

FDT/DTM 与 eEDDL (WIB 报告)

Group

FDT

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FDT 中国路演 - 深圳
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atp international 现场报告 FDT/DTM 和 eEDDL性能测试

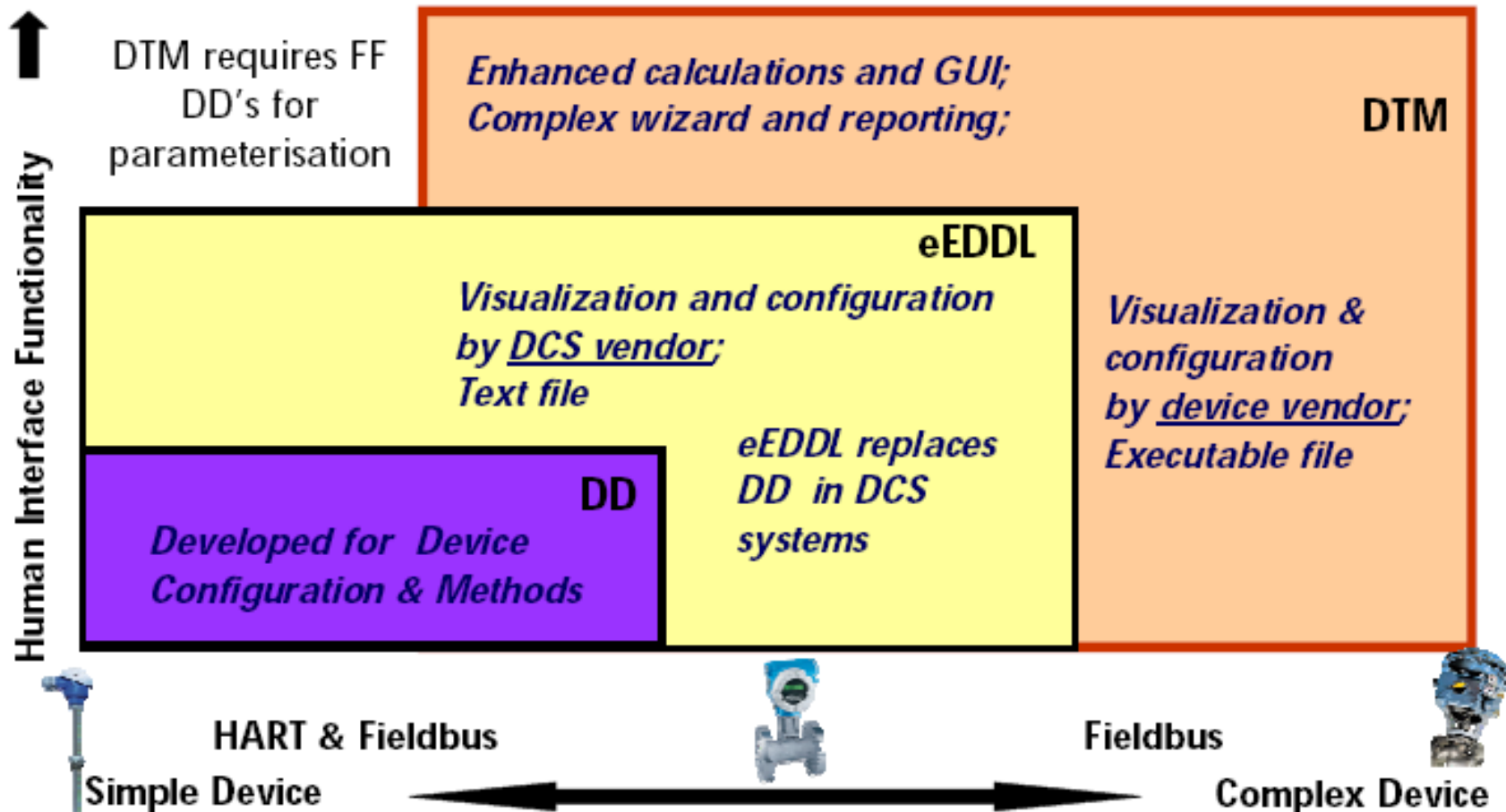
- 简介及测试流程
- eEDDL 和 FDT特性展示案例
- 测试结果总结
- 建议
- 结论

- 当今智能设备比如**FF**设备能够提供高级功能用于试车和维护
- **DCS**系统用于访问智能现场设备的方式各有不同
- 当前技术主要是基于**DD**
- **FDT/DTM**和**eEDDL**是用于提高智能设备数据访问能力的新技术

比较FDT/DTM和eEDDL技术针对于FF设备当前功能

在试车和维护执行阶段，数据可访问能力和效率

DD, eEDDL and FDT/DTM in FF

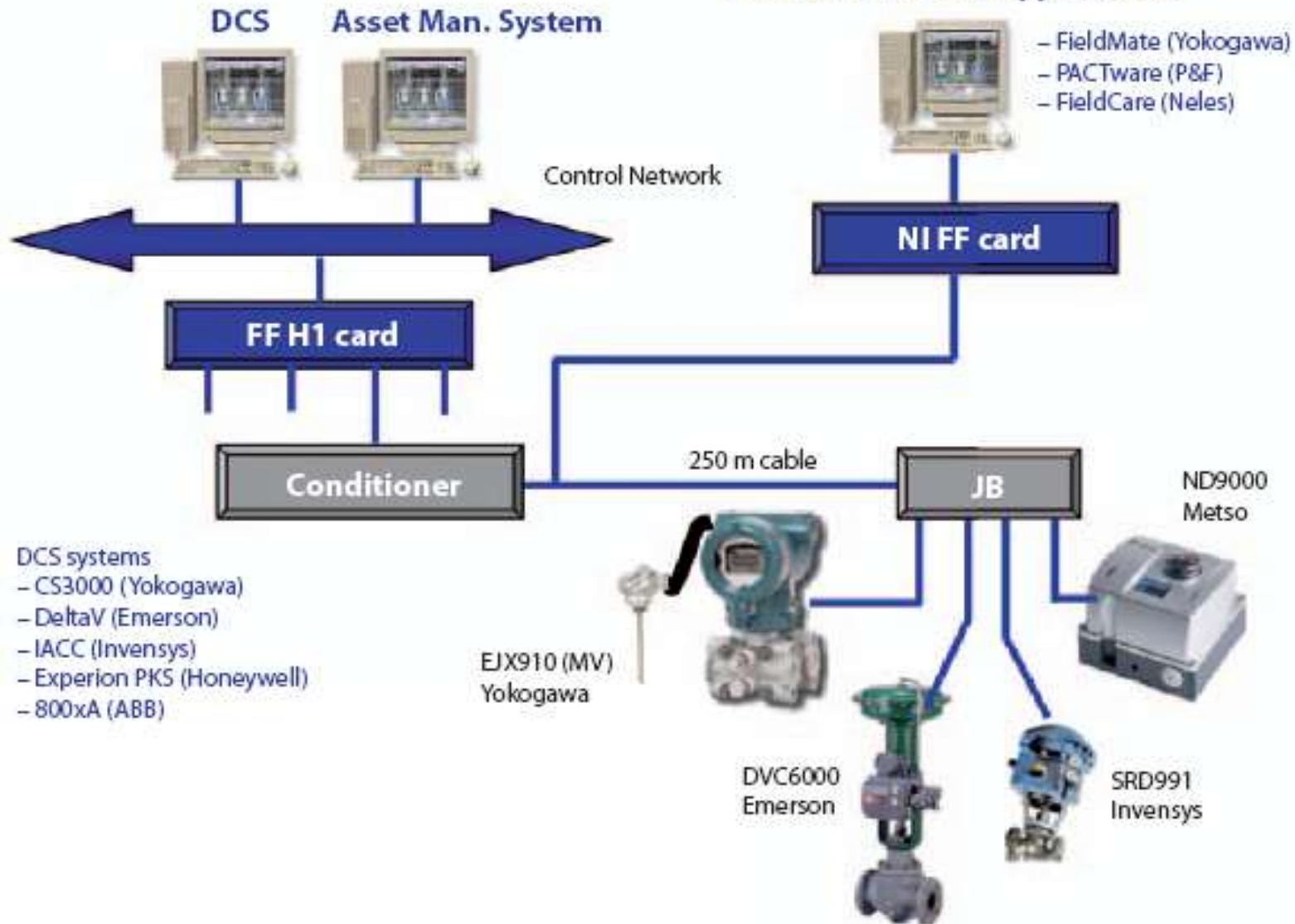


Tab. 2: Available systems for testing.

Vendor	System	Asset Manager	EDDL	FDT/DTM
ABB	800xA	N/A	Not available	Not available for FF
Emerson	DeltaV	AMS Suite	Available	Not available
Invensys	IACC	FDM	Available	Available
Honeywell	Experion PKS	AM PKS	Not available	Not available for FF
Yokogawa	CS3000	PRM	Not available	Available

- **Shell Global Solutions Research and Technology Center (SRTCA)** 在 Amsterdam 针对于 FF 协议测试了两种技术的互操作性。
- **3套DCS : Yokogawa CS3000, Emerson DeltaV and Invensys IACC**
- **3套独立 FDT 资产管理工具: Yokogawa Fieldmate, Metso Fieldcare 和 Pactware.**
- **4台现场设备: Emerson DVC6000 (DD, eEDDL), Invensys SRD991 (DD, DTM), Yokogawa EJX910 多变量变送器 (DD, DTM) and Metso ND9000, 唯一设备同时支持 DDs, eEDDs and DTMs.**
- **在3套 DCS中进行了所有可能组合的测试 DDs, EDDs 和 DTMs 。 此外在3套独立的FDT解决方案中测试了 DTMs.**

Standalone Frame Applications

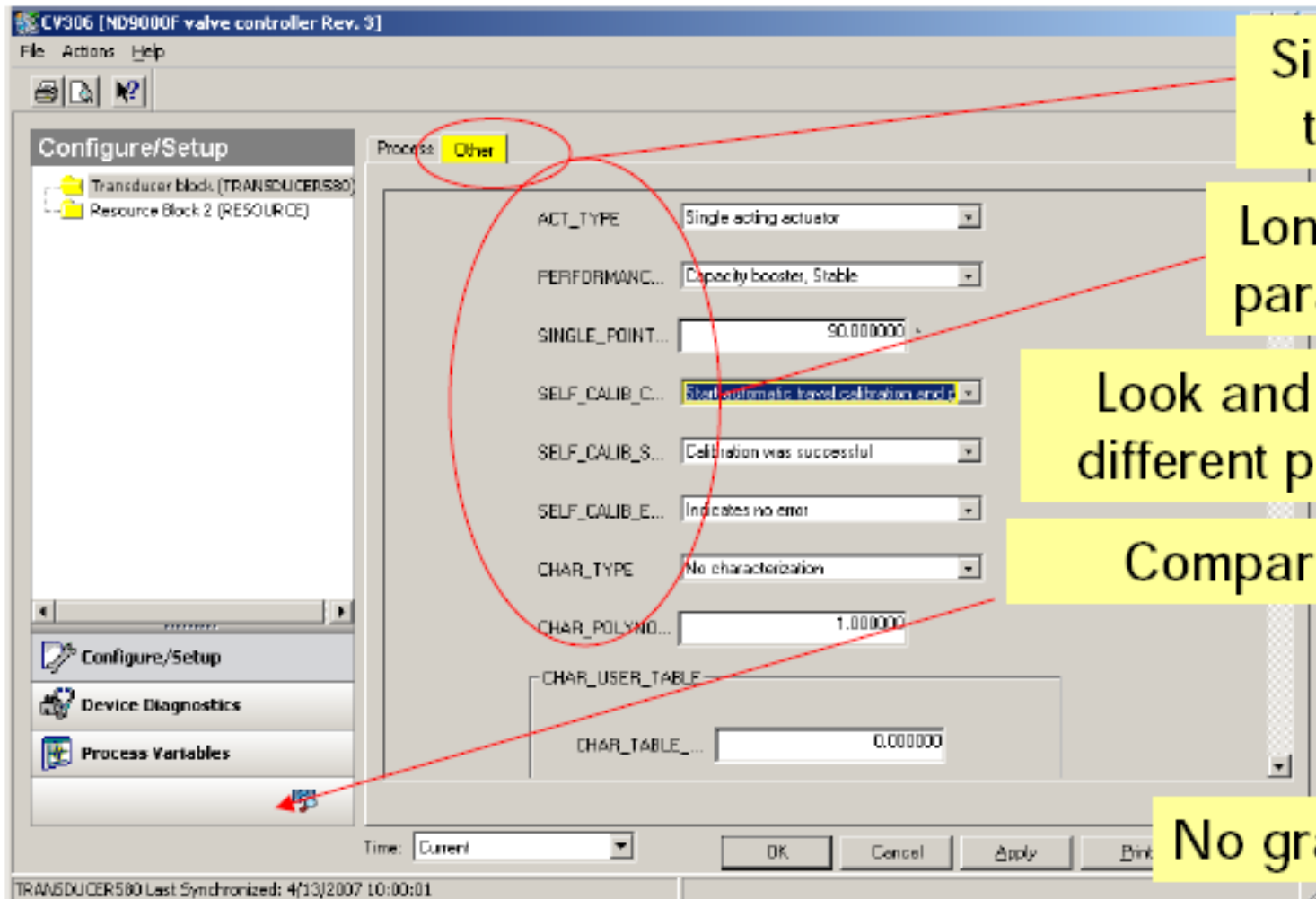


Evaluation Plan; Devices & Hosts Matrix

		CS3000	DeltaV	IACC	Field Mate	PACT ware	Field Care
ND9000	DD	Yes	Yes	Yes	Yes	No	No
	eEDDL	No	Yes	Yes	No	No	No
	DTM	Yes	No	Yes	Yes	Yes	Yes
	DD	Yes	Yes	Yes	Yes	No	No
	eEDDL	No	Yes	Yes	No	No	No
SRD991	DD	Yes	Yes	Yes	Yes	No	No
	DTM	Yes	No	Yes	Yes	Yes	Yes
EJX MV	DD	Yes	Yes	Yes	Yes	No	No
	DTM	Yes	No	Yes	Yes	Yes	Yes

Asses functionality and limitations per feasible combination

Evaluation Result DD (ND9000 at DeltaV)



Single tab

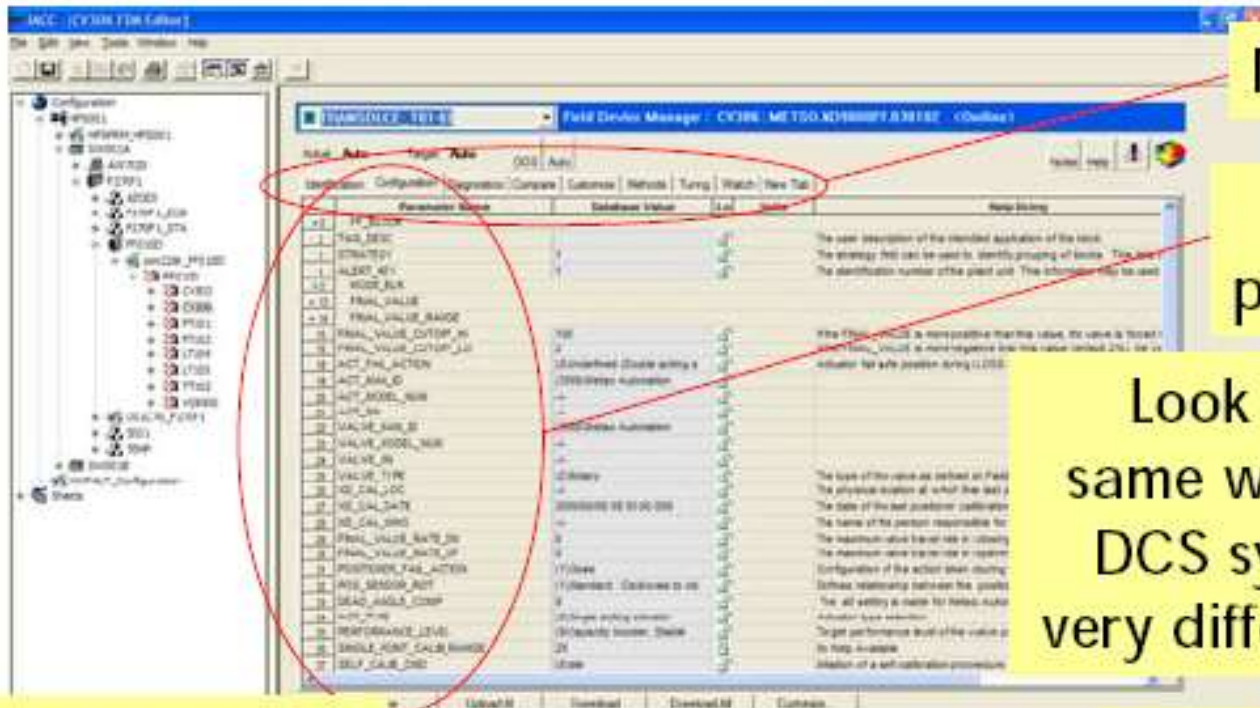
Long list of parameters

Look and feel is different per DCS

Compare tab

No graphics

Evaluation Result DD (ND9000 at IACC)



Multiple tabs

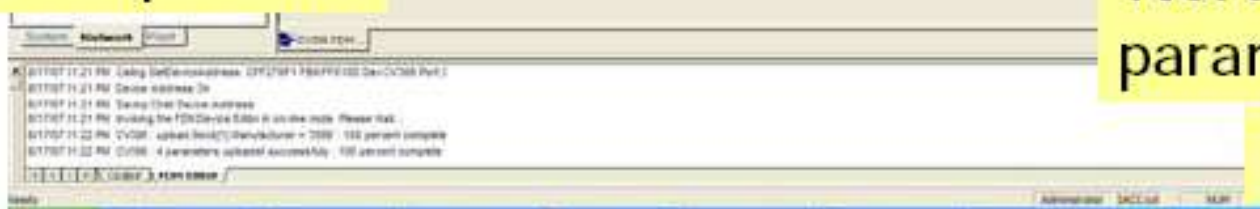
List of parameters

Look and feel is same within a single DCS system, but is very different per DCS

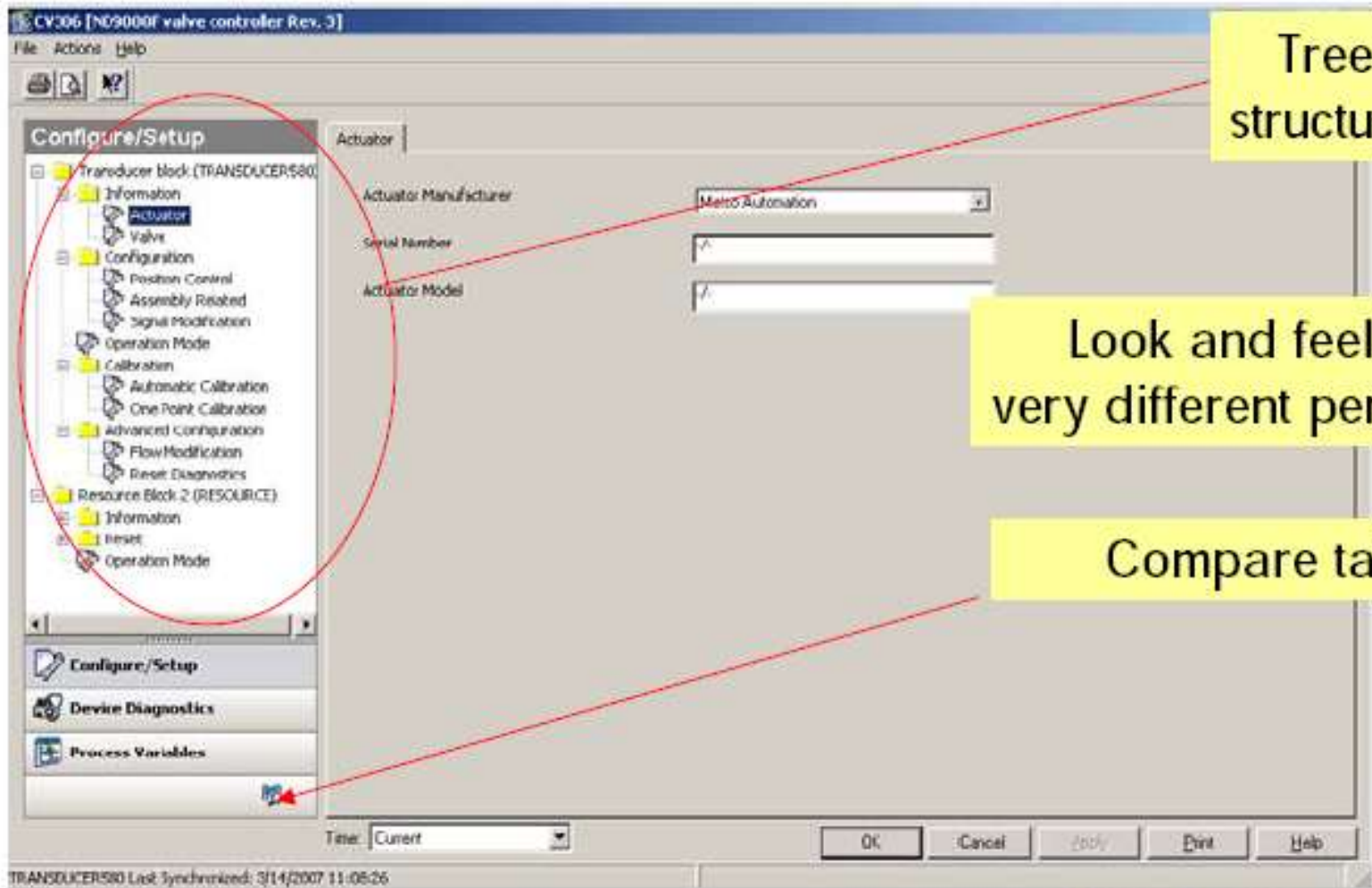
No compare tab

Not userfriendly parameterisation

No graphics



Evaluation Result eEDDL (ND9000 at DeltaV)

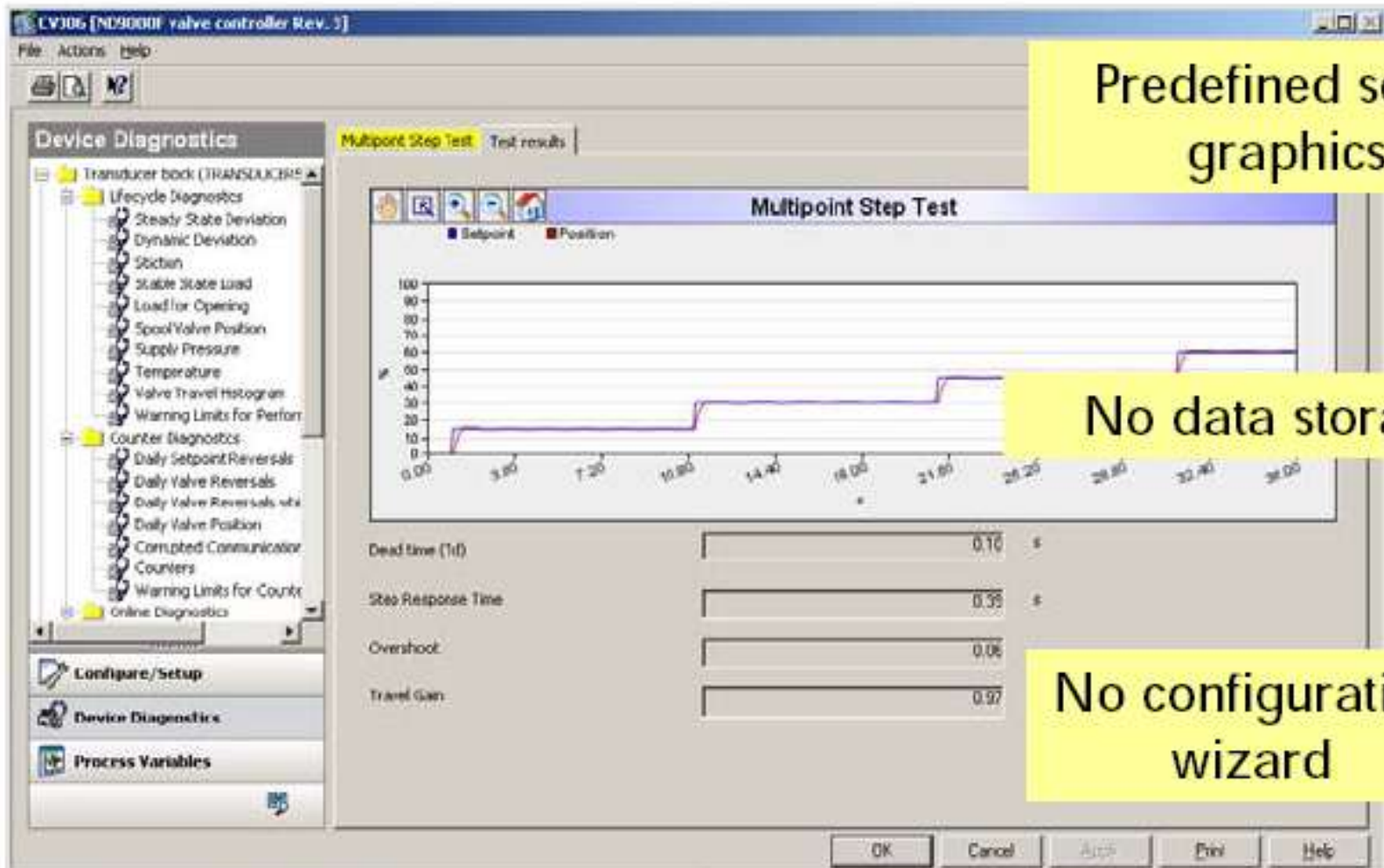


Tree structure

Look and feel is very different per DCS

Compare tab

Evaluation Result eEDDL (ND9000 at DeltaV)

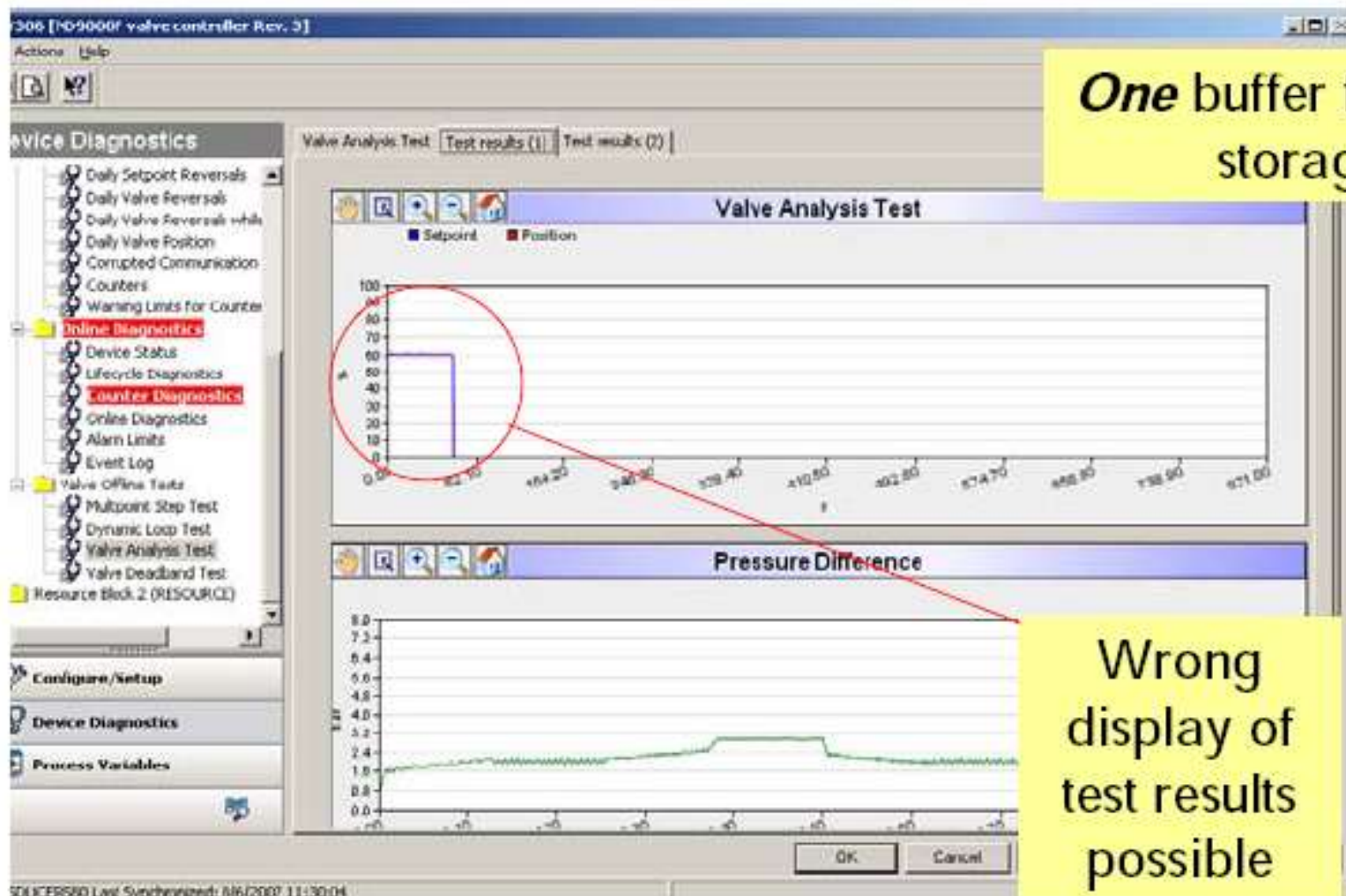


Predefined set of graphics

No data storage

No configuration wizard

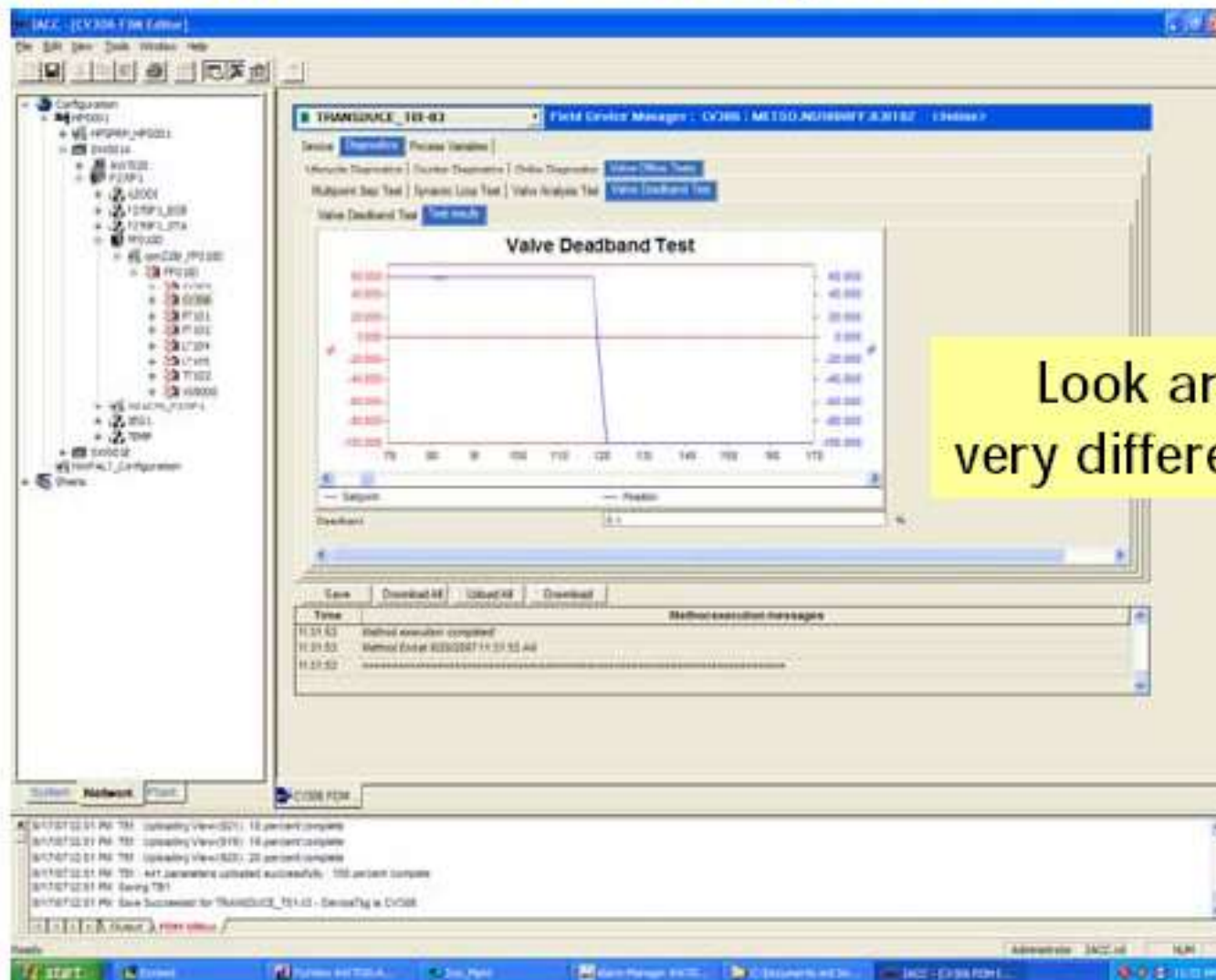
Evaluation Result eEDDL (ND9000 at DeltaV)



One buffer for data storage

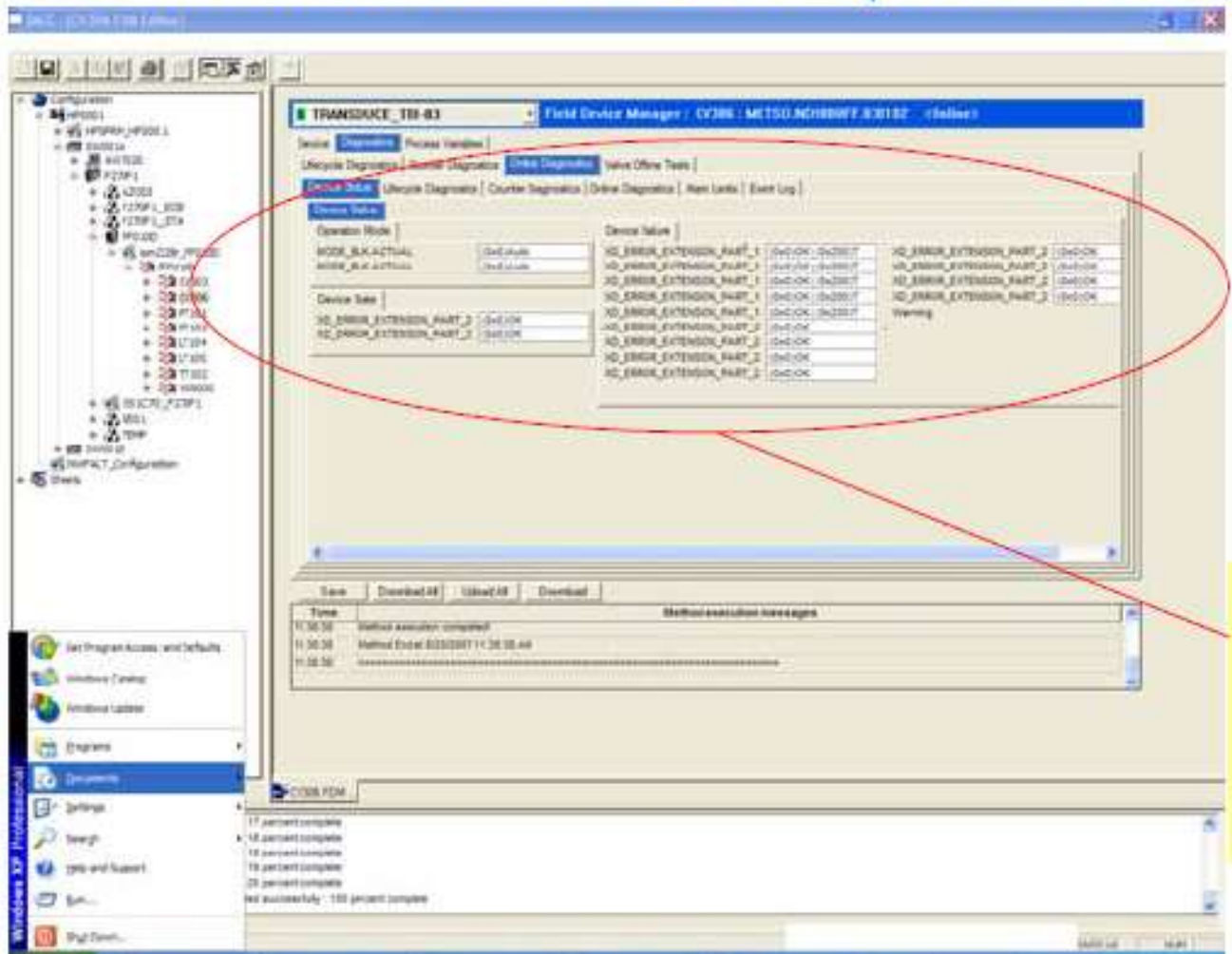
Wrong display of test results possible

Evaluation Result eEDDL (ND9000 at IACC)



Look and feel is very different per DCS

Evaluation Result eEDDL (ND9000 at IACC)



Online device diagnostics ??

Evaluation Result eEDDL (ND9000 at DeltaV)

ND9000 [ND9000 valve controller Rev. 3]

Actions Help

Device Diagnostics

- Supply Pressure
- Temperature
- Valve Travel Histogram
- Warning Limits for Perform
- Counter Diagnostics
- Daily Setpoint Reversals
- Daily Valve Reversals
- Daily Valve Reversals while
- Daily Valve Position
- Corrupted Communication
- Counters
- Warning Limits for Counter
- Online Diagnostics
- Device Status**
- Lifecycle Diagnostics
- Counter Diagnostics
- Online Diagnostics
- Alarm Limits
- Event Log
- Valve Offline Tests
- Resource Block 2 (RESOURCE)

Device Status

Operation Mode

- Automatic
- Out of Service

Device State

- Device in Fail-safe Mode
- Device in Reduced Performance Mode

Device Failure

- Pressure Sensor 1 Failure
- Pressure Sensor 2 Failure
- Pressure Sensor 3 Failure
- Spool Valve Sensor Failure
- Temperature Sensor Failure
- Continued Processor Reset
- Position Sensor Failure
- Prestage Shortcut
- Prestage Cut
- Parameter Corrupted
- Board to Board communication failure
- Processor Failure
- Fieldbus Communication Failure Rate

Warning

Online device diagnostics !!

OK Cancel Apply Print Help

Evaluation Result DTM (ND9000 at FieldCare)

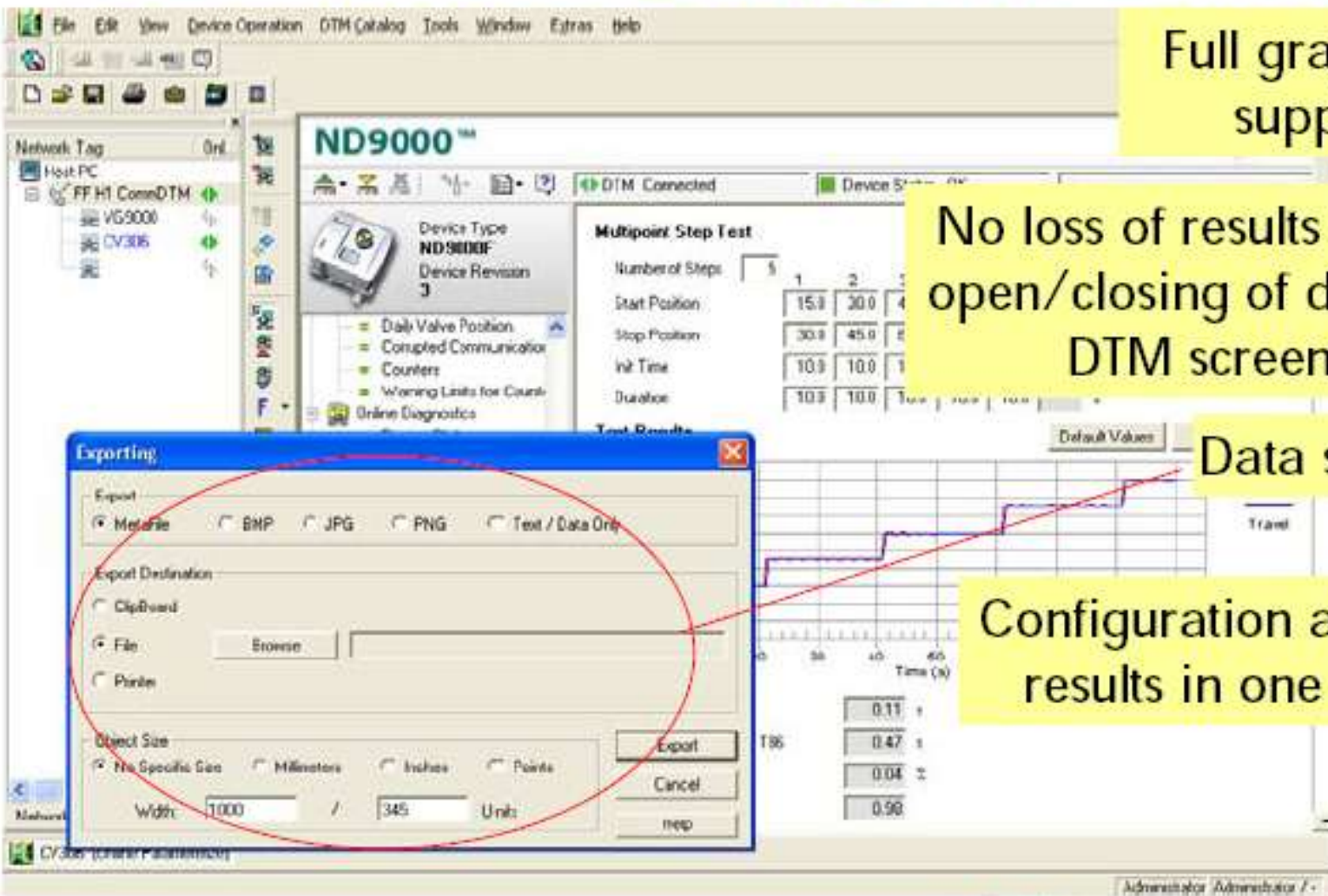
The screenshot shows the FieldCare software interface for an ND9000 device. The main panel displays the following information:

- Device Information:**
 - Device Type: ND9000F
 - Device Revision: 3
- Diagnostic Alerts List:**
 - Device State
 - Fail Safe Active
 - Device in Reduced Performance Mode
 - Device Failure
 - Lifecycle Diagnostics
 - Counter Diagnostics
 - Total Operation Time Warning
 - Total Valve Travel Warning
 - Total Valve Reversals Warning
 - Total Actuator Travel Warning
 - Total Actuator Reversals Warning
 - Total Spool Valve Travel Warning
 - Total Spool Valve Reversals Warning
 - Daily Setpoint Reversals Trend Warning
 - Daily Valve Reversals Trend Warning
 - Daily Valve Reversals while Stable Setpoint
 - Online Diagnostics

Automatic presentation of diagnostic alerts

Look and feel of DTM is same in all DCS's and all Frame applications

Evaluation Result DTM (ND9000 at FieldCare)



Full graphical support

No loss of results during open/closing of different DTM screens

Data storage

Configuration and test results in one view

ND9000 阀门定位器 DTM拷屏 用于阀门定位器标定

FieldCare - [CV306 (Online Parameterize)]

File Edit View Device Operation DTM Catalog Tools Window Extras Help

Network Tag Onl... Channel Adk

Host PC

- FF H1 ComrnDTM
 - VG9000 FF_H1 0.22
 - CV306 FF_H1 0.34
 - FF_H1 0.24

ND9000™

DTM Connected Device Status OK

Device Type ND9000F
Device Revision 3

Dynamic Variables

Sampling Rate (s) 1 s

Valve Position Target Position Cylinder Pressure (C1)
Cylinder Pressure (C2) Device Temperature

6 Mon Aug 2007

Valve Position 0.0 %
Target Position 0.0 %
Cylinder Pressure (C1) 4.9 bar
Cylinder Pressure (C2) -0.1 bar
Device Temperature 27.5 °C
Calculated Deviation -0.02 %

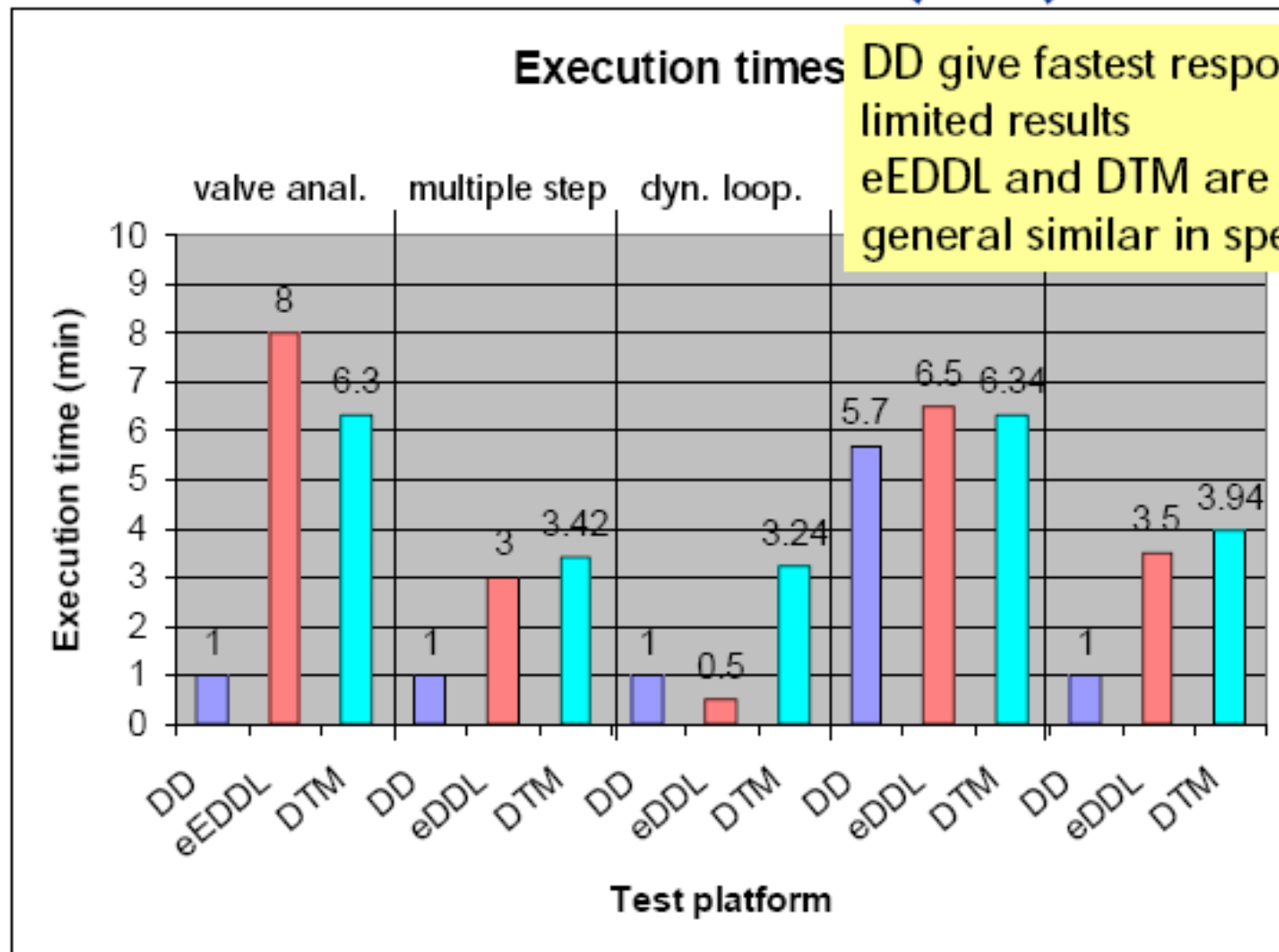
Network

CV306 (Online Parameterize)

Administrator Administrator 7

- **DTM**自动显示诊断信息，并在每一窗口中都已交通信号灯一样的颜色模式显示诊断信息，非常清晰，实用。
- 为简化评估，**DTM**把测试参数和测试结果放在同一窗口显示。
- 用户可以保存测试数据，并可以在不同的测试结果之间进行切换。
- **DTM**提供完整的现场设备报告，包括所有参数，图形，设备状态曲线和性能趋势图。

ND9000 Test Execution times (min)



Tab. 1: Basic claims on pros/cons of FDT/DTM and eEDDL are confirmed using FF technology.

Function	Basic DD	Enhanced DD	FDT
FF block configuration	Yes	Yes	No
Calibration Methods	No	Yes	Yes
Device Setup Wizards	No	Limited	Yes
Programming flexibility	Very limited	Limited	Yes
State-of-the-art GUI	No	Very limited	Yes
Capable of any type of complex calculations	No	Limited	Yes
Data storage and reporting functionality	No	Limited	Yes
Advanced diagnostics for the sophisticated devices	No	Limited	Yes

- **DD**适用于简单设备。他们提供基本配置功能，但是既没有图形也没有可视化。
- **eEDDL** 支持简单，预定义的操作控制。长远来看，将取代**DDL**。操作环境的外观和感觉因**DCS**厂商而迥异。
- 采用**DTM**，一台现场设备的完整功能，参数都能够体现，并可以在一个用户友好的界面下操作。
- **DD**测试最快，但是没有图形支持。**DTM**和**eEDDL**测试时间大抵相同，都很长。
- **DD**和**eEDDL**，不同**DCS**厂商的屏幕布局风格迥异。设备制造厂商无法影响设备参数是否被显示出来，如何被显示。
- **FDT/DTM**保证了，每一台现场设备针对于任何**DCS**甚至是独立资产管理工具，都是同一显示风格，并提供完整图形支持。但是**FDT**也有可以进一步提高的潜能，针对于不同供应商的设备，应保持标准化的操作风格。

Both FDT/DTM (IEC-62453 / ISA-103) and EDDL (IEC-61804 / ISA-104) are OPEN STANDARDS that are relevant to Process Automation.

- **DCS**供应商和现场总线设备供应商应该努力同时支持**EDDL**和**FDT**技术
- 需要更多的**FF**设备提供**eEDDL**和**DTM**
- 框架应用程序的认证（**DTM**采用**DTMInspector 2.0**）
- 改进风格导引，以使**DTM**能够获得相同的外观和感觉（试车界面和维护界面）
- 供应商应使现场设备变得愈加智能，并且保持着这一趋势。
- **eEDDL**提倡努力扩展现场设备功能，但是这一步调从未真正赶上，对最终用户而言，不可能达到满意结果。

WIB报告（**T2768 X07**）的出版确认了**FDT**组织的长期定位：

- **FDT/DTM** 和 **EDDL** 是相互补充的技术并且在各自的应用领域都表现出色。
- **EDDL**最适用于获取设备数据
- **FDT**接口因为其强大，高效的用户接口，推荐用做高级资产管理的平台。

Dr. Bindert Douma

In this presentation you will be confronted with the following terminology:

- **DD – Device Description**
- **DDL – Device Description Language; abbrev. of EDDL**
- **EDDL – Electronic Device Description Language**
- **eEDDL – enhanced Electronic Device Description Language**
- **FDT – Field Device Technology**
- **DTM – Device Type Manager**
- **CommDTM – Communication Device Type Manager**

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实现对智能设备的开放访问

