MARCH 2024

FDT GROUP

Real-Time Data

From Fragmentation to Unity: FDT/DTM Technology's Role in Configuration

Unified Environment for Intelligent Device Management in Control Applications

Steve Biegacki – FDT Group Managing Director

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FDT Group Managing Director

This editorial delves into the imperative of adopting a unified, device-independent configuration approach using FDT/DTM (IEC 62453) technology, revolutionizing control systems across diverse process and factory applications to answer the industry's call to provide standardized intelligent device management, as revealed in **FDT Group's latest end-user survey finding**.

In the complex landscape of industrial control systems, where a vast array of devices spans from Variable Frequency Drives (VFDs) and process instruments to valves, actuators, and intelligent sensors, the heterogeneity of these devices introduces a challenge. Each device may adhere to different configuration networked standards, such as Profibus, EtherNet/CIP, Modbus, HART, Foundation Fieldbus, etc., depending on the application requirements. This scenario often forces engineers and operators to use fragmented device configuration tools dependent on the protocol, causing numerous inefficiencies in workflow, training needs, and data access limitations that are costly to the bottom line.

Match this industrial device management challenge with the industry making progress in defining and launching a digital transformation strategy, and you'll find gridlock. The current state of control system silos brings inconsistencies that prevent intelligent data from easily being consolidated for collaborative applications such as IT/OT data servers and higher-level applications for predictive maintenance and analytics for intelligent manufacturing AI, ML, etc.

Device configuration unification can no longer be an afterthought in the makeup of control applications. Furthermore, individual communication protocol standards should not define the device configuration standard.

By adopting FDT/DTM as your device- and network-independent configuration environment at the core of your control system application, open interoperability is achieved. The FDT Unified Environment provides the collaborative method allowing all protocols and devices to plug and produce, allowing operators open access to all device parameters, features, and functions for a standardized approach to intelligent device management (device configuration, commissioning, operation, and maintenance) within a control system.

The FDT/DTM (IEC 62453) standard is a beacon of unity amidst diversity. FDT technology pioneers a device-independent configuration approach, breaking away from the restraints of individual device configuration standards. As industries embrace the FDT standard, they embark on a journey toward a future where control systems are unified and adaptable, allowing for optimizing devices based on specific needs and preferences. The FDT standard is more than a technological advancement; it is a gateway to a new era of efficiency, flexibility, and innovation in control systems.

It's easy to get started with FDT/DTM technology today. FDT Group offers host and device **developer tools**, reducing time to market with solutions that meet FDT specification conformance. It allows vendors to focus on value-added features and functions that separate their offerings from competitors. **FDT Service providers** can assist the vendor community by offering strategy consulting and turn-key development services.

For more information, visit **fdtgroup.org**.

VIDEO ROOM

A STATEMENT FROM THE CHAIRMAN OF THE FDT BOARD

André Uhl emphasizes the critical need for collaboration and harmonization in industrial automation control system applications.

NEW FDT HOST APPLICATIONS AND CERTIFIED DTMs

NEW DTMs

Flowserve – Logix 3820 Series DTM
HART (FDT 3.0)

Krohne – COM DTM
HART (FDT 1.2)

HART COMMUNICATION PROTOCOL

IO-Link

CC-Link

DeviceNet

EtherNet/IP

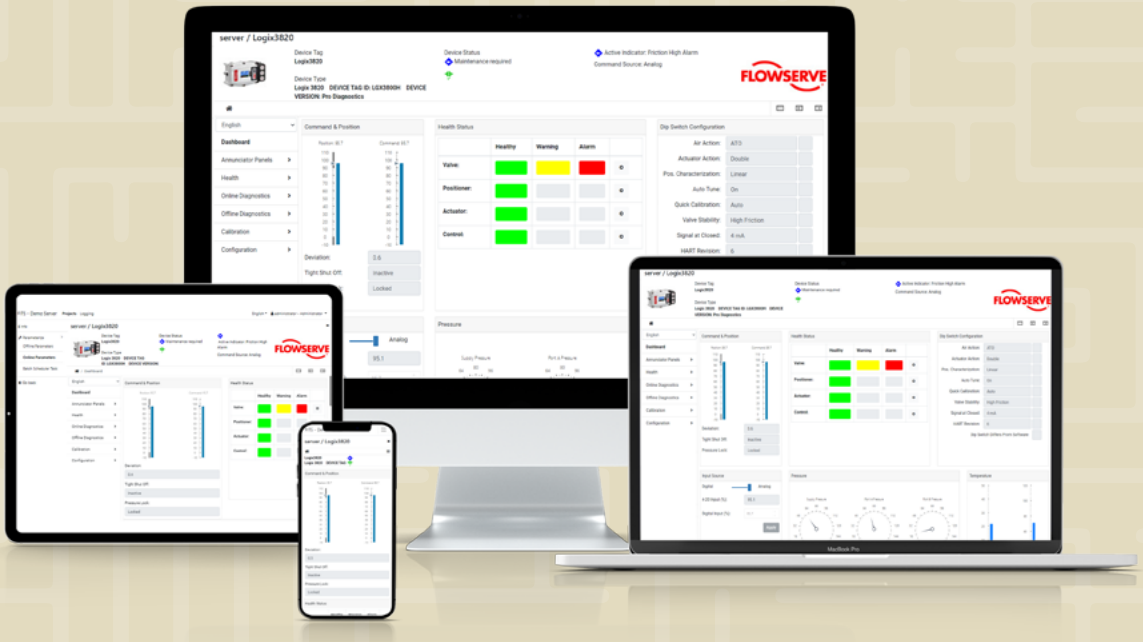
EtherCAT

ControlNet

FOUNDATION

CompoNet

sercos the automation bus



CANopen

PROFINET

PROFIBUS

Modbus

WirelessHART

ISA100Wireless

OPC UA

HART-IP

INTERBUS

FDT/DTM's Flexibility in Integrating Hybrid Applications with EtherNet/IP and Modbus TCP Protocols

Standardization for intelligent device management brings UI and data consistency for the enterprise

Two different worlds

There is a great divide between each continent's preferences in almost every imaginable liking between North América and Europe. Fast food vs slow food, Starbucks vs little coffee dwellings, huge SUVs vs small compact cars, interstate highways vs narrow one lane streets, ODVA vs PI (Profibus and Profinet International).

These Standard Development Organizations have a large market share in their respective regions of influence. The ODVA managed protocols have an overwhelming share in the North American automation market. That situation is reversed in Europe, where the PI managed protocols enjoy market dominance.

Since ODVA's introduction in 1995, the Standards Development Organization that manages the CIP (Common Industrial Protocol) has been improving the capabilities of the CIP media-independent network protocol and its four adaptations to different physical layers.

In the past, industrial network protocols used to be designed for specific applications, like those related to control tasks, information management and safety. The result of this approach was that at any plant, multiple network protocols were used, all of them working in different physical layers. Today, these multi-protocol applications are experiencing incompatibility challenges that result in information silos where data exchange between environments is only possible by closed/prosperity solutions.

The road to Open Standards

Due to the universal adoption of Internet-based technologies, the need for network compatibility is driving the development of solutions based on Open Standards, most frequently focused on the seven layers of the OSI communication model. However, even by working in this way, seamless integration between systems cannot be guaranteed.

ODVA developed four different network standards, EtherNet/IP, DeviceNet, ControlNet, and CompoNet, all of them based on the same communication protocol.

The CIP protocol includes an extensive suite of messages and services for the broadest industrial automation applications — control, safety, energy, synchronization & motion, information, and network management. CIP allows users to integrate these applications with enterprise-level Ethernet networks and the Internet, offering them an integrated approach to achieving enterprise-wide IT/OT integration.

EtherNet/IP

Currently, the most popular implementation of the CIP protocol is EtherNet/IP, which enables the use of standard Ethernet technology in industrial automation applications and additionally provides users with the tools necessary to implement industrial level requirements like real-time support, motion control and media redundancy.

With the increasing requirement of solutions for use in hybrid plants applications, or plants that feature a mix of process- and factory-oriented automation applications, there is a growing need for methods to integrate smart field devices into EtherNet/IP networks.

In the past, the usual way of achieving these goals would have been based on some proprietary hardware for protocol translation, adding unnecessary complexity and additional points of possible failure to an already complex installation.

The role of FDT technology in an EtherNet/IP environment

For over 20 years, FDT/DTM (IEC 62453) has become the de facto device integration and management standard by defining the interfaces needed at the host, communication, and device levels allowing a universal end-to-end approach for data exchange and lifecycle management supporting processes, hybrid, and discrete markets. The standard brings openness and simplicity to heterogenous protocol and device environments via a unified environment delivering modern asset health monitoring to the user community.

The FDT/DTM concept uses a framework container software application that can be implemented in a stand-alone configuration application, embedded into engineering solutions like DCS or PLCs, along with asset management applications. The FDT framework hosts software drivers called Device Type Managers (DTMs) that run and give transparent access to all data, diagnostics, and features from all connected intelligent field devices through any protocol/network due to the technology's agnostic networking integration strength.

This article will primarily focus on integrating the EtherNet/IP network in an FDT hosting environment and the value of a special DTM called a Communication DTM (CommDTM) that manages protocol-related operations.

Different DTM types for different tasks enable flexibility.

DTMs are the key software component enabling a unified control system environment opening the door to flexibility and scalability for manufacturing applications in process, hybrid, discrete and motion control applications. There are several types of DTMs:

Device Specific DTMs: These DTMs are supplied by the manufacturer of your devices and provide users with the widest range of access to the device's set of parameters and customized features. There are third party developers that can customize DTMs with extended configuration options or advanced diagnostics.

Interpreter DTM: These DTMs are not created for a specific device. Interpreter DTMs offer a translation service for other types of device description files, such as Device Descriptions (DDs), Electronic Device Descriptions (EDDs), Field Device Integration (FDI) Device Packages, IO Device Descriptions (IODDs), Electronic Data Sheet (EDS) files, etc. These DTMs are usually packaged with the delivery of system vendor's FDT-enabled engineering application, transparently converting any device driver type to configurable objects, therefore enabling the use of devices without native FDT/DTM support.

Generic/Universal DTMs: Generic DTMs are created with the purpose of providing bidirectional access to the device parameters that are compliant with a specific protocol profile. For example, there are many Generic HART DTMs which provide access to the set of parameters defined under the "Universal and Common Practice Commands" section of the HART protocol standard. A Generic DTM can be created to support any protocol to seamlessly integrate and manage devices in a unified environment.

Communication DTMs (CommDTMs): CommDTMs create a communication channel that works performing the communication operations of the mapped network protocol. CommDTMs function as the standardized device driver for either a single protocol or multiple protocols. The CommDTM is the first DTM needed for the integration of a field device in an FDT implementation.

Gateway DTMs: These DTMs allow transparent communications between different communication protocols in an FDT/DTM-based system architecture. Gateway DTMs work like a link between the CommDTM and the Device DTMs. They allow bidirectional communications across the system.

Two different approaches

The strength of FDT technology resided in its open and agnostic approach allowing any vendor, protocol, or device to plug and play. This strength is the key to limitless control system flexibility and adaptability offering a complete interoperable environment for intelligent device management, enterprise wide.

The below examples explain how two companies heavily involved in both ODVA and FDT Group followed different paths in their way to use FDT technology highlighting its flexibility strength promoting open but customized solutions.

Rockwell Automation approach to FDT Technology

Rockwell Automation's FDT technology adoption approach is focused on the integration of HART enabled field devices. Taking advantage of the "nested communications" feature of FDT technology, which allows the transference of data between tunneled protocols. This is accomplished using Gateway DTMs that support every HART enabled I/O card model that the company produces.

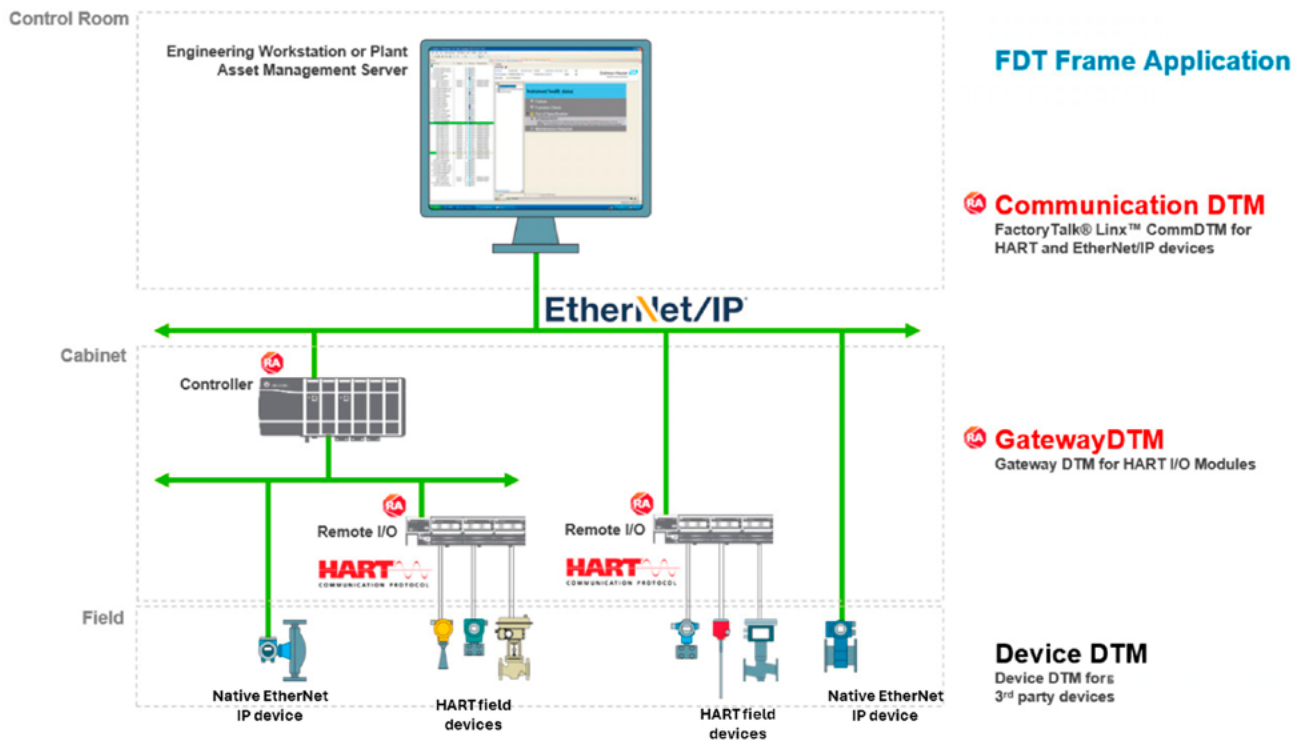
The "nested communications" feature offers transparent access to the HART field devices connected to the HART enabled I/O cards which work as HART to EtherNet/IP Gateways.

To maintain consistency with the configuration of legacy devices, Rockwell prefers to use alternative integration mechanisms for non-process applications.

To connect these Gateway DTMs to the EtherNet/IP network, Rockwell supplies the FactoryTalk Linx CommDTM. This DTM manages all the communication related tasks between the HART field devices and the plant's asset management system.

The FactoryTalk CommDTM is capable of use with any FDT hosting application for asset health monitoring. It has been evaluated with all the leading FDT Framework applications available, such as Endress + Hauser's FieldCare or PACTware Consortium's PACTware.

The general architecture of a Rockwell Automation EtherNet/IP FDT application follows the graphic below:

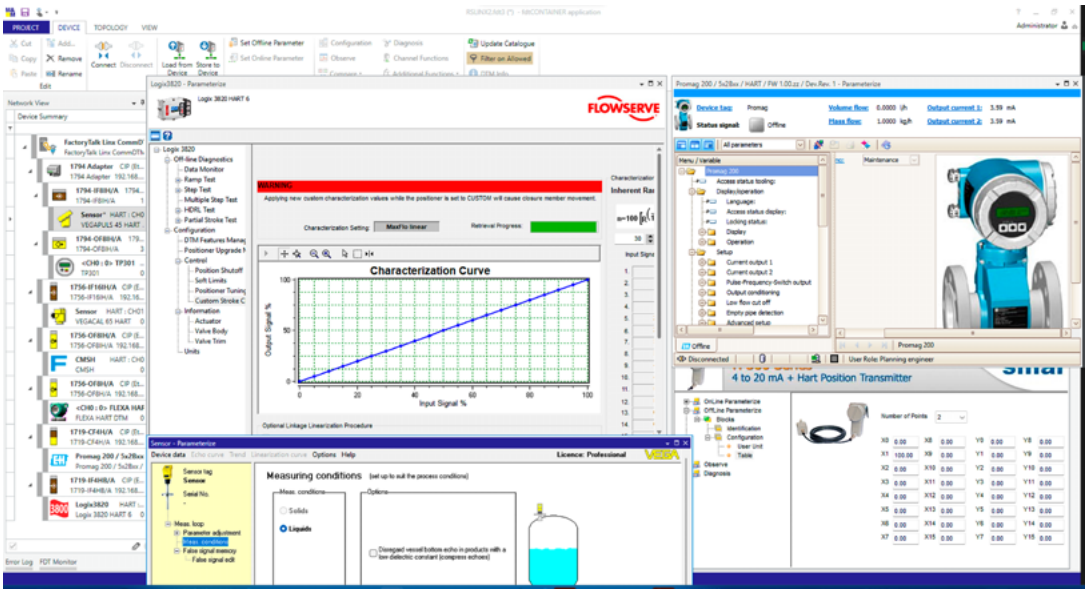


Possible implementations of FDT technology in a Rockwell plant installation

Application examples:

Rockwell's goal for using FDT technology is to provide a direct access path to intelligent field devices, enabling asset management tasks from any PC or Client with an FDT Framework application installed and connected to the plant's EtherNet/IP network.

The Rockwell Automation solution for the integration of smart field devices is based on the FactoryTalk Linx CommDTM. This DTM allows communication between the computer where the FDT Framework application is installed with all the HART Gateways available in Rockwell's product portfolio.



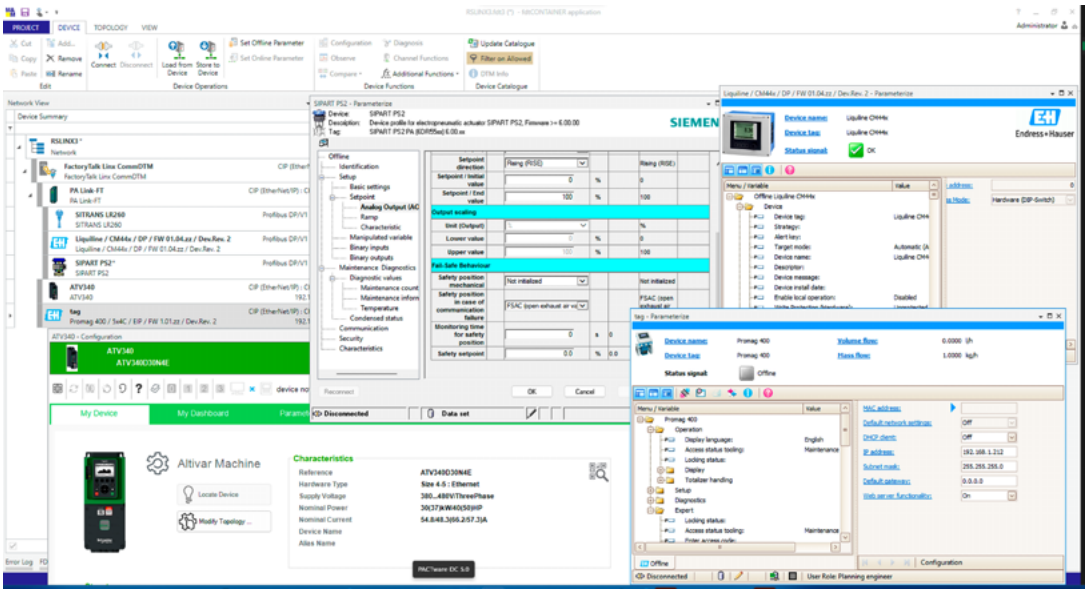
fdtCONTANER (FDT framework) by M&M Software hosts the FactoryTalk Comm DTM allowing the integration of HART devices into Rockwell EtherNet/IP plant installations.

This CommDTM supports the Rockwell Automation series of I/O cards: 1756, 1718, 1719, and 1794. The supported I/O cards include the HART Channel for FLEX5000 HART-enabled I/O modules and the AADvance Controller HART-enabled I/O cards.

The FactoryTalk Linx CommDTM also provides Rockwell's Controllers with access to field devices with native EtherNet/IP support and with an available DTM.

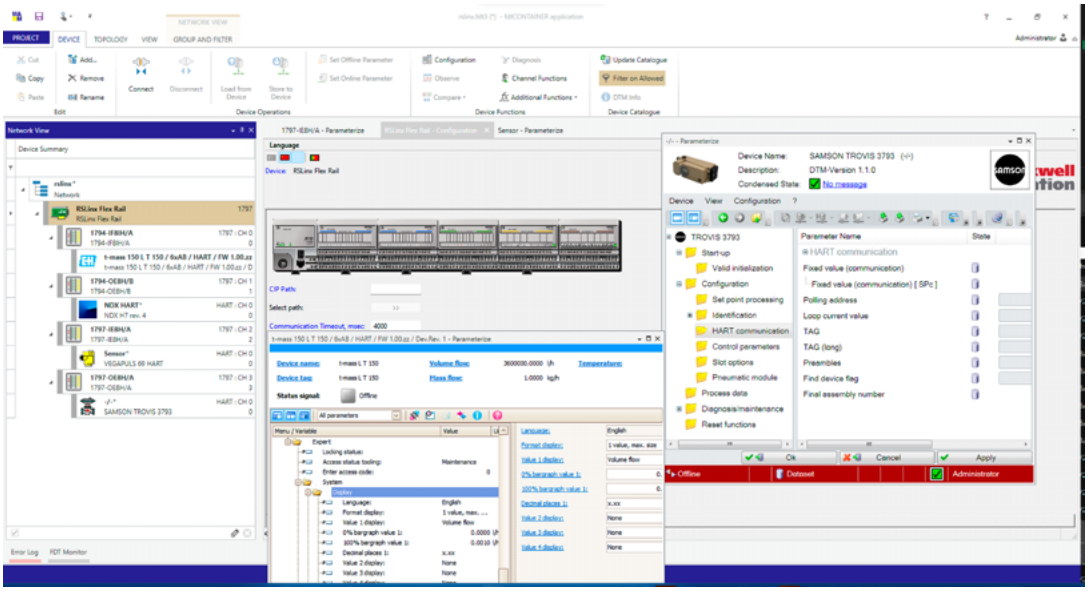
Mainly due to Ethernet's historical shortcomings in field applications, there are few devices available on the market that support EtherNet/IP connectivity, and the ones that exist are usually complex and expensive ones such as Coriolis and magnetic flow transmitters. Drives with DTM support are available from Schneider Electric.

There is even an EtherNet/IP to Profibus PA Linking Device made by the company Aparian Inc., which has a DTM that allows the integration of Profibus PA devices into an EtherNet/IP network. A Foundation fieldbus to EtherNet/IP version is also available.



The PA Link DTM from Aparian offers Profibus PA support for EtherNet/IP systems, making Profibus PA devices accessible like native EtherNet/IP devices, such as the ATV340 motor controller from Schneider Electric or the Promag400 flowmeter from Endres+Hauser

Additionally, there is a legacy CommDTM called the RSLinx Flex Rail Communication DTM. It integrated the FLEX Rail HART enabled I/O modules of the 1794 (standard IO modules) series and the 1797 (intrinsically safe IO modules) series. Although this hardware family is no longer available, many Brownfield installations still use them.



Application example of the RSLinx Comm DTM, the DTM Interfaces shown correspond to the E+H t-mass Mass flowmeter and to the Samson Throbis 1 valve positioner, the Comm DTM appears behind

The possibility of using an FDT-based Framework application to perform asset management of HART field devices connected through FLEX Rail modules can extend the lifecycle of an old installation.

Comparing the 1794 and 1797 DTMs, the latter shows a rich menu for HART related, offline parameterization options.

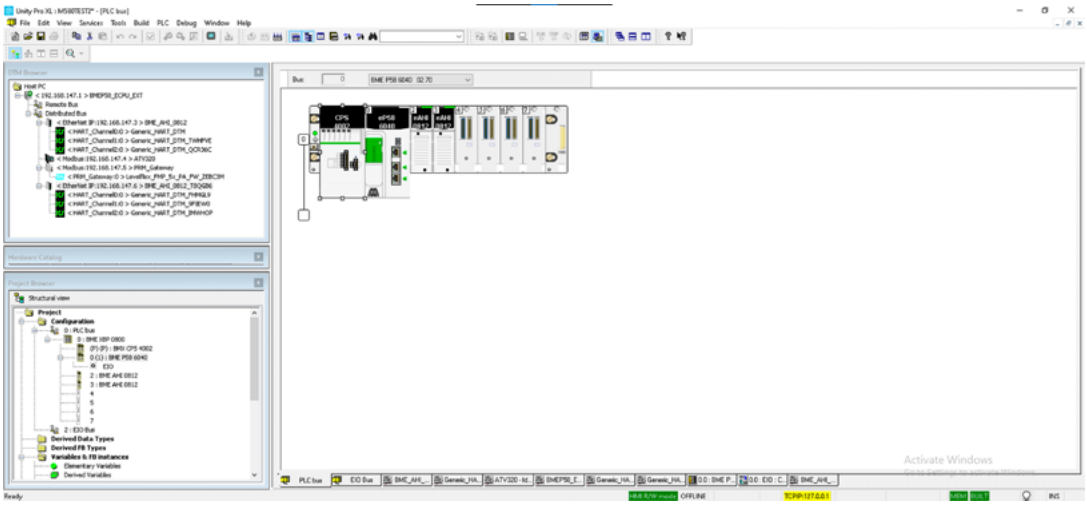
Finally, through the acquisition of the South African company Hiprom in the early 2000's, Rockwell acquired the ability to connect both Foundation Fieldbus and Profibus PA segments to their EtherNet/IP enabled controllers using an EtherNet/IP-enabled DTM-based Linking Device.

Rockwell's Hiprom Profibus PA to EtherNet/IP linking device, connected to various PA devices.

This solution has also been retired but is an interesting example of the flexibility offered by FDT technology. The integration of Profibus PA and FF networks is done by using Aparian's linking devices.

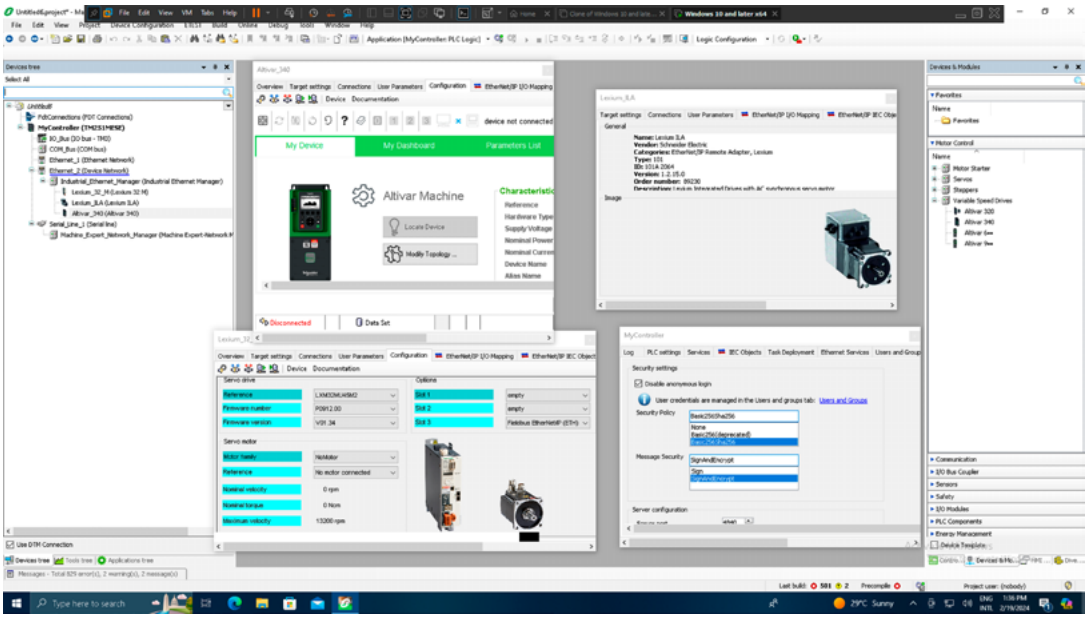
Schneider Electric's approach to FDT Technology

Schneider Electric adopted a different way to use FDT technology in their offerings.



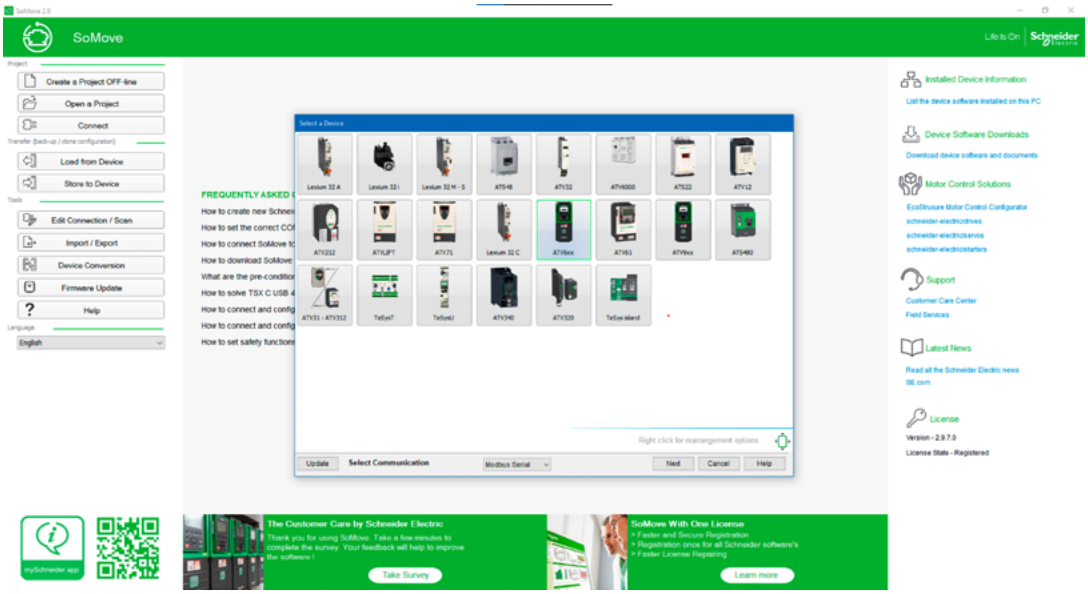
A M580 Schneider Electric PLC, with the corresponding backplane, power supply and two HART enabled 8 channels AI modules, viewed through the embedded FDT Framework of the EcoStruxure Control Expert software tool.

Schneider Electric embedded an FDT framework container across their entire family of configuration and engineering tools. The FDT framework is embedded into the EcoStruxture Control Expert engineering tool, as well as into the Ecostruxture Machine Expert tool optimized for applications like motion control, mechatronic/robotics, smart MCCs and drives configuration, simulation, diagnostics, and network setup.



A screenshot of the EcoStruxure Machine Expert software showing the DTMs of a Lexium drive, an Altivar VFD, and a Lexium IA Stepper motor for motion control and a TM 251 CPU

The company also has an FDT based software solution called SoMove. This is a user-friendly setup software for PC, designed to simplify and accelerate the configuration of Schneider Electric motor control devices.

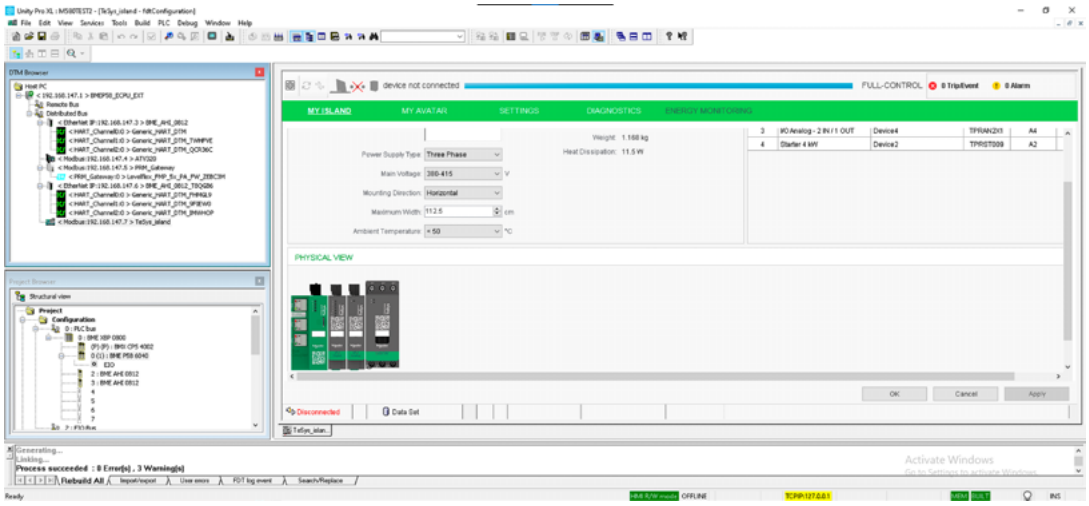


The SoMove FDT based stand alone application allows users to perform the configuration, parameterization, monitoring and diagnostics of Schenider Electric's motor control devices.

This approach allows Schneider Electric to use one DTM for the integration of a device in multiple software applications, with the additional benefit of maintaining the same user interfaces in all the applications.

These two application examples demonstrate how FDT technology can be used as a solution for factory automation applications and clearly demonstrate the flexibility of the FDT technology concept.

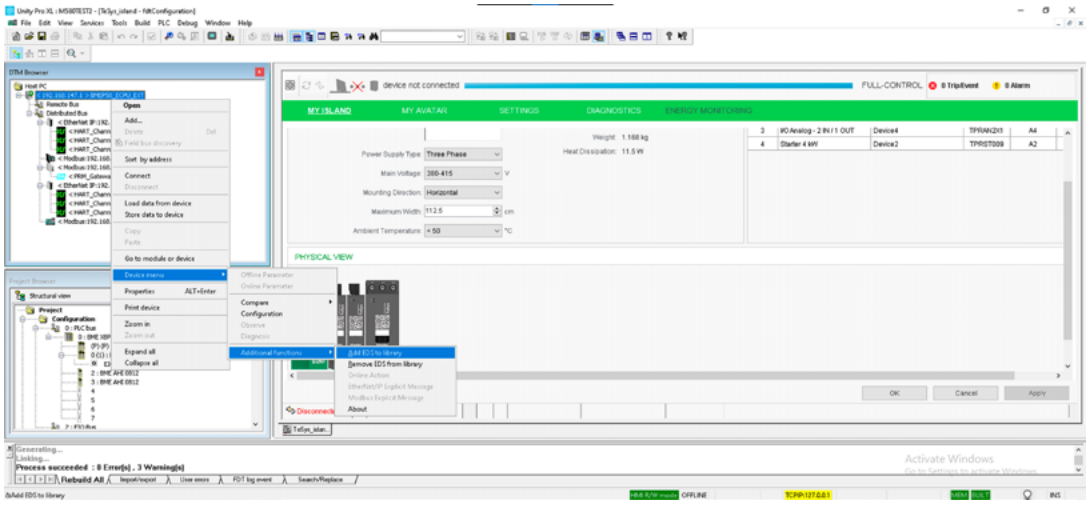
The FDT-embedded environment runs transparently behind the scenes, and many users do not realize they use the FDT/DTM concept. By following this approach, Schneider Electric can offer integration support for EtherNet/IP and Modbus TCP industrial Ethernet protocols.



A M580 PLC equipped with 2 HART enabled AI cards trough EtherNet/IP, an Altivar motor controller, a PRM Profibus Gateway and a TeSys modular motor control system EcoStruxure Rix through Modbus TCP

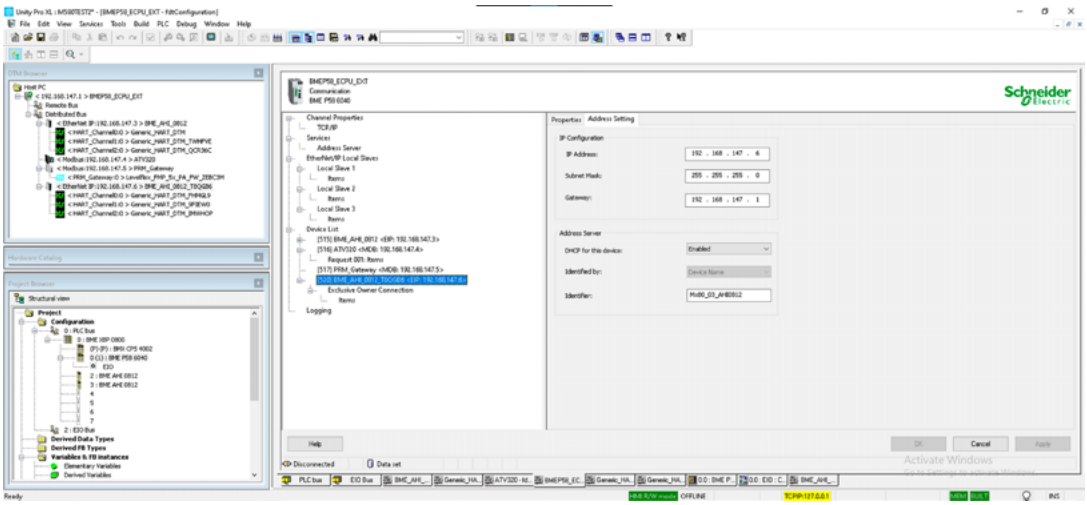
Since Schneider Electric has a wide range of Modbus TCP-enabled MCC (Motor Control Center) hardware, they can offer variable frequency drives and motor starters that can be configured and integrated using corresponding Device DTMs.

This option is also available for EtherNet/IP hardware, if they have an available DTM file. If that is not the case, then the corresponding EDS file must be imported into the DTM catalog.



Importing an EDS device descriptor into the DTM catalogue.
This is done through the CPU's DTM which works like an Interpreter DTM.

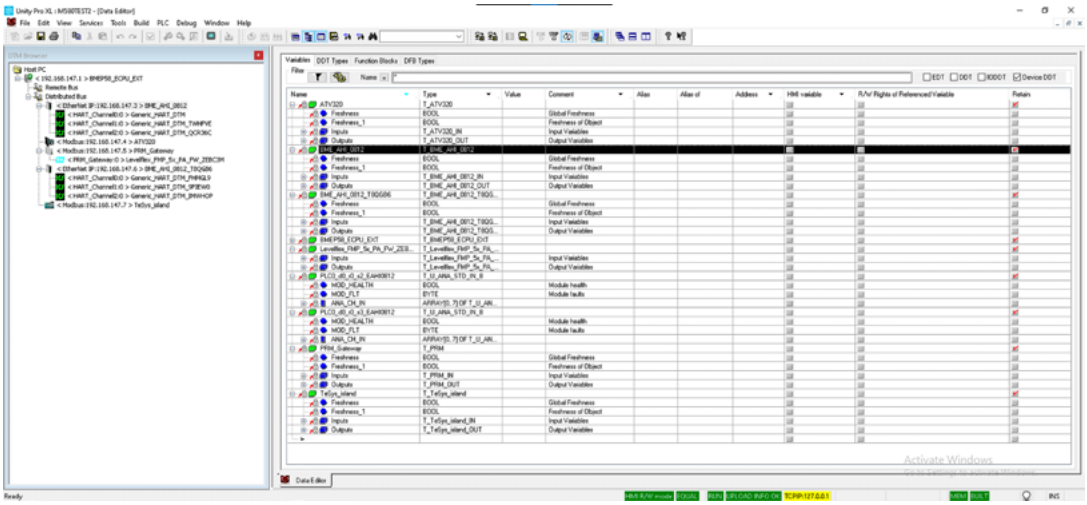
Schneider Electric's Ecostruxure platform uses FDT technology at the core of its solution. In this way, the Controller's hardware configuration uses DTMs. Each module connected to the PLC's rack is configured through the DTM Browser tool.



View of the M580 CPU's DTM through the embedded FDT Framework

So, in this case, using a standalone FDT Framework application is unnecessary because the PLC engineering tool itself is a native FDT hosting application.

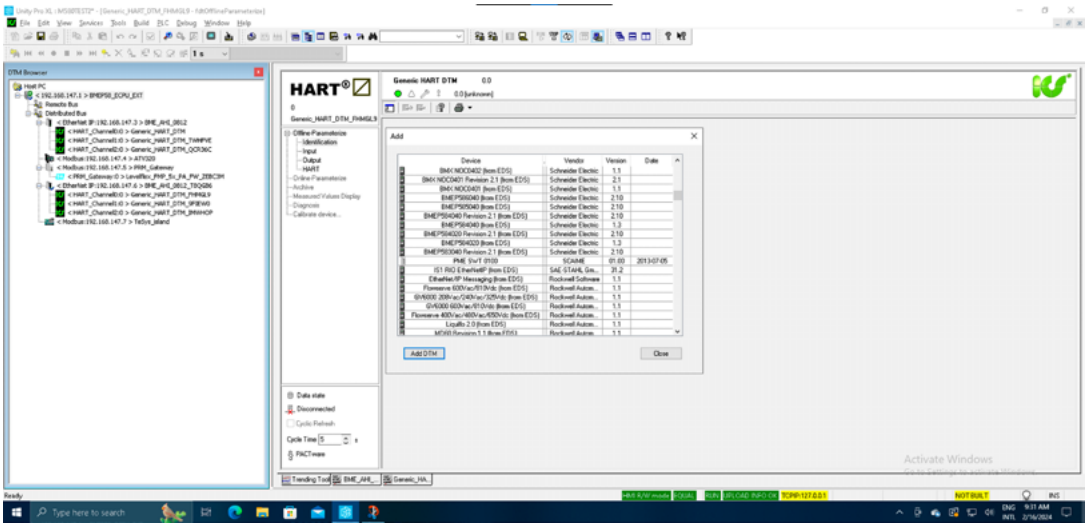
Compared with the typical method of using a separate (standalone) FDT framework, the benefits of this approach are that mismatches or errors between the FDT/DTM configuration and the PLC's hardware configuration are eliminated because they are the same thing.



List of variables available from the connected devices.

One consequence of this approach is that the hardware requirements of the Asset Management workstation are higher than those of the typical FDT Framework PC. However, the benefits of a unified and methodically coherent user interface for all the hardware integration tasks performed in a controller's hardware configuration tool are notable.

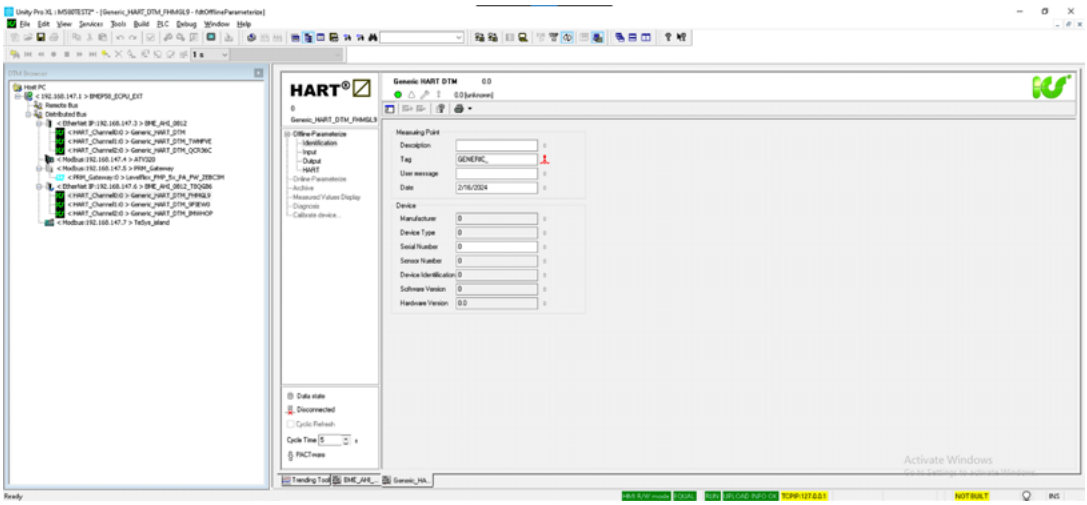
The use of an FDT-based engineering tool also provides Schneider Electric with support for both EtherNet/IP and Modbus TCP Generic DTM generators and interpreters.



The embedded DTM catalogue, showing a variety of DTMs generated from imported EDS device descriptions from devices supported by Schneider Electric and Rockwell.

Schneider Electric offers Generic DTMs for EtherNet/IP modular and non-modular devices and has included a built-in function in their FDT framework that uses an Interpreter DTM to automatically generate DTMs based on the Ethernet EDS description files used by EtherNet/IP devices. A Modbus TCP DDXML Generic DTM is also available to integrate Modbus TCP hardware that uses DDXML files as device descriptors.

So, the approach employed by Schneider Electric is to support the integration of Modbus TCP, EtherNet/IP, HART, and Profibus hardware using Device DTMs or, if they are not available, support for these devices use Generic DTMs created using the embedded Interpreter DTM.



HART field devices connected to 2 EtherNet/IP enabled HART AI I/O cards. HART data is transparently available to the system.

One advantage that the engineering tool with an embedded FDT framework has when compared with a standalone framework is that the engineering tool needs to verify the PLC's hardware's configuration integrity after each configuration change. It will not accept non-compatible DTM combinations, while a standalone FDT tool may be more prone to these issues. The fact is that a faulty hardware configuration may render the PLC unusable until the problem is solved, but a standalone framework is independent of the PLC's configuration.

One limitation of this approach is that HART enabled I/O cards integrated through their EDS files will not be capable of transferring HART information. That means that nested DTM communications is not supported by Interpreter DTMs. However, this is rectified if a combination of native device DTMs, Comm DTMs and Gateway DTM are deployed in the topology.

This approach makes the extensive portfolio of EtherNet/IP devices available in the market compatible with Schneider Electric's controllers. And by using the Interpreter DTM concept, it is not necessary to demand individual Device Specific DTMs from the suppliers.

Simplified Lifecycle Management via a Unified Environment

These two examples show how flexible FDT technology is while simplifying the integration using a mixed networking topology to access smart devices within a unified environment for lifecycle management. Whether supported natively through an engineering tool with an embedded framework or a standalone framework application, the availability of a single, easy-to-use, familiar interface for hardware integration, with the communication protocol's independence, greatly benefits the end users.

Finally, the use of FDT technology enables control systems to gain full access to the rich datasets available on state-of-the-art smart devices, on currently available smart devices, opening the doors to advanced applications such as the NOA concept, IT/OT integration, and the connection of the control system to the Internet of Things (IIoT).

In our next issue, we will examine implementation use cases and innovation using FDT technology with Profibus/Profinet based applications that take precedent across the Atlantic Ocean in the European market.

For more information about FDT technology, visit fdtgroup.org/innovation.

FDT GROUP

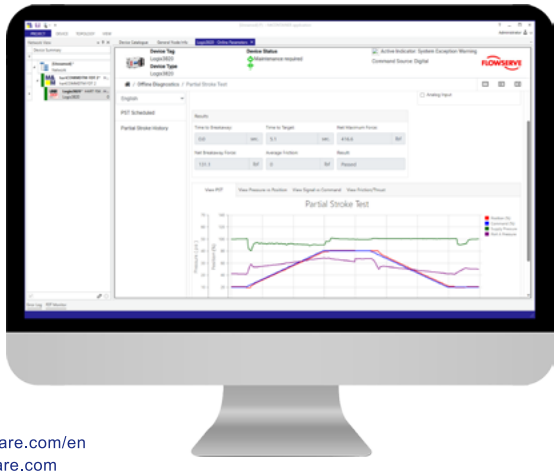
Unlock Insights:
Intelligent Device Management Challenges and Resolutions

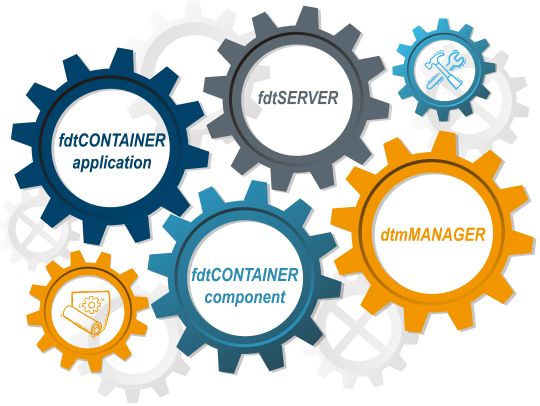
Review a source of standardization tackling these challenges.

Full Stack FDT UE Support

M&M

M&M Software is a member of the FDT Group with more than 20 years of experience in FDT/DTM technology. A team of experienced technical experts provides Certified Desktop Common Components, DTM development tool, Consulting,Training, Development,Support and maintenance.A full-stack solution by your side.





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Interview with Dharmaraju B, Engineering Director – Device Integration & OPC Business

Steve Biegacki, FDT Managing Director, recently talked with Dharmaraju B, Engineering Director – Device Integration & OPC Business at Utthunga, an FDT Service Provider and an accredited FDT Testing Site for DTMs.

For 15 years, Utthunga has catered to a wide range of industrial devices & their applications and believes the FDT standard (IEC 62453) is one of the critical device integration standards that advances the integration capabilities in the digital world of automation.

SB Steve Biegacki
FDT Group Managing Director

DB Dharmaraju B
Engineering Director – Device Integration & OPC Business

SB

Thanks for joining me to discuss field device integration challenges, Dharma.

Can you please introduce Utthunga, your mission, and the customer base you serve for the industrial automation market?

DB

Utthunga is a global product engineering and industrial solutions company catering to OEMs, Independent Software Vendors (ISV), and end industries. We provide services for software development, firmware & hardware development, IIoT, and cloud applications. We also specialize in OPC, device integration, IT-OT integration, communication protocols, and testing automation services.

Utthunga believes in delivering best-in-breed solutions that adhere to the reliability demands expected to help our clients improve efficiency and business profitability.

SB

This is a broad list of industrial engineering services, field to cloud!

Focusing on field device integration, what challenges is the industry presented with? Can you explain some of the industry's pain points and how Utthunga is helping the vendor community achieve reliable and interoperable solutions?

DB

In the early days, end-users in industries such as oil and gas, pharmaceutical, and energy encountered significant challenges while utilizing various software and applications focused on the commissioning, configuring, and monitoring field devices. These challenges presented inefficiencies in operational and cost management.

As a trusted partner, Utthunga plays a pivotal role in addressing these challenges. We leverage our expertise in device integration standards and technologies and collaborate with device vendors and OEMs to offer tailored solutions. Our

proficiency in FDT development services directly tackles issues related to disparate protocols, lack of standardization, and complex configurations.

At Utthunga, our approach is to enable seamless device integration through reliable, interoperable solutions. By harnessing the power of FDT/DTM technology, we enhance device integration and maintenance and empower the vendor community to deliver user-friendly and efficient solutions. This strategic focus aligns with our commitment to facilitating a smoother and more streamlined experience for end-users in their day-to-day operations.

SB

Awesome to hear how Utthunga is helping the industrial community focused on interoperable solutions.

Why is the FDTDTM standard (IEC 62453) necessary for device integration?

DB

The FDT/DTM standard (IEC 62453) is pivotal for device integration, providing a standardized communication framework between field devices and end systems. The FDT framework ensures interoperability, allowing seamless integration of devices from diverse manufacturers. FDT/DTM streamlines configuration, monitoring, and maintenance processes, reducing complexity and enhancing overall industrial system reliability.

The introduction of FDT/DTM by the FDT Group addresses and overcomes challenges faced by the end-user community. It provides significant advantages in device integration solutions, with widespread adoption by system integrators and device OEMs. FDT/DTM stands as a stable and enduring standard in the market, effectively resolving pain points and contributing to a more robust device integration landscape.

SB

It's great to highlight the challenges that FDT resolves in the device integration landscape.

Utthunga has been an FDT Service Provider for 15 years; tell us about your lineup of FDT/DTM development tools and services.

DB

Utthunga provides comprehensive FDT Services, including FDT/DTM development, desktop-based host development, FDT UE-based server development, and asset management application development. We also provide technical consultation, pre-compliance & certification support to ensure tailored solutions for industrial device OEMs and end industries.

We have in-house accelerators – uDTMsdk & DD-DTM Conversion tools. The uDTMsdk is a DTM accelerator that helps to develop the DTM quickly. It is a cost-effective and quick time-to-market solution. The uDD-DTM tool is valuable as it automatically

converts a DD/FDI package to an FDT-compliant DTM. It is a comprehensive, robust, cost-effective conversion tool for customer business requirements and goals.

If you struggle with standardizing and consolidating data from diverse devices, Utthunga's uDDx suite provides a unified approach. This suite enables seamless integration of enterprise and IT applications, offering remote operation capabilities for field devices. It facilitates virtual data processing, analysis, diagnostics, and maintenance, providing a comprehensive solution to streamline your operations.

SB

This is great news for system and device vendors who are looking for tools and/or outside help to execute FDT/DTM solution development to reach the market quickly.

Utthunga is an Accredited FDT Test Site for DTMs. Please explain why DTM Certification is essential for the user community and how Utthunga helps device vendors meet this requirement?

DB

FDT/DTM Certification is paramount for users, ensuring device compliance with industry standards while guaranteeing seamless interoperability. Certifying DTMs to the FDT specification involves rigorous testing, ensuring the viability of the DTM state machine, correct installation and de-installation, multi-user environment capability, interface functionality, robustness, network scanning communication performance, topology import/export, and audit trail capability.

SB

We are grateful to have Utthunga as a certification site for DTMs!

How can Utthunga help device Vendors with DTM Certification?

DB

As an FDT-accredited Test & Certification Centre, Utthunga tests device vendor DTMs to ensure FDT specification conformance. Our FDT/DTM specification experts provide consultation services and troubleshoot certification-related issues, ensuring a smooth and compliant certification process for device vendors.

Thank you, Dharma, for this productive discussion on field device integration and your services available to the vendor community to accelerate FDT-enable interoperable solutions for end industries that will benefit from the unified environment for intelligent device management.

For more information, please reach out to Utthunga at: https://bit.ly/3Rjv4KF

case study

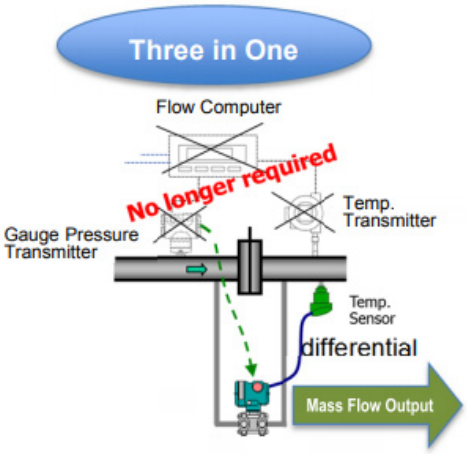
YOKOGAWA

Yokogawa Adds New Functions to Oprex™ Field Instruments

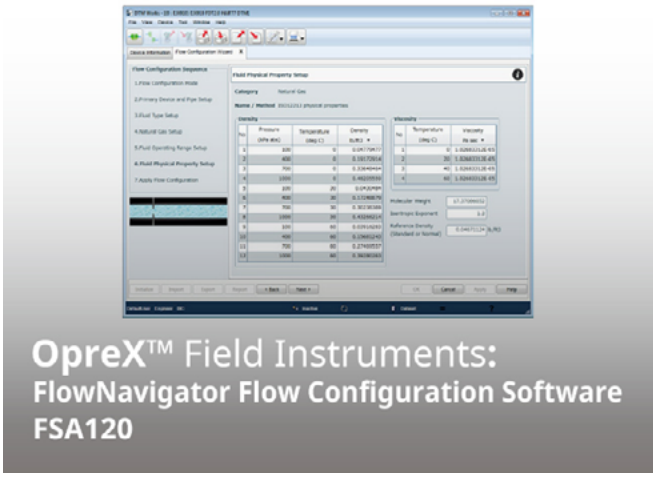
EJX Multivariable Transmitter, FDT 2.0-based-DTM, and FlowNavigator Flow Configuration Software FSA120 improve procurement, setup, operations, and maintenance, reducing the troubleshooting time required in the event of equipment failure.

EJX Multivariable Transmitter successfully integrates the DPharp multi-sensing capability with an onboard flow computer and can be configured for multi-variable (DP, SP, T) or dynamically compensated mass flow outputs. Dynamic flow compensation allows the EJX Multivariable transmitter to eliminate inherent errors in the DP flow calculations at actual operating condition and to model the flow profile more precisely. Extensive range of primary elements and process fluids are supported. The EJX Multivariable Transmitter is compatible with a wide range of primary devices, including orifice plates, nozzles, venturi tubes, multiport averaging pitot and cone meters, and can be used with various types of fluid, including general fluids DIPPR, steam tables IAPWS-IF97 and natural gas standard AGA8/ISO12213.

EJX Multivariable Transmitter

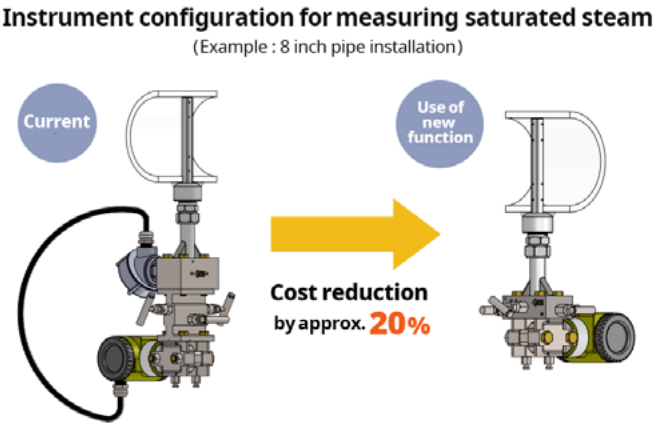


Application information, such as the primary device and fluid data required for mass flow calculation, is using an FDT 2.0-based mass flow parameter configuration tool — FlowNavigator Flow Configuration Software FSA120 that runs on a PC and is downloaded to the transmitter by means of field communication. In operation, the flowmeter computes standard volumetric or mass flow from measured differential pressure (DP) and flowing density using actual measured pressure and temperature, unlike standard differential pressure transmitters which assume pressure and temperature — and therefore flowing density — to be constant.



FlowNavigator Flow Configuration Software FSA120

New functions have been added to the YOKOGAWA Multivariable Transmitter EJX910A and EJX930A.



Saturated Steam Mode added for EJX Multivariable Transmitter

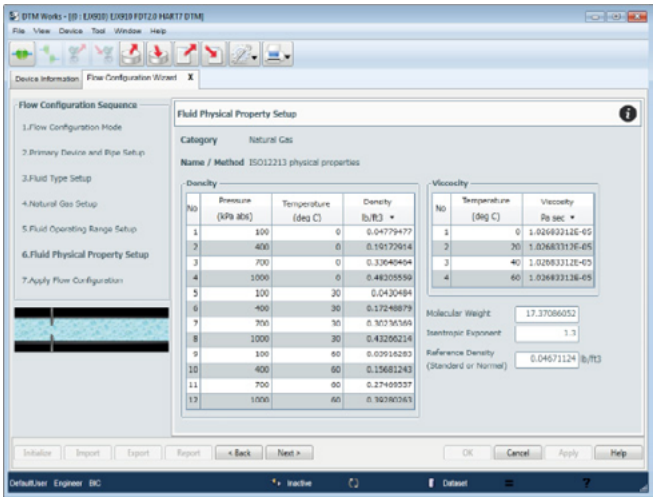
To reduce engineering man-hours and procurement costs, operation without using an external thermometer under saturated steam is made possible. The EJX Multivariable Transmitter can now calculate steam temperature from static pressure values using the steam table (international state formula IAPWS-IF97). When saturated steam mode (ET Fixed = Saturated Steam) is set, steam temperature values can be calculated. In measurement function B (mass flow measurement), saturated steam flow rate can be measured without connecting an external thermometer.

Storage of User Flow Parameters in FlowNavigator Flow Configuration Software FSA120

Application information, such as the primary devices and fluid data required for mass flow calculation, is using an FDT 2.0-based mass flow parameter configuration tool, FlowNavigator. Users can now enter application information using FSA120 FlowNavigator R2.03 GUI (Graphic User Interface) allowing "User Flow Parameters" to be stored in the transmitter. This reduces man-hours required for equipment setup and management, enabling rapid start-up of operation. Previously, storage of "User Flow Parameters" in the transmitter was not possible.

"User Flow Parameters" entered using the FlowNavigator's GUI include the primary device and fluid data required for mass flow calculation.

- Primary device and pipe setup
- Fluid type setup
- Fluid operating range setup
- Fluid physical property setup



Fluid physical property setup

Display of Device History

Detailed equipment history information, including alarms and process data detected by the transmitter, can be displayed, and harvested via the EJX Multivariable Transmitter FDT 2.0-based-device DTM in the unlikely event of equipment failure. This provides improved maintenance operations by reducing the troubleshooting time required in the event of equipment failure.

----------Maximum/Minimum----------		
Static Pressure Max	, 3564.7	kPa
Static Pressure Min	, 0.0	kPa
CapTemp Max	, 120.7	degC
CapTemp Min	, 19.0	degC
AmpTemp Max	, 85.0	degC
AmpTemp Min	, 18.9	degC

case study

New Compact5000 Analog HART DTM-enabled I/O

Leverage standardized intelligent device management for all assets across the plant floor

With customers needing to make smarter decisions in a competitive marketplace, and with increasing quantities of information that originate on the plant floor, remote access to real-time data and plant performance metrics is more important than ever.

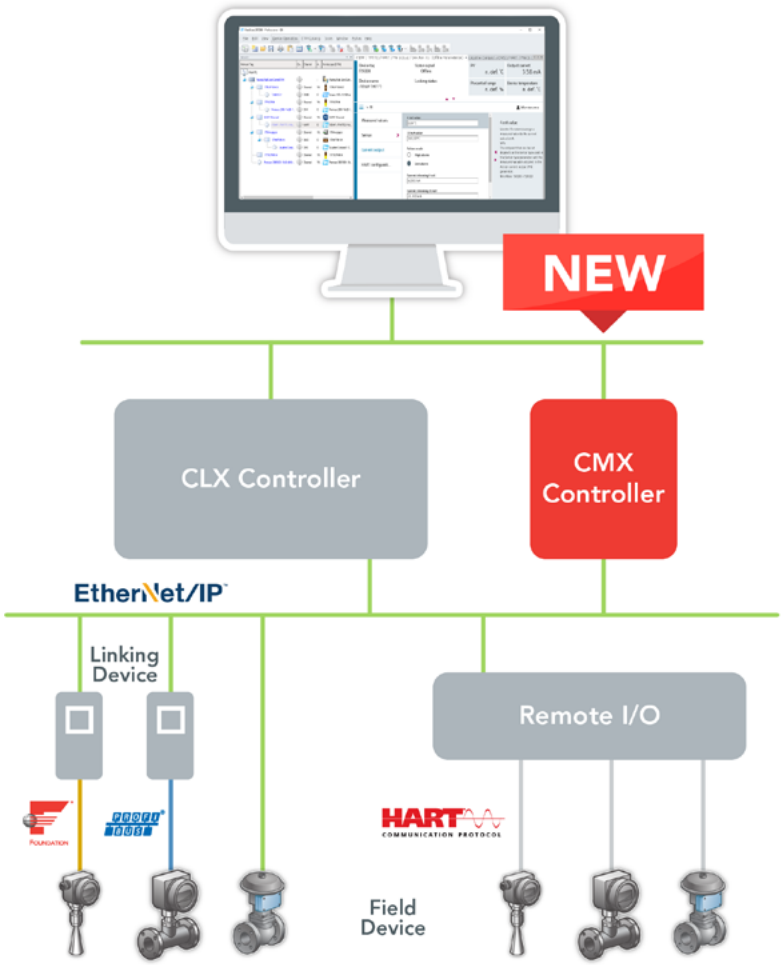
In 2024, Rockwell Automation will continue to invest in FDT/DTM-enabled hardware with its release of Compact5000 Analog HART DTM-enabled I/O. Now customers can realize the value of real-time data regardless of the scalable Logix platform that is chosen, ControlLogix or CompactLogix.

Rockwell Automation is committed to providing intelligent device management across the automation architecture. A leading standardized (IEC 62453) method used for streamlining device lifecycle management (integration, configuration, monitoring) with advanced diagnostics according to NE 107 (NAMUR) recommendation is DTM-enabled I/O. The DTM is an embedded software (device, gateway, and comm levels) solution that standardizes the communication path and access to all connected devices/data over any network topology in the automation infrastructure. The solution supports a major automation use case aimed at providing a unified user environment optimizing operations and maintenance performance for effective asset management.

To learn more about using DTMs to gain an integrated approach to field device management, please consider the following resources:

The FactoryTalk Linx CommDTM Getting Results Guide will guide you through the set-up of the communication path between your field devices connected to Allen-Bradley I/O and an FDT asset management system.

To download the latest FactoryTalk Linx CommDTM and the Gateway DTM for your Allen-Bradley I/O platform, please visit our Product Compatibility and Download Center (PCDC) click on "Find downloads" and search for "DTM".



Endress+Hauser

FieldCare SFE500 / SAH70

- FDT Frame Application for Process Device Configuration and Asset Health Monitoring

Rockwell Automation

FT Linx CommDTM for EtherNet/IP

- Enables the FDT framework application to communicate over the EtherNet/IP network
- Utilizes FactoryTalk® Linx for CIP communication

Rockwell Automation

HART Module DTMs

- Handles the transmission of HART over EIP, depending on the remote I/O type, or in chassis I/O (CLX & CMX)
- New for 2024 – Compact5000 Analog HART I/O

Process Device DTMs

- Device Type Manager for Endress+Hauser and third-party devices

To engage with experts from Rockwell Automation and our technology partners, please attend the annual Process Solutions Users Group at Automation Fair in Anaheim, CA USA on November 18-21, 2024. In addition to the full Rockwell Automation portfolio including, FactoryTalk Software, Allen-Bradley Hardware, PlantPAx Distributed Control Systems, and Lifecycle IQ Services, you will be able to talk to device and infrastructure providers to discover how their products (communication interfaces, cables, and safety barriers) create an opportunity to capture additional value by using device data to enhance decision making.

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