



# Technical Application Integration (TAI<sup>®</sup>) Solution

## At a glance

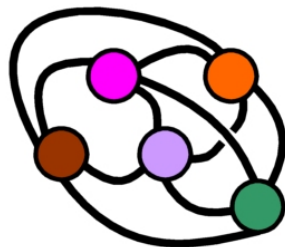
Today, diverse software applications must be designed to readily interchange many types of data. Ease of data transmission helps to eliminate both duplicate data and duplicate data management.

## The challenge

Large-scale application integration was begun in the 1970s and 80s and, within a few generations of progress, technology and processes have improved greatly. During this evolutionary period, three methodologies were landmarked: Point-to-Point, Database-Centric, and Model-Driven Integration.

### *Point-to-Point Integration*

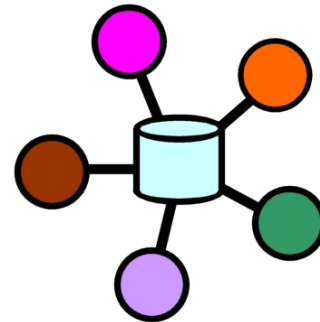
Based on the software tools available in the 80s, this integration method concentrated on writing discrete and specialized interfaces between applications sharing data. Many developed interfaces were based on flat-file exchange, and the implementation was coined "point-to-point integration." It resulted in the development and maintenance of special data converters used to bridge across different applications.



The resulting implementation, diagrammed at right, could be described as "spaghetti and meatballs." Though the system functioned, it was very expensive to maintain and install across all applications, in part because replacement or addition of any application required a complete interface rewrite!

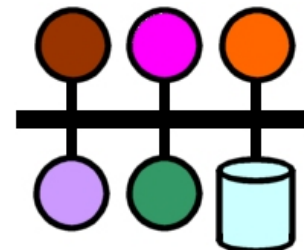
### *Database-Centric or Client-Server Integration*

The next attempt at data and application integration focused on creating one very large, centralized database to hold all data within an enterprise. This is alternately called a "database-centric," "client-server," or "lollipop" approach. Unfortunately, this process was also a massive undertaking.



Implementing a database-centric integration required identifying all of an enterprise's data, and then developing a single database to hold all the data. Each implementation was customized to a single site, to allow for the diversity of software and vendors represented within each individual enterprise. The process of Enterprise Resource Planning (ERP) generally relied on this integration configuration as its foundation.

### *Message Bus Integration*



More recent integration technologies take advantage of the strong points of the prior two methodologies, while recognizing their shortfalls.

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Message Bus Integration connects all software applications via a single, standard message bus; “adapters” link legacy code to the bus. The message bus can be considered a “virtual” in that it aggregates data into an environment in which all applications request data from the message bus in the same manner. Message bus transactions are transparent to the requesting application – the application simply sees its requested data after the message bus is queried.

Message Bus Integration features many improvements over prior integration strategies:

- Adapters between applications and the message bus are significantly less complicated than either a Point-to-Point implementation’s data converters or the Database-Centric Approach’s complex database construction.
- Message Buses are reusable.
- Message Bus implementation can be incremental, meaning it can be installed for just one or two applications at a time, reducing initial deployment costs.
- Message Bus technology conforms to modern industry standards, allowing the standards to affect efficiencies of implementations to lower prices of ini-

tial and continuing application integration work.

Under the guidance of EPRI, the electric utility industry has been working toward a “plug and play” environment in the electric utility operations centers. Development of the Common Information Model (CIM) was the first major step in creating the new environment, as it provides data representation for the technical data within an electric utility. The second major step involved defining the types of messages and the anticipated responses an application should encounter. This second step is the Generic Interface Definition (GID). Both the CIM and GID are now IEC international standards.

#### **Our solution**

The PSS®ODMS product line from Siemens Power Technologies International (Siemens PTI), the provider of network consulting, software solutions and T&D training in the Siemens Energy Sector, uses the CIM and GID at its core to provide integration of our PSS® software. Siemens PTI provides services to our clients based on these same technologies to integrate other software to the PSS®ODMS integrated CIM and GID architecture.

PSS®ODMS with message bus architecture is an integration platform that serv-

ing numerous clients through integration of diverse technical applications within the electric utility.

The Technical Application Integration (TAI®) solution offers PSS®ODMS clients the ability to efficiently integrate their technical applications, with all the benefits of the message bus integration methodology. The Siemens PTI TAI® solution uses industry standards throughout, resulting in reduced need for future software purchase, installation, and maintenance costs, as well as eliminating vendor “captivity” when replacing software applications in the TAI® environment.

Siemens PTI is the best qualified organization to perform your TAI®:

- Our 35+ years of consulting and software data experience. We know your data because we know your technology, unlike an independent software house.
- Our commitment to our client base to provide quality technical software and integration tools for engineering.
- Our commitment to maintaining and evolving industry standards throughout our TAI® processes, providing a platform that can grow with your needs well into the future.

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Siemens Energy, Inc.,  
Power Distribution, T&D Service Solutions  
Siemens Power Technologies International  
400 State Street  
PO Box 1058  
Schenectady, NY 12301-1058

[www.siemens.com/energy/power-technologies](http://www.siemens.com/energy/power-technologies)

Siemens AG  
Energy Sector  
E D SE PTI  
Freyeslebenstrasse 1  
91058 Erlangen, Germany

Siemens Transmission and Distribution Ltd  
PTI  
Sir William Siemens House, Princess Road  
Manchester, M20 2UR  
United Kingdom

For more information, please contact  
our Customer Support Center.  
Phone: +49 180 524 70 00  
Fax: +49 180 524 24 71  
(Charges depending on provider)  
E-mail: [support.energy@siemens.com](mailto:support.energy@siemens.com)

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