

## **EDDL Protects Device and System Investment**

### **- Staving Off Obsolescence**

Control systems and intelligent device management software use the Microsoft Windows operating system. However, the obsolescence cycle in the IT world is very much faster than in the world of process control. This means life-cycle challenges for the system administrator. Fortunately, the Electronic Device Description Language (EDDL) technology was designed to work on any platform and is therefore not affected by Windows obsolescence. This makes system administration very much easier.

### **Life-Cycle Challenge**

Control systems remain operational for 15 years or more. During this period of time new types and new versions of 4-20 mA/HART, FOUNDATION fieldbus, and PROFIBUS devices will arrive in the plant. From time to time it will also be necessary to install Windows service packs, patches, and .NET framework upgrades on the computers. At some point it will also be necessary to upgrade the computers and Windows to a newer version.

### **Driver Program Problem**

Some device management software use device driver programs similar to the Microsoft Windows printer driver concept. When new device types or new device versions arrive in the plant, a device driver for the device is installed on each computer to support it. However, this device driver (program) may require a newer version of Windows, .NET framework, or service pack, maybe even 64-bit version, thus forcing an earlier than planned Windows upgrade. This is costly, disruptive, and time consuming.

Moreover, a Windows upgrade in turn cascades onto drivers for other devices making it necessary to upgrade system software, database, and many of the device driver programs earlier than planned, which again is costly and disruptive. Obtaining and installing new versions of the driver programs compatible with the new version of Windows from the many device manufacturers is time consuming.

If the system software or one of the device drivers is not available in a version compatible with the new version of Windows, the upgrade cannot take place, which in turn means the new device cannot be used. That is, the plant may not be able to benefit from some of the new devices.

Conversely, inevitable Windows or .NET upgrade, installation of Windows service packs, and patches, may render some of the device drivers obsolete forcing new device driver versions compatible with the new version of Windows to be obtained from the respective device manufacturer and installed. This is costly, disruptive, and time consuming. If system software or one of the other device drivers of compatible version is not available, the upgrade cannot take place. That is, Windows cannot be upgraded until all the device driver programs for all the devices in the plant compatible with the new version of Windows have been made available by their respective device manufacturers. Older devices (product lines are discontinued or manufacturer is taken over or no longer exist) may not have a device driver for the latest version of Windows, and may have to be replaced at high cost and causing disruption. Since the device driver from device manufacturer (not the system manufacturer), having a system maintenance contract is not a solution.

# EDDL: The HTML of Process Control

## HTML

Web pages use Hyper Text Markup Language (HTML) which is a text file that describes the user interface as plain text. The beautiful user interface graphics is then rendered by the web browser. Because the text file format is totally independent of Windows or any operating system, the file/page works on any version of Windows etc. and any platform. Therefore HTML files do not go obsolete with new versions of Windows. A web page designed in 1994 still works today. The independence of operating system is key to the success of the World Wide Web (WWW) because any browser on any platform can access any site no matter how old.

**Table 1 Examples of HTML tags and attributes (keywords)**

Tag	Attribute	Value
Head	Value	Submit
Title	Selected	Button
Body	Border	Checkbox
BR	Type	
B	Value	
Select	SRC	
Option	Href	
Table		
TR		
TD		
Input		
Img		
A		

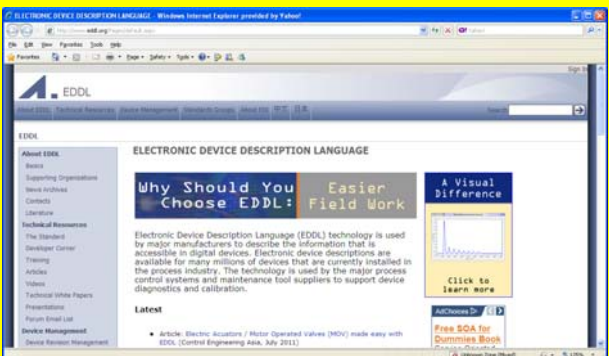
Web pages sometimes use JavaScript to validate user input and dynamically make text and images etc. visible or invisible depending on prior selections etc. The script is interpreted in a secure "sandbox" within the browser without access to computer resources.

```

1 <!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01
2 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">
3 <html _ngapp="ng" id="ng" class="ng">
4 <head><meta name="GENERATOR" content="Microsoft SharePoint" /><meta http-equiv="Content-Type"
5 content="text/html; charset=utf-8" /><meta http-equiv="Expires" content="0" /><META
6 NAME="ROBOTS" content="NOINDEX"></head>
7
8 ELECTRONIC DEVICE DESCRIPTION LANGUAGE
9
10 </title><link rel="stylesheet" type="text/css" href="/style%20library/en-US/Coze%
11 20style/Std.css"/>
12 <link rel="stylesheet" type="text/css" href="/style%20library/en-US/Coze%
13 20style/control.css"/>
14 <link rel="stylesheet" type="text/css" href="/style%20library/en-US/Coze%
15 20style/pageLayout.css"/>
16 <link rel="stylesheet" type="text/css" href="/style%20library/s1_blue.css"/>
17 <link rel="stylesheet" type="text/css" href="/_layouts/1033/styles/ocx.css?
18 rev=9a9e9e02f6173b3a1a1d43d"/>
19
20 <!--Style used for positioning, font and spacing definitions-->
21 <script src="/_layouts/1033/init.js?rev=7a60c3e87900911b2e43d3d"></script>
22 <script type="text/javascript" language="javascript" src="/_layouts/1033/ocx.js?
23 rev=9a9e9e02f6173b3a1a1d43d"></script>
24 <script type="text/javascript" language="javascript" src="/_layouts/1033/ie5up.js?rev=9a9e9e02f6173b3a1a1d43d"></script>
25 <script type="text/javascript" language="javascript" src="/_layouts/1033/search.js?rev=9a9e9e02f6173b3a1a1d43d"></script>
26 </script>
27 <!--Placeholder for additional overrides-->
28 <script src="ocx.css?rev=9a9e9e02f6173b3a1a1d43d"></script>

```

**Figure 1 Plain HTML text will generate a beautiful, easy to use, graphical web page**



**Figure 2 Beautiful, easy to use, graphical web page generated from plain HTML text**

The person who surfs the web need not understand the HTML-file language. It just works.

## EDDL

The first Device Description (DD<sup>1</sup>) technology was originally designed for handheld field communicators using embedded platforms. Therefore EDDL has been independent of Windows from the very beginning. An EDDL file is a compressed text file which works just like an HTML file and web browser, providing these same benefits. An EDDL file describes the user interface content & structure the device manufacturer wants for the device. When a new device type or version arrives in the plant, the EDDL file for the device is copied onto the system. The intelligent

<sup>1</sup> DD is sometimes called "Device Driver" but this is fundamentally wrong because a DD is not a driver software [www.eddl.org](http://www.eddl.org)

device management software renders the graphics for configuration/setup, calibration, and diagnostics pages. EDDL is an international standard (IEC 61804-3) totally independent of Windows and any other operating system. Therefore, EDDL files for devices are not made obsolete by new versions of Windows. This is a unique characteristic of EDDL. There is no need to hunt for new EDDL files when upgrading Windows on the system computers. Conversely, there is no need to upgrade Windows before loading a new EDDL file for a new device. An old system can use new devices. Old devices will not be made obsolete by new version Windows. This is particularly reassuring if the model is no longer in production or the manufacturer already out of business.

**Table 2 Examples of EDDL tags and attributes (keywords)**

Device Definition	Business Logic	User Interface Description	Attribute
BLOCK VARIABLE	METHOD IF SELECT * / + - FILE	MENU WAVEFORM CHART GAUGE GRAPH GRID	LABEL HELP CLASS HANDLING TYPE VALIDITY

User guidance wizards (EDDL methods) are created by the device manufacturer using a JavaScript-like language part of the EDDL standard and independent of operating system and platform. Wizards are interpreted by the device management software.

```
VARIABLE pressureValue
{
  LABEL [pressure_value];
  HELP [digital_value_pressure_help];
  CLASS CORRECTION & DYNAMIC;
  HANDLING READ;
  TYPE FLOAT
  {
    DISPLAY_FORMAT "%.3f";
  }
}

VARIABLE pressureUnits
{
  LABEL [pressure_value_unit];
  HELP [digital_units_pressure_help];
  HANDLING READ & WRITE;
  TYPE ENUMERATED (2)
  {
    // These 16-bit enumerations may be found in Common Tables, Table 2.65 (0x41)
    ( 0x4101, [InH2O], [inches_of_water_68_degrees_F_help] ),
    ( 0x4102, [InHg], [inches_of_mercury_0_degrees_C_help] ),
    ( 0x4103, [FtH2O], [feet_of_water_68_degrees_F_help] ),
    ( 0x4104, [mmH2O], [millimeters_of_water_68_degrees_F_help] )
  }
}
```

**Figure 3 Plain EDDL text will generate a beautiful, easy to use, graphical device page**



**Figure 4 Graphical device page generated from plain text EDDL**

The person that 'surfs' the devices need not understand the EDDL-file language. It just works.

Since the EDDL files from all the different manufacturers are not affected by a Windows upgrade, all that needs to be upgraded when Windows is upgraded is the system software itself. That is, a single installation from a single manufacturer. This makes it easy to adopt new versions of Windows to benefit from the increased productivity that new innovation brings. On a more frequent basis, EDDL files also remain unaffected by service packs and security patches. It is easy to upgrade an old DD-based system to enhanced EDDL since the old DD file continues to work on the new system.

### Investment Protection

Because EDDL is based on compressed text independent of operating system and version, EDDL staves off obsolescence, protecting investment in devices and systems. Similarly, system administration is greatly simplified (see separate white paper).

EDDL is the only device integration technology that works like web browsers. Other device integration technologies cannot achieve comparable results.

## References

EDDL Brochure and Technical Description on [www.eddl.org](http://www.eddl.org) site

Jonas Berge, "Fieldbuses for Process Control: Engineering, Operation, and Maintenance", ISA, 2002, ISBN 1-55617-760-7

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