The Language of Device Integration

Why four major user organizations are advancing device integration using EDDL, while cooperation with other field device technology proponents is being investigated.

The Electronic Device Description Language (EDDL) allows integration of all devices uniformly into a control system—from a simple sensor up to a complex drive. Furthermore, the device description provides information on maintenance and diagnostic functions of a field device, and serves as an electronic data sheet. New device, maintenance, and diagnostic functions can be integrated with little effort and at any time into the EDD.

While there are other device integration methods available, four industry heavyweights have thrown support to EDDL. Fieldbus Foundation, HART Communication Foundation, and Profibus International formed the EDDL Cooperation Team (ECT) four years ago. Two years ago OPC Foundation joined the ECT after recognizing the benefits of using EDDL as a descriptive technology in its new open interface, OPC UA (Unified Architecture). And most recently, the EDDL representatives are meeting with supporters of another industry field device technology (FDT Group) to investigate cooperation.

The ECT’s objective is to maintain convergence of common elements as further improvements to EDDL are developed. As part of that, EDDL specifications were submitted to the IEC (International Electrotechnical Commission) and adopted as an international standard, IEC 61804. Future improvements to EDDL will also be submitted to the IEC for adoption.

The EDDs of individual devices can be implemented rapidly and simply by any vendor on the basis of standard IEC 61804-3. Following “translation” of the EDD by the interpreter for the target system (for example, process control system or parameterization tool), the complete device description is available. This includes the graphical user interface (GUI) for operation and parameterization, the communications description, and the significance of internal diagnostics and status data of the device. Through application of the open EDDL standard, there are no additional costs for users from license fees.

One key feature of EDDL is its independence from any specific operating system, which is important for OPC UA’s direction of comprehensive and open usability. Moreover, as a descriptive technology, EDDL is not intrinsically bound to a particular fieldbus protocol, but is available without limitation for Profibus, HART and Foundation Fieldbus devices.

Only one update necessary
System integration of a device using software drivers usually requires a separate device implementation for each control system, and it may even be necessary when the version of a given system changes. This is a cost and time-inten-

Hans Georg Kumpfmüller

Quick start “wizards” can be built-in by device vendors in EDDL environments to simplify setup of new devices, such as this radar level unit.
A comprehensive procedure for suppliers of devices and control systems, and also for users. Such mutual dependencies do not occur when integrating using EDDL. If changes occur in the control or operating system, the only software that EDDL users need to update is the interpreter, and this only has to happen once in a single procedure. Therefore the installed base of an estimated 20 million devices described by EDDs continues to run.

Adoption of IEC 61804-3 counters concerns of limited EDDL functionality, since the standard defines language resources for EDDL. EDDL is fit for simple and complex devices and can describe motor drives with more than 2,000 parameters. Furthermore, device integration using EDD opens up access to highly developed functions, for example asset management.

**Enhancements for OPC UA**

Phase 1 of the EDDL enhancement project was completed with IEC 61804-3 adoption. During this phase, the ECT concentrated on improving device function visualization during runtime, including diagnostic and maintenance functions. All devices now provide a uniform appearance on all operator terminals, irrespective of fieldbus and control system vendor environments. Moreover, graphic representations of operating functions have also been standardized. The "look and feel" of the host system is preserved, while display content is specified by the device manufacturer in the EDD. Users benefit from fewer input errors and simplified training.

Phase 2 of the enhancement project involves integration into OPC UA, likely to make EDDL more convenient and universal. The four cooperation partners expect this will significantly improve interoperability between plant and enterprise levels with respect to devices and networks. It is also critical that legacy devices and legacy systems be able to plug into the new OPC UA and take full advantage of the large installed base of DDL files.

"We are working with FDT to streamline device configuration in a platform-independent way, and currently OPC is working collectively with FDT and EDDL to establish a common device information model to facilitate end-user expectations for standardized device configuration, diagnostics and runtime operation. We are clearly committed to facilitating integration between the information model suppliers, to provide a solid foundation for users to discover and exchange information between plant floor and enterprise."

Thomas J. Burke, president and executive director, OPC Foundation.
improve interoperability at the control system and corporate management levels. Instead of software, EDDL will be used to describe the data traffic between OPC server and client applications in the future, thus continuing to remain largely independent of the respective operating system. During phase 2 of the cooperation, the user organizations wish to improve the provision of critical device data and support in automation systems. This particularly applies to startup procedures, and will give special attention to improved writing of modular devices such as multi-variable transmitters.

**Competitive convergence**

EDDL has proven its applicability for over a decade. Despite numerous innovations in operating and control systems, it has lost none of its topicality and significance. On the contrary—its importance increases with new possibilities provided by the ECT, with additional functions planned. EDDL bridges each innovation.

The ECT leaders invited the FDT Group to join the team several months ago. [The FDT Group calls itself an open, independent, not-for-profit collaboration of companies dedicated to establishing an international standard based on field device tool technology.] Preliminary discussions have focused on developing a core set of principles as the basis for cooperation. These principles comprise operating system independence, platform independence, backward compatibility, and eliminating redundancies in functional capabilities of both technologies. Once they reach agreement, they can move forward to define a common solution and migration path that will ensure field device integration and operation compatible with millions of devices already installed and operating. ee

Hans Georg Kumpfmüller is chairman of ECT and head of Siemens A&D, SC division.

For more information, visit:
www.automation.siemens.com
www.fdtgroup.org
www.opcfoundation.org
www.fieldbus.org
www.hartcomm.org
www.us.profibus.com

---

**New Generation I/O that Talks over Ethernet**

**Active Ethernet I/O**
- Instant event reporting by TCP/UDP/e-mail/SNMP trap
- Easy local control without programming by patented Click&Go logic
- Windows VB and Windows/WinCE/Linux C API
- Peer-to-Peer I/O without controller

---

**Active Ethernet I/O Servers**
- ioLogik E2210 with 12 DI, 8DO
- ioLogik E2240 with 8 AI, 2 AO

---

**Application Reference**
- Security Systems
- Utility Meter
- Roadside Cabinet
- Heating, ventilation and air conditioning

**Moxa Technologies Co., Ltd**
Tel: 714 528 6777, Toll-Free: 888-MOXA-USA | www.moxa.com | E-mail: info@moxa.com