

# *Sully Station Solutions*



## **The Value of the Industrial Internet of Things**

In the harsh and unforgiving tunnels of the Dundee Precious Metals gold mine in Chelopech, Bulgaria, radio tags in helmets and vehicles deliver a constant stream of data to the mine safety operations center. That data populates a 3D map giving safety officers an immediate and intuitive view of the location of all mine workers.

In Stockholm, Sweden, medical device manufacturer Elekta installs advanced systems for treating cancer and brain disorders at more than 6,000 hospitals around the world. More than 80% of these installed devices now transmit usage data back to Elekta, feeding a predictive maintenance program that anticipates failures before they happen, reducing disruptions to patient care and total lifetime costs.

In rice fields across Malaysia, hundreds of sensors attached to irrigation gates send water level, temperature and flow rate data to the Ministry of Agriculture. This information is analyzed and made available to farmers to support both day-to-day optimization of irrigation water usage and rapid responses when water levels become dangerously high.

### **A New Industrial Revolution**

In every corner of the world, new technologies are transforming the face of industry, often in surprising ways. Known variously as the Industrial Internet of Things (IIoT), the Industrial Internet, or Industry 4.0, these changes are making companies more competitive, cities more efficient and workers more safe and productive.

Like its counterpart in the consumer realm, IIoT is the collective term for technologies that network physical objects such as clothing, vehicles, medical devices and manufacturing equipment. Sensors embedded in these objects gather often complex information and then transmit that information to central computers where it can be analyzed and used to drive decision making.

### **Enabling Technologies**

The IIoT revolution currently underway is enabled by advances across a broad range of hardware and software technologies. On the hardware side, sensor designers can leverage the benefits of the same dizzying march toward miniaturization and ultra-low power consumption that has fueled the development of smartphones - complete with their requisite cameras, touchscreens, tilt sensors and GPS units. Small, powerful sensors can now be placed virtually anywhere and run for years on a small battery. Some sensors are even able to operate without batteries, harvesting ambient power directly from radio signals.

Meanwhile a host of software platforms are giving businesses the tools they need to make sense of all the data. At the most basic level, IIoT software provides for connectivity among the diverse devices that might be deployed within a manufacturing plant or across a city, making sure that when a device phones home, the call is answered. But basic connectivity is just the beginning. Once the data from these devices is gathered, it is sliced, diced and analyzed using statistical and optimization tools, and must then be repackaged and delivered to end users in a format that enables them to understand the results and take action.

### **Real Gains and Savings**

The payoff for industrial investment in these technologies can be staggering. Manufacturing facilities routinely report productivity gains of up to 30% after successful IIoT initiatives. Firms that adopt predictive maintenance systems can see equipment failure reduced by as much as 70%. Across the global economy these gains and savings add up. A recent analysis from consultants McKinsey & Company estimates the total economic impact of IIoT initiatives could be up to \$11 trillion by 2025.

With IIoT playing a growing role in so many business and public venues, traditional sector-by-sector approaches to discussing trends begin to lose their meaning. Technology analysts have identified three broad cross-sector categories to apply when they discuss the business value of IIoT: operational efficiency, energy management, and predictive maintenance.

### **Operational Efficiency & Effectiveness**

Perhaps the most intuitive and straightforward of IIoT's impacts can be found on the factory floor where bottlenecks and inefficiencies crush productivity and drive up costs. Poor process in the manufacturing environment can lead directly to unnecessary overtime expense. Poor supply control can disrupt the entire production chain leading to delays and lost revenue. When manufacturers implement IIoT enhancements they see faster production cycles, reduced labor costs and double-digit increases in operational efficiency measures.

### **Energy Management**

Energy is the lifeblood of industry. Office lighting, computers, heating, cooling, and major equipment drive fuel and electricity consumption that can easily account for 20% or more of a company's operating budget. While the price of energy is outside the control of the industrial consumer, smart systems that monitor usage can help get a grip on those costs. IIoT technologies can easily create a double-digit reduction in consumption. Many firms see an energy related IIoT investment pay for itself in less than two years.

### **Predictive Maintenance & Controls**

Predictive maintenance programs are the quiet tsunami of IIoT. When equipment fails, the results can range from a costly inconvenience to a human catastrophe. The software industry has made tremendous strides in the application of machine learning techniques to analyze data and make maintenance decisions that are fully informed by the history and current state of the equipment in question.

Failure-prone parts on a piece of equipment are monitored, enabling technicians to intervene at the first sign of trouble. Historical data is aggregated to develop more effective maintenance schedules that keep equipment running in top form and reduce the total cost of ownership.

Predictive maintenance programs are also opening new lines of business for the equipment manufacturers that embrace them. Rather than playing defense by responding to equipment failures as warranty work and expensive emergency service calls, innovative firms are developing proactive services that add value for their business customers, increase customer satisfaction and create new revenue streams.

### **Just Getting Started**

As exciting as these IIoT developments might seem, it's important to note that the next industrial revolution is just getting started. As current trends continue, we can expect a greater variety of inexpensive, easily deployable sensors, accompanied by more intuitive and complete software platforms. In just a few years, maintaining a factory supply inventory or a vehicle fleet without IIoT will seem as antiquated and inefficient as maintaining a payroll system without software does today. Regardless of your sector, if your organization has not started down the IIoT implementation path, the time to start is now to remain competitive and maintain growth in the new industrial paradigm.