

## 會議報告（會議類別：其他）

### 出席第三代合作夥伴計畫服務及系統面第二工作組- 3GPP SA2 #124 國際標準會議報告

出國單位：財團法人工業技術研究院

出國人員：賴家齡

派赴國家：美國/雷諾

會議期間：106年11月27日至12月01日

報告日期：106年12月28日

## 摘要

本次第 3 代合作夥伴計畫(3<sup>rd</sup> Generation Partnership Project, 3GPP)服務及系統面第 2 工作組(SA2) #124 會議於 2017 年 11 月 27 日~12 月 1 日在美國/雷諾舉行，參與人數約為 133 個人。此次會議本計畫團隊主要鎖定下一代網路架構工作項目 (NextGen WID)。在 NextGen WID 裡鎖定網路切片架構和行動邊緣計算兩個議題。在會議中，本計畫團隊共發表 2 篇技術貢獻文件，更新至標準文件 TS 23.501 之內容。

此行主要任務參與第 5 代行動通訊 (5th Generation Mobile Mommunictaion, 5G) 下一代網路架構和程序 (5G NextGen Architecture and Procedure) 相關技術發展議題討論以及發表技術貢獻文件，並且關注新的研究項目 (Study Item Description, SID)，以掌握 3GPP 對於 5G 的網路架構與程序發展，以及關注與其發展相關的應用情境，例如支援網路切片 (Network Slicing) 在 5G 網路上的應用情境。本次會議為 5G 工作項目之標準文件 TS 23.501 和 TS 23.502 於今年最後一次會議，目前這兩個 TS 不允許再加入新的問題，只能就目前存在的同意的開放議題 (Open Issue) 中，撰寫相關之技術貢獻文件投稿。

本次會議的討論重點為 5G 網路切片、行動邊緣計算 (Mobile Edge Computing)，以及關注與 Release 16 (Rel-16) 相關的研究項目。Rel-16 會與 5G Phase II 的工作項目 (Work Item Description, WID) 相關。技術團隊持續關注整個 5G 架構於 3GPP SA2 的發展，並布局與 Rel-16 相關的技術，計畫貢獻於 Rel-16 中相關的 SIDs 或 WIDs。

此次會議本計畫團隊共提出 2 篇技術貢獻，其中 2 篇獲大會點名討論，1 篇最終獲大會接受。

## 縮寫與中英文對照表

| 英文全稱                                     | 英文縮寫 | 中文全稱      |
|------------------------------------------|------|-----------|
| Access type                              |      | 接取型態      |
| Application Function                     | AF   | 應用功能      |
| Accessible and Mobility Function         | AMF  | 接取和行動功能   |
| Connection Management                    | CM   | 連線管理      |
| Control Plane                            | CP   | 控制平面      |
| Data Network Access Identifier           | DANI | 資料網路存取識別碼 |
| Default                                  |      | 預設值       |
| Domain Network Name                      | DNN  | 區域網路名     |
| Data Radio Bearer                        | DRB  | 數據連線載體    |
| Device to Device Communication           | D2D  | 裝置對裝置通訊   |
| End to End                               | E2E  | 端點到端點     |
| Email-Approval                           |      | 信件討論批准    |
| Fully Qualified Domain Name              | FQDN | 完整網域名稱    |
| Globally Unique Temporary Identifier     | GUTI | 全球唯一臨時標識  |
| Home Subscriber Server                   | HSS  | 本地用戶伺服器   |
| International Mobile Subscriber Identity | IMSI | 國際移動用戶識別碼 |
| Internet Protocol                        | IP   | 網際網路通訊協定  |
| Local Access Data Network                | LADN | 本地存取數據網路  |
| Liaison Statement                        | LS   | 聯絡說明      |
| Mobility Management                      | MM   | 行動管理      |
| Mobility Management Element              | MME  | 行動管理單元    |
| Mobile Edge Computing                    | MEC  | 行動邊緣計算    |
| Non-Access Stratum                       | NAS  | 非存取層      |
| Network Exposure Function                | NEF  | 網路揭露功能    |
| Network Function Repository Function     | NRF  | 網路功能儲存功能  |
| Network Slice Selection Function         | NSSF | 網路切片選取功能  |
| Network Slice                            | NS   | 網路切片      |
| Network Slice Instance                   | NSI  | 網路切片實體    |

| 英文全稱                                           | 英文縮寫         | 中文全稱          |
|------------------------------------------------|--------------|---------------|
| Network Slice Selection Assistance Information | NSSAI        | 網路切片選取協助資訊    |
| Network Slice Selection Policy                 | NSSP         | 網路切片選取規則      |
| Next Generation                                | NextGen      | 下一代           |
| Non-3GPP Interworking Framework                | N3IWF        | 非 3GPP 處理功能元件 |
| Operation and Maintenance                      | OAM          | 管理維護系統        |
| Policy and Charge Function                     | PCF          | 策略與計費功能       |
| Packet Data Unit                               | PDU          | 封包數據單元        |
| Permanent Equipment Identifier                 | PEI          | 永久設備辨識碼       |
| Public Local Mobile Network                    | PLMN         | 公用陸地移動網路      |
| Registration Area                              | RA           | 註冊區域          |
| Release 15                                     | Rel-15       | 第 15 版        |
| Release 16                                     | Rel-16       | 第 16 版        |
| Registration Management                        | RM           | 註冊管理          |
| Roaming                                        |              | 漫遊            |
| Radio Resource Control                         | RRC          | 無線電資源控制       |
| Radio Access Networks                          | RAN          | 無線存取網路        |
| RRC Inactive                                   | RRC Inactive | 無線電資源控制非啟動模式  |
| System and service Aspect working group #2     | SA2          | 服務及系統面第 2 工作組 |
| Service Based Architecture                     | SBA          | 以服務為基礎之架構     |
| Service Differentiator                         | SD           | 服務輔助資訊        |
| Study Item Description                         | SID          | 研究項目          |
| Service Management Function                    | SMF          | 會議管理功能        |
| Subscriber Permanent Identifier                | SUPI         | 使用者永久辨識碼      |
| Service Request                                | SR           | 服務請求          |
| Service/Slice Type                             | SST          | 服務切片類型        |
| Tracking Area Update                           | TAU          | 追蹤區更新         |
| Uplink Classifier                              | UL CL        | 上行分類符         |
| User Data Management                           | UDM          | 使用者資料庫        |
| User Plane Function                            | UPF          | 使用者平面功能       |
| Working Item Description                       | WID          | 工作項目          |

## 技術貢獻

本次會議共提出 2 件技術貢獻。

本技術團隊提案一為提出與網路切片選取相關內容。在本提案裡，本技術貢獻文件提出刪除與 Non-3GPP 網路中是否支援網路切片。對於 Non-3GPP 網路，組成為 Non-3GPP 的存取節點 (Access Point, AP) 與非 3GPP 處理功能元件 (Non-3GPP Interworking Framework, N3IWF)。Non-3GPP AP 可以提供使用者裝置 (User Equipment, UE) 連接上網能力，UE 可以藉由 Non-3GPP AP 連接至 N3IWF，進入 5G 核心網路進行註冊或建立連線。對於 5G 核心網路而言，Non-3GPP 和 N3IWF 的功能加起來等同下一代無線存取網路 (NG-RAN)，因此所有在 3GPP 網路上可以進行的網路切片選擇程序一樣可以適用於 Non-3GPP 網路，因此這個問題並不存在 Non-3GPP 網路上，可以直接使用應用在 3GPP 網路的相同的網路切片選擇程序。此技術貢獻文件為更新 TS 23.501 之內容。

第二篇是無線電資源控制非啟動模式 (RRC Inactive state)，提出本地存取數據網路 (Local Access Data Network, LADN) 資訊可以提供給 NG-RAN，由 NG-RAN 幫 5G 核心網路去追蹤 UE 的位置。NG-RAN 可以利用核心網路提供的資訊，建立 LADN 追蹤相關的 UE 位置資訊，並且利用這樣的方式回報 UE 位置訊息給核心網路是否目前 UE 位置在 LADN 的服務區域裡面。

## 會議解說

本次會議目的為解決目前尚未解決的開放議題 (如下表所列)。

| Item # | Agenda Item | Title                                                                            | Description                                                                                                                                                                                              | Comments                                      | Known contributors                                                     |
|--------|-------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|
| OI#1   | 6.5.8       | LCS architecture                                                                 | LCS architecture is incomplete thus still in the annex of 501 at the moment. Need to conclude on LCS architecture thus need resolution of LCS architecture open items to ensure completion in rel-15 Ph1 |                                               | Nokia (Gyuri Wolfner)<br>Huawei (Runze)<br>CMCC (Aihua Li)             |
| OI#2a  | 6.5.8       | Emergency services fallback                                                      | 23.501 part on the basic approach. When NR/5GC does not support emergency services, may trigger procedures, e.g., RRC release w/ redirection.                                                            | This is postponed in SA2#123                  | Nokia (Devaki)<br>Lenovo (Genadi)                                      |
| OI#2b  | 6.5.8       | Emergency services fallback                                                      | 23.502 related procedures.                                                                                                                                                                               | This is postponed in SA2#123                  | Nokia (Devaki)                                                         |
| OI#3   | 6.5.11      | UDR further clarification                                                        | Follow up of UDR architecture decided in SA2#123 to further clarifies in 23.502 how UDR services are invoked in procedures by e.g., UDM, PCF and what are the related Data Set/Subset Identifiers        |                                               | For PCF data set and subset identifiers in 23.503. (Ericsson Belen)    |
| OI#3a  | 6.5.11      | UDR discovery                                                                    | Solution for NF consumer to discover the right UDR instance                                                                                                                                              | This is unresolved by the agreed architecture | Nokia (Devaki)<br>CMCC (Tao)<br>Ericsson (MCruz)                       |
| OI#4a  | 6.5.1       | Network Slicing: alignment between specs                                         | Aligning the 501 text with the approved 502 text on clarifying how the multi-level NRFs support the roaming procedures during the UE registration and session establishment.                             |                                               | Telecom Italia (Mario), ZTE (Tricci)<br>CMCC (Chen wei)<br>Huawei(Hui) |
| OI#4b  | 6.5.1       | NSI ID                                                                           | Is NSI ID needed? Would NSI ID be allocated by NSSF or by NRF when multiple NSIs correspond to the same S-NSSAI?                                                                                         |                                               | Huawei (Patrice), KDDI(takeshi)                                        |
| OI#4c  | 6.5.1       | Slice privacy                                                                    | After LS IN S2-176970 received from SA3 clause 5.15.5.4 Slice Privacy Considerations needs to be removed                                                                                                 |                                               | Telecom Italia (Mario)                                                 |
| OI#4d  | 6.5.1       | Triggering NSSP on UE service policy update corresponding to slice configuration | Addressing ENs in 23.501 for multiple possible scenarios when PLMN changes the configured NSSAI which may cause the NSSP to update UE for the network slicing configuration policy                       |                                               | ZTE (Tricci)                                                           |

| Item # | Agenda Item | Title                                                                                              | Description                                                                                                                                                                                                                               | Comments                     | Known contributors                                                                                                                      |
|--------|-------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
|        |             | change                                                                                             |                                                                                                                                                                                                                                           |                              |                                                                                                                                         |
| OI#4e  | 6.5.1       | SM Procedure updates on handling network slice availability in a PLMN                              | Updating the existing SM procedures in both 23.501 and 502 to handle network slice availability based on last SA2#123 agreement on the granularity and dynamicity when detecting the change of the network slice availability             |                              | E///(Peter)?                                                                                                                            |
| OI#4f  | 6.5.1       | Slice isolation                                                                                    | Isolation support among network slices for a given UE                                                                                                                                                                                     |                              | Nokia (Alessio)<br>Huawei(Patrice)                                                                                                      |
| OI#4g  | 6.5.1       | Configuring NSSF with what S-NSSAI a TA supports (or does not support) at the RAN capability level | The NSSF may have business logic configured per UE/TA. this needs to be intersected with the capabilities of the RAN per TA in order to determine the allowed NSSAI) the AMF obtains these capabilities from the RAN at N2 establishment. |                              | Nokia (Alessio)<br>Ericsson (Peter)                                                                                                     |
| OI#4h  | 6.5.1       | Slice and AMF selection at HO procedure                                                            | 1) How to select the set of Network Slice(s) in the target PLMN during HO procedure?<br>2) How to select the target AMF during the HO procedure.                                                                                          |                              | Ericsson (Peter)<br>Huawei(Fenqin)<br><br>Lenovo (Genadi):<br><i>aligning the HO procedure in case of changed set of Network Slices</i> |
| OI#4i  | 6.5.1       | Slice support for UE                                                                               | Simplifying UE support requirements where possible                                                                                                                                                                                        |                              | Huawei (Patrice)                                                                                                                        |
| OI#4j  | 6.5.1       | Minimising SLA dependencies                                                                        | Avoiding to require SLA updates for each change of S-NSSAIs by the home operator                                                                                                                                                          |                              | Huawei (Patrice, Fenqin)                                                                                                                |
| OI#6   | 6.5.9       | EBI Management                                                                                     | Clarification on EBI management, such as EBI exhaustion, EBI re-building after intra-RAN or inter-RAT mobility                                                                                                                            | This is postponed in SA2#123 | Huawei (Runze)                                                                                                                          |
| OI#7a  | 6.5.6       | UE Policy Pre-Configure                                                                            | How to pre-configure policy in UE, and how to use those Policy                                                                                                                                                                            | Postponed from SA2#123       | Huawei                                                                                                                                  |

| Item # | Agenda Item | Title                                     | Description                                                                                                                                                                                                                      | Comments                      | Known contributors                                                                                           |
|--------|-------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------|
| OI#7b  | 6.5.6       | UE Policy transfer                        | Addressing the EN of policy transfer from PCF to UE, e.g., considering limitation of NAS PDU size<br><br>Whether to use a new procedure or apply UE configuration procedure to transfer UE policies from AMF to UE?              |                               | Nokia (Gyuri)<br><br>Huawei<br><br>Qualcomm (Cheng Hong)<br><br>Ericsson (Belen)<br><br>NEC (Iskren)         |
| OI#7c  | 6.5.6       | UE policy                                 | Define UE Route selection policy and related UE behavior (Clause 6.6 of TS 23.503)                                                                                                                                               |                               | Nokia (Gyuri)<br><br>Huawei(Ouyang)<br><br>Qualcomm (Cheng Hong)<br><br>Ericsson (Belen)<br><br>NEC (Iskren) |
| OI#8a  | 6.5.11      | NSSF Service                              | Defines NSSF services, compliant with both the options for SMF selection in roaming agreed at SA2 #123                                                                                                                           |                               | Oracle(Uri),<br>Telecom Italia (Mario)                                                                       |
| OI#8b  | 6.5.11      | NRF Discovery in roaming                  | NFs Discovery across PLMNs needs to be aligned with the procedure for SMF selection in roaming agreed at SA2 #123<br><br>Note: NF service discovery may align to have UE identity information (e.g., SUPI as optional parameter. |                               | Telecom Italia (Mario)                                                                                       |
| OI#8c  | 6.5.11      | NRF authorization                         | To comply with requirements agreed in S2-177633 at least the Requester ID should be added to the Nnrf_NFDiscovery service                                                                                                        |                               | Telecom Italia (Mario)                                                                                       |
| OI#9   | 6.5.11      | SBA framework                             | UDSF Services/Service operations                                                                                                                                                                                                 |                               | Oracle(Uri) .                                                                                                |
| OI#10  | 6.5.9       | Interworking w/o N26                      | How to correlate the sessions between source and target systems                                                                                                                                                                  | This was postponed to SA2#124 | NTT DOCOMO (Jari)                                                                                            |
| OI#11  | 6.5.1       | Network slicing and Interworking with EPS | Resolve the editor's notes in 5.15.7 in TS 23.501. Add corresponding details to TS 23.502.<br><br>Determining S-NSSAIs for PDN connections moved from EPC.                                                                       |                               | NTT DOCOMO (Malla)<br><br>CMCC (Aihua)<br><br>Huawei(Fenqin)<br><br>Qualcomm                                 |



| Item # | Agenda Item | Title | Description                                                                                                                                                                                                                 | Comments                                                                      | Known contributors                          |
|--------|-------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------|
|        |             |       |                                                                                                                                                                                                                             |                                                                               | (Sebastian)                                 |
| OI#12  | 6.5.10      |       | N3IWF/ePDG selection                                                                                                                                                                                                        | A voice-centric UE MAY need to select an ePDG when IMS voice is not supported | Nokia (Nicolas)                             |
| OI#13  | 6.5.10      |       | Mobility between 3GPP and NON 3GPP in EPC IWK scenarios<br><br>Architecture for mobility between ePDG connected to EPC and 5GC.<br><br>Handover between ePDG and 5GS and Handover between N3IWF and EPS with AMF relocation |                                                                               | Nokia (Nicolas)<br><br>Qualcomm (Sebastian) |
| OI#15  | 6.5.10      |       | ANDS (Access Network Discovery and Selection)                                                                                                                                                                               |                                                                               | Nokia (Gyuri)<br><br>Huawei (Marco)         |
| OI#16  | 6.5.10      |       | Support of emergency services over non-3GPP untrusted access<br><br>- authenticated UEs<br><br>- unauthenticated UEs                                                                                                        |                                                                               | Nokia (Nicolas)                             |
| OI#17  | 6.5.10      |       | 3GPP based authentication for access to N3GPP Access Network (acknowledged as a valid issue at SA2#123)                                                                                                                     |                                                                               | Nokia (Nicolas)<br><br>Huawei (Marco)       |
| OI#18  | 6.5.3       |       | NAS SM: split between info that any SMF understands and info that V-SMF not meant to understand (CT1 LS + discussion during e-mail approval)                                                                                |                                                                               | Nokia (LTH)                                 |
| OI#19  | 6.5.3       |       | UPF selection related issue (postponed at last SA2)                                                                                                                                                                         |                                                                               | Nokia (LTH)<br><br>Huawei (Runze, Patrice)  |
| OI#20a | 6.5.3       |       | Add the AF control of whether DNAI (i.e. application instance) change should or should not occur when there is ongoing traffic with an application instance at the change of UPF                                            |                                                                               | Nokia (LTH)<br><br>Huawei(Patrice)          |

| Item #  | Agenda Item | Title        | Description                                                                                                                                                                                                   | Comments                               | Known contributors                                   |
|---------|-------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------------------------------|
| OI#20 b | 6.5.3       |              | Support of application identification at dedicated PDU session setup for AF influence                                                                                                                         |                                        | Huawei(Patrice)                                      |
| OI#21   | 6.5.4       |              | AS security: pass security parameters to AN even at registration (also needed by N3GPP)                                                                                                                       | Postponed from SA2#123                 | Nokia (Devaki)<br>Huawei                             |
| OI#22   | 6.5.9       | Interworking | EPS IWK IDLE mode mobility procedures – Transfer of ETH PDU Sessions as non-IP from 5GS to EPS                                                                                                                | Postponed from SA2#123                 | Nokia (Devaki)<br>Huawei(Xiaobo)                     |
| OI#23   | 6.5.1       |              | 5GC Internal overload control. Scope of work to be done in rel-15 needs to be determined; Scope of work to be deferred to CT4 needs to be agreed along with an LS out                                         | Postponed from SA#123                  |                                                      |
| OI#25   | 6.5.9       | Interworking | Mapped and native security context handling and related GUTI aspects for EPC-5GC interworking                                                                                                                 |                                        | Qualcomm (Sebastian)<br>Huawei (Ouyang)              |
| OI#26   | 6.5.10      |              | Home routed handover between 3GPP and N3GPP when a UE is connected via same or different PLMNs in 3GPP and non-3GPP accesses.                                                                                 | Postponed from SA2#123                 | LGE (Myungjune)<br>Nokia (Nicolas)<br>Huawei (marco) |
| OI#27   | 6.5.2       |              | 1) AMF and TNL Management – Handling non-UE associated signalling and<br>2) fixes to AMF planned removal (specifically handling per UE messages)<br>3) Clarification on the AMF management related NF service | This was partly postponed from SA2#123 | Nokia (Devaki)<br>Huawei(Fenqin)                     |
| OI#28   | 6.5.2       |              | Relationship between Load re-balancing procedure and AMF planned removal                                                                                                                                      | Open issue identified during SA2#123   | Nokia (Devaki)                                       |
| OI#29   | 6.5.11      |              | 1) NF Management – Deregistration                                                                                                                                                                             | Gap in the spec                        | Nokia (Devaki)                                       |
| OI#30   | 6.5.2       |              | How NF can subscribe for AMF planned maintenance?                                                                                                                                                             | Postponed from SA2#124                 | Huawei(Fenqin)                                       |
| OI#31   | 6.5.10      |              | Service Request procedure for non-3GPP                                                                                                                                                                        | Postponed from SA2#123                 | Huawei(Marco/Hualin)                                 |

針對解決 open issue 的技術貢獻文件有較高的優先權可以於 SA2 會議中打開，其他的技術貢獻文件則會進入信件討論批准 (Email-Approval)的階段，並不會在會議中打開討論，以有效的利用會議時間。本次會議為 TS23.501 和 23.502 今年最後一次會議，亦為 Rel-15 的最後一次會議。明年會進入 5G Phase II 的階段，進行 Rel-16 的 SID 研究階段。

### 與會成員工作分配

| 與會成員 | 任務                                                   |
|------|------------------------------------------------------|
| 賴家齡  | 參加 3GPP SA2# 124 會議進行網路切片標準規範制定以及關注明年 Rel-16 的 SIDs。 |

本次 3GPP SA2#124 會議於美國/雷諾舉行，本計畫團隊派 1 位成員參加會議，主要是鎖定 NextGen WID 網路切片相關議題和邊緣計算相關議題並希望能與其他大廠接觸，增加未來合作交流機會，並提前為 R15/R16 標準規範布局。

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## 一、會議名稱

3GPP SA2 #124 會議

## 二、參加會議目的及效益

- 參加 NextGen WID 標準規範文件制定。
- 與其他國際大廠接觸，討論未來下一代網路架構可能的架構，並尋求未來合作的可能性。
- 為 R15/R16 標準規範文件提前布局。
- 追蹤 3GPP 會議相關工作項目的規格制定方向及進度。
- 提出貢獻，參與技術討論及協商，確認未來技術運用之機會。
- 尋求國際大廠合作的可能性。

## 三、會議時間

27 Nov.~01 Dec. 2017

## 四、會議地點

美國/雷諾(Peppermill resort hotel in Reno, USA)

## 五、會議議程

3GPP SA2 #124 會議議程，會議進行之會議室與時間安排如下：

|     | Topic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Specs                                                                               | Rapporteur     |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------|
| 1   | Opening of the meeting <b>09:00 on Monday</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                     |                |
| 2   | Approval of the agenda<br>2.1 IPR Call and Antitrust Reminder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                     |                |
| 3   | Meeting reports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                     |                |
| 4   | General                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                     |                |
| 4.1 | Common issues and Incoming LSs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                     |                |
| 5   | <p><b>Pre-Rel-15 Essential Corrections</b></p> <p><i>There are no restrictions on the use of TEI<sub>x</sub> Category F CRs for maintenance. Use the original WI Code for features maintained for the release in which the feature is introduced, and 'TEI<sub>x</sub>, &lt;original feature WI Code&gt;' for maintaining the feature in subsequent releases. Use TEI<sub>x</sub> as Rel-12 or Rel-13 Category F CRs is acceptable, e.g. "TEI13, QoS_SSL" or "TEI12, LIPA_SIPTO".</i></p> <p><i>Alignment CRs to features led by other working groups should be introduced using 'TEI<sub>x</sub>, &lt;WI Code of feature&gt;' or the original WI Code of the feature.</i></p> <p><i>(Please do not submit documents directly to this agenda item.)</i></p> |                                                                                     |                |
| 5.1 | <p><b>3GPP Packet Access Maintenance</b></p> <p>For corrections of any issues that relate to 3GPP access related aspects and for any work items from that area, like: SAE, CSFB, DÉCOR, MTC, CioT, CUPS, V2X.</p> <p>And for maintenance of functionality introduced by TEI<sub>x</sub> CRs (x&lt;15) in the area of 3GPP Access. Also alignment to past features (e.g. SAES) related to 3GPP access related aspects and alignment to diverse features specified by other working groups.</p>                                                                                                                                                                                                                                                               | 23.060,<br>23.246,<br>23.272,<br>23.401,<br>23.468,<br>23.682,<br>23.285,<br>23.214 | Diverse / None |
| 5.2 | <p><b>QoS and PCC Maintenance</b></p> <p>For corrections of any issues that relate to QoS and PCC, including the policy related aspects of other Wis like from SAE, but also work items specific for that area like FMSS.</p> <p>And for maintenance of functionality introduced by TEI<sub>x</sub> CRs (x&lt;15) in the area of QoS and PCC. Also QoS and PCC related alignments to past features (e.g. SAES) and alignment to diverse features specified by other working groups.</p>                                                                                                                                                                                                                                                                     | 23.060,<br>23.401,<br>23.402                                                        | Diverse / None |
| 5.3 | <p><b>Non-3GPP Access Maintenance</b></p> <p>For corrections of any issues that relate to non-3GPP access related aspects and for any work items from that area, like: SEW1.</p> <p>And for maintenance of functionality introduced by TEI<sub>x</sub> CRs (x&lt;15) in the area of non-3GPP Access. Also for alignment to non-3GPP aspects from past features (e.g. SAES) and for alignment to diverse features specified by other working groups, etc.</p>                                                                                                                                                                                                                                                                                                | 23.402                                                                              | Diverse / None |
| 5.4 | <b>IMS and IMS-Related Maintenance</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 23.167,<br>23.216,                                                                  | Diverse / None |

|            | Topic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Specs                                         | Rapporteur                                                                                                     |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------|
|            | For corrections of any issues that are IMS-related and similar aspects and for any work items from that area, like: IMS, Emergency, PS_data_off.<br><br>And for maintenance of functionality introduced by TEI <sub>x</sub> CRs (x<15) in the area of IMS-related. Also for alignment to IMS-related and similar aspects from past features and for alignment to diverse features specified by other working groups, etc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 23.228,<br>23.237<br><br>23.228<br><br>23.292 |                                                                                                                |
| <b>6</b>   | <b>Release 15 and future releases</b> ( <i>Please do not submit documents directly to this agenda item.</i> )<br><br>Also for alignment to Rel-15 aspects or features specified by other working groups                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                               |                                                                                                                |
| <b>6.1</b> | <b>Rel-15 3GPP Packet Access Maintenance – essential corrections</b><br><br>For corrections of any issues that relate to 3GPP access related aspects and for any work items from that area, like: ProSe_WLAN_DD_Stage2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 23.060,<br>23.251,<br>23.401                  | Diverse                                                                                                        |
| <b>6.2</b> | <b>Rel-15 PCC/QoS Maintenance– essential corrections</b><br><br>For corrections of any issues that relate to QoS and PCC, including the policy related aspects of other WIs from that area, but also work items specific for that area like                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 23.060,<br>23.203,<br>23.401                  | Diverse                                                                                                        |
| <b>6.3</b> | <b>Rel-15 Non-3GPP Access Maintenance– essential corrections</b><br><br>For corrections of any issues that relate to non-3GPP access related aspects and for any work items from that area, like: VoWLAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 23.402                                        | Diverse                                                                                                        |
| <b>6.4</b> | <b>Rel-15 IMS-Related Maintenance– essential corrections</b><br><br>For corrections of any issues that are IMS and related aspects and for any work items from that area, like:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 23.221,<br>23.228,<br>23.292                  | Diverse                                                                                                        |
| <b>6.5</b> | <b>5G System Architecture</b><br><br>( <i>Please do not submit documents directly to this agenda item.</i> )<br><br>There will be prioritisation of essential open or missing items where some resolution is still needed for specifying a complete, operational phase 1 5G system within the scope defined by the WI objectives.<br><br>In addition tdocs by four or more author companies will be handled with priority, which is further prioritization within each category of “essential issues” and “other issues”.<br><br>The rapporteurs maintain a list of those essential open or missing items to also help to focus already during the meeting preparations.<br><br>For any tdocs that contain some selection or decision proposals or a longer discussion part please include a summary of about one page in maximum, unless the total discussion part of the tdoc is not much larger.<br><br>If your tdoc is suitable for handling via email (email approval), e.g. editorial or small corrections, please indicate this in the abstract. | 23.501<br>23.502<br>23.503                    | Tao Sun (China Mobile)<br>Devaki Chandramouli (Nokia)<br>Peter Hedman (Ericsson)<br><br>Mirko Schramm (Huawei) |
| 6.5.1      | General aspects, concepts and reference models<br><br>High level function descriptions that don’t fit under any of the other, more specific agenda items. Reference models.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 23.501<br>23.502                              |                                                                                                                |
| 6.5.2      | Common Access Control, RM and CM functions and procedure flows                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 23.501                                        |                                                                                                                |

|          | Topic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Specs                                | Rapporteur |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------|
|          | Related high level function descriptions, registration management procedures and RM and CM state models as long as common for 3GPP and non3GPP accesses. Related services/service operations where the AMF is the “NF producer”. Including slice related aspects of AC, RM and CM. Any impacts from virtual environments that affect RM/CM.<br><br>Any 3GPP or non3GPP access specific aspects of states or registration management procedures are for 6.5.7 or 6.5.10 respectively. | 23.502                               |            |
| 6.5.3    | Session management and continuity functions and flows<br><br>Related high level function descriptions. Perhaps state models. Related system procedure flows. Related services/service operations where the SMF is the “NF producer”. Including slice related aspects of SM.                                                                                                                                                                                                          | 23.501<br>23.502                     |            |
| 6.5.4    | Security related functions and flows<br><br>Related high level function descriptions. Related system procedure flows. Related service based procedures.                                                                                                                                                                                                                                                                                                                              | 23.501<br>23.502                     |            |
| 6.5.5    | QoS concept and functionality<br><br>Related high level function descriptions. Related system procedure flows. Related service based procedures. Any QoS related aspects from specific services support.                                                                                                                                                                                                                                                                             | 23.501<br>23.502                     |            |
| 6.5.6    | Policy and charging control<br><br>Related high level function descriptions. Related system procedure flows. Related services/service operations where the PCF is the “NF producer”.                                                                                                                                                                                                                                                                                                 | 23.501<br>23.502<br>23.503<br>23.203 |            |
| 6.5.7    | 3GPP access specific functionality and flows - not for tdocs, use sub-items<br><br>Related high level functions and procedures, including 3GPP access related specifics of RM and CM states and registration procedures. Related service based procedures, if primarily motivated by the procedures here. Also on radio and CN idle related aspects, i.e. including aspects of RRC_inactive.                                                                                         | 23.501<br>23.502                     |            |
| 6.5.7.1  | 3GPP access specifics of RM and CM states. Registration area management and area restriction handling. 3GPP access specific aspects of the registration management procedure.                                                                                                                                                                                                                                                                                                        | 23.501<br>23.502                     |            |
| 6.5.7.2  | MICO related                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 23.501<br>23.502                     |            |
| 6.5.7.3  | Handover procedures and related.                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 23.501<br>23.502                     |            |
| 6.5.7.4  | Service Request procedures and related, including selective activation of UP connections<br><br>Service Request with impact on SMF/UPF like changing those NFs is considered under 6.5.3.                                                                                                                                                                                                                                                                                            | 23.501<br>23.502                     |            |
| 6.5.7.5  | RRC_inactive related                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 23.501<br>23.502                     |            |
| 6.5.7.5A | RAN3-SA2 on “Xn Connectivity and RRC_INACTIVE Handling”<br><br>Tdoc submission for this session to RAN3 under 10.6.5. Others                                                                                                                                                                                                                                                                                                                                                         |                                      |            |



|             | <b>Topic</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Specs</b>     | <b>Rapporteur</b>                       |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------------------------------|
| 6.5.8       | <p>Specific services support</p> <p>Any QoS related aspects from specific services support, like MPS, are handled under 6.5.5.</p> <p>- NAS level procedures and functions that are needed to support or enable specific services, e.g. for carrying SMS.</p> <p>All common NAS procedures/support for users like SM or SMS should be under 6.5.2. Here should be only users of common NAS, like SMS specific NAS or like NAS for Location Services. SM specific NAS is under 6.5.3.</p> <p>- SMS, PWS, IMS or Location Services procedures and functions that are above or outside NAS.</p> | 23.501<br>23.502 |                                         |
| 6.5.9       | <p>Interworking and Migration</p> <p>Related high level function descriptions. Related system procedure flows. Related service based procedures.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                         | 23.501<br>23.502 |                                         |
| 6.5.10      | <p>Non-3GPP access specific functionality and flows</p> <p>Related high level function descriptions including non3GPP access related specifics of RM and CM states and registration procedures. Related system procedure flows. Related service based procedures.</p>                                                                                                                                                                                                                                                                                                                        | 23.501<br>23.502 |                                         |
| 6.5.11      | <p>Framework functions</p> <p>Related high level function descriptions. Related system procedure flows. Related services/service operations for “NF producers” like NRF or UDM. Function/service registration, discovery, authorisation of usage, ...</p>                                                                                                                                                                                                                                                                                                                                    | 23.501<br>23.502 |                                         |
| <b>6.6</b>  | <b>Study on architecture enhancements for 3GPP support of advanced V2X services (FS_eV2XARC)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 23.786           | LaeYoung Kim<br>(LG Electronics)        |
| <b>6.7</b>  | <b>Study on the Wireless and Wireline Convergence for the 5G system architecture (FS_5WWC)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 23.716           | Marco Spini<br>(Huawei)                 |
| <b>6.8</b>  | <b>Study for enhanced VoLTE performance (FS_eVoLP)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 23.759           | Xiaobo Wu<br>(Huawei)                   |
| <b>6.9</b>  | <b>Unlicensed spectrum offloading system enhancements (USOS)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  | Haris Zisimopoulos<br>(Qualcomm)        |
| <b>6.10</b> | <b>Study on architecture enhancements to ProSe UE-to-Network Relay (FS_REAR)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 23.733           | Dario Serafino Tonesi<br>(Huawei)       |
| <b>6.11</b> | <b>EPC support for E-UTRAN URLLC (EPS_URLLC)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  | Chris Pudney<br>(Vodafone)              |
| <b>6.12</b> | <b>Study on Access Traffic Steering, Switch and Splitting support in the 5G system architecture (FS_ATSSS)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 23.793           | Tricci So<br>(ZTE)                      |
| <b>6.13</b> | <b>PS Data Off Feature Phase 2 (PS_DATA_OFF2)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  | Leopold Murhammer<br>(Deutsche Telekom) |

|      | Topic                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Specs                                                                               | Rapporteur               |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------|
| 6.14 | EPC support for Option 3/3a/3x Dual Connectivity with New Radio (EDCE5)                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                     | Chris Pudney (Vodafone)  |
| 6.15 | Study on core network aspects of signalling reduction to enable light connection for LTE                                                                                                                                                                                                                                                                                                                                                                | 23.723                                                                              | Sašo Stojanovski (Intel) |
| 6.16 | Study on System enhancements for Provision of Access to Restricted Local Operator Services by Unauthenticated UEs (FS_PARLOS_SA2)                                                                                                                                                                                                                                                                                                                       |                                                                                     | Nicolas Drevon (Nokia)   |
| 6.21 | TEI15 Category B/C - Enhancements and Improvements only.<br>3GPP Packet Access.<br>Only for:<br>Small data allowance plans (acc. to S2-174731).<br>Use of xMB for group message delivery (acc. to S2-174242).                                                                                                                                                                                                                                           | 23.060,<br>23.221,<br>23.251,<br>23.272,<br>23.303,<br>23.401,<br>23.468,<br>23.682 |                          |
| 6.22 | TEI15 Category B/C - Enhancements and Improvements only.<br>PCC/QoS.<br>Only for:<br>QCI Priority Level Override (acc. to S2-178032 or way forward in meeting minutes).                                                                                                                                                                                                                                                                                 | 23.060,<br>23.203,<br>23.401                                                        |                          |
| 6.23 | TEI14 Category B/C - Enhancements and Improvements only.<br>Non-3GPP Access.                                                                                                                                                                                                                                                                                                                                                                            | 23.261,<br>23.402                                                                   |                          |
| 6.24 | TEI15 Category B/C - Enhancements and Improvements only.<br>IMS, IMS-Related, Emergency, Other.<br>Only for:<br>Identity Attestation and Verification support in IMS (acc. to S2-176919).                                                                                                                                                                                                                                                               | 23.167,<br>23.204,<br>23.216,<br>23.228,<br>23.237,<br>23.246,<br>23.271,<br>23.292 |                          |
| 7    | <b>Project Planning and Management</b>                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                     |                          |
| 7.1  | <b>New and Revised Work Items, Cover sheets for completed work items, TEI15 proposals</b><br>Any TEI15 technical enhancements should be proposed under 7.1 with a brief justification/discussion paper, possibly together with related CRs. So that the group can discuss and decide whether and how to move forward with the proposed TEI15 items and consider what meeting time to allocate per accepted TEI15 item during the work planning session. |                                                                                     |                          |
| 7.2  | <b>Review of the Work Plan</b>                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                     |                          |
| 7.3  | <b>Planning future meetings</b>                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                     |                          |
| 8    | <b>AOB</b>                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                     |                          |
| 9    | <b>Close of the Meeting</b><br><b>18:00 on Friday</b>                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                     |                          |

|                       | Monday                                                                                                          | Tuesday                                                                                                                                                                                                   | Wednesday                                                                                                               | Thursday                                                                                                                                                                                        | Friday                                                                                                                                                                                                                                 |
|-----------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 08:00<br>Q1.<br>10:00 | <p>09:00</p> <p>Opening (1), Agenda (2), Reports (3) Incoming LSs (4.1), WIDs (7.1), Future Meetings (7.3).</p> | <p>5G (6.5.1) General – anything</p> <p>5G (6.5.9) IW &amp; Migrate</p> <p>PCC/QoS maintenance (5.2, 6.2) TEI15 PCC/QoS (6.22) IMS &amp; related maintenance (5.4,6.4) TEI15 IMS &amp; related (6.24)</p> | <p>(6.5.1) General - slicing</p> <p>5G (6.5.9) IW &amp; Migrate</p> <p>5G (6.5.10) non-3GPP specific</p>                | <p>5G (6.5.1) General – anything + Revisions</p> <p>Revisions (6.5.7.5) RRC_Inactive, 5G (6.5.9) IW &amp; Migrate, (6.5.8) Services support</p> <p>5G (6.5.3) SM/SC + Revisions</p>             | <p>5G Revisions, 5G (6.5.3) SM/SC</p> <p>Parallel revisions: (6.5.8) Services support, 3GPP maintenance (5.1, 6.1), TEI15 3G (6.21), (6.5.7.1/2/3) 3GPP specific, (6.5.7.5) RRC_Inactive</p> <p>Parallel revisions: 5G (6.5.6) PCC</p> |
| 10:30<br>Q2.<br>12:30 | <p>11:00</p> <p>5G (6.5.1) General</p> <p>3GPP maintenance (5.1, 6.1)</p>                                       | <p>5G (6.5.2) AC/MM/CM</p> <p>3GPP maintenance (5.1) CIOT(-Ext) (5.1), CloT Rel-15 (6.1)</p> <p>5G (6.5.6) PCC incl. Policies/NSSP update in the UE</p>                                                   | <p>5G (6.5.3) SM/SC</p> <p>5G (6.5.9) IW &amp; Migrate</p> <p>5G (6.5.6) PCC</p>                                        | <p>5G Revisions (6.5.2) AC/MM/CM, (6.5.3) SM/SC</p> <p>Parallel revisions: (6.5.8) Services support, (6.5.7.1/2/3) 3GPP specific</p> <p>Parallel revisions PCC</p>                              | <p>5G (6.5.1) slicing, 11:30 5G (6.5.3) SM/SC</p> <p>5G (6.5.11) Framework, 11:30 Slice related after 11:30</p> <p>5G (6.5.10) non-3GPP specific, 5G (6.5.6) PCC</p>                                                                   |
| Lunch                 |                                                                                                                 |                                                                                                                                                                                                           |                                                                                                                         |                                                                                                                                                                                                 |                                                                                                                                                                                                                                        |
| 14:00<br>Q3.<br>15:30 | <p>5G 5G (6.5.1) slicing interworking realted</p> <p>5G (6.5.8) Services support – emergency, location SMS</p>  | <p>5G (6.5.5) QoS</p> <p>3GPP maintenance (5.1) – no CIOT, TEI15 3G (6.21)</p> <p>5G (6.5.10) non-3GPP specific</p>                                                                                       | <p>5G (6.5.5) QoS</p> <p>5G (6.5.10) non-3GPP specific</p> <p>5G (6.5.8) Services support - SMS, voice support, IMS</p> | <p>5G Revisions 5G (6.5.5) QoS</p> <p>Parallel revisions: 3GPP maintenance (5.1, 6.1), TEI15 3G (6.21) 5G (6.5.9) IW &amp; Migrate</p> <p>Parallel revisions: 5G (6.5.10) non-3GPP specific</p> | <p>13:30</p> <p>(6.5.9) IW &amp; Migrate</p> <p>List of agreed tdocs for block approval</p> <p>all other Revisions</p>                                                                                                                 |
| 16:00<br>Q4.<br>17:30 | <p>5G (6.5.2) AC/MM/CM</p> <p>5G (6.5.6) PCC</p>                                                                | <p>5G (6.5.3) SM/SC</p> <p>5G (6.5.4) Security, 5G (6.5.7.1/2/3) 3GPP specific</p>                                                                                                                        | <p>(6.5.1) General – slicing</p> <p>5G (6.5.11) Framework, nothing related to external exposure</p>                     | <p>5G Revisions (6.5.1) General – slicing</p> <p>Parallel revisions: 5G (6.5.4) Security, 5G (6.5.9) IW &amp; Migrate</p>                                                                       | <p>16:00 block approval of agreed tdocs, Agreed tdocs not available by the time of the block approval may be turned to status OPEN on request</p>                                                                                      |

|                       |                                                                                                            |                                                                                          |                                                                                                                                                   |                                                                                                                                                                                                               |                                                                                                                                             |
|-----------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <p>5G (6.5.7.5A) RAN3-SA2 on RRC_Inactive; RAN3 room, for tdoc submission and scope see AI description</p> | <p>USOS (6.9), 5G (6.5.6) PCC</p>                                                        | <p>5G (6.5.6) PCC</p>                                                                                                                             | <p>Parallel revisions: 5G (6.5.6) PCC, 5.2.5.4 6.4 USOS 6.22</p>                                                                                                                                              | <p>Revisions: AOB (8)</p>                                                                                                                   |
| 18:00<br>Q5.<br>19:30 | <p>5G (6.5.11) Framework</p> <p>5G (6.5.7.5) 3GPP specific RRC_Inactive</p>                                | <p>5G (6.5.3) SM/SC</p> <p>5G (6.5.7.1/2) 3GPP specific</p> <p>5G (6.5.11) Framework</p> | <p>5G (6.5.7.4) 3GPP specific</p> <p>EPS_URLLC (6.11) 3GPP maint. (6.1) EDCE5</p> <p>3G maintenance (5.3, 6.3), 5G (6.5.10) non-3GPP specific</p> | <p>5G Revisions: (6.5.7.4) 3GPP specific</p> <p>Parallel revisions: EPS_URLLC (6.11) EDCE5 (6.1) (6.5.9) IW &amp; Migrate, (6.5.8) Services support</p> <p>Parallel revisions: (6.5.10) non-3GPP specific</p> | <p>18:00 Close of meeting (9)</p> <p>Approved tdocs not available after the meeting may be unapproved and go for email approval instead</p> |
| 19:30                 | <p>8pm Drafting session on slice – EPC IW/mobility</p>                                                     |                                                                                          |                                                                                                                                                   | <p>19:00 New and Revised Work Items (7.1), Review if the work plan (7.2)</p>                                                                                                                                  |                                                                                                                                             |

## 六、會議紀要

### RRC Inactive 相關技術貢獻文件

|           |                                                                                                                |                       |       |
|-----------|----------------------------------------------------------------------------------------------------------------|-----------------------|-------|
| S2-178707 | 23.502:LADN PDU session handling in RRC inactive mode                                                          | Qualcomm incorporated | noted |
| S2-178889 | 23.501: Update to 23.501: Regarding LADN information as RRC Inactive assistance information provided to NG-RAN | ITRI                  | noted |
| S2-178874 | 23.501: Further clarification on the area of interest from AMF provided to the RAN                             | Huawei, HiSilicon     | noted |

以上為投稿於 6.5.7.5: RRC Inactive Related 的技術貢獻文件。三篇技術貢獻文件包含本技術團隊的文件在會議中被打開討論，由於在會議中沒有共識，因此主席決定全部 noted 這三篇技術貢獻文件。以下會逐一解說此三篇技術貢獻文件。

此三篇技術貢獻文件為與本地存取數據網路(Local Access Data Network, LADN)相關之技術貢獻文件，由高通(Qualcomm)、本技術團隊及華為(Huawei)提出。其中由 Qualcomm 提出之技術貢獻文件為更新 TS 23.502 標準文件內容。本技術團隊和 Huawei 為更新 TS 23.501 標準文件內容。

於 Qualcomm 技術貢獻文件內容中，討論當用戶設備(User Plane, UE)在無線電資源控制(Radio Resource Control,RRC)交互作用(Inactive)狀態時，與 LADN 有關的封包數據單元連線 (PDU Session) 要如何處理。在之前會議 SA#123 中，討論到當 UE 處於連線管理連線狀態 (CM-CONNECTED) 時，UE 進出 LADN 服務區域並不會特別通知核心網路。如果核心網路欲知道 UE 是否在 LADN 服務區域，可以由核心網路 (Accessible and Mobility Function,AMF)開始在所在位置報告(Location reporting)去追蹤 UE 的位置是否位於 LADN 服務區域。然而，當 UE 處於連線管理連結 (CM-CONNECTED)有支援 RRC Inactive 時，由無線存取網路 (RAN) 指派給 UE 的無線網路追蹤區域 (RAN Notification Area, RNA)中的 cell 可以在 LAND 服務區域內或在 LADN 服務區域外。因此，RAN 無法藉由指派給 UE 的 RNA 中確切知道 UE 位置是否在 LADN 服務區內或外。在此，於 Qualcomm 的技術文件中，有兩個情境可以討論。

**情境 1：當 UE 進入 RRC Inactive 時，位置在 LADN 服務區域外，RNA 區域至少包含部分 LADN 服務區域。**

下圖 1 為描述當 UE 處於 RRC Inactive 時進入 LADN 服務區域，並且有一條未啟動傳輸的 PDU 連線。此時，

1. UE 連線至 5G 核心網路，並且有一條 LADN PDU 連線。
2. 當 UE 移動到一個不在 LADN 服務區域的 RAN 時，5G 核心網路 (AMF) 會通知會議管理功能 (SMF)，UE 已經離開 LADN 服務區域。SMF 會通知使用者平面 (UPF) 連線將與 LADN 有關係的 PDU 連線關掉，並且丟掉由下傳方向來的資料。
3. 此時，不在 LADN 服務區域的 RAN 決定將 UE 變成 RRC Inactive 狀態，重新指派 RNA 給 UE。此指派的 RNA 會包含部分的 LADN 服務區域。
4. 當 UE 處於 RRC Inactive 狀態移動進入 LADN 服務區域時，而且此時 UE 所在的 RNA 位置為 LADN 服務區域內。但是因為 UE 還在 RAN 指派的 RNA 範圍內移動，因此 RAN 並不知道 UE 已經回去 LADN 服務區域內。因此，LADN 相關的 PDU 連線還是沒有啟動，即使 UE 已經回到 LADN 服務區域內。

在最佳的情況下是，當 UE 回到 LADN 服務區域時，RAN 可以馬上知道，並且通知 5G 核心網路 UE 已經回到 LADN 服務區域。此時，SMF 就可以恢復 LADN PDU 的連線。

因此，本篇技術貢獻提出解決方法去解決上述當 UE 處於 RRC Inactive 時並回到 LADN 服務區域時，RAN 可以通知 5G 核心網路，去啟動與 LADN 相關的 PDU 連線。如果一個 UE 處於 RRC Inactive 狀態，

而且此 UE 有一個未啟動傳輸的 LADN PDU 連線。當此 UE 移動進入 LADN 服務區域時，它開始一個 LADN PDU 連線進行傳輸。

**情境 2：UE 處於 RRC Inactive 狀態進入 LADN 服務區域，但是由 RAN 指派給 UE 的 RNA 並沒有包含 LADN 服務區域。**

在這個情況下，由於 UE 離開 LADN 區域，但是指派給 UE 的 RNA 並沒有包含 LADN 服務區域，因此 5G 核心網路並不會被通知。因此，與 LADN PDU 連線相關的下傳資料會傳送到 RAN，並由 RAN 做 Paging UE 的動作。但是，當 UE 回復 RRC CONNECTED 與 5G 核心網路連線時，5G 核心網路會發現 UE 並沒有在 LADN 服務區域內，因此會將 LADN PDU 連線關掉。本篇技術貢獻文件認為目前的 5G 系統可以解決這些問題，並不需要加入其他新的方法來解決。

本技術團隊提出的方法為，於 TS 23.501 章節 5.3.3.2.5 中描述，一個 UE 可以根據網路設定，由 RAN 決定將此 UE 由 RRC CONNECTED 狀態進入 RRC Inactive 狀態。一個處於 RRC Inactive 狀態的 UE 可以知道由 RAN 指派的 RNA 位置資訊。RAN 可以藉由指派 RNA 資訊用來追蹤 UE 位置。另外一方面，由於啟動 LADN 服務依賴 UE 的位置資訊是不是在 LADN 服務區域裡面。在目前的標準文件 TS 23.501 中描述，只有當 UE 在 LADN 服務區域內，UE 才可以啟動與 LADN 相關的 PDU 連線。因此，為了可以支援 LADN 上傳和下傳資料傳輸，5G 核心網路 SMF 需要知道 UE 的位置在去分配相關的 UPF 去支援 LADN 資料的傳輸。因此，5G 核心網路可以仰賴 RAN 去追蹤 UE，並且回報 UE 是否在 LADN 服務區域內，只要 RAN 可以拿到關於此 UE 的 LADN 服務區域資料。

由 Huawei 提出之技術貢獻文件，也類似本技術團隊提出的方法。由 5G 網路提供有興趣的區域 (the area of interest) 給 RAN，由 RAN 可以根據 5G 核心網路提出的資料去決定 UE 的 RNA 範圍，並且為 5G 核心網路追蹤 UE 是否在 5G 核心網路有興趣的區域內。

以上這三篇，由於在會議中有其他公司的反對，並且有不同的意見，無法達到共識，所以主席認為直接將三篇技術貢獻文件 noted。

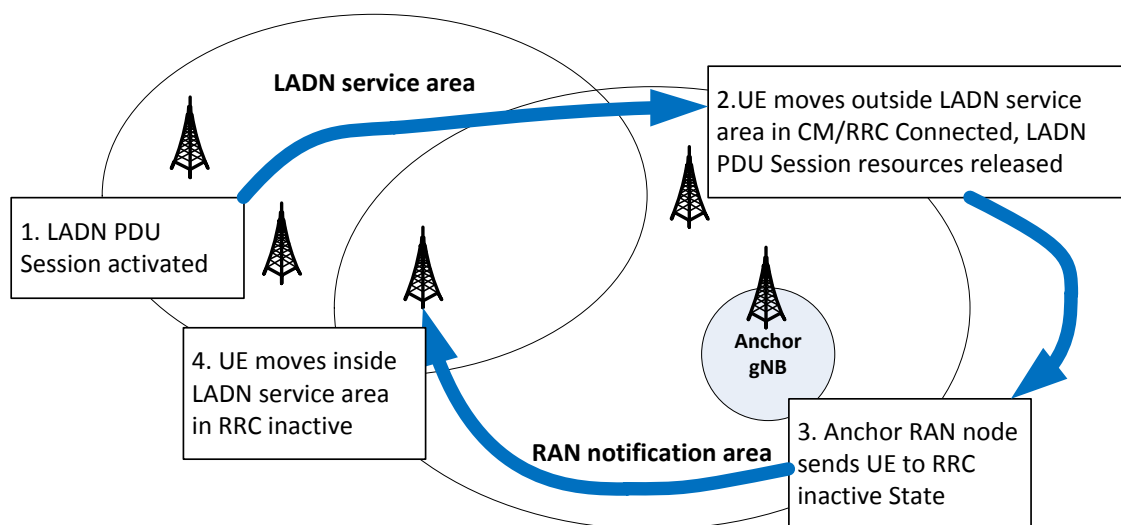


圖 1：LADN PDU session deactivated / UE entering LADN service area while in RRC inactive

### Network Slicing 相關技術貢獻文件

|           |                                                                                                                            |                             |        |
|-----------|----------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------|
| S2-179569 | 23.501: 23.501 – alignment text for Multi-level NRFs support for network slicing described in clauses 5.15.5.1 to 5.15.5.3 | ZTE, Oracle, Telecom Italia | agreed |
| S2-179420 | 23.501: 23.501 – Alignment for 23.501 with 23.502 for Multi-level NRFs support for Network Slicing Roaming                 | Telecom Italia, ZTE, Oracle | agreed |

由中興(ZTE)主導的技術貢獻文件是提出針對多層網路功能儲存功能(Multi-level NRF)的在 TS 23.501 和 TS 23.502 之一致性描述。以下為本篇技術貢獻文件提出在 TS 23.501 的更改：

1. 當 AMF 詢問網路切片選取功能(Network Slice Selection Function, NSSF)的時候，會將 Requested NSSAI、Subscribed NSSAI 和 PLMN ID 傳給 NSSF。其中，被申請網路切片選取協助資訊 (Subscribed NSSAI) 裡面會有一個說明 (indication)，指出這個 Subscribed NSSAI 是否為預設(Default) NSSAI。當 UE 的追蹤區 (Tracking Area) 超過一個以上時，UE 可以使用一個以上的接取型態 (Access Type)。
2. NRF 可以用來決定 AMF 候選名單。NSSF 可以回覆與某些 S-NSSAI 相關的 NSI ID。
3. 如果 AMF 無法使用合適的 NRF 去詢問與 S-NSSAI 相關的資訊，則 NSSF 可以回覆適合的 NRF 給 AMF。

由義大利電信(Telecom Italia)主導的技術貢獻文件為更新 Multi-level NRF 支援 Network Slicing Roaming 的部分。

- (1) 首先，更新 NSSF 支援 Roaming 的情境下。加入 Visited NSSF 和 Home NSSF 之間的介面。
- (2) 針對跨 PLMN 的網路功能搜尋，在 Visited PLMN 的 NRF 可以與 Home PLMN 的 NRF 互相溝通。

### Local Access Data Network (LADN) 相關技術貢獻文件

|           |                                                                     |                          |        |
|-----------|---------------------------------------------------------------------|--------------------------|--------|
| S2-179403 | 23.501:Clarification in LADN Clause 5.6.5                           | Intel, Huawei, ZTE, Oppo | agreed |
| S2-178288 | 23.501: AMF and SMF operations for LADN PDU Session                 | Samsung                  | merged |
| S2-178449 | 23.501: TS 23.501: clarification on LADN in case of CM state change | LG Electronics           | merged |



|           |                                                                |      |        |
|-----------|----------------------------------------------------------------|------|--------|
| S2-178903 | 23.501: Clarification on LADN subscription and Roaming support | ETRI | merged |
|-----------|----------------------------------------------------------------|------|--------|

以上的技術貢獻文件為與 LADN 服務相關，由索尼 (Sony) 提出的 S2-178465 在會議中無法得到共識，因此延遲於下次會議討論。其餘的全部合併到 S2-179403 這篇技術貢獻文件。此篇技術貢獻文件由英特爾(Intel)主導，合併的文件來自 Huawei, ZTE, OPPO, LGE, HTC, KDDI, SAMSUNG, Qualcomm, ETRI, NOKIA, Lenovo, Motorola Mobility，主要是要重整標準文件 TS 23.501 中，章節 5.6.5 Support for local area data network，使得裡面的敘述更為清楚明瞭。

## 七、心得與建議

### (1)心得：

本次會議為今年度 5G 第 1 階段 (Phase I) 標準文件制定的最後一次會議。根據 3GPP 定義的時程，會在今年釋出 5G 網路的第一個版本。SA2 工作規範小組於今年度 2017 年 11 月結束第一階段 5G 網路架構與程序設計，即結束 Rel-15 的標準文件制定。雖然，在目前的釋出的版本並沒有完全完成 5G Phase I 的架構和解決所有的問題。但是，整個基礎的 5G 網路架構已底定，並不會有太大的改變。本計畫團隊會持續關注 5G 網路相關議題，並且規劃明年度 SA2 參與計畫。

### (2)建議：

Rel-16 的研究項目會於明年度開始，即 SA2 會開始 5G 第 2 階段 (Phase II) 的研究階段。因此，本計畫團隊會關注相關 Rel-16 的 SIDs，並且撰寫相關技術貢獻文件至 Rel-16，先行宣告本計畫團隊於 Rel-16 的布局，以利切入之後的 Rel-16 的工作項目標準文件制定。

## 八、附件

[3GPP SA2#124 Meeting \(27 Nov. to 01 Dec. 2017\) Reno/USA \(2,2,1\)](#)

1. S2-178889 Update to 23.501: Registration LADN information as RRC Inactive assistance information provided to NG-RAN, ITRI, <noted>.
2. S2-178855 Update to 23.501: Removal of FFS in Section 6.3.5 AMF selection related to N3IWF supporting network slicing, <accepted>