

# RTI in Energy



Empowering Distributed Energy Solutions of Tomorrow



The power and utility sector is witnessing significant disruption and changes in policy, technology, and customer requirements. The Industrial Internet of Things offers the energy industry an opportunity to deliver on the promise of smart energy. Industrial-strength data sharing can improve power generation and distribution and enable the efficient use of renewable energy resources at large scale. RTI Connex<sup>®</sup> DDS leads the way.

## Industry Trends and Opportunities

The oil and gas industry is facing two fundamental business challenges that create a transformative opportunity for technology innovation.

The first one is related to the current reduced demand for oil resulting in lower oil price. This trend generates the need for operational expenses reductions and for increase in efficiency and profitability. Some of the current inefficiencies stem from the disconnection and isolated nature of equipment used in the oil fields and on the oil rig. The equipment used for oil explorations, drilling and pumping currently generates a lot of data, but this data is very siloed and is not leveraged to improve operational efficiency.

The second challenge, often referred to as "the great crew change", is related to the fact that much of the personnel, including engineers and technicians, currently employed in drilling and other field operations, is getting close to their retirement age. This leads to potential shortage of qualified workforce in the industry in the near future. This trend drives a need for equipment modernization and greater process automation.

## The Value of Industrial IoT

The Industrial IoT offers a unique opportunity to effectively address the business realities of shrinking oil prices and upcoming shortage of qualified technical personnel.

IoT can help gather data from isolated field equipment. It also enables turning data into actionable information and using this information in intelligent systems, such as process control and to create operational optimization and improve efficiency. This will help make the field operations more streamlined, reduce costs and increase profitability. It will help mitigate the current shrinking profits and prepare the companies for the cyclical jump in oil prices in the long term. The IIoT systems also excel in industrial automation and predictive maintenance, domains, which, in addition to cost savings, can generate new revenue streams by offering innovative services.

The industry thought leaders are already funding efforts to leverage the IIoT value. One such example is a collaboration between ExxonMobil and Lockheed Martin, the next-generation open and secure automation initiative. The project will design a new architecture to control and optimize refining and chemical manufacturing facilities, while enabling future equipment and information services such as preventative maintenance and fleet optimization.

## Developing New Smart Grid Architecture



Traditional central-station power grids operate on 15-minute output update cycles that result in operators over-generating power to compensate for variation in power generation or demand. To efficiently integrate distributed energy resources, the grid needs fast-reacting intelligence at the edge.

RTI is collaborating with other members of the Industrial Internet Consortium (IIC) to introduce the flexibility of real-time analytics and control into power grids and ensure that power is generated more accurately and reliably to match demand. IIC's Communication and Control Testbed for Microgrid Applications will re-architect the power grid system into a series of distributed microgrids that control smaller areas and support load, generation, and storage. These microgrids will enable efficient integration of solar and wind into the grid, creating a dynamic, open marketplace for smart grid vendors. RTI is proud to lead this effort to create power grid of the future.

## Accelerate Grid Modernization



RTI is also a member of the Smart Grid Interoperability Panel (SGIP), whose OpenFMB™ (Open Field Message Bus™) Priority Action Plan applies Industrial Internet technologies and techniques to enable the Smart Grid. The Priority Action Plan will develop a smart-grid framework to enable combining solar, wind, and storage into an efficient, secure, flexible architecture for Distributed Energy Resources (DERs). DDS powers the current OpenFMB information-sharing implementation.

## Ensure Critical Infrastructure Availability



The largest power plant in North America has replaced its SCADA control system with RTI Connex DDS. The aging, monolithic SCADA system was no longer effective at meeting today's important requirements – extreme availability, fault tolerance, performance, security, and ability to implement wide-area communications.

The new, DDS-based control system is modern, distributed, secure, and very reliable. Compared to the old SCADA system, it's smarter, more efficient, and easier to evolve. Also, because it's based on modern networking protocols, the new DDS design can leverage new technology as it becomes available, such as cloud computing, connectivity, and security.

## Find and Delivering the Right Data



Siemens Wind Power, one of the world's largest wind turbine manufacturers, uses RTI Connex DDS to integrate its entire farm. Wind turbine farms can include as many as 500 turbines with 100-meter blades. Turbine control requires fast local loops and maintenance data collection. Gust control across the array necessitates fast communications with dynamic, selective filtering.

RTI Connex DDS provides fast, reliable connectivity across Siemens' many turbines. With Connex DDS, a Siemens Wind Power farm optimizes power, monitors its own health, and reacts to its environment by capitalizing on the power of the Industrial IoT.

## About RTI

Real-Time Innovations (RTI) is the Industrial Internet of Things (IIoT) connectivity company. The RTI Connex® databus is a software framework that shares information in real time, making applications work together as one, integrated system. It connects across field, fog and cloud. Its reliability, security, performance and scalability are proven in the most demanding industrial systems. Deployed systems include medical devices and imaging; wind, hydro and solar power; autonomous planes, trains and cars; traffic control; Oil and Gas; robotics, ships and defense.

RTI is the largest vendor of products based on the Object Management Group (OMG) Data Distribution Service™ (DDS) standard. RTI is privately held and headquartered in Sunnyvale, California.



CORPORATE HEADQUARTERS  
232 E. Java Drive  
Sunnyvale, CA 94089  
Tel: +1 (408) 990-7400  
Fax: +1 (408) 990-7402  
[info@rti.com](mailto:info@rti.com)  
[www.rti.com](http://www.rti.com)