

OPC-UA, Linking the Legacy

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Keywords

OPC Foundation, Unified Architecture, OPC-UA, Legacy, EDDL

Summary

Dealing with multiple generations of automation products is an issue that affects all manufacturers whose plants are not brand new, regardless of revenue, profitability, industry, application or geography. State-of-the art automation products may be continuously added or used to replace legacy automation products wherever an appropriate business case can be made.

However, wherever an appropriate business case has yet to be made, most

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manufacturers can point to legacy automation products that were purchased in the 1990s, 1980s, or before running flawlessly in their plants. Even if these legacy products are so old that they are no longer supported by their manufacturer or spare parts are no longer available through traditional channels, these manufacturers turn to eBay or other

outlets as an MRO source for these products, further extending their lifecycle. This creates a big challenge for manufacturers 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. The OPC Foundation is addressing this challenge with their soon to be introduced OPC Unified Architecture, or OPC-UA.

Analysis

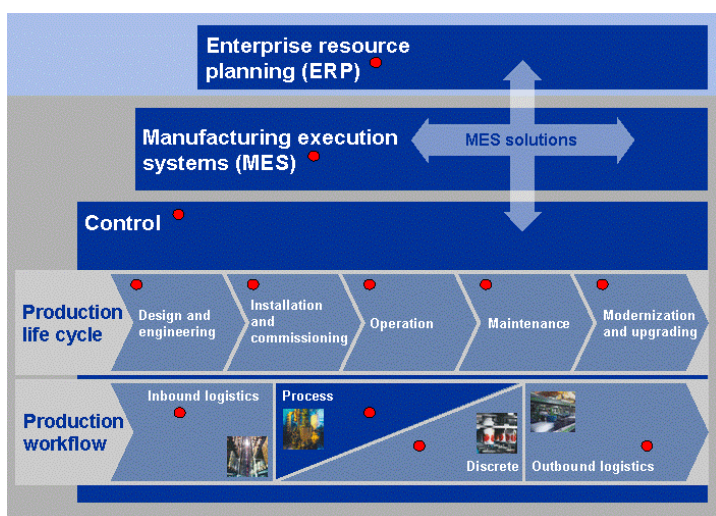
The OPC Foundation's Unified Architecture is a technology driven by the trend on the plant floor towards decentralization and interoperability. OPC recognizes the need for technology that automation suppliers can employ in pursuit of universal, standardized and interoperable solutions to comprehensively describe automation components. This technology is also deployed by manufacturers to perform device configuration, device re-



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.



● Applications Where OPC-UA and EDDL Collaborate

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

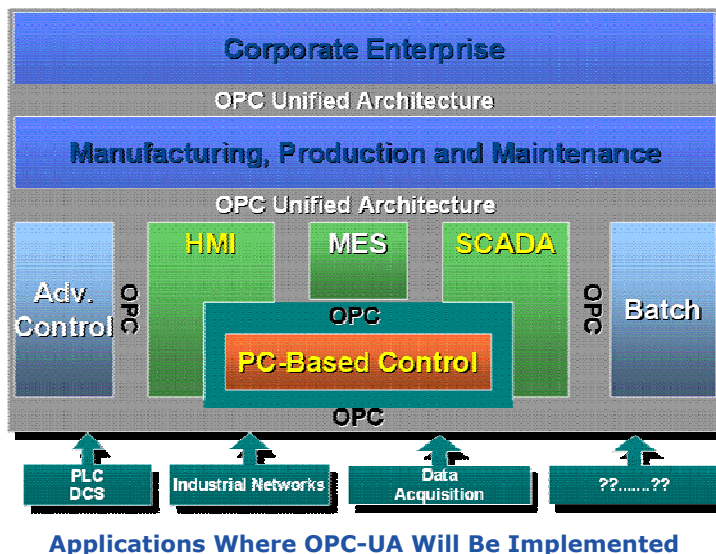
In February of 2005, the OPC Foundation joined Foundation Fieldbus, PROFIBUS, and HART Communications Foundation to standardize and enhance the functionality of EDDL technology. A primary goal of the alliance was to extend EDDL’s reach into the OPC-UA. The EDDL benefits from this collaborative effort 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.

OPC-UA will be released at ARC's 14th Annual Forum, Driving Enterprise Performance through Next Generation Manufacturing Concepts, held June 26-28, 2006 in Boston, MA. For more info: www.arcweb.com.

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.

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