SA2 Rel-19 23Q3 moderated discussion - 5G Femto - Version 0.0.2

SA2

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1 Introduction

Based on the SA#100 guidance provided in SP-230765, this moderated discussion on 5G Femto is initiated.

The following information has been included to provide background information available as input to the SA#100 workshop. It has not been reviewed by the moderator for accuracy, agreement, or endorsement, but presented as is to facilitate understanding and discussion.

The work items listed in section 2 are based on the following tdocs, which contains work tasks/objectives related to 5G femto.

SWS-230037: Nokia, Verizon, Casa Systems, Oracle, BT, MATRIXX Software, SK Telecom, AT&T, Samsung, Cisco, NTT DOCOMO, T-Mobile US, Telefonica, Reliance Jio.

- *WT#1: How to define the overall architecture and required functional and procedural impacts for supporting 5G Femto deployments.*
- *WT#2: How to define the 5G Femto access control mechanism based on the existing CAG concept.*
    - *RAN internal architecture aspects need to be studied in RAN WGs (introducing a Femto GW, Xn enhancements). Cooperation with RAN WGs is required, e.g., regarding potential enhancements to the RAN Core interface (NGAP enhancements).*
- *WT#3: How to enable provisioning of subscribers allowed to access 5G Femto cells and how to manage 5G Femto access control by the Closed Access Group (CAG) owner or an authorized administrator.*
    - *Access control for visitors may require a function like the CSG Subscriber Server (CSS) specified for EPS.*
    - *Possible enhancements to the existing CAG concept introduced for PNI-NPN may require cooperation with RAN WGs.*
- *WT#4: How to enable access to DN and local services (like printers or servers) via an UPF integrated in the HgNB.*

[Moderator's comment] The above 4 work tasks cover 'Potential WT for MED (starting point)' captured in SP-230759. These WTs will be listed as WT#1~WT#4 in section 2 in order to request companies' feedback.

SWS-230016: AT&T

- *Enhancement of UE-to-Network Relay to support multiple NR PC5 hops*

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[Moderator's comment] Since none of the WTs cover this aspect, this can be considered an additional item but can be provided by the company as an additional work item in Section 2.2.

- *Study how to define the overall architecture and required functional and procedural impacts for supporting 5G Femto deploymentsStudy how to define the 5G Femto access control mechanism based on the existing CAG concept.*
    - *RAN internal architecture aspects need to be studied in RAN WGs (introducing a Femto GW, Xn enhancements). Cooperation with RAN WGs is required, e.g., regarding potential enhancements to the RAN-Core interface (NGAP enhancements).*
- *Study how to enable provisioning of subscribers allowed to access 5G Femto cells and how to manage 5G Femto access control by the Closed Access Group (CAG) owner or an authorized administrator.*
    - *Access control for visitors may require a function like the CSG Subscriber Server (CSS) specified for EPS.*
    - *Possible enhancements to the existing CAG concept introduced for PNI-NP may require cooperation with RAN WGs*
- *Study how to enable access to local services like printers or servers via an UPF integrated in the HgNB*

[Moderator's comment] Above WTs (from #2 ~ #5) correspond to WT#1 ~ WT#4 of (SWS-230037: Nokia et al).

SWS-230023: KPN

- *High bandwidth and throughput with 5G are required indoors to enable new immersive applications such as AR/VR/MR, etc. While a lot of capacity is required indoor, outdoor to indoor coverage with 5G mid and high-bands is limited. 5G Femto offers a cost-effective way to improve 5G indoor coverage, and offload macro gNB network traffic. 5G Femto can use higher frequency bands, allowing premises owners to deploy HgNB on their own, and leading to efficient and effective usage of higher frequency spectrum.*

[Moderator's comment] This objective corresponds to WT#1 ~ WT#4 of (SWS-230037: Nokia et al).

SWS-230054: NTT DOCOMO

- *Insufficient use of mmWave is problematic. Home gNB that uses mmWave + Local GW can be considered as a good tool to improve this situation, if that is capable enough to allow customers to put it at their home by themselves in a plug and play manner and boost capacity there.*

  Key objectives: CAG enhancement, Local GW selection.

[Moderator's comment] This objective corresponds to WT#1 ~ WT#4 of (SWS-230037: Nokia et al).

SWS-230036: Nokia

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- *Define the overall architecture and required functional and procedural impacts for supporting 5G Femto deployments.*
- *Define the 5G Femto access control mechanism based on the existing CAG concept.*
- *Enable provisioning of subscribers allowed to access 5G Femto cells and how to manage 5G Femto access control by the CAG owner or an authorized administrator.*
- *Enable access to local services via an UPF integrated in the HgNB.*

[Moderator's comment] These WTs correspond to WT#1 ~ WT#4 of (SWS-230037: Nokia et al).

SWS-230035: Samsung

- *Define the overall architecture and required functional and procedural impacts for supporting 5G Femto deployments.*
- *Define the 5G Femtoaccess control mechanism based on the existing CAG concept*
- *Study how to enable provisioning of subscribers allowed to access 5G Femtocells (such as using a function like CSG Subscriber Server (CSS) specified for EPS) and how to manage 5G Femtoaccess control by the CAG owner or an authorized administrator.*

[Moderator's comment] These WTs correspond to WT#1 ~ WT#4 of (SWS-230037: Nokia et al).

SWS-230061: Cisco

- *Enable large scale deployments of gNB in enterprise (equivalent features to HeNB)*

[Moderator's comment] This objective corresponds to WT#1 ~ WT#4 of (SWS-230037: Nokia et al).

2 Scoping

2.1 Work Tasks based on input to and outcome of the Workshop

The initial set of Work Tasks for discussion, based on the input to the workshop and SP-230759 are as follows:

- **WT-1:** Define the overall architecture and required functional and procedural impacts for supporting 5G Femto deployments.
- **WT-2:** Define the 5G Femto access control mechanism based on the existing CAG concept.
- **WT-3:** Enable provisioning of subscribers allowed to access 5G Femto cells and how to manage 5G Femto access control by the CAG owner or an authorized administrator.

- **WT-4:** Enable access to local services via a UPF integrated into the HgNB.

Feedback Form 1: Which of the above Work Tasks should be in scope of Rel-19?

1 – Nokia Germany

all need to be in scope of R19

2 – NTT DOCOMO INC.

All the WTs need to be in scope of Rel-19.

3 – Verizon Spain

All WTs need to be in the scope of Rel-19

4 – Qualcomm Technologies Int

Comments on the specific proposed WTs:

For WT1: We believe that the existing 5GC architecture supports ”open Home gNB” deployment since rel.15. Specifically 5GC has been built from the beginning assuming support of virtualised deployment. Specifically what is described in TS 23.501 clause 5.21 allows flexible TNL associations between RAN and AMF and allows the addition/removal of AMF instances in flexible manner. In rel.16 onwards also support for Closed Access Groups (CAGs) was added which would facilitate potential ”closed Home gNB” deployment. In addition (or alternatively) the SNPN functionality of rel.16/17 can also be used which offers more flexibility since it can make the network offered by the ”Home gNB” neutral host. For example it can either allow other HPLMNs to be acting as Credentials Holders (CH) to this SNPN or even allow onboarding and provisioning of new users . We therefore don’t see anything missing from architecture point of view. At present we don’t see any gaps in the architecture and therefore no need for WT1.

For WT2: Existing CAG concept (described in TS 23.501, cl. 5.30.3.3) ”as is” can fulfill the needs for ”closed” 5G Femto access control mechanism or the SNPN mechanism can be used in addition or alternatively. At present we don’t see any gaps in the CAG or SNPN concept to enable closed home gNB deployment and therefore we see no need for WT2.

For WT3: The allowed CAG list is currently stored in UDM of HPLMN and is provided by the HPLMN on a per VPLMN basis. The entries of the Allowed CAG list can be associated with validity condition if the UE indicates support of CAG with validity information. In rel.18 (as part VMR WI) time duration restriction information may be provided together with the CAG Identifier(s) for the cells that the UE can access. Considering that the authorised administrator needs to get access to operators UDM data the mechanism to provision the data and authorisation policy can be out of scope of 3GPP. At present we don’t see any gaps in the provisioning for CAG lists from authorised administrator and therefore we see no need for WT3. In addition (or alternatively) as stated to our responses for WT1 and WT2 the existing SNPN functionality can be used which does not require any provisioning since it can by default support onboarding/provisioning.

For WT4: The meaning of ”UPF integrated into the Home gNB” is unclear to us. In 3GPP we define logical functions and the implementation of these logical functions in specific products are out of scope of 3GPP. In this respect already from rel.15 is possible to implement the ”local GW” concept by selecting

either UL classifier or local UPF close to the UE e.g. collocated with RAN or not. These functionalities are already defined for edge computing since rel.15 in TS 23.501 e.g. clause 5.13 and further enhanced in future releases with functionalities and procedures defined in TS 23.548. At present we don't see any gaps to Enable access to local services via a home gNB and therefore we see no need for WT4.

5 – MediaTek Inc.

Gap analysis versus existing features (incl. CAG, SNPN) is required before the proper scoping of WTs can be accomplished.

6 – NEC Corporation

All the WT should be part of the rel-19.

7 – Ericsson LM

WT-1: It has strong dependency to the RAN discussion on the same topic. It shall be synched with RAN study discussion outcome. WT-1 shall also be reworded (see proposal in Feedback Form 3 below).

WT-4: This WT describes a solution instead of topic for study. The main point seems about accessing local service as justified in some of the input papers in clause 1. Accessing local service is already supported via Edge computing in our view (e.g., deploying UPF collocated with RAN node is a deployment choice which can be supported already). This WT at the current stage seems not needed in our reading.

8 – Samsung Electronics Co.

All (WT-1, 2, 3, 4) need to be in the scope of Rel-19

9 – HUAWEI TECHNOLOGIES Co. Ltd.

In general the WT assumed some gaps in current specification that need to demonstrated and studied whether they are present or not.

WT-1 proposes to study the architecture improvement if needed, but this is not the starting point since the architecture will depend by the solution proposed. Furthermore there is dependency on RAN activities. The WT may be reworded as "to study whether and how the architecture, functional and procedural needs to be improved in order to support 5G Femto tak~~en~~ing into considerations RAN study".

WT-2 & WT-3 can be in the scope of the SID, but since the CAG is already for PNI-NPN taking inspiration from 4G, therefore the WT-2 and WT-3 can be merged and reworded as follow "to study whether and how the CAG concept can be adapted to provide 5G Femto access control mechanism"

WT-4 the wording is solution oriented and there is not limitation in current specification to exclude such deployment solution. Therefore we do not see the need of this WT.

10 – Datang Mobile Com. Equipment

[CATT]:

WT-1 is too general and RAN dependency. We can live with it if RAN has such work.

WT-4: This WT discusses architecture. So this WT can probably be merged into WT-1 or be removed.

11 – Comcast

We support WT-1, WT-2, WT-3, WT-4. There is potential to reword and merge WT-1 and WT-4.

As an operator, we feel that the Integrated UPF is different from L-UPF. A more optimized solution that does not require N4 interface to each and every Femto potentially sitting behind a NAT scales better operationally. One potential aspect that could be studied is whether N1 signaling can be optimized to indicate use of local UPF and delivery of DL policies without requiring an N4 interface to every Femto.

12 – T-Mobile USA Inc.

Supports WT 1, 2, and 3.

It is unclear what WT4 needs to support that is not already supported with existing edge computing functionality.

13 – CableLabs

Support WT-1/2/3/4

14 – VODAFONE Group Plc

Support 5G femto (WT 1/2/3/4) but I accept that I need to check what we can do with the existing CAG architecture (as suggested by Qualcomm and Mediatek)

15 – Charter Communications

All need to be in scope of Rel-19

Additional WT proposed by Charter

WT-Charter-1 Study how to support aggregation of N2 connections between 5G Femto cells and operator core network through a Gateway function.

WT-Charter-2 Study how to support aggregation of N3 connections between 5G Femto cells and operator core network through a Gateway function.

Feedback Form 2: Can any of the Work Tasks above be combined/merged?

1 – Nokia Germany

no

2 – NTT DOCOMO INC.

No

3 – Qualcomm Technologies Int

None

4 – NEC Corporation

None

5 – Ericsson LM

WT-2 and WT-3 probably can be merged.

6 – Samsung Electronics Co.

No

7 – HUAWEI TECHNOLOGIES Co. Ltd.

WT-2 & WT-3 shall be merged

8 – Datang Mobile Com. Equipment

[CATT]:

WT-1 and WT-4 probably can be merged.

9 – Comcast

WT-1 and WT-4 can be merged as follows:

- WT-14_merged: Define the overall architecture and required functional and procedural impacts for supporting 5G Femto (5G HgNB) deployments with or without an integrated UPF.

10 – Charter Communications

No

Feedback Form 3: Should any of the Work Tasks above be re-worded? If so, propose the required rewording.

1 – NTT DOCOMO INC.

WT-4 should be reworded as follows:

How to enable access to DN (e.g., Internet) and to local services via a UPF integrated into the HgNB and enable access to IMS DNN via the HgNB and a centralized UPF.

2 – Nokia Germany

Should we generalize this:

How to enable access to a data network (e.g., Internet) and to local services via a UPF integrated into the HgNB and also enable access to a data network via a UPF in the operator core network.

3 – Qualcomm Technologies Int

All WTs need to be reworded explaining clearly what is missing from the existing functionalities that are defined in 5G system architecture e.g. WT1 what is missing from current architecture to support home gNBs, WT2 what is missing from CAG or SNPN concept, WT3 what is missing in order to provision CAG Allowed lists and why SNPNs cannot be used alternatively when the deployment scenario requires the ability to dynamically onboard and provision access to the network provided by the home gNB, WT4 what is missing to support access to local services.

4 – NEC Corporation

no

5 – Ericsson LM

WT-1: Identify and analyze operators' requirements for residential coverage (i.e. femto cell). Based on identified requirements, and taking into account the observations from RAN3, define the overall architecture and required functional impacts to support residential coverage.

WT-2: Investigate the 5G Femto cell access control mechanism based on the existing concept (e.g. CAG).

WT-3: Investigate the support of Enabling the provisioning of subscribers allowed to access 5G Femto cells and how to manage access control by the Femto cell owner or an authorized administrator.

6 – Samsung Electronics Co.

WT-3 should be reworded to avoid using unclear terminologies:

WT-3: Enable provisioning of subscribers allowed to access 5G Femto cells and managing access control by the owner or an authorized administrator of HgNB.

7 – HUAWEI TECHNOLOGIES Co. Ltd.

The WT needs to be reworded as follow:

· WT-1 "to study whether and how the architecture, functional and procedural needs to be improved in order to support 5G Femto taken into considerations RAN study"

· WT-2 & WT-3 merged "to study whether and how the CAG concept can be adapted to provide 5G Femto access control mechanism"

· WT-4 is not required

8 – Datang Mobile Com. Equipment

[CATT]

For WT-1, we agree with HUAWEI.

9 – CableLabs

WT-1 can add a clear dependency on RAN study (e.g., Ericsson proposal).

10 – Charter Communications

No

2.2 Additional Work Tasks

As well as the initial set of Work Tasks in section 2.1 companies can request to add additional Work Tasks. The naming of these additional Work Tasks should follow the format: WT-company name-# (eg WT-Samsung-1) so that other participants can reference them.

Feedback Form 4: Are there any additional Work Tasks that should be part of Rel-19?

1 – NTT DOCOMO INC.

WT-NTT DOCOMO-1: How to define a concept and a mechanism for ownership of 5G Femto or CAG or both (e.g., by utilizing Hosting Party Module (HPM)).

2 – Nokia Germany

WT-NTT DOCOMO-1: Is Femto ownership in 3gpp scope? I understand HPM as a security concept (basically a UICC in the HeNB) to authenticate the access point. I would leave this to the discussions in SA3 as it is mainly security related.

3 – NTT DOCOMO INC.

WT-NTT DOCOMO-1:

Our intention is to align to the ownership concept defined in 4G.

For instance, there is a definition of Hosting party in TS 33.320, 3.1 as follows:

Hosting party: The party hosting the H(e)NB and having a contract with the PLMN operator.

Therefore "Hosting party" can be said as a Femto owner. This has been in 3GPP scope until and including 4G.

Then, there is a text in TS 33.320, 5.2 as follows:

The authentication of the hosting party is based on credentials contained in a separate Hosting Party Module (HPM) in H(e)NB, and in the MNO HLR/HSS.

This text clearly says "The authentication of the hosting party", not authentication of access point.

We agree that SA3 would discuss this aspect, if needed. However, we feel that SA2 can define an overarching concept and leave the details to SA3 so that SA3 can at least use the concept as a basis for their discussion.

That being said, we will see how the solutions are developed and what the conclusions of the study will be; at least we are open to that.

4 – Qualcomm Technologies Int

No

5 – NEC Corporation

Currently we don't see any need to add additional work task. However, we would like to know whether E-UTRAN-5GC will be part of this study?

6 – Ericsson LM

No

7 – Samsung Electronics Co.

No

8 – HUAWEI TECHNOLOGIES Co. Ltd.

No addition WTs are needed since the current proposal cover all aspects

9 – Datang Mobile Com. Equipment

[CATT]: NO

10 – Charter Communications

Charter would like to propose the following additional tasks. These tasks are needed to enhance functionality, alleviate load on the core network functions, hide the topology of core network from Femto cells, and enhance security for Femto deployment.

WT-Charter-1 Study how to support aggregation of N2 connections between 5G Femto cells and operator core network through a Gateway function.

WT-Charter-2 Study how to support aggregation of N3 connections between 5G Femto cells and operator core network through a Gateway function.

Feedback Form 5: If there are any additional Work Tasks required, describe them

1 – NTT DOCOMO INC.

On WT-NTT DOCOMO-1:

The CAG owner concept in WT-3 is new. It is expected that studying this ownership concept before studying WT-3 will help to properly organize discussion. For example, Hosting Party Module (HPM) is defined in TS 33.320, 5.1.5 and used for HeNB. The CAG owner concept in WT-3 appears to be able to rely on this HPM.

2 – Charter Communications

See Charter's response in Feedback Form 4 for the proposed WTs.

3 Dependencies

These feedback forms will help define the dependencies between Work Tasks, dependencies of Work Tasks on other Working Groups (SA, RAN or CT), and dependencies on other potential SA2 Rel-19 SIDs and WIDs. The Work Tasks can be from the list in section 2.1, or any additional Work Tasks identified in the feedback in section 2.2.

Feedback Form 6: Describe the dependencies that any of the Work Tasks have on other 3GPP Working Groups

1 – Nokia Germany

WT1,2, 4 have RAN dependency.

2 – NTT DOCOMO INC.

WT-1, especially the overall architecture aspect, and RAN3 depend on each other.

WT-NTT DOCOMO-1 and SA3 depend on each other.

3 – MediaTek Inc.

All WTs can have strong RAN dependency.

4 – Ericsson LM

WT-1 has strong dependency to RAN study and requires SA2 to take into account the outcomes of a similar study in RAN.

5 – Samsung Electronics Co.

WT-1, 2, and 4 have dependency on RAN WG

6 – HUAWEI TECHNOLOGIES Co. Ltd.

WT 1, 2 and (4 if maintained) have RAN dependency

WT-1, 2 and 3 have SA3 dependency

7 – Datang Mobile Com. Equipment

[CATT]:

WT-1, 2 and 4 have RAN dependency.

8 – Comcast

RAN dependency if there modifications to existing use of CAG; also N2/N3 aggregation is dependent on RAN2

9 – CableLabs

RAN dependency (e.g., WT-1 impact based on RAN discussion on N2/N3 aggregation)

10 – Charter Communications

WT-1, WT-2, WT-4 and WT-Charter-1 have RAN dependency

11 – Charter Communications

WT-4 and WT-Charter-2 have some RAN dependency but should be led by SA2. These WTs involve UPF interactions that are associated with UL/CL & branch pointing, edge, and central services, these topics are core topics that need to be addressed and led by SA2.

Feedback Form 7: Describe dependencies between the Work Tasks

1 – Nokia Germany

WT1 is self-contained, all other WTs depend on WT#1.

2 – NTT DOCOMO INC.

WT-1 is self-contained.

All the other WTs depend on WT-1.

WT-3 depends on WT-NTT DOCOMO-1.

3 – Samsung Electronics Co.

WT-1 is self-contained, and all the other WTs depend on WT-1.

4 – HUAWEI TECHNOLOGIES Co. Ltd.

all WTs depend each others.

WT 2 & 3 are strictly related if they are maintained separated

5 – CableLabs

WT-2/WT-3 are dependent on WT-1 at least

6 – Charter Communications

WT-1 is self-contained, all other WTs depend on WT-1.

Feedback Form 8: Describe any dependencies on potential work/study items that might be created as a result of the other Q3 moderated discussions.

1 – Charter Communications

We think this may lead to creation of associated RAN and SA3 work/study items.

4 Partitioning

These questions will help determine whether there is one, or more than one, Study Item, Work Item or TEI-19 item to be created from these Work Tasks.

Feedback Form 9: Should there be more than one SID, WID or TEI-19 item created based on the Work Tasks?

1 – Nokia Germany

only one SID should be created.

2 – NTT DOCOMO INC.

No. One SID should be created.

3 – Verizon Spain

One SID

4 – Qualcomm Technologies Int

If the desire of the proponents of this topic is to describe a deployment option of using existing functionalities in order to support ”home gNB” deployment, this can be done as part of TEI19 WI and the deployment option described in Annex of TS 23.501.

5 – NEC Corporation

One SID or WID. Whether we need a WID or SID needs to be discussed as lot of scope is already clear that it will be based on CAG architecture and inherits all the well defined procedure of CSG in EPS.

6 – Ericsson LM

We see the potential of 2 different studies. WT-1 should be one study with synch/input from RAN study. WT-2 and WT-3 probably can be a separate one.

7 – Samsung Electronics Co.

No, one SID is sufficient.

8 – HUAWEI TECHNOLOGIES Co. Ltd.

one SID

9 – Datang Mobile Com. Equipment

[CATT]:

One SID or TEI.

10 – Comcast

No splitting is required. One SID is preferred.

11 – Charter Communications

One SID

Feedback Form 10: If the answer to the above question is yes, describe how the Work Tasks should be partitioned into different items.

1 – Ericsson LM

WT-1 should be one study with synch/input from RAN study.

WT-2 and WT-3 probably can be a separate one.

5 Summary from the Q3 discussions

The following are Working Tasks listed in section 2.1.

- WT-1: Define the overall architecture and required functional and procedural impacts for supporting 5G Femto deployments.
- WT-2: Define the 5G Femto access control mechanism based on the existing CAG concept.
- WT-3: Enable provisioning of subscribers allowed to access 5G Femto cells and how to manage 5G Femto access control by the CAG owner or an authorized administrator.
- WT-4: Enable access to local services via a UPF integrated into the HgNB.

Regarding "Which of the above Work Tasks should be in the scope of Rel-19?" in Form 1, 15 Responses were received from 15 companies.

9 Companies indicated that all four WTs need to be in the scope of Rel-19. 2 companies indicated that WT4 can be merged into WT1.

2 companies indicated that WT4 is already supported by the current specification and therefore they see no need for this WT.

One company indicated that all WTs need to be reworded explaining clearly what is missing from the existing functionalities that are defined in 5G system architecture. Similarly, another company asked gap analysis on required enhancements.

Moderator Proposal 1: Given the strong support from the companies (especially the operators), it is proposed that WT#1, WT#2, and WT#3 be the subject of the study proposal, with modifications to the wording proposed by the various companies. In addition, it is proposed that WT#4 be merged with WT#1. In light of the responses, the following revision is proposed and will be discussed further at the F2F meeting.

- WT-1: Identify and analyze operators' requirements for 5G Femto. Based on the identified requirements, study whether and how the architecture, functional and procedural need to be improved to support 5G Femto, taking into account the observations from RAN3.

  NOTE 1: Access to different service(s) with or without UPF integrated with HgNB requirements are investigated as part of WT-1.

https://nwm-trial.etsi.org/#/documents/8574

- WT-2: Study whether and how the CAG concept can be adapted to provide a 5G Femto access control mechanism.

- WT-3: Study whether and how to support enabling the provisioning of subscribers allowed to access 5G Femto and to manage access control by the 5G Femto owner or an authorized administrator.

  NOTE 2: Ownership of the 5G Femto (or CAG or both) concept and a mechanism will be defined in coordination with SA3.

Note that two companies have proposed to merge WT-2 and WT-3 and simplify the WT, e.g., ”to investigate whether and how the CAG concept can be adapted to provide a 5G femto access control mechanism.” Merging WT-2 and WT-3 could be one approach. However, given the majority opinion, it is suggested that this aspect be discussed at the meeting.

There are some proposals on additional Working Tasks in feedback form 3.

Table 1:

		Additional WT
1	WT-NTT DOCOMO-1	How to define a concept and a mechanism for ownership of 5G Femto or CAG or both (e.g., by utilizing Hosting Party Module (HPM)).
2	NEC	We would like to know whether E-UTRAN-5GC will be part of this study?
3	WT-Charter-1	Study how to support aggregation of N2 connections between 5G Femto cells and operator core network through a Gateway function.
4	WT-Charter-2	Study how to support aggregation of N3 connections between 5G Femto cells and operator core network through a Gateway function.

Moderator Proposal 2: NTT DOCOMO’s proposal can be integrated into WT-3 and investigate the concept of ownership in coordination with SA3, therefore it is proposed to add a NOTE to WT-3 (see NOTE 2 above). The Charter’s proposal is related to an overall architecture and can be treated as part of WT-1 as it is generic; therefore, it is proposed to be investigated as part of WT-1.

About the proposal from NEC whether E-UTRAN-5GC will be part of this study or not. This aspect needs to be discussed further in the next SA2 meeting. Since E-UTRAN does not even have a CAG concept, further discussion, and common understanding are needed to include this aspect.

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Regarding the partitioning, the majority opinion is that only one SID is sufficient and coordination with RAN3 and SA3 is required. However, another approach could be that WT-1 can be a single study with synchronization/input of RAN study. WT-2 and WT-3 can probably be another SID. Therefore, this partitioning aspect needs to be discussed further during the meeting.