**3GPP TSG- Meeting #**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** |  | **rev** | **1** | **Current version:** |  |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network | **X** |

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| ***Title:*** |  | | | | | | | | | |
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| ***Source to WG:*** | , Huawei, Samsung | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***Release:*** | | |  |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In SA5#152 meeting, Discussion paper "S5-238312 DP Schema definition Issues SubNetwork and ManagedElement OpenAPI SS" is endorsed.  This is to introduce the correction as endorsed to TS28.318 OpenAPI SS.  Additionally, the solution set reference in word spec is missing | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Fix stage 3 implementation schema definition issue for SubNetwork of OpenAPI SS. MnS definition is updated accordingly  Add the solution set reference as proposed in DP S5-241509. | | | | | | | | |
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| ***Consequences if not approved:*** | | Incorrect specification leads to incorrect implementation. | | | | | | | | |
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| ***Clauses affected:*** | | 2, Y (new), (Note: normative Stage 3 code is in Forge) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | | **X** |  | O&M Specifications | | | | TS 28.623 CR0338 | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | Forge MR link: <https://forge.3gpp.org/rep/sa5/MnS/-/merge_requests/1061> at commit d3f571d37cb15ce251c3f0d6b8c4c56588d04af9 | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Revision of S5-241510 (with S5-241408 merged) | | | | | | | | |

\*\*\* START OF CHANGE \*\*\*

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] DIRECTIVE (EU) 2019/ 944 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL - of 5 June 2019 - on common rules for the internal market for electricity and amending Directive 2012/ 27/ EU (europa.eu)  
<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0944&from=EN>

[3] IEC TC 57 <https://www.iec.ch/ords/f?p=103:7:511571509228708::::FSP_ORG_ID,FSP_LANG_ID:1273,25>

[4] 3GPP TS 32.130: "Telecommunication management; Network sharing; Concepts and requirements"

[5] IEC "Bringing intelligence to the grid", International Electrotechnical Commission, Geneva, Switzerland, 2018. https://www.iec.ch/basecamp/bringing-intelligence-grid <accessed: 12.7.23>

[6] IEEE SMARTGRID, "Standards", IEEE, 2023. https://smartgrid.ieee.org/about-ieee-smart-grid/standards <accessed: 12.7.23>

[7] Sendin, A., Stafford, J., Grilli, A., "Utilities and Telecommunications in a Nutshell", EUTC, Ediciones Experiencia, 2022.

[8] 3GPP TS 22.104, "Service requirements for cyber-physical control applications in vertical domains; Stage 1".

[9] 3GPP TS 22.261, "Service requirements for the 5G system; Stage 1"

[10] IEC TR 61000-3-6 Electromagnetic compatibility (EMC) - Part 3-6: Limits - Assessment of emission limits for the connection of distorting installations to MV, HV and EHV power systems.

[11] IETF RFC 1628, "UPS Management Information Base", May 1994.

[12] ETSI ES 202 336-3: "Environmental Engineering (EE); Monitoring and Control Interface for Infrastructure Equipment (Power, Cooling and Building Environment Systems used in Telecommunication Networks); Part 3: AC UPS power system control and monitoring information model".

[13] 3GPP TS 28.622: "Telecommunication management; Generic Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[14] 3GPP TS 28.552: "Management and orchestration; 5G performance measurements".

[15] 3GPP TS 28.554: "Management and orchestration; 5G end to end Key Performance Indicators (KPI)".

[16] 3GPP TS 28.541: " Management and orchestration; 5G Network Resource Model (NRM); Stage 2 and stage 3".

[17] 3GPP TS 38.473: "NG-RAN; F1 Application Protocol (F1AP)".

[18] 3GPP TS 23.003: "Numbering, addressing and identification".

[19] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".

[20] 3GPP TS 28.622: "Telecommunication management; Generic Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[21] 3GPP TS 28.541: " Management and orchestration; 5G Network Resource Model (NRM); Stage 2 and stage 3".

[22] ETSI ES 202 336-11: "Environmental Engineering (EE); Monitoring and control interface for infrastructure equipment (Power, Cooling and environment systems used in telecommunication networks); Part 11: Battery system with integrated control and monitoring information model".

[x] 3GPP TS 28.623: "Telecommunication management; Generic Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions".

\*\*\* Next CHANGE \*\*\*

# 7 Stage 3 definitions

## 7.X OpenAPI document for DSO NRM

The OpenAPI/YAML definitions for DSO NRM (including DSO Rapid Recovery NRM fragment and DSO Threshold Monitoring NRM fragment) are specified in 3GPP Forge, refer to clause 4.3 of TS 28.623 [x] for the Forge location. An example of Forge location is: "https://forge.3gpp.org/rep/sa5/MnS/-/tree/Tag\_Rel18\_SA104/".

Directory: OpenAPI

File: TS28318\_DsoNrm.yaml

\*\*\* Next CHANGE \*\*\*

<CODE BEGINS>

openapi: 3.0.1

info:

title: 3GPP NRM

version: 18.5.0

description: >-

OAS 3.0.1 specification of the OutageAndRecoveryInfo NRM

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externalDocs:

description: 3GPP TS 28.318; OutageAndRecoveryInfo NRM

url: http://www.3gpp.org/ftp/Specs/archive/28\_series/28.318/

paths: {}

components:

schemas:

#-------- Definition of types-----------------------------------------------------

EnergyServiceLocation:

type: object

properties:

CGI:

type: string

energySupplyId:

type: string

#-------- Definition of concrete IOCs --------------------------------------------

MnS:

oneOf:

- type: object

properties:

SubNetwork:

type: array

items:

$ref: '#/components/schemas/SubNetwork-ncO-DsoNrm'

SubNetwork-ncO-DsoNrm:

type: object

properties:

OutageAndRecoveryInfo:

$ref: '#/components/schemas/OutageAndRecoveryInfo-Multiple'

DsoThresholdMonitor:

$ref: '#/components/schemas/DsoThresholdMonitor-Multiple'

OutageAndRecoveryInfo-Single:

allOf:

- $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'

- type: object

properties:

outageStartTime:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/DateTime'

expectedOutageEndTime:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/DateTime'

dsoRapidInterventionTime:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/DateTime'

dsoRapidInterventionDuration:

type: integer

mnoInterventionTime:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/DateTime'

mnoInterventionDuration:

type: integer

mnoMaxServiceDuration:

type: integer

affectedArea:

$ref: '#/components/schemas/EnergyServiceLocation'

isAffectedAreaPriority:

type: boolean

actualOutageEndTime:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/DateTime'

DsoThresholdMonitor-Single:

allOf:

- $ref: 'TS28623\_ThresholdMonitorNrm.yaml#/components/schemas/ThresholdMonitor-Single'

- type: object

properties:

targetThresholdLocation:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/AreaOfInterest'

#-------- Definition of JSON arrays for name-contained IOCs ----------------------

OutageAndRecoveryInfo-Multiple:

type: array

items:

$ref: '#/components/schemas/OutageAndRecoveryInfo-Single'

DsoThresholdMonitor-Multiple:

type: array

items:

$ref: '#/components/schemas/DsoThresholdMonitor-Single'

#--------------------------------- Definition ------------------------------------

resources-DSORecovery:

oneOf:

- $ref: '#/components/schemas/MnS'

- $ref: '#/components/schemas/OutageAndRecoveryInfo-Single'

- $ref: '#/components/schemas/DsoThresholdMonitor-Single'

\*\*\* END OF CHANGE \*\*\*