



The Standards Based Integration Company



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## UIB Adapter for use with OSIsoft PI System

## Integrating Network Models Into PI

### Description

SISCO's Utility Integration Bus (UIB) adapter for use with the PI System (PI) from OSIsoft combines the power of the OSIsoft world-leading platform for real-time performance management with the application integration and common information exchange model capabilities of SISCO's UIB. The UIB adapter receives modeling information, such as a network connectivity model typically maintained by a network modeling tool, EMS, DMS, or GIS system; and automatically configures the PI Analysis Framework (AF) for those points that are being historized by the PI Server. The UIB Adapter organizes the PI tags within the context of models familiar to the user such as EPRI's Common Information Model (CIM), existing models from other applications like GIS or EMS, or a user-defined power system model. Changes made to the connectivity model are delivered via the UIB to the UIB PI adapter, which automatically creates the PI AF entries, and PI configuration needed. The UIB and PI System provide a unique cost saving solution for electric utility users that minimizes manual reconfiguration and data handling.

### Features

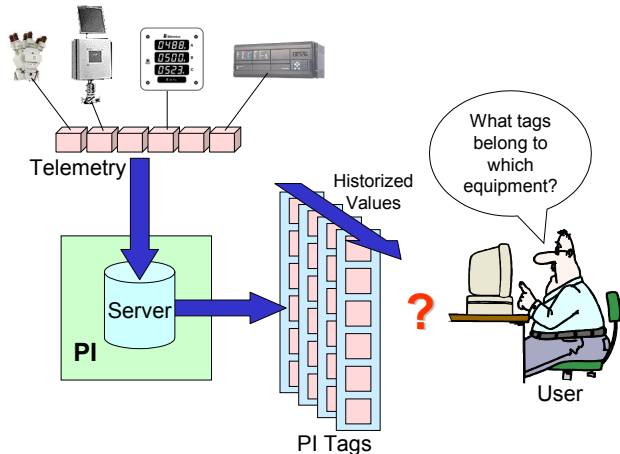
- ❑ Works with customer defined models, models derived from applications, or industry standard models such as CIM, IEC61850, ISA, etc.
- ❑ Imports XML model definitions and network connectivity information into PI AF.
- ❑ Can auto-create PI tag names based upon the model definitions.
- ❑ Supports model synchronization between the PI and the power system models in other systems to enable historization of these external model changes within the PI environment.



### Benefits

- ❑ View and search for PI tags within the context of familiar power system models.
- ❑ Facilitates the development of reusable analysis and display applications for PI ProcessBook™.
- ❑ Lowers configuration and maintenance costs by providing automatic configuration updates when changes are made to the system model.
- ❑ Provides a common integration framework that eliminates costly point-to-point data transformations and integration links.
- ❑ Leverages existing Enterprise Application Integration (EAI) and middleware products such as IBM WebSphere and others to provide maximum performance and flexibility for integration with other enterprise applications.
- ❑ Support for industry standard models and APIs reduces costs for integrating utility applications based on commercial EAI and middleware software.

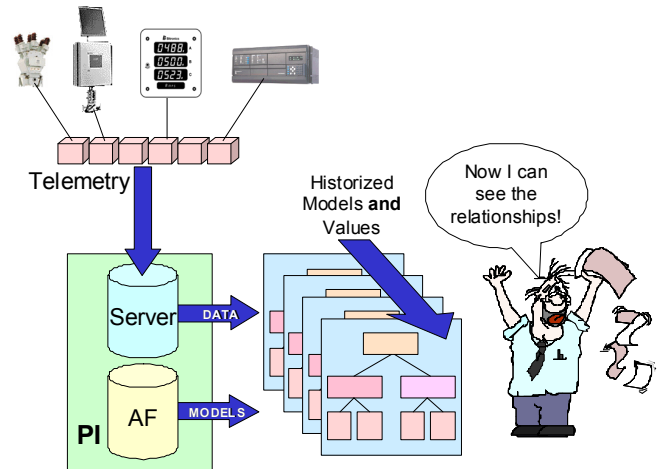
## The need to Organize Tags



The OSIsoft PI Server organizes data as an array of tags with history. Typically, users have developed their own customized naming strategies as a way of representing the relationship of one tag to another tag. The tag relationships and model information can be conveyed to the user of the information that understands this naming strategy. Relying solely on encoded tag names makes the resulting displays and applications more highly customized to that naming strategy. This can increase the complexity and cost of developing reusable generic displays and applications that make use of the information.

To illustrate this, imagine that a tag for status information associated with a breaker in an AIRPORT substation is given the PI Tag name of AIRPORT\_B1\_001. Another breaker in the same substation may have a tag name of AIRPORT\_B2\_003. Even though the tags represent the status of breakers, the unique names create difficulties in developing reusable generic breaker applications and displays.

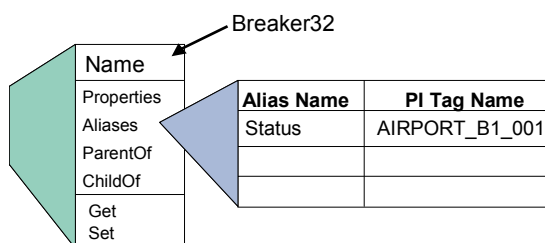
## PI Analysis Framework



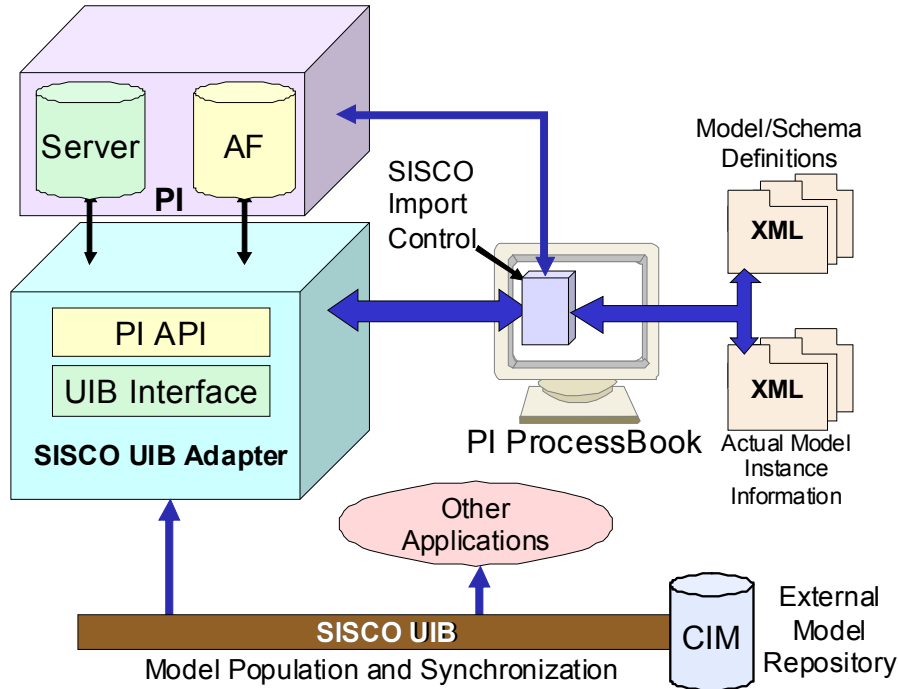
The PI AF Database allows model and relationship definitions to be defined. The SISCO UIB PI Adapter enhances the capability of PI through algorithmic and model centric population and maintenance of PI AF. The Adapter allows for model relationships based upon class hierarchy (e.g. a breaker is a type of switch) and instance relationships (e.g. a breaker contained within a given substation) to be visualized and maintained as part of the PI System.

The benefit, to the user, is that programming based upon prior knowledge is minimized. Consistent algorithms for displaying information (e.g. Status) can be programmed in PI ProcessBook instead of relying on hard coded tag names. This will significantly decrease application life-cycle costs (e.g. development, deployment, and maintenance) because it reduces the number of unique displays and applications that must be supported.

## Anatomy of a Model



Through modularization, object definitions are created for each equipment type (e.g. Breakers). Particular instances of breakers become PI AF objects with user assigned names (e.g. Breaker32) and an alias (e.g. Status) that can be referenced to the appropriate PI Tag. Using the alias allows applications to be written generically (e.g. for all breakers) without requiring the prior knowledge of the specific tags. The cross-referencing of the alias to the PI Tag can be done algorithmically resulting in a reusable generic display or application.



## How it Works

SISCO's UIB PI Adapter consists of: the adapter itself and an import tool. The software allows for model creation and maintenance in the PI AF automatically enabling standardized or customer defined models to be used.

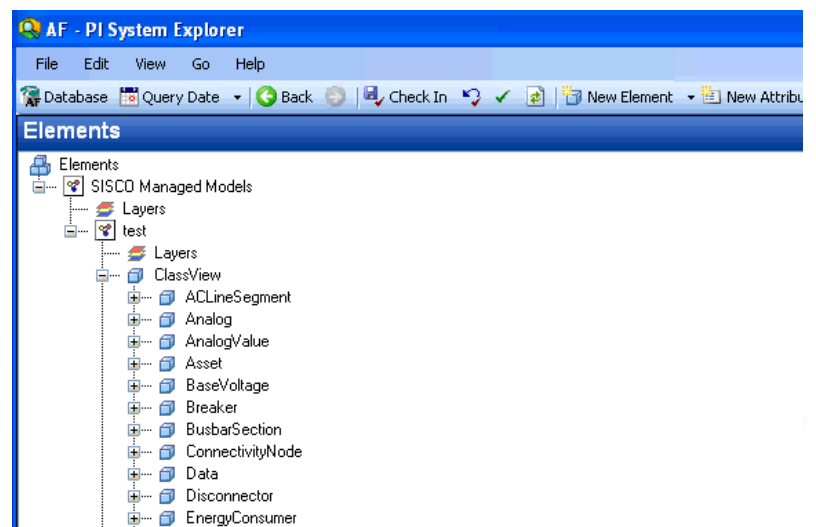
Manual model creation and maintenance is performed through the import of eXtensible Markup Language (XML) Resource Description Format (RDF) files whose format has been standardized within the

International Electrotechnical Committee (IEC). The two formats that have been standardized allow for schema/model definitions and actual object instance information to be conveyed using XML RDF.

Automatic model creation and maintenance is enabled through the use of SISCO's Utility Integration Bus (UIB). Using the UIB with the PI adapter allows changes made in an external model to be automatically delivered to AF and to other non-PI applications as well (e.g. network applications, GIS, EMS, and others). The model repository can contain model information relating to standard models (e.g. CIM, IEC, ISA, etc.), customer defined models or models residing in other applications such as GIS, EMS, PSS/ODMS, and other network modeling applications and tools.

## The Result

Users of PI AF, and other PI AF application tools, will have the ability to view the relationship between measurements and equipment based on the model. The SISCO UIB Adapter creates and maintains the various relationships specified by the model definition. As a result, it is now possible for a PI AF application to locate a transformer that is contained within a substation without having to know the PI tag in advance.



## About SISCO



SISCO, Inc. is a private company founded in 1983. Over the years SISCO has established itself as a leader in several technologies. Today our capabilities are used in a wide variety of industries from automotive manufacturing to electrical and gas power transmission, distribution and generation systems. We work with both end users and OEMs serving those end users. SISCO's ability to partner with other OEMs and integrators allows us to deliver more capabilities at a lower cost resulting in better solutions for you. Today SISCO has demonstrated leadership and capabilities to provide solutions in the following areas:



- Message bus based integration technology based upon advanced publish/subscribe and object oriented technology for enterprise integration of heterogeneous applications
- Real-time communications and networking based upon open, public, and international standards such as:
  - Inter-control Center Communications Protocol (ICCP) per IEC60870-6 TASE.2
  - IEC 61850 Substation Automation and Centralized Remedial Action Systems
- Unified Analytic Platform for PI providing high-speed analytic applications for:
  - Centralized Remedial Action Systems (C-RAS) for improved transmission line protection.
  - Real-time processing of PMU synchrophasor measurements for improved Wide Area Measurement Systems (WAMS)

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