



ODVA
2011
Industry Conference
and 14th Annual Meeting

ODVA 2011 INDUSTRY CONFERENCE & 14TH ANNUAL MEETING

MARCH 1-3, 2011
THE WIGWAM RESORT
LITCHFIELD PARK, ARIZONA, USA

Learn

the latest innovations in development for ODVA technologies

Ensure

you are meeting your customers' needs by hearing tips from end users

Get Ready

to capitalize on changes by discovering new technology trends

Network

with industry colleagues from over 50 companies from around the world!

ODVA is at the forefront of industry initiatives and technologies that are delivering the next level of productivity improvements in industrial automation.

Held in conjunction with ODVA's Annual Meeting of Members, the Industry Conference is designed to be informative, educational and fun.

You will not want to miss it!

Membership in ODVA is NOT required to attend the open sessions.
Registration closes on January 31.

Read on for session descriptions!



CONFERENCE PROSPECTUS AND SESSION DESCRIPTIONS *as of January 14, 2011*

This is the conference prospectus and session descriptions for the
ODVA 2011 Industry Conference and 14th Annual Meeting.

Register today to attend the conference via the [Event Registration Form](#) currently posted on www.odva.org. Once you have registered for the Event, please reserve your seat at specific sessions through the supplementary [Session Registration Form](#).

The following schedule is subject to revision.

MONDAY, FEBRUARY 28, 2011

| Session | Description | Audience | Track | Availability |
|--|--|------------------------------------|-------|---|
| EtherNet/IP Implementor Workshop #32 (8.00 am-5.00 pm) | ODVA has established its Implementor Workshop series as the premier tool to help developers get products to market quickly. Each year, a series of workshops is held to get developers up to speed on the application of CIP™ technology to EtherNet/IP™. With the guidance of a knowledgeable leader, each participant can learn from others and also help increase the knowledge base of all participants. | Developers of EtherNet/IP products | N/A | Open but requires advanced registration (separate from conference registration) |

TUESDAY, MARCH 1, 2011

| Session | Description | Audience | Track | Availability |
|--|--|------------------------------------|-------|---|
| EtherNet/IP Implementor Workshop #32 (8.00 am-12.00 pm) | ODVA has established its Implementor Workshop series as the premier tool to help developers get products to market quickly. Each year, a series of workshops is held to get developers up to speed on the application of CIP technology to EtherNet/IP. With the guidance of a knowledgeable leader, each participant can learn from others and also help increase the knowledge base of all participants. | Developers of EtherNet/IP products | N/A | Open but requires advanced registration (separate from conference registration) |
| Special Interest Group (SIG) meetings (Time vary; see session registration form for details) | SIGs are the technical working groups that develop enhancements to the ODVA Specifications as well as guidelines and recommendations for the application of ODVA technologies. These SIG meetings are restricted to active SIG participants, at the discretion of the SIG chair. Participation Agreements for joining must be received and accepted by ODVA no later than February 21. Participation Agreements cannot be accepted onsite. | Eligible ODVA members | N/A | Closed to eligible ODVA members only |

In the evening of Tuesday, March 1, ODVA will host a Meet & Greet Reception.



CONFERENCE PROSPECTUS AND SESSION DESCRIPTIONS *as of January 14, 2011*

WEDNESDAY, MARCH 2, 2011

| Session | Description | Audience | Track | Availability |
|---|--|---|-----------|--------------|
| Technical Review Board Update (8.00 am-9.30 am) | ODVA's Technical Review Board (TRB) regulates the technical programs of the corporation and reviews the technical activities of the corporation. The TRB authorizes Special Interest Groups (SIGs) and oversees the establishment of standards and specifications. Attend this session to hear directly from TRB members about the latest updates to ODVA technologies under consideration. | All | Technical | Open |
| Preparing for Conformance Testing (10.00 am-11.00 am) | This session will outline the rules of the conformance testing process. Attendees will learn how to avoid development mistakes that can delay timely product launch, and will leave with a solid understanding of the steps to help conformance testing run smoothly. | Developers of products built to ODVA technologies | Technical | Open |
| Enabling Technologies Pavilion (Open all day, but staffed from 9.30 am-10.00 am and from 1.45 pm-2.30 pm) | The ODVA Enabling Technologies Pavilion is a forum for providers of enabling technologies to display and discuss their products with conference attendees. No registration is required to stop by this pavilion! | All | Marketing | Open |
| Technical Track Paper Presentations (Times vary and are listed on the session registration form; all are between 10.00 am-5.00 pm) | With the theme of "Technology & Innovations," the Industry Conference Technical Track is a forum for ODVA technology experts to present papers that investigate the application of ODVA technologies to solve a diverse range of challenges. See below for a list of papers as described by these experts: | All | Technical | Open |
| Securing EtherNet/IP Networks | Security means many things to many people. The intent of this presentation is to introduce the concept of "cyber-security" for Automation Networks. In today's competitive environment, connectivity to all the processes of the enterprise has increased productivity while reducing the actual time to market for new offers. This advance in connectivity has created a new path for both desirable and undesirable connections. This presentation aims to outline some issues to consider when deciding whether or not to bridge the automation network to the enterprise network and eventually, the internet. Security is discussed for the simple, stand-alone machine or process which is unconnected to the automation or company network all the way through, to the fully integrated network which links all the processes within an enterprise. Each "more-connected" example builds on the previous to provide a continuous path of value for the stakeholders. | | | |



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| Monitoring EtherNet/IP networks over Cellular | Although not a new technical development, ubiquitous deployment and acceptance of 3G cellular has created opportunities for monitoring of remote EtherNet/IP networks. SCADA networks have utilized cellular and leased-line technology for remote access to equipment for many years. Recently machine builders are realizing the benefits to them and to their customers in using cellular networks to monitor and troubleshoot their machines in the field. This presentation covers the details of accessing remote programmable automation controllers (PACs) over a cellular infrastructure. It covers the technical aspects of the cellular network necessary to support remote machine monitoring, security and creation of a VPN tunnel between a central location and remote machine locations, the customer benefits of allowing network access for troubleshooting to equipment located in their plant without requiring connection of the equipment to their company LAN and without requiring modifications to their company router, and the ability to go online with remote equipment, make program changes and monitor the system for faults. | | | |
| IPv6 for EtherNet/IP: Is the Sky Falling, or Just an Acorn? | The first IPv6 RFC was published in 1998. Since then, reports of imminent worldwide adoption have been muted by the reality of limited IPv6 deployment. As the pool of unallocated, public IP addresses continues to move toward exhaustion, EtherNet/IP users and vendors face a number of questions. What, if anything, should we be doing about IPv6? This presentation will present an overview of IPv6 features and attempt to answer the primary questions on IPv6's relevance to EtherNet/IP users and vendors: <ul style="list-style-type: none"> • Who should be concerned with IPv6? • In what application scenarios would IPv6 be relevant? • How would EtherNet/IP IPv4 devices fit in an IPv4/IPv6 hybrid network? • What would it mean for EtherNet/IP to natively support IPv6? • What should users and vendors be doing about IPv6? | | | |
| Minimizing Contributions to System Delay from NIC Packet Processing | This presentation will discuss a software architecture designed to minimize the contribution of the NIC to jitter and latency. This architecture can be implemented on any standard microprocessor. In addition, enhancements to the hardware architecture of the NIC which provides additional QoS discrimination and minimizes contributions to latency and jitter associated with Real-Time Operating Systems (RTOS) and Media Access Controller (MAC) will be discussed. Finally, results from a "proof of concept" experiment which implements the proposed architecture will be offered and can readily be applied to Real-Time EtherNet/IP and CIP Motion applications. | | | |
| Enhancing Network Performance in Next Generation EtherNet/IP Systems | ODVA's EtherNet/IP technology is the leading Ethernet industrial automation network technology in the world. Over the last ten years during which the technology emerged and was globally adopted, EtherNet/IP was enhanced and its capabilities increased, at the same as the number of nodes on a typical plant network has increased. Within these larger networks, the performance of each EtherNet/IP device contributes to the overall network performance. Measuring and documenting EtherNet/IP device performance enables end-users to plan for efficient application specific network operation, and provides vendors with a key competitive differentiator for end-user device selection. ODVA is evaluating the addition of baseline performance metrics into the Conformance Testing process for EtherNet/IP compliant devices. This presentation will highlight the results of a combined member-staff study on possible approach to evaluating performance metrics both at ODVA's TSP and on a pre-testing basis by vendors. | | | |



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| Moving EtherNet/IP Towards 'Plug and Play' | There is a need for a common mechanism to allow a scanner device to open an I/O connection to an adapter device using EtherNet/IP communications on a live network. This functionality already exists in DeviceNet through the Connection Object with standard instance values (instance 1 for Explicit Messaging, instance 2 for Polled I/O, etc). This presentation highlights a potential new optional CIP object as well as a proof of concept demo using the new object in a multi-vendor environment. In addition, it was also touch on other options adapter devices can implement to help with the initial commissioning (embed EDS file in device, web pages, etc...). | | | |
| 802.11n – Wireless Performance for Control? | ODVA develops open technologies like EtherNet/IP based upon standard unmodified Ethernet, IP and TCP/UDP protocols. By using standard Ethernet and TCP/IP protocols allows manufacturers to easily transport EtherNet/IP over standard wireless infrastructure. The widespread adoption of Ethernet leads to the deployment of wireless technology that offers reduced dependence on wires and greater flexibility for remote, stranded and mobile assets. Since the last ODVA Annual Meeting, 802.11n has been ratified as an official IEEE Wireless standard. This technology may hold the key to reliable performance for challenging control applications. 802.11n represents a five-fold increase over 802.11a/g performance and incorporates Multiple Input Multiple Output (MIMO), packet aggregation and other technologies to significantly increase not only the speed but the reliability and predictability of the wireless network. | | | |
| Implementing an EtherNet/IP Device DTM | FDT/DTM technology was introduced in process automation a few years ago. Now, more and more supporters in factory automation are embracing it. The technology allows the integrated management of devices from different vendors to connect to different field busses. Beginning with a brief introduction to FDT/DTM technology, as well as what is provided by frame applications and communication DTMs vs. what is the responsibility of a device DTM, this presentation will describe implementing a device DTM for EtherNet/IP based adapters. Currently available DTMs will be used to demonstrate various styles of DTMs, from the simple eds driven model to a fully custom implementation. How to begin, from scratch or using toolkits, will be examined. How process channels are used to exchange information between the DTM and the frame application is described. Finally, various methods for testing your device DTM are considered. References and helpful resources are also included. | | | |
| The Development of CompoNet Gateway with Common Network Interface | Networking of automation systems is being required to expand to the sensor-actuator level. But Ethernet-based industrial networks and conventional fieldbus are not suitable for the expansion. CompoNet is one of sensor-actuator networks which can complement to the existent industrial networks to complete the expansion via gateway connection. This presentation describes how to design a CompoNet gateway with common network interface to extend different industrial networks to sensor and actuator level of automation systems. After an introduction of CompoNet technology, necessary aspects of designing CompoNet gateway base on CIP advantages are described, which includes general requirements, gateway structure, state machine, parameters, data mapping and diagnosis. An implementation example is also shown on how to map the CIP information to a specific network. The presentation can be referenced for design of CompoNet master, gateways and other gateways as well as adoption of gateways for inter-network communications of automation systems. | | | |



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| <p>Latest Enhancements to the EZ-EDS Software</p> | <p>The EZ-EDS software has been around for a few years now and it has been continuously enhanced to keep up with the ever expanding specifications of EDS details. This latest version features a number of useful additions to the functionality of this software, among them:</p> <ul style="list-style-type: none"> • Support for embedded icons • Display of EDS content • Support for Vista and Windows 7 • Improved Connection Path decoding support <p>This presentation will give an overview over the general features of EZ-EDS and it will demonstrate the latest enhancements</p> | | | |
| <p>CIP Motion System Performance Considerations</p> | <p>This presentation presents information helpful to anyone interested in evaluating or optimizing performance of an EtherNet/IP control system with CIP Motion drives. The presentation begins with an introduction to the CIP Motion timing model and the role End-to-End QoS plays in securing deterministic EtherNet/IP data delivery on an open network. Two key principles that govern motion control performance are then discussed, tight time synchronization and timely data exchange. Good time synchronization performance, as measured by the jitter metric, can be achieved through use of IEEE-1588 boundary clocks and transparent clocks, and further enhanced when used in conjunction with time offset filtering. To characterize data exchange performance, six key CIP Motion utilization metrics are defined based on the CIP Motion timing model, any of which could limit the overall performance of the system. The presentation examines the impact various components of the CIP Motion system have on these metrics. These components include the motion controller, communications controller, Ethernet switches and cabling. Representative EtherNet/IP network topologies are presented and performance considerations of these topologies are discussed. Network topologies can be partitioned into time critical device segments and non time critical device segments. The role managed/unmanaged/embedded switches, QoS, and IEEE-1588 transparent clocks have in these network topologies is also discussed with the end goal of maximizing performance while minimizing Ethernet infrastructure cost. When equipped with contemporary system components, the maximum number of drives that can be supported at a 1 msec update period can be calculated. Using a multi-cycle CIP Motion timing model to relax timing constraints and full-duplex network data processing motion control data exchange performance can reach 80-axes/msec over standard Fast Ethernet. Faced with the constraint of the Ethernet media bandwidth itself, the presentation then discusses the role CIP Motion drive payload size plays on network utilization. The presentation concludes with CIP Motion system performance projections based on future Gigabit Ethernet support.</p> | | | |



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| Strategic Market Requirements for Integration of Energy into ODVA's Application Coverage (3.00 pm-5.00 pm) | Optimization of energy usage is a natural expansion of ODVA's application coverage for industrial automation. Key milestones and the timeline for this future activity have been under development at the direction of ODVA Board of Directors. ODVA envisions a comprehensive energy solution for industrial energy consumers that will be comprehensive, scalable, open, and inclusive for both users and vendors. ODVA's energy approach will offer broad situational awareness of energy consumption and enable control strategies to optimize energy usage throughout the industrial system from the plant floor to the grid. This session will introduce ODVA's vision of energy optimization for the industrial consumer. In addition, there will be related overviews on energy-related products plans from Cisco Systems, Rockwell Automation and Schneider Electric. A panel discussion will follow the formal presentations. | All | Marketing | Open |

In the evening of Wednesday, March 2, ODVA will host a Conference Reception & Dinner.

THURSDAY, MARCH 3, 2011

| Session | Description | Audience | Track | Availability |
|---|--|----------|-------|--------------|
| ODVA 14 th Annual Meeting of Members (8.00 am-12.00pm) | This meeting is also open to nonmembers of ODVA. Presentations to be made include, but are not limited to: <ul style="list-style-type: none"> • Affairs of the Corporation: "Term in Review," Katherine Voss, executive director and Rich Harwell, chief technology officer • End-User Application Story, Pete Anderla, Kimberly-Clark • Future Technology Trends: "The Internet of Things," Flavio Bonomi, Cisco Systems • Strategic Considerations: "ODVA in the Changing Landscape for Industrial Automation," Katherine Voss, executive director | All | N/A | Open |

The event will conclude on Thursday, March 3 with a hosted conference lunch.