



## Frequently Asked Questions

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### **Q: What is FOUNDATION for Remote Operations Management™?**

A: FOUNDATION for Remote Operations Management™ promises to advance the utilization of an open, interoperable fieldbus automation infrastructure incorporating wired and wireless High Speed Ethernet (HSE), wired and wireless sensor networks, and industrial wireless applications.

FOUNDATION fieldbus has been built from the ground up for openness, and can support the rapidly changing world of technology in process automation. With the addition of FOUNDATION for Remote Operations Management, users now have the ability to bring valuable diagnostic information from wireless devices into the open and standardized infrastructure of FOUNDATION fieldbus. Combined with the ability to handle remote I/O and the complete range of wireless devices for process automation, as well as other networks, this greatly extends the range and capabilities of FOUNDATION fieldbus to encompass many more devices throughout the entire plant or facility—regardless of their communications technology. The business value lies in taking the large amounts of data from these devices through HSE and turning it into useful information in an open environment. Users will be able to enjoy the benefits of wireless networking and remote I/O along with the powerful infrastructure of FOUNDATION technology.

### **Q: What is the scope of this initiative?**

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A: The FOUNDATION for Remote Operations Management specifications define a series of interoperable HSE devices to bring control I/O (both analog and discrete) back to plant automation systems over an international standard, high-speed network. The HSE network can be wired for in-plant use, or serve as a wireless backhaul for remote applications. Wireless sensor networks can currently either be *WirelessHART*<sup>®</sup> or ISA100.11a, but expansion continues as different wireless technologies gain prominence.

The project consists of three teams. The HSE Remote I/O (HSE RIO) team developed the specification for the interface from wired HSE to conventional I/O and wired HART<sup>®</sup>. The Fieldbus Foundation/ISA Cooperation (FIC) team developed specifications for the wireless HSE backhaul architecture for FOUNDATION for Remote Operations Management devices. The Wireless Sensor Interface Team (WSIT) developed specifications for interface of wireless sensor networks.

### **Q: When was the project launched?**

A: Wireless marketing requirements and technical concepts were completed in early 2007, and the Fieldbus Foundation's board of directors authorized development of technical specifications in June 2007.

### **Q: How does the FOUNDATION for Remote Operations Management solution work?**

A: Within the FOUNDATION automation architecture, H1 (31.25 kbit/s) and HSE (100 Mbit/s) provide a distributed function block capability with HSE serving as a larger pipeline offering increased speed and throughput. The FOUNDATION for Remote Operations Management development expands these capabilities by establishing open, non-proprietary specifications for an interface to wireless field device networks, a wired HSE backhaul, and a wireless HSE backhaul integrating various wireless technologies.

HSE technology provides an efficient way to bring large concentrations of discrete and analog field I/O back to the control room using a high-speed HSE connection. The addition of remote I/O further tightens the integration of process instrumentation within a FOUNDATION control system infrastructure.

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The FOUNDATION for Remote Operations Management solution employing HSE RIO allows industrial plants to access high data requirement devices directly in the fieldbus host system using HSE. FOUNDATION for Remote Operations Management devices can encompass the functionality of smart wireless gateways, Remote Terminal Units (RTUs), and process automation controllers. In addition, they integrate all forms of conventional I/O into the native fieldbus environment easily. This solution makes discrete-in, discrete-out, analog-in, analog-out and FOUNDATION H1 available over a common Ethernet network.

### **Q: What are the benefits of FOUNDATION for ROM?**

A: Device networks offer communication capabilities, but do not provide a complete automation infrastructure. FOUNDATION for Remote Operations Management broadens the automation infrastructure capabilities of FOUNDATION fieldbus by bringing device information into the FOUNDATION infrastructure using our object-oriented block structure. This offers much more than just simple protocol translation. The block structure makes it possible to manage data from disparate devices in a single, unified framework for data quality and data management. FOUNDATION technology delivers process integrity, business intelligence, and open scalable integration in a managed environment, making it a true system infrastructure. End users will realize capital expense (CAPEX) and operational expense (OPEX) benefits from suppliers incorporating remote I/O technology.

### **Q: Who is supporting this technology?**

A: The following companies participated in development of the FOUNDATION for Remote Operations Management technical specifications: ABB, Abzil/Yamatake, Aniotek, Advanced Process Automation Technologies, Aprion, Belden/Hirschmann, Boeing, BP, Byres Security Inc./Tofino, Chevron, Cisco, Cooper Industries/MTL, EF Johnson, Emerson Process Management, Endress+Hauser, ExxonMobil, Fieldbus Diagnostics, Fieldbus Inc., General Electric, Geode Network Technologies, HART Communication Foundation, Herman Storey Consulting, Hodson Consulting, Honeywell, Industrial Automation Networks Inc., International Society of Automation, Invensys Process Systems, Maximum Control Technologies, National Instruments, OPUS Consulting, Pepperl+Fuchs, Phoenix Contact, PROFIBUS Nutzerorganisation e.V, R. STAHL, RuggedCom, Saudi Aramco, Shell Global Solutions, Siemens, Smar, Softing, Turck, Westlock Controls, Wi-Fi Sensors, Inc., and Yokogawa.

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**Q: How does FOUNDATION for Remote Operations Management fit into the current wireless market, which is characterized by *WirelessHART* and ISA 100.11a?**

A: The position of the Fieldbus Foundation is one of neutrality. We realize there is a range of technologies that end users must add to their arsenal to be successful, and one of our core principles is to adapt to these new technologies as necessary. That is why we are currently engaged in a global strategy of providing an infrastructure supporting both *WirelessHART* and ISA100.11a. The foundation enthusiastically endorses the end user market's request to suppliers for a single standard and supports the ongoing work on convergence.

**Q: What tools are available to support the design of FOUNDATION for Remote Operations Management devices?**

A: The Fieldbus Foundation offers the following resources to device developers:

- *Technical Specifications*: Defines a series of interoperable HSE devices to bring control I/O (both analog and discrete) back to plant automation systems over the high-speed HSE network.
- *HSE Interoperability Test Kit (HSE-ITK)*: Tests the functionality of an HSE device and its conformance to the FOUNDATION fieldbus function block and transducer block specifications. The HSE ITK's test cases have been updated to Device ITK Profile 6.0 and now support the VC<sup>++</sup> 2008 (v9) standard. The test kit also employs an all-new, intuitive user interface and updated HSE test function device application.

**Q: What is the current status of the development work?**

A: The Fieldbus Foundation has released its HSE RIO final specification and has completed validation of wired HART and *WirelessHART* integration specifications. The preliminary specification for wired and *WirelessHART* integration was released in September 2011. The wireless backhaul architecture model supporting HSE has been approved the ISA100.15 working group.

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