



HTML5

DEVICE INTEGRATION STRATEGIES

Empowering the Intelligent Enterprise

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What is FDT® Technology?

The FDT Group AISBL is an international non-profit corporation consisting of leading worldwide member companies active in industrial automation and manufacturing. The major purpose of the FDT Group is to provide an open standard for enterprise-wide network and asset integration, innovating the way automation architectures connect and communicate sensor to cloud for the process, hybrid and factory automation markets. FDT technology benefits both manufacturers and end users, with advancements such as the Industrial Internet of Things (IIoT) and Industry 4.0 delivered out-of-the-box – enabling modernized asset integration and access to performance data for visualizing crucial operational problems. Around the world, end users, manufacturers, universities, and research organizations are working together to develop the technology; provide development tools, support, and training; coordinate field trials and demonstrations; and enable product interoperability.

FDT Technology is comprised of two primary software components—the FDT Device Type Manager (FDT/DTM™) the driver for an intelligent device, and the FDT FRAME Application (FDT/FRAME™), which can be a stand-alone configuration application or embedded in engineering applications such as a DCS, PLC or asset management solution. DTMs developed by instrumentation suppliers provide a graphical interface to support configuration, diagnostics and troubleshooting of critical measurement devices and other assets. The FRAME Application provided by the system supplier, hosts DTMs used for management of all the devices on a wide variety of process and factory networks within a facility. Together, an FDT/FRAME and a collection of DTMs and/or other device drivers create an FDT-enabled application, which can be scaled from a small collection of devices to tens of thousands of devices controlled by a single FRAME throughout the automation communication pyramid.

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Editorial: FITS™ | Platform Independent Development and Automation Deployment

New FDT IloT Server™ standard yields the optimum ROI for both vendors and end users



Lee Lane, FDT Group Chairman of the Board of Directors

We just completed our first European Developers' Workshop focused on the emerging FDT IloT Server™ (FITS™) standard scheduled to release to the public in the first quarter of 2020. More than 60 product managers, system architects, and software engineers from around the world (both members and non-members) attended this two-day event to gain advanced insight into business benefits the FITS architecture enables. On the second day, it was truly unique in that attendees received hand-on programming experience with the actual platform independent developer tools (Common Components), that greatly simplify the development of FITS compliant device DTMs, in addition to Desktop, and Server applications. The only "negative" feedback received, is that attendees would have liked additional time with the tools – one day wasn't enough to explore all the new capabilities!

I cannot stress strongly enough the significance that our development tools for FITS are fully platform independent. This means that the resulting products that our vendor community develops using these tools will be platform and operating system independent.

Since the FITS deployment options are scalable from skid to cloud, platform independence yields the optimum ROI for both the vendors and end users. Read more about FITS and platform independence in the companion article entitled, *"FITS™ Provides Platform-independent Solution to Modernize and Simplify Automation Product Development."*



Recent FITS Developers' Workshop

One question that comes up frequently from end users when we are discussing our new FITS standard is the availability and capability of OPC UA within the architecture. We have taken a very principled position that in order to support Industry 4.0 and IloT initiatives, OPC UA must be natively integrated in our solution. In the FITS standard,

Continued

FITS™ | Platform Independent Development and Automation Deployment

all device DTMs automatically make their data and health information available through the OPC UA Information Model that works equally with all industrial control networks across factory and process automation. This rich dataset is then exposed through the OPC UA Server that is built into our FDT Server. This means that any OPC UA Client that has authenticated access to the Server is able to acquire real-time data and health information from any connected device. This unparalleled capability is a direct result of our collaboration with OPC Foundation.



Henk van der Bent accepts long-term FDT leadership award from Lee Lane, FDT Chairman of the Board

At our recent Board meeting we had the opportunity to review the tremendous progress that our various committees have made in preparing the release of the FITS standard. Thousands of volunteer hours have gone into this project with many more to follow. On behalf of our Board of Directors, I would like to thank the individuals and the companies that have so generously contributed to this outstanding body of work.

While the FITS project occupied much of the Board agenda, we paused to recognize the retirement of a long-term leader within the

FDT organization - Henk van der Bent of Yokogawa. Henk was active at the founding of the FDT standard serving continuously on our Executive Committee and most recently as Treasurer of the organization. Henk's leadership and guidance has contributed greatly to the success of the FDT standard. Thank you, Henk – you will be missed. We wish you an enjoyable retirement.



ISA103 Chairman, Ilan Verhappen recognized for standards services for FDT Group

The Board also had the opportunity to thank Ilan Verhappen for his leadership in steering FDT through the process of becoming an ISA/ANSI standard. Ilan is an active and well-respected member of the automation community, so we are very grateful for his expertise and service to this important standard for the Americas.

While it's great to look back and be proud of the progress accomplished by all this year, we look forward to Q1 2020 as we plan the official launch of the FITS standard along with all the development tools that will drive digital transformation across the automation sector. Stay tuned to the FDT Group [website](#), newsletter and social media outlets as news releases.

FITS™ Provide Platform-independent Solution to Modernize and Simplify Automation Product Development

Control system and device suppliers can prepare for new business opportunities with the third-generation FDT Specification

Suriya Selvaraj, VP of Technology - FDT Group

Developed and managed by FDT Group AISBL, an international, non-profit corporation consisting of leading global companies active in industrial automation and manufacturing, the FDT® standard provides an open, standardized solution for universal device integration and information exchange for effective asset management.

In recent years, major strides have been made to strategically meet marketplace demands to modernize the FDT standard for the digital world while also simplifying the FDT development environment. The emerging FDT IIoT Server (FITS™) architecture (FDT 3.0) is designed for demanding process and factory automation, hybrid automation and motion-related applications. This solution incorporates single-user desktop to multi-user distributed server architectures irrespective of system, device, platform or protocol limitations.

The emerging FITS standard will provide control system and device vendors with the opportunity to advance their intelligent automation solution offerings with standards-based, platform-independent, information-driven business models meeting the requirements of process and discrete manufacturing.



A key advancement with FITS is the ability to create a Graphical User Interface (GUI) in HTML5 and JavaScript—eliminating common coding challenges and freeing automation developers from the Windows environment.

“Your clear path to Asset Excellence”



Availability + Diagnostics = Predictability

Yokogawa's PRM Plant Resource Manager is an integrated Plant Asset Management solution that enables centralized online monitoring of automation assets. PRM takes a step forward with its capability to create and integrate innovative diagnostics applications. Based on the FDT open standard and armed with the PRM Advanced Diagnostics Application (PAA) environment, PRM integrates diagnostic intelligence and provides a single-window solution for predictive asset management. In addition, PRM synchronises seamlessly with Yokogawa's FieldMate Device Management Wizard.



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www.yokogawa.com/PRM

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FITS™ Provides Platform-independent Solution to Modernize and Simplify Automation Product Development

What FITS means to the market

For suppliers of industrial control products and solutions, the implementation of FDT is a forward-looking strategy leveraging the new era of automation. The technology has been enhanced to support applications that open the door for standardized sensor-to-cloud and enterprise-wide integration.

The third generation FDT standard, manifested in FITS, is a disruptive technology for modern industrial operations, and a key enabler of the Fourth Industrial Revolution, with an Industrial Internet of Things (IIoT) server-based solution providing advancements for cloud-based enterprise data access, mobility, apps, and the use of augmented reality.

It is important to note that both development and deployment is entirely platform independent for FITS-based

FDT Servers and FDT Device Type Managers™ (FDT/DTMs™). In fact, FDT is the only standard offering a complete integration solution with the flexibility to deploy FITS independent of the user's operating system with the backward computability to the existing installation in the market.

The FITS solution will empower the intelligent enterprise by transforming manufacturing practices, enabling open, secure, flexible, and platform independent deployment architectures for cloud, edge, on-premise, and desktop environments. Its Client/Server-based architecture enables sensor-to-cloud integration with an embedded OPC Unified Architecture (UA) Server and Web Server, as well as built-in security features—making the FITS solution suitable for highly critical to most basic applications.

Continued

FITS™ Provides Platform-independent Solution to Modernize and Simplify Automation Product Development

FDT Group received industry feedback that inclusion of OPC UA in the FITS solution was important to product suppliers. OPC UA is a well-adopted international interoperability standard for reliable and secure exchange of information. It represents the information and communication layer in the RAMI 4.0 architecture, and is the basis for the Industry 4.0 communication guideline.

Unlike standards that make the use of OPC UA completely optional, with FDT Group's technology, the OPC UA Server is natively integrated and completely pre-wired within the server developer toolkit so developers don't have to bother with implementing OPC UA—it's already part of the tool set.

With FITS, all device DTMs automatically make their data and health information available through the OPC UA Information Model used across all industrial control networks in factory and process automation. This rich dataset is then exposed through the OPC UA Server built into the FDT Server. As such, any OPC UA Client with authenticated access to the Server can acquire real-time data and health information from any connected device.

Why developers should be interested

Automation product developers have many reasons to be interested in the latest FDT technology developments. Release of the FITS architecture, set for the first quarter of 2020, will dramatically change the outlook for the worldwide supplier community. The modernized approach inherent in FITS "lowers the bar" for vendors seeking to take advantage of this innovative technology while greatly optimizing developer performance.

The FITS solution is multi-faceted, scalable and agile, and can be utilized in a host of diverse operating environments due to its platform independent approach employing the .NET Core Framework. The technology's standardized interfaces and infrastructure will boost connectivity to a new level by offering cloud deployment and mobility services, and thereby make field devices ready for IIoT and Industry 4.0. At the same time, the use HTML5 and JavaScript allows for a modernized graphical interface to support development activities.

FITS will also expand mobile access to detailed device diagnostics across equipment vendors and all FDT-supported network architectures, while eliminating the need for advanced coding or programming in the supervisory control system.

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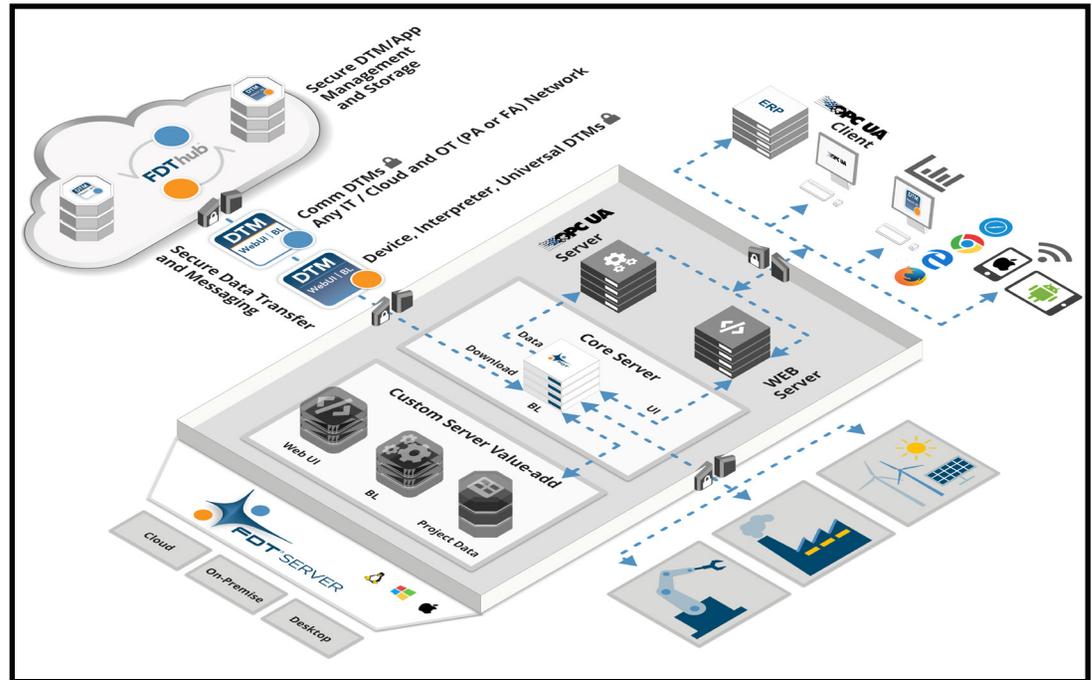
FITS™ Provides Platform-independent Solution to Modernize and Simplify Automation Product Development

At the same time, OPC UA and mobile remote access will have a significant impact on solutions intended for plant and factory maintenance personnel, who are looking to implement condition-based maintenance to reduce their cost for periodic, scheduled repair and troubleshooting activities.

The FDT IIoT Server platform improves the device supplier business model by allowing for creation of a new generation of FDT/DTMs that will seamlessly integrate with any Server or Desktop hosting environment. This approach holds the key to unlocking universal device integration, bridging the current FDT installed base with next-generation technology, while creating an excellent starting point for new applications.

FDT Group is committed to simplifying FITS product development by providing its members with discounts on [specifications and other valuable development resources](#). The goal is to enable automation suppliers to develop FDT Servers, FDT Desktops and DTMs faster and more efficiently than ever before.

All base coding to ensure interoperability is done, so vendors can



FDT IIoT Server (FITS) | High-level Architecture

focus on competitive - value-add capabilities, while also bringing advanced product portfolios to market.

Putting FITS-based toolkits to use

FDT Group has a variety of toolkits for Server, Desktop and DTM applications for developers working in the FITS environment. The organization provides versatile Server, Desktop and DTM Common Components to create a library of routines to simplify the development

Continued

FITS™ Provides Platform-independent Solution to Modernize and Simplify Automation Product Development

process. It also offers dtmINSPECTOR, which delivers all the properties needed to effectively ensure DTM development compliance for certification by the FDT Group Business Office.



FITS-based Developer Tools Available

These platform-independent tools, available for use with any of the major operating systems, ensure specification compliance, greatly enhanced interoperability, and work together to

help developers deliver robust FDT-enabled solutions while accelerating time to market.

FDT Group's second-generation toolkits have been updated based on user feedback to create an environment allowing for quick and easy development. For example, the standard FDT Server Common Components toolkit has a built-in, platform-independent OPC UA Server that is prewired, pretested and ready for immediate deployment. This solution alleviates headaches for developers by eliminating the learning curve for implementing an OPC UA Server and integrating it with an FDT application.

In addition, the FDT Server Common Components toolkit integrates the necessary Web Server to support all the browser-based Clients in the FITS architecture. The toolkit includes a pre-built Web Server so this aspect of the development process is eliminated. In fact, the FDT Server Common Components can even be compiled and employed as a working FDT Server out-of-the-box, without the need for any additional engineering!

For device vendors, the latest FITS (FDT 3.0) standard makes it easier to create compliant device DTMs than ever before. Thanks to the DTM Common Components, DTMs are automatically compatible with OPC

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FITS™ Provides Platform-independent Solution to Modernize and Simplify Automation Product Development

UA and compliant with the NAMUR NE 107 status recommendations for predictive maintenance.

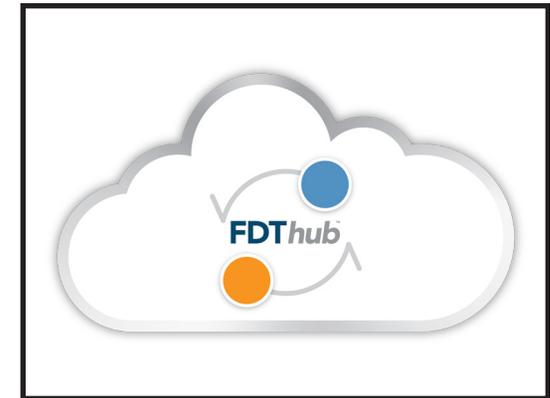
Previously, automation suppliers implementing FDT 1.2 spent a considerable amount of time reviewing the standard to find answers to questions and guide their development efforts.

With the latest generation standard and tool set, they can take advantage of a completely integrated development environment regardless of the operating system platform.

The FDT 3.0 standard has also been updated with a feature known as “static functions,” which simplifies a wide range of DTM-related activities. Device vendors can now employ a granular runtime environment for processing information for a specific function without running the full DTM.

In the past, developers utilizing the FDT 1.2 standard had to instantiate the entire DTM and deal with large volumes of code in order to obtain current device health or process values. The static functions capability allows them to access smaller segments of code, so it is no longer necessary start-up the entire DTM to obtain the information they need. This solution greatly reduces coding requirements, and at the same time, benefits end-users by minimizing resource requirements and enabling much more responsive system operation.

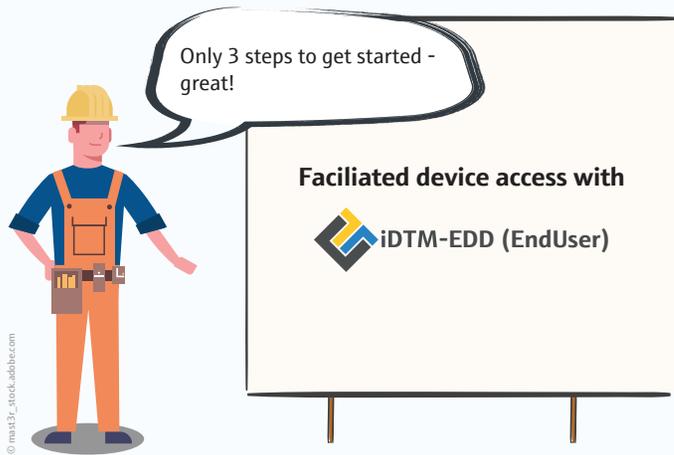
Lastly, the FITS platform incorporates an “FDThub™” providing a single, centralized location for hosting of all certified, FITS-capable FDT/DTMs. Designed for both cloud-based and on-premise air-gapped system deployment, the repository capability is provided as part of



FDThub DTM Repository

the DTM certification process and eliminates several DTM management headaches for device suppliers. Once a DTM is certified, it is uploaded to the FDThub and made available when the vendor’s product is ready for release.

The FDThub makes it possible to deploy “FDT as a Service” with convenient online access to certified DTMs for distribution to customers. Device discovery triggers automatic download or search results in the case of multiple DTMs.



Everybody is talking about cloud business, web applications and Industry 4.0. Well - we do that as well. But is that really what is of interest for you NOW?

Isn't the situation like this:

There are running plants out there which need to be maintained.
There still is enough effort in exchanging devices.

This often results in

- searching for device drivers
- asking for EDDs or FDI device packages
- download from different providers etc.

That is time consuming and prevents you from doing your job in an effective way. Isn't your current need to configure, monitor or troubleshoot devices?

If your answer is YES, check this out:

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- install ONE driver
- access 1400+ HART devices and 700+ Foundation Fieldbus devices
- save time and money by using iDTM.

Supported protocols:



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Continued

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Utilizing other valuable resources

FDT Group has taken steps to make it easier for developers, end-users, product managers, business strategists, IT/OT professionals and other stakeholders to gather information about next generation universal device integration and asset management enabled by the FITS architecture.

The organization recently held its first European FITS Developer Workshop where more than 60 members and non-members were present to learn about development initiatives supporting the IIoT and Industry 4.0. The event provided an in-depth look at the FITS architecture, while giving attendees hands-on programming experience for FITS-enabled FDT Server and FDT/DTM development using the official Common Component toolkits. Additional developer workshops are planned

for the future. For more information, please contact the FDT Group business office (businessoffice@fdtgroup.org).

In addition, automation equipment suppliers can obtain valuable assistance from recognized FDT Service Providers. These organizations are active members of the FDT Group who stay up-to-date on the latest developments and trends. FDT Service Providers offer training and workshops to teach customers everything they need to know about FDT technology. They can advise about system and device integration, and help suppliers future-proof their system and device management strategy. A full list of FDT [Service Providers](#) is available on the FDT Group website.

By becoming an FDT Group member, automation suppliers can access a wealth of information and assistance to make FDT-compliant product devel-

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FITS™ Provides Platform-independent Solution to Modernize and Simplify Automation Product Development

opment a smooth process. Membership provides an easy entry into the Fourth Industrial Revolution, IIoT and the new era of automation.

Conclusion

FDT Group members, including many of the largest suppliers of industrial automation technology worldwide, will realize opportunities to better serve customers—and improve their business performance—by adopting the FITS architecture.

FITS is a modern, platform-independent solution that migrates the fundamental standard on which FDT is built from the Windows-based .NET Framework to an open .NET Core as well as HTML5 and JavaScript.

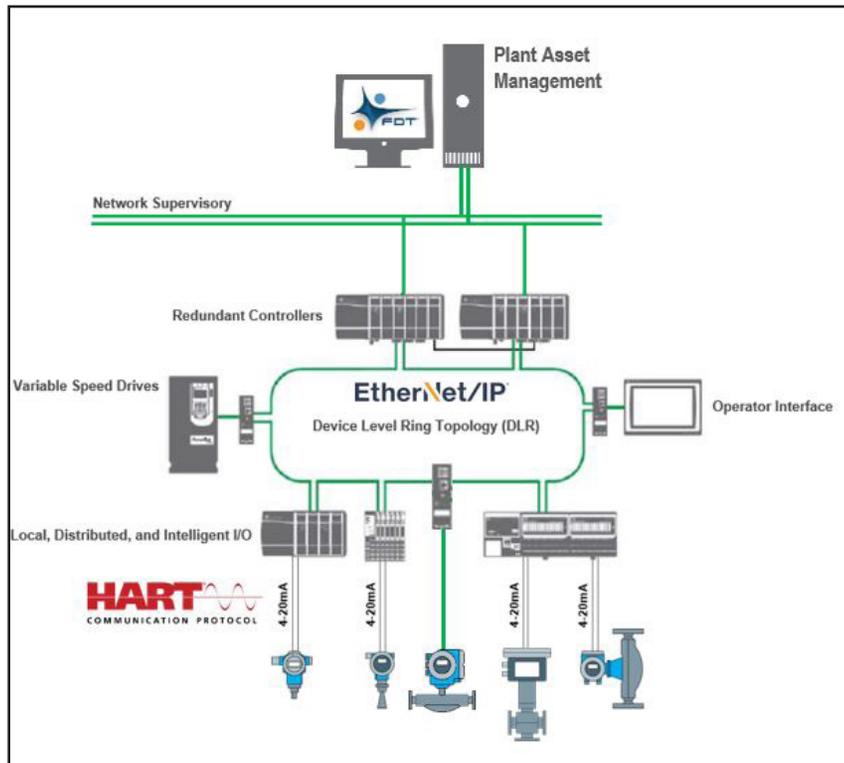
The concept of FITS was created to prepare FDT technology for a digital future. It is the key for automation vendors seeking a digital transformation path to keep pace with today's changing environment and emerging user requirements.

HART Devices in EtherNet/IP Environment Connect Easy with FDT

Modern, easy-to-use solution increases device information access while reducing maintenance effort

James Winter, Global Process Director, Rockwell Automation

Process maintenance teams have long been challenged with gaining access and connectivity to service their lowest-level field devices. Traditionally, plant personnel needed to walk out to the processing area and use a handheld communicator or web server to connect to each device individually – a process that can take hours.



As more operations are connected using next-generation process field networks, like EtherNet/IP, the need for an easier connection method is imperative for more efficient process-instrumentation management.

To this end, Rockwell Automation offers solutions that leverage the seamless integration and time-saving benefits of FDT® technology and the network reach of EtherNet/IP to connect, configure and maintain HART devices. This gives maintenance personnel the ability to remotely access intelligent HART devices from a centralized, secure and safe location, reducing field-device maintenance from hours to mere minutes.

Getting Connected

To enhance plant operational efficiency, modern facilities want a fully enabled IIoT architecture with connected applications, automation systems, and process devices throughout the enterprise. To access plant floor data, Rockwell Automation and its Encompass Partner, Spectrum Controls, supports HART process devices in an FDT architecture with a variety of DTMs supporting HART IO Modules in the following families: 1756, 1794, 1718, 1719, 1734 and 1769.

Continued

HART Devices in Ethernet/IP Environment Connect Easy with FDT

The HART IO Module DTMs allow asset management software that is based on FDT technology, such as Endress+Hauser FieldCare, to communicate with HART devices. Maintenance technicians can now use the FactoryTalk® Linx Comm DTM and the IO Module DTMs to connect to various IO sub-systems across all systems and skids, regardless of a plant's size. With this solution, technicians can identify any HART device by its serial number, perform configurations such as parameter changes and get the health status of each device - all from the central control room. This not only saves significant time, but also helps eliminate the risks associated with field maintenance.

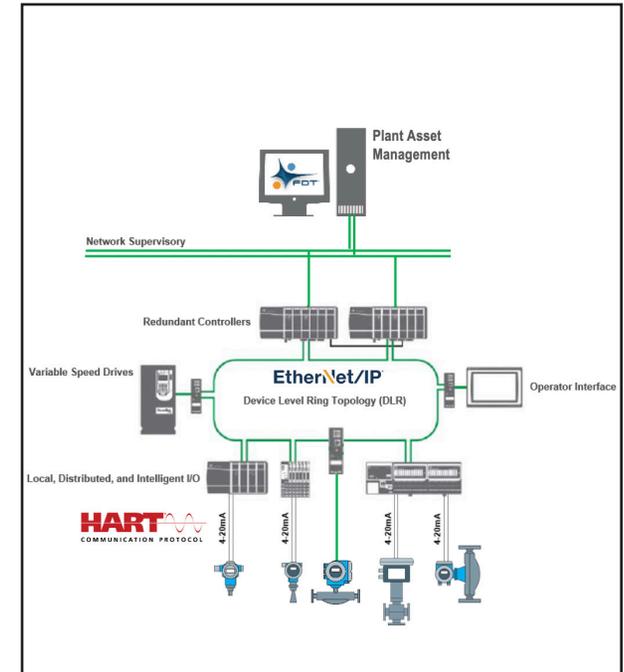
Ethernet Topology Integrates Field Devices

EtherNet/IP™ enables industrial automation applications with enterprise connectivity using standards-based Ethernet technology (IEEE 802.3 with the TCP/IP Suite). As an IIoT enabler, EtherNet/IP provides the opportunity to connect a wide variety of 'Things' ranging from software applications to industrial controllers and field devices. One of the most common field device protocols installed in the Process Industries is HART with its ability to communicate both analog and value-adding digital information over a current loop. EtherNet/IP provides additional architectural benefits to HART-enabled applications by providing a harmonization layer allowing integration of multiple IP and

non-IP based networks. By eliminating disparate networks and trips to the field for troubleshooting the network, EtherNet/IP optimizes the workflow experience for technicians. Key enhancements include centralized management of the installed-base of HART devices, a

consistent user experience for device and network configuration, and security management through the FDT-enabled hosting interface. EtherNet/IP and FDT- both proven technologies, together bridge the current installed-base to advance the ease of access to field level information while improving work efficiencies for the IIoT era.

To download the latest HART IO Module DTMs, please visit our [Product Compatibility and Download Center \(PCDC\)](#).



TeSys™ island - Industry 4.0 Offer Based-On FDT/DTM Technology

New Avatars provide digital twin logic, while engineering tools provide lifecycle management

**Authors: Saurav AGRAWAL, Digital Future Offer Marketing Manager; Schneider Electric
Dominique LEDUC, Device Life Cycle Marketing Manager; Schneider Electric**

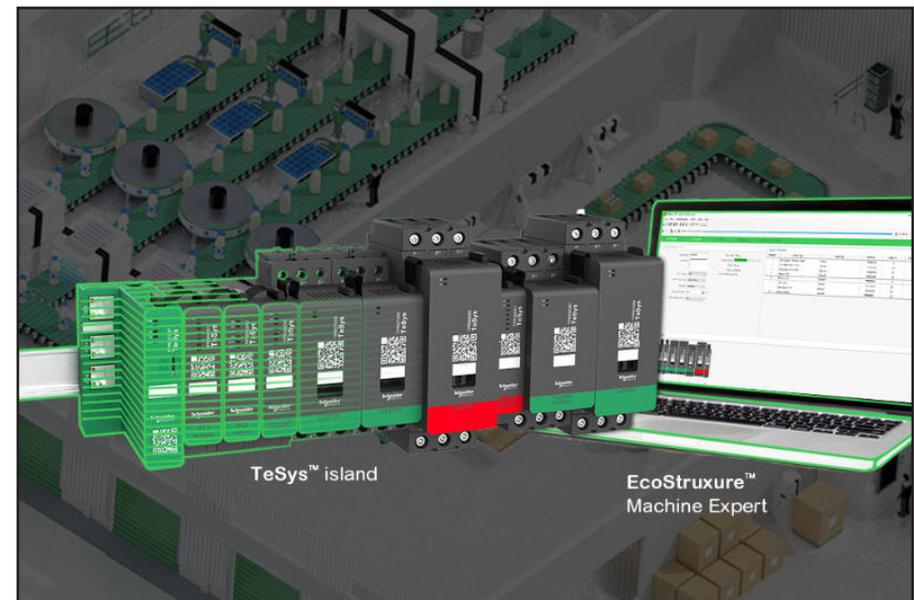
TeSys island is the new innovative digital load management solution from Schneider Electric —providing data for higher machine efficiency and ease of servicing and allowing faster time to market.

TeSys island is a modular, multifunctional system providing integrated functions inside an automation architecture, primarily for the direct control and management of low-voltage loads. TeSys island can switch, help protect, and manage motors and other electrical loads up to 80 A (AC3) installed in an electrical control panel.

This system is designed around the concept of TeSys Avatars (conceptual to Industry 4.0 - Digital Twins). These avatars are digital objects representing a logical function of the physical module with the pre-defined logic. It also helps determine the configuration of the island.

The logical aspects of the island are managed with software tools, covering all phases of product and application lifecycle: design, engineering, commissioning, operation and maintenance.

The physical island consists of a set of devices installed on a single



DIN rail controlling loads, monitoring data, diagnostics information and connected through a ribbon cable providing the internal communication between modules.

The external communication with the automation environment is made via a single coupler module, and the island is seen as a single node on the network. The other modules include starters, power in-



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Continued TeSys island – Industry 4.0 Offer Based-on FDT/DTM Technology

interface modules, analog and digital I/O modules, voltage interface modules, and SIL interface modules, covering a wide range of operational functions.

TeSys Avatars

Avatars are the digital representations of the physical modules on the TeSys™ island. TeSys™ Avatars bring ready-to-use functions through their predefined logic and associated physical devices. The Avatars installed on the TeSys island are controlled by the island's bus coupler. Each Avatar includes pre-defined logic for managing its physical modules, while also providing easy data exchange with PLCs through function blocks. Avatars include pre-configuration of the available protection functions. Data exchanges between PLCs and all the Avatars on the island are managed through the bus coupler.

Information accessible through the Avatar includes:

- Control data
- Advanced diagnostics data
- Asset management data
- Energy data

The TeSys Avatars include three types:

System Avatar represents the whole island as a system. The system avatar allows setting the network configuration and computes island level data.

Device Avatars represent functions performed by switches and I/O modules.

Load Avatars represent functions related to specific loads, such as a forward-reverse motor. Load Avatars include the appropriate modules and



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Continued

TeSys island – Industry 4.0 Offer Based-on FDT/DTM Technology

operating characteristics to serve the load type. For example, a Motor Two Directions Avatar includes two starter modules, accessories, pre-programmed control logic, and a pre-configuration of the available protection functions.

TeSys island Engineering Tools

To manage the TeSys™ island through all life-cycle phases—from component selection, to operational monitoring, to maintenance; three digital tools are available:

TeSys island Configurator: an online tool for the initial design of the island

Engineering tools: software for configuring, monitoring, and controlling the island (**TeSys™ island DTM** within EcoStruxure™ Machine Expert or **So-Move™ software**)

Operation and Maintenance Tool

(OMT): an online tool embedded in the bus coupler for operation, maintenance, and troubleshooting

The engineering tools assist with the design, engineering, and commissioning phases of the island, as well as with PLC programming.

The TeSys island engineering tools are built using open, FDT/DTM (standard) technology enabling easy integration and providing the following functions:

- **Design Functions**
 - Design the island topology.
 - Generate a bill of material.
- **Engineering Functions**
 - Adjust the settings of TeSys Avatars to customize the electrical and load protection parameters.
 - Communicate with the PLC (Machine Expert).





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• Commissioning Functions

- Check the electrical wiring and test the electrical lines in Test mode without loading a configuration.
- Simulate commands from the PLC and set the status of the Avatars in Force mode.
- Check the island's status and monitor the Avatars with diagnostic features.
- Compare the loaded configuration and topology against the project file.
- Operate the island directly from a control panel.

• Programming Functions

- Generate exchange files for third-party PLC programming environments (SoMove software).
- Access a library of function blocks (Machine Expert)

for control, diagnostics, energy monitoring, and asset management.

The full Integration into SoMove Software provides:

• Aided design to determine

- The bill of materials of the island
- The topology of the island

• Aided engineering

- Generation of exchange files with a third-party programming environment (EDS files)
- Fast programming using function blocks
- Customized functions for Electrical protections, Motor protections, and Energy monitoring
- Contextual setting of parameters for communication with the controller and Avatars

Continued

TeSys island – Industry 4.0 Offer Based-on FDT/DTM Technology

- **Aided commissioning**

- *Test mode:* Check the electrical wiring and test the electrical lines without loading a configuration.
- *Force mode:* Force the commands and Avatar status to ease commissioning.

- *Diagnostic tab:* Check the status, monitor the Avatars and their associated modules, and compare the loaded configuration and topology with the project file.
- *Control panel:* Operate the island directly.

TeSys island Screenshots

Built upon FDT/DTM technology (FDT 1.2), TeSys island enables easy integration within 3rd party FDT FRAME application such as PAC-Tware or fdtCONTAINER from M&M Software.

The screenshot displays the TeSys island software interface. The top menu bar includes File, View, Communication, Device, Tools, and Help. Below the menu is a toolbar with various icons. The main interface is divided into several sections:

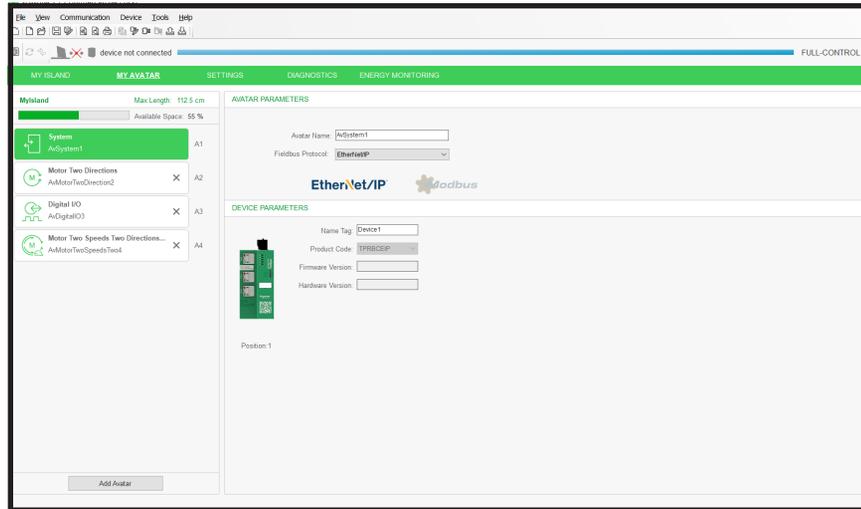
- ISLAND CHARACTERISTICS:** This section contains fields for Name (MyIsland), Description, Max Width (112.5 cm), Available Space (55%), Width (42 cm), Weight (4.766 kg), Heat Dissipation (30.2 W), Power Supply Type (Three Phase), Main Voltage (380-415 V), Mounting Direction (Horizontal), Maximum Width (112.5 cm), and Ambient Temperature (<50 °C).
- BILL OF MATERIALS:** A table listing components and their quantities.
- PHYSICAL VIEW:** A visual representation of the island components, numbered 1 through 11.

Position	Device Type	Name Tag	Reference	Avatar Number	SIL Group
1	Bus Coupler - Ethernet Switch	Device1	TPRBCEIP	A1	
2	I/O Analog - 2 IN / 1 OUT	Device5	TPRAN2X1	A2	
3	I/O Digital - 4 IN / 2 OUT	Device4	TPRDG4X2	A3	
4	Voltage Interface	Device6	TPRVM001	A2	
5	Starter 4 kW	Device2	TPRST009	A2	
6	Starter 4 kW	Device3	TPRST009	A2	
	Assembly Kit		LAD9R1	A2	
7	Starter 4 kW	Device7	TPRST009	A4	1
8	Starter 4 kW	Device8	TPRST009	A4	1
9	SIL Starter 4 kW	Device9	TPRSS009	A4	1
10	SIL Starter 4 kW	Device10	TPRSS009	A4	1
	Assembly Kit		LAD9R1	A4	
	Parallel Link		LAD9V5	A4	
	Mechanical Interlock		LAD9V2	A4	
11	SIL Interface	Device11	TPRSM001	A4	1

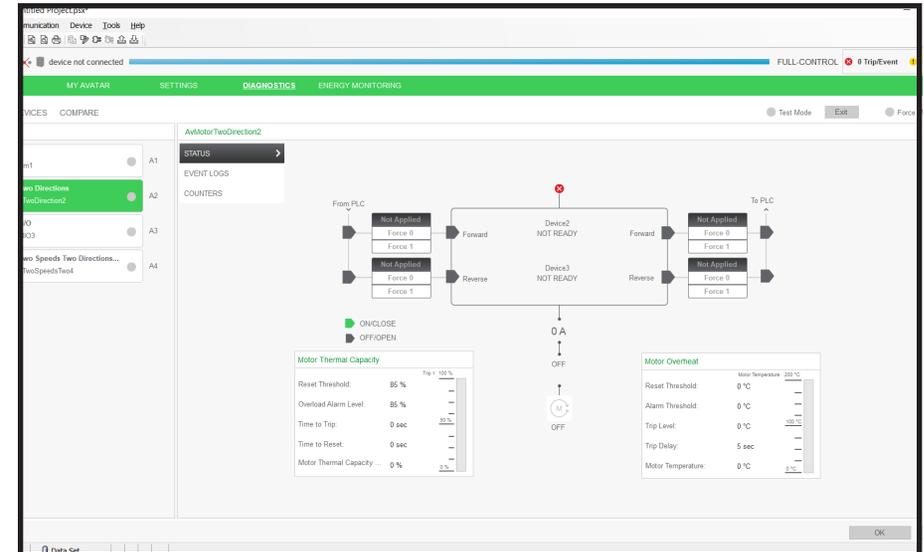
My Island view

Continued

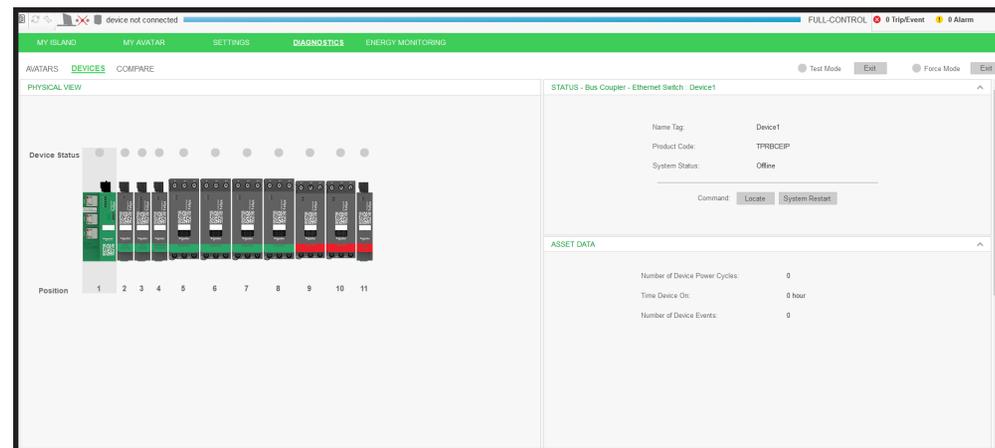
TeSys island – Industry 4.0 Offer Based-on FDT/DTM Technology



My Avatar view



Diagnostic view Avatars



Diagnostic view Devices

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