-aggregated gNB** ***Ericsson***
Replaces

The document was revised.
Replaced by R3-173396

R3-173396 **Resiliance and scalability in a dis-aggregated gNB** ***Ericsson***
Replaces R3-173228

The document was agreed.

R3-173027 **Function of F1 for opt 3 (ENDC)** ***NEC***
Replaces

The document was noted.
Replaced by

10.10.1.2 CU/DU Node Ids

Max n of DUs per CU is only limited by implementation
WA: gNB-CU ID is not needed
WA: gNB-DU ID is not connected to cell identifiers
WA: It is FFS whether a gNB-DU ID is needed

R3-173059 **gNB-ID discussion** ***China Telecommunications***
Replaces The length of gNB ID is discussed in this contribution.

MCC: wrong WI code used

The document was noted.
Replaced by

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R3-172947 **Identification of gNB and NR cell** ***Samsung***
Replaces

MCC: wrong WI code used
handled in connection with R3-173095 in 10.5.3

The document was noted.
Replaced by

R3-173093 **Discussion on the Total Length of NR CI** ***China Telecommunications***
Replaces

MCC: wrong WI code used

The document was not treated.
Replaced by

R3-172819 **Identifiers for the NR** ***IAESI***
Replaces

The document was noted.
Replaced by R3-173364

R3-173364 **Identifiers for the NR** ***IAESI***

The document was not treated.

R3-173265 **Need and definition of DU IDs** ***Qualcomm Incorporated***
Replaces

The document was noted.
Replaced by

R3-173092 **Discussion on the Total Length of NR CI** ***China Telecommunications***
Replaces

The document was withdrawn.
Replaced by

10.10.1.3 Aspects of Using F1 in E-UTRAN (Opt. 3) and in NG-RAN

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R3-172714 **Necessary Adjustments needed to F1 Interface specs to accommodate Option 3** ***Interdigital Asia LLC***

Replaces

Proposal 1:
1. Agree that the formal terms for the central unit and distributed unit in NG-RAN gNB is gNB-CU and gNB-DU (current general terms used)
2. Agree that the formal terms for the central unit and distributed unit in option 3 within E-UTRAN is en-gNB-CU and en-gNB-DU
3. Agree that the term "CU" and "DU" is to be used in 38.47x when describing functionality common to gNB and en-gNB CUs and DUs.
4. Task each rapporteur, with modifying current gNB-CU and gNB-DU references to CU and DU in the general case

5. Agree to add the following definitions added to the 38.47x series where CU and DU are referenced:
CU -Central Unit – refers to a gNB-CU in NG-RAN or a en-gNB-CU in E-UTRAN
DU- Distributed Unit – refers to a gNB-DU in NG-RAN or an en-gNB-CU in E-UTRAN.

Proposal 2:
Add to the scope of each 47x document the combinations of CUs and DUs defined in each network, namely:
The F1 interface consists of the interconnection of either:
gNB-CU and gNB-DU within the NG-RAN architecture or,
en-gNB-CU and en-gNB-DU within the E-UTRAN architecture

Ericsson: supports proposal 2, has related Tdoc in R3-173282
Nokia: scope is correct but we need to avoid terms en-gNB-CU and en-gNB-DU

RAN3 chair: could we use:
The F1 interface consists of the interconnection of either:
gNB-CU and gNB-DU within the NG-RAN architecture or,
gNB-CU and gNB-DU for en-gNB within the E-UTRAN architecture

Nokia: The text is acceptable but there is no need to put this in a spec.
Ericsson: we should have a pCR for it

The document was noted.

Replaced by

R3-173282 **On the definition of CU and DU** ***Ericsson***

Replaces

Obseravation 1: The disaggregated (CU-DU) deployment applies to both E-UTRAN (i.e., for the en-gNB) and NG-RAN (i.e., for the gNB).
Obseravation 2: Depending on the outcome of the SI on "Architecture Evolution for E-UTRAN", it is possible that in the future the disaggregated (CU-DU) deployment will aply also to a different RAT (E-UTRA).

Proposal 1: For clarity and future-proofness, we propose to adopt the terms CU and DU (instead of gNB-CU and gNB-DU).

Nokia, ZTE, Samsung, Verizon: no change needed
IAESI, Vodafone: support Ericsson view

The document was noted.

Replaced by

R3-172948 **en-gNB addition procedure in EN-DC with CU-DU split** ***Samsung***

Replaces

Ericsson: has related Tdoc in R3-173233 (AI 10.10.1.6)
Nokia: has related Tdoc in R3-172761 (10.10.1.5)
NEC: has related Tdoc in R3-173028

conclusion: further offline discussion needed (rapporteur: Samsung),
as a result a pCR to TS 38.401 will be drafted

The document was noted.

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R3-173399 **Stage 2 flows for CU-DU split** ***Samsung***
Replaces R3-172948

The document was revised.
Replaced by R3-173432

R3-173432 **Stage 2 flows for CU-DU split** ***Samsung***
Replaces R3-173399

Ericsson: has a different way to show call flows in R3-173419

The document was revised.
Replaced by R3-173435

R3-173435 **Stage 2 flows for CU-DU split** ***Samsung***
Replaces R3-173432

conclusion: agreed unseen

The document was agreed.

R3-173419 **Text proposal for stage 2 call-flows considering CU-DU split – alternative depiction** ***Ericsson***
related to R3-173399

RAN3 chair: is an alternative approach for showing CU-DU call flows
Telecom Italia: there was discussion on the reflector and no consensus to move from the traditional approach

The document was rejected.

R3-172949 **Text proposal for TS38.401 on en-gNB addition** ***Samsung***
Replaces

The document was rejected.
Replaced by

R3-172924 **Discussion on SgNB Change in Option 3** ***ZTE Corporation***
Replaces

The document was noted.
Replaced by

R3-172925 **SgNB Change in Option 3 for TS38.401** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-173132 **SRB type identification over F1 and X2 interface for CU-DU** ***Huawei***
Replaces

Proposal 1: RRC message carried over F1-C interface should include a SRB type indication for the gNB-DU to identify among SRB1(S)/SRB2(S)/SRB3.
Proposal 2: RRC message carried over X2-C interface should include a SRB type indication indication for the gNB-CU to identify between SRB1S/SRB2S.

conclusion:
proposal 1: agreement: RRC message carried over F1-C interface should include a SRB type indication for the gNB-DU to identify among SRB0/SRB1(S)/SRB2(S)/SRB3.

The document was noted.
Replaced by

10.10.1.4 System Information

How information is split between CU and DU, who generates the message, how it is delivered over F1…
Other parameters…
WA: SFN info resides in the DU

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R3-173000 **Open issue on system information management function** ***LG Electronics***
Replaces

The document was noted.
Replaced by

R3-173043 **On the ways of SI message generation and transportation in disaggregated gNB** ***China Telecommunications***
Replaces

The document was noted.
Replaced by

R3-173045 **TP for system information in disaggregated gNB** ***China Telecom***
Replaces

The document was postponed.
Replaced by

R3-173149 **System information generation and delivery in CU-DU split architecture** ***CMCCration***
Replaces

The document was noted.
Replaced by

R3-172950 **System information transmission over F1** ***Samsung***
Replaces

Proposal 1: RAN3 is unnecessary to analyze the SI information split between gNB-CU and gNB-DU.
Proposal 2: gNB-CU controls the setting of SI parameters except SFN.
Proposal 3: gNB-CU generates other SI messages except NR-MIB.
Proposal 4: For NR-MIB, gNB-DU is the generator, and gNB-CU sends other parameters to gNB-DU via F1AP.
Proposal 5: RAN3 is kindly asked to consider the SI transfer procedure and SI configuration procedure for stage-3 work.

The document was noted.
Replaced by

R3-172951 **Text proposal for TS38.401 on SI transfer** ***Samsung***
Replaces

The document was not treated.
Replaced by

R3-172952 **Text proposal for TS38.470 on SI transfer** ***Samsung***
Replaces

The document was not treated.
Replaced by

R3-172953 **Text proposal for TS38.473 on SI transfer** ***Samsung***
Replaces

The document was not treated.
Replaced by

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R3-172810 **Discussion on system information transfer** ***CATT***
Replaces

Proposal 1: Parameters in MIB message could be configured to DU and MIB message should be encoded by DU.
Proposal 2: It is proposed that parameters in SIB1/SIB2 message could be configured to DU and DU encodes the RRC message for SIB1/SIB2.
Proposal 3: For other SI, the information should be configured to CU and CU sends the encoded RRC message to DU via a F1AP message i.e. System information transport.
Proposal 4:CU should include the sequence number of SI and the current valuetag in the F1AP message i.e.System information transport.
Proposal 5: It is proposed to introduce a new F1AP(i.e. System information transport request) to support on demand system information transport.

The document was noted.
Replaced by

R3-172811 **TP for 38.401 on system information transfer** ***CATT***
Replaces

The document was not treated.
Replaced by

R3-172812 **TP for 38.473 on system information transfer** ***CATT***
Replaces

The document was not treated.
Replaced by

R3-172772 **System Information management** ***Nokia, Nokia Shanghai Bell***
Replaces

Nokia: already covered

The document was noted.
Replaced by

R3-172773 **TP of System Information management (TS 38.401)** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-172774 **TP of System Information management (TS 38.473)** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-173294 **F1 parameter control** ***NTT DOCOMO, INC.***
Replaces

treated in connection with R3-173198 (AI 10.10.2.4)

Proposal 1: RRC configured parameters for resource assignment should be controlled by DU.
Proposal 2: RLC parameters should be controlled by CU.
Proposal 3a: Basically, LCH parameters should be controlled by CU.
Proposal 3b: As for exceptional case, at least LCG should be controlled by DU for scheduler policy.
Proposal 4a: Basically, MAC parameters should be controlled by DU.
Proposal 4b: As for exceptional case, at least longDRX-Cycle and shortDRX-Cycle should be controlled by CU.
Proposal 5: Basically, Physical layer parameters should be controlled by DU.

conclusion: agreements
- L1 resource parameters for resource management should be controlled by DU (e.g. PUCCH, SRS)
- MAC parameters (e.g. BSR, PHR,, HARQ, DRX, pending RAN2) should be controlled by DU.
- FFS whether longDRX-Cycle and shortDRX-Cycle (there may be others) should be controlled by CU
- Physical layer parameters should be controlled by DU

The document was noted.
Replaced by

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R3-173229 **System information in disaggregated gNB** ***Ericsson***
Replaces

The document was not treated.
Replaced by

R3-173230 **Delivery of system information in disaggregated gNB** ***Ericsson***
Replaces

Proposal 1: The delivery of the SI includes in the following steps:
- In pre-OP state: CU-OAM configures the SI controlled by the CU and DU-OAM configures the SI controlled by the DU
- In OP state (F1 is operational):
1. CU sends its part of the SI to DU over F1-C
2. DU stores the SI received from CU
3. DU complies and transmits the SI over the air

Proposal 2: The CU can update its part of the SI parameters using F1-C interface.

Proposal 3: The CU can retrieve the SI parameters that are configured by the DU by sending a specific request over the F1-C interface.

Proposal 4: The CU should be allowed to change SI parameters controlled by the DU that are useful for inter-cell coordination (e.g., PCI and RACH configuration). The CU should not be allowed to change SI parameters controlled by the DU that are not needed for inter-cell coordination (e.g., cell ID and TAC).

Proposal 5: RAN3 to discuss which SI parameters controlled by the DU may be useful for inter-cell coordination.

The X2 parameters can be taken as a baseline.

Proposal 6: RAN3 is kindly asked to agree with the TP in Annex I for TS 38.401.

The document was noted.
Replaced by

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R3-173103 **System Information Delivery over F1** ***Huawei***
Replaces

Observation 1: In LTE system information, MIB and SIB1 have fixed schedule, while other SIBs are dynamically scheduled.
Observation 2: In LTE system information, change of system information only occurs at specific radio frames.
Observation 3: In NR, the minimum SI is broadcast periodically.
Observation 4: For idle and inactive UE, the other SI can be requested on-demand by msg1 or msg3. The other SI may be broadcast at configurable periodicity.
Observation 5: For active UE, the other SI may be requested and transferred over RRC message.
Observation 6: Part of system info are generated in gNB-CU and gNB-DU respectively.
Observation 7: There's no system info transfer over F1 interface for NSA operation.
Proposal 1: It is proposed RAN3 agree gNB-DU to compile the final system information.
Proposal 2: It is proposed RAN3 agree SIB container to convey SI parameters over F1 interface.
Proposal 3: It is proposed RAN3 define new F1AP message DL/UL SI TRANSFER for exchanging SI between gNB-CU and gNB-DU.
Proposal 4: It is proposed RAN3 define new F1AP message for the gNB-CU to indicate the gNB-DU to broadcast the requested other SI.

RAN3 chair: topics to be discussed with all discussion papers:
1. Configuration in pre-OP/OP phase
2. Encoding of System Info RRC message: 2 options
   a. CU always encodes SI RRC message
   b. DU always encodes SI RRC message
   c. CU encodes parameters ...
3. System Information/Parameter Exchange over F1-C
4. On demand System Info via F1

conclusions:
for 1.:
(modified proposal 1 from Ericsson paper): agreement: In pre-OP state: CU-OAM configures the initial SI parameters owned by the CU and OAM configures the initial SI parameters owned by the DU.
for 2.:
5 options identified
for 3.: agreement:
SI exchange over F1-C shall be supported (support for exchange encoded RRC message, individual parameters, or both is FFS)

The document was noted.
Replaced by

10.10.1.5 UE Initial Access, State Transitions

R3-172954 **UE initial access procedure considering CU-DU split** ***Samsung***
Replaces

The document was noted.
Replaced by

R3-172955 **Text proposal for TS38.401 on UE initial access** ***Samsung***
Replaces

The document was not treated.
Replaced by

R3-172813 **TP for 38.401 on Initial UE Access** ***CATT***
Replaces

The document was revised.
Replaced by R3-173406

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R3-173406 **TP for 38.401 on Initial UE Access** ***CATT***
Replaces R3-172813

The document was agreed.

R3-173231 **Idle to Connected state transitions in a disaggregated gNB** ***Ericsson***
Replaces

The document was noted.
Replaced by

R3-172761 **UE Initial Access procedure** ***Nokia, Nokia Shanghai Bell***
Replaces

treated in connection with R3-172948 in AI 10.10.1.3

also R3-172918 (AI 10.10.2.3) and R3-173117 (10.10.2.4) treated together with R3-172761

The document was rejected.
Replaced by

10.10.1.6 Mobility Aspects

R3-172669 **Inter DU Mobility** ***Vodafone GmbH***
Replaces

Observation 1: whether or not security keys change at inter-DU handover should be discussed and confirmed with SA 3 and RAN 2.
Observation 2: Whether or not the non-delivered PDCP packets can be delivered in the new DU using the security keys for the old DU should be checked with SA3 and RAN 2.
Observation 3: intER Control Plane Entity, intRA CU-User Plane entity mobility, can trigger unnecessary signalling within the core network. This should be discussed with SA2.

Proposal 1: an LS should be drafted to SA3 and RAN2 on the handling of cipher keys and data flows at DU change.

Proposal 2: an LS should be drafted to SA2 to discuss the handling of inter-control plane entity, intra user plane entity handover.

The document was noted.
Replaced by

R3-172922 **Discussion on Inter-DU Mobility and Intra-DU Mobility** ***ZTE Corporation, China Telecom***
Replaces

The document was noted.
Replaced by

R3-172923 **Inter-DU Mobility and Intra-DU Mobility for TS38.401** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

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R3-172762 **Inter-gNB-DU Mobility procedure** ***Nokia, Nokia Shanghai Bell***
Replaces

conclusion: agreement:
MOBILITY FLOWS TO BE CAPTURED ("working" pCR to 38.401):
I) Intra-CU NR Mobility
a) inter-gNB-DU mobility
b) intra-gNB-DU inter-cell mobility (FFS)

II) EN-DC Mobility
a) inter-gNB-DU mobility using MCG SRB
b) inter-gNB-DU mobility using SCG SRB (FFS)

See R3-173407

The document was postponed.
Replaced by

R3-173142 **Discussion on Intra-DU Inter-Cell Mobility** ***CMCC***
Replaces

The document was noted.
Replaced by

R3-173143 **Text proposal for 38.401 on Intra-DU Inter-Cell Mobility** ***CMCC***
Replaces

The document was not treated.
Replaced by

R3-173232 **Xn handover in disaggregated gNB** ***Ericsson***
Replaces

The document was noted.
Replaced by

R3-172958 **C-RNTI allocation in mobility procedure** ***Samsung***
Replaces

The document was noted.
Replaced by

R3-172959 **Text proposal for TS38.473 on C-RNTI allocation in mobility procedure** ***Samsung***
Replaces

The document was postponed.
Replaced by

R3-173407 **pCR to 38.401 on Mobility flows with CU-DU split** ***Nokia***

The document was agreed.

R3-173028 **Stage 2 signalling message flow for EN-DC and CU-DU architecture** ***NEC***
Replaces

treated in connection with R3-172948 in AI 10.10.1.3

The document was noted.
Replaced by

R3-173233 **SgNB addition in disaggregated gNB** ***Ericsson***
Replaces

treated in connection with R3-172948 in AI 10.10.1.3
Ericsson: dotted lines jkust for illustration as not visible from external interfaces

The document was noted.
Replaced by

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R3-173140 **Considerations on centralized retransmission of lost PDUs** ***CMCC***
Replaces

The document was noted.
Replaced by

R3-173141 **Text proposal for 38.401 on centralized retransmission of lost PDU** ***CMCC***
Replaces

The document was not treated.
Replaced by

R3-172956 **Intra-CU/Inter-DU mobility and lost packet retransmission** ***Samsung***
Replaces

The document was noted.
Replaced by

R3-172957 **Text proposal for TS38.401 on intra-CU/inter-DU mobility and lost packet retransmission** ***Samsung***
Replaces

The document was postponed.
Replaced by

R3-173002 **Issues on mechanism of centralized retransmission of lost PDUs** ***LG Electronics***
Replaces

The document was noted.
Replaced by

R3-173235 **Mechanism for fast retransmission of lost PDUs** ***Ericsson, AT&T***
Replaces

The document was noted.
Replaced by

R3-172768 **Retransmission procedure in radio link outage** ***Nokia, Nokia Shanghai Bell***
Replaces

Huawei: has a related Tdoc in R3-173114 (AI 10.10.2.5)
NTT: has a related Tdoc in R3-173316 (AI 10.8.3.2)
ZTE has a related Tdoc in R3-172936 (AI 10.8.3.2)
Qualcomm: has a related Tdoc in R3-172747 (AI 10.8.3.2)

conclusion:
- working assumption:
Address multi-connectivity scenario with UP solution
- agreement:
The status of radio link outage is decided in the DU.

The document was noted.
Replaced by

R3-172769 **TP of Retransmission procedure in radio link outage (TS 38.401)** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-172770 **TP of Retransmission procedure in radio link outage (TS 38.475)** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

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R3-172771 **[DRAFT]LS on retransmission mechanism in radio link outage** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-173104 **Discussions on mobility procedures over F1** ***Huawei***
Replaces

The document was noted.
Replaced by

R3-173105 **TP on Mobility procedures to 38.401** ***Huawei***
Replaces

The document was postponed.
Replaced by

10.10.1.7 Paging

R3-173087 **Consideration on Paging Message Generation and Delivery over F1 interface** ***China Telecommunications***
Replaces

The document was not treated.
Replaced by

R3-172998 **Discussion on paging function** ***LG Electronics***
Replaces

The document was not treated.
Replaced by

R3-173266 **Support of paging in F1** ***Qualcomm Incorporated***
Replaces

The document was not treated.
Replaced by

R3-173234 **Paging in disaggregated gNB** ***Ericsson***
Replaces

The document was not treated.
Replaced by

R3-172782 **Paging management** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-172783 **TP of Paging management (TS 38.401)** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-172784 **TP of Paging management (TS 38.473)** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-172931 **Discussion on paging over F1** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

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R3-172932 **Paging over F1 for TS38.401** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-172933 **Paging over F1 for TS38.470** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-172934 **Paging over F1 for TS38.473** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-173102 **Paging delivery over F1** ***Huawei***
Replaces

The document was not treated.
Replaced by

10.10.1.8 Cell Setup

DU is pre-configured with basic connection parameters (e.g. CU address); F1 setup is triggered subsequently
For initial cell startup, CU decides whether DU is allowed to broadcast.
DU is allowed to announce that one or more of its cells are unavailable (e.g. due to hardware failure) over F1-C.

R3-172785 **Further discussion on cell management** ***Nokia, Nokia Shanghai Bell, NTT DOCOMO, Vodafone, KT, Fujitsu***

Replaces

Observation 1: Parameters to be provided to the gNB-DU, possible use case for cell release, and possible start up procedure should be clarified if cell management is realized by F1-C.
Observation 2: gNB-CU should control Cell (re)configuration (cell parameters) of the gNB-DU including identifiers (e.g., PCI), parameters which require multi-carrier/cell coordination (e.g., DL and UL transmission power control parameters) and SON parameters (e.g., RACH parameters).
Observation 3: There are certain use cases where gNB-CU should control cell release/deactivation.
Proposal 1: It is proposed to support Cell management function over F1-C, including Cell setup/release, Cell (re)configuration. Those should be separately supported from F1 Setup procedure.
Proposal 2: It is proposed to agree on the TP for TS 38.401 and TS 38.473 provided in [2] and [3], respectively.
Observation 4: Following procedures would run for cell start up after F1 pre-operational state.
- F1 setup procedure
- Cell management procedure
- System information management

Tdoc was treated in connection with R3-172926 under AI 10.10.4
RAN3 chair: offline discussion (QAM model, how to configure cell parameters (which ones) via F1, separation (if any) of F1 setup and cell management) to come to a way forward or an agreeable pCR

Vodafone: CU and DU O&Ms should not be separate boxes

The document was revised.
Replaced by R3-173353

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R3-173353 **Further discussion on cell management** ***Nokia, Nokia Shanghai Bell, NTT DOCOMO, Vodafone, KT, Fujitsu***

Replaces R3-172785

treated in connection R3-173067 (AI 10.10.2.1)

Proposal 1: gNB-DU and its cells are configured by OAM.
Proposal 2: Come back in the next meeting and try to decide the start-up flow between the two options described above.

conclusions:
- agreement: gNB-DU and its cells are configured by OAM
- discussion and selection between two options (of R3-173353) will continue:
cell actiovation via F1 setup vs. F1 setup + additional procedure
- agreement: F1AP shall support the update of configuration information
between the CU and/the DU (direction if FFS)
- agreement: F1AP support for configuration information update shall use Class 1 procedure

The document was endorsed.

R3-172786 **TP of Cell management (TS 38.401)** ***Nokia, Nokia Shanghai Bell, NTT DOCOMO, Vodafone, KT, Fujitsu***

Replaces

The document was not treated.
Replaced by

R3-172787 **TP of Cell management (TS 38.473)** ***Nokia, Nokia Shanghai Bell, NTT DOCOMO, Vodafone, KT, Fujitsu***

Replaces

The document was not treated.
Replaced by

R3-172805 **TP for 38.401 on cell setup procedure** ***CATT***
Replaces

Proposal: It is proposed to adopt option 1 (CU active the cells via F1 setup response message) to support cell setup procedure.

Tdoc was treated in connection with R3-172926 under AI 10.10.4

The document was postponed.
Replaced by

R3-173116 **Discussions on cell setup procedure over F1** ***Huawei***
Replaces

Observation 1: DU could be configured with basic information for initial cell startup by OAM.
Observation 2: CU's F1 setup response could be served as an implicit confirmation/permission for the DU to broadcast, i.e. implicitly indicate to DU to provide radio coverage.
Observation 3: It is up to network/operator strategy if CU should perform additional check upon reception of DU's F1 setup request
Proposal 1: Initial cell startup is done via F1 setup procedure.
Proposal 1bis: The basic parameters of initial cell startup is configured by OAM.
Proposal 2: In order to allow DU to announce cell availability over F1-C, it is proposed to introduce a new F1 procedure, DU configuration update to CU.
Proposal 3: It is proposed RAN3 agree the text proposal in Annex part to 38.470

Tdoc was treated in connection with R3-172926 under AI 10.10.4

The document was postponed.
Replaced by

10.10.1.9 Others

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R3-173091 **Discussion on C-RNTI management between CU and DU** ***China Telecommunications***
Replaces

The document was not treated.
Replaced by

R3-172927 **Discussion on CU-DU Node synchronization** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-172928 **CU-DU Node synchronization for TS38.401** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-172929 **CU-DU Node synchronization for TS38.470** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-172930 **CU-DU Node synchronization for TS38.473** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-172937 **Further consideration on SI (Re)configuration** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-172939 **SI (Re)configuration for TS38.401** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-172940 **SI (Re)configuration for TS38.470** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-172942 **SI (Re)configuration for TS38.473** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

10.10.2 Function Definition

10.10.2.1 F1 Setup

F1 setup initiated from the DU (success/fail)
Open issues:
1) Information to be carried over F1 setup
2) Need for CU (and/or DU) config update procedure

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R3-172997 **Open issues for F1 setup procedure** ***LG Electronics***
Replaces

Proposal 1: The setup of SRB0 in the radio interface is needed during the F1 setup.
Proposal 2: Further discussion of which option is more beneficial is needed.
Proposal 3: The SIs and the necessary information for broadcasting SIs should be carried over F1 setup to the gNB-DU.

The document was noted.
Replaced by

R3-172806 **TP for 38.473 on F1 setup procedure** ***CATT,CATR***
Replaces

The document was postponed.
Replaced by

R3-172905 **TP of F1 Setup (TS 38.473)** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was postponed.
Replaced by

R3-172910 **Left open issues on F1 interface management** ***ZTE Corporation, China Unicom***
Replaces

Prposal 1: gNB-DU/gNB-CU configuration update procedure needs to be introduced in order to keep the application level configuration data alignment between gNB-CU and gNB-DU.
Prposal 2: The gNB-DU ID over F1 interface helps gNB-CU recognize and manage the multiple CU-DU connections easily, and make it simple to mantain the CU-DU-NR cell relationship both in RAN node and OAM system.
Prposal 3: The above configuration data need to be exchanged over F1 interface during F1 Setup Procedure.
Prposal 4: When the above configuration data need to be updated, the gNB-CU/gNB-DU Configuration Update Procedure will be triggered.

The document was noted.
Replaced by

R3-172911 **Update on F1 interface management for TS38.470** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-172912 **Update on F1 interface management for TS38.473** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-173067 **Discussions on F1 interface management** ***Huawei***
Replaces

RAN3 chair: to be discussed
Information to be carried at F1 Setup/Resonse?
Whether CU/DU Cinfig Update is needed?

Nokia: can present related come back Tdoc R3-173353 (AI 10.10.1.8)

The document was noted.
Replaced by

R3-173100 **TP on F1 interface management procedures to 38.470** ***Huawei***
Replaces

The document was not treated.
Replaced by

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R3-173101 **TP on F1 interface management procedures to 38.473** ***Huawei***
Replaces

The document was not treated.
Replaced by

10.10.2.2 UE Context Management

Definition of UE context in CU/DU scope…

R3-172763 **F1 UE context management** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was noted.
Replaced by

R3-172764 **TP of F1 UE context management (TS 38.401)** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-172765 **TP of F1 UE context management (TS 38.473)** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-172960 **UE context setup procedure** ***Samsung***
Replaces

Proposal 1: RAN3 is kindly asked to agree with the above UE context setup procedure.
Proposal 2: The information related to UE ID, bearer and serving cell(s) can be considered as the UE context.
Proposal 3: RAN3 is kindly asked to agree with the above UE context setup failure procedure.

The document was noted.
Replaced by

R3-172961 **Text proposal for TS38.401 on UE context setup** ***Samsung***
Replaces

The document was not treated.
Replaced by

R3-172962 **Text proposal for TS38.470 on UE context setup** ***Samsung***
Replaces

The document was not treated.
Replaced by

R3-172963 **Text proposal for TS38.473 on UE context setup** ***Samsung***
Replaces

The document was not treated.
Replaced by

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R3-172814 **Discussion on UE Context Management function** ***CATT***
Replaces

Proposal 1: UE context management procedure could be used to support simultaneous transmission from two DUs
Proposal2: UE Context management procedure can also be used to support Option3/3a/ 3x for tight interworking between NR and E-UTRA case. In this case, the legacy LTE QoS framework will be applied.
The TP which capture the above procedure is provided in [2]
Proposal 3: UE context management procedure will include UE Context Setup, UE Context Modify and UE Context Release procedures, the corresponding stage 3 TP is provide in [3].

conclusion: agreements:
- Introduce Class F1AP UE context setup procedure (name is FFS) initiated by the gNB-CU.

- INFO TO BE INCLUDED IN F1AP UE CTXT SETUP REQ:
ID Info:
gNB-CU UE F1AP ID
C-RNTI

Bearer info:
SRB:
SRB ID

DRB:
DRB ID
DRB QoS profile (FFS)
GTP Tunnel Endpoint
E-UTRAN QoS
Flow-level QoS profile (FFS)
Flow-to-DRB mapping (FFS)

- F1AP rapporteur will provide appropriate stage 2/3 CRs for next RAN3 meeting reflecting agreements

The document was noted.
Replaced by

R3-172815 **TP for 38.401 on UE Context Management function** ***CATT***
Replaces

The document was not treated.
Replaced by

R3-172816 **TP for 38.473 on UE Context Management function** ***CATT***
Replaces

The document was not treated.
Replaced by

R3-172964 **UE context modification procedure** ***Samsung***
Replaces

The document was noted.
Replaced by

R3-172965 **Text proposal for TS38.401 on UE context modification** ***Samsung***
Replaces

The document was revised.
Replaced by R3-173410

R3-173410 **Text proposal for TS38.401 on UE context modification** ***Samsung***
Replaces R3-172965

will include also aspects of R3-172969;
conclusion: multiple versions of R3-173410 exist

The document was revised.
Replaced by R3-173424

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R3-173424 **Text proposal for TS38.401 on UE context modification** ***Samsung***
Replaces R3-173410

The document was revised.
Replaced by R3-173433

R3-173433 **Text proposal for TS38.401 on UE context modification** ***Samsung***
Replaces R3-173424

The document was agreed.

R3-172966 **Text proposal for TS38.470 on UE context modification** ***Samsung***
Replaces

The document was not treated.
Replaced by

R3-172967 **Text proposal for TS38.473 on UE context modification** ***Samsung***
Replaces

The document was not treated.
Replaced by

R3-173106 **UE context management on F1** ***Huawei***
Replaces

conclusions:
- working assumptiion: Use UE Context Management procedure (name and definition FFS) to also manage bearer information
- agreement: Both CU-initiated and DU-initiated modification procedures are needed
- agreement: Procedures shall be class 1
- agreement:
introduce 2 UE Context Release procedures (name and class FFS):
1. DU-initiated release "required" (class 2)
2. CU-initiated release command (class 1)
- agreement: F1AP rapp to provide appropriate St2/3 CRs reflecting agreements

The document was noted.
Replaced by

R3-173107 **TP for UE Context Management over F1 to 38.401** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173108 **TP on UE Context management over F1 to 38.470** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173109 **TP on UE Context Management over F1 to 38.473** ***Huawei***
Replaces

The document was not treated.
Replaced by

10.10.2.3 Bearer Management

R3-173005 **Discussion on bearer management function** ***LG Electronics***
Replaces

The document was not treated.
Replaced by

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R3-172766 **TP of Bearer management (TS 38.473)** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-172918 **Discussion on UE Initial Access and UE RB Context management** ***ZTE Corporation***
Replaces

treated together with R3-172761 (AI 10.10.1.5)

The document was noted.
Replaced by

R3-172919 **UE radio bearer management over F1 interface for TS38.401** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-172920 **UE radio bearer management over F1 interface for TS38.470** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-172921 **UE radio bearer management over F1 interface for TS38.473** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-172968 **Bearer management on supporting PDCP duplication in CA case** ***Samsung***
Replaces

The document was not treated.
Replaced by

R3-172969 **Text proposal for TS38.401 on supporting PDCP duplication** ***Samsung***
Replaces

treated in connection with R3-173128
conclusion: merged into R3-173410

The document was merged.
Replaced by

R3-173110 **Bearer Management over F1** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173111 **TP for Bearer Management over F1 to 38.401** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173112 **TP for Bearer Management over F1 to 38.470** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173113 **TP for Bearer Management over F1 to 38.473** ***Huawei***
Replaces

The document was not treated.
Replaced by

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10.10.2.4 RRC Message Transfer

R3-172913 **RRC message transmission over F1 interface for TS38.470** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-172914 **RRC message transmission over F1 interface for TS38.473** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-172807 **Discussion on RRC message transfer** ***CATT***
Replaces

The document was noted.
Replaced by

R3-172808 **TP for 38.401 on RRC message transfer** ***CATT***
Replaces

The document was agreed.
Replaced by

R3-172809 **TP for 38.473 on RRC message transfer** ***CATT***
Replaces

The document was not treated.
Replaced by

R3-172767 **TP of RRC message transfer (TS 38.473)** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-173004 **Discussion on C-RNTI management in gNB-DU** ***LG Electronics***
Replaces

The document was noted.
Replaced by

R3-173198 **Issues on RRC-INACTIVE state in CU-DU split** ***LG Electronics***
Replaces

Huawei: we have a related Tdoc in R3-173133 (AI 10.10.2.5)
NTT: we have a related Tdoc in R3-173294 (AI 10.10.1.4)

The document was noted.
Replaced by

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R3-173117 **RRC message transfer** ***Huawei***
Replaces

treated together with R3-172761 (AI 10.10.1.5)

Proposal 1: A general non-UE associated class 2 F1AP procedure INITIAL UL RRC MESSAGE TRANSFER is used to deliver the RRCConnectionRequest to the CU.
Proposal 2: Two general UE associated class 2 F1AP procedures UL/DL RRC MESSAGE TRANSFER are used to transfer the UE dedicated RRC messages between the CU and the DU.
Proposal 3: The 'first message' INITIAL UL RRC MESSAGE TRANSFER and the 'first response message' DL RRC MESSAGE TRANFER at F1AP are used to establish the F1AP UE logical signaling connection.

Ericsson: would be happy to agree all the proposals of this Tdoc
Nokia: why same procedure for UE-associated and not associated?
RAN3 chair: Initial is not UE associated, the other 2 are UE associated
Nokia: can agree with proposal 1 and 2 but not proposal 3

conclusion:
working assumption:
Non-UE associated class 2 F1AP procedure INITIAL UL RRC MESSAGE TRANSFER is used to deliver the RRCConnectionRequest to the CU; this message carries C-RNTI.

agreement:
- Two UE associated class 2 F1AP procedures UL/DL RRC MESSAGE TRANSFER are used to transfer the UE dedicated RRC messages between the CU and the DU.

The document was noted.
Replaced by

R3-173118 **TP on RRC message transfer over F1 to 38.470** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173119 **TP on RRC message transfer over F1 to 38.473** ***Huawei***
Replaces

The document was not treated.
Replaced by

10.10.2.5 Others

R3-172775 **Load management** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-172776 **TP of Load management (TS 38.401)** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-172777 **TP of Load management (TS 38.473)** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-172778 **[DRAFT]LS on load management in gNB-CU/DU configuration** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

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R3-172779 **gNB-DU Measurement Reporting** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-172780 **TP of gNB-DU Measurement Reporting (TS 38.401)** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-172781 **TP of gNB-DU Measurement Reporting (TS 38.473)** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-173114 **Fast retransmission of lost PDUs** ***Huawei***
Replaces

The document was noted.
Replaced by

R3-173115 **TP of fast retransmission of lost PDUs to 38.401** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173127 **L1/L2 configuration for gNB-DU** ***Huawei***
Replaces

The document was noted.
Replaced by

R3-173128 **PDCP duplication for CU-DU** ***Huawei***
Replaces

Proposal 1 it is proposed RAN3 agree gNB-CU to perform PDCP duplication.
Proposal 2 For CA case, the transmission of duplicated PDCP PDUs from one SRB should be distinguished by gNB DU over F1AP message.
Proposal 3 For CA case, it is proposed to setup two F1-U tunnels to distinguish duplicated PDCP PDUs of one DRB bearer, and gNB should be aware of the PDCP duplications for a DL DRB.

Nokia: agrees with all proposals

conclusions: agreements:
- gNB-CU manages PDCP duplication
- For intra-DU CA, two F1-U tunnels are set up to distinguish duplicated PDCP PDUs belonging to the same DRB (FFS for UL).

The document was noted.
Replaced by

R3-173130 **Discussions on Introduction of UE pair ID over F1** ***Huawei***
Replaces

Nokia: alllows one DU to connect to multiple CUs which is breaking the principle
Ericsson: supports Huawei otherwise we restrict implementation
ZTE: a pair of IDs is needed

conclusion: It is ffs whether to introduc DU UE F1AP ID.

The document was rejected.
Replaced by

Petitioners' Exhibit 1012
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R3-173133 **Support RRC inactive mode for CU-DU** ***Huawei***
Replaces

treated in connection with R3-173198 (AI 10.10.2.4)

conclusion: agreement:
use F1AP message, e.g. UE CONTEXT RELEASE, for gNB-CU to inform gNB-DU to release UE context when UE enters into RRC_INACTIVE mode

The document was noted.
Replaced by

10.10.3 Other RRC Aspects

Other RRC aspects (if any) not covered in AI 10.10.2.4

10.10.4 OAM Aspects

Possible Startup flow…

R3-173307 **gNB-DU management function** ***Small Cell Forum***
Replaces

RAN3 chair: first time that we see a revised incoming LS

The document was revised.
Replaced by R3-173312

R3-173312 **gNB-DU management function** ***Small Cell Forum***
Replaces R3-173307

presented by RAN3 chair
conclusion: no LS answer

The document was noted.
Replaced by

R3-172926 **Discussion on OAM in CU-DU deployment** ***ZTE Corporation, China Unicom***
Replaces

Proposal1: It is proposed that gNB-DU should be managed directly by OAM.
Proposal2: It is proposed that RAN3 should choose one configuration model and consider the influence on F1 interface.
Proposal3: It is proposed that the cell activation should be executed once the cell configuration is completed.

Nokia: has a corresponding Tdoc in R3-172785
Huawei: has a corresponding Tdoc in R3-173116

Ericsson: on start-up we are close, on orchestration more discussion may be needed

CATT: has a corresponding Tdoc in R3-172805

The document was noted.
Replaced by

R3-173236 **Startup flow** ***Ericsson***
Replaces

The document was noted.
Replaced by

10.10.5 Others

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R3-173150 **Liaison letter to 3GPP RAN3** ***IEEE 802.1, Ericsson***
Replaces

conclusion: no LS answer

The document was replied to.
Replaced by

R3-173203 **Discussion on the LS from IEEE 802.1** ***Ericsson***
Replaces

Observation 1: The ongoing work in P802.1CM is highly relevant for RAN3.
Observation 2: Some transport requirements for the high layer split (option 2) were identified during the NR SI phase and are reported in TR 38.801.
Proposal 1: RAN3 is kindly asked to agree with the reply LS in R3-173204 [2].

The document was noted.
Replaced by

R3-173204 **Draft Reply to liaison letter from IEEE 802.1 (To: IEEE 802.1, Cc:-)** ***Ericsson***
Replaces

NEC: there is some progress in other WGs as well so we may provide some more up-to-date information
Huawei: but we clarified this is a SI
Ericsson: we provided here the information that is relevant rather then just pointing to a TR and they do not know where to look
RAN3 chair: we could add "and represent the view in RAN3 at the time the TR 38.801 was agreed"
Nokia: we should remove the sentence "However, it is believed ..."; is higher layer split helpful for their work since we work on lower layer split;
Ericsson: they were explicitly asking for this
NEC: any urgency to send this now?
Ericsson: as this is on higher layer split, we should send it now
Huawei: either we send it now or we do not send it
Nokia: [1] does not exist
conclusion: addition of one sentence and removal of another one (see above), remove the [1] multiple times

The document was revised.
Replaced by R3-173354

R3-173354 **Reply to R3-173150 liaison letter from IEEE 802.1 (to: IEEE 802.1, cc: -; contact: Ericsson)** ***RAN3***
Replaces R3-173204

The document was approved.

10.11 Stage 2 Updates

NB This AI is for rapporteurs to provide baseline CRs and Rapporteur Updates (if needed) as input for the meeting.

10.11.1 TS 38.300

R3-172856 **TS 38.300 – latest endorsed version (V0.6.0)** ***Nokia (rapporteur)***
Replaces

Nokia: this is provided for information to RAN3 (TS is under RAN2 control), it was endorsed in RAN2

The document was noted.
Replaced by

R3-173134 **TS 38.300 restructuring of RAN3 sections** ***Nokia, Nokia Shanghai Bell***
Replaces

Ericsson: nodes providing E-UTRA coverage needs further discussion

The document was rejected.
Replaced by

Petitioners' Exhibit 1012
Nokia of America Corp., et al. v. KT Corporation, et al.
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R3-172657 **Discussion on DC Relevant Stage2 Updates Due to TS37.340** ***ZTE Corporation***
Replaces Discussion, Rel-15,NR_newRAT

The document was not treated.
Replaced by

R3-172658 **Correction of TS38.300 DC Relevant Updates Due to TS37.340** ***ZTE Corporation***
Replaces pCR, Rel-15,NR_newRAT

The document was not treated.
Replaced by

R3-172661 **TS38.300 Update for Section 14 Network Interfaces** ***ZTE Corporation***
Replaces Discussion, Rel-15,NR_newRAT

The document was not treated.
Replaced by

R3-172662 **Correction of TS38.300 Section 14 Network Interfaces** ***ZTE Corporation***
Replaces pCR, Rel-15,NR_newRAT

The document was not treated.
Replaced by

R3-172757 **Documentation of multi-network node Bs** ***Interdigital Asia LLC***
Replaces

The document was not treated.
Replaced by

R3-172908 **Stage2 update for TS38.300** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-172909 **Stage2 ANR TP for TS38.300** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-173038 **Discussion on Node Identifiers** ***Huawei***
Replaces

wrong agenda item, see R3-173095 (AI10.5.3) instead

The document was withdrawn.

10.11.2 TS 37.340

R3-172688 **Latest TS37.340 Rapporteur** ***ZTE Corporation***
Replaces DraftTS, Rel-15,NR_newRAT

TR is under RAN2 control and just for information here

The document was noted.
Replaced by

10.11.3 TS 38.401 Architecture description

R3-173025 **Proposed Rapporteur update to TS 38.401** ***NEC***
Replaces

MCC: will correct the Tdoc type from "discussion" to "pCR"
Huawei: editor's note in 6.4 should be reworded
NEC: is addressed in R3-173026

The document was agreed.
Replaced by

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R3-173026 **solving some FFS in 38.401** ***NEC***

Replaces

ZTE: proposal 6 not acceptable, wants to keep ffs
Nokia: proposal 2: further changes needed
Ericsson: would like to keep ffs for proposal 1 and has a paper on this

conclusion: all changes of the pCR are ok except proposal 1/2/6

The document was revised.

Replaced by R3-173317

R3-173317 **solving some FFS in 38.401** ***NEC***

Replaces R3-173026

The document was agreed.

R3-173263 **Update to TS38.401 reflecting decissions from NR AdHoc, Qingdao, China, 27-29 June 2017** ***Deutsche Telekom, Telecom Italia, AT&T, SK Telecom, KT***

Replaces

Deutsche Telekom: also NTT DOCOMO and T-Mobile US are supporting this document
Ericsson: overall architecture shows just CP, way gNB should be shown to be discussed
Nokia: no need to change figure
Samsung: maybe we can have a UP figure
Huawei: yes, UP is more complex
ZTE: spirit of this paper was already agreed at last meeting, we just need to decide how to properly document this in the figure, line between 2 gNB can be added
Telecom Italia: intention was to show that CU-DU split is not the only possibility
RAN3 chair: we will come back on this but come up with something that is agreeable to all

The document was agreed.

Replaced by R3-173356

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R3-173356 **Update to TS38.401 reflecting decissions from NR AdHoc, Qingdao, China, 27-29 June 2017** ***Deutsche Telekom, Telecom Italia, AT&T, SK Telecom, KT, NTT DOCOMO, T-Mobile-US, Verizon, Nokia, Nokia Shanghai Bell, ZTE, Samsung, Kathrein, Orange, KPN, China Mobile, BT***

Replaces R3-173263

Ericsson: has an own Tdoc in R3-173418; Nokia proposed to remove the figure as it is controversial and that would be an acceptable compromise for us
Nokia: suggests to remove figure to avoid inconsistency with the text that we have checked (38.300, 38.401); topic is not affecting other work
Telecom Italia: we have a figure also in 38.401 and other specs are not covering F1; removing the figure would be really the last solution
Huawei: we had a long 6 months debate on this and we encourage all companies to close this topic
Interdigital: is supporting Nokia and Huawei
Vodafone: the only difference of the figures is where the Xn terminates but was this not yet covered?
NTT DOCOMO: we would not like to remove it but as a last solution we could remove it
Samsung: supports Vodafone
RAN3 chair: suggests to agree the pCR and to minute the concerns from companies
Ericsson: Xn-U could terminate differently so we would causing ambiguity
RAN3 chair: ok, then take the last take out the figure if it causing so much trouble and ambiguity
Deutsche Telekom: we did not want to remove the figure, we want to modify it; this decision will also affect other areas of our work like signalling flows
Telecom Italia: concerned about the way forward that without architecural picture the spec is incomplete and this needs to be solved at the next meeting;
AT&T: we suggest to take a working agreement to accept R3-173356;
Huawei: we could have a simplified picture to address Telecom Italia concern
Ericsson: we should not mix internal and external architecture, we had a couple of proposals (remove fig., show just the internal structure)
RAN3 chair: R3-173356 agreement was proposed and we need to make sure that we do not talk about ambiguity, interworking issues, dotted/dashed lines in the future again so that we do not waste time with this anymore;
Ericsson: suggests to agree R3-173263 instead of R3-173356

conclusion: R3-173263 is agreed and R3-173356 is not agreed
RAN3 chair: it is clear to me that no common understanding of this issue can be reached, continueing this discussion is considered a pointless exercise and a waste of valuable meeting time therefore no further discussion about this is to be expected

The document was rejected.

R3-173418 **Update to TS38.401 reflecting decisions from RAN3 NR AdHoc #2, and discussions from RAN3#97** ***Ericsson***

The document was postponed.

R3-173054 **TP of NG-RAN architecture – 38.401** ***China Telecommunications***
Replaces

The document was not treated.
Replaced by

R3-173058 **TP for 38.401** ***China Telecommunications***
Replaces

The document was not treated.
Replaced by

R3-172659 **Correction of TS38.401 DC Relevant Updates Due to TS37.340** ***ZTE Corporation***
Replaces pCR, Rel-15,NR_newRAT

The document was not treated.
Replaced by

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R3-172916 **Update on Flow control over F1 interface for TS38.401** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

R3-172826 **Central RRM functionality** ***IAESI, Thales, Fairspectrum, VTT***
Replaces

The document was not treated.
Replaced by

10.11.4 TS 38.410/420/470 NG/Xn/F1 General aspects and principles

R3-172891 **Resubmission of baseline TS 38.410** ***Nokia, Nokia Shanghai Bell***
Replaces

Ericsson: there is no change in the spec
Hauwei: we agreed in the past that there is no need to resubmit spec version as input to the next meeting
Nokia: is August version
conclusion: no change of the spec, just date/cover page change, TS version is just noted (not needed)

The document was noted.
Replaced by

R3-172892 **Rapporteur's update for TS 38.410** ***Nokia, Nokia Shanghai Bell***
Replaces

Ericsson: section 4.1 needs to be updated (node names in fig.)
Nokia: or referring to 38.300 may be enough?
Samsung: fig. is useful
ZTE: supports to have the figure
Ericsson: section 5.2: "e.g." as well needs to be clarified
RAN3 chair: we will come back on this in revision R3-173318

The document was revised.
Replaced by R3-173318

R3-173318 **Rapporteur's update for TS 38.410** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172892

The document was agreed.

R3-172893 **Text Proposal for procedures for TS 38.410** ***Nokia, Nokia Shanghai Bell***
Replaces

Ericsson: list is 40 sections long including subsections, most of the text will appear also in stage 3
Nokia: are placeholders for highlevel interactions as agreed last time
Ericsson: do you forsee so many interactions?
Nokia: just followed agreements of last meeting
Samsung: if really also in stage 3, then just give the list of procedures
RAN3 chair: so we need to come back on this

The document was revised.
Replaced by R3-173319

R3-173319 **Text Proposal for procedures for TS 38.410** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172893

The document was agreed.

R3-172742 **UE capablity Management (P-CR 38.410)** ***Qualcomm Incorporated***
Replaces

RAN3 chair: let's focus on rapporteur's inputs

The document was not treated.
Replaced by

Petitioners' Exhibit 1012
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R3-172733 **Rapporteur changes for TS 38.420** ***Qualcomm Incorporated***
Replaces

ZTE: section 6.2.2: alignment with other specs needed
Ericsson: explicit definition expected?
Nokia: 36.300 describes what an eNB is, no need for new definitions and abbreviations needed
MCC: each spec shall explain the abbreviations and definition that is uses but instead of repeating text for this that you have in another spec you can add a reference to this spec and clarify that further abbreviations/definitions are provided in this spec
RAN3 chair: we need to come back on this

The document was revised.
Replaced by R3-173320

R3-173320 **Rapporteur changes for TS 38.420** ***Qualcomm Incorporated***
Replaces R3-172733

The document was agreed.

R3-172734 **Introduction of functions for TS 38.420** ***Qualcomm Incorporated***
Replaces

Ericsson: needs to be discussed together with the come back on the 38.410 pCR
Qualcomm: these are functions
Nokia: for functions we have a list but for procedures we could have subsection approach as placeholders (as also indicated by Ericsson)
RAN3 chair: we will come back on this

The document was revised.
Replaced by R3-173321

R3-173321 **Introduction of functions for TS 38.420** ***Qualcomm Incorporated***
Replaces R3-172734

The document was agreed.

R3-172660 **Correction of TS38.420 DC Relevant Updates Due to TS37.340** ***ZTE Corporation***
Replaces pCR, Rel-15,NR_newRAT

The document was not treated.
Replaced by

R3-173120 **Updates to 38.470** ***Huawei***
Replaces

Huawei: needs to be aligned with TS 38.410/TS 38.420

The document was revised.
Replaced by R3-173324

R3-173324 **Updates to 38.470** ***Huawei***
Replaces R3-173120

The document was agreed.

10.11.5 Others

10.12 Stage 3 Updates

NB This AI is for rapporteurs to provide baseline CRs and Rapporteur Updates (if needed) as input for the meeting. This includes Rapporteur CRs to increase to 4 Tbit/s the maximum bit rate values signaled over S1, X2, F1 (Xn, NG impacts FFS), as agreed at the June 2017 AdHoc.

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R3-173040 **Support 4T bit/s in S1AP/X2AP** ***Nokia, Nokia Shanghai Bell, Ericsson***

Replaces

Observation: The procedure/message/IEs related to LTE CIOT and Sidelink/V2X will not be affected.
Proposal: Discuss and Agree the proposed method. In case the proposed method is agreeable, discuss and agree the proposed changes to S1AP/X2AP.

The document was noted.

Replaced by

R3-173041 **Support 4T bps in S1AP**
Nokia, Nokia Shanghai Bell
Replaces

Huawei: can we make IE extendable?
RAN3 chair: it is already extended
Ericsson: add "..." at the end
Nokia: suggests to discuss this offline
Huawei: linked to a previous max data rate LS
Nokia: yes
conclusion: adding ... at the end for new IE and new protocol IE ID, and also align ASN.1 with R3-173066 change, check max GBr/aggregated but rate for extend IE

The document was revised.

Replaced by R3-173322

R3-173322 **Support 4T bps in S1AP**
Nokia, Nokia Shanghai Bell
Replaces R3-173041

conclusion: will be included in baseline CR

The document was endorsed.

R3-173066 **Support 4T bps in X2AP** ***Ericsson***
Replaces

Ericsson: same changes as for R3-173041 may be needed and there seems to be a bit different ASN.1 approach
conclusion: adding ... at the end for new IE and new protocol IE ID, and also align ASN.1 with R3-173041 change, check max GBr/aggregated but rate for extend IE

The document was revised.

Replaced by R3-173323

R3-173323 **Support 4T bps in X2AP** ***Ericsson***
Replaces R3-173066

conclusion: will be included in baseline CR

The document was endorsed.

10.12.1 TS 38.411/421/471 NG/Xn/F1 Layer 1

R3-173271 **Draft TS 38.471 (F1 layer 1) v0.2.0** ***Fujitsu***
Replaces

just for information (no need to resubmit a spec)

The document was noted.

Replaced by

10.12.2 TS 38.412/422/472 NG/Xn/F1 Signaling transport

R3-172715 **TS 38.472 v0.2.1** ***Interdigital Asia LLC***
Replaces

The document was agreed.

Replaced by

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R3-173305 **Draft TS 38.412 v0.1.0** ***NTT DOCOMO***
Replaces

The document was withdrawn.
Replaced by

R3-173306 **Draft TS 38.422 v0.1.0** ***NTT Docomo***
Replaces

The document was withdrawn.
Replaced by

10.12.3 Application Protocol

10.12.3.1 TS 38.413 NG Application Protocol (NGAP)

R3-172862 **TS 38.413 V0.2.1** ***Nokia (rapporteur)***
Replaces

no change compared to last meeting, is just a resubmission

The document was noted.
Replaced by

R3-172863 **TP for TS 38.413 with rapporteur updates** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was agreed.
Replaced by

R3-172894 **NGAP protocol structure with AMF/SMF separation** ***Nokia, Nokia Shanghai Bell***
Replaces

Proposal 1: It is proposed to specify the SMF interaction with the NG-RAN for the session management via the AMF transparent relay of SM information, as follows :
- keeping AMF as termination point for NGAP: SM related information is exchanged over NG-C via a transparent NGAP container.
- define SMF as a termination point of NGAP-SM information exchanged between the NG-RAN and the SMF via the AMF acting as a transparent relay for this information.

Proposal 2: agree to capture the figure 1 as the control plane protocol structure of NG interface in TS 38.410 as presented in Text Proposal in [3].
Proposal 3: agree the text proposal in [4] for TS 38.413 which solves the FFS related to the design of PDU Session Setup procedures.

Samsung: figure is misleading but we can have a description, has a related Tdoc R3-172982 and pCRs in R3-172983/R3-172984

The document was noted.
Replaced by

R3-172895 **Text Proposal for NG Control Plane** ***Nokia, Nokia Shanghai Bell***
Replaces

Nokia: would like to treat this under AI 10.12.3.1
moved from AI 10.11.4 to AI 10.12.3.1
discussed together with R3-172896

conclusion: not change figure but have text description

The document was revised.
Replaced by R3-173325

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R3-173325 **Text Proposal for NG Control Plane** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172895

Nokia: instead of changing the fig. we have some text

The document was agreed.

R3-172896 **Text Proposal for PDU Session Resource Setup messages** ***Nokia, Nokia Shanghai Bell***
Replaces

conclusion: align with PDU session resource update from Samsung (see revision of R3-172984)

The document was revised.
Replaced by R3-173326

R3-173326 **Text Proposal for PDU Session Resource Setup messages** ***Nokia, Nokia Shanghai Bell***
Replaces R3-172896

The document was agreed.

R3-172982 **Discussion on N2 SM Info** ***Samsung***
Replaces

The document was noted.
Replaced by

R3-172983 **TP for PDU Session Setup and Release Procedures** ***Samsung***
Replaces

Nokia: prefers separate proposals for separate procedures
conclusion: setup part with be covered in R3-173327 as well, release part can be brought up in a separate pCR in the future

The document was revised.
Replaced by R3-173415

R3-173415 **TP for PDU Session Setup and Release Procedures** ***Samsung***
Replaces R3-172983

Ericsson: further checking needed

The document was postponed.

R3-172984 **TP for PDU Session Modify and Notify Procedures** ***Samsung***
Replaces

The document was revised.
Replaced by R3-173327

R3-173327 **TP for PDU Session Setup, Modify and Notify Procedures** ***Samsung***
Replaces R3-172984

covers also aspects of R3-172983
conclusion: remove changes in 8.2.3.1

The document was revised.
Replaced by R3-173434

R3-173434 **TP for PDU Session Setup, Modify and Notify Procedures** ***Samsung***
Replaces R3-173327

conclusion: agreed unseen

The document was agreed.

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R3-173052 **Discussion on work split between RAN3 and CT4 for single N2/N3 for both 3GPP Access and non-3GPP Access** ***Nokia, Nokia Shanghai Bell, China Telecom, KT Corp., Intel***

Replaces

Ericsson: in theory we should not see anything that is different, would have expected an action from SA2;
Nokia: SA2 will not give us stage 3 details
Huawei: SA2 should have created multiple termination points N2A/N2B/N2C and not just N2, CT4 is expecting an LS from RAN3 from this week (to ask them to concentrate on non-3GPP access);
Huawei: LS to CT4 is needed by Wed
Ericsson: wondering why the LS is needed
Nokia: CT4 Ericsson seems to say that non-3GPP access should be handled in RAN3, that's why we need to clarify this
Deutsche Telekom: some work is also done in Broadband Forum about non-3GPP access so it would be premature to rush here with an LS from RAN3, CT4 also received this Broadband Forum LS
Huawei: SA2 is just in study phase on some aspects; for termination point CT4 should contact SA2
Ericsson: we can have a come back to discuss a reason for an LS from RAN3 to CT4
Telecom Italia: supports to have an LS to avoid doing same work in multiple groups
RAN3 chair: so we will have a come back related to R3-173053 to see whether we can send an LS (will be checked on Wed morning)

The document was noted.
Replaced by

R3-173053 **LS on work split between RAN3 and CT4 for single N2/N3 for both 3GPP Access and non-3GPP Access** ***Nokia, Nokia Shanghai Bell***

Replaces

The document was revised.
Replaced by R3-173328

R3-173328 **Draft LS on work split between RAN3 and CT4 for single N2/N3 for both 3GPP Access and non-3GPP Access** ***Nokia, Nokia Shanghai Bell***

Replaces R3-173053

Ericsson: Add . in first line and adding some , will help

The document was revised.
Replaced by R3-173387

R3-173387 **LS on supporting non-3GPP access in NGAP (to: SA2; cc: CT4; contact: Nokia)** ***RAN3***

Replaces R3-173328

conclusion: This was supposed to be the final LS but there is still "Draft" in the title and source is not RAN3. Therefore revised in R3-173394 which is approved unseen.

The document was revised.
Replaced by R3-173394

R3-173394 **LS on supporting non-3GPP access in NGAP (to: SA2; cc: CT4; contact: Nokia)** ***RAN3***

Replaces R3-173387

LS R3-173394 was sent out on Wed afternoon of RAN3 #97

The document was approved.

R3-173008 **Cause Vaules in NGAP** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-172741 **UE capablity Indication (P-CR 38.413)** ***Qualcomm Incorporated***
Replaces

The document was not treated.
Replaced by

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R3-172665 **Further Discussion on PDU Session/QoS Flow Failure Relevant Handling** ***ZTE Corporation***
Replaces Discussion, Rel-15,NR_newRAT

The document was not treated.
Replaced by

R3-172684 **Correction of TS38.413 About Failure Relevant Handling** ***ZTE Corporation***
Replaces pCR, Rel-15,NR_newRAT

The document was not treated.
Replaced by

R3-172685 **Further Consideration on PDU SESSION RESOURCE NOTIFY** ***ZTE Corporation***
Replaces Discussion, Rel-15,NR_newRAT

The document was not treated.
Replaced by

R3-172689 **Correction of TS38.413 About PDU SESSION RESOURCE NOTIFY** ***ZTE Corporation***
Replaces pCR, Rel-15,NR_newRAT

The document was not treated.
Replaced by

R3-172743 **NG Multicast** ***Qualcomm Incorporated***
Replaces

The document was not treated.
Replaced by

R3-172744 **NG Multicast (P-CR 38.413)** ***Qualcomm Incorporated***
Replaces

The document was not treated.
Replaced by

R3-172745 **Paging procedure (P-CR 38.413)** ***Qualcomm Incorporated***
Replaces

The document was not treated.
Replaced by

R3-172751 **Radio information and Compatibility Request procedure** ***Qualcomm Incorporated***
Replaces

The document was not treated.
Replaced by

R3-172752 **Radio information and Compatibility Request procedure** ***Qualcomm Incorporated***
Replaces

The document was not treated.
Replaced by

R3-172980 **Discussion on the TNL Address** ***Samsung***
Replaces

The document was not treated.
Replaced by

R3-172981 **TP on TNL Address for 38.413** ***Samsung***
Replaces

The document was not treated.
Replaced by

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R3-173050 **Discussion on UE-associated logical NG-connection establishment during Downlink NAS Transport procedure** ***Nokia, Nokia Shanghai Bell***

Replaces

The document was not treated.
Replaced by

R3-173051 **TP for Downlink NAS Transport procedure (TS38.413)** ***Nokia, Nokia Shanghai Bell***

Replaces

The document was not treated.
Replaced by

10.12.3.2 TS 38.423 Xn Application Protocol (XnAP)

R3-173237 **TP for 38.423 with Rapporteurs updates** ***Ericsson***

Replaces

The document was agreed.
Replaced by

R3-173019 **Cause Values in XnAP** ***Huawei***

Replaces

The document was not treated.
Replaced by

10.12.3.3 F1 Application Protocol (F1AP)

R3-173121 **Updates to 38.473** ***Huawei***

Replaces

The document was agreed.
Replaced by

10.12.4 TS 38.414/424/474 NG/Xn/F1 Data transport

R3-172686 **Further Updates of TS38.414 NG-RAN NG Data Transport** ***ZTE Corporation***

Replaces Discussion, Rel-15,NR_newRAT

Proposal 1: To update draftTS38.414 as shown in [3].
Proposal 2: To discuss and fix whether “flow” and/or “PDU Session” should be used in section 5.3 UDP/IP.
Proposal 3: To ask SA2 whether IP Differentiated Services code point marking shall be supported in 5G.

The document was noted.
Replaced by

R3-172687 **Updated DraftTS 38.414 NG-RAN NG Data Transport** ***ZTE Corporation***

Replaces

RAN3 chair: this is not a draft TS, this is the pCR related to what is proposed in R3-172686
Nokia: suggests to remove existing NG (due to duplication)
Ericsson: we should get rid of - in NG-RAN
Nokia: PDU session change: we need to see corresponding agenda item

The document was rejected.
Replaced by

10.12.5 User Plane protocol

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10.12.5.1 TS 38.425 Xn User Plane protocol

R3-172749 **Xn Flow control and retransmission (P-CR 38.425)** ***Qualcomm Incorporated***
Replaces

The document was not treated.
Replaced by

10.12.5.2 TS 38.475 F1 User Plane protocol

R3-172748 **F1-U Flow control and retransmission (P-CR 38.475)** ***Qualcomm Incorporated***
Replaces

The document was not treated.
Replaced by

R3-172915 **Update on flow control over F1-U** ***ZTE Corporation, China Telecom***
Replaces

The document was not treated.
Replaced by

R3-172917 **Update on Flow control over F1 interface for TS38.475** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

10.13 Positioning Support

R3-172735 **Discussion of positioning support in Release 15 NG-RAN** ***Qualcomm Incorporated***
Replaces

Observation 1: NG-C is required to support the transport of positioning messages between the NG-RAN node and the CN.
Observation 2: NG-C is required to transfer both UE specific and non-UE specific messages.
Observation 3: NGAP is expected to provide a transparent service (i.e. transfer of positioning message as an octet string).
Observation 4: Several approaches may be used to support both legacy LTE and new (NR) positioning procedures over NG-C.
Proposal 1: If maximum flexility in later releases is preferred, adopt option 3, i.e., only NPPa is transported over NG-C, and LTE related functionality is explicitly copied to NPPa by including relevant portions of the LPPa specification.
Proposal 2: If there is an expectation that a subset of LPPa functionality can be supported for NG-RAN that will not need to diverge from LPPa in future releases, adopt option 4 which reduces TS impacts in Release 15, avoids dual maintenance of common aspects of LPPa and NPPa and allows for some divergence should this be needed.

The document was noted.
Replaced by

R3-173238 **Skeleton for TS 38.455** ***Ericsson***
Replaces

Huawei: termination point of the protocol is still open so we should not yet agree it

Samsung: E-CID is in LPPa, do you want to repeat the procedures?
Huawei: cell ID will be new

conclusion: TS will be revised having editor's note regarding termination point and to include already agreements of RAN3 #97

The document was revised.
Replaced by R3-173374

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R3-173374 **TS 38.455** ***Ericsson***
Replaces R3-173238

RAN3 chair: should NRPPa be renamed in NPPa?
Huawei: does not support this
Qualcomm: supports change to NPPa
Nokia: NRPPa looks like RAT specific
Samsung: no E-SMLC anymore?
Ericsson: termination point to be decided by SA2, has an editor's note

conclusion: NG-RAN Node => NG-RAN node

The document was revised.
Replaced by R3-173436

R3-173436 **TS 38.455** ***Ericsson***
Replaces R3-173374

The document was agreed.

10.13.1 Transport of Positioning Messages Between 5G-CN and NG-RAN Hosting E-UTRA

R3-172989 **Positioning in NR: LPPa transport** ***Huawei, HiSilicon***
Replaces

Proposal 1: Discuss whether LPPa should be transported independently on NG, or encapsulated within NRPPa.
Proposal 2: Define both UE-associated and non-UE-associated LPPa transport on NG.

The document was noted.
Replaced by

R3-173239 **Positioning support for NG-RAN Hosting E-UTRA** ***Ericsson***
Replaces

Proposal 1: NRPPa should support current LPPa E-CID and OTDOA information exchange to support NG-RAN nodes hosting E-UTRA cells.
Proposal 2: RAN3 should wait for further progress in SA2 before adding UTDOA support in NRPPa.

Huawei: LPPa can be reused, NRPPa will have some new information
Ericsson: NRPPa will be used for LTE and NR RAT so LPPa procedures will be the starting point and we will add NR parts
Huawei: encapsulation?
Qualcomm: our option 4 could be used
Samsung: we could encapsulate LPPa into NRPPa and then referring to 36.455
Huawei: key point is to avoid duplication
Nokia: not different from NGAP discussion, we could use Qualcomm's option 3

RAN3 chair: it seems we need some more offline discussion (e.g. copy/paste LPPa into NRPPa, single protocol?, encapsulation? architecture implication, LS to SA2?)

conclusion: offline discussion (see above), Ericsson is tasked to bring a way forward in R3-173373
agreement:
Define both UE-associated and non-UE-associated LPPa transport on NG

The document was noted.
Replaced by

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R3-173373 **Way forward on positioning transpoirt for NG-RAN hosting E-UTRA** ***Ericsson***

proposal:
- working assumption to go for option 3 (Copy portions of LPPa into NRPPa. Only NRPPa is transferred over NG-C)
- working assumption to have a single protocol (supporting both RATs) between the NG-RAN Node and the termination point in the 5GC

conclusion:
- working assumption: Adopt applicable parts of LPPa into NRPPa and make them applicable for NG-RAN nodes with a NG interface towards the 5GC.
- working assumption: There is a single protocol (supporting both RATs) between the NG-RAN Node and the termination point in the 5GC

The document was noted.

10.13.2 Transport of Positioning Messages Between 5G-CN and NG-RAN Hosting NR

R3-172990 **Positioning in NR: NRPPa transport** ***Huawei, HiSilicon***
Replaces

The document was noted.
Replaced by

R3-173240 **Positioning support for NG-RAN Hosting NR** ***Ericsson***
Replaces

Proposal 1: To help fulfilling Rel-15 NR positioning requirements, NRPPa shall support Cell ID positioning including cell portion IDs – this should be prioritized.
Proposal 2: Define the NR Cell Portion ID over at least the same range as LTE Cell Portion IDs (0..4095).
Proposal 3: RAN3 should introduce NRPPa signaling transport functionality in NGAP (e.g. through the appropriate UE associated / non-UE-associated NRPPa transport procedure(s)).
Proposal 4: Assuming that NRPP messages are transported over NG NAS, no specific support needs to be introduced for NRPP in RAN3.

Huawei: with proposal 4 we need to wait a bit (e.g. on RAN2 and CT)

conclusion:
agreements:
- NRPPa shall support Cell ID positioning including cell portion IDs, this should be prioritized.
- Define the NR Cell Portion ID over at least the same range as LTE Cell Portion IDs (0..4095).
- introduce NRPPa signaling transport functionality in NGAP (e.g. through the appropriate UE associated / non-UE-associated NRPPa transport procedure(s))

The document was noted.
Replaced by

10.13.3 NR CID and Cell Portions

R3-172991 **Positioning in NR: NRPPa design** ***Huawei, HiSilicon***
Replaces

Proposal: Implement NRPPa supporting the elementary procedures with associated messages:
- E-CID Measurement Initiation
- E-CID Measurement Failure Indication
- E-CID Measurement Report
- E-CID Measurement Termination
- Error Indication

conclusion: proposal is agreed

The document was noted.
Replaced by

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10.14 Others

Security, Network Sharing, Duplexing, IMS, etc …

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11 Study on CU-DU lower layer split for New Radio SI

SID [FS_NR_CU_DU_LLS]: RP-170818 (target: RAN#78)

R3-173300 **Discussion on new TR creation** ***NTT DOCOMO, INC. (SI rapporteur)***

Replaces

The document was withdrawn.
Replaced by

R3-173302 **Skelton TR for CU-DU LLS SI** ***NTT DOCOMO, INC. (SI rapporteur)***

Replaces

The document was revised.
Replaced by R3-173352

R3-173352 **Skelton TR for CU-DU LLS SI** ***NTT DOCOMO, INC. (SI rapporteur)***

Replaces R3-173302

Huawei: instead of Annex A (long copy and paste) we could add a reference to the TR 38.801
Intel: some description of the split otions was not completed and if we want to work on it, we need the copy
Huawei: if there is an update, we can add the new parts (delta) in this new TR

The document was revised.
Replaced by R3-173404

R3-173404 **Skelton TR for CU-DU LLS SI** ***NTT DOCOMO, INC. (SI rapporteur)***

Replaces R3-173352

Editor's note that definitions are ffs
Huawei: general secion is a copy from SID, usually we do not have this, this is normally covered in the scope

The document was revised.
Replaced by R3-173437

R3-173437 **Skelton TR for CU-DU LLS SI** ***NTT DOCOMO, INC. (SI rapporteur)***

Replaces R3-173404

RAN3 chair: next time please bring a real TR version (including the TR number) after RAN #77 will approve a SID revision including this new TR

The document was endorsed.

R3-173304 **TP on utilizing study for LLS in Rel-14** ***NTT DOCOMO, INC. (SI rapporteur)***

Replaces

The document was withdrawn.
Replaced by

11.1 Functionality and CU-DU Lower Layer Split

Potential options to be down-selected from Opt. 6, 7 families (as captured in TR 38.801)
Rapporteur to request new TR; Chairman to report
Use 38.801 low layer split-related section as starting point for SI
Impact of LL split options on complexity and fronthaul interface capacity is to be further considered in SI
New TR is needed

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R3-172946 **Further analysis on option 7** ***ZTE Corporation***
Replaces

The document was noted.
Replaced by

R3-173033 **Down selection of Option 6 and 7 for CU-DU Lower Layer Split** ***NEC***
Replaces

NTT DOCOMO: we are in generally supporting both proposals but this is rather for the next agenda item on evaluation
conclusion: will be continued in evaluation phase

The document was noted.
Replaced by

R3-173148 **Further consideration on asymmetric CU-DU low layer split** ***CMCC***
Replaces

The document was noted.
Replaced by

R3-173281 **Further details on intra-PHY split options** ***Intel Corporation***
Replaces

Observation 1: SRS and analogue beamforming are missing in the L1 model considered so far in the intra-PHY split discussion.
Observation 2: Digital beamforming could be considered as a subset of the DL precoding and UL pre-filtering function, but may need to clarify with RAN1 (e.g. via LS) whether a separate block is necessary.
Proposal 1: RAN3 to adopt the L1 model with SRS and analogue beamforming in Figure 2 as the starting point for intra-PHY split discussions.
Observation 3: PRACH filter in the split option 7-1 is not clearly defined.
Proposal 3: For the split option 7-1, RAN3 to adopt the PRACH filter definition with three function blocks (antenna data combination or selection, CP remove, and a decimation filter + smaller size FFT or a large FFT + PRACH subcarrier selection).
Observation 4: Pre-filtering in the split option 7-2 is not clearly defined.
Proposal 4: For the split option 7-2, RAN3 to adopt the pre-filtering description provided in Section 2-2.

Intel: can be considered as alternative to NTT DOCOMO proposal

The document was noted.
Replaced by

R3-173293 **Consideration on 5G E2E deployments with higher layer and lower layer function splits** ***SK Telecom***
Replaces This contribution describes detail 5G E2E deployments with higher layer and lower layer function splits and necessity of low layer split in practical 5G deployment.

Proposal 1: gNB-DU shall be divided by gNB-DU-high and gNB-DU-low so that operators who have adopted C-RAN architecture in LTE can deploy 5G cost-efficiently.
Proposal 2: Normative specification and interface of lower layer split shall be considered in Release 15 so that operator can consider large scale 5G deployment.

Ericsson: site for higher layer split and for lower layer split have different characteristics so no reuse possible
Samsung: supports SKT, we can evaluate this
NTT DOCOMO: proposal 1 can be a valid scenario but main message seems to be proposal 2

The document was noted.
Replaced by

R3-173295 **NR L1 processing diagram update** ***NTT DOCMO, INC.***
Replaces

NTT DOCOMO: already included in our summary

The document was noted.
Replaced by

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R3-173402 **Overall of proposed L1 processing diagram** ***NTT DOCOMO***

is a summary document

The document was noted.

R3-173296 **draft LS on NR L1 processing diagram** ***NTT DOCOMO, INC.***

Replaces

The document was revised.
Replaced by R3-173403

R3-173403 **draft LS on NR L1 processing diagram (to: RAN1; cc: -; contact: NTT DOCOMO)** ***NTT DOCOMO, INC.***

Replaces R3-173296

The document was revised.
Replaced by R3-173430

R3-173430 **DRAFT LS on NR L1 processing diagram (to: RAN1; cc: -; contact: NTT DOCOMO)** ***NTT DOCOMO***

Replaces R3-173403 related to R3-173402

ZTE: has still problems with the figures
Huawei: has same concern as ZTE but there is the strong wish from operators to send the LS
ZTE: suggests to remove the figure
Huawei: we could ask RAN1 to correct the figure if not correct
ZTE: evaluation perf. of split options: RAN3 is not the proper group, if we want to ask RAN1 we need to clarify the options
Telecom Italia: we just ask for L1 features
conclusion: action regarding figure added

The document was revised.
Replaced by R3-173438

R3-173438 **DRAFT LS on NR L1 processing diagram (to: RAN1; cc: -; contact: NTT DOCOMO)** ***NTT DOCOMO***

Replaces R3-173430

RAN3 chair: still some figure corrections are to be done?
Huawei: still with the update of the figure the figure does not reflect a RAN3 consensus but it is a compromise to send out the LS; intention is not to discuss the options

conclusion: no figure update, RAN1 can correct this in line with the extra action

The document was revised.
Replaced by R3-173439

R3-173439 **LS on NR L1 processing chain (to: RAN1; cc: -; contact: NTT DOCOMO)** ***RAN3***

Replaces R3-173438

The document was approved.

R3-173298 **TP on L1 processing diagram** ***NTT DOCOMO, INC.***

Replaces

is a pCR based on TR 38.801 but is intended to be included into a new TR

The document was not treated.
Replaced by

11.2 Evaluation Criteria for Lower Layer Split Options

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R3-173094 **Evaluation criteria of low-level CU-DU RAN functional split** ***China Telecom Corporation Ltd.***

Replaces

Proposal: Transport network requirements, performance, and OAM should be considered to be the evaluation criteria for LLS, and a unified criterion for bandwidth is proposed.

Huawei: How can a requirement be a criteria for evaluation? If we do not meet the requirement, then we have no solution.

The document was noted.

Replaced by

R3-173137 **Evaluation criteria for CU-DU low layer split** ***CMCC***

Replaces

Proposal 1: Option 6 and Option 7 families in TR 38.801 should be refined based on NR L1 functionalities.
Proposal 2: RAN3 to agree the following as criteria for CU&DU LLS evaluation
- Transport requirements
- Collaborative performance gain
- Pooling gain & interface complexity
- Operation and Maintenance

The document was noted.

Replaced by

R3-173297 **Evaluation criteria for lower layer split** ***NTT DOCOMO, INC.***

Replaces Update of R3-172583

Proposal1: Consider followings as evaluation criterion for LLS:
1. Fronthaul bandwidth
   - Required bandwidth ([X] Gbps), scaling based on layer/stream/antenna, traffic dependent or not
2. Performance
   - Multi-cell/freq. coordination, UL advanced receiver
3. Fronthaul interface complexity
   - Specification complexity, multi-vendor inte-operability
4. DU impact
   - DU complexity, Future proofness

Proposal2: Take the contents of table1 as initial comparison among LLS options.

RAN3 chair: evaluation criteria from the Tdocs:
Performance
OAM impact (out of RAN3 scope)
Fronthaul bandwidth
Interface complexity (# of messages/IEs?)
DU impact (e.g. complexity, future-proofness)

Huawei: bandwidth is a criteria, all others would require clarification
Ericsson: agrees with Huawei, criteria are vague and also several things that influence TNL bandwidth
AT&T: interface complexity is not really an evaluation criteria
NTT: performance = UL impact from different receiver options (e.g. beamforming)
Telecom Italia: feasibility of an interface: what is transferred over the interface is the first thing
Deutsche Telekom: not quantifiable criteria should be excluded
RAN3 chair: changed TNL bandwidth to fronthaul bandwidth
Nokia: interface complexity may be an important criteria for manufacturers
Huawei: yes, but how to measure it?
Telecom Italia: specification impact could be considered
Deutsche Telekom: specification complexity may be a paramter but how to measure?

conclusion: agreements
evaluation criteria:
- fronthaul bandwidth
- complexity (editor's note: detailed criteria for complexity evaluation need to be clarified)

The document was noted.

Replaced by

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R3-173299 **TP on evaluation criteria** ***NTT DOCOMO, INC.***
Replaces

The document was not treated.
Replaced by

11.3 Feasibility of a Standardized Interface for Lower Layer Split

11.4 Others

12 Study on Architecture Evolution for E-UTRAN SI

SID [FS_LTE_arch_evo]: RP-170843 (target: RAN#78)
R3-172615 Endorsed as WF
(1) The SI scope should also include the eNB CU-DU split in E-UTRAN option 3 EN-DC.
(2) Whether NG-RAN scenarios, e.g. option 7, are to be considered as lower priority.
Chair to report to RAN, including issue that this is still an LTE SI

R3-173096 **TR 36.756 skeleton for E-UTRAN architecture evolution** ***China Unicom***
Replaces

The document was agreed.
Replaced by

R3-173097 **Work plan for E-UTRAN architecture evolution** ***China Unicom***
Replaces

rapporteur's plan for RAN3#97 (Aug 2017):
- Approve the skeleton of TR 36.756 v0.0.1.
- Discuss on principle, scenario and architecture, then capture the agreements into the TR.
- Discuss on the eNB CU-DU interface protocol stack, function, procedure in detail, and capture the agreed TPs into the TR.
- Update TR 36.756 with the agreed TPs.

The document was noted.
Replaced by

R3-173459 **TS 36.756 v0.1.0 covering agreements of RAN3 #97** ***China Unicom***
based on last RAN3 agreed v0.0.2 in R3-173096

The document was Agreed.

12.1 Potential CU-DU Functional Split for the eNB

R3-172668 **Evolved LTE RAN Architecture** ***Vodafone GmbH***
Replaces

Proposal: Based on the Scenarios illustrated in this contribution we kindly ask RAN3 to adopt these architectures and principles in the new TR on E-UTRAN architecture evolution.

RAN3 chair: is this already taken into account for the TR or do we need a pCR for it?

conclusion: Vodafone will discuss offline to come up with a pCR

The document was noted.
Replaced by

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R3-173368 **pCR on deployment scenarios for evolved LTE architecture** ***Vodafone***

CP/UP separationnot precluded
Vodafone: need to continue this next time

The document was withdrawn.

R3-172716 **eNB CU DU function split for architecture option 3** ***Huawei, China Unicom***
Replaces

Proposal: RAN3 agrees to introduce the same function split architecture in LTE as in NR, define the eNB CU as a logical node hosting RRC and PDCP protocols, and define the eNB DU as a logical node hosting RLC, MAC and PHY layers.
eNB Central Unit (eNB-CU): a logical node hosting RRC and PDCP layers.
eNB Distributed Unit (eNB-DU): a logical node hosting RLC, MAC and PHY layers.

conclusions: agreements:
- Consider for the scope of the SI the same function split architecture in LTE as in NR, define the eNB CU as a logical node hosting RRC and PDCP protocols, and define the eNB DU as a logical node hosting RLC, MAC and PHY layers. Node names as agreed are applicable to SI scope.

The document was agreed.
Replaced by

R3-172717 **ng-eNB CU DU function split for architecture option 7** ***Huawei, China Unicom***
Replaces

Proposal: RAN3 agrees to introduce a unified architecture, i.e. to adopt option 2 for E-UTRAN and NR, for eNB, ng-eNB and gNB.
Proposal 2: RAN3 agrees to define the ng-eNB Central Unit (ng-eNB-CU as a logical node hosting RRC, SDAP and PDCP layers, and define the ng-eNB Distributed Unit (ng-eNB-DU) as a logical node hosting RLC, MAC and PHY layers.
ng-eNB Central Unit (ng-eNB-CU): a logical node hosting RRC, SDAP and PDCP layers..
ng-eNB Distributed Unit (ng-eNB-DU): a logical node hosting RLC, MAC and PHY layers.

conclusions: agreements:
- For the scope of the SI, adopt option 2 for E-UTRA as for NR, i.e. for eNB and ng-eNB.
- eNB-CU: a logical node hosting RRC, SDAP and PDCP
- eNB-DU: a logical node hosting RLC, MAC and PHY
- For SI scope capture both ng-eNB-CU/DU and eNB-CU/DU use cases.

The document was agreed.
Replaced by

12.2 CU-DU Interface, Functions, and Procedures

R3-172718 **eNB CU DU interface, principles and Functions** ***Huawei, China Unicom***
Replaces

Proposal 1: assume a new interface V1 between eNB-CU and eNB-DU in the study item discussion, and to be further decided whether to reuse/enhance F1 interface to implement V1 interface at the end of the study or in normative phase.
Proposal 2: agree the principles listed in the right column of the table for LTE CU DU design.
Proposal 3: agree the listed V1 interface functions as baseline.

Ericsson: naming should be for SI, reusing F1 should be precluded

conclusion: agreements:
- assume a new interface V1 between eNB-CU and eNB-DU in the study item discussion, and to further decide at the end of the study or in the normative phase whether to reuse/enhance F1 interface or V1
- SI shall not impact F1 progress

The document was revised.
Replaced by R3-173369

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R3-173369 **eNB CU DU interface, principles and Functions** ***Huawei, China Unicom***
Replaces R3-172718

The document was agreed.

R3-172719 **eNB CU DU interface procedures** ***Huawei, China Unicom***
Replaces

Nokia: no benefit to copy/paste from F1
Huawei: current F1 status can be considered as baseline

The document was revised.
Replaced by R3-173370

R3-173370 **eNB CU DU interface procedures** ***Huawei, China Unicom***
Replaces R3-172719

The document was agreed.

12.3 Others

R3-173138 **Clarification on the scenario of E-UTRAN CU-DU split architecture** ***CMCC***
Replaces

Proposal 1: Alternative 1 should be considered as E-UTRAN CU-DU architecture to support option 3
Proposal 2: RAN3 to clarify the validity of alternative 2 and whether it will be considered in the SI study.

CMCC: eNB-CU can connect the gNB-DU via X2-U (implementation dependent)
Huawei: can be handled by imoplementation, no need to discuss in SI

The document was noted.
Replaced by

R3-173098 **Discussion on architecture scenaios for E-UTRAN architecture evolution SI** ***China Unicom***
Replaces

The document was not treated.
Replaced by

R3-173099 **TP for eNB CU and DU deployment scenaio for option3/3a/3x** ***China Unicom***
Replaces

The document was revised.
Replaced by R3-173371

R3-173371 **TP for eNB CU and DU deployment scenaio for option3/3a/3x** ***China Unicom***
Replaces R3-173099

Ericsson: general section is alreadycovered in another pCR
RAN3 chair: ok, rapporteur will take this into account

conclusion: No need to agree on general section (already captured in other agreed docs for same TR – rapp to clean up duplications).

The document was agreed.

R3-173135 **TP for eNB CU and DU deployment scenaio for option7/7a/7x** ***China Unicom***
Replaces

The document was revised.
Replaced by R3-173372

R3-173372 **TP for eNB CU and DU deployment scenaio for option7/7a/7x** ***China Unicom***
Replaces R3-173135

The document was agreed.

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13 Further NB-IoT enhancements (RAN1-led) WI

WID [NB_IOTenh2-Core]: RP-171428 (target: RAN#80)

13.1 Early data transmission

R3-172943 **RAN3 impact on early data transmission in eNB-IoT** ***ZTE Corporation***
Replaces

The document was noted.
Replaced by

R3-172720 **Early Data transmission in CP solution** ***Huawei***
Replaces

Proposal 1: adopt the early data transmission solution as baseline.
Proposal 2: Introduce End Indication IE in DL NAS TRANSPORT and CONNECTION ESTABLISHMENT INDICATION messages.
Proposal 3: Update the trigger of Initial UE message procedure.

ZTE: supports proposal 1 and 3 but does not agree to proposal 2: how to set end indicator for big data so difficult to set this flag, can be handled by eNB without indicator

The document was noted.
Replaced by

R3-173056 **Introduction of NB-IoT early data transmission** ***Huawei***
Replaces

Nokia: RAN2 is discussing this for the first time, so too early to decide

The document was postponed.
Replaced by

13.2 UE differentiation

R3-172944 **Consideration on UE differentiation in NB-IoT** ***ZTE Corporation***
Replaces

The document was noted.
Replaced by

R3-172754 **On UE differentiation in NB-IOT** ***Qualcomm Incorporated***
Replaces

The document was noted.
Replaced by

R3-173270 **Discussion on UE differentiation in NB-IoT** ***Ericsson***
Replaces

The document was noted.
Replaced by

R3-172721 **Consideration on NB-IoT UE differentiation** ***Huawei***
Replaces

RAN3 chair: we have now 4 completely different proposals so we need to send this offline to converge
conclusion: offline discussion (rapporteur: ZTE) to have a way forward in R3-173375

The document was noted.
Replaced by

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R3-173375 **Way forward on UE differentiation in NB-IOT** ***ZTE***

ZTE: way forward is withdrawn, we need guidance from SA2 on UE differentiation, therefore LS R3-173401 is provided

The document was withdrawn.

R3-173401 **LS on UE differentiation of NB-IoT (to: SA2; cc: RAN2; contact: ZTE)** ***RAN3***

The document was approved.

13.3 Others

R3-172945 **CSG support in NB-IoT** ***ZTE Corporation***
Replaces

The document was not treated.
Replaced by

14 Even further enhanced MTC for LTE (RAN1-led) WI

14.1 Early data transmission

14.2 Others

15 UE positioning accuracy enhancement for LTE (RAN2-led) WI

WID [LCS_LTE_acc_enh-Core]: RP-171508 (target: RAN#80)

15.1 RTK signaling

15.2 Broadcasting of assistance data

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15.3 Others

16 Further enhancements on Video for LTE (RAN2-led) WI

WID [LTE_ViLTE_enh2-Core]: RP-171392 (target: RAN#78)

16.1 Network aspects

R3-173136 **Way forward for the discussion of local cache solution** ***CMCC***
Replaces

The document was noted.
Replaced by

R3-173310 **Response to R3-173136** ***Ericsson***
Replaces

CMCC: RAN2 is aware of the discussion, no LS needed
Huawei: a TR is not normative so deriving a working assumption from a SI TR for the WI is not really possible
CMCC: there is an email discussion in RAN2 that is quoted so RAN2 is aware
Qualcomm: SI solution is not yet a complete solution
Ericsson: we need to include that this is workable
Qualcomm: no LS to RAN2 needed as RAN3 agreed no normative work
RAN3 chair: would an LS harm pointing to our RAN3 TR?
Qualcomm: UE assistence is up to RAN2
NEC: this is a RAN2 WI and RAN2 has to review the status of RAN3
Qualcomm: in RAN3 we agreed on no architecture change
Ericsson: WID says RAN3 should identify the solution
RAN3 chair: work on an acceptable LS which preempting anything

The document was noted.
Replaced by

R3-173367 **Draft LS on RAN3 conclusions on ViLTE architecture choice (to: RAN2; cc: -; contact: CMCC)** ***CMCC***

The document was revised.
Replaced by R3-173414

R3-173414 **Draft LS on RAN3 conclusions on ViLTE architecture choice (to: RAN2; cc: -; contact: CMCC)** ***CMCC***
Replaces R3-173367

CMCC: Ericsson could not agree on last sentence
Ericsson: has another draft
CMCC: we have seen Ericsson's draft which is not acceptable for us

The document was rejected.

16.2 Others

UE aspects, if any, not related to RAN2

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17 Quality of Experience (QoE) Measurement Collection for streaming services

in E-UTRAN (RAN2-led) WI

WID [LTE_QMC_Streaming-Core]: RP-170956 (target: RAN#78)
Note: Existing MDT functionality should be taken as baseline

Agenda item 17 was chaired by RAN3 vice-chair Mrs. Yin Gao (ZTE)

17.1 E-UTRAN Functionality for QoE Measurement Collection (depending on RAN2

progress)

R3-173194 **Possible RAN3 impacts for QMC** ***Huawei***
Replaces

- Solution 1: as proposed in [4], both the QoE configurations and measurement results are transferred via RRC signaling. This solution is similar to QMC in UMTS.
- Solution 2: as proposed in [2], both the QoE configurations and measurement results are transferred via user plane.
- Solution 3: as proposed in [3], the QoE configurations are transferred via RRC signalling and the QoE measurement results are transferred via user plane.

Proposal: If RAN2 agrees that QMC solutions would allow the network to send the QoE configuration to the UE, the possible RAN3 impacts are:
- update TS 36.413 and TS 36.423 in order to support the QoE configuration from the CN to the eNB and between eNBs. In addition, the IEs "MDT Area Scope" and "Signalling based MDT PLMN list" are also needed in addition to the QoE configuration (with changing the names).

Observation: If RAN2 agree only one QMC solution (either CP solution or UP solution), there is no impact on top of the above proposal. If RAN2 agrees more than one solutions (e.g. both CP solution and UP solution), it is required to indicate which solution is applied (from CN to eNodeB).

The document was noted.
Replaced by

R3-173241 **QoE for streaming services in E-UTRAN** ***Ericsson***
Replaces

Proposal 1: RAN3 to consider introducing both management based and signalling based triggering of QoE in EUTRAN.
Proposal 2: RAN3 to consider introducing QoE in EUTRAN in general way, i.e. as one type of UE Application Layer Measurement.
Proposal 3: RAN3 to consider introducing UE capability of QoE feature support which is indicated to CN in EUTRAN.
Proposal 4: RAN3 to consider introducing QoE measurement continuation after X2/S1 Handover in EUTRAN.
Proposal 5: RAN3 to consider introducing the target node feedback of QoE support in EUTRAN.

conclusions: agreements:
- Both management based and signalling based triggering are supported.
- We have foreseen a future addition of such measurements e.g. as one of the UE Application Layer Measurement.
- RAN3 shall wait for the decision in RAN2 and provide the appropriate signalling (if needed)

The document was noted.
Replaced by

R3-173195 **Introduction of QoE Measurement Collection for LTE** ***Huawei***
Replaces

The document was not treated.
Replaced by

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R3-173196 **Introduction of QoE Measurement Collection for LTE** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173366 **Report for AI 17 Quality of Experience (QoE) Measurement Collection for streaming services in E-UTRAN** ***ZTE***

The document was endorsed.

17.2 OAM Requirements for handling of UE and E-UTRAN measurement data

18 Other WI/SIs with impact on RAN3

Waiting for other RAN4 progress:
- New Work Item proposal on an FDD band in the L-band for LTE (RAN4-led) (NTT), RP-162536
- LTE Extended 1.5 GHz SDL band (1427 – 1518 MHz) and LTE Carrier Aggregation (2DL/1UL) with Band 20 (RAN4-led) (Orange) , RP-162556
- New L-band (1427-1518MHz) plans for LTE (RAN4-led) (Etisalat), RP-162557
- 450MHz E-UTRA FDD Band for LTE PPDR and PMR/PAMR in Europe (Ministere de l'intérieur (RAN4-led) (French MOI), RP-162514
- US 600 MHz Band for LTE (T-Mobile USA), RP-170740
- New WID on 450 MHz Band for LTE in Region 3 (China Unicom), RP-170159
- LAA/eLAA for the CBRS 3.5GHz band in the United States (AT&T), RP-170804

18.1 Rapporteur SID summarize

Only for SI with RAN3 responsibility without TU, the tdoc will be pre-allocated i.e.
- RP-170779, Study on enhanced LTE Support for Aerial Vehicles (E///)
- RP-170840, LTE connectivity to 5G-CN (HW)

18.2 Band completion

Pending to RAN4

R3-172755 **Introduction of Band 72** ***Airbus DS SLC, Nokia***
Replaces

The document was revised.
Replaced by R3-173444

R3-173444 **Introduction of Band 72** ***Airbus DS SLC, Nokia***
Replaces R3-172755

The document was agreed.

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R3-172756 **Introduction of Band 72** ***Airbus DS SLC, Nokia***
Replaces

Ericsson: needs to be revised and should use spare biut 12

The document was revised.
Replaced by R3-173445

R3-173445 **Introduction of Band 72** ***Airbus DS SLC, Nokia***
Replaces R3-172756

The document was agreed.

R3-173024 **Introduction of the FDD L-band (Band 74) into TS 25.461** ***NTT DOCOMO INC.***
Replaces Introduction of requirements for the FDD L-band as Band 74.The contents are the same as the draft CR (R4-1705257) endorsed in RAN4#83.

The document was agreed.
Replaced by

R3-173035 **Introduction of the FDD L-band (Band 74) into TS 25.466** ***NTT DOCOMO INC.***
Replaces was Introduction of requirements for the FDD L-band as Band 74.The content was separated from the draft merged CR (R4-1705934) which endorsed in RAN4#83 for bands 49, 50, 71, 72, 72, 73, 74 and 75.

Ericsson: overlapping R3-173246 with R3-173035, if we withdraw R3-173035 and agree R3-173246 we would cover both

The document was withdrawn.
Replaced by

R3-173151 **CR to 25.461: Introduction of Band 49 (3.5 GHz LAA in US)** ***Ericsson, AT&T***
Replaces R3-171914

Ericsson: was endorsed by RAN4 in R4-1705895 at RAN4#83
Ericsson: RAN4 work is not yet completed

The document was postponed.
Replaced by

R3-173164 **CR to 25.466: Introduction of Band 49 (3.5 GHz LAA in US)** ***Ericsson***
Replaces R3-171748

Ericsson: RAN4 work is not yet completed

The document was postponed.
Replaced by

R3-173165 **Introduction of the TDD L-band(Band 50 and Band 51)** ***Huawei, HiSilicon***
Replaces

The document was revised.
Replaced by R3-173441

R3-173441 **Introduction of the TDD L-band(Band 50 and Band 51)** ***Huawei, HiSilicon***
Replaces R3-173165

The document was agreed.

R3-173166 **Introduction of the TDD L-band(Band 50 and Band 51)** ***Huawei, HiSilicon***
Replaces

The document was revised.
Replaced by R3-173442

R3-173442 **Introduction of the TDD L-band(Band 50 and Band 51)** ***Huawei, HiSilicon***
Replaces R3-173166

The document was agreed.

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R3-173242 **Introduction of Band 50, 51** ***Ericsson***
Replaces

instead R3-173165 and R3-173166 are agreed

The document was withdrawn.
Replaced by

R3-173243 **CR to 25.461: Introduction of Band 71 (600MHz FDD band for US)** ***Ericsson, Nokia***
Replaces

Ericsson: was endorsed by RAN4 in R4-1704964 at RAN4#83

The document was agreed.
Replaced by

R3-173244 **Introduction of Band 71** ***Ericsson***
Replaces

Nokia: why spare bit 11 and not the subsequent one?

The document was agreed.
Replaced by

R3-173245 **Introduction of Band 72** ***Ericsson***
Replaces

withdrawn as covered by other CRs (from Nokia/Airbus)

The document was withdrawn.
Replaced by

R3-173246 **Introduction of Band 74** ***Ericsson***
Replaces

Nokia: what is the logic of this sort of CRs?
Ericsson: was a misunderstanding that Ericisson and NTT DOCOMO provided CRs for same band

The document was revised.
Replaced by R3-173440

R3-173440 **Introduction of Band 74** ***Ericsson***
Replaces R3-173246

The document was agreed.

R3-173247 **CR to 25.461: Introduction of B75 and B76** ***Ericsson***
Replaces

The document was agreed.
Replaced by

R3-173248 **Introduction of Band 75, 76** ***Ericsson***
Replaces

Ericsson: we are running out of spare bits so new table was added

The document was revised.
Replaced by R3-173443

R3-173443 **Introduction of Band 75, 76** ***Ericsson***
Replaces R3-173248

The document was agreed.

R3-173023 **Introduction of the FDD L-band (Band 74) into TS 25.461** ***NTT DOCOMO INC.***
Replaces
Introduction of requirements for the FDD L-band as Band 74.The contents are the same as the draft CR (R4-1705257) endorsed in RAN4#83.

The document was withdrawn.
Replaced by

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18.3 Others

19 Further Enhancements to LTE Device to Device, UE to Network Relays for IoT

and Wearables (RAN2-led) SI

SID [FS_feD2D_IoT_relay_wearable]: RP-170295 (target: RAN#77)

20 Enhancing LTE CA Utilization WI

WID [LTE_euCA-Core]: RP-170805 (target: RAN#78)

R3-172867 **Workplan for the euCA work item** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was noted.
Replaced by

R3-172868 **Analysis of SCell setup delay** ***Nokia, Nokia Shanghai Bell***
Replaces

Observation 1: UE is not monitoring SCells in RRC_IDLE to avoid excessive power consumption.
Observation 2: Low latency improves UE performance, and helps to utilize features that allow high spectral efficiency.

Observation 3: Delay in Scell activation may decrease UE performance and result in higher latency and lower throughput than could be expected.
Observation 4: UE doesn't know the CA preferences of its serving cell while in RRC_IDLE.
Observation 5: Reducing the time it takes to activate security helps also to reduce SCell setup delay.
Observation 6: Reducing the time taken for measurement configuration and inter-frequency reporting helps to reduce SCell setup delay.
Observation 7: Configuring SCells in activated mode can help to reduce SCell setup delay.
Observation 8: Reducing SCell activation delay would also reduce SCell setup delay.
Observation 9: Reducing SCell activation delay would require RAN4 work.
Observation 10: The inter-frequency neighbour cell measurements present the largest potential delay for SCell addition.

Proposal 1: Consider reduction in availability of inter-frequency measurements as a candidate mechanism for reducing SCell setup time.
Proposal 2: Discuss the impacts of eNB configuring a SCell to be directly in active state at RRC reconfiguration.

The document was noted.
Replaced by

R3-172869 **Analysis for reducing signalling overhead for SCells** ***Nokia, Nokia Shanghai Bell***
Replaces

Observation 1: SCell configuration is always done one SCell at a time, with no common parts for any of the SCells. The RRC signalling load of SCell configuration is N*SCellToAddMod, where N is the number of Scells.
Observation 2: The DC configuration requires transferring MCG and SCG SCell configurations over X2.
Observation 3: (P)SCell management actions require both Uu and X2 signalling.
Observation 4: (P)SCell management actions may cause significant signalling load over both Uu and X2.

Proposal 1: RAN3 to investigate signalling overhead reduction for (P)SCell management actions.

RAN3 chair: further RAN3 progress is pending RAN2 progress

The document was noted.
Replaced by

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21 Signalling reduction to enable light connection for LTE (RAN2-led) WI

WID [LTE_LIGHT_CON-Core]: RP-171459 (target: RAN#79)
No DSR
Pending SA2 SID completion and possible WID

22 Study on Separation of CP and UP for Split Option 2

SID [FS_NR_CPUP_Split]: RP-171421 (target: RAN#78)
Start from agreed baseline TR (R3-172534) and endorsed open issue list (R3-172638)

22.1 Scenarios, Interface Principles and Definitions

R3-173331 **TR 38.806 v0.0.1 on Study of separation of NR Control Plane (CP) and User Plane (UP) for split option 2**
Ericsson

Ericsson: TR number was just assigned last week, contents is the same as endorsed as in the last meeting

The document was agreed.

R3-173065 **Considerations for Separation of CP and UP in CU** ***KT Corp.***
Replaces

Proposal 1: It should be clarified whether a master CU-UP node is required or not in case that multiple CU-UP nodes are deployed.
Proposal 2: The function location of the SDAP-CP protocol in CU should be clarified.
Proposal 3: The resource management of multiple CU-UP nodes should be supported as the E1 interface functionality.

The document was noted.
Replaced by

R3-173274 **CP-UP separation: benefits and architecture** ***Intel Corporation***
Replaces

Proposal 1: RAN3 to capture the following benefits of CP-UP separation in the baseline TR.
Proposal 2: RAN3 to capture in the baseline TR the diagram illustrating a RAN architecture with CP-UP separation consisting of gNB-DU, gNB-CU-CP and gNB-CU-UP, in which the gNB-CU-CP is connected to the gNB-CU-UP via the E1 interface.
Proposal 3: a gNB-DU is connected to only one gNB-CU-CP. A gNB-CU-UP is connected to only one gNB-CU-CP while a gNB-CU-CP may be connected to multiple gNB-CU-UPs.

The document was noted.
Replaced by

R3-173252 **E1 interface principles and functions** ***Ericsson, AT&T***
Replaces

The document was revised.
Replaced by R3-173335

R3-173335 **E1 interface principles and functions** ***Ericsson, AT&T***
Replaces R3-173252

RAN3 chair: discuss further offline, include KT, Intel, Huawei comments etc., try to include Intel aspects (if possible)
Huawei: functions are excluded?

The document was revised.
Replaced by R3-173350

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R3-173350 Replaces R3-173335 **E1 interface principles and functions** ***Ericsson, AT&T***

The document was agreed.

R3-173249 Replaces **Resolution of E1 open issues – scenarios and benefits** ***Ericsson, AT&T, Intel***

The document was revised.
Replaced by R3-173332

R3-173332 Replaces R3-173249 **Resolution of E1 open issues – scenarios and benefits** ***Ericsson, AT&T, Intel***

Ericsson: would like to agree the pCR
Huawei: we need to see the benefits and drawbacks first
Ericsson: we have discussed the scenarios already several times
Vodafone: seperation gives us some degrees of freedom in network design
AT&T: if you have specific concerns to be added, then we can of course discuss them
Telecom Italia: we usually compare pros & cons, so we should also look at the impacts
RAN3 chair: discuss scenarios, pros and cons offline and try to come up with an acceptable revision

The document was revised.
Replaced by R3-173349

R3-173349 Replaces R3-173332 **Resolution of E1 open issues – scenarios and benefits** ***Ericsson, AT&T, Intel***

The document was agreed.

R3-173250 Replaces **Resolution of E1 open issues – standardization** ***Ericsson, AT&T, Intel***

The document was revised.
Replaced by R3-173333

R3-173333 Replaces R3-173250 **Resolution of E1 open issues – standardization** ***Ericsson, AT&T, Intel***

The document was postponed.

R3-173251 Replaces **Resolution of E1 open issues – interface design** ***Ericsson, AT&T, Intel***

The document was revised.
Replaced by R3-173334

R3-173334 Replaces R3-173251 **Resolution of E1 open issues – interface design** ***Ericsson, AT&T, Intel***

The document was postponed.

R3-173122 Replaces **Open issues for CP-UP separation** ***Huawei***

Proposal 1: It is proposed to use gNB-CU-CP and gNB-CU-UP for the name of CP and UP part.
Proposal 2 : It is proposed to discuss the definitions of gNB-CU, gNB-CU-CP and gNB-CU-UP.
Proposal 3 : It is proposed RAN3 discuss whether one CU-CP could be connected to more than one CU-UPs within the gNB.
Proposal 4 : It is proposed RAN3 discuss how CP-UP separation could satisfy latency requirement for control

The document was noted.
Replaced by

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R3-173460 **TS 38.806 v0.1.0 covering agreements of RAN3 #97** ***Ericsson***
based on last RAN3 agreed v0.1.1 in R3-173331

The document was Agreed.

22.2 Functions and Procedures

R3-172821 **CP functions of split gNB-CU** ***IAESI***
Replaces

The document was not treated.
Replaced by

R3-172824 **Issues on Security for CU-CP and CU-UP Separation** ***LG Electronics UK***
Replaces

The document was not treated.
Replaced by

R3-173275 **CP-UP separation: interface functions** ***Intel Corporation***
Replaces

The document was not treated.
Replaced by

R3-172986 **E1 procedures and cardinality** ***Nokia, Nokia Shanghai Bell***
Replaces

The document was not treated.
Replaced by

R3-173253 **Idle to Connected state transitions in a disaggregated gNB with E1 interface** ***Ericsson, AT&T, Vodafone***
Replaces

The document was not treated.
Replaced by

R3-173254 **Xn handover in disaggregated gNB with E1 interface** ***Ericsson, AT&T, Vodafone***
Replaces

The document was not treated.
Replaced by

R3-173255 **SgNB addition in disaggregated gNB with E1 interface** ***Ericsson, AT&T, Vodafone***
Replaces

The document was not treated.
Replaced by

R3-173123 **SgNB addition procedure for CP-UP separation** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173124 **TP on SgNB addition procedure for CP-UP separation** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173129 **Handover procedure for CP-UP separation** ***Huawei***
Replaces

The document was not treated.
Replaced by

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R3-173131 **Idle to connected procedure for CP-UP separation** ***Huawei***
Replaces

The document was not treated.
Replaced by

22.3 Others

R3-173088 **Discussion on latency of E1** ***China Telecom Corporation Ltd.***
Replaces

The document was not treated.
Replaced by

R3-173125 **Discussions on Security handling for CP-UP separation** ***Huawei***
Replaces

The document was not treated.
Replaced by

R3-173126 **TP on Security handling for CP-UP separation** ***Huawei***
Replaces

The document was not treated.
Replaced by

31 Corrections to Rel-14 and TEI14

31.1 3G

31.2 LTE.

R3-172724 **Consideration on NB-IoT UP mobility** ***Huawei***
Replaces

The document was noted.
Replaced by

R3-172725 **Correction on NB-IoT UP mobility** ***Huawei***
Replaces

Ericsson: first change ok, 2nd change (9.1.1.2) not needed
Huawei: we could change 2nd change into a note
Ericsson: would be ok with this
Samsung: 2nd change may not be correct (WCDMA does not have this note)
RAN3 chair: you can discuss the 2nd change further offline

The document was revised.
Replaced by R3-173347

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R3-173347 **Correction on NB-IoT UP mobility** ***Huawei***
Replaces R3-172725

The document was agreed.

R3-172726 **Correction of the mismatch code points of overload action** ***Huawei***
Replaces

Ericsson: it would be more correct to do this change in REL-13 for compatibility reasons
Huawei: we thought we fix this only in REL-14 as it will be backwards incompatible anyway
Nokia: our preference is to fix this in REL-14
Ericsson: wants to check for another day
RAN3 chair: ok, we will come back later this week, discuss offline

Huawei: conclusion after offline discussion: just REL-14 CR

The document was agreed.
Replaced by

R3-172753 **Correction of SeNB Release Confirm** ***Qualcomm Incorporated***
Replaces

Huawei: tabular is correct, ASN.1 is wrong
Qualcomm: ok, would like to check
RAN3 chair: discuss offline, we will come back

The document was revised.
Replaced by R3-173348

R3-173348 **Correction of SeNB Release Confirm** ***Qualcomm Incorporated***
Replaces R3-172753

The document was agreed.

R3-173020 **Correction in the tabular definition of the of SENB RELEASE CONFIRM message** ***NTT DOCOMO INC.***
Replaces inverted

The CHOICE value of the Bearer Option IE in the tabular definition of the SENB RELEASE CONFIRM message was mistakenly between "SCG Bearer" and "Split Bearer"(This correction was already agreed in R3-150406 but not implemented properly.)

covers the same topic as R3-172753

The document was withdrawn.
Replaced by

R3-172938 **Consideration on MTC positioning** ***Huawei***
Replaces

The document was noted.
Replaced by

R3-172941 **Correction on MTC positioning** ***Huawei***
Replaces

The document was agreed.
Replaced by

R3-173034 **Correction on cause vaule for VoLTE redirection** ***Huawei***
Replaces '

conclusion: offline discussion about R3-173034 and R3-173258 for stage 3 (stage 2 R3-173257 seems to be stable)

The document was postponed.
Replaced by

R3-173256 **Discussion on support of redirection for VoLTE** ***Ericsson***
Replaces

The document was noted.
Replaced by

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R3-173257 **Remove the description of Inter RAT Redirection value for MMTEL** ***Ericsson***
Replaces

conclusion: offline discussion about R3-173034 and R3-173258 for stage 3 (stage 2 R3-173257 seems to be stable)

CR will go to RAN2 for agreement (RAN3 was updating RAN2 part!)

The document was endorsed.
Replaced by

R3-173258 **Remove the description of Inter RAT Redirection value for MMTEL** ***Ericsson***
Replaces

conclusion: offline discussion about R3-173034 and R3-173258 for stage 3 (stage 2 R3-173257 seems to be stable)

The document was revised.
Replaced by R3-173400

R3-173400 **Remove the description of Inter RAT Redirection value for MMTEL** ***Ericsson***
Replaces R3-173258

The document was agreed.

R3-173259 **On the RAN2 E-UTRAN sharing enhancement** ***Ericsson***
Replaces

proposal: no RAN3 impact resulting from the approved RAN2 CR's.
conclusion: agreement: There is no immediate RAN3 or SA5 impact resulting from the approved RAN2 CRs on E-UTRAN sharing enhancements.

The document was noted.
Replaced by

R3-173267 **Support indicator for reliable DL NAS delivery** ***Nokia, Nokia Shanghai Bell***
Replaces

Qualcomm: seems to be inefficient to send this info at every message
Huawei: we do not exchange eNB capabilities over the network

The document was rejected.
Replaced by

R3-173269 **S1-MME Path Switch for C-Plane** ***Ericsson***
Replaces

proposal: include the possibility to perform S1-MME Path Switch for the C-Plane only and to introduce an indication that allows the MME to skip the Bearer Modify procedure on S11

Samsung, Huawei, Nokia: do not see a need
Huawei: this is an optimisation, do we not usually do this at the end of a REL?

The document was noted.
Replaced by

R3-173285 **S1AP Cause for E-RAB Release Due to Pre-Emption Actions** ***AT&T***
Replaces

The document was revised.
Replaced by R3-173329

R3-173329 **S1AP Cause for E-RAB Release Due to Pre-Emption Actions** ***AT&T***
Replaces R3-173285

The document was noted.

R3-173286 **S1AP Cause for E-UTRAN Pre-Emption Operations** ***AT&T***
Replaces

The document was revised.
Replaced by R3-173330

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R3-173330 **S1AP Cause for E-UTRAN Pre-Emption Operations** ***AT&T***
Replaces R3-173286

The document was agreed.

R3-173279 **Update for TS 36.464 Xw data transport (v14.1.1)** ***Intel Corporation, Nokia***
Replaces

RAN3 chair: renumbering of references is not allowed
Huawei: adding references that are not used in the document
MCC: this would require a CR

The document was noted.
Replaced by

R3-173280 **Update for TS 36.465 Xw-UP (v14.0.1)** ***Intel Corporation, Nokia***
Replaces

MCC: you need to bring a CR to change a spec which is under CR control

The document was noted.
Replaced by

32 Rel-13/Rel-14 Specification Review

32.1 Editorial

R3-173287 **Editorial correction for S1AP**
Nokia, Nokia Shanghai Bell
Replaces

The document was not treated.
Replaced by

R3-173290 **Editorial correction for S1AP**
Nokia, Nokia Shanghai Bell
Replaces

The document was not treated.
Replaced by

32.2 ASN.1

33 Withdrawal of GERAN Iu Mode Specifications from Rel-12

CT has suspended their support for GERAN Iu mode from Rel-12. As a result, GERAN Iu mode specifications TS 44.118 and 44.160 are planned to be withdrawn from Rel-12 at RAN #77 – see RAN6 Chairman's Report to RAN #76 (RP-170869) and RAN #76 Meeting Report.
RAN has tasked RAN WGs to remove any references to the above TSs from their specs; agreed CRs are expected to be submitted to RAN #77.
RAN3 Rapporteurs are kindly asked to check their specifications and submit the appropriate CRs (if any) to RAN3 #97.

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R3-173260 **Removal of references to 44.118** ***Ericsson***
Replaces

Nokia: prefers other reference or note
Ericsson: there is no other reference
RAN3 chair: the task from RAN #76 was to remove the reference and not the feature (see RP-170869 and RAN #76 report)
RAN3 chair: Nokia is rapporteur 25.413, so you may want to bring a company CR for this to RAN #77

The document was agreed.
Replaced by

R3-173261 **Removal of references to 44.118** ***Ericsson***
Replaces

The document was agreed.
Replaced by

R3-173262 **Removal of references to 44.118** ***Ericsson***
Replaces

The document was agreed.
Replaced by

34 Any other business

35 Closing of the meeting (Thursday 17:00)

The TSG RAN WG3 chairman Gino Masini (Ericsson) thanked the delegates for participating and contributing to RAN WG3 meeting #97, he thanked the host for organizing the meeting and he closed the meeting on Friday Aug. 25th, 2017 at 13:50.

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APPENDIX 23

TSG-RAN Working Group 3 meeting #93bis **TSGR3#93 R3-16xxxx**

Sophia Antipolis, France, 10th - 14th October 2016

Agenda Item: 3

Source: MCC

Title: Draft report of 3GPP TSG RAN WG3 meeting #93

Document for: Approval

Draft Report of 3GPP TSG RAN WG3 meeting #93

Gothenburg, Sweden, 22nd – 26th August 2016

Juha Korhonen

Juha.Korhonen@etsi.org

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Organisation of the meeting

Meeting:	3GPP TSG RAN WG3 #93		
Location:	Gothenburg, Sweden		
Duration:	22nd - 26th August 2016		
Host:	EF3		
Chairman:	Philippe Reininger (Huawei)		
	email: philippe.reininger@huawei.com		
TSG RAN WG3 Secretary:	Juha Korhonen (ETSI MCC)		
	email: Juha.Korhonen@etsi.org		
Email reflector:	3GPP_TSG_RAN_WG3@LIST.ETSI.ORG		
Technical documents:	ftp://ftp.3gpp.org/tsg_ran/WG3_Iu/TSGR3_93/Docs/		
Next meetings:	TSG RAN WG3 #93bis	10.10.2016 - 14.10.2016	Sophia Antipolis, France
	TSG RAN WG3 #94	14.11.2016 - 18.11.2016	Reno, Nevada, USA

Statistics of TSG RAN WG3 meeting #93

- **109 participants**
- **540~~35~~ contributions**
- **13~~1~~ agreed and endorsed CRs**
- **31~~0~~ incoming liaison statements**
- **3 outgoing liaison statements**

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1 Opening of the meeting

The chairman opened the meeting at 09:00 on Monday, 22nd of August. Martin Israelsson (Ericsson) welcomed the delegates to Gothenburg on behalf of the hosting organization (EF3).

2 Approval of the Agenda

Tdoc	Title	Source	Type	Decision
R3-161545	Agenda for RAN3#93, Gothenburg, Sweden	Chairman	Agenda	Approved

Discussion: Presented by the Chairman.
Decision: Approved

3 Approval of the minutes from previous meetings

Tdoc	Title	Source	Type	Decision
R3-161546	RAN3#92 Meeting Report, Nanjing, China	MCC	report	Approved

Discussion: Presented by the MCC technical officer.
Decision: Approved

4 Reminders

4.1 IPR Declaration

The attention of the delegates to the meeting of this Technical Specification Group was drawn to the fact that 3GPP Individual Members have the obligation under the IPR Policies of their respective Organizational Partners to inform their respective Organizational Partners of Essential IPRs they become aware of.

The delegates were asked to take note that they were thereby invited:

- to investigate whether their organization or any other organization owns IPRs which were, or were likely

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to become Essential in respect of the work of 3GPP.

- to notify their respective Organizational Partners of all potential IPRs,e.g., for ETSI, by means of the IPR Information Statement and the Licensing declaration forms.

4.2 Statement of antitrust compliance

The attention of the delegates to the meeting was drawn to the fact that 3GPP activities were subject to all applicable antitrust and competition laws and that compliance with said laws was therefore required by any participant of the meeting, including the Chairman and Vice-Chairmen and were invited to seek any clarification needed with their legal counsel. The leadership would conduct the present meeting with impartiality and in the interests of 3GPP. Delegates were reminded that timely submission of work items in advance of TSG/WG meetings was important to allow for full and fair consideration of such matters.

4.3 Responsible IT behaviour

Delegates are reminded that they share the meeting IT resources with their fellow delegates. You should not abuse the service by using bandwidth-hogging applications such as movie downloads, streaming video, web-based gaming, etc during the meeting. Use the internet service in your hotel rooms for this!

Delegates must respect the law of the hosting country, and should not visit prohibited internet sites.

In cases of persistent abuse of the internet bandwidth, MCC may restrict individual's use of the service.

In particular, the PCG has laid down the following network usage conditions:

1. Users shall not use the network to engage in illegal activities. This includes activities such as copyright violation, hacking, espionage or any other activity that may be prohibited by local laws.

2. Users shall not engage in non-work related activities that are consume excessive bandwidth or cause significant degradation of the performance of the network.

Since the network is a shared resource, users should exercise some basic etiquette when using the 3GPP network at a meeting. It is understood that high bandwidth applications such as downloading large files or video streaming might be required for business purposes, but delegates should be strongly discouraged in performing these activities for personal use. Downloading a movie or doing something in an interactive environment for personal use essentially wastes bandwidth that others need to make the meeting effective. The meeting chairman should remind end users that the network is a shared resource; the more one user grabs, the less there is for another. Email and its attachments already take up significant bandwidth (certain email programs are not very bandwidth efficient). In case of need the chair can ask the delegates to restrict IT usage to things that are essential for the meeting itself.

1.DON'T place your WiFi device in ad-hoc mode
2.DON'T set up a personal hotspot in the meeting room

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3.DO try 802.11a if your WiFi device supports it
4.DON'T manually allocate an IP address
5.DON'T be a bandwidth hog by streaming video, playing online games, or downloading huge files
6.DON'T use packet probing software which clogs the local network (e.g., packet sniffers or port scanners)

Reference: http://www.3gpp.org/Delegates-Corner#outil_sommaire_14

5 Incoming LSs

A summary of incoming liaison statements is given in Annex B. For corresponding outgoing liaison statements see Annex C.

5.1 New Incoming LSs

Tdoc	Title	Source	WI	Rel	Source Tdoc	Response To	Contact Company	Decision
R3-161555	Reply LS on NB-IOT NAS retransmission timers (To: SA2, CT1; Cc: RAN3, CT4)	RAN2	NB_IOT-Core	Rel-13	R2-164578		Vodafone	Noted

Discussion: Presented by the Chairman.
Decision: Noted

R3-161558	LS on Network Assistance for Network Synchronization in LTE (To: RAN1, RAN4; Cc: RAN3)	RAN	FS_LTE_NW_SYNC	Rel-14	RP-161262		Huawei	Noted

Discussion: Presented by Liwei Qiu (Huawei). In this LS, RAN asks clarification from both RAN1 and RAN for two solutions so that RAN3 could proceed.
Decision: Noted

R3-161566	Response LS on Progress on Security for LWIP (To: SA3, RAN; Cc: RAN2, RAN3)	SA		Rel-13	SP-160457		Nokia	Noted

Discussion: Presented by Krzysztof Kordybach (Nokia).

Gino Masini (Ericsson): This proposal would result in one group specifying the interface and another one specifying the node. This would be quite unusual.

Decision: Noted

R3-161567	Reply LS on Multiple bearer capability handling (To: SA2, RAN2; Cc: RAN3, CT)	CT1	CIoT-CT	Rel-13	C1-163890		Intel	Noted

Discussion: Presented by Sangeetha Bangolae (Intel).
Decision: Noted

R3-161568	LS on prioritization of NAS signalling (To: SA2, RAN2, RAN3)	CT1	CIoT-CT	Rel-13	C1-164015		Ericsson	Noted

Discussion: Presented by Martin Israelsson (Ericsson). CT1 has decided to include a note in the NAS specification to inform that prioritized handling of NAS signalling procedures compared to transport of user data via the control plane procedures cannot be guaranteed in the downlink direction in this version of the specification (C1-164003, C1-164004).

Decision: Noted

CSFB & RLF

Tdoc	Title	Source	WI	Rel	Source Tdoc	Response To	Contact Company	Decision
R3-161548	LS response on lower layer failure (To: RAN3; Cc: RAN2)	CT1	HetNet_eMOB_LTE-Core, TEI12	Rel-12	C1-162977	R3-161028	Samsung	Noted

Discussion: Presented by Lixiang Xu (Samsung). By the present definition and understanding in CT1, NAS is not aware that a lower layer failure at the AS layer is because of a radio link failure. NAS only knows that a lower layer failure occurred, but is not aware of the reason for it.

Decision: Noted

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161611	Increased CSFB setup delay problem in case of context fetch	Samsung	discussion						Rel-12	Postponed

Discussion: Presented by Lixiang Xu (Samsung). Based on CT1's response in R3-161548, this paper proposes to include CSFB indicator in the handover request message in case the handover is triggered by context fetch.

Hakon Helmers (ALU): We can also have a stage-2 solution only as an option.

- Corner case, RLF occurs when CSFB occurs?
- UE needs wait timer expiration (5 mn?)?

-> Offline_#7 (Samsung):
- Can implementation solve the issue
- As a compromise stage-2 change only?

Decision: Postponed

R3-161612	Introduction of solution to solve CSFB setup delay problem	Samsung	CR	36.423	0993		F	HetNet_eMOB_LTE-Core, TEI12	Rel-12	Postponed

Discussion: Presented by Lixiang Xu (Samsung).
Decision: Postponed

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R3-161613	Introduction of solution to solve CSFB setup delay problem	Samsung	CR	36.423	0994		A	HetNet_eMOB_LTE-Core, TEI12	Rel-13	Postponed

Discussion: Presented by Lixiang Xu (Samsung).
Decision: Postponed

eDRX

Tdoc	Title	Source	WI	Rel	Source Tdoc	Response To	Contact Company	Decision
R3-161554	LS on RAN2 agreements on eDRX Paging Hyper-frame Calculation (To: RAN3, SA2; Cc: CT1, CT4, RAN)	RAN2	LTE_extDRX-Core	Rel-13	R2-164575		Samsung	Noted

Discussion: Presented by Xiaowan Ke (Samsung). As the title indicates.
Decision: Noted

R3-161556	LS on eDRX paging timing calculation and security concern (To: SA3; Cc: RAN3, SA2, CT1)	RAN2	LTE_extDRX-Core	Rel-13	R2-164582		NTT DOCOMO	Noted

Discussion: Presented by the Chairman. RAN asks SA3 to give guidance on if the UE_ID_H, or the calculated PH and/or PTW_start could be conveyed to the eNB, or whether some other means is necessary to avoid security issues.

Decision: Noted

R3-161559	Reply LS on eDRX Paging Hyper-frame and PTW_Start Calculation (To: RAN2, RAN3, SA2; Cc: CT1, CT4)	RAN	LTE_extDRX-Core	Rel-13	RP-161311		NTT DOCOMO	Noted

Discussion: Presented by the Chairman. As a response, TSG-RAN was unable to conclude on the modification of PTW_start calculation and decided to postpone the topic together with the RAN2 agreed CR on Paging Hyper-frame calculation in R2-164574.

Decision: Noted

R3-161569	Reply to LS on eDRX paging timing calculation and security concern (To: RAN2; Cc: RAN3, SA2, CT1)	SA3	LTE_extDRX-Core	Rel-13	S3-161153		NTT DOCOMO	Noted

Discussion: Presented by the Chairman. SA3 has security concerns to send additional bits of IMSI to the eNB and use it for paging. SA3 suggest RAN2 to find a solution without using these extra bits of IMSI.

Decision: Noted

****

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-> eDRX progress is pending to RAN2.

NAS Timers

Tdoc	Title	Source	WI	Rel	Source Tdoc	Response To	Contact Company	Decision
R3-161560	LS on Enhanced coverage impacts on NAS timers in eMTC (To: RAN3, CT1; Cc: SA2)	RAN	LTE_MTCe2_L1-Core	Rel-13	RP-161312		Ericsson	Noted

Discussion: Presented by Alex Vesely (Ericsson). In this LS, RAN asks RAN3 to introduce corresponding “early” UE CE capability indication from eNB to MME as in attached CR to 36.331.

Decision: Noted

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161637	Discussion on CE Mode B support Indicator	Huawei	discussion					LTE_MTCe2_L1-Core	Rel-13	Noted

Discussion: Presented by Zheng Zhou (Huawei). Based on the RAN LS on Enhanced coverage impacts on NAS timers in eMTC, the MME needs to know whether the UE is capable to supports CE mode B or not. Two proposals are made:
1: include the CE-mode-B Support Indicator in S1AP: INITIAL UE MESSAGE message.
2: include the CE-mode-B Support Indicator in S1AP: HANDOVER NOTIFY message.

Alex Vesely (Ericsson): Should we modify Handover Request Ack?

Decision: Noted

R3-161638	Introduction of CE mode B support indicator	Huawei	CR	36.413	1438		F	LTE_MTCe2_L1-Core	Rel-13	Revised
R3-161950	Introduction of CE mode B support indicator	Huawei	CR	36.413	1438	1	F	LTE_MTCe2_L1-Core	Rel-13	Agreed

Discussion: Presented by Zheng Zhou (Huawei). This CR implements the proposals made by R3-161637.

-> Offline_#8 (Huawei):
- HO Notification vs HO Ack Req?
-> Revised in R3-161950

Decision: Agreed

R3-161788	S1 impact of NAS timer setting for eMTC	ZTE Corporation	CR	36.413	1441		F		Rel-13	Noted

Discussion: Presented by Yin Gao (ZTE). ZTE proposes to modify only the Intial UE Message, as requsted by RAN.
Decision: Noted

R3-161879	Correction of NAS Timer Extension for NBIOT and eMTC	Nokia, Alcatel-Lucent Shanghai Bell	discussion						Rel-13	Noted

Discussion: Presented by Philippe Godin (Nokia). Nokia's paper is handling the MTC aspects of this problem. This paper claims that RAN#72 has reasonably solved the issue of extended NAS timers for eMTC UEs but not for NB-IOT UEs even though the issue is much more severe as shown in this paper.
As a consequence without indication from eNB, either:
- the MME sets the NAS timer too short causing retransmissions and impacting MME counters (see [2]),
- the MME sets the NAS timer too long which severely degrades performance for NB-IOT UEs in good coverage (e.g. UEs in cell reselection).
It is therefore proposed:
1: following RAN guidance, introduce CE ModeB capability over S1 in the Initial UE Message and close the issue of extended NAS timers for eMTC.
2: introduce the NAS PDU Transmission Delay Indicator IE in the Initial UE Message as recommended by SA2 and earlier proposed by RAN3 but do it with an additive factor in line with recent CT1 decision.

Alex Vesely (Ericsson): This is a CT1 issue. We should not do anything more than what CT1 has requested.
Zheng Zhou (Huawei): Agrees with Ericsson, unless CT1 explicitly asks us to do more.

-> An LS from CT1 is required before further work in RAN3.

Decision: Noted

R3-161880	Correction of NAS Timer Extension for NBIOT	Nokia, Alcatel-Lucent Shanghai Bell	CR	36.413	0028		F	NB_IOT-Core	Rel-13	Withdrawn

Discussion:
Decision: Withdrawn

R3-161927	Correction of NAS Timer Extension for NBIOT	Nokia, Alcatel-Lucent Shanghai Bell	CR	36.413	1463		F	NB_IOT-Core	Rel-13	Noted

Discussion: Presented by Philippe Godin (Nokia). This paper implements the proposals made by R3-161879.
Decision: Noted

R3-161885	NAS Timer setting for eMTC	Ericsson	CR	36.413	1459		F	LTE_MTCe2_L1-Core	Rel-13	Noted

Discussion: Presented by Alex Vesely (Ericsson). The “early” UE CE mode capability indication received on Uu in RRCConnectionSetupComplete which will be passed on to the MME in the S1AP INITIAL UE MESSAGE. This allows the MME to be aware of UE CE mode capability before the UE EUTRA capabilities are available in the network (e.g. at initial ATTACH). This solution also allows the MME to avoid examining the transparent container UERadioPagingInformation.

Decision: Noted

CSG & DC

Tdoc	Title	Source	WI	Rel	Source	Response	Contact Company	Decision

					Tdoc	To		
R3-161562	Response LS on CSG and LIPA support in DC (Dual Connectivity) enhancements for LTE (To: RAN3; Cc: RAN, RAN2)	SA2	LTE_dualC_ext-Core	Rel-13	S2-163205		Nokia	Noted

Discussion: Presented by Tsunehiko Chiba (Nokia). SA2 asks RAN3 to verify SA2 understanding and if correct to kindly update their specifications to reflect it.
Decision: Noted

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161624	Discussion on CSG support in Dual Connectivity	Nokia, Alcatel-Lucent Shanghai Bell	discussion					LTE_SC_enh_dualC-Core	Rel-13	Noted

Discussion: Presented by Tsunehiko Chiba (Nokia). Nokia proposes the following changes.
- In 36.300 CR, add “In the current version of the specification, the procedure is only used for CSG membership verification for Dual Connectivity.”
- In 36.413 CR, remove “If no CSG Membership Info IE is received in the E-RAB MODIFICATION INDICATION message and the UE was previously configured with resources from a hybrid cell, the MME shall consider that the UE has moved into an open access cell.”

Decision: Noted

R3-161625	Correction on CSG support in Dual Connectivity	Nokia, Alcatel-Lucent Shanghai Bell	draftCR	36.300			F	LTE_SC_enh_dualC-Core	Rel-13	Endorsed

Discussion: Presented by Tsunehiko Chiba (Nokia). This paper implements the stage-2 proposal from R3-161624.
Decision: Endorsed

R3-161626	Correction on CSG support in Dual Connectivity	Nokia, Alcatel-Lucent Shanghai Bell	CR	36.413	1435		F	LTE_SC_enh_dualC-Core	Rel-13	~~Agreed~~Revised
R3-162084	Correction on CSG support in Dual Connectivity	Nokia, Alcatel-Lucent Shanghai Bell	CR	36.413	1435	1	F	LTE_SC_enh_dualC-Core	Rel-13	Agreed

Discussion: Presented by Tsunehiko Chiba (Nokia). This paper implements the stage-3 proposal from R3-161624.

-> Agreed, but then revised by MCC in R3-162084 because of a coverpage update (missing CR number).

Decision: Agreed

SRVCC Capability Real Time

Tdoc	Title	Source	WI	Rel	Source Tdoc	Response To	Contact Company	Decision
R3-161564	LS on Update of SRVCC Capability Real time during emergency PDC connection setup (To: RAN3)	SA2		Rel-13	S2-163215		Ericsson	Noted

Discussion: Presented by Martin Israelsson (Ericsson). SA2 requests RAN WG3 to evaluate the alternatives to update eNB in ECM-Connected State with “SRVCC operation possible” during the emergency PDN connectivity establishment and release procedures, and provide feedback.

Decision: Noted

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161869	Handling of SRVCC for Emergency Calls	Nokia, Alcatel-Lucent Shanghai Bell	discussion					eSRVCC	Rel-13	Noted

Discussion: Presented by Philippe Godin (Nokia). Nokia proposes a solution for this backwards compatibility issue which is derived from what we’ve done in the past for the CSFB high priority, when RAN3 wanted to differentiate between two types: one due to MPS and one due to emergency call:
Solution 5: Add an additional new Only Emergency SRVCC Operation Possible IE in addition to the existing SRVCC Operation Possible IE.

- Solutions 1 and 2 are backwards compatible but do not include legacy nodes, i.e., eNB upgrade is needed.
- Huawei has a slight preference on Ericsson's solution.
- Samsung prefers Ericsson's solution.

-> Offline_#9 (Ericsson):
- Select a solution and provide CR?
-> The CR s in R3-162033.

Decision: Noted

R3-161870	SRVCC capability for Emergency call	Nokia, Alcatel-Lucent Shanghai Bell	CR	36.413	1445		F	eSRVCC	Rel-13	Noted

Discussion: Presented by Philippe Godin (Nokia). This CR introduces a new Additional SRVCC Operation IE in the Initial UE Context Setup, Handover Request and DL NAS Transport messages which indicate that SRVCC Operation is only possible for emergency calls.

Decision: Noted

R3-161882	Update of SRVCC capability for emergency call	Ericsson	discussion					TEI13	Rel-13	Noted

Discussion: Presented by Martin Israelsson (Ericsson). Ericsson claims that the most appropriate solution to update the “SRVCC operation possible” during emergency calls is to update and use the UE CONTEXT MODIFICATION REQUEST message.

Philippe Godin (Nokia): Cannot see how this solution could work.

Decision: Noted

R3-161883	Correction to enable update of SRVCC capability for emergency call	Ericsson	CR	36.413	1458		F	TEI13	Rel-13	Revised
R3-162033	Correction to enable update of SRVCC capability for emergency call	Ericsson, Nokia	CR	36.413	1458	1	F	TEI13	Rel-13	Agreed

Discussion: Presented by Martin Israelsson (Ericsson). In this CR the SRVCC Operation Possible IE has been introduced in the UE CONTEXT MODIFICATION REQUEST message to enable update of the SRVCC capability during emergency calls.

-> Revised in R3-162033.

Decision: Agreed

Not Treated:

R3-161871	SRVCC capability for Emergency call	Nokia, Alcatel-Lucent Shanghai Bell	CR	36.423	0997		F	eSRVCC	Rel-13	
R3-161872	[DRAFT] Reply LS on update of SRVCC capability real time during emergency PDN connection setup (To: SA2)	Nokia	LS out					eSRVCC	Rel-13	
R3-161881	Response to LS on Update of SRVCC Capability Real time during emergency PDC connection setup (To: SA2)	Ericsson	LS out					eSRVCC	Rel-13	

LSin received during the meeting

Tdoc	Title	Source	WI	Rel	Source Tdoc	Response To	Contact Company	Decision
R3-162018	RAN2#95 agreements Light Connection (To: RAN3)	RAN2	LTE_LIGHT_CON-Core	Rel-14	R2-165793		Huawei & Intel	Noted

Discussion: Presented by Mingzeng Dai (Huawei)..
Decision: Noted

R3-162019	LS on RAN1 agreements in sidelink-based V2V (To: RAN2, RAN3, RAN4)	RAN1	LTE_SL_V2V-Core	Rel-14	R1-168251		LGE	Noted

Discussion: Presented by Jian Xu (LGE).
Decision: Noted

R3-162020	Reply LS on Network Assistance for Network Synchronization in LTE (To: RAN3, RAN; Cc: RAN4)	RAN1	FS_LTE_NW_SYNC	Rel-14	R1-167916		Huawei	Noted

Discussion: Presented by Liwei Qiu (Huawei).
Decision: Noted

R3-162052	LS on eDRX Paging Hyper-frame and PTW_Start Calculation (To: SA2, RAN3, CT1; Cc: SA3, CT4)	RAN2	LTE_extDRX-Core	Rel-13	R2-165935		NTT DOCOMO	Noted

Discussion: Presented by Wuri Hapsari (NTT DOCOMO). RAN2 would like to inform the relevant WGs about the solution direction of changing the calculation formula of eDRX Paging Hyper-frame and PTW_Start Calculation.

- Will the hash calculation defined in TS 36.304, be in MME or eNB?

-> Email#02 (NTT DOCOMO)
- Check if the LS from RAN2 has an impact on RAN3 specifications with regards to R3-161645 and the RAN2 email discussion
- If any RAN3 impact is identified, provide an update of R3-161645 or a new CR
- If no agreement on any CRs, a company CR to RAN may be provided.
- Deadline Wednesday 7th September noon (12:00) CEST

Summary:
Kicked off by NTT DOCOMO 30th August with a document that looked at potential impact related to the RAN2 LS and asked for company views. Positive response from Qualcomm (with proposal to consider an abnormal condition with a later CR for the case when S-TMSI is not available). Positive response from Huawei. Positive response from Nokia. Clarification from Qualcomm that any abnormal condition could be discussed next meeting. Positive response from CATT. Huawei provided a draft CR update that included allocated IE ID. NTT DOCOMO summarised the email discussion and conclusion.

The draft updated CR1440r1 provided by Huawei is agreed. And the agreed CR has already been provided in R3-162083.

Decision: Noted

R3-162081	LS on RAN2 agreements on UMTS and LTE joint operation (To: RAN3)	RAN2	FS_UTRA_LTE_JOP	Rel-14	R2-165977		China Unicom	Postponed

Discussion:
Decision: Postponed

5.2 Left over LSs/ pending actions

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision

6 Documents for immediate consideration

7 Organizational topics

Future meeting dates and hosting

Meeting	Dates	Venue	Host
RAN#73	19 - 22 September 2016	New Orleans, USA	NAF
RAN3#93bis	10 - 14 October 2016	Sophia Antipolis, France	ETSI
RAN3#94	14 - 18 November 2016	USA	NAF
RAN3-NR	17 - 19 January 2017		
RAN3#95	13 - 17 February 2017	Athens, Greece	EF3
RAN3#95bis	3 - 7 April 2017	USA	NAF
RAN3#96	15 - 19 May 2017	China	CF3

8 General, protocol principles and issues

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161547	TR 30.531, v1.25.0	MCC	draft TR	30.531					Rel-14	Noted

Discussion: Presented by the MCC technical officer.
Decision: Noted

9 Corrections to Rel-13 or earlier releases

9.1 3G

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision

9.2 LTE

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161623	Correction to RETRIEVE UE CONTEXT RESPONSE	CATT	CR	36.423	0986		F		Rel-13	Noted

Discussion: Presented by Jiancheng Sun (CATT). This CR proposes to change the semantics description for the RRC Context IE, add the reference to HandoverPreparationInformation-NB message as defined in subclause 10.6.2 of TS 36.331.

Decision: Noted

R3-161642	Correction on NB-IoT inter node RRC containers	Huawei	CR	36.413	1439		F	NB_IOT-Core	Rel-13	Revised
R3-161951	Correction on NB-IoT inter node RRC containers	Huawei	CR	36.413	1439	1	F	NB_IOT-Core	Rel-13	Agreed

Discussion: Presented by Xuelong Wang (Huawei). This CR updates the semantics description of Coverage Enhancement Level, UE Radio Capability, and UE Radio Capability for Paging IEs, to clarify that for NB-IoT Includes the corresponding RRC message as defined in 10.6.2 of TS 36.331.

-> Offline_#10 (Huawei):
- Check with rapporteur for accurate semantics
-> Revised in R3-161951.

Decision: Agreed

R3-161643	Correction on NB-IoT inter node RRC container	Huawei	CR	36.423	0989		F	NB_IOT-Core	Rel-13	Revised
R3-161952	Correction on NB-IoT inter node RRC container	Huawei	CR	36.423	0989	1	F	NB_IOT-Core	Rel-13	Agreed

Discussion: Presented by Xuelong Wang (Huawei).
-> Revised in R3-161952.

Decision: Agreed

R3-161877	Transfer of NBIOT capabilities	Nokia, Alcatel-Lucent Shanghai Bell	discus sion					NB_IOT-Core	Rel-13	Noted

Discussion: Presented by Philippe Godin (Nokia).
Decision: Noted

R3-161878	Transfer of NBIOT capabilities	Nokia, Alcatel-Lucent Shanghai Bell	CR	36.413	0024		F	NB_IOT-Core	Rel-13	Withdrawn

Discussion:
Decision: Withdrawn

R3-161926	Correction of Transfer of NBIOT capabilities	Nokia, Alcatel-Lucent Shanghai Bell	CR	36.413	1462		F	NB_IOT-Core	Rel-13	Noted

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Discussion: Presented by Philippe Godin (Nokia).
Decision: Noted

R3-161640	Unsuccessful Retrieve UE Context procedure	Huawei	discussion					NB_IOT-Core	Rel-13	Noted

Discussion: Presented by Xuelong Wang (Huawei). Figure 20.2.2.19-2 is misleading as it only shows one possibility of the eNB's choices. Considering that the section is only related to the X2 procedure between the new and old eNBs, it is proposed RAN3 to remove the RRC procedure part in the Figure 20.2.2.19-2 of TS 36.300.

Alex Vesely (Ericsson): The current text is not wrong.
Xiaowan Ke (Samsung): As a compromise proposal, just remove RRC Connection Setup.
Sean Kelley (Nokia): Prefers to keep the specification unchanged.

Decision: Noted

R3-161641	Correction on Retrieve UE Context Failure	Huawei	draftCR	36.300			F	NB_IOT-Core	Rel-13	Noted

Discussion: Presented by Xuelong Wang (Huawei). This CR removes the RRC procedures part in the Figure 20.2.2.19-2.
Decision: Noted

R3-161644	Discussion on NB-IoT UE Identity Index Value in Paging	Huawei	discussion					NB_IOT-Core	Rel-13	Noted

Discussion: Presented by Xuelong Wang (Huawei). It has earlier been agreed to use IMSI mode 4096 to calculate the Paging resources for NB-IoT. To support this, it is proposed to introduce a new 12bits NB-IoT UE Identity Index Value IE in S1AP PAGING message.

Luis Lopes (Qualcomm): We should wait for RAN2's decision on eDRX IDs.
Yin Gao (ZTE): Supports the view of Qualcomm.

-> Offline_#11 (Huawei):
- Pending to RAN progress

-> Waiting for an LS from RAN2.

Decision: Noted

R3-161645	Introduction of NB-IoT UE Identity Index Value in Paging	Huawei	CR	36.413	1440		F	NB_IOT-Core	Rel-13	Revised~~Noted~~
R3-162083	Introduction of NB-IoT UE Identity Index Value in Paging	Huawei	CR	36.413	1440	1	F	NB_IOT-Core	Rel-13	Agreed

Discussion: Presented by Xuelong Wang (Huawei). This CR implements the proposal made by R3-161644.

-> Revised in R3-162083.
-> Agreed in Email#02.

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Decision: ~~Noted~~Agreed

R3-161716	Discussion on NB-IoT Cell Information	Huawei	discussion					NB_IOT-Core	Rel-13	Noted

Discussion: Presented by Xuelong Wang (Huawei). Based on the conclusions from RAN1 and RAN2 on the cell frequency and bandwidth, in order to support correct NB-IoT Cell information exchanging between eNBs, the following proposals are made:
1: Extend the Transmission Bandwidth IE, to add one more code point “bw1”.
2: Introduce DL CarrierFreqOffset and UL CarrierFreqOffset IEs in Served Cell Information IE.
3: Introduce DL CarrierFreqOffset IE in the Neighbour Information IE in X2 SETUP REQUEST/RESPONSE and ENB CONFIGURATION UPDATE REQUEST messages.

- No agreement on proposal 3.

Decision: Noted

R3-161717	Correction on NB-IoT Cell Information	Huawei	CR	36.423	0990		F	NB_IOT-Core	Rel-13	Noted

Discussion: Presented by Xuelong Wang (Huawei). This CR implements the proposals made by R3-161716.
Decision: Noted

R3-161765	Served Cell Information for NB-IoT	Nokia, Alcatel-Lucent Shanghai Bell	discussion						Rel-13	Noted

Discussion: Presented by Sean Kelley (Nokia). Nokia's proposal is a subset of Huawei's, including proposals 1 and 2 only.
Decision: Noted

R3-161766	Correction to Served Cell Information for NB-IoT	Nokia, Alcatel-Lucent Shanghai Bell	CR	36.423	0995		F	NB_IOT-Core	Rel-13	Revised
R3-161953	Correction to Served Cell Information for NB-IoT	Nokia, Alcatel-Lucent Shanghai Bell	CR	36.423	0995	1	F	NB_IOT-Core	Rel-13	Not Available

Discussion: Presented by Sean Kelley (Nokia). The following changes are introduced:
1. The Transmission Bandwidth IE is extended to include value bw1.
2. The Offset of NB-IoT Channel Number to DL EARFCN IE and Offset of NB-IoT Channel Number to UL EARFCN IE are added in the Served Cell Information IE.

-> Introduction of the BW of the NB-IoT cell is agreed.

-> Offline_#12 (Nokia):
- Offline to focus on the offset needed?
-> Revised in R3-161953

-> To contnue in the next meeting

Decision: Not Available

R3-161937	Correction on Security Related Information in UE Context Retrieval Request	Samsung	discussion					TEI13	Rel-13	Noted

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Discussion: Presented by Xiaowan Ke (Samsung). In Retrieve UE Context, it is understood that Resume ID is used to identify the UE context. The short MAC-I and the E-UTRAN Cell Identifier are used for security verification. The E-UTRAN Cell Identifier is also used for access check. The existing text for the usage of the three IEs is incorrect and needs to be updated.

Alex Vesely (Ericsson): It is possible to acquire PLMN ID afterwards.

Decision: Noted

R3-161938	Correction on Security Related Information in UE Context Retrieval Request	Samsung	CR	36.423	0998		F	TEI13	Rel-13	Revised
R3-161954	Correction on Security Related Information in UE Context Retrieval Request	Samsung	CR	36.423	0998	1	F	TEI13	Rel-13	Revised
R3-162045	Correction on Security Related Information in UE Context Retrieval Request	Samsung	CR	36.423	0998	2	F	TEI13	Rel-13	Agreed

Discussion: Presented by Xiaowan Ke (Samsung). This CR implements the proposal made by R3-161937.

-> Offline_#13 (Samsung)
- Improve the TP for the removed text "If the old eNB is able to identify the UE context by means of the Resume ID, the ShortMAC-I and the E-UTRAN Cell Identifier of the new cell contained in the RETRIEVE UE CONTEXT REQUEST message, it shall respond with the RETRIEVE UE CONTEXT RESPONSE message."
- Remove other changes if the CR is agreeable
-> Revised in R3-161954.

-> Email#01 (Samsung)
- Correction to Security Related Information
- Deadline September 7th Wed noon (12:00) CEST
- Check implementation of the new IE against ASN.1 and backwards compatibility
-> Revised in R3-162045.

Summary:
Kicked off by Samsung 1st September. Comment from Huawei to only change the Semantics description for the ShortMAC-I IE. CATT also indicated a preference to only change the Semantics description. Ericsson indicated a preference to introduce a new IE (and not just change the semantics). Nokia proposed a 3rd solution (new IE at the end) but also indicated that the solution to only change the Semantics description would ok. Samsung proposed to go with the majority view and only change the semantics of ShortMAC-I IE. Ericsson indicated a preference for a new IE. Samsung explained why the change of the Semantics description for the ShortMAC-I IE would be backwards compatible for a smart implementation. Samsung provided two versions of the draft CR. Ericsson questioned the need for the additional eNB behaviour. Response from Samsung clarifying that the intention with Email #01 was to check backwards compatibility for the new IE. Ericsson indicated that option 1 is acceptable.

The CR for option 1 is agreed. Please provide the agreed CR0998r2 in R3-162045.

Decision: Agreed

R3-161586	Correction to UE Context Resume Function	Intel Corporation	discussion					NB_IOT-Core	Rel-13	Revised
R3-161955	Correction to UE Context Resume Function	Intel Corporation	CR	36.413	1464		F	NB_IOT-Core	Rel-13	Revised
R3-162046	Correction to UE Context Resume Function	Intel Corporation	CR	36.413	1464	1	F	NB_IOT-Core	Rel-13	Not Availabe

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Discussion: Presented by Sangeetha Bangolae (Intel). This contributions makes two proposals:
1. Include further details to align network and UE behavior for bearer synchronization while performing UE CONTEXT RESUME function.
2. Include the Resume cause to the UE CONTEXT RESUME REQUEST message.

Yin Gao (ZTE): Proposal 1 is a RAN2 matter.

-> Offline_#14 (Intel)
- Provide a CR for the new cause only
-> Revised in R3-161955, CR#1464.

-> Nokia wants further time for checking
- Add protocol IE ID.
- Update revision marks
-> Revised in R3-162046.
-> To be continued.

Decision: Not Available

R3-161725	X2AP correction for eMTC	Nokia, Alcatel-Lucent Shanghai Bell	discussion						Rel-13	Noted

Discussion: Presented by Hakon Helmers (Nokia). In order to avoid failed handovers or failed handover preparations for UEs supporting Rel-13 eMTC narrow-band operation (coverage enhancement), It is proposed to enhance the X2AP Served Cell Information IE with an indication about whether the RRC SystemInformationBlockType1-BR IE is scheduled in the cell.

Decision: Noted

R3-161726	Target cell selection for low complexity UEs and UEs in enhanced coverage	Nokia, Alcatel-Lucent Shanghai Bell	CR	36.423	0992		F	TEI13, LTE_MTCe2_L1-Core	Rel-13	Revised
R3-162038	Target cell selection for low complexity UEs and UEs in enhanced coverage	Nokia, Alcatel-Lucent Shanghai Bell	CR	36.423	0992	1	F	TEI13, LTE_MTCe2_L1-Core	Rel-13	Postponed

Discussion: Presented by Hakon Helmes (Nokia). This CR implements the proposal made by R3-161725.

Alex Vesely (Ericsson): Do we really need a new IE to address this issue?
Zheng Zhou (Huawei): This is really a cell capability issue.
HH: This is not about what a cell supports but what it will transmit at a certain point of time, thus it is not cell capability,
Luis Lopes (Qualcomm):

-> Offline_#15 (Nokia):
- Check the scenario for the idle mode
- Is this issue related to capability exchange
- OAM may be enough to solve the issue
-> Revised in R3-162038

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Decision: Postponed

R3-162014	WF on target cell selection for low complexity UEs and UEs in enhanced coverage	Nokia, Alcatel-Lucent Shanghai Bell	discussion					TEI13, LTE_MTCe2_L1-Core	Rel-14	Noted

Discussion: Presented by Hakon Helmers (Nokia). The present paper provides a status of discussions relative to proposed Rel-13 X2AP correction relative to target cell selection for UEs supporting eMTC features.

Decision: Noted

R3-161792	Correction on the reinitiating waiting time in Xw	HUAWEI TECHNOLOGIES Co. Ltd.	CR	36.463	0022		F		Rel-13	Noted

Discussion: Presented by Chenguang Qian (Huawei). The Time To Wait IEs are added into the Xw SETUP FAILURE message and WT CONFIGURATION FAILURE message.
Sasha Sirotkin (Intel): A cut-and-paste error "X2 Setup" should be "Xw Setup"
Gino Masini (Ericsson): This topic could be seen as an optimization.

-> To be discussed in TEI14.

Decision: Noted

R3-161823	Correction on WT initiated WT modification procedure	Huawei	draftCR	36.300			F	LTE_WLAN_radio-Core	Rel-13	Revised
R3-161956	Correction on WT initiated WT modification procedure	Huawei	draftCR	36.300			F	LTE_WLAN_radio-Core	Rel-13	Endorsed

Discussion: Presented by Zheng Zhou (Huawei). It was agreed that the WT initiated WT modification procedure is used to request to the eNB the release of LWA bearers, or change their WT GTP Tunnel Endpoints. However, in current section 22B.2.2.4 still stated this procedure is only for the bearer release.

Gino Masini (Ericsson): Supports the CR but proposes a few editorials.

-> Offline_#16 (Huawei):
- Editorials
- Check the wording
- The CR is for Rel-13, correct the coversheet
-> Revised in R3-161956

Decision: Endorsed

R3-161826	Correction of the LWA PDU type	Intel Corporation	CR	36.464	0005		F	TEI13, LTE_WLAN_radio	Rel-13	Agreed

Discussion: Presented by Sasha Sirotkin (Intel). In this CR, the “PDCP PDU” expression is corrected to “LWA PDU”. Additionally, an editorial is corrected.

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Gino Masini (Ericsson): This looks like an editorial change, and could be handled in a rapporteur review CR for Rel-14.
Luis Lopes (Qualcomm): The current text could lead to confusion.

-> The CR is agreed.

Decision: Agreed

R3-161827	Correction of the LWA PDU type	Intel Corporation	CR	36.464	0006		F	TEI13, LTE_WLAN_radio	Rel-14	Noted

Discussion: Presented by Sasha Sirotkin (Intel).
-> No need for a Rel-14 CR since Rel-14 spec does not exist yet.

Decision: Noted

R3-161828	Correction of the LWA PDU type	Intel Corporation	CR	36.465	0008		F	TEI13, LTE_WLAN_radio	Rel-13	Noted

Discussion: Presented by Sasha Sirotkin (Intel). The LWA PDU term is used on most places, however there is one occurrence of the undefined term LWAAP PDU. Thus, LWAAP PDU is corrected to LWA PDU.

- A full correction review is preferred in the end of Rel-14, including this topic.

Decision: Noted

R3-161829	Correction of the LWA PDU type	Intel Corporation	CR	36.465	0009		F	TEI13, LTE_WLAN_radio	Rel-14	Noted

Discussion: Presented by Sasha Sirotkin (Intel).
-> No need for a Rel-14 CR since Rel-14 spec does not exist yet.

Decision: Noted

R3-161884	Packet Length Correction	Ericsson	CR	25.446	0029		F	TEI13	Rel-13	Noted

Discussion: Presented by Gino Masini (Ericsson).The Elapsed Octet Counter and the Total Number of Octets do not count the header part of the SYNC PDU (recently clarified by RAN3 in R3-160537); however, nothing is specified for the Length of the Nth Packet. This can create problems in IOT. This CR specifies that the Length of the Nth Packet does not count the header part of the SYNC PDU, consistently with the Elapsed Octet Counter and the Total Number of Octets.

Steven Xu (Nokia): The proposed CR is not correct. In 5.5.3.16, the first sentence already defines that the header is included in the length.

-> Offline_#17 (Ericsson):
- Check Nokia's comment (above).

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Decision: Noted

R3-161873	UE Radio Capability for signaling only RRC connections	Nokia, Alcatel-Lucent Shanghai Bell, TeliaSonera, Huawei	discussion						Rel-13	Noted

Discussion: Presented by Philippe Godin (Nokia). This contribution explains again the issue of inaccurate idle mode steering of UEs during signalling only RRC connections after RAN2 confirmed the undefined behaviour of the UE when receiving non supported frequencies and confirmed the non compliancy of eNB sending non supported frequencies to the UE. As a consequence it is proposed to solve the problem by allowing sending the UE Radio Capability IE within the S1AP DOWNLINK NAS TRANSPORT message for all these signalling only RRC connections and not only for CIoT.

Decision: Noted

R3-161874	Correction of UE Radio Capability Information	Nokia, Alcatel-Lucent Shanghai Bell, TeliaSonera, Huawei	draftCR	36.300				TEI13	Rel-13	Endorsed

Discussion: Presented by Philippe Godin (Nokia). This CR implements the proposal made by R3-161873.
Markus Drevo (Ericsson): The problem can be handled via an alternative method based on eNB's knowledge on UE capabilities (implementation).

-> Offline_#18 (Nokia):
- Is the CR needed or can we rely on implementation?

Decision: Endorsed

R3-161850	Presence Condition of Paging Time Window IE	NTT DOCOMO INC.	CR	36.413	1444		F	LTE_extDRX-Core	Rel-13	Noted

Discussion: Presented by Wuri Hapsari (NTT DOCOMO). This CR proposes that the relevant procedure text for Paging Time Window IE is clarified such that, only if eDRX cycle value is 5.12s, Paging Time Window IE is optional.

-> Offline_#19 (NTT DOCOMO)
- Does the MME always need to send the information?
- Is the information needed?

Decision: Noted

10 Study on Next Generation New Radio Access Technology Void

10.1 General

Work Plan

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Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161789	Work plan on NR Study Item in RAN2 and RAN3	NTT DOCOMO, INC. (Rapporteur)	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Hideaki Takahashi (NTT DOCOMO). Contains a work plan of NR SI for RAN2 and RAN3 and how to split the work since the tasks for RAN2 and RAN3 are closely related.

Angelo Centonza (Ericsson): We should add a checklist for November, and if we are not on schedule then, we have to prioritise what we can achieve before March 2017. There are only two meetings left before March.
Mariana Goldhamer (IAESI): We should make sure that the CP is also discussed in RAN3. The work plan presented mentions only the UP.
Yin Gao (ZTE): IRAT mobility should also be checked with RAN2

-> The Work Plan is endorsed.

Decision: Noted

R3-161875	Status of NextGen study in SA2	Nokia, CMCC	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Sean Kelley (Nokia). This contribution summarizes the latest SA2 agreements from SA2#115 and SA2#116 that are of potential relevance to RAN3 work.

Sasha Sirotkin (Intel): Useful paper; can we make some agreements based on the contents?
Chairman: There are specific papers submitted for that.

Decision: Noted

LSin

Tdoc	Title	Source	WI	Rel	Source Tdoc	Response To	Contact Company	Decision
R3-161570	LS on the study of the management of RAN virtualized network functions (To: RAN3; Cc: SA)	SA5		Rel-14	S5-164305		Intel	Noted

Discussion: Presented by Sasha Sirotkin (Intel). SA5 is currently working on the work items dedicated to the management of mobile networks that include virtualized network functions, targeting completion in Release 14. The current scope of the work items is limited to the management aspect of mobile networks that include virtualized network functions which can be part of EPC or IMS. SA5 is considering to commence a new SI to study on whether it is necessary to extend its scope of above mentioned work items to include virtualized network functions which can be part of RAN. SA5 is seeking inputs from RAN3 on information needed for the study, for example, which functions in clause 5 deployment scenarios of TR 38.801 can be virtualized?

Decision: Noted

R3-161601	New Radio internal architecture and Virtualized Small Cells (To: RAN3)	Small Cell			scf_3GPP_liaison		Cisco	Noted

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		Forum						

Discussion: Presented by the Chairman. The SCF has been studying the issue of virtualization of the RAN as it applies to the deployment of small cells for over 2 years, and would like to share the relevant information with RAN3.

Mariana Goldhamer (IAESI): SCF website has a white paper on NFV. The conclusion in that paper is that NFV deployment does not provide cost benefit. However, the main benefit of NFV is the centralised coordination of small cells.

Decision: Noted

R3-161946	Liaison letter to 3GPP RAN3 (To: RAN3)	IEEE 802.1			liaison-3GPP-RAN3-0716-v01		Ericsson	Noted

Discussion: Presented by Angelo Centonza (Ericsson). IEEE 802.1 would appreciate if 3GPP RAN3 could take P802.1CM and its potential future amendments into consideration. They would be grateful if 3GPP RAN3 would inform us of relevant ongoing work in the RAN3 Working Group, for potential input to P802.1CM or any future amendment particularly with regards to requirements.

Decision: Noted

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161578	[DRAFT] Reply LS on the study of the management of RAN virtualized network functions (To: SA5; Cc: SA)	Intel Corporation	LS out					FS_NR_newRAT	Rel-14	Revised
R3-161961	[DRAFT] Reply LS on the study of the management of RAN virtualized network functions (To: SA5; Cc: SA)	Intel Corporation	LS out					FS_NR_newRAT	Rel-14	Revised
R3-162069	[DRAFT] Reply LS on the study of the management of RAN virtualized network functions (To: SA5; Cc: SA)	Intel Corporation	LS out					FS_NR_newRAT	Rel-14	Postponed

Discussion: Presented by Sasha Sirotkin (Intel). With regards to the SA3 question “which functions in clause 5 deployment scenarios of TR 38.801 can be virtualized?”, RAN3 would like to clarify that clause 5 of the TR 38.801 contains different scenarios which NR shall support, in particular the centralized scenario in which the central unit (CU) contains RAN NFs which can be virtualized.

Furthermore, RAN3 would like to inform SA3 that it has progressed on the definition of RAN NFs in clause 8 of the TR 38.801, in particular RAN3 have defined a number of RAN NFs, specifying which NFs can be virtualized. RAN3 will continue working on the realization of RAN NFs to allow SA5 progress on RAN NFV.

-> Offline_#24 (Intel)
- Update in case of progress
-> Revised in R3-161961.
-> Revised in R3-162069.

-> LS response postponed

Decision: Postponed

R3-161760	Discussion on RAN Functions Realization	Huawei	discussion					FS_NR_newRAT	Rel-14	Noted

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Discussion: Presented by Henrik Olofsson (Huawei). Huawei argues that the study of RAN3 is still in the very early stage, with the identification of the RAN functions. There is no consensus today on theses aspects. We would like also to clarify that the virtualization is a possible way to realize the standardisation of the RAN functions. However, the benefit and gain of such standardization against legacy way, is questionable.

Florin Baboescu (Broadcom): At this point we should be careful on what to respond regarding NFV. It is not yet discussed in RAN.

Decision: Noted

R3-161761	[DRAFT] Response LS on the study of the management of RAN virtualized network (To: SA5; Cc: SA)	Huawei	LS out					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Henrik Olofsson (Huawei). Contains Huawei's proposed LS response.
Decision: Noted

10.1.1 RAN3 TR 38.801

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161687	TR 38.801, New Radio Access Technology: Radio Access Architecture and Interfaces, v0.3.0	DOCOMO Communications Lab.	draft TR	38.801				FS_NR_newRAT	Rel-14	Revised
R3-161962	TR 38.801, New Radio Access Technology: Radio Access Architecture and Interfaces, v0.4.0	DOCOMO Communications Lab.	draft TR	38.801				FS_NR_newRAT	Rel-14	Agreed

Discussion: Presented by Hideaki Takahashi (NTT DOCOMO).

-> Version 0.3.0 is endorsed.

-> Offline_#25 (NEC)
- Update the TR based on the following agreed TPs:
  - R3-161867
  - R3-161972
  - R3-161973 (only the sentence, not the new section)
  - R3-161975
  - R3-162049
  - R3-161978
  - R3-161979
  - R3-161980
  - R3-162011
  - R3-161966
  - R3-162056
  - R3-162057
  - R3-162058
  - R3-162032

- R3-162034
- R3-162059
- R3-162062
- R3-162051
- R3-162063
- R3-162005
- R3-161995
- R3-161997
- R3-161998
- R3-162077
- R3-162053
- R3-162054
- R3-162060
- R3-162078

-> Revised in R3-161962

Note: The cleanup task (wording, terminology, etc) will be handled before the next meeting. It will be separate from the TR update in Email#03.

-> Email#03 (NEC)
- TR Update (integration of the TPs listed above)
- Deadline 7th of September, Wednesday noon (12:00) CEST
- The update should focus only on new agreed TP, the alignment on terminology in core part (text and figure) will be provided by next meeting.

-> Revised R3-161962.

Summary:
Kicked off by NEC 31th August with a first draft. Comment from ZTE to move the TP in R3-161995 for interworking with WLAN into chapter 15. Nokia proposed 3 corrections. Confirmation from NEC on ZTE and Nokia correction 1/ and 2/, but proposed that the rapporteur would handle correction 3/ later. NEC provided a second draft. AT&T propose to move the implementation of some agreed text from 6.1.2.1 to 6.1.2.1.1, and to re-label the options to 7-1 and 7-2. CATT indicated support for the proposal from AT&T. NEC provided a 3rd draft taking into account the proposal from AT&T. Nokia pointed out one un-clarity with the 3rd draft as a result of the re-structuring, and proposed to add a sentence. NEC provided a 4th draft taking into account the comment from Nokia. Nokia pointed out 2 additional editorials, and NEC confirmed that they will be corrected in the next draft. Ericsson proposed and update of 2 section titles. NEC provided a 5th draft taking into account the latest comments.

Draft 5 is agreed as version 0.4.0. Please provide the agreed TR version in R3-161962.

Decision: Agreed

R3-161592	Miscellaneous Issues for Clarification in 38.801	ZTE Corporation	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Li Yang (ZTE). ZTE proposes:
1: To use/align “NR gNB” as the single terminology throughout the whole TR 38.801 (both texts and figures).
2a: To cleanup all descriptions with “LTE” and “eLTE” throughout TR 38.801.
2b: For cases where both LTE and eLTE are referred to and valid, to use “eLTE” accordingly.
3: To introduce the explicit definitions for CU and DU as above.
4: To update the section 6.3.1 according to the SA2’ latest agreements.

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Chairman: Lets do the cleanup tasks via email discussion.
Angelo Centonza (Ericsson): Proposal 3 is related to the discussion on functional split.

Decision: Noted

R3-161886	On the use of the term "NR RAN" in RAN (WG3) discussions	Ericsson	pCR	38.801				FS_NR_newRAT	Rel-14	Revised
R3-161972	On the use of the term "NR RAN" in RAN (WG3) discussions	Ericsson	pCR	38.801				FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Alex Vesely (Ericsson). Ericsson suggests to choose an unambiguous term and rename “NR RAN” to “New RAN” and to update TR 38.801 accordingly as highlighted in the Annex of this paper.

-> Offline_#33 (Ericsson)
- Evolved UTRAN needs to support NR functions via the introduction of New RAN.
  -> Note or FFS to clarify
- Evolved UTRAN also needs a definition
- Deadline: Thursday morning coffee break.
-> Revised in R3-161972.
- Note: NR == gNB

-> The TP is agreed.

Decision: Noted

10.1.2 Objectives, Requirements and deployment scenarios

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161683	5G access – a heterogeneous deployment scenario	IAESI, Thales, Fairspectrum, VTT	discussion					FS_NR_newRAT	Rel-14	Revised
R3-161973	5G access – a heterogeneous deployment scenario	IAESI, Thales, Fairspectrum, VTT	pCR	38.801				FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Mariana Goldhamer (IAESI). It is proposed to introduce the content of the section “Heterogeneous multi-connectivity deployment scenario” as a new section after section 5.4 of TR38.801.

-> The proposal is agreeable but a TP is needed.

-> Offline_#34 (IAESI)
- Draft a short TP which states that NR deployment allows heterogeneous deployment: "the different deployment scenarios may coexist in the same area".
-> Revised in R3-161973.

-> The TP is agreed; but only the sentence; not the new section.

Decision: Noted

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R3-161776	Discussion on 5G Deployment Scenarios	ZTE Corporation	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Yin Gao (ZTE).
Decision: Noted

R3-161778	Support for Ultra-Reliable Low Latency Communication	ZTE Corporation	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Yin Gao (ZTE). This contribution analyses the characteristics of all kinds of URCCL scenarios, and proposes:
1: For URLLC, the end-to-end latency should take the followings into consideration: the latency over air interface, the latency over RAN-CN interface, and the latency within CN.
2: For URLLC, the one way end to end latency between UE and CN should support equal or less than 1ms.
3: A local UP GW near to or collocated with RAN can minimize the transmission delay in the network.
4: Seamless handover can be considered for URLLC service in order to improve the reliability and reduce latency.
5: When multi-connectivity function is used for URLLC, the packet duplicate detection should be performed at the anchor point of multiple RL connections on the UL.

Decision: Noted

10.2 Overall RAN Architecture

10.2.1 RAN-CN functional split

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161603	NR RAN functions	Samsung	discussion					FS_NR_newRAT	Rel-14	Revised
R3-161974	TP on IRAT HO for 5G	Ericsson	pCR	38.801				FS_NR_newRAT	Rel-14	Revised
R3-162048	TP on IRAT HO for 5G	Ericsson	pCR	38.801				FS_NR_newRAT	Rel-14	Revised
R3-162077	TP on IRAT HO for 5G	Ericsson	pCR	38.801				FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Lixiang Xu (Samsung). This paper proposes to move the function of LTE-NR handover via CN from the “may” list to the confirmed list.

-> Offline_#35 (Ericsson)
- Add one sentence to explain why IRAT HO as an NR function is not only a decision by RAN3, but also by RAN2/SA2.
-> Revised in R3-161974.

- Comments that the last Note is too long.
- Second attempt for a TP.
-> Revised in R3-162048

- Remove RAN2

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- When discussing solution to support this function...

-> Revised in R3-162077
-> The TP is agreed unseen.

Decision: Noted

R3-161745	Refinement of NR RAN functions	Huawei	discussion					FS_NR_newRAT	Rel-14	Revised
R3-161975	Refinement of NR RAN functions	Huawei	pCR	38.801				FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Henrik Olofsson (Huawei). The following proposals are made:
1: Agree the “contacting UEs in inactive mode” function from network point of view.
2: Put functions as “Radio channel ciphering and deciphering”, “Integrity protection” and “Header compression” as FFS.
3: RAN needs to support QoS related functions.

-> Offline_#36 (Huawei)
- QoS Support: Either add a basic sentence or remove the QoS part
- Mobility same as above for IRAT
-> Revised in R3-161975.

-> The TP is agreed.

Decision: Noted

R3-161686	Additional NR RAN specific functions	IAESI, Thales, Fairspectrum, VTT	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Mariana Goldhamer (IAESI). The gNB base station includes one Central Unit and several Distributed Units. This structure involves a number of new functions, not yet listed in TR 38.801. It is proposed to add the following functions to the list of “Functions specific for NR RAN”:
1. Forwarding and routing of the user traffic
2. Centralized coordination of the NR Central and Distributed Units, non-centralized gNBs and LTE base stations in the geographic area covered by a Centralized gNB.

-> No support

Decision: Noted

R3-161887	Functions for URLLC	Ericsson	pCR	38.801				FS_NR_newRAT	Rel-14	Revised
R3-161976	TP on URLLC	Ericsson	pCR	38.801				FS_NR_newRAT	Rel-14	Revised
R3-162049	TP on URLLC	Ericsson	pCR	38.801				FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Angelo Centonza (Ericsson). Two proposals:

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1: Do not focus the discussion in standardization on high availability as in node, HW/SW, transport link availability, and instead the focus should be on coverage, mobility, radio link features etc. related to providing low latency and high reliability.
2: A high level description of NR RAN functionality to support high reliability services should be added to the RAN TR as NR RAN functionality.

-> Offline_#37 (Ericsson):
- TP for the URLLC Request for section 4 of the TR
- FFS if this requirement needs to be a new NR function
-> Revised in R3-161976.

- Add an FFS for end-to-end delay
-> The TP is agreed unseen in R3-162049

Decision: Noted

10.2.2 Realization of Network Slicing

Principles

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161710	Network Slicing: A Holistic Approach	NEC	discussion					FS_NR_newRAT	Rel-14	Revised
R3-161977	Network Slicing: A Holistic Approach	NEC	discussion					FS_NR_newRAT	Rel-14	Revised
R3-162050	Network Slicing: A Holistic Approach	NEC	discussion					FS_NR_newRAT	Rel-14	Revised
R3-162053	Network Slicing: A Holistic Approach	NEC	pCR	38.801				FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Sivavakeesar Sivapathalingham (NEC). This paper proposes that slicing related aspects are included in TR 38.801.

Phlippe Godin (Nokia): Does not agree with all the observations in this paper.

-> Offline_#38 (NEC)
- Additional list of topics for slice study
  - RAN3 topics
  - Agreed topics
-> Revised in R3-161977

- Double-check the TP
-> Revised in R3-162050
-> Revised in R3-162053

-> The TP is agreed.

Decision: Noted

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R3-161751	Key principles for Support of Network Slicing in RAN	Huawei	discussion					FS_NR_newRAT	Rel-14	Revised
R3-161978	Key principles for Support of Network Slicing in RAN	Huawei	pCR	38.801				FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Henrik Olofsson (Huawei). The following proposals are made:
1. The definitions of network slice approved in SA2 should be captured into RAN3 TR.
2. The RAN shall support a differentiated handling of traffic through different network slices. A network slice may be dynamically commissioned or re-configured to meet traffic demand or may have been pre-configured by the operator.
3. The RAN shall support initial selection of the CN entity for initial routing of uplink messages. The selection may be based on received slice selection assistance information.
4. The RAN shall support the selection of the RAN part of the network slice using slice selection assistance information provided by the UE or CN which can be used to unambiguously identify one of the network slice instances in the PLMN.
5. The RAN shall provide radio resource management, using per-slice traffic management information, to efficiently multiplex the traffic from multiple UEs in different slices onto the available shared radio resources.
6. The RAN shall support policies for resolving resourcing conflicts between slices.
7. The RAN shall support control mechanisms for common and shared resources on a per-slice basis .
8. The RAN shall support different QoS parameters for CP and UP traffic and for different slices.

- "Using per-UE traffic management information" -> rewording
- Slice ID definition and interpretation
- QoS: remove CP and UP concepts.
- CN core selection

-> Offline_#39 (Huawei)
- Need to update:
  - RAN awarenes of slices
  - Resource isolation between slices (FFS)
  - Resource management between slices from R3-161888 (agreed)
  - RAN selection of CN entity (FFS)

-> Revised in R3-161978.

-> The TP is agreed.

Decision: Noted

-> Each Network Slicing princple will be subject to a dedicated subclause.

R3-161888	Principles of Network Slicing for 5G	Ericsson	pCR	38.801				FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Angelo Centonza (Ericsson). The following observations are done:
1: it should be possible for a single RAN node to support multiple network slices and to freely use appropriate RRM policies to ensure different levels of slice resource isolation and meet established SLAs

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2: 3GPP should not prevent the possibility of deploying RAN nodes that are dedicated to one or a few network slices. However, the scenario to be considered as reference should be one where one RAN node supports multiple slices.
3: it should be possible to allocate resources for control channels serving all UEs independently of the slice they need to connect. Such resources would not be subject to per slice resource policies
4: The RAN should offer means to protect slices from each other, i.e., avoid that shortage of shared resources (e.g. common signaling resources) in one slice breaks the service level agreement for another slice
5: Configuration of network slice policies and functions is derived by agreements taken by the operator, e.g. SLAs, and it is left to implementation
6: The CN node terminating the UE signalling connection should be able to support multiple network slices. The UE should be able to access multiple network slices over the same RAN/CN signalling connection
7: The RAN is assumed to receive a network slice identifier that allows to trigger signalling connection establishment with an appropriate node in the CN. Such CN node may consist of the node finally serving the UE or it might reroute the UE to other nodes serving the requested network slice.

-> Resource management between slices to be added to the TP in R3-161978.

Decision: Noted

Slice Selection

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161861	Solution for Selection of Network Slice and CN entity	Nokia, Alcatel-Lucent Shanghai Bell, Samsung, ZTE, CATT	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Philippe Godin (Nokia). This paper recalls the progress made in SA2 on slicing and proposes RAN3 to capture a RAN solution aligned with the merged proposal solution agreed in tdoc [6] in section 6.1.2 of S2-164116 which enables multiple slices to be simultaneously supported per UE. Two proposals are made:
1: Capture in the RAN3 TR the RAN solution above enabling simultaneous support of multiple slices per UE.
2: Update the general section 9.1 “RAN selection of CN Entity” to distinguish the cases where a CN entity has already been allocated or not for the selected PLMN.

Decision: Noted

R3-161689	On selection of RAN part of the network slice	CATT	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Chunlin Ni (CATT).
- Already part of the offline discussion.

Decision: Noted

R3-161665	Network Slice Selection	QUALCOMM CDMA Technologies	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Xipeng Zhu (Qualcomm). This paper proposes an alternative text for "RAN awareness of slices".
Decision: Noted

R3-161597	Network Slice Selection Procedure	ZTE Corporation	discus					FS_NR_newR	Rel-14	Noted

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			sion					AT		

Discussion: Presented by Li Yang (ZTE). This paper proposes a generic approach to network slice selection.

Angelo Centonza (Ericsson): Does not cover all alternatives.

Decision: Noted

R3-161759	RAN Support for Core Network Slicing	Huawei	discus sion					FS_NR_newR AT	Rel-14	Noted

Discussion: Presented by Henrik Olofsson (Huawei). This paper proposes to add a very large chapter on Realization of Network Slicing.
Angelo Centonza (Ericsson): Does not cover all alternatives.

Decision: Noted

R3-161889	Network Slice Selection for 5G	Ericsson	pCR	38.801				FS_NR_newR AT	Rel-14	Noted

Discussion: Presented by Angelo Centonza (Ericsson). The following proposals are presented:
1: Mechanisms for network slice selection based on Slice ID indication from the UE and from the CN should be in TR38.801.
2: Agree on the principle that a UE can only access in parallel the network slices supported by the CN node serving it.

Decision: Noted

R3-161929	Consideration for network slice selection	LG Electronics Inc.	discus sion					FS_NR_newR AT	Rel-14	Noted

Discussion: Presented by Seokjung Kim (LGE). This contribution focuses on the issue on network slice selection and makes the following proposals:
1: Instead of the gNB, the common CP function is responsible to authenticate and authorize the UE for accessing the operator's network and the slice by the UE provided slice ID.
2: The gNB verifies if the UE is authorized to select a certain slice based on the result from CN, which verifies the UE during MM attach procedure or session setup procedure.

Decision: Noted

****

-> Offline_#40 (Nokia)
- Discuss how to proceed with slide selection; three alternatives
  - Capture all proposals from SA2 with RAN impacts; or
  - TP for generic aspects of slice selection
  - Do nothing
- TP for the section introduction: title and editor's notes on what is expected pending to the discussion (skeleton)
- In R3-161979.

R3-161979	TP for Network Slice election and CN entity selection	Nokia, Alcatel-Lucent Shanghai Bell	pCR	38.801				FS_NR_newR AT	Rel-14	Noted

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Discussion: Presented by Philippe Godin (Nokia).
-> The TP is agreed.

Decision: Noted

R3-162036	Generic slice selection	Nokia	pCR	38.801				FS_NR_newRAT	Rel-14	Not Available

Discussion:
Decision: Not Available

Resource Isolation

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161666	Resource Isolation for RAN Part of Network Slice	QUALCOMM CDMA Technologies	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Xipeng Zhu (Qualcomm). Three proposals are presented:
1: Radio bearer level isolation shall be supported for network slicing. Multiplexing multiple network slices on same radio bearer shall be excluded.
2: Different slices may use different access resource partition to avoid one slice blocking other slices. It is up to RAN1/RAN2 to decide how to partition access channel e.g. in frequency, time and preamble.
3: Cell and/or frequency level isolation should be supported for network slicing.

Decision: Noted

R3-161596	Clarification on Network Slicing in RAN	ZTE Corporation	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Li Yang (ZTE). ZTE proposes to update the text for Resource isolation between slices:

- Resource isolation between slices (FFS): the RAN shall support resource isolation between slices.
Editor's Note: Resource isolation needs to be clarified: It is unclear possible if resource isolation would imply that multiple slices cannot share control plane (respectively user plane) resources or processing resources in common. It is unclear possibleif resource isolation would imply that cryptographic means should be used to isolate CP and UP traffic between slices. The FFS includes at least :
- Random access resource for slices should be isolated,;
- Resources for data transmission should be isolated between slices;
- Load control and access control independently to each slice;

Also, it proposed that RAN is not supposed to do any UE's authorization during accessing NW Slices; SA2/3 should confirm such understanding.

Decision: Noted

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-> Offline_#41 (Qualcomm)

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- TP for the section introduction: title and editor's notes on what is expected pending to the discussion (skeleton)
- TP for Resource Isolation if possible
- In R3-161980

R3-161980	Resource Isolation for RAN Part of Network Slice	Qualcomm	pCR	38.801				FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Xipeng Zhu (Qualcomm). This paper proposes TP for resource isolation between slices in RAN.
-> The TP is agreed.

Decision: Noted

QoS

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161667	QoS for slicing in RAN	QUALCOMM CDMA Technologies	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Xipeng Zhu (Qualcomm). This paper has three proposals:
1: Slice level QoS enforcement shall be supported by RAN.
2: RAN receives slice level QoS from core network.
3: RAN design shall be able to support slice level QoS parameters for all QoS parameters that have a corresponding APN level definitions.

- 1-to-1 mapping between slice / QoS / DRB looks restrictive
- No link between QoS and slice
- Pending to SA2.

Decision: Noted

Configuration

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161752	RAN configuration for network slices	Huawei	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Henrik Olofsson (Huawei). This paper proposes to add a section on the configuration of network slices:

9.y RAN configuration of network slices
In addition to a customised set of network functions, each slice may have a distinct set of performance requirements that must be met to ensure that traffic associated with the slice satisfies those business and service needs. From a RAN perspective, providing the appropriate treatment to traffic associated with a network slice involves:
1. associating traffic to and from a UE with a corresponding network slice.

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2. identifying the set of traffic management parameters associated with the UE.
3. identifying the set of traffic management parameters associated with the selected slice.
4. ensuring that traffic to and from the UE conforms to both UE-specific per-slice parameters and aggregate slice traffic management parameters.
5. ensuring that traffic associated with one network slice does not unduly impact traffic associated with other slices.
To accomplish this, the RAN needs per-UE traffic management parameters.

Decision: Noted

10.2.3 Others

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161650	QoS model for NR RAN	Samsung	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Hong Wang (Samsung). This discussion paper presents general consideration on the QoS model for NR and how RAN aggregation IP flow into the radio bearer. Two proposals:
1: No EPS bearer in the NG1.
2: Consider adopting per-flow QoS model for RAN that will allow for differentiating between flows within the radio bearer.

Decision: Noted

R3-161672	Principles for QoS in the RAN	QUALCOMM CDMA Technologies	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Xipeng Zhu (Qualcomm). This paper has three proposals:
1: Agree on below QoS principles, based on RAN2/SA2 agreements:
- Flow based QoS is supported.
- Flow is identified by U-plane marking on encapsulation protocol e.g. GTP-U and PDCP.
- DRB is still supported in 5G to define the QoS treatment in RAN.

2: The RAN QoS framework should support using multiple DRBs to differentiate QoS treatments for packets to and from a specific UE.
3: Flows associated with a specific UE requiring the same QoS treatments (e.g. scheduling priority, delay, SDU error rate) can be grouped as a DRB (Data Radio Bearer) in RAN.

Decision: Noted

R3-161690	QoS framework impact on RAN	CATT	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Aijuan Liu (CATT). It is proposed that the mapping relationship between “PDU session traffic” (e.g. “flows”) and radio bearer is left to network implementation at RAN. In order to allow for flexibility, mapping between “PDU session traffic” and RB is not limited to one-to-one mapping.

Decision: Noted

R3-161779	Consideration on QoS enforcement in NG RAN	ZTE Corporation	discussion					FS_NR_newRAT	Rel-14	Noted

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Discussion: Presented by Yin Gao (ZTE). Three proposals are made:
1: To enforce QoS in RAN, the following CP functions and UP functions shall be introduced in the NG DRB management framework:
CP functions:
- QoS profile reception from NG CN and storage;
- NG DRB management (establishment, modification, release etc.) according to the received QoS profile from NG CN or according to the QoS profile and the identified flow ID from UP data;
- NG DRB information transmission to UE: convey the associated flow ID(s) for each NG DRB to the UE at least for uplink transmission;

UP functions:
- flow ID identification from the received data packet;
- NG DRB association: associate the UP data between the tunnels on NG3 (or PDU sessions) and NG DRBs based on the the stored NG DRB information & the identified flow ID. The NG DRB information (e.g. the associated flow ID(s) for each NG DRB) is stored in UP entity after NG DRB establishment;

2: It should be possible that NG DRBs can be shared by different PDU sessions.
3: The flow ID can be used for UP association but the detail association solution should be left to RAN2's decision.

Decision: Noted

R3-161832	Considerations on QoS aspects for NR	Intel Corporation	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Sangeetha Bangolae (Intel). This paper proposes RAN3 to take SA2 agreements into consideration for NR QoS framework study in RAN3.
Decision: Noted

R3-161864	Content Aware QoS framework and NG1 impact	Nokia, Alcatel-Lucent Shanghai Bell	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Philippe Godin (Nokia). Ths paper proposes to add a 5-step description of the generic QoS framework and NG1 impacts:
1. At PDU Session creation, the CN CP may signal QoS rules to the CN UP and to the RAN. The QoS rules are used by CN UP to detect and classify accordingly the flows received for this PDU session into QoS class(es).
2. At PDU session creation the RAN may create in anticipation one radio bearer for one or several expected QoS class(es). A radio bearer applies similar QoS treatment to its packets.
3. When traffic is sent each QoS class is then signaled in-band from CN UP to RAN over NG1-U by packet marking with a QoS indicator in NG1-U encapsulation header.
4. When receiving a marked packet over NG1-U the RAN maps it over the adequate radio bearer according to the (received or standardized) QoS rules. The RAN may create an additional radio bearer at this stage if no suitable radio bearer has been created at step 2 (e.g. new QoS indicator received).
5. For uplink packets, reflective QoS controlled by the network may be applied as defined in TR 23.799.

Decision: Noted

10.3 RAN architectures and interfaces

10.3.1 General principles

NG1 Principles

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Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161866	Splitting Key Principles for RAN-CN interface	Nokia, Alcatel-Lucent Shanghai Bell	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Philippe Godin (Nokia). This paper proposes to re-organize the NG1 principles to differentiate principles which are common to NG1-C and NG1-U, principles which apply to NG1-C only, principles which apply for NG1-U only, for better clarity. It will also be easier to capture new principles which affect either CP or UP.

-> Too early to see the separation of sub-clauses.

Decision: Noted

R3-161867	Key Principles for NG1 Application Protocol	Nokia, Alcatel-Lucent Shanghai Bell	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Philippe Godin (Nokia). This paper emphasizes the importance of selecting an Application Protocol for NG1-C which is modular in design and which syntax optimizes the encoding /decoding efficiency. It is proposed to add the following principle for the NG1-C interface:
- The NG1 Application Protocol shall support modular procedures design and use a syntax allowing optimized encoding / decoding efficiency.

-> The TP is agreed.

Decision: Noted

NG Architecture Diagram and interface naming

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161805	CP/UP separation for NR	Deutsche Telekom, AT&T, SK-Telecom, Intel, CMCC, Telecom Italia	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Andreas Neubacher (DT). This contribution addresses the CP/UP separation, and the following proposals give some guidelines as to how this requirement can be addressed in the ongoing SI for NR:
1. CP/UP separation for NR should consist of a functional split between CP functions and UP functions.
2. RAN2 & RAN3 will identify the CP functions. The functions defined for the current LTE architecture can be reused as the initial basis for NR.
3. CP functions should be grouped based on latency requirements, on network and user-specific control, and on selected RAT.
4. The interface between CP and UP shall be standardized and open. Further, coordination between RAN2 and RAN3 is needed to progress on the functional split between CP and UP.
5. NR CP/UP separation is introduced in phased way: Rel-15 should target less delay-sensitive CP functions, e.g. RRC, whereas separation of synchronous CP functions is left for further releases.

- The purpose of virtualization is to make the feature independent of the platform.

Li Yang (ZTE): We should be careful on introducing the CP-UP interface. It could make things more complex.

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Angelo Centonza (Ericsson): Would like to separate the discussion on NFV and functions, and on the other hand the discussion on interfaces.
Mariana Goldhamer (IAESI): It does not make sense to separate everything. We should discuss on which separations are useful.

Decision: Noted

R3-161574	C-plane and U-plane separation of NR RAN	Intel Corporation, KT Corp., Deutsche Telekom, AT&T, Samsung, Telecom Italia	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Sasha Sirotkin (Intel). Two proposals are made:
1: Discuss which reference architecture (Figure 1 or Figure 2) shall be used in 38.801 and to capture the selected option.
2: Discuss the classification of RAN functions as control or user plane and to indicate this in 38.801.

Zheng Zhou (Huawei): In Figure 1, what are the functionalities in interfaces NGy and NGz?
Teruaki Toeda (NTT DOCOMO): You are introducing a new interface NGx... what is the motivation for it?
Li Yang (ZTE): We do not need CP - UP interface for centralised architecture.

- Motivation for the CP-UP separation?

Decision: Noted

R3-161945	Response to R3-161805 and R3-161574	IAESI, Fairspectrum	response					FS_NR_newRAT	Rel-14	Withdrawn

Discussion:
Decision: Withdrawn

R3-161947	Response to contributions R3-161805 and R3-161574	IAESI, Thales, Fairspectrum	response					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Mariana Goldhamer (IAESI). This paper proposes a modified version of the proposals in R3-161805, as follows:
1: CP/UP separation for NR should consist of a functional split between CP functions and UP functions while considering the Centralized Coordination and where possible the abstractions of PHY/Layer 2 of the RAN.
2: ~~RAN2 &~~ RAN3 will identify the abstractions and the Central CP functions. The suitable functions defined for the current LTE architecture can be reused as the initial basis for NR.
3: The Central CP functions should be grouped based on latency requirements and their level of PHY/Level 2 abstraction, on network and user-specific control, and on selected RAT.
4 (new): The first studies will cover the benefits resulting from applying the CP-UP separation including a Central Coordinator to heterogenous deployments including centralized gNBs, non-centralized gNBs and eNBs.
5 (was 4): The interface between CP and UP shall be standardized and open. Further, coordination between RAN2 and RAN3 is needed to progress on the functional split between CP and UP.
~~6 (was 5): NR CP/UP separation is introduced in phased way: Rel-15 should target less delay-sensitive CP functions, e.g. RRC , whereas separation of synchronous CP functions is left for further release~~

Decision: Noted

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R3-161669	RAN Internal Interfaces	QUALCOMM CDMA Technologies	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Xipeng Zhu (Qualcomm). Five proposals are made:
1: Adopt SA2 reference point naming NG2, NG3 and terminologies NG-RAN, NG-Core into RAN3 TR.
2: Capture figure 2 into RAN3 TR as RAN architecture.
3: Capture the table 1 as the baseline for the functions to be supported over the XN2 control plane interface.
4: Consider the existing LTE X2AP interface as a good starting point for the XN2 control plane interface
5: Agree below principles for the specification of XN2 interface:
- the XN2 interface shall be open;
- the XN2 interface shall support the exchange of signalling information between the NG-RAN nodes;
- from a logical standpoint, the XN2 is a point-to-point interface between NG-RAN nodes. A point-to-point logical interface shall be supported even in the absence of a physical direct connection;
- the XN2 interface shall support control plane and user plane separation;
- the XN2 interface shall separate Radio Network Layer and Transport Network Layer.

Yin Gao (ZTE): In general agrees with Qualcomm's proposals.

- the paper proposes X2-like interface inside NG-RAN for related functions

Chairman: What are the termination points for such an interface?
Gavin Horn (Qualcomm): The new X2-like interface is between CU and CU. It is like the gNB - gNB interface.

Decision: Noted

R3-161594	Further Thoughts on CP and UP Separation Architecture	ZTE Corporation	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Li Yang (ZTE). This paper provides a large number of proposals:
1: To adopt Option 4 as the baseline architecture for CP-NFs provision, sticking to single level RRC/RRM provision.
2: To adopt Option 3 as the baseline architecture for UP-NFs provision. There is one special case that all UP-NFs are configured in DU entity alone (CU is transparent for UP data).
3a: For connection between CU-C and CU-U, no standardized interface is needed.
3b: For connection between DU-C and DU-U, no standardized interface is needed.
3c: For connection between CU-C and DU-U, NGFI-C interfaces needs to be specified.
3d: For connection between CU-U and DU-U, NGFI-U interfaces needs to be specified.
3e: For connection between CU1-C and CU2-C, Xnew-C interface needs to be specified.
3f: For connection between CU1-U and CU2-U, Xnew-U interface needs to be specified.
3g: For connection between gNB1-C and gNB2-C, Xnew-C interface needs to be specified.
3h: For connection between gNB1-U and gNB2-U, Xnew-U interface needs to be specified.
4a: The NGFI-C interface between CU-C and DU-U should support direct signalling data transfer w.o. involving NGFI-U interface.
4b: The Xnew-C interface should support direct signalling data transfer w.o. involving Xnew-U interface.
4c: The behaviours/performances of NGFI-C interface should be decoupled with those of NGFI-U.
4d: The behaviours/performances of Xnew-C interface should be decoupled with those of Xnew-U.
5: To discuss the mapping of NR-NFs onto CP/UP entities as shown in Figure 7.

- No interface between CP and UP

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- Capture figure on UP/CP?

Decision: Noted

R3-161602	Misalignment between SA2 and RAN3	Samsung	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Lixiang Xu (Samsung). This contribution briefly discussed one misalignment problem between SA2 and RAN3. In order to make the spec more consistent, it is proposed to ask SA2 to align with RAN3 by using NG1 between NextGen RAN and NextGen Core.

Sasha Sirotkin (Intel): The naming of interfaces is becoming confusing.
Chairman: Note that SA2 and RAN3 are referring to different things here. SA2 talks about termination points and RAN3 about interfaces. They are nor necessarily the same thing.

-> Rename NG1-U and NG1-C as NG-U and NG-C (interface netween gNB and NG-Core)

-> Offline_#26 (Samsung):
- Keep RAN3 names (NG-C and NG-U) and send an LS to SA2, asking them to align with RAN3
- Attempt for a TP on different reference points and subsets.
- In R3-161963

-> The LS is not needed due to rewording.
-> Rapporteur to report to RAN2 the names of the interfaces between New RAN and NG-Core, i.e., NG-C and NG-U.

Decision: Noted

R3-161963	[DRAFT] [LSout to SA2 on interface naming (To: SA2)]	Samsung	LS out					FS_NR_newRAT	Rel-14	Not Available

Discussion:
Decision: Not Available

R3-161584	NR Overall RAN Architecture	Intel Corporation	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Sangeetha Balgolae (Intel). This paper provides an alternative proposal to Samsung's one: RAN2 should capture SA2's terminology.

Sean Kelley (Nokia): Supports Samsung's approach: Keep existing interface naming and send an LS to SA2.

Decision: Noted

R3-161764	Internal RAN Architecture Interface Naming	Interdigital Asia LLC	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by James Miller (Interdigital). Proposes that RAN3 should defines names for the interfaces between gNB and gNB, between LTE eNB and gNB, and between centralised and distributed unit.

Interdigital's proposal is to use:

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gNB - gNB interface – NGX-c and NGX-u
LTE eNB - gNB – either NGX-c and NGX-u or if different then NGL-c and NGL-u
CU-DU interface – NGR-c and NGR-u

Decision: Noted

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-> Offline_#27 (ZTE)
- either provide a TP for the TR based on figure 2 of R3-161954 with good FFSs, in R3-161964; or
- prepare an LS to RAN to clarify the requirements for CP/UP, in R3-161965.

R3-161964	[TP based on Fig 2 of R3-161594]	ZTE	pCR					FS_NR_newRAT	Rel-14	Not Available

Discussion:
Decision: Not Available

R3-161965	[DRAFT] [LS to RAN to clarify the requirements for CP/UP (To: RAN)]	ZTE	LS out					FS_NR_newRAT	Rel-14	Not Available

Discussion:
Decision: Not Available

R3-162011	TP for UP-CP separation	Ericsson	pCR	38.801				FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Angelo Centonza (Ericsson). This paper proposes to add sections in the RAN3 TR38.801 that should capture the analysis on UP and CP functions, the eventual benefits of CP and UP functions separation and the feasibility of specifying an architecture that supports such separation.

- The same principle apply to the discussion: function grouping -> justification -> standards aspects
- Discussion in parallel of the RAN functional split.

-> The TP is agreed as section 6.1.3.

Decision: Noted

Interface DU – DU?

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161593	Impacts on Radio Aggregation Scenarios due to CU-DU Separation	ZTE Corporation	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Li Yang (ZTE). This paper proposes:

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1a: To discuss whether the direct interface between DU entities is justified and needs to be specified.
1b: The Xnew interface between CU entities needs to be specified, so accordingly the Figure 5.4-1 in TR 38.801 should be modified.
2: To discuss whether inter-CU radio aggregation with multiple DUs is valid scenario and whether the Xnew interface between CU entities is required to support associated radio aggregation operation.
3: To discuss above issues in the context of (e)LTE-NR Inter-RAT radio aggregation.

Zheng Zhou (Huawei): This is pending to protocol stack functional split.
- Also pending to the definitions of CU and DU.

Decision: Noted

RAN-CN interface, corrections, clarifications, alignments …

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161769	Deployment options for NR and eLTE	Nokia, Alcatel-Lucent Shanghai Bell	discussion					FS_NR_newRAT	Rel-14	Revised
R3-161966	Deployment options for NR and eLTE	Nokia, Alcatel-Lucent Shanghai Bell	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Sean Kelley (Nokia). This paper analyses the impact of RAN/SA decisions captured in RP-161269, and proposes:
1: Revise section 6.3 “Interfaces” of TR 38.801 as follows: (1) remove section 6.3.1.1 “RAN-CN interface deployment scenarios”, and (2) add a new “General” section with figures and descriptions for options 2, 3/3a, 4/4a, 5, and 7/7a of RP-161266.
2: Add the following definition for non-standalone NR to section 3.1 of the TR: “A deployment configuration where the gNB requires an LTE eNB as control plane anchor.”
3: Add the following definition for non-standalone eLTE to section 3.1 of the TR: “A deployment configuration where the eLTE eNB requires a gNB as control plane anchor.”
4: Modify the definition of eLTE eNB as follows: “The eLTE eNB is the evolution of eNB that supports operation in the NG RANconnectivity to EPC and NG-Core.”

-> Offline_#28 (Nokia)
- NG RAN definition/clarification/removal
- Be sure that nothing is missing if anything is removed
- eLTE eNB will be kept as it is + build NG RAN reference on top
- Check non-standalone term definitions
- Refine the FFS on CP EPC-gNB, pending to evolution of EPC against NG-core. Clarify that no further work regarding the FFS is foreseen.
- Align with plenary via Annex?

-> Revised in R3-161966.

-> MCC to minute: RAN decision is possible in the future.
-> The TP is agreed.

Decision: Noted

R3-161604	RAN-CN interface deployment scenarios	Samsung	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Lixiang Xu (Samsung). RAN3 is requested to discuss whether to remove RAN-CN interface deployment scenarios or to refine them.

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Hideaki Takahashi (NTT DOCOMO): Does not like to remove the scenarios at this point.
Sean Kelley (Nokia): My understanding is that the RAN plenary agreed to remove them

- In this scenario it is assumed that there is an interface between CN nodes (FFS), it is not clear if SA2 comes to the same conclusion.

Decision: Noted

R3-161605	User Plane between NR and EPC	Samsung	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Lixiang Xu (Samsung). The following proposals are made:
1: The design & operation of NR PDCP in the stand-alone NR deployment scenario should not be restricted/negatively impacted by the re-use of NR PDCP in case of a direct NR-EPC user plane.
2: The support of a direct NR-EPC user plane interface should only be decided when the differences between NR PDCP and LTE PDCP are clear, and it is understood that the direct NR-EPC user plane can be supported with minimal impact to NR PDCP.

-> Need consideration on NR PDCP when we discuss 3C and 1A.

Decision: Noted

R3-161691	TP on deployment scenarios for RAN-CN interface	CATT	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Chunlin Li (CATT).
- Check with Nokia if something in CATT's paper is missing from Nokia's TP.

Decision: Noted

R3-161714	Consideration on the scenarios of RAN-CN interface (alignment with RP-161266)	LG Electronics Inc.	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Jian Xu (LGE).
- Check with Nokia if something in LGE's paper is missing from Nokia's TP.

Decision: Noted

R3-161744	Overview of 5G architecture options	Huawei	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Mingzeng Dai (Huawei). This paper discusses the full set of 5G architecture options and proposes:
1: confirm that the scenario NR connecting EPC with control plane is not supported in this SID.
2: L2/L3 enhancements on Evolved LTE (option 2) to support new core functions are expected.
3: In SCG bearer based LTE anchored Non-Standalone NR (Option 3a), the following issues needs to be discussed:
- Whether S1-U or NG1-U is used between EPC and NR gNB?
- Whether legacy PDCP function, e.g. security is used in NR gNB?
- Whether CU-DU function split should be considered in NR gNB?

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4: In Split bearer based NR anchored Non-Standalone LTE (Option 4), a X2-like interface between eNB and gNB is preferred.
5: In SCG bearer based NR anchored Non-Standalone Evolved LTE (Option 4a), NG1-U is used between Evolved LTE and NG-Core, and user plane related new functions in NG-Core should be supported by Evolved LTE.
6: Split/SCG bearer based Evolved LTE anchored Non-Standalone NR (Option 7/7a) is based on evolved LTE and a new interface other than X2 between evolved eNB and NR gNB may be needed.
7: The following options should be studied firstly:
- Standalone NR, NG-Core Connected (Option 2);
- Evolved LTE (Option 5);
- Split bearer based LTE anchored Non-Standalone NR (Option 3).

-> No support

Decision: Noted

R3-161743	Clarification on deployment and interface scenarios	Huawei	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Mingzeng Dai (Huawei). This paper provides updated text proposal of the TR 38.801 with
- providing unified definitions and consequent correction;
- adding evolved LTE as a possible deployment scenario;
- adding the missing scenarios in interface scenarios;
- corrections e.g. change NR BS to be NR gNB.

-> No support

Decision: Noted

R3-161894	Consequences from discussions on RP-161266 at TSG#72	Ericsson	pCR	38.801				FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Alex Vesely (Ericsson).
- Proposes to keep the existing structure in 38.801 for connectivity options.

Decision: Noted

R3-161780	Discussion on global procedures of RAN-CN interface	ZTE Corporation	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Yin Gao (ZTE). This paper proposes to add the following global procedures are necessary for NG1 interface:
- NG1 Setup
- RAN Configuration Update
- CORE Configuration Update
- Reset
- Error Indication
- RAN /CORE Configuration Transfer

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Decision: Noted

NG1 procedures and protocols stacks

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161890	Optimised RAN-CN interface design	Ericsson	pCR	38.801				FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Angelo Centonza (Ericsson). This paper provides an analysis of the RAN-CN connectivity for an eLTE eNB. It describes how design complexity may increase if an eLTE eNB is requested to support two separate interfaces to the EPC and to the 5G CN. At the same time the paper states that it should be possible to develop an unconstrained interface between a 5G RAN and a 5G CN and that it should be possible to serve some RAN areas with a 5G CN that has no legacy UE support.

Philippe Godin (ALU): Does not agree with conclusions; they are based on wrong assumptions.
Hideaki Takahashi (NTT DOCOMO): This paper could be used as a starting point for the design of RAN3 interfaces.
Chenghock Ng (NEC): Supports the paper.
- Doubts by Samsung.
Mariana Goldhamer: We need one interface to the core network, and an adaptation function in RAN.

Decision: Noted

R3-161892	Procedures analysis for the NG1 interface	Ericsson	pCR	38.801				FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Angelo Centonza (Ericsson). This paper attempts to capture a list of basic procedures that need to be supported at a RAN-CN interface in order to achieve the requirements currently in place for 5G systems.

Decision: Noted

R3-161668	RAN-CN Interface Analysis	QUALCOMM CDMA Technologies	discussion					FS_NR_newRAT	Rel-14	Revised
R3-161967	RAN-CN Interface Analysis	QUALCOMM CDMA Technologies	discussion					FS_NR_newRAT	Rel-14	Revised
R3-162054	RAN-CN Interface Analysis	QUALCOMM CDMA Technologies	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Xipeng Zhu (Qualcomm). Five proposals are made:
1: There is a single common interface (NG2/NG3) between the NR CN and NR RAN supporting all applicable RATs for each of the C-plane and U-plane.
2: The common interface (NG2/NG3) shall also allow separately deployed interfaces to NR BS and eLTE RAN nodes, i.e., it does not always have to have NR BS present.
3: There is a common horizontal interface (XN2) for both C-plane and U-plane between NR RAN nodes supporting all applicable RATs.
4: Capture the table as the baseline for the functions to be supported over the CN-RAN control plane interface, and use it to study how these functions may need to be enhanced for NR RAN including multi-RAT support.
5: Consider the existing LTE S1AP interface as a good starting point for the new RAN-CN functional split for the CN-RAN control plane interface.

Philippe Godin (Nokia): Support Qualcomm's approach.

-> Offline_#29 (Qualcomm)
- Provide a TP for a list of functions supported by NG
-> Revised in R3-161967

- Remove UE associated aspects everywhere in the TP.
- Bulletpoint for paging
- PDU management?

-> Revised in R3-162054
> The TP is agreed.

Decision: Noted

Not Treated:

R3-161608	NG1 interface considerations	Samsung	discussion					FS_NR_newRAT	Rel-14	
R3-161609	NG1 UP considerations	Samsung	discussion					FS_NR_newRAT	Rel-14	
R3-161746	NG1 interface protocol structure	Huawei	discussion					FS_NR_newRAT	Rel-14	
R3-161891	RAN-CN interface procedures per connectivity scenario	Ericsson	pCR	38.801				FS_NR_newRAT	Rel-14	

Local Breakout

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161575	Local Breakout for Ultra-Low Latency Communications	Intel Corporation	discussion					FS_NR_newRAT	Rel-14	Not Treated

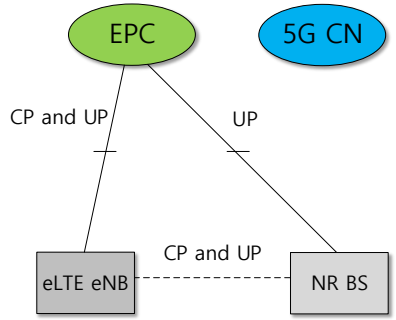
Discussion:
Decision: Not Treated

10.3.2 Evolution path to/and reference architecture

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161646	Migration path towards NR with EPC	NTT DOCOMO, INC.	discussion					FS_NR_newRAT	Rel-14	Revised
R3-162000	Migration path towards NR with EPC	NTT DOCOMO, INC.	discussion					FS_NR_newRAT	Rel-14	Revised
R3-162056	Migration path towards NR with EPC	NTT DOCOMO, INC.	discussion					FS_NR_newRAT	Rel-14	Noted

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Discussion: Presented by Teruaki Toeda (NTT DOCOMO). This paper explains the rationale behind the NR-EPC connection and the expected specification impact. It is too early to exclude the scenarios where NR is connected to EPC in both C/U-planes. Two proposals are made:
1: Keep FFS on the C-plane connection between EPC and NR as in Figure 6.3.1.1-1 of TR 38.801 (as marked with yellow below).
2: The C-plane connection between EPC and NR is to be decided after NextGen Core in relation to EPC becomes clear.



- Step1: option 3/3a
- The evolution is pending to EPC evolution and NG core definition.

-> Offline_51 (NTT DOCOMO)
- Describe the migration path 3/3a
- Use "step", no "phase"
- The evolution is pending to EPC evolution and NG core definition.
- FFS on terminology
-> Revised in R3-162000.

- Add reference to the original proposal's tdoc number to th3 section header.
- Remove two last sentences

-> Revised in R3-162056.
-> The TP is agreed.

Decision: Noted

R3-161772	AT&T Views on 5G Architecture Evolution	AT&T	discussion					FS_NR_newRAT	Rel-14	Revised
R3-161999	AT&T Views on 5G Architecture Evolution	AT&T	discussion					FS_NR_newRAT	Rel-14	Revised
R3-162057	AT&T Views on 5G Architecture Evolution	AT&T	discussion					FS_NR_newRAT	Rel-14	Noted

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Discussion: Presented by Vince Spatafora (AT&T). AT&T supports phased evolution:
Step 1: Early 5G Deployment utilizing Phase 1 Option 3
Step 2: Phase 1 Evolution to Option 7 –Plus Simultaneous Support for Option 3 & Option 7
Step 3: Phase 2 Evolution to Option 2/4 –Plus Simultaneous Support Option 3 & Option 7

Hideaki Takahashi (NTT DOCOMO): In your presentation, what is eLTE?
VS: eLTE is evolved eNB (upgrade of eNB).

- How to cover service continuity, i.e., IRAT HO LTE to NR?
- Or transition between options does not need to support function like IRAT HO (FFS)
- FFS terminology might need an update based on the discussion.

-> Offline_#50 (AT&T)
- Describe migration paths 3, 7 and 2/4
- Use "step", no "phase"
- Remove implementation aspects
- Capture FFSs
-> Revised in R3-161999

- "scenarios should be" -> "scenarios may be"
- "data" -> "voice" in end of bullets 2 and 4.
- Align the title with DOCOMO with reference to R3-161772
- Add FFS (figures to be added later)
-> TP agreed unseen in R3-162057

Decision: Noted

R3-161809	Analysis of migration paths towards RAN for new RAT	CMCC	discussion					FS_NR_newRAT	Rel-14	Revised
R3-162001	Analysis of migration paths towards RAN for new RAT	CMCC	discussion					FS_NR_newRAT	Rel-14	Revised
R3-162058	Analysis of migration paths towards RAN for new RAT	CMCC	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Boubacar Kimba dit Adamou (CMCC). The following proposals were made:
1: Do not look at Option 6, 8 & 8a and agree to focus on Option 2, 3 & 3a, 4 & 4a, 5 and 7 & 7a for migration and interworking study.
2: Include the five potential migration paths to TR 38.801
- Standalone mode
  - Path 1: LTE/EPC -> Option 2
  - Path 2: LTE/EPC -> Option5 +Option 2 -> Option 2
- Non-standalone mode
  - Path 3: LTE/EPC -> Option 3/3a -> Option 2
  - Path 4: LTE/EPC -> Option 3/3a -> Option 7/7a -> Option 2
  - Path 5: LTE/EPC -> Option 7/7a -> Option 2

-> Offline_#52 (CMCC)
- CMCC to describe its preferred migration path 2+3, 5, 7

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- Capture the FFS terminology
-> Revised in R3-162001.

- Remove "considered in [x]" ?
- Align the title with DOCOMO with reference to R3-161809.
- Add FFS (figures to be added later)
-> TP agreed unseen in R3-162058.

Decision: Noted

Not Treated:

R3-161595	Further Consideration on Various RAN3 Aspects of eLTE	ZTE Corporation	discussion					FS_NR_newRAT	Rel-14	
R3-161606	Target/reference architectures	Samsung	discussion					FS_NR_newRAT	Rel-14	
R3-161607	Evolution path of target architectures	Samsung	discussion					FS_NR_newRAT	Rel-14	
R3-161670	Connecting legacy LTE eNB to 5G Core	QUALCOMM CDMA Technologies	discussion					FS_NR_newRAT	Rel-14	
R3-161704	NR Migration and forward compatibility	NEC	discussion					FS_NR_newRAT	Rel-14	
R3-161715	Consideration on the Migration Path	LG Electronics Inc.	discussion					FS_NR_newRAT	Rel-14	
R3-161750	Migration path from LTE to NR	Huawei	discussion					FS_NR_newRAT	Rel-14	
R3-161770	Characteristics of eLTE eNB	Nokia, Alcatel-Lucent Shanghai Bell	discussion					FS_NR_newRAT	Rel-14	
R3-161771	Migration scenario for NR	Nokia, Alcatel-Lucent Shanghai Bell	discussion					FS_NR_newRAT	Rel-14	
R3-161895	New RAN Roll Out Scenarios	Ericsson	pCR	38.801				FS_NR_newRAT	Rel-14	

10.3.3 Others

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision

10.4 NR Access and Mobility

10.4.1 Standalone-access

Idle mode

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Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161758	Location area management	HuaWei Technologies Co., Ltd	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Liwei Qiu (Huawei). This contribution discusses the location area management for idle UE and provides the following proposals. Further study depends on the coordination with RAN2 on whether the idle mode exists in NR or not.
1: For LTE and NR, the potential frequent TAU issue caused by idle UE inter-RAT cell reselection should be resolved.
2: For legacy LTE and NR which are connected to EPC and NG-Core respectively, the existing function between 3G and LTE can be reused.
3: With respect to the scenarios in which eLTE eNB and NR BS are both connected to NG-Core, the potential frequent TAU/NR-TAU issue needs to be solved.
4: The two options including coordinated TA and common TA management can be considered.

- SA2 specific, analogy 2G/3G is not accurate.

Decision: Noted

R3-161893	Mobility between LTE and NR for inactive UEs	Ericsson	pCR	38.801				FS_NR_newRAT	Rel-14	Revised
R3-162032	Mobility between LTE and NR for inactive UEs	Ericsson	pCR	38.801				FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Alex Vesely (Ericsson). This paper proposes to support solutions where RAN context and RAN / CN connected can be kept and transferred over an X2 like interface between LTE and NR for UEs with RRC context and active CN / RAN connection.

-> Offline_#71 (Ericsson)
- In "may" section
- Note: Pending to decision on LC + note on paging
-> Revised in R3-162032

-> The TP is agreed.

Decision: Noted

Not Treated:

R3-161671	Paging and location management in inactive mode	QUALCOMM CDMA Technologies	discussion					FS_NR_newRAT	Rel-14	
R3-161711	On the Need for RAN-based Paging	NEC	discussion					FS_NR_newRAT	Rel-14	
R3-161781	Consideration on “inactive state” in NR	ZTE Corporation	discussion					FS_NR_newRAT	Rel-14	
R3-161868	Paging and Mobility in Inactive Mode	Nokia, Alcatel-Lucent Shanghai Bell	discussion					FS_NR_newRAT	Rel-14	
R3-161896	On RAN paging with CN assistance	Ericsson	pCR	38.801				FS_NR_newRAT, LTE_LIGHT_	Rel-14	

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								CON-Core		
R3-161931	Discussion on functionality considering RRC-Inactive state	LG Electronics Inc.	discussion					FS_NR_newRAT	Rel-14	

Session Request

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161858	NR function for Data Connectivity Request	Nokia, Alcatel-Lucent Shanghai Bell	discussion					FS_NR_newRAT	Rel-14	Revised
R3-162034	NR function for Data Connectivity Request	Nokia, Alcatel-Lucent Shanghai Bell	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Philippe Godin (Nokia). This paper has introduced the NR function which is necessary to setup contexts in connection oriented mode to exchange data ”in replacement” of the E-RAB management LTE function whenever PDU sessions are being setup.

Alex Vesely (Ericsson): "gNB" -> "new RAN"
Hong Wang (Samsung): "request" -> "management"
"create" -> "manage"
Remove "and a corresponding tunnel between the gNB and the UPGW for the exchange of data for this session"

-> Offline_#72 (Nokia)
- See corrections above
-> Revised R3-162034

-> The TP is agreed.

Decision: Noted

Intermediate state

Not Treated:

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161585	NR RAN function to support new RAN-controlled state	Intel Corporation	discussion					FS_NR_newRAT	Rel-14	
R3-161688	Discussion on RAN controlled UE state	CATT	discussion					FS_NR_newRAT	Rel-14	
R3-161939	NR RRC inactive state principles	Qualcomm Incorporated	discussion					FS_NR_newRAT	Rel-14	

Connected mode

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Not Treated:

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161684	Distributed and centralized gNB-gNB mobility scenarios	IAESI, Thales, Fairspectrum, VTT	discussion					FS_NR_newRAT	Rel-14	
R3-161693	Considerations on intra-RAT mobility	CATT	discussion					FS_NR_newRAT	Rel-14	
R3-161705	Intra NR Mobility (Inter gNBs Mobility)	NEC	discussion					FS_NR_newRAT	Rel-14	
R3-161839	UE centric operation and mobility for NR	HUAWEI TECHNOLOGIES Co. Ltd.	discussion					FS_NR_newRAT	Rel-14	
R3-161860	NR function for In-band Path Switch	Nokia, Alcatel-Lucent Shanghai Bell	discussion					FS_NR_newRAT	Rel-14	
R3-161940	NR Mobility Procedure	Qualcomm Incorporated	discussion					FS_NR_newRAT	Rel-14	

Horizontal interface or interfaces?

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161782	The interface between RAN nodes	ZTE Corporation	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Yin Gao (ZTE). The following general principles are proposed for the NG2 interface:
- the NG2 interface should be open;
- the NG2 interface shall support the exchange of signalling information between an eLTE eNB/NR BS and its neighbour;
- from a logical standpoint, the NG2 is a point-to-point interface between an eLTE eNB/NR BS and its neighbour. A point-to-point logical interface should be feasible even in the absence of a physical direct connection between the eLTE eNB/NR BS and its neighbour.
- the NG2 interface shall support contral plane and user plane separation;
- the NG2 interface shall separate Radio Network Layer and Transport Network Layer;
- the NG2 interface shall be future proof to fulfil different new requirements and support of new services and new functions.

Decision: Noted

R3-161692	Consideration on the evolution path of interface between LTE and NR	CATT	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Chunlin Ni (CATT). This contribution discusses the evolution path for the interface between LTE & NR. The following proposals are made:
1: A new logical interface should be defined between LTE eNB and NR BS to support inter-working.
2: For forward compatibility, the new logical interface should be same as future interface between NR BSs, e.g, NGn.
3: The legacy X2 logical interface should be used between LTE eNB and eLTE eNB.
4: A new logical interface: NGn should be defined between eLTE eNB and NR BS, as well as between NR BSs.
5: Two types of logical interfaces:X2, NGn should be simultaneously supported between eLTE eNBs. One for UEs conneted to EPC, the other for UEs conneted to 5G CN.

Decision: Noted

****

-> The interfaces gNB / gNB and eLTE eNB / gNB are the same interfaces, e.g., horizonal interfaces in the New RAN are the same interface,, i.e., Xn
- tbc for eLTE eNB / eLTE eNB interface

gNB-gNB procedures and protocols stacks

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161749	Key principle for horizontal intra-RAT interfaces	Huawei	discussion					FS_NR_newRAT	Rel-14	Revised
R3-162035	Key principle for horizontal intra-RAT interfaces	Huawei	pCR	38.801				FS_NR_newRAT	Rel-14	Revised
R3-162059	Key principle for horizontal intra-RAT interfaces	Huawei	pCR	38.801				FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Henrik Olofsson (Huawei). Four proposals are made:
1: Direct interface between gNBs is needed.
2: The direct interface between gNBs should support at least Direct handover between gNBs, including related signalling and data forwarding
3: The control plane of the direct interface between gNBs should be SCTP based.
4: Whether user plane of the direct interface between gNBs is GTP based or not should be FFS.

-> Offline_#73 (Huawei)
- add eLTE eNB
- capture agreement "The interfaces gNB / gNB and eLTE eNB / gNB are the same interfaces, e.g., horizonal interfaces in the New RAN are the same interface."
- futher check if agreeable
- only general principle
-> Revised in R3-162035

- Remove from bullet 3: "within the NR".
- Add FFS that eLTE eNB / eLTE eNB is tbc
- first bullet "should" -> "shall"
- "two gNBs / eLTE eNBs" -> "the endpoints"

-> Revised in R3-162059.
-> The TP is agreed unseen.

Decision: Noted

Not Treated:

R3-161783	Discussion on global procedures of the interface	ZTE Corporation	discus					FS_NR_newR	Rel-14	

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	between RAN nodes		sion					AT		
R3-161838	Discussion on NR interface functions	LG Electronics Inc.	discus sion					FS_NR_newR AT	Rel-14	Revised
R3-162010	Discussion on NR interface functions	LG Electronics Inc.	discus sion					FS_NR_newR AT	Rel-14	

10.4.2 Tight Interworking LTE

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161627	General considerations for LTE-NR tight interworking	Nokia, Alcatel-Lucent Shanghai Bell	discus sion					FS_NR_newR AT	Rel-14	Revised
R3-162037	General considerations for LTE-NR tight interworking	Nokia, Alcatel-Lucent Shanghai Bell	discus sion					FS_NR_newR AT	Rel-14	Revised
R3-162060	General considerations for LTE-NR tight interworking	Nokia, Alcatel-Lucent Shanghai Bell	discus sion					FS_NR_newR AT	Rel-14	Noted

Discussion: Presented by Tsunehiko Chiba (Nokia). This paper makes several proposals:
1: A new interface “Xn” should be introduced between LTE eNB and gNB in the deployment scenario of Non-Standalone/”LTE assisted”, EPC connected tight interworking.
2: DC procedures and protocols specified in TS36.300 and relevant stage 3 specifications should be baseline in the deployment scenario of Non-Standalone/”LTE assisted”, EPC connected tight interworking.
3: Agree on Radio Protocol Architecture for split bearer and SCG bearer in Non-Standalone/”LTE assisted”, EPC connected scenario as provided in Figure 2 although it is recognized that the NR radio protocols are not yet mature and are being studied.
4: Agree on the C-Plane and U-plane network interface configurations as provided in Figure 3 and Figure 4.
5: Reuse all the DC procedures specified in TS36.300 as the baseline for LTE-NR tight interworking with minor enhancements where needed as provided in Table 1.
6: Agree on the TP provided in the Appendix.

-> Remove deployment scenario -> reference to existing figures
- Format the table like in R3-161757 + add sentence stating "as specified in 36.423" as the baseline
- gNB -> gNB & eLTE eNB
- Xn -> Xx
- Remove the sentence after the table "Considering..."

-> Offline_#74 (Nokia)
- capture the changes above
-> Revised in R3-162037

- "gNB / eLTE eNB" -> "gNB"
- "as much as possible" -> "used as a baseline"
- Editor's note" -> "Editor's note: as example"
- NCS -> NR PDCP dash box
-> Revised in R3-162060.

-> The TP is agreed.

Decision: Noted

R3-161673	Tight Interworking between LTE and NR	QUALCOMM CDMA Technologies	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Xipeng Zhu (Qualcomm). The following proposals are made:
1: Adopt RAN2 agreements as RAN3 work assumption as below:
- DC is used for LTE-NR aggregation;
- CA based LTE-NR aggregation is not studied as part of this study item;
- Master owns control plane connections to CN and to UE;
- ASN.1 exchange between UE and secondary is transported via the master.

2: Take option 1-6 (SA2 deployment scenario 3,4,7) as LTE-NR DC scenarios for tight interworking study.
3: An inter-RAT X2 like interface XN2 shall be defined between LTE and NR for DC based tight interworking. The DC procedures on X2 interface shall be used as baseline for XN2 function design.

- CA is not in the scope of RAN3

Decision: Noted

R3-161757	Functionality and procedure for LTE-NR tight interworking	Huawei	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Liwei Qiu (Huawei).
Decision: Noted

Not Treated:

R3-161629	SCG split bearer for NR	ZTE Corporation	discussion					FS_NR_newRAT	Rel-14	
R3-161685	RAN-based solution for LTE tight interworking with NR	IAESI, Thales	discussion					FS_NR_newRAT	Rel-14	
R3-161694	Considerations on LTE and NR interworking	CATT	discussion					FS_NR_newRAT	Rel-14	
R3-161706	NR Tight Interworking with LTE	NEC	discussion					FS_NR_newRAT	Rel-14	
R3-161754	LTE-NR tight interworking user plane options	Huawei	discussion					FS_NR_newRAT	Rel-14	
R3-161755	LTE-NR interface functions and procedures	Huawei	discussion					FS_NR_newRAT	Rel-14	
R3-161756	Consideration on NR PDCP design	Huawei	discussion					FS_NR_newRAT	Rel-14	
R3-161825	Discussion on SCG split bearer	NTT DOCOMO INC.	discussion					FS_NR_newRAT	Rel-14	
R3-161834	Tight Interworking between LTE and New RAT	LG Electronics Inc.	discussion					FS_NR_newRAT	Rel-14	
R3-161897	Tight NR/LTE interworking and stand-alone NR access	Ericsson	pCR	38.801				FS_NR_newRAT	Rel-14	

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10.4.3 Inter-RAT with LTE

Not Treated:

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161610	Inter-RAT handover with LTE	Samsung	discussion					FS_NR_newRAT	Rel-14	
R3-161753	Inter-RAT mobility with LTE	Huawei	discussion					FS_NR_newRAT	Rel-14	
R3-161800	Consideration on the Full Picture for Inter-RAT HO	LG Electronics Inc.	discussion					FS_NR_newRAT	Rel-14	

10.4.4 Others

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision

10.5 RAN logical architecture

10.5.1 RAN internal functional split

Tdoc	Title	Source	Type	Spec	CR	Rev	Cat	WI	Rel	Decision
R3-161571	RAN functional split: intra PHY	Intel Corporation	discussion					FS_NR_newRAT	Rel-14	Revised
R3-162002	RAN functional split: intra PHY	Intel Corporation	discussion					FS_NR_newRAT	Rel-14	Revised
R3-162062	RAN functional split: intra PHY	Intel Corporation	discussion					FS_NR_newRAT	Rel-14	Noted

Discussion: Presented by Sasha Sirotkin (Intel). This paper proposes to capture two PHY function split options (option 7-1 and option 7-2) as additional candidate options in TR 38.801.

-> Offline_#53 (Intel)
- Capture the additional split for option 7 with simplified TP: Intel + AT&T
- Capture TP for justification, see R3-161773
-> Revised in R3-162002.

- It was requested to minute: Opher options of split 7 are possible.