**3GPP TSG RAN meeting #94e RP-21xxxx**

**Electronic Meeting, December 6 - 17, 2021**

**Source: Ericsson (Moderator)**

**Title: New SID on RedCap UE bandwidth reduction**

**Document for: Approval**

**Agenda Item: 8A.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: Study on RedCap UE bandwidth reduction

## Acronym: FS\_redCap-redBW

## Unique identifier: xxxxxx

|  |  |
| --- | --- |
| **This WID includes a Core part** |  |
| **This WID includes a Performance part** |  |

## 1 Impacts

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

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

### 2.1 Primary classification

This work item is a

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

### 2.2 Parent Work Item

|  |  |  |  |
| --- | --- | --- | --- |
| Parent Work / Study Items | | | |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
|  |  |  |  |

### 2.3 Other related Work Items and dependencies

|  |  |  |
| --- | --- | --- |
| Other related Work Items (if any) | | |
| Unique ID | Title | Nature of relationship |
| 860035 | Study on support of reduced capability NR devices |  |
| 900062 | Support of reduced capability NR devices |  |

## 3 Justification

5G aims to accelerate industrial transformation and digitalization, which improve flexibility, enhance productivity and efficiency, reduce maintenance cost, and improve operational safety. Industrial sensors play an important role for realizing such a vision. Not only widely used in industrial automation and digitalization use cases, industrial sensors are also widely used in the general environmental monitoring use cases such as monitoring of critical infrastructure (e.g., buildings, bridges, water dams, etc.) or monitoring for natural disasters (e.g., wild fire, flood, tsunami, earthquake, etc.).

Another emerging new class of new 5G use cases is the smart city vertical, which covers data collection and processing to more efficiently monitor and control city resources, and to provide services to city residents. Especially, the deployment of surveillance cameras is an essential part of the smart city but also of factories and industries.

Furthermore, there have been increasing interests in wearables use cases such as smart watches, eHealth related devices, and medical monitoring devices. These use cases call for different design considerations and have different requirements in terms of form factor, UE complexity and energy efficiency, compared to eMBB devices.

The support of industrial sensors, video surveillance, and wearables were the motivations behind Rel-17 RedCap. Through the Rel-17 NR RedCap work item, 3GPP has established a framework for enabling reduced capability NR devices suitable for a range of use cases, including the industrial sensors, video surveillance, and wearables use cases mentioned above, with requirements on low UE complexity and sometimes also on low UE power consumption.

Now when the foundation has been laid in Rel-17, enhancements can be considered to enable as efficient support as possible for the mentioned use cases and also to expand RedCap into a new range of use cases.

To further expand the market for RedCap use cases with relatively low cost, low energy consumption, and low data rate requirements, e.g., industrial wireless sensor network use cases, some further cost and complexity reduction enhancements should be considered.

Rel-18 RedCap should provide NR support for low-tier devices between existing LPWA UEs and the capabilities of Rel-17 RedCap UEs. But Rel-18 RedCap should not overlap with existing LPWA solutions.

These enhancements should be introduced while maintaining the integrity of the RedCap ecosystem and maximizing the benefit of economies of scale. The work aims at enhancements applicable to the RedCap UE type and framework defined in Rel-17.

## 4 Objective

### 4.1 Objective of Core part WI

To further reduce the complexity/cost of RedCap devices, the following should be studied:

* Study further reduced UE bandwidth of 5MHz, especially considering [RAN1]
  + expected UE complexity/cost reduction based on Rel-17 evaluation methodology
  + network impact, compatibility with Rel-17, coexistence of RedCap and non-RedCap UEs, UE impact, specification impact
  + other alternative solutions for reducing device complexity/cost

### 4.2 Objective of Performance part WI

### 4.3 RAN time budget request

**additional comments to the time budget request in the attached Excel table:**

## 5 Expected Output and Time scale

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **New specifications** *{One line per specification. Create/delete lines as needed}* | | | | | |
| Proposed Spec no. or series | Type (see note 1) | Title | For info  at TSG# | For approval at TSG# | Remarks |
|  |  |  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Impacted existing TS/TR** *{One line per specification. Create/delete lines as needed}* | | | |
| TS/TR No. | Description of change | Target completion plenary# | Remarks |
| 38.875 | Study on support of reduced capability NR devices | RAN#97 (Sep. ‘22) |  |
|  |  |  |  |

## 6 Work item Rapporteur(s)

TBD

## 7 Work item leadership

Primary: RAN WG1

Secondary: none

## 8 Aspects that involve other WGs

## 9 Supporting Individual Members

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| --- |
| Supporting IM name |
|  |
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