The big challenge for manufacturers is to find a way to not only provide interoperability between plant floor and enterprise, but also to provide a link between multiple generations of legacy automation products.
placement, diagnostics or audit trails, all of which are building blocks in modern field device management systems. OPC-UA provides a uniform, standards-based protocol for transparency, integration and a central view of all data and functions from the plant floor to the enterprise. To achieve this, OPC incorporated with IEC 61804-2 Electronic Device Description Language (EDDL) to provide the “how” for moving the data.

**What Is EDDL**

EDDL is a text-based language for describing the digital communication characteristics of intelligent field instrumentation and equipment parameters, such as device status, diagnostic data, and configuration details, in an operating system and human machine interface (HMI) neutral environment. EDDL technology was designed to avoid the need for special, proprietary, and operating system-specific host application files. It allows a host system to both configure as well as monitor devices on-line. EDDL consists of two parts: a file (EDD) that describes the device and the information that it contains, and a host application that reads the EDD file to learn how to retrieve and interpret digital information from the device. Because EDDL is an open technology with international standard status, it can be applied to any device and any fieldbus protocol. The EDDL technology enables the creation of a single engineering environment that can support multiple devices from many suppliers using various communication protocols.

**EDDL’s Role in OPC-UA and Legacy Devices**

In February of 2005, the OPC Foundation joined Foundation Fieldbus, PROFIBUS, and HART Communications Foundation to standardize and enhance the functionality of EDDL technology. A primary goal of the alliance was to extend EDDL’s reach into the OPC-UA. The EDDL benefits from this collaborative effort are independence from operating systems, DCS platforms, and communication systems. EDDL enables legacy devices to be plugged into OPC-UA components and provide information and full
services for reading, writing and exception-based notification as well as basic functionality of diagnostics, data acquisition, and alarm and event based notification. The second phase of the development agreement between OPC and EDDL continues to enhance the delivery of critical data from the device, and provide a standard and consistent structure for data transport within the OPC-UA. The result will be a simple approach to access and distribute performance measurements and data. Manufacturers can take advantage of increased system interoperability and cost-effective control system integration.

There are more than 100 different suppliers of field devices and automation components all over the world that currently support EDDL for their respective devices. With the OPC Foundation’s Unified Architecture collaboration with EDDL, program and application information about a device can be obtained and acted upon appropriately. This is especially critical as more and more technical functions are moving from the controller to the remote devices.

**The Role of OPC-UA in Legacy Device Connectivity**

The OPC Foundation’s Unified Architecture is designed to bridge the integration gap between legacy and state-of-the-art automation products, including legacy products that have not been integrated via existing OPC standards such as OPC-DA. A vision of the OPC Foundation Unified Architecture is to provide interoperability technology for automation products deployed today as well as future automation products. One application that requires interoperable solutions from multiple generations of automation products to the enterprise is asset management. Asset management systems can access generations of automation products.

Fundamental services of the OPC Foundation Unified Architecture include services for discovery and interpretation of the descriptive information associated with all devices from the plant floor. This set of services facilitates
the manufacturers’ ability to calibrate instruments, diagnose problems, provide data for interface displays, identify process alarms, and obtain information for high-level software, bridging the gap to the enterprise applications. When legacy devices on the plant floor are plugged into the system, OPC client applications will provide a configuration interface to operate on the values and variables associated with the legacy device. OPC-UA will provide base services for exception-based information exchange between the legacy device and the OPC application on the host system. This will enable a legacy device connected by an OPC-UA server application and allow it to communicate with another legacy device that is also connected by another OPC-UA server application.


**Recommendations**

- Manufacturers should deploy OPC-UA as a solution to provide interoperability between the multiple generations of legacy automation products that are operating on their own plant floors.

- Manufacturers should be actively involved with the OPC Foundation to ensure that the OPC-UA specification takes into account their issues of multiple generation legacy interoperability.

- Automation suppliers should look to OPC-UA to help them deal with the issue of providing interoperability solutions between the multiple generations of their own legacy products that they must support.

- Manufacturers should specify OPC-UA as a requirement for future automation and interoperability projects, and automation suppliers should be asked to describe their competency in this new technology.

*For further information or to provide feedback on this Insight, please contact your account manager or the author at cresnick@arcweb.com. ARC Insights are published and copyrighted by ARC Advisory Group. The information is proprietary to ARC and no part of it may be reproduced without prior permission from ARC.*