

# SERTEL ELECTRONICS

**INFORMATION  
SESSION**  
May 26, 2017



SERTEL CANADA  
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# AGENDA

Who We Are / Sertel DNA

Products / Proven Time Sync Solutions

Standards / Dynamics in the Substation  
Horizon

Market Domains / STP

Smart Grid Use Cases / Summary



# Who?

3

## **Vision:**

To be the process industries first choice recommendation in the automation industry and manufacture world's highest quality industrial products which offers reliability and real time operations.

## **Mission:**

To manufacture finest industrial automation products and solutions that are cost effective, reliable. To become world's leading company with finest range of industrial products, services. To enhance our technical expertise and solve problems with precise solutions. To Position Sertel as a prominent niche supplier in Industry verticals we operate.



# Where?



Sertel Offices



Sertel Projects

4



# When?

5

Birth @  
Mr.  
Gopalan's  
Garage

Commenced  
Service  
Integration For  
Switchgear &  
Panels

Evolved into  
Product  
Development  
Based  
Company

Dominate  
Indian Market  
For Time Sync  
Based  
Solutions

Diversified  
Product  
Offering With  
Alarm  
Annunciators  
For NA Market

Launched  
Sertel UK To  
Address  
Global Market  
Demand

Transformed  
Business  
Model to  
International  
OEMs

Acquisition of  
Market  
Leading  
Furnace  
Cameras

Develop  
Smart Grid  
Product  
Range  
Specific to  
IEC 61850  
Applications

1977

1985

1992

2000

2008

2010

2012

2014

2016





# WHY?

6



Power Blackouts



Time Disorder



Recognized Expert



Visionaries in Precision Time



# AGENDA

Who We Are / **SERTEL DNA**  
Products / **Proven Time Sync Solutions**  
Standards / **Dynamics in the Substation Horizon**  
Market Domains / **STP**  
Smart Grid Use Cases / **Summary**



# product classifications



**Time  
Synchronization**



**Alarm  
Sequence of Events  
Recording**



**Smart Grid  
Solutions**

DR Recovery  
Process bus  
Goose based  
Solutions  
Protocol  
Conversions  
Data  
Concentrators



**TGPS300**



**TAA300**

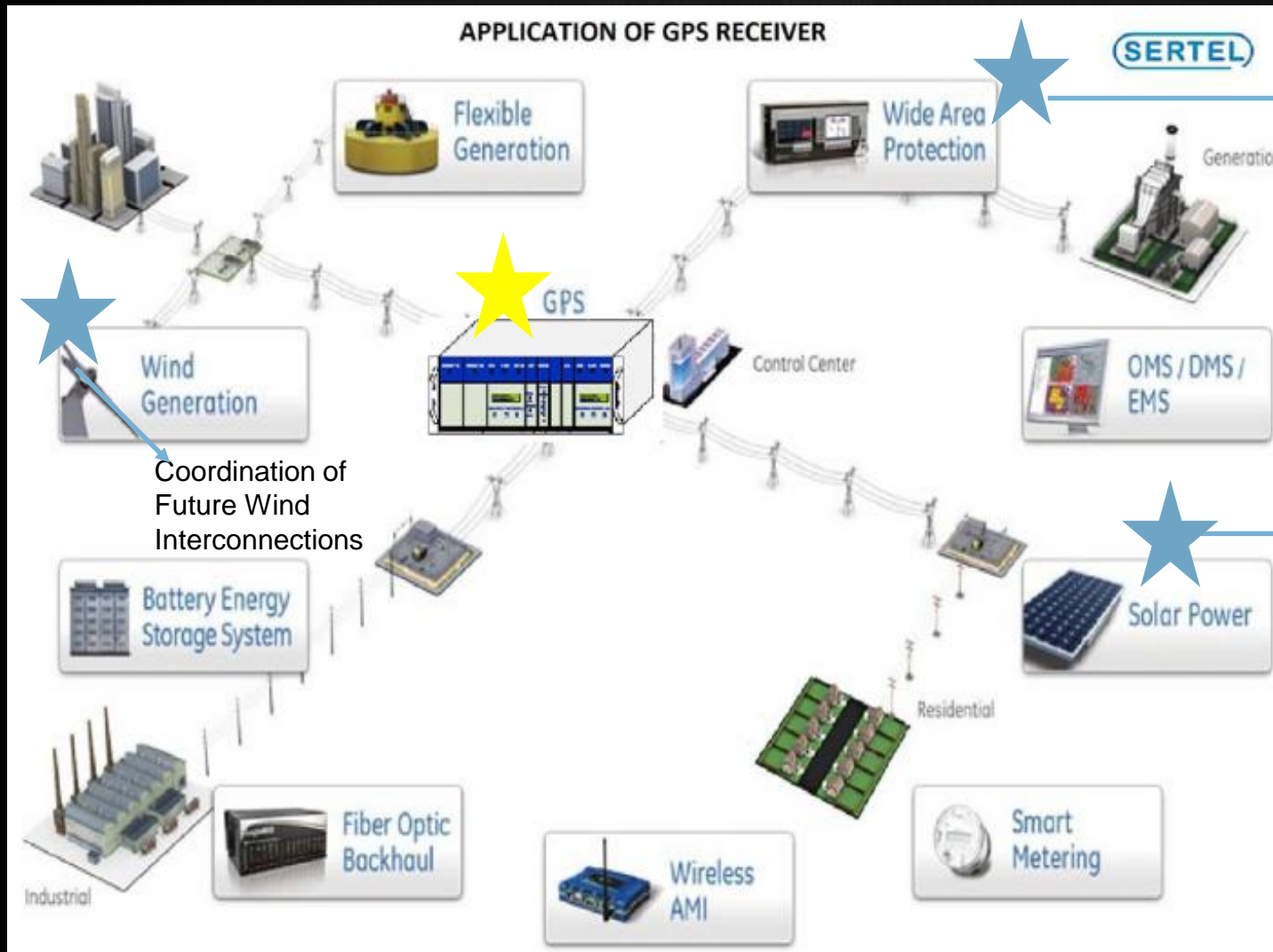




# Time synchronization Solutions

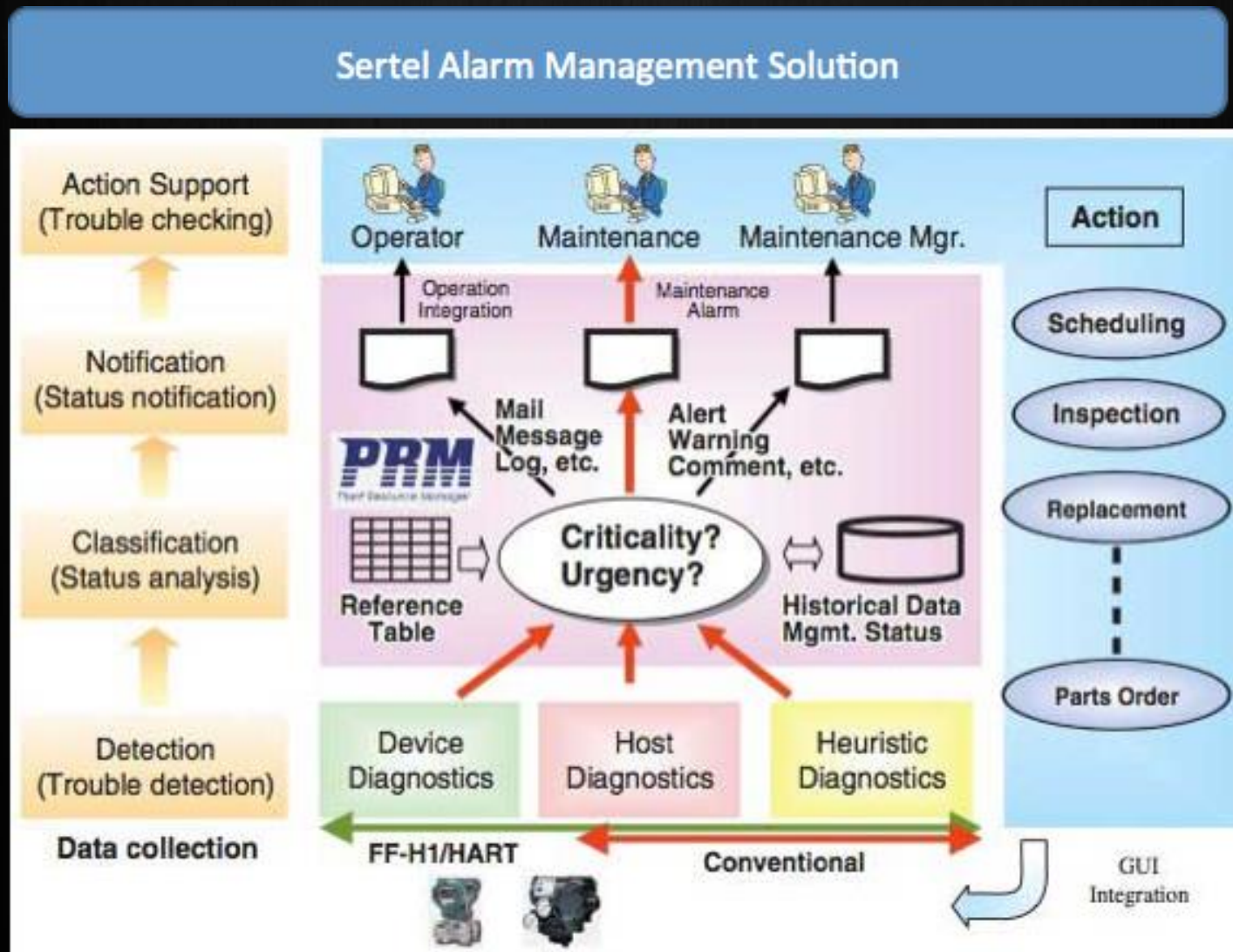


9



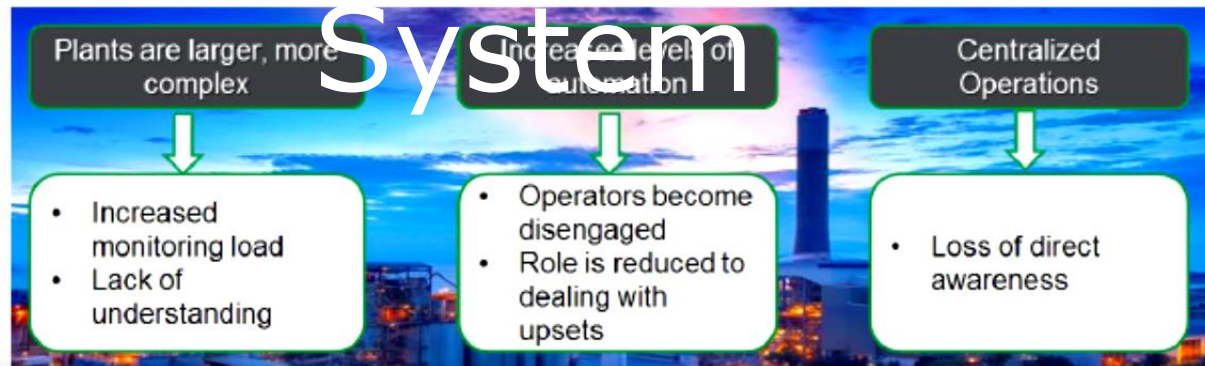
# Alarm annunciation Solutions

10

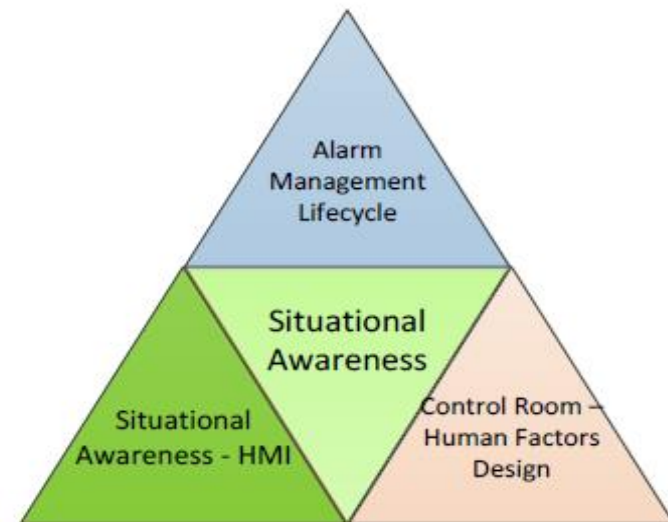
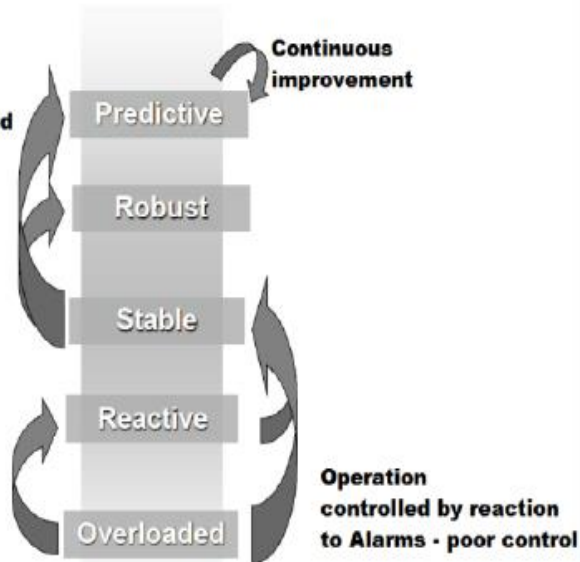


# Sertel Alarm Management System

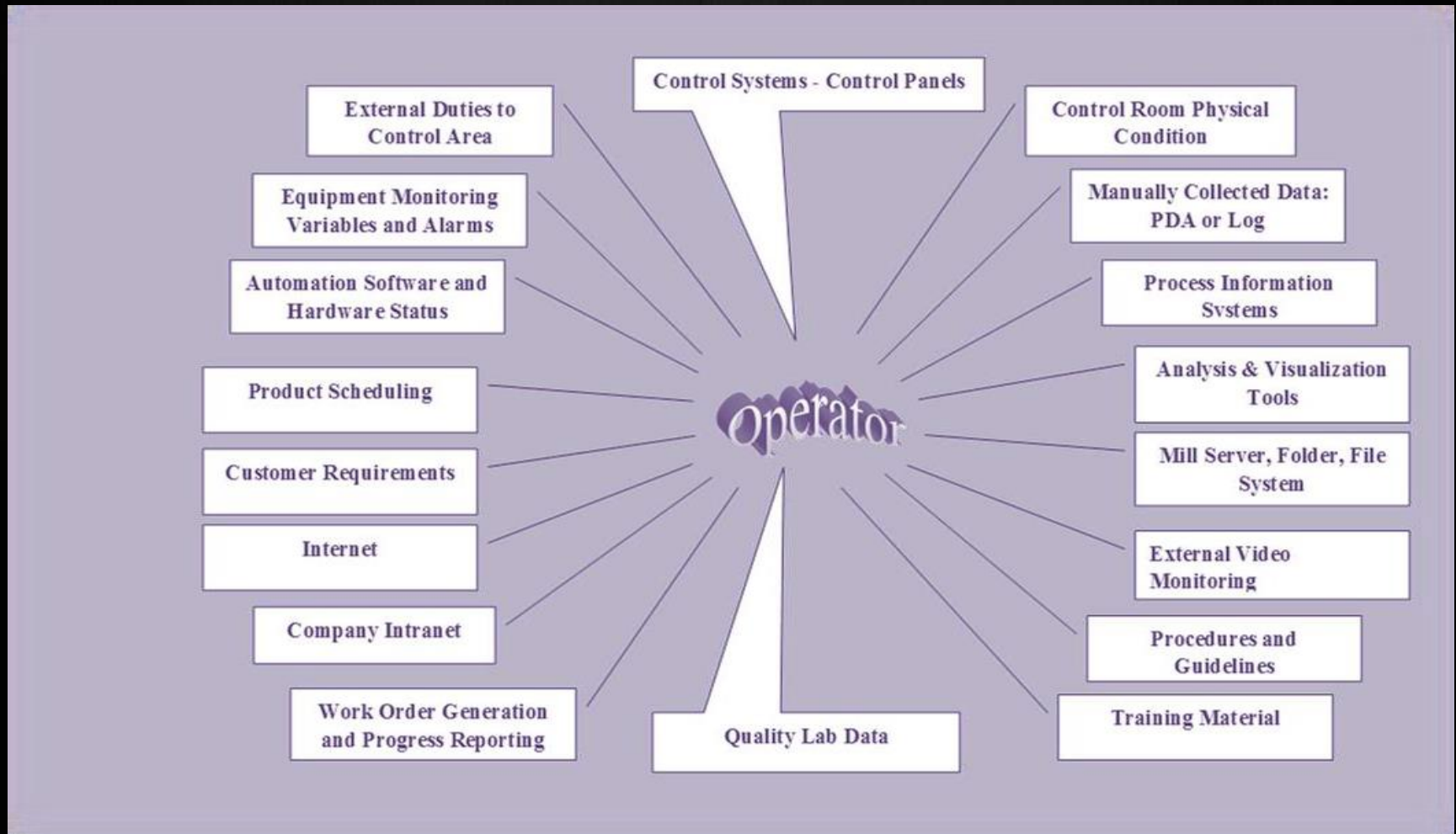
**Figure 1**  
*Industrial Trends and challenges*



Operation controlled proactively, with process insight and integrity



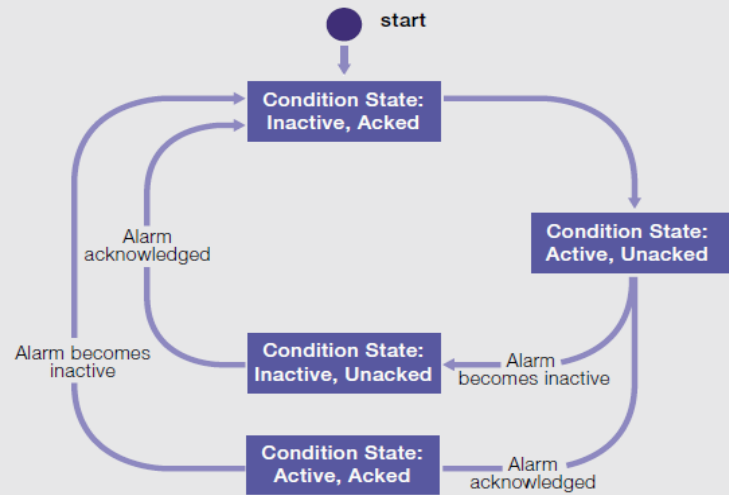
# Sertel Alarm Management System – Aiding the Operator For Smooth Functioning of Plant



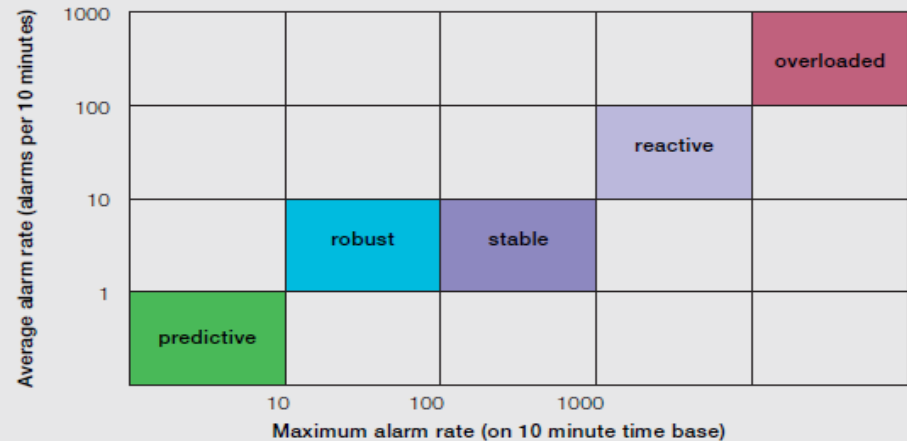


# Sertel Alarm Management System - Asset Optimization & Data point Analysis

Alarm states and transitions



Report of alarm performance levels



Settings

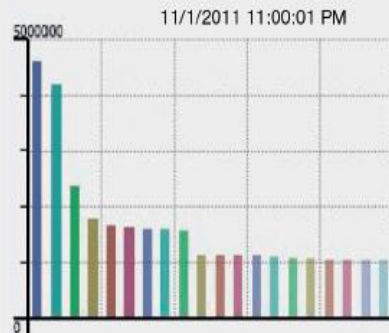
From: 01.09.2008 00:00:00

To: 01.10.2008 00:00:00

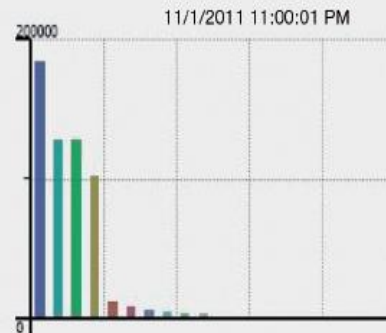
First: 01.09.2008 02:03:01

Last: 30.09.2008 23:45:56

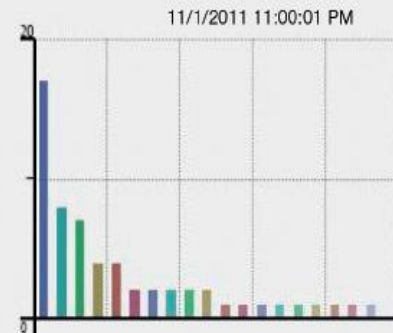
Active Alarm With Duration (seconds)



20 Longest Standing Alarms (seconds)



20 Most Frequent Alarms (activations)



Alarm frequency analysis

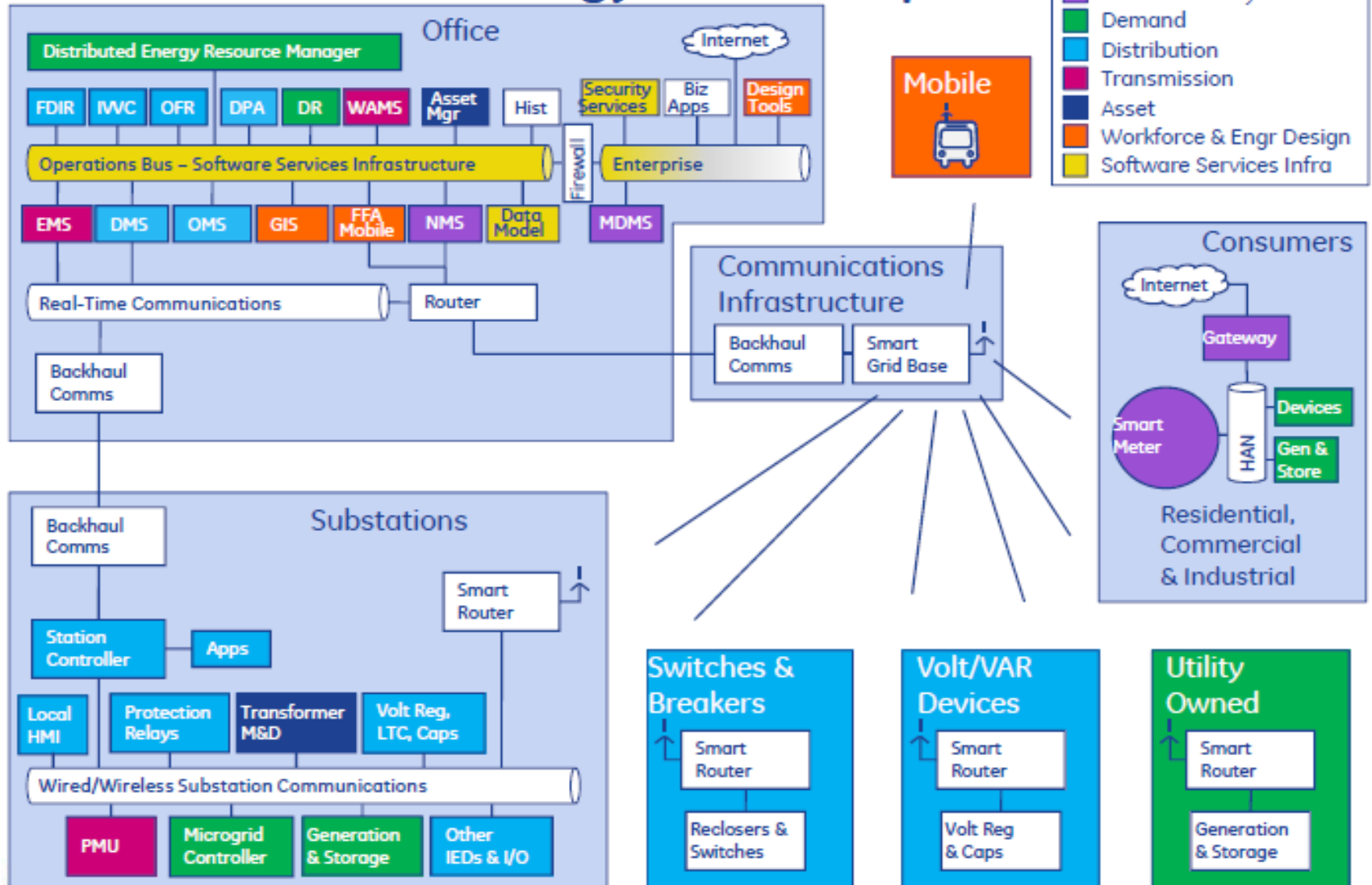


# AGENDA

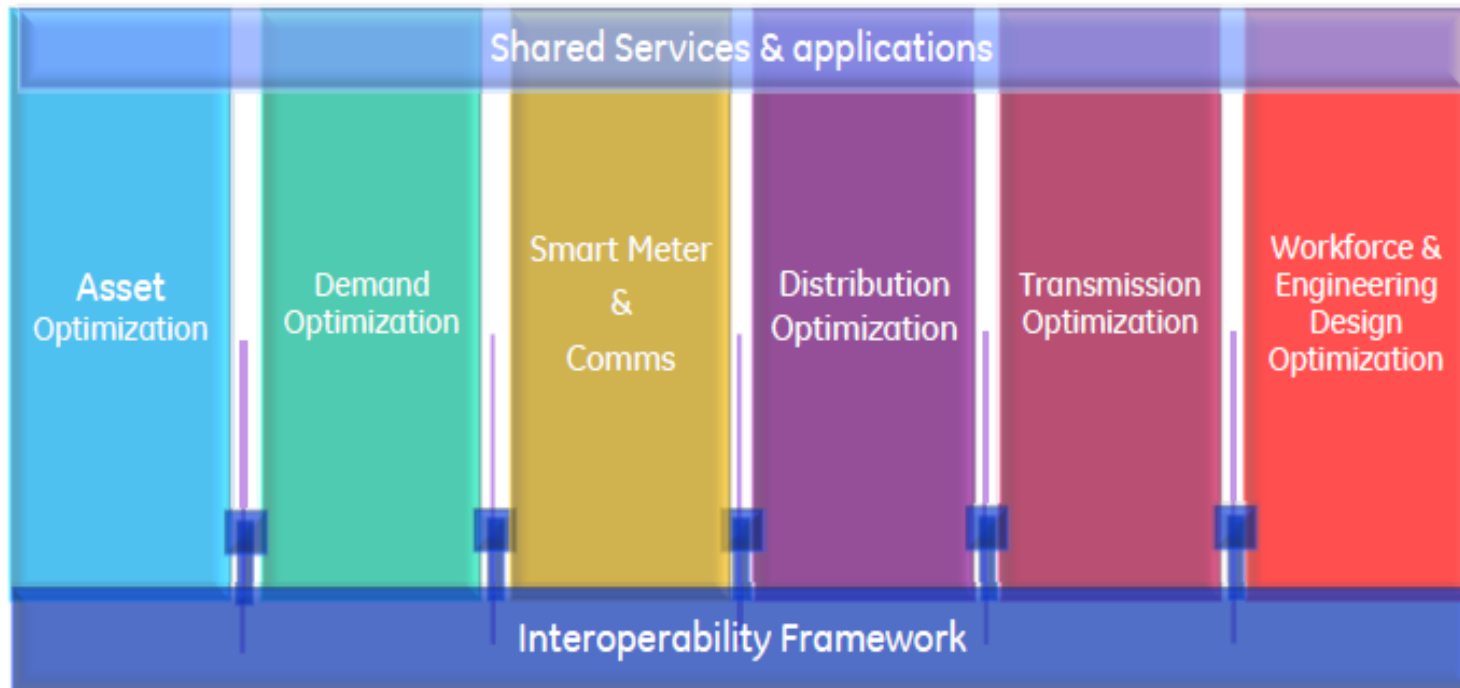
**Products / Proven Time Sync Solutions**  
**Standards / Dynamics in the Substation**  
**Horizon**  
**Market Domains / STP**  
**Smart Grid Use Cases / Summary**



# Smart Grid Technology Roadmap



# Smart Grid Holistic Solutions



Transitioning from products/systems to  
holistic solutions

# Key Industry/Societal Trends

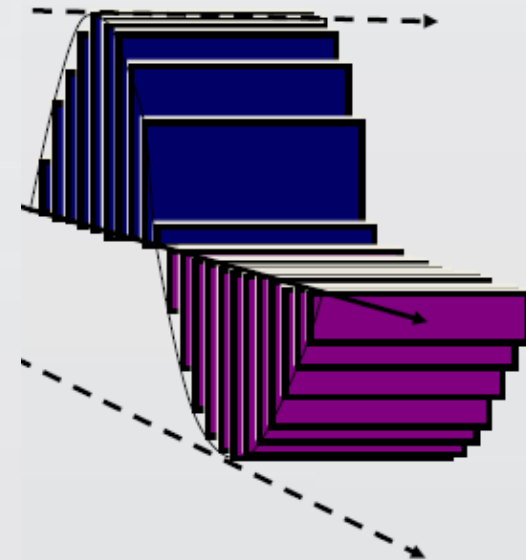
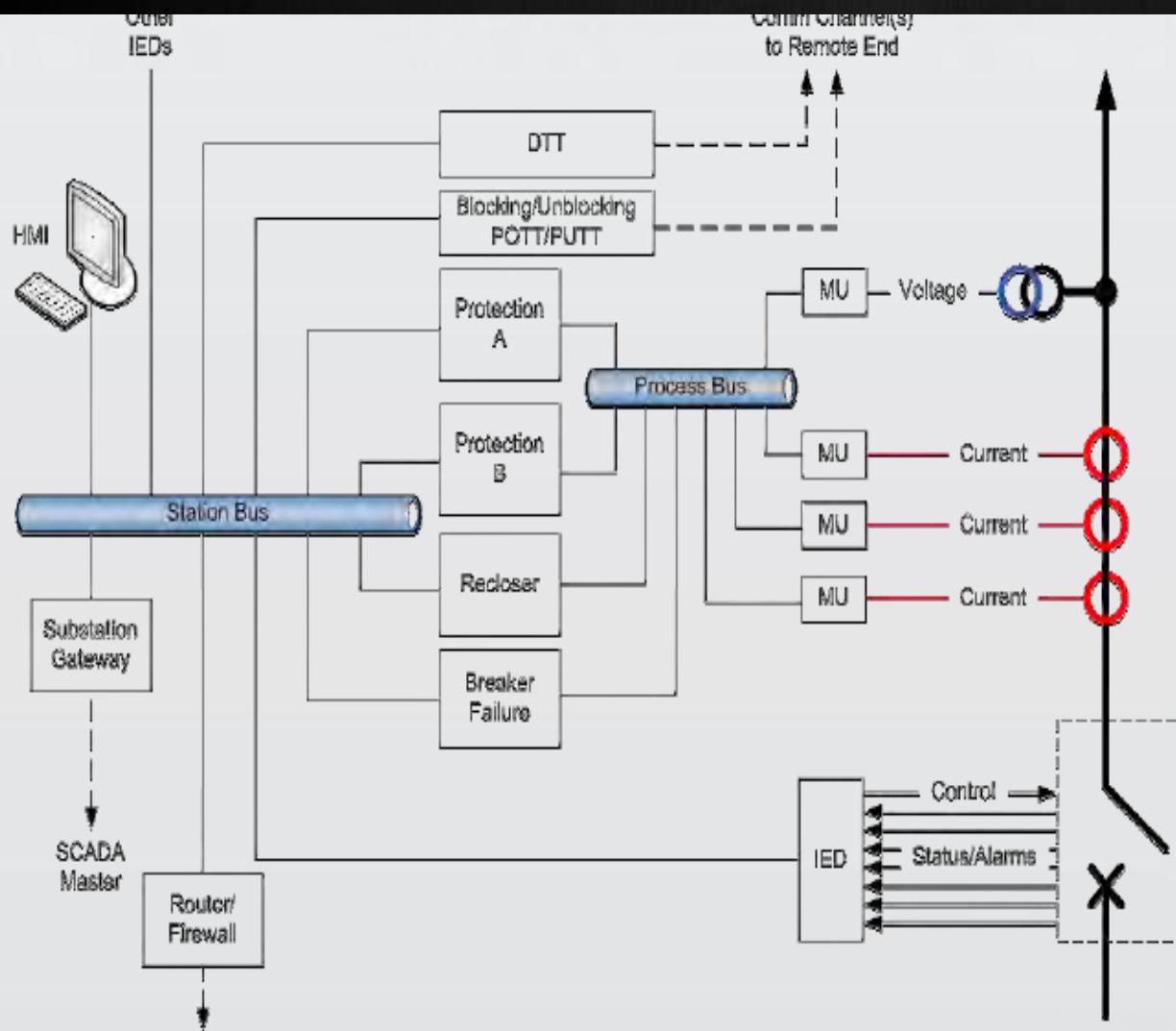


- ✓ Transitioning from Devices/Systems to Holistic Solutions
- ✓ Success = Technology, Standards, Policy
- ✓ Grid Flexibility + Self Healing + Reconfigurable
- ✓ Electrical Power Distribution Infrastructures Resiliency
- ✓ Big Data, the Cloud and Use of Social Media
- ✓ Convergence of IT and OT to Support Enterprise
- ✓ Data Management
- ✓ Need for Customisation & Adaptation as per local requirements
- ✓ Extensive configurability & dynamic Adaptation to Grid loads & flexibility.



# Standards - Architecture

18

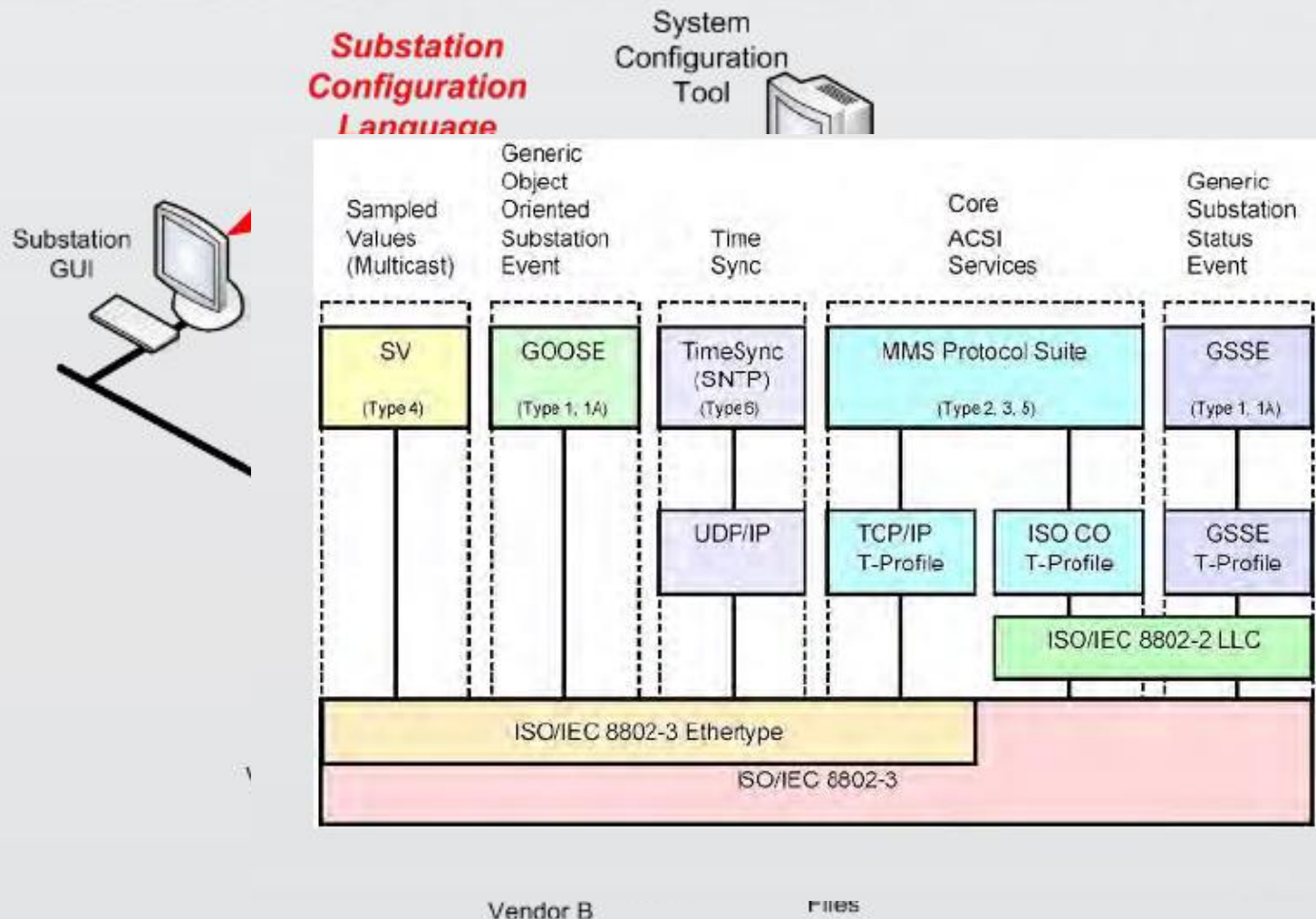


Sampled  
Values on  
LAN

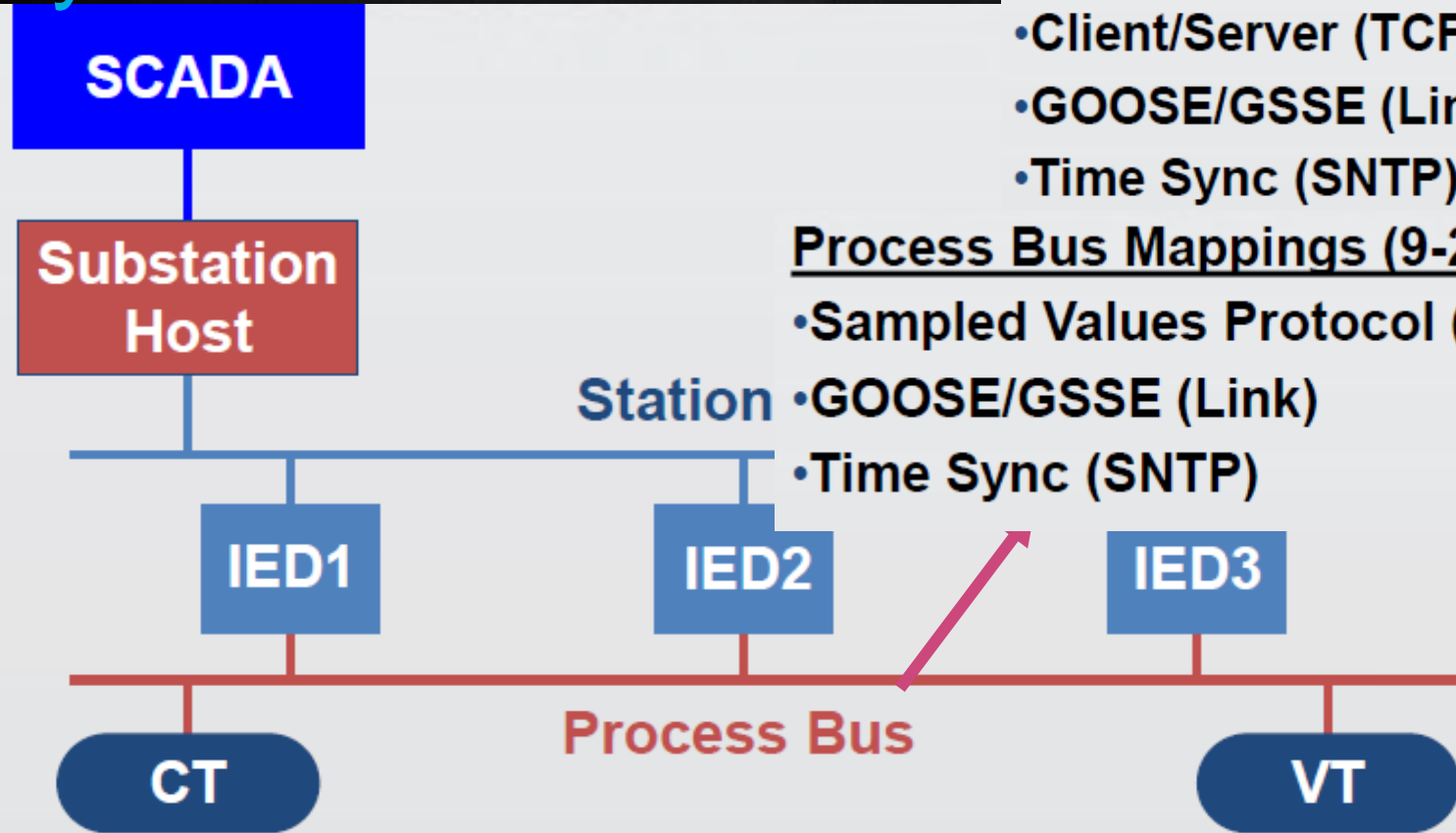




# Need For Customisation



# Standards Sitting on different Layers on LAN/WAN



## Station Mappings (8-1)

- Client/Server (TCP/IP)
- GOOSE/GSSE (Link)
- Time Sync (SNTP)

## Process Bus Mappings (9-2)

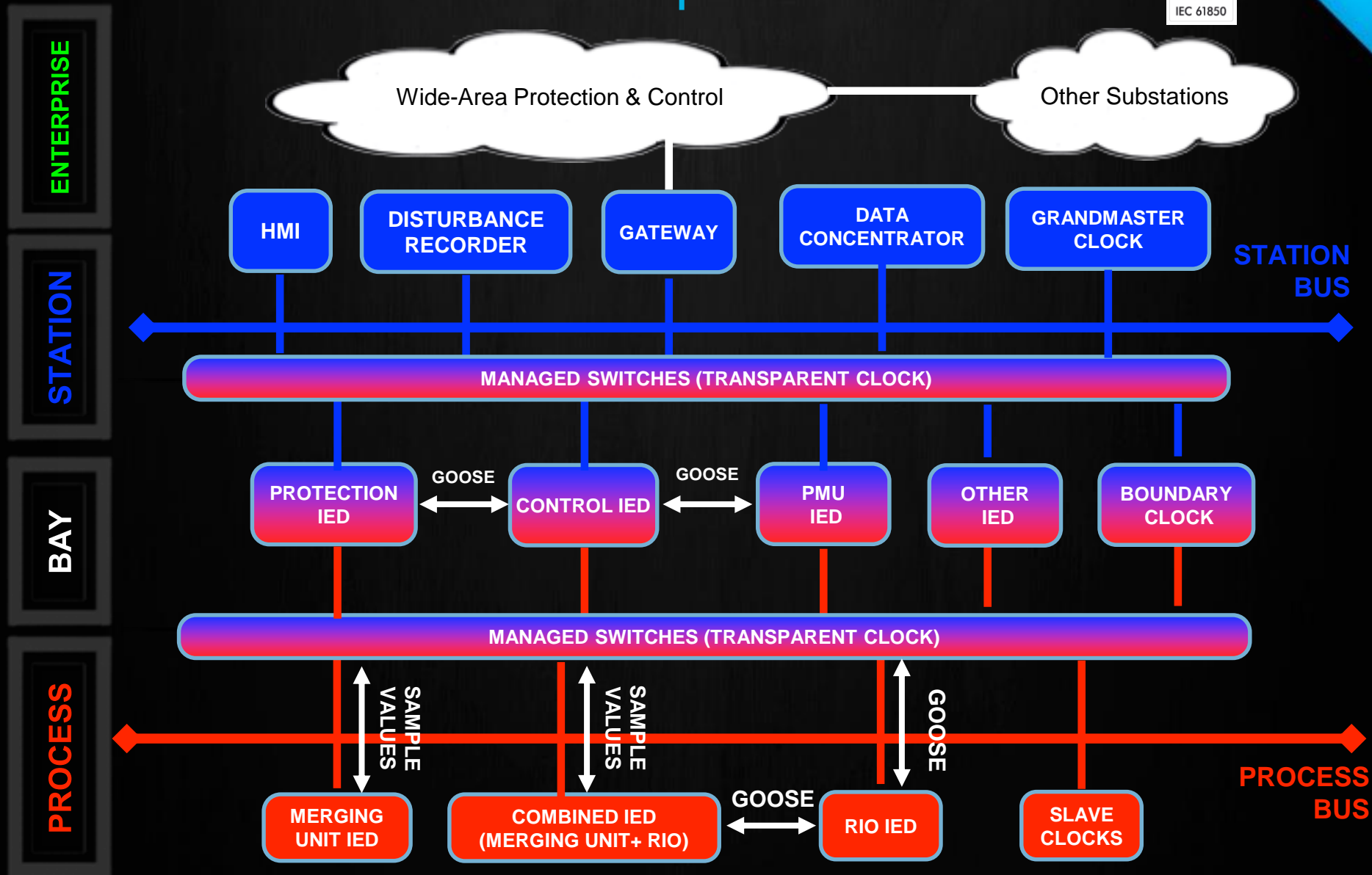
- Sampled Values Protocol (Link)
- GOOSE/GSSE (Link)
- Time Sync (SNTP)

Changing to Time Sync - IEEE1588

# IEC 61850 Conceptual architecture



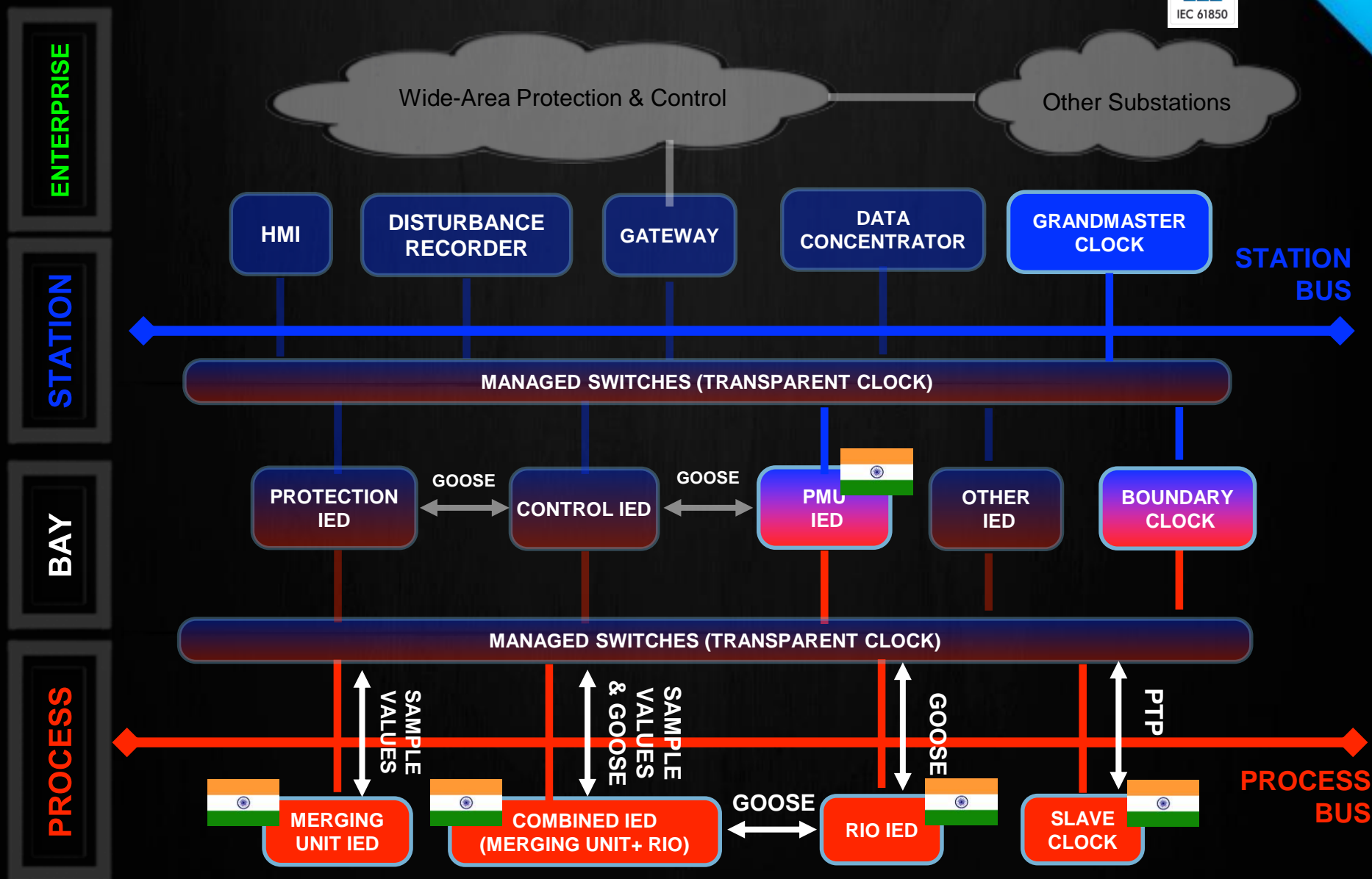
21



# IEC 61850 – Sertel's Positioning

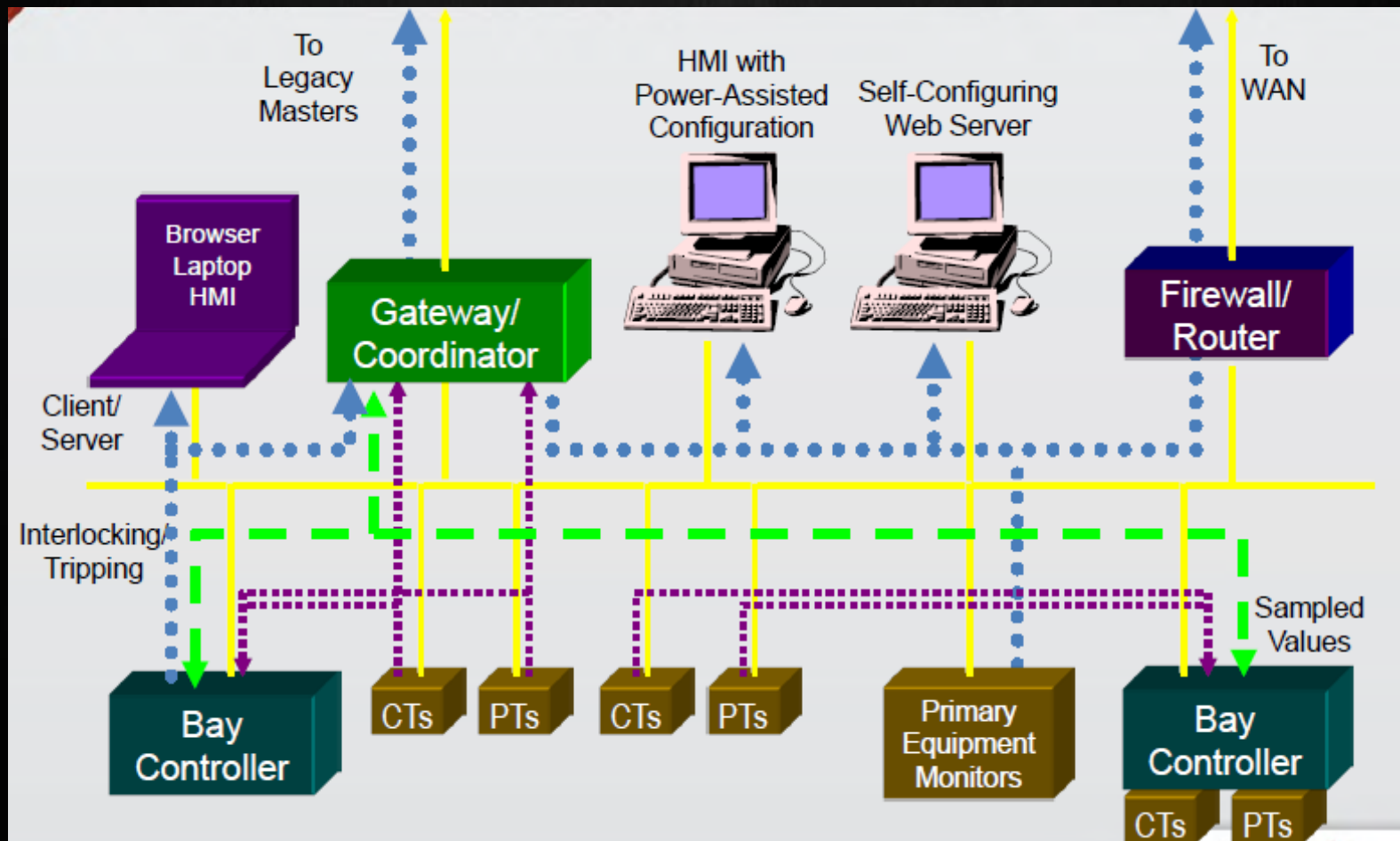


22



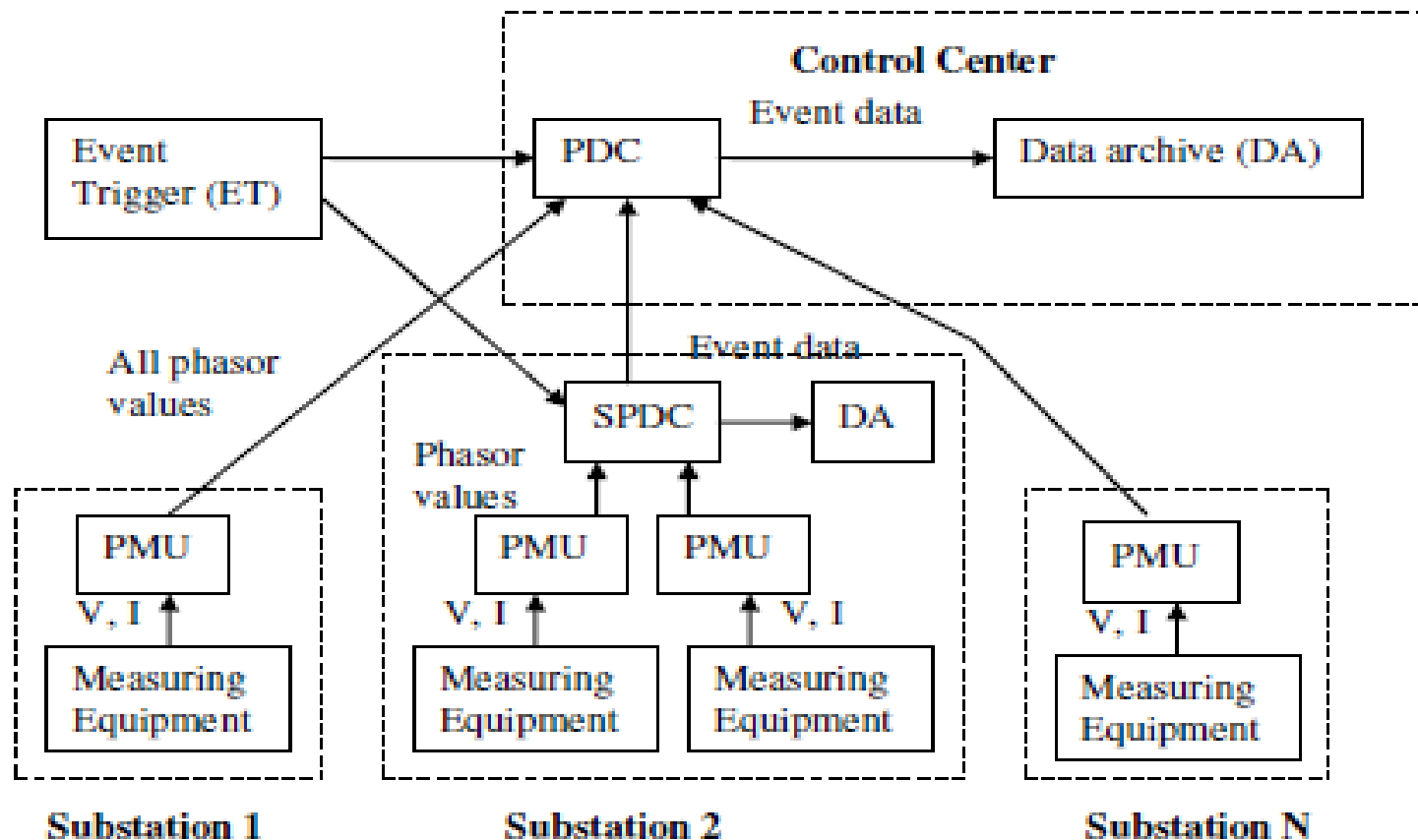
# SMART GRID

## Substation Automation Component





# Data Analytics – Control Centre Management of Substations



# Convergence of Standards

## ► IEC 61850-7-4xx for Object Models

- IEC 61850-7-400: The original 7-4, substation models
- IEC 61850-7-410: Hydro Power
- IEC 61850-7-420: Distributed Energy Resources

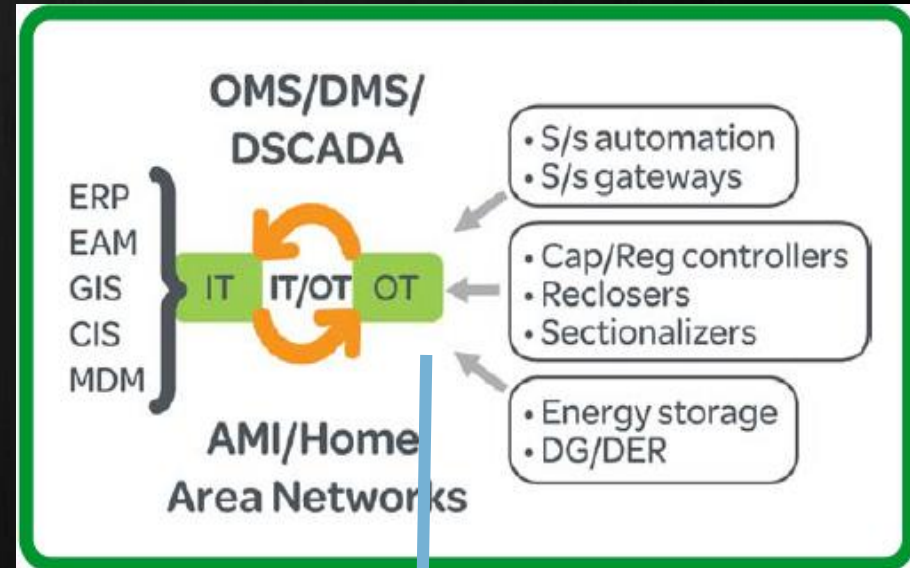
## ► IEC 61850-7-5xx for Users Guides

## ► IEC 61850-80-x Mapping Docs

- IEC 61850-80-1 Mapping to IEC 60870-5-101
- IEC 61850-80-2 Mapping to DNP3 (pending)

## ► IEC 61850-90-x Interfaces (all pending except 90-1)

- IEC 61850-90-1 Between Substations
- IEC 61850-90-2 Substation to Control Center
- IEC 61850-90-3 Condition Monitoring
- IEC 61850-90-4 Networking Guidelines
- IEC 61850-90-5 Synchrophasors
- IEC 61850-90-7 DER Inverter Models
- IEC 61850-90-8 Electric Vehicle Models



# SMART GRID – Visualisation of Entire Network

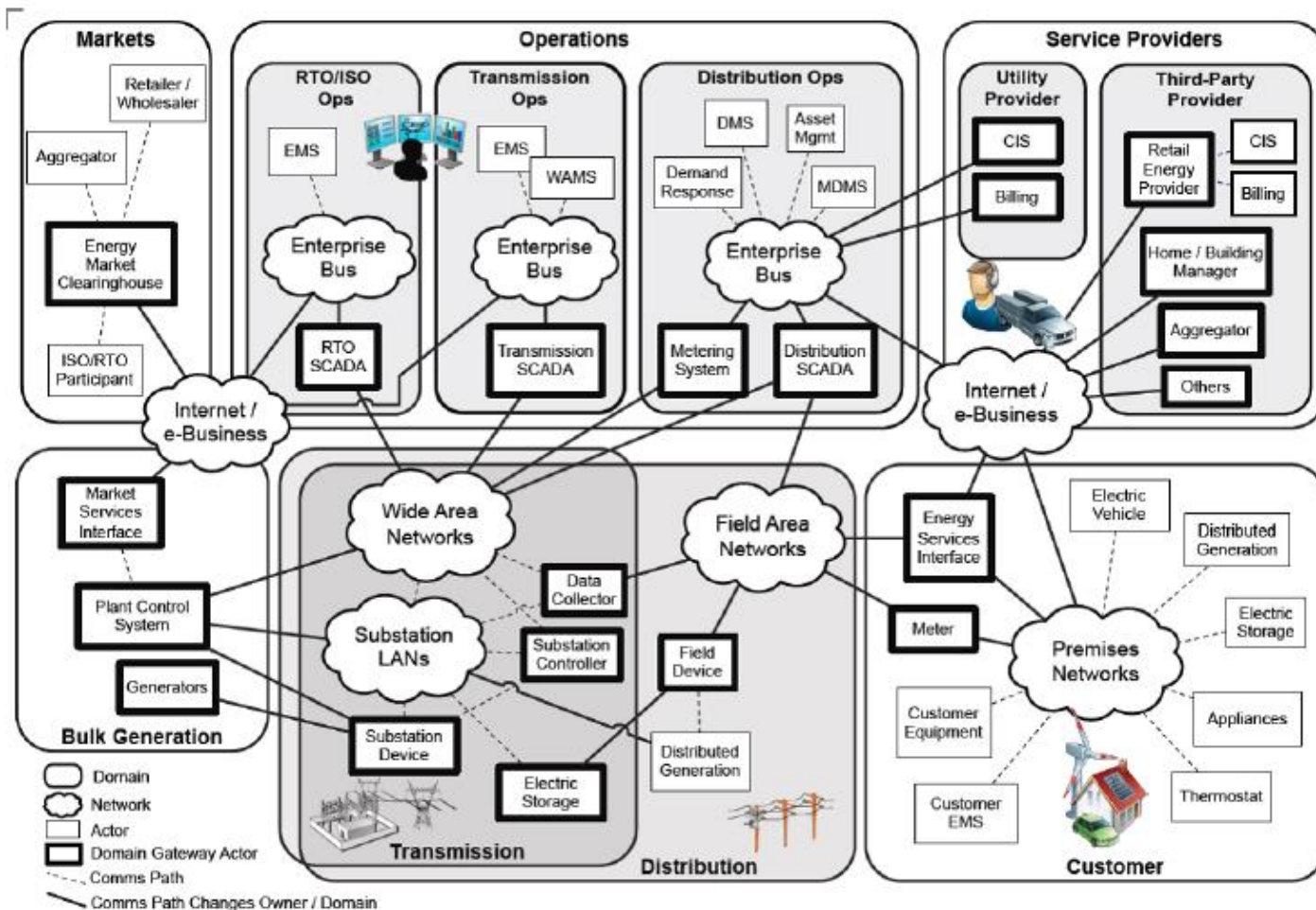


Figure 12 – Smart Grid Conceptual Reference Diagram (Source: NIST Interoperability Framework 1.0)

# AGENDA

Standards / Dynamics in the Substation  
Horizon

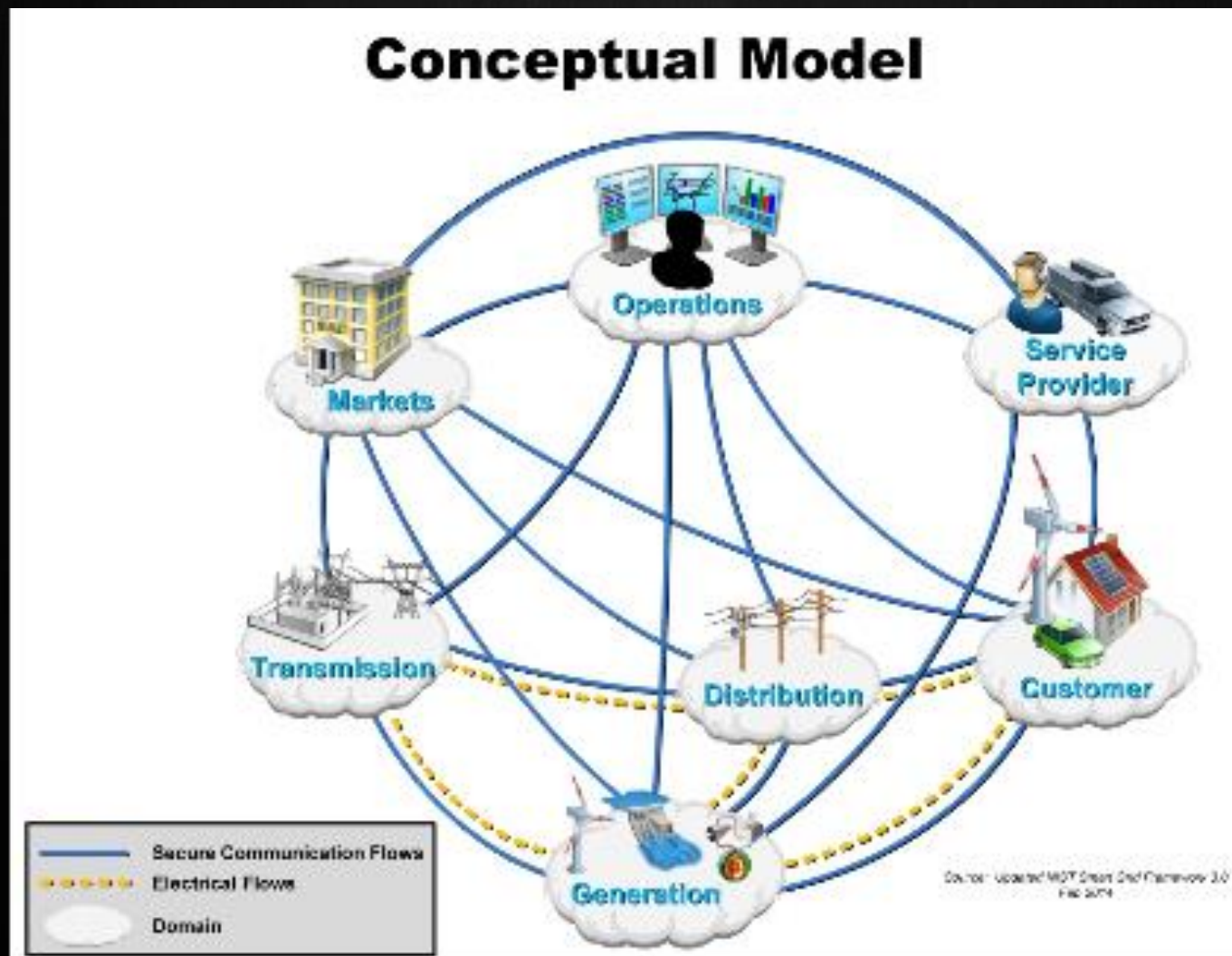
Market Domains / STP

Smart Grid Use Cases / Summary



# Segmentation

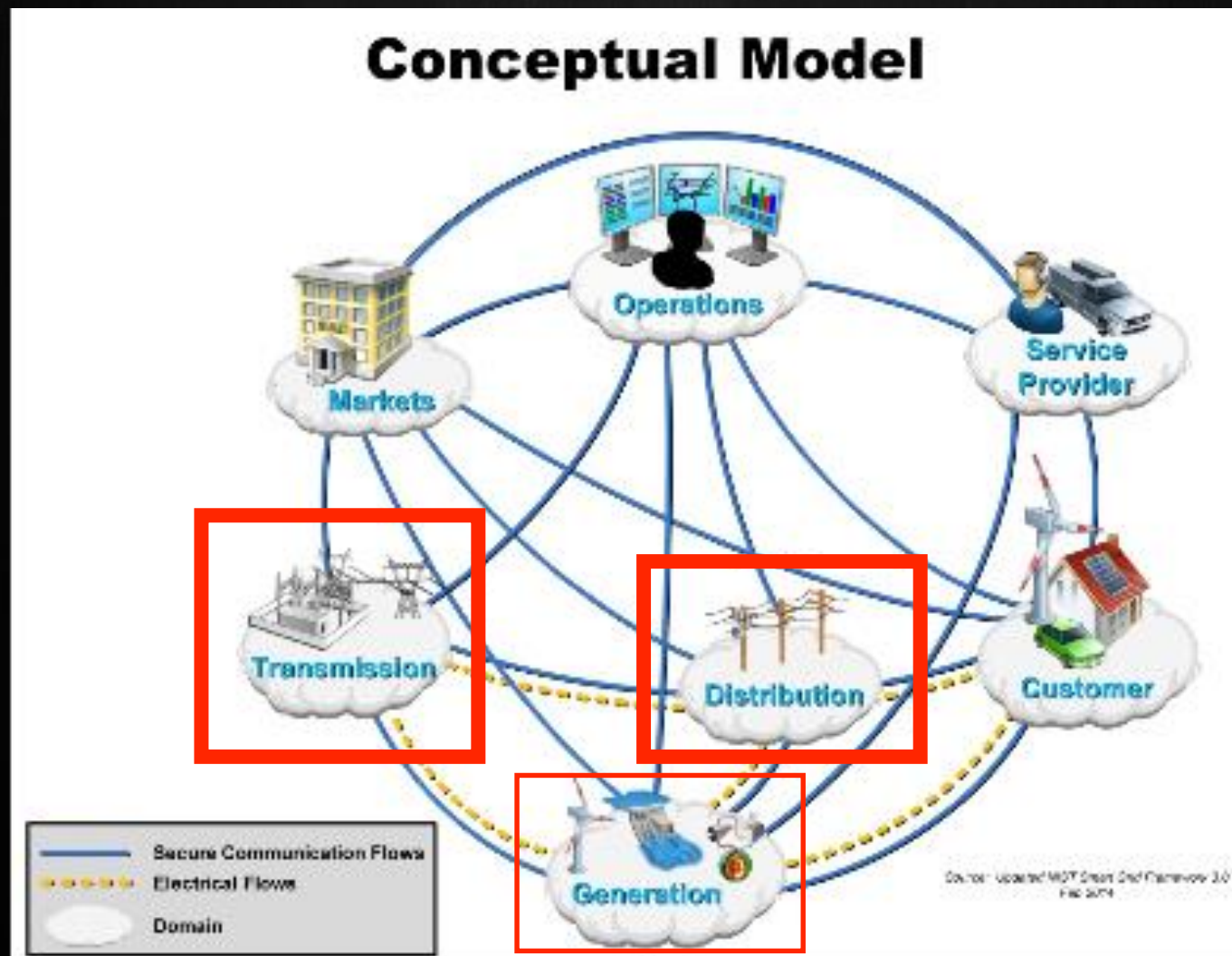
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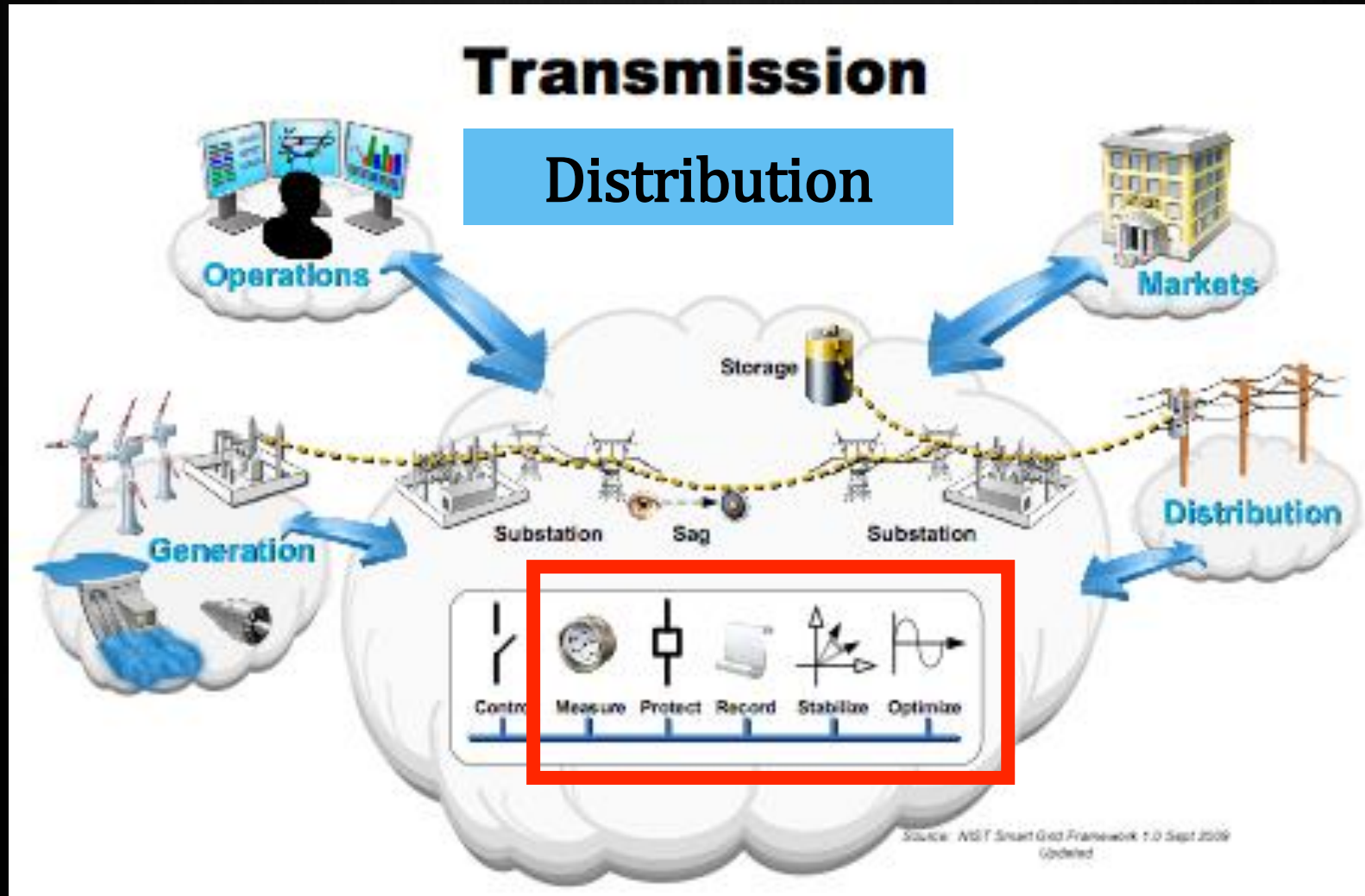
# Targeting

29



# Positioning

30



# AGENDA

Market Domains / **STP**  
Smart Grid Use Cases / **Summary**



Station Bus Time Synchronization  
(Grandmaster/Boundary Clocks)

Process Bus Time Synchronization  
(Boundary/Slave Clocks)

Phasor Measurement Solutions  
(Remedial Action Schemes)

Merging Unit Solutions  
(Coming Soon)

DR Collection

Alarm Event  
Monitoring

Process Bus

Data  
Concentrator

Protocol  
Communication

Data Analytics



# Summary – The Future

- ▶ **New hardware:** smart CTs and PTs, integrated primary eqpt., wiring reduction
- ▶ **New installation:** automatic and power-assisted configuration
- ▶ **New applications:** LAN-based breaker synchronization, interlocking
- ▶ **New interfaces:** casual browser HMIs
- ▶ **New flexibility:** the device nearest the problem does the job
- ▶ **New philosophy:** integrated protection, telecontrol, asset mgmt.

Solution provider  
to solve local  
challenges

Expertise building  
Holistic View







Sertel Time Stamping Modules are reliable and satisfactory. We have been using their system for past 15 years and we are pleased to inform that there has been very good performance. With all IOCL's using Sertel time syncs there are very good feedbacks from all our refineries. --- *Indian Oil Corporation | D.G.M Bongaigoan | India IOCL headquarters.*



## OUR PRESTIGIOUS CLIENTS

**Industries:**

- Oil & gas
- Power & Utility
- Nuclear
- Automation
- Bank
- Airport
- Networking
- Medicine
- Energy

Sertel has become a key product supplier to our projects. I am pleased to confirm that during the interoperability testing, no technical concerns were identified. Therefore I can conclude that the technology demonstrated is suitable for synchronizing our new generation MiCOM P847 PMU -- *Alstom Grid | Substation Automation Solutions | Marketing Product Manager | Staffordshire U.K.*

# Unique Value Proposition

35

**Sertel  
Reputation (+30  
years)**

**Future Smart Grid  
Product Supplier For  
Process Bus & PMU  
Technologies**

**Promotes  
Innovation  
In T&D**

**Vertically Integrated  
Business  
Model**

**Time Sync.  
Experts**

**Customized Solutions  
With Cost-Effective  
Delivery Model**





Sertel at Inter-operability Testing of  
our products in UCA in Belgium

36



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PVT LTD  
ISO 9001:2008 COMPANY**

