

Standards Interoperability Breaks Silos In Operating Facilities

By Gary Mintchell, The Manufacturing Connection

The problem in operating facilities no longer lies in getting data. Nor is there a problem with not enough IT and data standards. The problem remains that so much data resides in silos of applications and databases. These may all comply with one data standard or another, but those standards sometimes actually conflict with each other. The Internet of Things and more powerful databases may provide floods of additional data, yet managers still are searching for information that will aid decision-making and improve performance.

In a word, the problem is lack of interoperability in both IT and systems. The solution is a systemof-systems interoperability architecture—the Open Industrial Interoperability Ecosystem (OIIE).

John Palfrey and Urs Gasser, writing in *Interop: The Promise and Perils of Highly Interconnected Systems*, said, "Higher levels of interoperability can lead to systemic efficiencies. The greatest beneficiaries of interoperability are often business operations that use it to streamline their processes and manage costs."



Silos

Owner/operators recognize that they are in a bind. Custom integration of data horizontally across the horizontal plant lifecycle does not work in the long run, not to mention its expense. They have turned to technology suppliers, but the solution requires a larger industry effort.



A Manufacturing Connection White Paper

The figure above shows the problem of passing data from system to system. The problem is both **IT interoperability**—getting the data to flow, and **system-to-system interoperability**—getting the entire facility operations to work together.

The **OpenO&M Initiative** formation was driven by this need for achieving interoperability among open standards that, at the same time, allows for use of Commercial Off The Shelf software and solutions from the various technology suppliers. Founding members included **ISA** (88 and 95 committees), **MESA International**, **MIMOSA**, and the **OPC Foundation**. Other organizations that joined in the work include **Fiatech**, **POSC Caesar Association**, and **Professional Petroleum Data Management Association**.

The work has culminated in the **Open Industrial Interoperability Ecosystem (OIIE)**. This ecosystem explains how the various standards are used together to support systems, communications, and applications interoperability employing a system-of-systems approach. It builds upon existing standards and describes how to make them work together.

The OIIE is well-documented and available for use by technology providers/suppliers and by owner/operators. Responses for quotations are, in fact, in process using OIIE.

Continuing work on the OIIE involves continued development of Use Cases and Scenarios to more fully extend the architecture. Scenarios are intended to include sufficient detail to let them stand on their own as re-usable, interoperable building blocks, which can be implemented in COTS products.

Reduce Capital and Operating Costs

The centerpiece of the OIIE Systems Architecture is the OpenO&M Information Service Bus Model (ISBM)—also described in ISA 95-Standard for Enterprise Control System Integration. The ISBM specification can handle the arbitration for Layer 3 related activities, and it is, in fact, a series of open APIs.

Importantly, the business process itself is not standardized by the OIIE. No attempt is made to require either proprietary application software or a plant's business process to conform to a standard.

Standardization allows industries to collectively reduce capital and operating costs as well as risks, because software required to support the OIIE can be written and, more importantly, maintained by software suppliers rather than owner/operators.

OGI Pilot Demonstrates Success

So, does this actually work?

Twelve technology suppliers, universities, standards organizations, and owner/operators worked together to construct a pilot of a debutanizer project. The **Oil & Gas Interoperability (OGI) Pilot**— an instance of the **Open Industrial Interoperability Ecosystem (OIIE)**—demonstrated the feasibility in action of a continuous handover from design to operation and maintenance of a debutanizer.

The OGI Pilot environment continues to be updated with more data sets and scenarios to more fully represent a real capital asset flowing through its entire lifecycle. Owner/operator specific proofs of concept have also been successful as they prepare to move to production implementations.

Owner/operators involved in the project have already found value in the work as it encompasses asset integrity management and operational risk management.

Future technical white papers will expand description of OIIE, and address the asset performance, automation and control, and engineering information management communities.