**3GPP TSG-SA5 Meeting #141-e *S5-221203rev1***

**e-meeting, 17 -26 January 2022**

**Source: China Mobile, Huawei**

**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

|  |
| --- |
| 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 without service impacts. 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 service-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 lacks capability to identify faults which impact services and recover issues automatically. Multiple kinds of management data from different domains, e.g. alarms, service experience, performance measurements and KPIs should be collected and correlated to identify anomaly events which have service impacts and service information. Further processing may involve root-cause analysis, demarcation and locating of the problematic object, recovering from the network issues and the impacted services.

New analytics and assurance functions using AI and ML may be needed to enhance the existing Fault Supervision for support of use cases, e.g. outage, SLS deterioration etc. New fault prediction capabilities may be needed, e.g. support of risk predictions. The existing alarm information may need to be extended e.g. notification of anomaly events.

eMDAS supports the general concept of alarm related analysis and fault prediction capability to provide the root cause and recommended actions. Some eMDAS capabilities may be reused and based on some new use cases. The 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 fault supervision evolution.

In conclusion, fault supervision may need to interact with eMDAS and eCOSLA to utilize or enhance capabilities for each other.

## 4 Objective

This study item aims to study the following:

1. The relationship between fault supervision evolution and other aspect, e.g. performance management.
2. Use cases, key issues and potential requirements derived, e.g. 5G SLS deterioration, risk prediction.
3. 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.
4. Whether there are use cases in eMDAS and eCOSLA that are not covered by the existing Fault Supervision.
5. Whether new capabilities and additional alarm data are needed to support eMDAS and eCOSLA and cover their needs.

## 5 Expected Output and Time scale

|  |
| --- |
| **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 | <Wang>, <Chen>, <CMCC>, wangchenyj@chinamobile.com<Zhang>, <Jian>, <Huawei>, justincn.zhang@huawei.com |

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

## 6 Work item Rapporteur(s)

<Wang>, <Chen>, <CMCC>, wangchenyj@chinamobile.com, responsible for bullet 1,3,5

<Zhang>, <Jian>, <Huawei>, justincn.zhang@huawei.com, responsible for bullet 2,4.

## 7 Work item leadership

SA WG5

## 8 Aspects that involve other WGs

Null

## 9 Supporting Individual Members

|  |
| --- |
| Supporting IM name |
| Huawei |
| CMCC |
| AsiaInfo |
| China Telecom |
| Ericsson |
|  |