



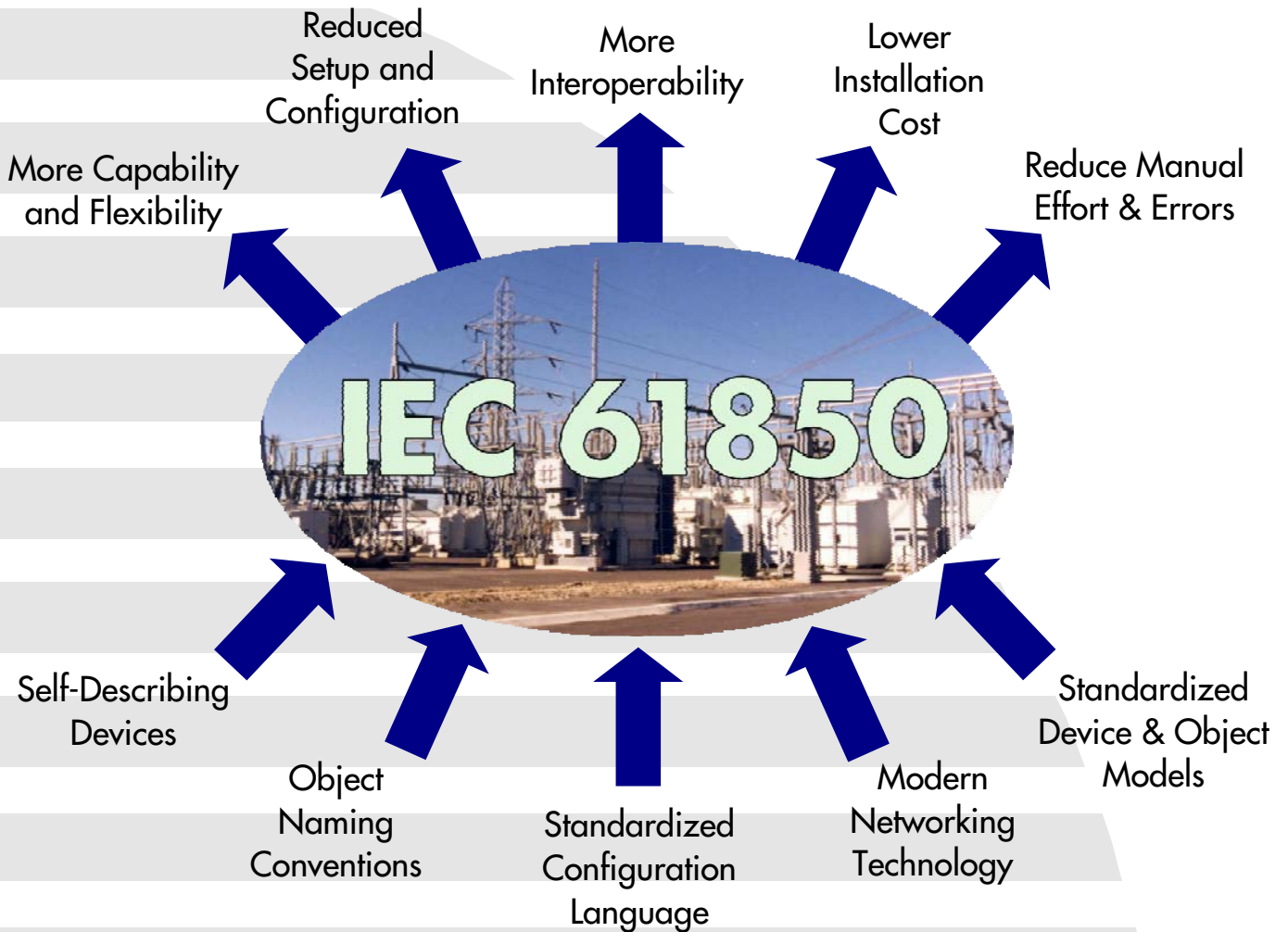
The Standards Based Integration Company



# IEC 61850

A New Approach to Substation Automation, Communications, and Integration

## Benefits in Substations and Bays



## IEC 61850 Features

# IEC 61850

## A New Approach to Substation Integration



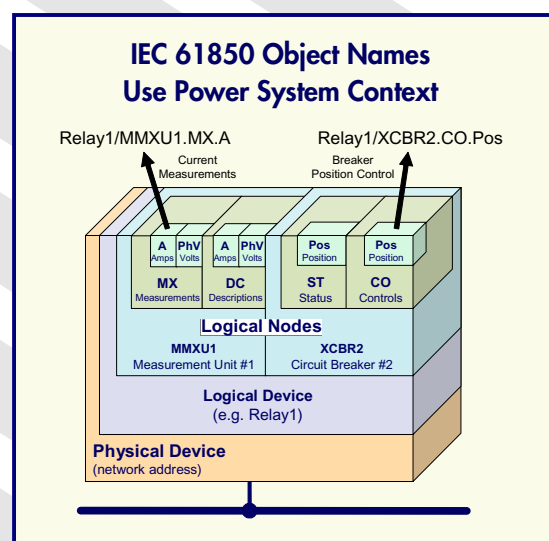
### Why is IEC 61850 Different?

The traditional approach to substation integration used standardized RTU protocols that were designed to provide protocol efficiency for operation over bandwidth limited serial links. While such limitations remain for many applications, substation hardened equipment implementing modern networking standards like Ethernet now provide a cost-effective means of enabling high-speed communications within the substation. To truly take advantage of this technology and dramatically lower the total cost of ownership of substation automation systems, a new approach to substation integration that goes beyond a simple RTU protocol is needed.

IEC 61850, an object oriented model of how devices look and behave to network applications, is that new approach. IEC 61850 goes far beyond just a protocol standard by defining a comprehensive device and object model that uses human understandable names in a power system context. IEC 61850 provides a standardized framework for substation integration that specifies the communications requirements, the functional characteristics, the structure of data in devices, the naming conventions for the data, how applications interact and control the devices, and how conformity to the standard should be tested. These models are then mapped to a specific set of protocol profiles that are optimized and secure for each functional area of the system from data access, supervisory control, protection oriented messaging, and transducer interfaces. And, because the models are specified separately from the protocols, IEC 61850 can be migrated to future networking technology without breaking the model.

### Field Proven Innovation

IEC61850 embodies a new and innovative approach to substation automation and communications that leverages modern computer and networking technology to maximize reliability and performance while minimizing design, installation, and commissioning costs. Since being released in 2002, IEC 61850 is actively used in many hundreds of substation systems world-wide and is fast becoming the single most important international standard for substation automation. Hundreds of companies are implementing and using IEC 61850 while contributing to enhancing and extending the standard via an active international user group.





## The Benefits of Using IEC 61850

The bottom line is always about how a new technology can improve your substation systems by lowering your costs, improving power reliability, or both. IEC 61850 has a proven track record of deliverable benefits to both small and large utilities. Networking equipment costs money to install, configure and maintain. But the savings that IEC 61850 delivers in the cost of substation design, installation, commissioning, and operation combined with the ability to implement new capabilities that are not practical or cost effective using legacy approaches makes those networking costs a worthwhile investment for the future. The benefits of IEC 61850 for substation automation and integration include:

- ☑ Self-describing devices enable access to device configuration over the network dramatically reducing setup time and cost.
- ☑ Standardized device-object models provide a higher level of interoperability that reduces variances between different types and vendors of devices lowering startup cost.
- ☑ A Substation Configuration Language (SCL) provides an XML file format that describes power system and device configuration for unambiguous specification of requirements eliminating procurement uncertainty while enabling off-line configuration and exchange of system and device setup information.
- ☑ Standardized data naming conventions use power system context to avoid arcane number oriented point tags and eliminates manual I/O to power function mapping simplifying setup and improving understandability.
- ☑ Device models inherently support logical location of data and device functions enabling migration and coexistence of legacy systems.
- ☑ Use of shared station level networking for data access, supervisory control, and process functions minimizes point to point wiring and dramatically reduces cost for incremental improvement of existing systems over time.
- ☑ Multiple protocol profiles leverage modern networking technology to provide secure, optimized, and reliable performance for a wider variety of applications including:
  - Station and bay control and monitoring.
  - IED-to-IED protection messaging for intrabay, intrastation, and wide area remedial action.
  - Transducer networks for CT/PT interfaces



SISCO is the world-wide leader in IEC 61850 technology. SISCO works with most of the world's leading OEMs and integrators and has helped them deliver successful IEC 61850 projects with:

- ☑ Ready-to-run interfaces for client applications, OSIsoft PI, HMI-SCADA, historians, translators, and gateways.
- ☑ Training programs that help users understand IEC 61850 with a practical hands-on approach.
- ☑ Protocol source code for OEMs and custom developments
- ☑ Integration products that can leverage IEC 61850 across the enterprise using a service oriented architecture (SOA) based on IBM WebSphere.

Systems Integration Specialists Company, Inc.

## About SISCO



SISCO is an employee owned company founded in 1983 that is dedicated to applying standards to address real-world problems in the electric utility and industrial automation industries. SISCO offers real-time communications and application integration products and services that are used world-wide in many industries by leading OEMs, system integrators, and end users. SISCO's mission is to provide world-class, real-time communications and integration solutions to OEM and end-user customers in the energy utility, manufacturing, and other industries based on open internationally accepted standards.

- IEC 61850 for substation automation and wide area remedial action
  - Protocol source code
  - Off-the-shelf interfaces for OPC, SCADA/HMI and OSIssoft PI System
- ICCP-TASE.2 for intercontrol center communications and power plant dispatching
  - Programming toolkits and source code
  - Off-the-shelf interfaces for OPC, SCADA/HMI and OSIssoft PI System
- Utility Integration Bus (UIB) for integration of operational and business applications using the common information model (CIM) and standardized interfaces using middleware based on IBM WebSphere SOA

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