**3GPP TSG-SA5 Meeting #139-e *S5-215105***

**e-meeting, 11 - 20 October 2021**

**Source: Huawei, China Mobile**

**Title: New SID on Fault Supervision Evolution**

**Document for: Approval**

**Agenda Item: 6.2**

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 Fault Supervision Evolution

## Acronym: FS\_FSEV

## Unique identifier: *{A number to be provided by MCC at the plenary}*

Potential target Release: {Rel-18}.

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** |  |  |  |  |  |
| **Don't know** | X |  |  |  | X |

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

### 2.1 Primary classification

This work item is a Study Item.

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

### 2.2 Parent Work Item

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| 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 |
| 870030 | [Enhancements of Management Data Analytics Service](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=910027) | FS\_FSEV may interact with eMDAS services. |
| 910027 | [Enhanced Closed loop SLS Assurance](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=870030) | FS\_FSEV may interact with eCOSLA services. |

## 3 Justification

The 5G mobile network supports various service types, such as eMBB, uRLLC, and mMTC. The service scenarios are diversified, and the network scale and complexity increase. Management data, such as alarms, performance reports, and KPIs reports, increases exponentially. A large number of alarms overwhelm key fault information, and a large number of false alarms exist. As a result, service and KPI deterioration cannot be detected in a timely manner, bringing great challenges to legacy OAM mode. In legacy OAM mode, the alarms and performance are managed independently, and there is no mutual impact or combination analysis method.

The capability of identifying, locating, and resolving service and network risks and problems needs to be improved. OAM should be able to handle complex issues, such as mass faults, major network faults, service and network performance deterioration, and risks etc. OAM should also evolve from passive management to customer-oriented proactive and predictive management. OAM should be able to collect necessary information including management data and service information etc, analyze and discover potential risks that affect service performance and rectify them in a timely manner to ensure service quality and improve network reliability and availability.

Existing Fault Supervision services support data report service and data control service for NSI, NSSI and NF etc. It lacks capability to identify faults which impact services and recover issues automatically. The concept of incident could be introduced to represent the outcome of correlated management data which may have or will have service impacts and service information. Incident management is an important aspect of fault supervision evolution. The incident is considered as a new kind of management information, which indicates certain issues, e.g. outage, performance degradation and risks etc. It is identified through correlated analysis of multiple data sources from different domains, e.g. alarms, performance measurements, service experience, logs, network topology and customer complaints etc. However, the existing concepts above cannot be resolved together to identify the following situations: risks, the alarms which need actions, or the root-causes in other domains etc. Unless they are converged from different domains together and processed by the incident management. Management of the incident involves identifying and reporting incidents and incidents processing progress to the consumer, analyzing root causes, demarcation and locating of the problematic objects, recovering from the network issues and the impacted services. With the introduction of incident management, OAM efficiency improves significantly.

eMDAS supports the general concept of alarm incident analysis and fault prediction, e.g. alarm related incident analysis capability and fault prediction capability to provide the root cause and recommended actions. The incident management concerns identification and close loop of incident for different scenarios, e.g. outage, SLS deterioration, risks etc. Incident management service manages lifecycle of incident, so that the customer could focus on incidents which have service impacts and should be handled. Incident management focuses on integral process (to some degree, an E2E process) of incident. Incident management may utilize capabilities of eMDAS. Based on more typical use cases of incidents, some study results may also enhance the eMDAS capabilities. eCOSLA describes general principle and process for closed control loop of SLS targets, the scope and focus are different with incident management. There should be different characteristics and solutions for different incidents.

In conclusion, evolved fault supervision (with incident management) may interact with eMDAS and eCOSLA to utilize or enhance capabilities for each other.

## 4 Objective

This study item aims to study the following aspects of incident management:

- Concepts and characteristics of incident, relation with existing fault supervision, performance management and other related aspects;

- Scenarios, use cases and key issues, e.g., 5G SLS deterioration incidents, 5GC risk incidents, and large-scale radio access network decommissioning incidents, etc.;

- Fault supervision evolution solutions and interface capabilities for incident lifecycle management and closed loop control (incident awareness, root cause analysis, demarcation, decision-making and recovery execution, etc.), etc.;

- Relation and interaction with eMDAS and eCOSLA for evolved fault supervision, e.g., how to take advantage of and integrate eMDAS capabilities into the solutions and if any, recommended capabilities needed for eMDAS enhancements.

## 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 |
| TR | 28.xyz | Fault Supervision Evolution  | TSG#95 | TSG#96 | <Zhang>, <Jian>, <Huawei>, justincn.zhang@huawei.com;<Wang>, <Chen>, <CMCC>, wangchenyj@chinamobile.com |

|  |
| --- |
| **Impacted existing TS/TR** |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| Null |  |  |  |

## 6 Work item Rapporteur(s)

<Zhang>, <Jian>, <Huawei>, justincn.zhang@huawei.com, responsible for definition of incident and incident management solutions

<Wang>, <Chen>, <CMCC>, wangchenyj@chinamobile.com, responsible for scenarios, use cases and the analysis of the relation with eMDAS and eCOSLA

## 7 Work item leadership

SA WG5

## 8 Aspects that involve other WGs

Null

## 9 Supporting Individual Members

|  |
| --- |
| Supporting IM name |
| Huawei |
| CMCC |
|  |
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