**3GPP T****SG-RAN WG3 Meeting #124 R3-243807**

**Fukuoka, Japan, 20th – 24th May 2024**

**Agenda Item: 16.2**

**Source: Ericsson**

**Title: [TP for TR 38.769] CB:#AIoT1\_Architecture**

**Document for: Discussions & Approval**

# 1 Introduction

This is the summary of offline discussions on the first comeback for Ambient AIoT during RAN3#124.

The chair’s minutes are as follows:

**CB: # AIoT1\_Architecture**

**- Focus on how to capture the system architecture in TR**

**- Discuss the definition of common reader function and AIoT RAN function**

**- the possibility to send LS to other WGs on security?**

(moderator – E///)

Offline discussions were based on R3-243549 and attempted to produce commonly acceptable content for TR 38.769, as shown below in the “Text Proposal”, containing architecture related Figures and the definition of the terms used in the figure. Items for further study are captured within “Editor’s Notes”.

- Further item worth to mention

# 2 Text Proposal

<<<<<<<<<<<<<<<<<<<< First Change >>>>>>>>>>>>>>>>>>>>

## 6.4 RAN architecture aspects

Editor’s note: Corresponds to the second RAN3 objective in the SID, to identify RAN architecture aspects, including whether support for split architecture is necessary.

This chapter attempts to identify and describe architectural elements necessary to define a RAN architecture for support of Ambient IoT embedded in the overall 5G system architecture in support of topology 1 and topology 2 (as defined in TR 38.848 [2]).

This chapter also attempts to identify a functional split between RAN and CN.

Figure 6.4-1 depicts a simplified System architecture, able to support topology 1 and topology 2.

It consists of the following architectural elements:

**AIoT device**: equipment communicating with 5GS with characteristics outlined e.g. in TS 22.369 [x].

Editor’s Note: It is FFS whether and in which way necessary network functions determine AIoT device properties or result in further requirements for the AIoT device.

**AIoT RAN**: executing 5GS functions as of the functional split between RAN and CN

Editor’s Note: Further details regarding functional split to be decided by RAN2, RAN3 and SA2

**AIoT radio**: radio interface between AIoT RAN node and AIoT device.

Editor’s Note: Further on details to be discussed by RAN1&2

**AIoT CN**: executing 5GS functions as of the functional split between RAN and CN

Editor’s Note: Further details regarding functional split to be decided by RAN2, RAN3 and SA2

**XX interface**: hypothetical interface between the AIoT RAN and the AIoT CN on which certain AIoT specific functions are performed

Editor’s Note: The functions represented by the XX intefaces are FFS. It is also FFS whether this interface represents a new logical interface or is equal to NG.

**XX/NG**: interface between AIoT RAN and the AIoT CN.

Editor’s Note: “XX/NG” is used as an intermediate term for representing the simplified system architecture supporting topologies 1&2. For topology 1 it may only represent “XX”, for topology 2 it might represent either 2 interface instances, one for “XX” one for NG, or NG alone.

**Common reader function**: a function residing in AIoT RAN. It communicates with the AIoT device by means of AIoT radio. AIoT RAN supports multiple Common reader functions. One instance of the Common reader function is assumed to serve the AIoT-equivalent of a “cell”.

Editor’s Note: Further on details to be discussed by RAN1&2, as for AIoT radio)

**AIoT RAN node function**: a function residing in AIoT RAN. It controls the AIoT radio resources used towards the AIoT device and coordinates the Upper Layer functions (e.g. Inventory, Command) e.g. in case these functions have to be performed over a multitude of instances of the Common Reader Function.

Editor’s Note: further details are FFS.



Figure 6.4-1: Simplified System Architecture supporting topology 1 and topology 2.

Figure 6.4-2 depicts a deployment scenario for topology 2, based on Fiture 6.4-1, where AIoT RAN is deployed as a UE Reader and an AIoT-enabled gNB, distributing the Common reader function and the AIoT RAN node function accordingly. The definitions of the 2 additional entities are given below:

**UE Reader**: a UE able to communicate with the AIoT Device, AIoT radio resource usage is controlled by the AIoT-enabled gNB

Editor’s Note: further details are FFS.

**AIoT-enabled gNB**: a gNB able to communicate with the UE Reader in order to control the UE Reader’s AIOT radio resource usage.

Editor’s Note: further details are FFS.



Figure 6.4-2: Deployment scenario for topology 2 based on the Simplified System Architecture.

<<<<<<<<<<<<<<<<<<<< End of Changes >>>>>>>>>>>>>>>>>>>>