CIM EUROPEAN DISTRIBUTION STATUS

Status, Feedback & Challenges

Eric Lambert – EDF R&D

EPRI Workshop – Washington  September 2010
Agenda

- Introduction
- Is CIM used in Europe?
- ERDF CIM Feedback & Challenges
- EDF R&D CIM Feedback & Challenges
- Conclusion
Introduction

- European Smartgrid Roadmap

- NIST SGIP initiative with PAPs
  - PAP 8 : CIM for Distribution Grid Management
  - PAP14 : Transmission and Distribution Power Systems Model Mapping

- Standard Information Models are Key in Smartgrid vision (CIM, 61850, COSEM)

- EDF R&D contributes to these international efforts since 1997
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Is CIM Used in Europe? (1/2)
« if CIM is used by TSOs, it will encourage DSOs usage »

- ENTSO-E: 34 countries, 42 TSOs, 500 Million people, 2300 TWh
- March 2009: CIM IOP #1 in Europe for TSOs (EPRI)
- Business process: Day ahead congestion study
- European TSOs migration process started in 2010
- EDF provides converters to ENTSO-E
- July 2010: CIM IOP #2 in Europe for TSOs (ENTSO-E)
Is CIM Used in Europe? (2/2)
« not reinventing the wheel »

- European DSOs are more & more familiar with CIM
  CIRED, CIGRE, UCA CIMUg Europe
- Smartgrid European projects funded by EC are using CIM or
  61850 : ADDRESS project

- Challenge : Same approach in other European projects
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Brief introduction of ERDF

- French distribution subsidiary of EDF group

- Manages regulated activities for the distribution network
  - 2200 distribution substations
  - 570.000 km of MV network
  - 730.000 MV/LV substations
  - 630.000 km of LV network
  - 29 millions customers
A challenge: managing MSITE/CIM versions

MSITE = CIM subset + ERDF extensions

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- MV network description
- GIS and SCADA exchanges
- LV network description
- GIS and calculation codes
- Exchanges #1

- Maintenance
- Power quality
- AMM

Today

Have to consider and anticipate the next version (15)

Before MSITE... 1.0 1.1 2.0 2.1 2.2
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EDF R&D SMARTGRID PLATFORMS

- **DIGI²TAL**: Distribution Grid Intelligence InTegrAtion Laboratory
  - Model Driven Engineering Integration platform (CIM-61850-COSEM)
  - Provides Methodology, Tools, and Services to others R&D smartgrid related projects
  - Give access to Smartgrid platform R&D demonstrator MENOFIS
- **MENOFIS**: Smartgrid platform
The DER challenge

Approach with existing practise ("fit and forget")
- No control over DER / Worst case scenarios used for connection sizing

Active distribution network: Coordinated control of voltage and flows (VVC: Volt VAr Control function) to:
- Maintain voltage within limits and Optimise other parameters (Reactive power transit between DSO and TSO / Distribution network losses / ....)
- Increase DG hosting capacity
Architecture of control centre tools for an active network

MATLAB Prototype using a CIM interface for data configuration
Experiment and validation (2007-2010)
Value and Validate Distribution Automation Functions

LOT A – Existing Control System

SCADA
MGIR

Grid Configurator
SITR

Manual Commands
MMI

Testing New Automation Functions

Connexion Function to the Info Bus
FonSynt
FonLoc
FonRep
State estimation
Reconfiguration, VVC

Information Bus
R&D Challenges

- Harmonization between CIM & 61850
  Prove it through a prototype based on SCADA/DMS ERDF System

- Strategic & Technical Coordination
  At EDF R&D level
  In coordination with EDF Group operational divisions
  In coordination with International Bodies
    European commission
    European Utilities Associations
    International Users associations like UCA CIMUg, UCA 61850, UCA OpenSmartgrid
    French Smartgrids demonstrators & North American Smartgrids demonstrators (EPRI)

- Anticipate …
Conclusion
“moving forward”

- Interoperability tests for CIM Distribution (March 2011)
- Maintenance Cycle of IEC standards
- Consolidate Uses Cases from Utilities and consolidate, expand CIM for Distribution
- Harmonize CIM and 61850
Thanks for your attention!

Questions?