**3GPP TSG-CT WG1 Meeting #133bis-eC1-220506**

**E-Meeting, 17th – 21st January 2022**

**3GPP TSG-CT Meeting #93-eCP-212105**

**E-Meeting, 13th – 15th September 2021**

**3GPP TSG-CT WG1 Meeting #131eC1-215065**

**E-Meeting, 19th – 27th August 2021**

**Source: CATT, OPPO**

**Title: Revised WID on CT aspects of proximity based services in 5GS**

**Document for: Approval**

**Agenda Item: 17.1.1**

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

# Title: CT aspects of proximity based services in 5GS

## Acronym: 5G\_ProSe

## Unique identifier: 910018

Potential target Release: Rel-17

Note that this field above indicates the proposed Release at the time of submission of the WID to TSG approval. It can later be changed without a need to revise the WID. The updated target Release is indicated in the Work Plan.

## 1 Impacts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Affects:** | UICC apps | ME | AN | CN | Others (specify) |
| **Yes** | X | X |  | X |  |
| **No** |  |  | X |  | X |
| **Don't know** |  |  |  |  |  |

## 2 Classification of the Work Item and linked work items

### 2.1 Primary classification

|  |  |
| --- | --- |
|  | Feature |
| X | Building Block |
|  | *Work Task* |
|  | Study Item |

### 2.2 Parent Work Item

|  |
| --- |
| Parent Work / Study Items  |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| 5G\_ProSe | SA2 | 900007 | Proximity based Services in 5GS |

### 2.3 Other related Work Items and dependencies

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| Other related Work Items (if any) |
| Unique ID | Title | Nature of relationship |
| 790001 | New Services and Markets Technology Enablers – Phase 2 | SA1 work item to define requirements for 5GS, which contains proximity services requirements. |
| 780002 | Removal of 'over LTE' limitation from Mission Critical Specifications | The requirements specified in 3GPP stage 1. |
| 800023 | Study on Mission Critical services support over 5G System | SA6 study item to support mission critical services over 5GS. |
| 800015 | Study on Network Controlled Interactive Service in 5GS | SA1 study item, which studies new services requirements related to proximity services. |
| 840030 | WID on Network Controlled Interactive Service(NCIS) Requirements | SA1 work item, which specifies the requirements for interactive service. |
| 880005 | Study on Security Aspects of Enhancement for Proximity Based Services in 5GS | SA3 study item, which studies new security requirements related to proximity services. |
| 890018 | Study on charging aspects of Enhanced Proximity-based Services in 5GC | SA5 study item, which studies new charging requirements related to proximity services. |
| 860042 | WID on NR Sidelink enhancement | RAN work item, which specifies enhancements of NR sidelink. |
| 860038 | Study on NR Sidelink relay | RAN study item, which studies NR sidelink relay. |
| 630006 | CT aspects of Proximity-based Services (Stage 3) | CT work item, which specifies the protocol for proximity services for 4G/EPS. |
| 830033 | Study on System enhancement for Proximity based Services in 5GS | SA2 study item, which studies the requirements on proximity services in 5GS. |

**Dependency on non-3GPP (draft) specification**: none

## 3 Justification

Proximity based services in 5GS is a Rel-17 SA WGs work item which impacts the CT WGs (see WID in SP-201132). The stage 2 work is to provide enhancements of the 5G System to support proximity based services:

a) The SA WG1 captured the necessary service requirements of proximity based services for the 5G System in the TS 22.261 and TS 22.468;

b) The SA2 WG is enhancing the 5GCN and the UE as specified in TR 23.752 and TS 23.304. Therefore, this new work item is proposed to address the stage 3 protocol support of proximity based services for the 5G System;

c) The SA3 WG is working on a study on the security aspects of proximity based services in 5GS; and

d) The SA5 WG is working on a study on the charging aspects of proximity based services in 5GS, which results in further impacts to the 5GCN and the UE.

Therefore, it is necessary for a new CT work item to implement the stage-2 requirements for proximity based services in 5GS.

## 4 Objective

The objective of this work is to specify the CT aspects of proximity based services in 5GS in order to enhance the CT WGs specifications based on the stage-2 requirements. Normative work to be developed by SA WGs and RAN WGs which impacts CT WGs will be considered as soon as those are available.

The work shall be started only after the applicable normative SA2 requirements are available.

The expected work per the TSG CT group includes:

For CT1:

- update the PLMN selection procedure to cover particular interactions between proximity based services in 5GS and NAS functions related to MS in idle mode;

- update NAS procedures and message(s) for providing support of proximity based services in 5GS;

- support the direct discovery for proximity based services in 5GS over PC5 reference point including discovery model, group member discovery, discovery messages and procedures, etc., using NR-PC5 RAT;

NOTE 1: SA2 concludes to reuse and adapt model A and model B defined in TS 23.303 with the exception of the usage of PC5-D protocol stack for direct discovery in subclause 5.3.7.

- support the direct communications for proximity based services in 5GS over PC5 reference point including PC5 direct communication messages and procedures as well as PC5 direct communication QoS, using NR-PC5 RAT;

NOTE 2: SA2 concluded to reuse and adapt subclause 5.2, TS 23.287.

- support the procedures and messages between UE and 5G Direct Discovery Name Management Function (DDNMF);

NOTE 3: SA2 concluded to reuse and adapt the PC3 procedures defined in TS 23.303.

- support UE-to-Network relay for proximity based services in 5GS including relay selection and reselection, relay QoS, UE-to-Network relay authentication and authorization, etc.;

- support UE policy for proximity based services in 5GS;

- addition or update of existing AT commands to support proximity based services in 5GS;

- support direct communication path selection between PC5 and Uu in 5GS; and

- support UE usage reporting in 5GS;

For CT3:

- potential impacts to the PCC framework for proximity based services in 5GS with regards to charging and QoS support;

- impact to the NEF northbound interface to support proximity based services in 5GS;

- support the procedures and messages between the 5G DDNMF and ProSe Application Server in 5GS (referring to TS 29.343); and

- update to PCF for ProSe related policy because of proximity based services in 5GS:

a) update of UE Policy delivery procedure to support the request, authorization and delivery of 5GS ProSe policies; and

b) support of PCF notification of PDUID changes to the 5G DDNMF;

For CT4:

- Inter-5G DDNMF signalling interaction to support proximity based services in 5GS;

- potential update to the AMF to support proximity based services in 5GS;

- potential update to the NRF for NF/NF service selection;

- potential update to the QoS flow handling in SMF to support proximity based services in 5GS;

- potential update to UDM and UDR due to proximity based services in 5GS support;

- potential storage of new subscription data to support proximity based services in 5GS;

- potential update to the restoration procedures to support proximity based services in 5GS; and

For CT6:

- support of proximity based services in 5GS by means of using the USIM.

## 5 Expected Output and Time scale

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| **New specifications** *{One line per specification. Create/delete lines as needed}* |
| Type  | TS/TR number | Title | For info at TSG#  | For approval at TSG# | Rapporteur |
| TS | 24.554 | Proximity based services(ProSe) in 5G system(5GS) protocol aspects; Stage 3 | TSG CT #94 (December 2021) | TSG CT #95 (March 2022) | CT1The TS will define the ProSe signalings and messages over PC5 reference point and ProSe related signalings and message over Uu reference point.Rapporteur:Haorui Yang, OPPO(yanghaorui@oppo.com) |
| TS | 24.555 | Proximity based services(ProSe) in 5G system(5GS); User Equipment (UE) policies; Stage 3 | TSG CT #94 (December 2021) | TSG CT #95 (March 2022) | CT1The TS will define the ProSe UE policies in 5GS.Rapporteur:Haorui Yang, OPPO(yanghaorui@oppo.com) |
| TS | 29.557 | 5G System; Application Function ProSe Service; Stage 3 | TSG CT #94 (December 2021) | TSG CT #95 (March 2022) | CT3The TS will define AF ProSe Service to support 5G ProSe Direct Discovery authorization requested by 5G DDNMF towards ProSe Application Server.Rapporteur:Xiaoyan Duan, CATT(duanxiaoyan@catt.cn) |
| TS | 29.555 | 5G System; 5G Direct Discovery Name Management Services; Stage 3 | TSG CT #94 (December 2021) | TSG CT #95 (March 2022) | CT4The TS will define the N5g-ddnmf Discovery Service. Rapporteur:Chenxi Bao, CATT (baochenxi@catt.cn) |

|  |
| --- |
| **Impacted existing TS/TR** *{One line per specification. Create/delete lines as needed}* |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| 23.122 | Updates to cover interactions between ProSe in 5GS and NAS functions related to MS in idle mode | TSG CT #95 (March 2022) | CT1 |
| 24.501 | Update to support interactions between proximity based services in 5GS and the 5GMM and 5GSM | TSG CT #95 (March 2022) | CT1 |
| 24.526 | Update to support 5G ProSe policy | TSG CT #95 (March 2022) | CT1 |
| 24.587 | Update to support the transmission of 5G ProSe policy between UE and PCF | TSG CT #95 (March 2022) | CT1 |
| 27.007 | Addition or update of existing AT commands to support proximity based services in 5GS | TSG CT #95 (March 2022) | CT1 |
| 29.513 | Updates to policy and QoS parameters in order to support proximity based services in 5GS;Update to support of the subscription/notification of PDUID changes between the 5G DDNMF and PCF  | TSG CT #95 (March 2022) | CT3 |
| 29.519 | Possible updates to Unified Data Repository Service for Application Data in order to support proximity based services in 5GS | TSG CT #95 (March 2022) | CT3 |
| 29.522 | Potential update to the Nnef\_ServiceParameter service or possible update to the Nnef\_ParameterProvision service to support proximity based services in 5GS | TSG CT #95 (March 2022) | CT3 |
| 29.525 | Updates to support proximity based services in 5GS in UE policy control service; | TSG CT #95 (March 2022) | CT3 |
| 29.534 | Update to support the subscription/notification of PDUID changes | TSG CT #95 (March 2022) | CT3 |
| 23.008 | Possible update on storage of subscription data | TSG CT #95 (March 2022) | CT4 |
| 29.502 | Possible updates to the SMF to support proximity based services in 5GS | TSG CT #95 (March 2022) | CT4 |
| 29.503 | Possible updates to the UDM services to support proximity based services in 5GS | TSG CT #95 (March 2022) | CT4 |
| 29.505 | Possible updates to the UDR services for subscription data to support proximity based services in 5GS  | TSG CT #95 (March 2022) | CT4 |
| 29.510 | Possible update on NRF on NF / NF service selection to support proximity based services in 5GS | TSG CT #95 (March 2022) | CT4 |
| 29.518 | Possible updates on AMF to support proximity based services in 5GS | TSG CT #95 (March 2022) | CT4 |
| 29.527 | Possible updates to the restoration procedures to support proximity based services in 5GS | TSG CT #95 (March 2022) | CT4 |
| 29.571 | Possible definition of new common data types applicable for multiple 5G services to support proximity based services in 5GS | TSG CT #95 (March 2022) | CT4 |
| 31.102 | Update to add support for proximity based services in 5GS | TSG CT #95 (March 2022) | CT6 |
| 31.111 | Update to add support for proximity based services in 5GS such as 5G ProSe usage information report | TSG CT #95 (March 2022) | CT6 |

NOTE: The possible update to TS 29.512 in CT3 is subject to the conclusion of 5G\_ProSe in SA2.

## 6 Work item Rapporteur(s)

Xiaoyan Duan, CATT, duanxiaoyan@catt.cn

## 7 Work item leadership

CT1

## 8 Aspects that involve other WGs

SA1 for the requirements aspects,

SA2 for the architectural aspects,

SA3 for the security aspects.

SA5 for the charging aspects.

## 9 Supporting Individual Members

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| Supporting IM name |
| OPPO |
| CATT |
| CMCC |
| China Unicom |
| LG Electronics |
| China Telecom |
| vivo |
| Tencent |
| MediaTek Inc. |
| ZTE |
| Xiaomi |
| Qualcomm Incorporated |
| Apple |
| Nokia |
| Nokia Shanghai Bell |
| Samsung |
| InterDigital |
| Ericsson |
| Lenovo |
| Motorola Mobility |
| Huawei |
| HiSilicon |
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