Monitoring the distribution Grid

Link to explanations, examples and the selection list for indicated fields, please refer to document "Use Case Description draft ver0.55"

<http://www.cen.eu/cen/Sectors/Sectors/UtilitiesAndEnergy/SmartGrids/Pages/default.aspx>

Version of Template: 0.55, Sept 2011

# Description of the Use Case

* + *General*
  + *Name of Use Case*

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| --- | --- | --- | --- |
| ***ID*** | ***Domain*** | ***Name of Use Case*** | ***Level of Depth***  *Cluster, High Level Use Case, Detailed Use Case* |
| WGSP-0600 | - | Monitoring the distribution Grid | - |

* + *Version Management*

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| ***Changes / Version*** | ***Date*** | ***Name  Author(s) or Committee*** | ***Domain Expert*** | ***Area of Expertise / Domain / Role*** | ***Title*** | ***Approval Status***  *draft, for comments, for voting, final* |
| - | - | - | - | - | - | - |

* + *Basic Information to Use Case*

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| ***Source(s) / Literature*** | ***Link*** | ***Conditions (limitations) of Use*** |
| - | - | - |

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| ***Relation to Higher Level Use Case*** | |
| ***Cluster*** | ***Higher Level Use Case*** |
|  | Fault location, isolation and system restoration (FLIR) |

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| ***Maturity of Use Case*** *- in business operation, realized in demonstration project, realised in R&D, in preparation, visionary* |
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| ***Prioritisation*** |
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| ***Generic, Regional or National Relation*** |
| - |
| ***View*** *- Technical / Business* |
| - |
| ***Further Keywords for Classification*** |
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* + *Scope and Objectives of Use Case*

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| ***Scope and Objectives of Function*** |
| Once connected with a communication line the new smart grid devices and their communication possibilities (Smart Metering, Substations) should be used also for a better monitoring of the grid also on lower voltage levels. These information will be provided in the SCADA system of the DSO and for further evaluations (e.g. fault identification, outage monitoring, etc.). Due to increased DER providing energy to the distribution grid also on the lower voltage levels the need for better monitoring is increasing in order to supervise e.g. the voltage values or power ratings. |

* + *Narrative of Use Case*

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| ***Narrative of Use Case*** |
| ***Short description*** *- max 3 sentences* |
| New communication possibilities of sensors, actors and other devices within an smart grid will be used for the monitoring of the grid also on lower voltage levels. |
| ***Complete description*** |
| Today remote control in the distribution grid and smart metering is broadly not available. So there are currently only limited or no information available from the distribution grid. With the smart grid the need for communication and for monitoring as well as for the remote control of devices will increase. If there is an communication available further information might be used for supervision and monitoring.  Information from  - Substations and feeder lines  o electrical signals: power quality data (voltage), power flow, protection  o     surveillance of the substation: breaking-in, temperature  Feeder line: e.g. line tension  -      -    Smart Metering (partly called Smart Grid Meter if used also for grid purpose and not only for billing) -    Customer Energy Management System (CEMS) and their connected devices (e.g. DER, EV, storage devices, refer to next chapter) provided by the flexibility operator -    DSO owned equipment like e.g. storage  The additional information will be used for the SCADA system of the DSO.    Use Cases which had been considered for this generic use case :  EDF-0012, FINS-0005, FINS-0034 – 0037, Ener-0004, Ener-0006, Ener-0013, Ener-0028, INTEG-0003, RWE-0003, RWE-0004, RWE-0008, FNN-0001-0009 |

* + *Actors: People, Systems, Applications, Databases, the Power System, and Other Stakeholders*

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| ***Actor Name*** | ***Actor Type*** | ***Actor Description*** |
| Devices | - | - |
| Smart Meter (SM) | System | The metering end device is a combination of the following meter-related functions from the Smart Metering reference architecture: â€¢  Metrology functions including the conventional meter display (register or index) that are under legal metrological control. When under metrological control, these functions shall meet the essential requirements of the MID; â€¢    One or more additional functions not covered by the MID. These may also make use of the display; â€¢    Meter communication functions. |
| Aggregator | System |  |
| DSO | - | - |
| Customer Energy Manager (CEM) | - | The CEM is a logical function optimising energy consumption and or production based on signals received from the grid, consumerâ€™s settings and contracts, and devices minimum performance standards. The Customer Energy Manager collects messages sent to and received from connected devices; especially the in-home/building sector has to be mentioned. It can handle general or dedicated load and generation management commands and then forwards these to the connected devices. It provides vice versa information towards the â€œgrid / marketâ€. Note that multiple loads/generation resources can be combined in the CEM to be mutually controlled.  When the CEM is integrated with communication functionalities it is called a Customer Energy Management System or CEMS. |

* + *Issues: Legal Contracts, Legal Regulations, Constraints and others*

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| ***Issue -*** ***here specific ones*** | ***Impact of Issue on Use Case*** | ***Reference -*** *law, standard, others* |
| - | - | - |

* + *Preconditions, Assumptions, Post condition, Events*

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| ***Actor/System/Information/Contract*** | ***Triggering Event*** | ***Pre-conditions*** | ***Assumption*** |
| ***-*** | - | - | - |

* + *Referenced Standards and / or Standardization Committees (if available)*

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| ***Relevant Standardization Committees*** | ***Standards supporting the Use Case*** | ***Standard Status*** |
| - | - | - |

* + *General Remarks*

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| ***General Remarks*** |
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# Drawing or Diagram of Use Case

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| ***Drawing or Diagram of Use Case*** ***- recommended "context diagram" and "sequence diagram" in UML*** |
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# Step by Step Analysis of Use Case

| **S.No** | **Primary Actor** | **Triggering Event** | **Pre-Condition** | **Post-Condition** |
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| - | - | - | - | - |