DOE Wind Consortium Project

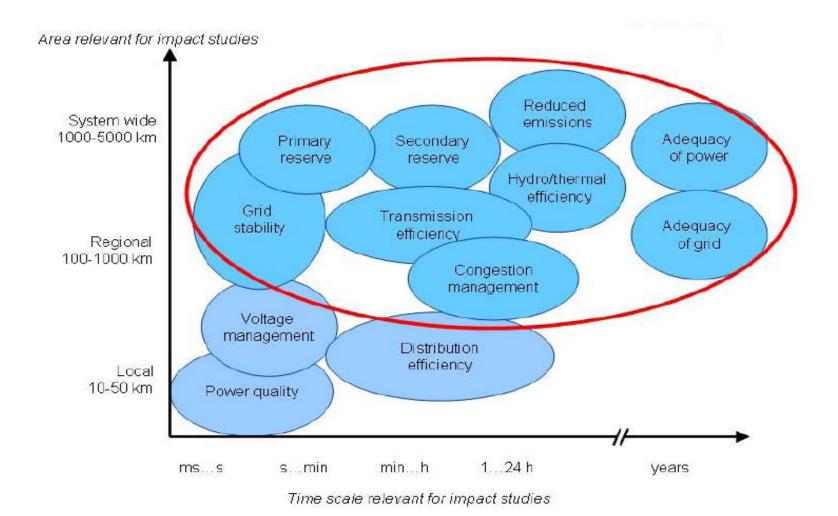
Wind Energy Research and Development

IIT, Chicago July 20th, 2011 Jay Giri

Jay.giri@alstom.com

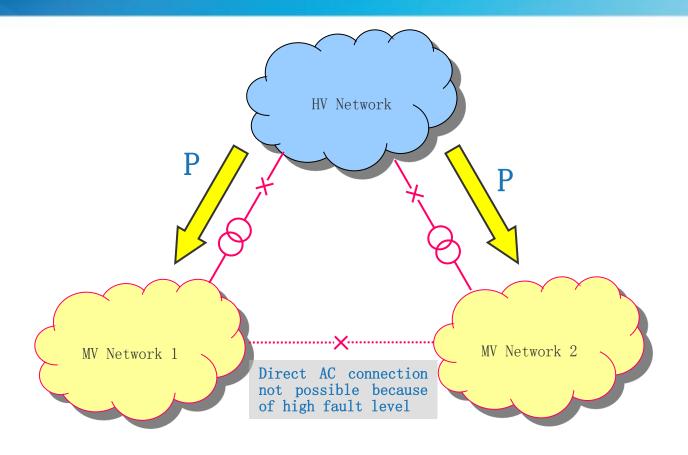


Possible Impacts of Wind Power on Grid Operations





Generation and Load Demand Balance

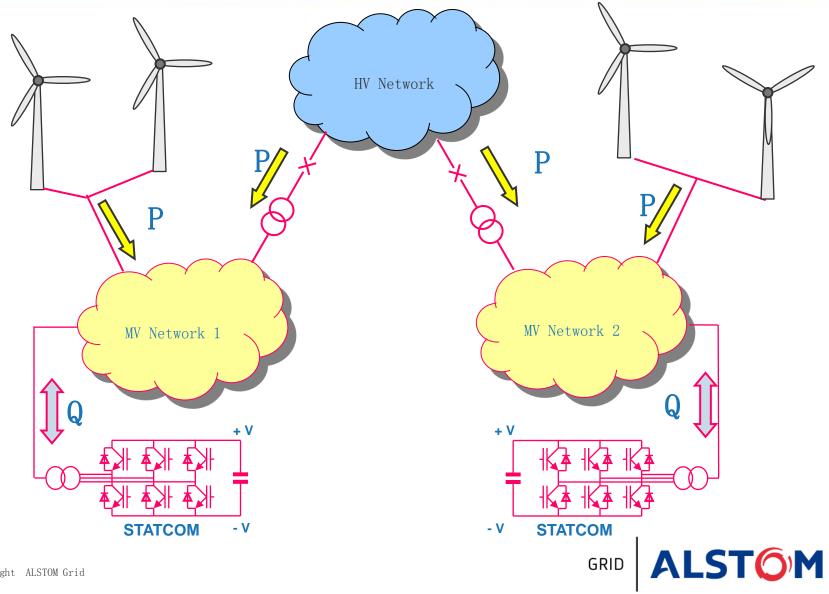


The traditional model:

Network designed for power flow from HV to MV



Generation and Load Demand Balance



Alstom Software on this project

Distribution Management System Software (DMS)

Power System Simulator Software (DTS)



DMS Functions - 3-phase Unbalanced

Network Analysis

Power Flow (RT & Study)
Limit Violation Monitor
Fault Location
Loss Analysis

Network Outage

Unplanned/Planned Lifecycle
Trouble Calls/AMI
Customer Updates
Crew Monitor/Assign
Performance Indices
Device Prediction

Network View

Dynamic Operations Map Geographic/Schematic Persistence of Dressings Energization visualization

Network Optimizer

FISR (self healing)
Feeder Reconfig (proactive)
Volt/Var Management (automatic)

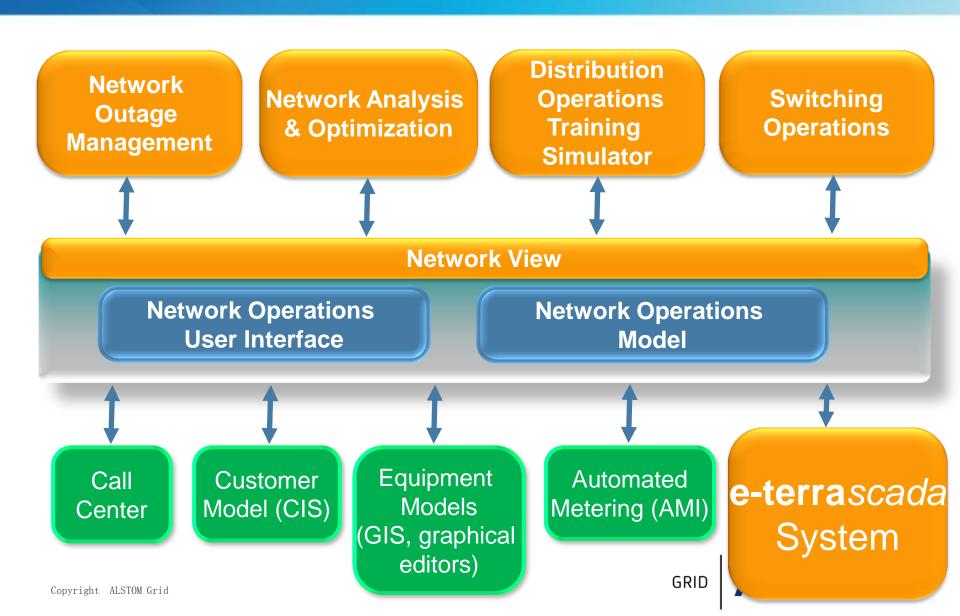
Switching Operations

Create, Simulate, Execute, Switch Orders and Safety Documents

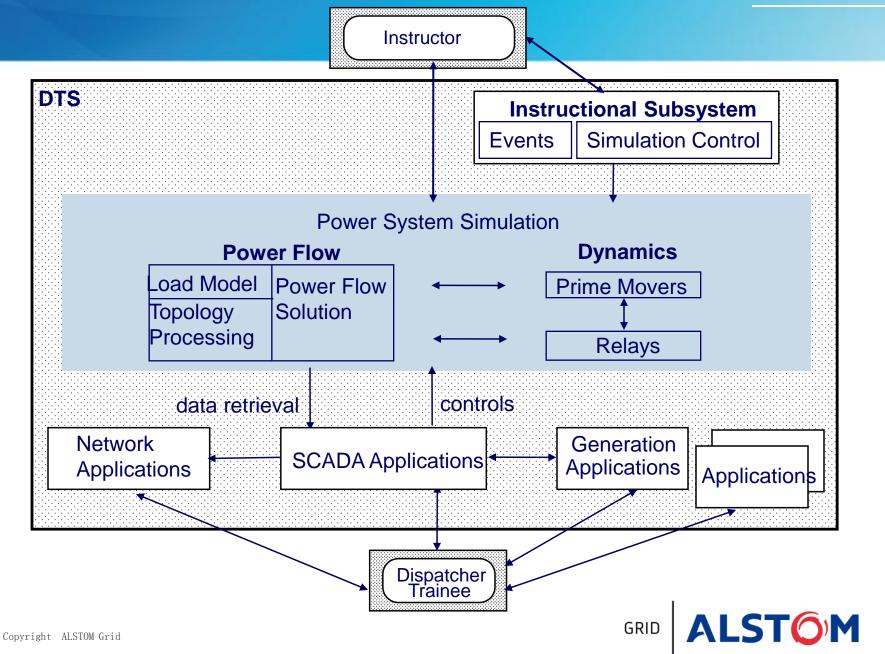
SCADA



DMS Subsystems



DTS - HV Transmission System Simulator



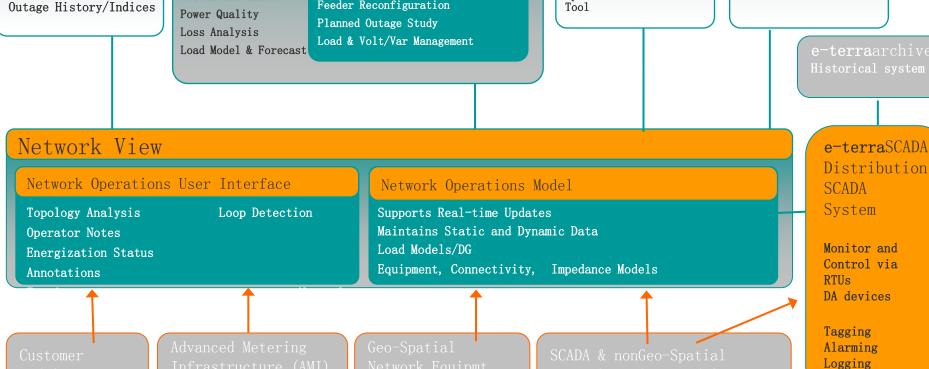


More details



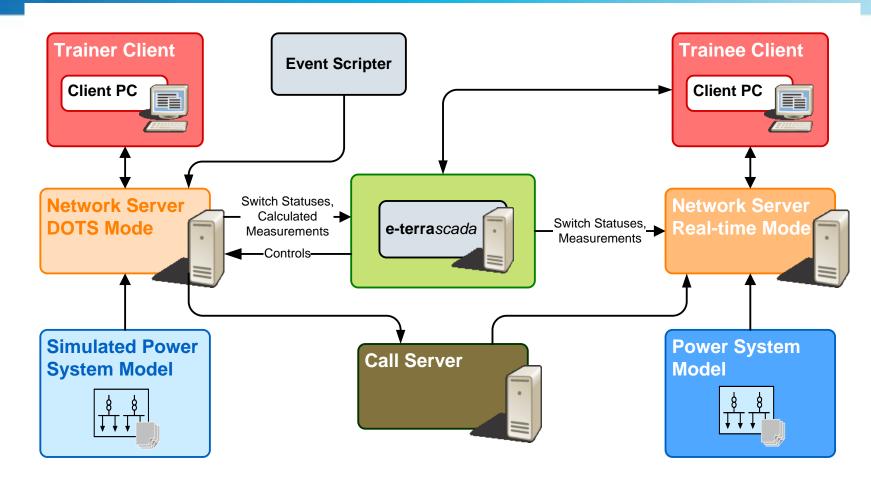
e-terradistribution - Distribution System

Analysis Unbalanced 3-phase network analysis Dist. Operations Outage Management Switching Training Simulator Operations | Network Optimizer Power Flow Creation, Validation and Distribution Operator Unplanned/Planned Training Execution of Switching Load Allocation Outage Management Orders. Limit Monitor Outage and Restoration Trouble Call Mgmt. Fault Isolation and Service Training Creation and Management Fault Location of Safety Documents Crew Monitor/Assign Restoration Protection Check Operations Validation Feeder Reconfiguration Outage History/Indices Too1 Power Quality Planned Outage Study Loss Analysis Load & Volt/Var Management Load Model & Forecast



ALSTOM GRID

Distribution Operator Training Simulator Data Flow





Wind Power Ramp Management using e-terrasimulator - a project example

Realtime Data Flow

