

ConductorTM



A Solution for Total Business Integration in the Utility Industry



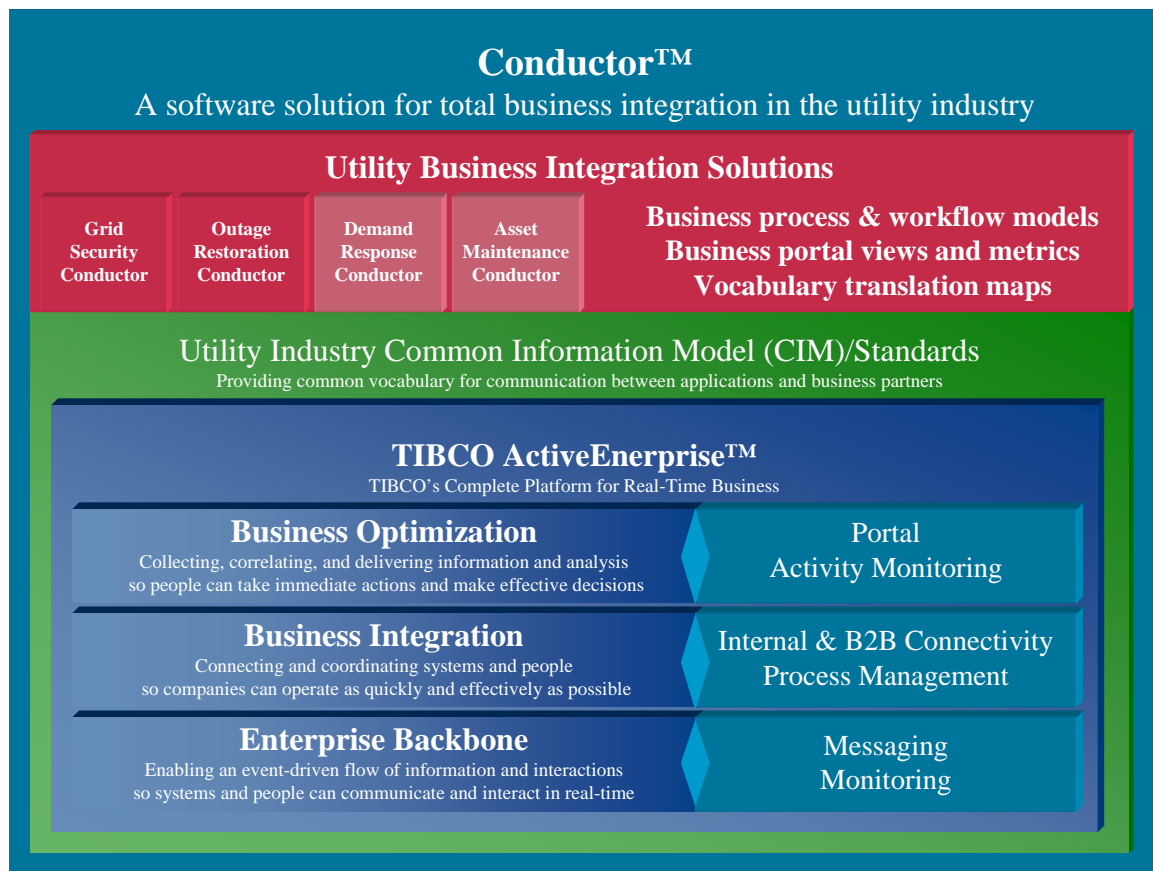
A Solution for Improving Performance through Total Business Integration

Conductor™

UISOL **Conductor™** solution enables (electric) utilities to increase performance through total business integration¹. By enabling better communication and coordination among people, computer applications, and supply chain partners, **Conductor™** helps utilities improve key business processes and workflows to reduced cost, higher reliability, increased customer satisfaction, and enhance regulatory compliance.

Conductor™ is built on the leading total business integration platform ActiveEnterprise™ from TIBCO Software, Inc. (www.TIBCO.com), and the utility industry Common Information Model (CIM)². Leveraging TIBCO™’s service oriented architecture, **Conductor™** “orchestrates” web services integration of CIM-based XML documents and efficient execution of business services in the utility industry.

UISOL is currently building a number of pre-configured and reusable business process templates and portal views for **Conductor™** in two important application areas: 1) grid security coordination and 2) outage restoration. Other important utility business processes such as demand response and reliability centered asset maintenance are also planned.



¹ Ali Vojdani, “Tools for real-time business integration and collaboration”, invited paper, IEEE PES Vol. 18, No. 2, Special issue on Tools for Managing Restructured Energy Systems, pp 555-562, May 2003.

² See the official CIM website hosted by UISOL at <http://cimuser.com>.

The Need for Total Business Integration

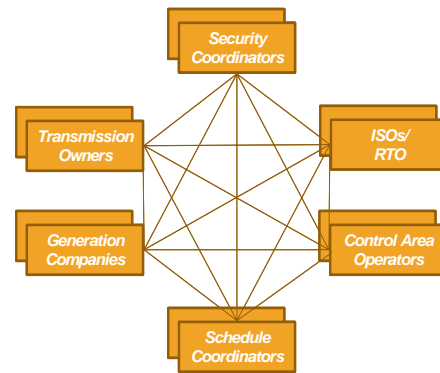
Leading utility companies continuously improve their key performance indicators related to costs, reliability, customer service, safety, and regulatory compliance. To that end, they search for effective ways to streamline and automate the underlying business processes such as transmission grid security assurance, outage restoration, asset maintenance, and demand response.

To manage business processes efficiently, utilities deploy a number of computer systems including Energy Management System (EMS), Call Centers, Customer Information Systems (CIS), Asset Management, Supervisory Control and Data Acquisition Systems (SCADA), Outage Management Systems (OMS), Mobile Workforce Management Systems, Geographical Information Systems (GIS), and Load Management Systems (LMS). Each system provides specialized applications according to its particular role in the business process. Typically these systems are not all acquired from the same vendor, they speak incompatible vocabularies, they are not interfaced with one another, and they may be running on different computer platforms.

Efficient management of a business process, however requires automated and seamless flow of information from one system to another, coordinated executions (i.e., proper sequence of execution) of the applications in all systems involved in the process, as well as streamlining the workflow between these applications, employees and external entities. As an example, the outage restoration process involves various manual and computerized tasks to detect outages, log each event, manage customer trouble calls, issue trouble tickets, analyze outage events and trouble tickets, identify remedial actions, schedule repair work, restore service to customers, and report on each event. The outage restoration process can be significantly improved through computer-aided integration of these tasks as it is demonstrated by a number of real-life implementations at leading utilities³. Many utilities develop point-to-point interfaces among the various systems, and code customized applications to execute these various outage management tasks. Developing these interfaces and codes are costly. Once developed, they are also difficult to change and expensive to maintain. Application of business integration platforms that provide tools for Enterprise Applications Integration (EAI), Business-to-Business integration (B2B), Business Process Management (BPM), Workflow automation, portal building, and Business Activity Monitoring (BAM) have proven far superior results.

Some business processes in the utility industry, like security coordination or demand response, involve extensive communication and coordination (i.e., collaboration) among the electricity supply chain members. As an example, utility transmission operators need to efficiently communicate and coordinate certain measurements and events, such as real-time conditions and equipment outage schedules, to scheduling coordinators, independent system operators (ISOs), and regional security coordinators to assure security of the (transmission) grid. Such real-time collaboration over a wide geographic area is essential for reducing the risk and impact of power outages and blackouts. The need for real-time wide-area collaboration is becoming increasingly critical given the current historical low levels of transmission margins and the heightened risks of terrorist attacks on the utility industry infrastructure.

Grid Security Communication and Coordination



UISOL Conductor™ provide utilities with a powerful software platform that could help utilities to integrate and improve key business processes such as security coordination, outage restoration, demand response, and asset maintenance.

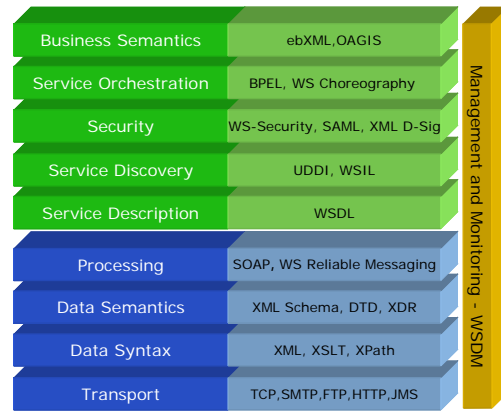
³ See 1/21/2004 Nexant/UISOL press release regarding integration of outage management processes at PG&E.

TIBCO™'s Standards-Based Web Services Platform

Conductor™ Solution Architecture

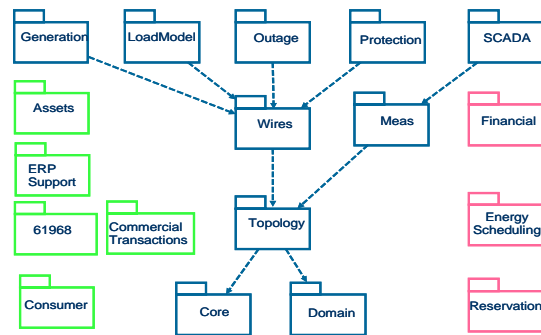
UISOL Conductor™ software solution is built on TIBCO™'s standards-based web-services platform for real-time business, which includes proven capabilities for Enterprise Application Integration (EAI), Business to Business (B2B) integration, business process automation, workflow management, enterprise portal, and infrastructure monitoring. It is the only solution on the market that automates the workflow and processes for key business processes in the utility industry such as unplanned and planned outage management, and then monitors them in real-time and provides a business cockpit view of the events. As workflow and processes execute, information moves to and from disparate computer systems including:

- Call management systems
- Energy Management System
- Supervisory Control and Data Acquisition (SCADA) systems
- Outage management systems (OMS)
- Geographic information systems (GIS)
- Mobile dispatch and work management systems
- Asset management systems
- Supply chain partners (e.g., Service providers, ISOs)



UISOL Conductor™ software facilitates total business integration in the utility industry by providing a framework for integration of complex utility industry business process and workflows through an orchestration of web-services. TIBCO™ Rendezvous message bus is used to implement a utility message bus based on publish-subscribe messaging technology. The software guarantees transaction security, integrity, and reliability, scalability and flexibility of solution, reduces programming efforts through use of proven, advanced development tools and reusable components, provides advanced data transformation, and provides automatic load balancing and fail-over system support.

The solution employs the utility industry Common Information Model (CIM) to represent the business objects and events. CIM provides a consistent and comprehensive information model for the electric utility industry that is receiving broad acceptance among utilities and vendors for many applications. The CIM integration is accomplished through the use of the International Electrotechnical Committee (IEC) 61968 specification, which defines XML schemas for definition of messages exchanged between cooperating systems⁴.



A key feature of the solution is a growing set of reusable, pre-configured components for total business integration in the utility industry. This set of reusable components includes utility industry specific business process and workflow templates, and cockpit views. This feature is currently being demonstrated for a select set of business processes in the utility industry related to Grid Security Coordination and Outage Restoration. A number of commercially available applications from Proactive Systems, Inc. are used for demonstration purposes. UISOL plans to continually expand these reusable components by increasing the scope of the utility business processes business and applications that are addressed, driven by customer demand. Business processes related to Demand Response and Reliability-Centered Maintenance (RCM) are likely to be addressed next.

⁴ S. Neumann et al, "CIM Extensions to Electrical Distribution and CIM XML for the IEEE Radial Test Feeders", IEEE PES

Solution Benefits

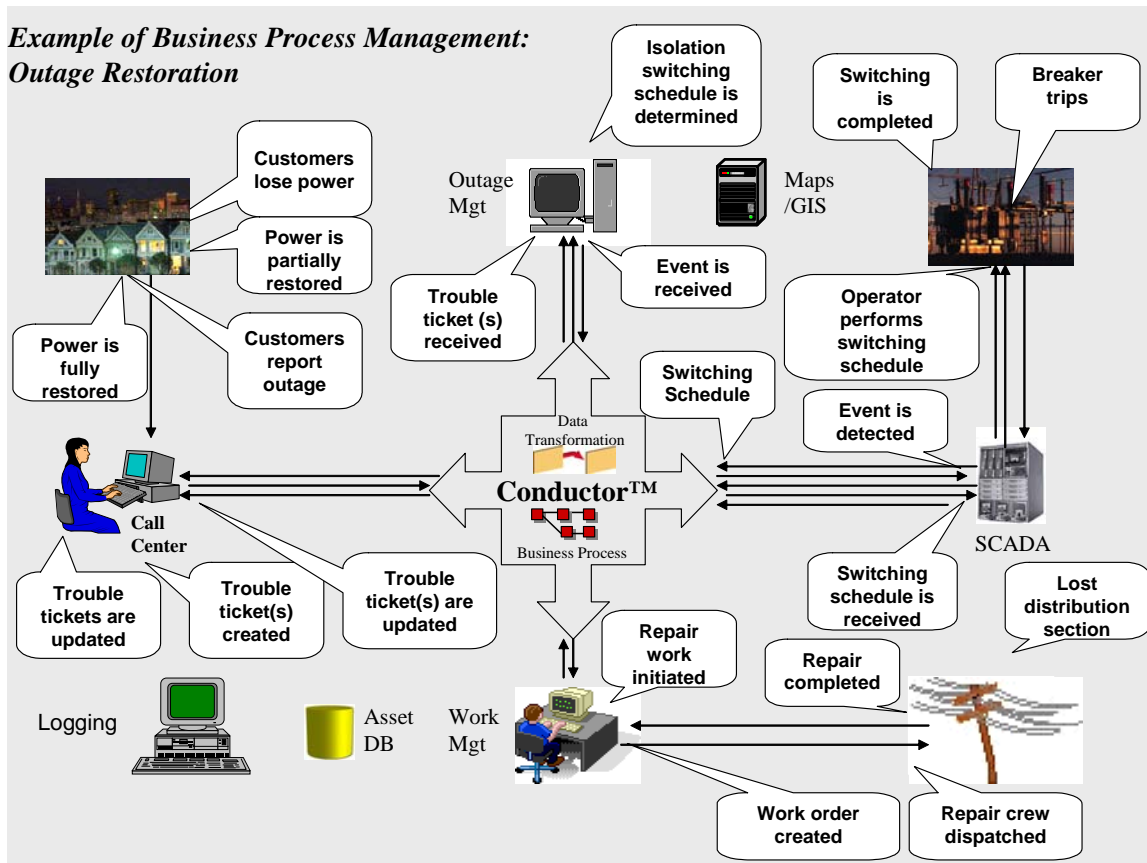
By applying **Conductor™** software solution, utilities will be able to simplify automation and monitoring of workflow and processes for some of the key business processes in the utility industry such as security coordination, outage restoration, demand response⁵, and maintenance management. This in turn can result in the following benefits:

- Improved customer satisfaction
- Reduced costs
- Increased reliability
- Improved accuracy
- Increased regulatory compliance/lower penalties
- Enhanced employee satisfaction
- Reduced training time for new employees
- Feedback for improving existing processes

The flexible service-oriented architecture of **Conductor™** brings about the following additional benefits:

- Reduced IT implementation time and costs
- Reduced IT maintenance costs
- Scalable and flexible solution that can accommodate growth and change

**Example of Business Process Management:
Outage Restoration**



For Additional Information

To see a demonstration of **Conductor™** or for additional information, call UISOL at 925-939-0449, or visit www.uisol.com.

⁵ Ali Vojdani, "Building an infrastructure for demand response", *Power Economics*, Volume 5, Issue 9, October 2001.