

IT architecture of ANM

The integration strategy of IT systems in Distribution Network Operator (DNO) control centers needs to be changed from point-to-point to Service Oriented Architecture (SOA).

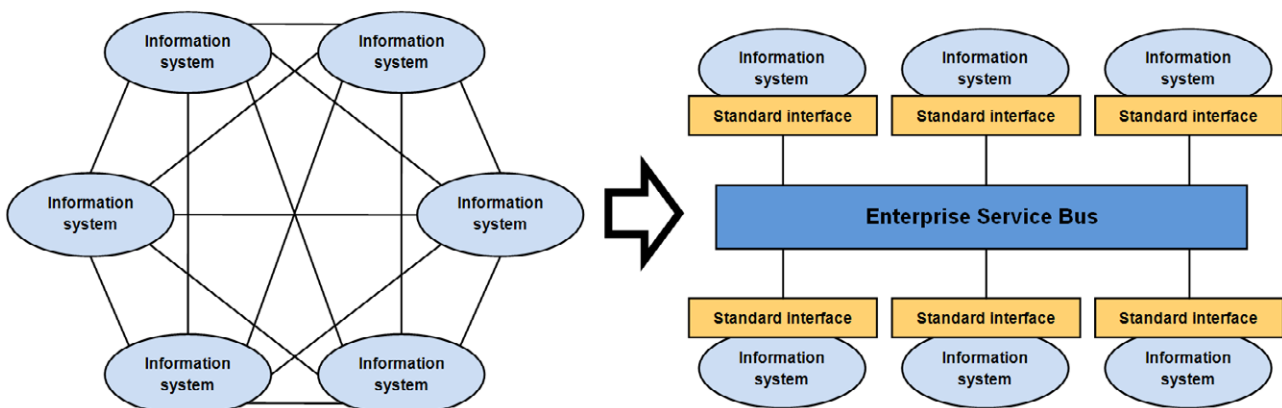
The utilization of Active Network Management (ANM) increases the number of software applications needed in distribution network management. In DNO control centers this results in new information systems and data transfer interfaces. Without sophisticated

integration strategy the IT architecture can become overly complex which in turn leads to high IT maintenance costs.

INTEGRATION STRATEGY

Traditionally information systems have been integrated with company and product specific, often proprietary, point-to-point interfaces. In current state of distribution network development this type of integration strategy is not anymore justified.

From now on the information systems should be integrated through Enterprise Service Bus (ESB) using SOA principle, standard interfaces and standard information model. The most promising interface and information model standard is known as Common Information Model (CIM) which consists of IEC standards IEC 61970 and IEC 61968. At data transfer level the most important technologies are XML and Web Services.



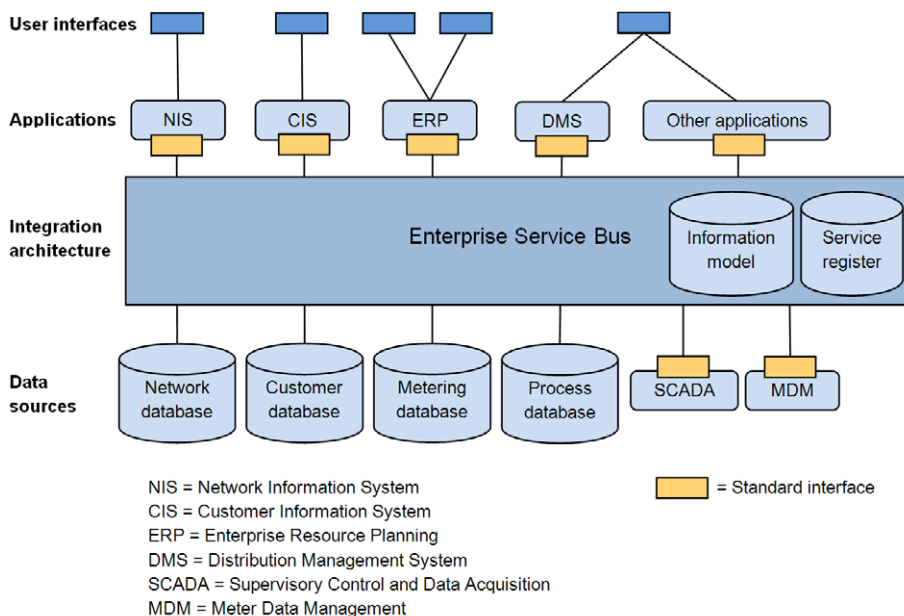
A change is needed in IT system integration strategy in distribution network companies. Traditionally used point-to-point integration strategy needs to be changed to strategy based on SOA, ESB, standard interfaces and standard information model. This new approach reduces total amount of interfaces, accelerates commissioning of new systems and clarifies communication between different parties.

SYSTEM ARCHITECTURE

In the future the information system architecture is required to provide better openness, expandability, modularity, scalability, performance, usability and security than the systems used today. These goals can be achieved with utilization of interface and information model standards and SOA based integration strategy. Decentralization and partitioning of large information systems and decoupling of user interfaces, applications and data sources from each other can furthermore help in reaching these objectives.

CONTROL CENTER ENVIRONMENT

From ANM point of view the most important information systems used today are Supervisory Control and Data Acquisition (SCADA) and Distribution Management System (DMS). Currently these systems are used simultaneously with separate user interfaces. As the number of software applications used in DNO control centers increase, the need for unified user interface becomes constantly greater. In the end this leads to an environment where the role of SCADA is to act only as a data broker between distribution network and higher level systems.



Vision of the information system architecture of ANM. Applications communicate with each other through standard interfaces and ESB. Utilization of standard information model (e.g. CIM) reduces the need for data transformations between different information systems.



Contact person:
 Project coordinator
 Ms Mirva Seppänen
 mirva.seppanen@hermia.fi
 www.hermia.fi



Contact person in Adine project:
 Mr Matti Kärenlampi
 ABB Ltd Distribution Automation
 matti.karenlampi@fi.abb.com
 www.abb.com



Contact persons in Adine project:
 Mr Ralf Jessler
 ralf.jessler@areva-td.com and
 Mr Jarmo Aho
 jarmo.aho@areva-td.com
 www.areva-td.com



Contact person in Adine project:
 CEO Anders Malmquist
 info@compower.se
 www.compower.se



LUND UNIVERSITY
 Contact person in Adine project:
 Prof. Olof Samuelsson
 olof.samuelsson@iea.lth.se
 www.lth.se/english



TAMPERE UNIVERSITY OF TECHNOLOGY

Contact person in Adine project:
 Dr. Tech. Sami Repo, Department
 of Electrical Energy Engineering
 sami.repo@tut.fi
 www.tut.fi



Adine project has been supported by the Centre of Expertise Program