

Une approche globale de l'interopérabilité

Dans les ISA Flash N°19 et 20, nous avons expliqué comment des équipements connectés sur un même réseau pouvaient être rendus interopérables grâce à l'une ou l'autre des deux techniques en cours de standardisation au sein de l'ISA :

- Le langage de description EDDL, traité par le comité SP 104 (ISA Flash 19)
- La technologie FDT (Field Device Tool) / DTM (Device Type Manager) traité par le Comité ISA SP103 (ISA Flash 20)

Le présent ISA-Flash, rédigé par notre collègue Christian Verney, christian.verney@schneider-electric.com, traite de l'interopérabilité au sein d'un système, sous son aspect le plus général : entre équipements, entre sous-systèmes et au niveau de l'entreprise. Cet objectif ambitieux est celui de l'OPC-UA : OPC Unified Architecture.

OPC-UA (Unified Architecture): a unifying standard that allows true interoperability

OPC aims

The first objective of OPC is to develop worldwide industry-standards for data transfer, offering multi-vendor interoperability and seamless connectivity of measurement and automation devices, systems and networks used in the manufacturing and process industries.

OPC UA, which is the latest incarnation of the OPC connectivity standard, is a series of specifications intended to expand the framework for moving information:

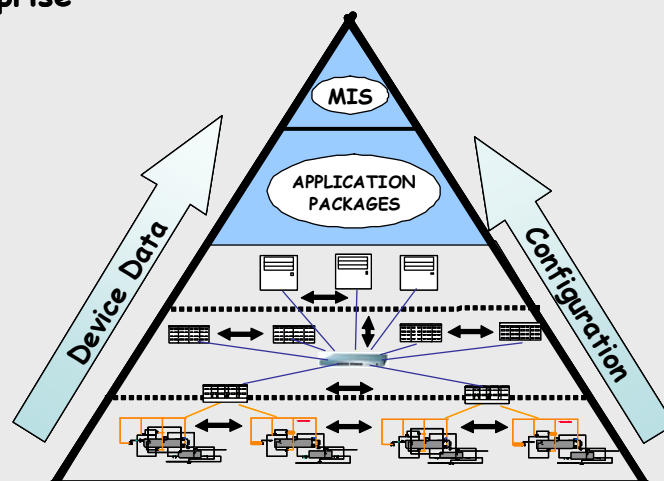
- Horizontally, between devices on different industrial networks from different vendors. Production devices include sensors, instruments, PLCs, RTUs, DCSs, HMIs, historians, trending subsystems, alarm subsystems, and the like.
- Vertically, from the process plant and factory floor among applications in the enterprise space. The range of applications can extend from standardized diagnostics and configuration of devices on the factory floor using generic applications, to asset management solutions with real-time access to the physical devices and corresponding applications for optimum execution.

OPC-UA a solution to deliver interoperability, Device to Device and Device to the Enterprise

Enterprise Integration
(ERP, Asset Management, Advanced Diagnostics, etc.)

Subsystem Integration

Device Integration
(FF, Profibus, Modbus, DeviceNet, HART, etc)



OPC Unified Architecture basis

The Unified Architecture specification provides a service-oriented architecture that facilitates secure, reliable interoperability across corporate firewalls and platforms, and also defines a binary encoding for speed when needed

- OPC-UA relies on standard Web service security mechanisms, clients present credentials to UA Servers which require authentication and authorization. Message signing and encryption or “heartbeat” messages are optional.
- OPC-UA includes complex data structures with an object-base approach.
- OPC-UA is designed for easy (optional) redundancy of both Clients and Servers, e.g. re-sync request can be sent to a backup server

OPC-UA a way to unify standards

Conflicting standards have bad effects for everyone; customers get confused and postpone purchases to see how the market settles and suppliers limit investment in development of products that may end up being “non-standard”. So growth is inhibited and the market becomes fragmented.

What end-users need is the freedom to choose the best products from many different suppliers, with network interface or “glue” that makes everything plays together beyond proprietary boundaries. That “glue” is OPC. Several working groups from IEC or automation related standards groups such as ISA and MIMOSA, have produced information model specifications. IEC TC65/SC65E EDDL and FDT projects (IEC 61804-3, IEC 62453), IEC TC57 (IEC 61850), ISA-S88 and ISA-S95 are examples of such model specifications.

The OPC Foundation is collaborating with the information model consortiums to facilitate the widespread adoption of the respective information model technology using OPC UA as the transport.



OPC-UA a future IEC standard (IEC 62541-x)

After the standardization Fieldbus war, the device description stage, this is a new era in the standardization of Device Integration in Systems. This step is very important for all the manufacturers of devices used in industrial networks. This new work item issued by the US National Committee is supported by all the automation actors

This standardization project is hosted by the IEC Technical committee TC65 (Industrial process measurement, control and automation) and more precisely by WG8 of the subcommittee SC65E (Device and integration in enterprise systems).

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