EDDL Cooperation Project Phase 2
Maintenance Team
PNO EDDL Device Integration

Ingo Weber
Email: Ingo.Weber@siemens.com
more than 15 years success

- 2006 updated IEC 61804 specification and guideline including EDDL Enhancements accepted
- 2005 start EDDL Enhancements Phase 2
- 2004 OPC Foundation joined EDDL Cooperation
- 2004 IEC 61804 accepted
- 2003 start EDDL Cooperation with PNO, HCF und FF
- 2002 start Standardization in CENELEC and IEC 61804
- 2000 PROFIBUS Standard
- 1997 first PROFIBUS devices with EDDs
- 1996 FF Standard
- 1993 HART Standard
- 1990 EDDL in the International Fieldbus Group
- 1988 First intelligent devices
EDDL Cooperation Team (ECT)

ECT Steering Committee
Hans-G. Kumpfmüller - HCF
Ronald Helson - HCF
Thomas Burke – OPC
Kevin Roach - OPC
Edgar Kuester - PNO
Achim Laubenstein - PNO
Richard Timoney – FF
Martin Zielinski – FF
Chairman

ECT Project Coordinator
Dave Glanzer - FF

Maintenance/Compliance Team
+ Ingo Weber – PNO
+ Nestor Camino – OPCF
  Sven Fueller – PNO
  Jeff Harding – OPCF
  Paul Backer - HCF
+ Stephen Mitschke – FF
+ Wally Pratt – HCF**
  Matthias Riedl*** - IFAK
  Chris Kantzes – FF

Technical Team Leader
+ QA Leader
** Subject Leader - Compliance Tests
*** EDDL Common Test Requirements
Specification Editor

Enhancement Team
* Jon Westbrock - FF
  Immanuel Vetter - PNO
  Omar Sacilotto Donaires - HCF
  Sven Fueller - PNO
  Dave Hardin – OPCF
* Jeffrey Harding - OPCF
  Lee Neitzel - OPCF
  Stephen Mitschke – FF
* Wally Pratt -HCF
  Krishnakutty Premraj - HCF
  Minoru Kimura - FF
* Ingo Weber - PNO

Technical Team Leader
* Head of Delegation

Developing process
• Specifying user case and requirement
• Developing EDDL specification and guideline
• Validation of concept within the different consortia
OPC UA Basic Concept

OPC is today

- the most common interface standard. It is based on COM/DCOM technology

New features of OPC UA

- Interface definition is based on internet-technology (Web-Services, TCP/IP) that allows solutions on different operating systems
- OPC UA consolidates existing interfaces e.g. data~, archive~, alarm + event~
- EDDL information in addition to data can provided by a OPC UA server, which enables client application to use OPC UA server data with reduce engineering effort
OPC UA Client applications using OPC UA servers to have access to their information

Possible Client Applications

- HMI-Application
- MES-Application
- Maintenance-Applications
- Planning and Engineering Applications
- Specific Client Applications
  - OPC UA Client
  - OPC UA Client
  - OPC UA Client
  - OPC UA Client
  - OPC UA Client

OPC UA Server (UA = Unified Architecture)

- Device Catalog: EDD
- Offline: Project data base
- Online:

EDDL Cooperation Project Phase 2, 22.05.2006

PROFIBUS International
Information model of OPC UA servers

An EDD OPC UA Server should provide for a plant information in a unified way.

- Common unique identifiers for data
- EDD type information
  - Common labels and help information, including translations
  - Data types and ranges, etc.
  - User interface information
- Different kinds of data
  - Product data e.g. identification, I/O description, certifications
  - Parameter e.g. unit, upper/lower limits
  - Diagnostic data e.g. classification, description, spare parts, tools for maintenance
  - Process data e.g. measurement data, set point
- Network and component topology
- Rules are defining how the common information model can be extent with device specific information and methods

![Diagram of EDDL Cooperation Project Phase 2, 22.05.2006](image)

**Level Description**
- ERP - Level
- MES - Level
- HMI - Level
- Control - Level
- Field - Level
Generic OPC Applications using EDD information

**HMI**
- Process pictures, Face-Plates
  - Product data
  - Diagnostic
  - Process values

**MES / ERP Application**
- Plant representation and work orders
  - Product data
  - Diagnostic

**Maintenance Applications**
- Product data
- Diagnostic

**OPC UA Address Space**

**Data**
- Process values
- Diagnostic
- Product data
- I/O information

**EDD Type Information**
- Data description
- User interface description
- Unit relations
- Labels
- Help
- Default values
- Min. values
- Max. values
- Graphs
- Images
- Menus
- Dialogs
- Charts

**OPC UA Server**
Based on EDD
Future Device Integration (1)

Basic idea is to combine

- descriptive and
- program

technology using EDDL and OPC UA

Device integrations consist of

- EDD, the device description of a component
- protocol specific files like GSD or CFG
- optional an OPC UA client application
Scalable Device Integration

- Standard device integrations only need EDDs
- EDD covers all system requirements
- Advanced device integrations could contain in addition to an EDD an OPC UA client application with specific features
- Device client application
  - shall only use OPC UA to access the system
  - shall not duplicate EDDL features
  - shall be independent of the operating system and platform of the host system
  - shall have access only to the device that is invoked have access to online and offline data via the EDD driven OPC UA server
  - functions may have user interface

### OPC UA Server (UA = Unified Architecture)

- Simple Device
  - EDD
- Complex Device
  - EDD

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Related Standards and Specifications

- NAMUR NE 100 submitted to the IEC 65b 555 NP
- PROLIST and eClass
- PNO, FF, HCF profiles
- NE 107 Self-monitoring and diagnosis of field devices
- PNO, HCF diagnostic guideline
- ISO/IEC 62264-3 (ISA 95)
Benefits of EDDL Based OPC UA

Customer benefits:

- Reduced effort to customize HMI, MES etc. systems
- Device information available up to the HMI and MES level
- The unified device representation allows to interpret device information without device specific knowledge
- Data type safety, because of available EDD description
- OPC UA Servers can describe with EDDL it’s self;
  - that allows to configure servers from remote clients
  - More server information available e.g. load level, number of clients, etc.

Software manufacturer benefits:

- Client applications can use EDD information of OPC UA EDDL servers to create generic user interfaces
- EDDL technology available for additional use cases and applications than EDDL is used today
Modular Devices

PNO Remote I/Os are described with EDDs. To get a common and general solution phase 2 defines modular devices.

- Modular devices are components with sub components. Each is described with an EDDL. Sub components can have sub components.

- Each component can be delivered separate.

- The EDD defines the components that can be configured within a modular device.

- Conditions can be defined to allow only correct configurations.

- Components can be used for:
  - Modules of remote I/Os, modules of complex devices, etc.
  - Units like sensors, valves, motors, etc.
ECT Maintenance Team

Main Tasks

- Developing test requirements for
  - Host and
  - EDD compliance test
- Maintain the deliverables (specification and guideline) and submission to the IEC
State of ECT Compliance Test Specifications

- Host test requirements specification will be completed within the next team meeting in July 2006.

- EDD test requirements are developed by the consortia’s. The common parts will be joined into the specification.

- The consortia’s will take this specifications as a base and will it supplement it for the protocol specific test requirements specifications.
PNO EDD Certification

- Today, the PNO EDDs are tested by test laboratories. The EDDL syntax of the EDDs are tested with a EDD test tool and the tool EDD compiler.

- PNO has created a TC 1 WG 10 for EDD certification to specify the test requirements and test procedures.

- EDD test requirement specification is ready to start the PNO review. Within September the review will be completed. PNO EDD certification will start end of this year.

- The host certification will be following
Today the EDD applications including the EDD library. The library includes standard include files, dictionaries and profiles.

Since June 2005 enhanced EDDs are developed by the different manufacturer for their PROFIBUS devices.

The EDD library will be available on the PNO internet server.