General Session & 18th Annual Meeting of Members
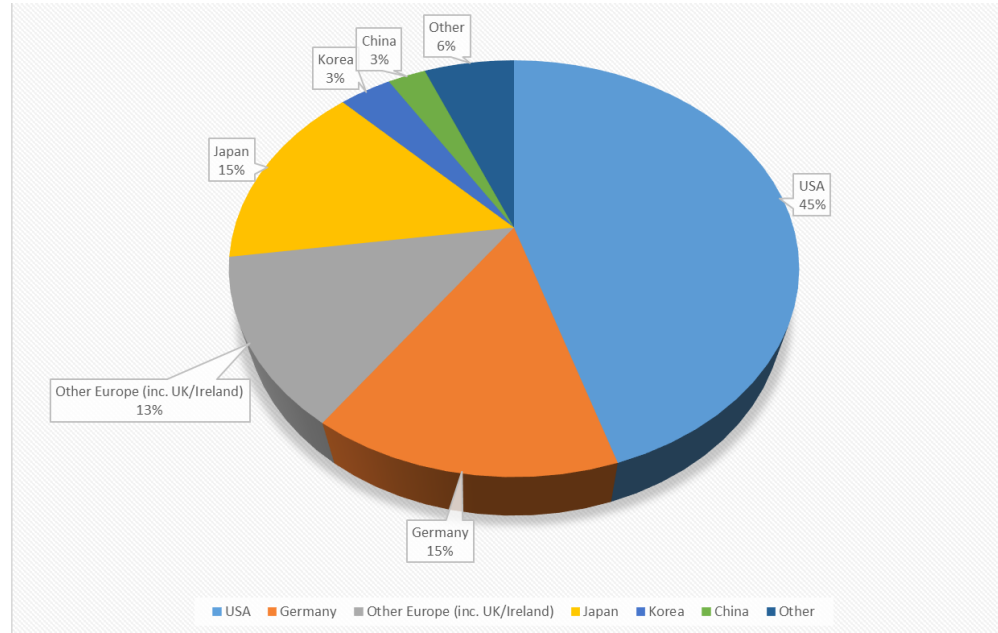
February 23, 2017

Activities of the Association

Report to the Membership
on the Affairs of the Company

ODVA™

308 entities – stable and growing

HQ Staff & local PR supporting
North & Latin America

HQ Staff & local
PR supporting European in-country
resources

Germany

RIC Italy

TAG
Korea

TAG Japan

ODVA ATS with
TAG China

HQ Staff supporting Asian
in-country resources

ODVA GUIDING PRINCIPLES FOR SUCCESS

1. Design for Integration of Heterogeneous Systems

2. Deploy ICT Standards to Achieve Interoperability

3. Optimize Performance-Cost Ratio with COTS

4. Blend the Best Technical Solutions of the Future with Proven Solutions of the Present

5. Architect and Automate for Diagnostics

6. Design for the Scalability of "THINGS"

Innovators 2.5 % | Early Adopters 13.5 % | Early Majority 34 % | Late Majority 34 % | Laggards 16 %
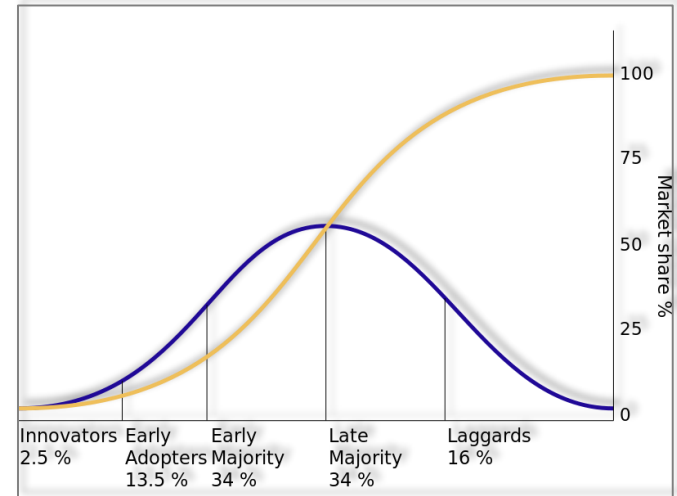
Technology implementations and diffusion from suppliers to users will be particularly impacted by common approaches information models and cybersecurity.

EtherNet/IP has become a comprehensive and proven platform for the smart and secure industrial control systems of tomorrow.
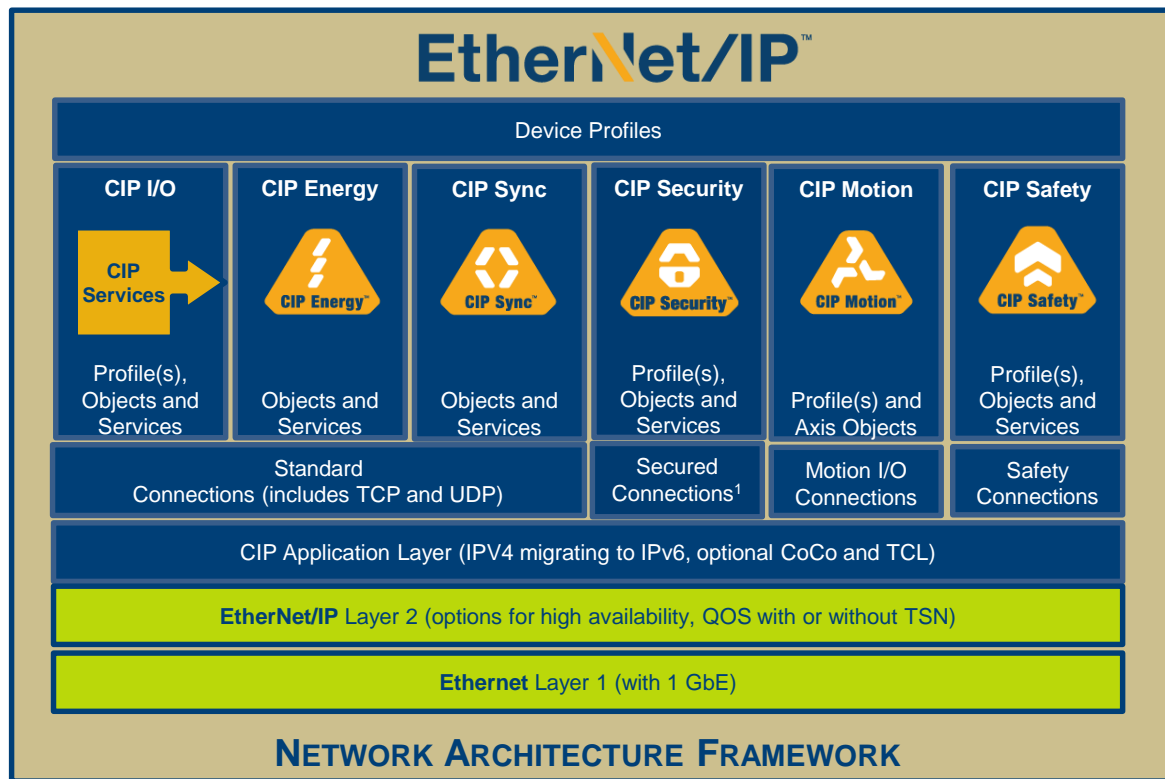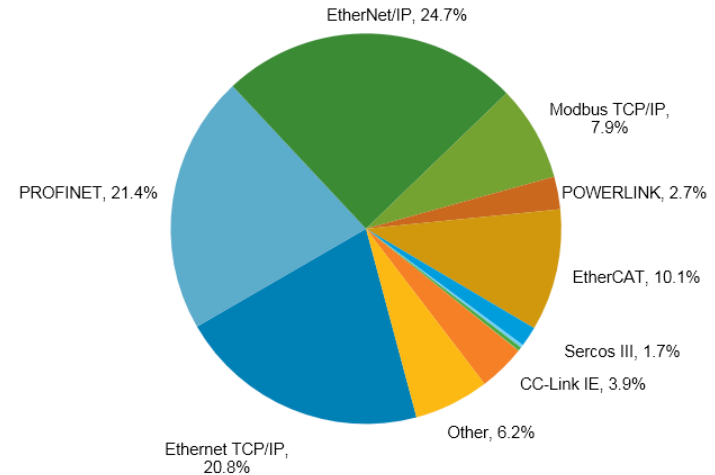
- ## What are industry analysts saying?

IHS Markit™

"Transition to industrial Ethernet is accelerating and EtherNet/IP accounted for approximately 25% of all new Ethernet nodes shipped in 2015. The growth trend for EtherNet/IP is expected to continue building on its strong installed base, the transition from fieldbus to Ethernet networks, and the fact that industrial Ethernet will provide a fundamental component of connectivity necessary to enable smart manufacturing and IIOT solutions."

Alex West, analyst for IHS Markit

EtherNet/IP™
ODVA

EtherNet/IP, 24.7%
Modbus TCP/IP, 7.9%
POWERLINK, 2.7%
EtherCAT, 10.1%
Sercos III, 1.7%
CC-Link IE, 3.9%
Other, 6.2%
Ethernet TCP/IP, 20.8%
PROFINET, 21.4%

New Connected Industrial Ethernet Nodes 2015
"Industrial Communications Report 2015"
© IHS Markit.

Michael Höing
Weidmüller Interface

Fabrice Jadot
Schneider Electric

Dr. Jürgen Weinhofer
Rockwell Automation

Masaru Takeuchi
Omron

Dr. Thomas Bürger
Bosch Rexroth

Dr. Rolf Birkhofer
Endress+Hauser

- **President and Executive Director – Katherine Voss**

- **Chief Technology Officer – Joakim Wiberg**

- **Secretary – Christopher Lynch**

- **Treasurer – Jürgen Weinhofer**

Call to Order

General Session and
17th Annual Meeting of Members

October 15, 2015

Exhibits at Hannover Fair and SPS IPC Drives show in Germany. . .

. . . and Concurrent Media Briefings

Industry Awareness

Exhibits at
Systems Controls Fair. . .

. . . and
Industrial Open Net Fair
in Japan

Launched refreshed EtherNet/IP seminar, starting in:

- Barcelona, Spain
- Detroit, Michigan, USA
- Frankfurt, Germany
- Parma, Italy

Industry Awareness

Organization Ambassador to
IOT Solutions World Congress

Chinese Automation Association Forum
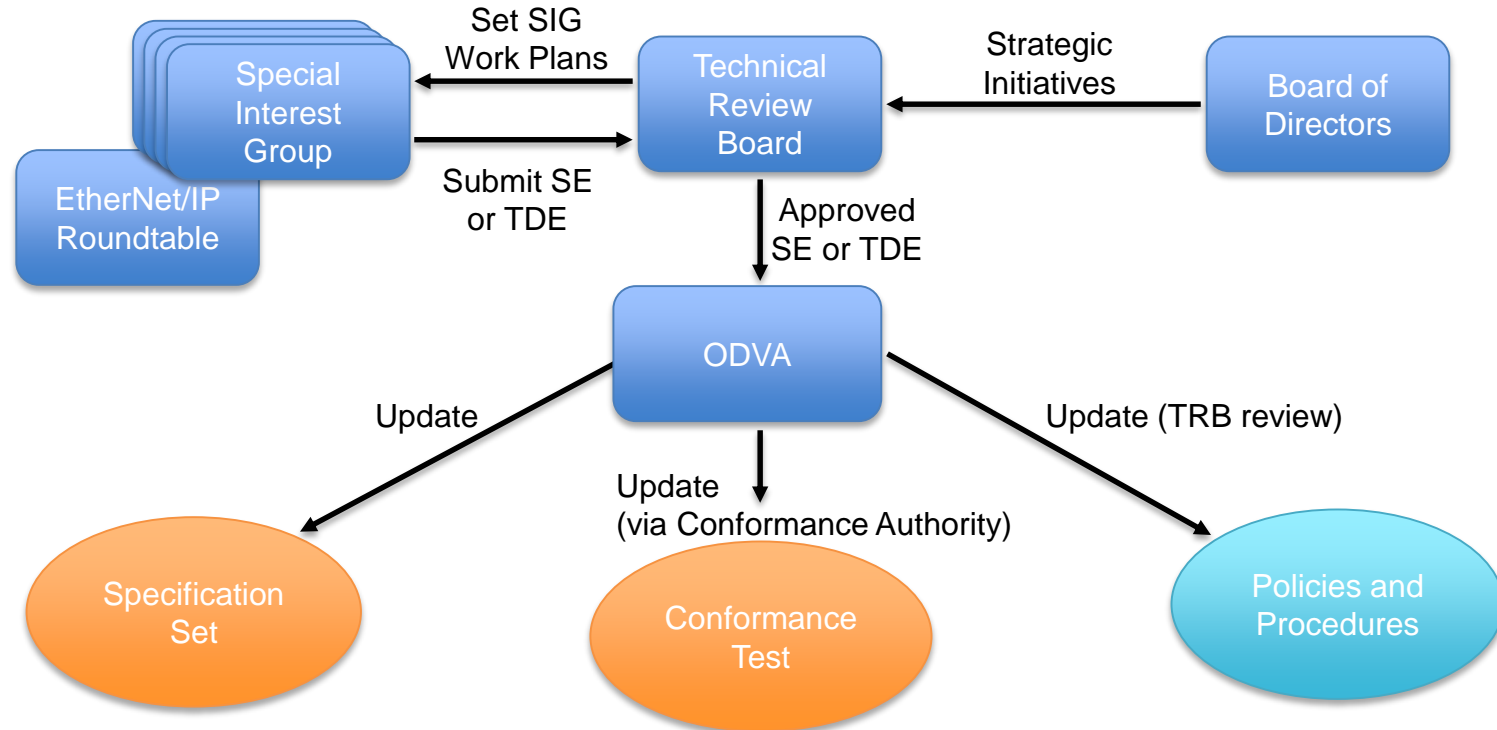## September 2016

Western China GongKong Forum
December 2016

Report on ODVA Technical Activities

- ODVA Technology Development Overview

- Technical Review Board Roster

- Special Interest Groups and Working Groups

- Key Technical Accomplishments since last Annual Meeting

- Key Planned Activities for Next Term

ODVA Technology Development Process

Technical Review Board

- Joakim Wiberg, chairperson
- Dave VanGompel
- Dr. Ludwig Leurs
- Rudy Belliardi
- Paul Didier
- Shinji Murayama
- Dr. Jörg Hähniche
- Eric Scott

Active Special Interest Groups and Working Groups

- EtherNet/IP In Process Industry – Mirko Brcic (Endress+Hauser)
- CIP Safety – Bruce Brown (Rockwell Automation)
- Common Industrial Cloud Interface – Stephen Briant (Rockwell Automation) (new SIG)
- IO-Link Integration – Frank Moritz (SICK)
- DeviceNet of Things – Thomas Peter (Weidmueller)
- Machinery Information – Beudert/Zuponcic/Leurs
- EtherNet/IP Physical Layer – Bob Lounsbury (Rockwell Automation)
- DeviceNet Physical Layer – Brad Woodman (Molex)
- EtherNet/IP Infrastructure – George Ditzel (Schneider Electric)
- EtherNet/IP System – Brian Batke (Rockwell Automation)
- Distributed Motion and Time Synchronization – Steve Zuponcic (Rockwell Automation)
- CompoNet – Tianbing Li (Omron)
- Conformance – Qi Zeng (ODVA)
- Modbus Integration – Todd Snide (Schneider Electric)
- Motor Control and Circuit Breaker - John Caspers (Rockwell Automation) (new SIG)
- CIP System – Dave VanGompel (Rockwell Automation)
- Energy Applications – Rick Blair (Schneider Electric)
- EtherNet/IP Roundtable – Kevin Knake (HMS Industrial Networks) US Track
                                         Ulrich Kaemmerer (Schneider Electric) European Track

Specification Enhancement Summary

- 56 Specification Enhancements distributed over 3 publication cycles
- 2 Technical Documents

Specification Volume	PC 2016-1 to PC 2017-1
CIP Common (Vol 1)	16
EtherNet/IP (Vol 2)	8
CIP Safety (Vol 5)	7
CIP Security (Vol 8)	9
CIP Motion (Vol 9)	16

Key Accomplishments since last Annual Meeting

Topic	SIG	Summary
CIP Motion Reorganization	Motion & Time Sync	Reorganize all the current material into one new volume
CIP Security	EtherNet/IP System	First prototypes available and two interoperability tests
EtherNet/IP CT13 and CT14 DeviceNet CT27 and CT28	Conformance	Supporting slides
Roundtable Diagnostic Activities	Roundtable, CIP System, EtherNet/IP System	First enhancements related to the ongoing diagnostic activities
DLR Whitepaper	EtherNet/IP Infrastructure	New ODVA publication
Time Sensitive Networking	Motion & Time Sync	Supporting slides

Conformance Test Updates

- EtherNet/IP CT13 and CT14 released

- DeviceNet CT27 and CT28 released

- Significant Enhancements to Common Object Tests
  - Port, Energy and Power, PRP/HSR, TCP/IP, Ethernet, File, CoCo

- Diagnostic Counters
  - From EtherNet/IP Roundtable initiative

Distributed Motion & Time Synchronization SIG

- In November 2015 the SIG changed its name from: "The Distributed Motion SIG" to "The Distributed Motion & Time Synchronization SIG"
- Extended charter to include emerging standards and technologies, including:
  - Time Sensitive Networking
  - Gigabit Ethernet
- Time Synchronization and TSN Activities
  - Analysis of Frame Preemption, Stream Reservation Protocols, Gigabit Ethernet, and Scheduling on overall Performance in the CIP Motion architecture

Key Planned Activities for Next Term

Topic	SIG	Summary
Process	EtherNet/IP for Process	Finalize HART mapping on CIP
CIP Security Phase 1.5 & 2	EtherNet/IP System	Certificate enrollment CIP Authentication and Authorization
DeviceNet of Things	DeviceNet of Things, CIP System	Supporting slides
IO-Link	IO-Link Integration	Supporting slides
Roundtable Activities	Roundtable, CIP System, EtherNet/IP System	Diagnostic project, LLDP investigation, CIP Security, Interoperability

- Proposed plans for next 12-18 months
  - Complete work on the Physical Layer Spec
    - Work on the Power Supply concept
    - Test specification
  - System integration in control / PLC system
    - Scanner enhancements
  - Profile description
  - System Tests
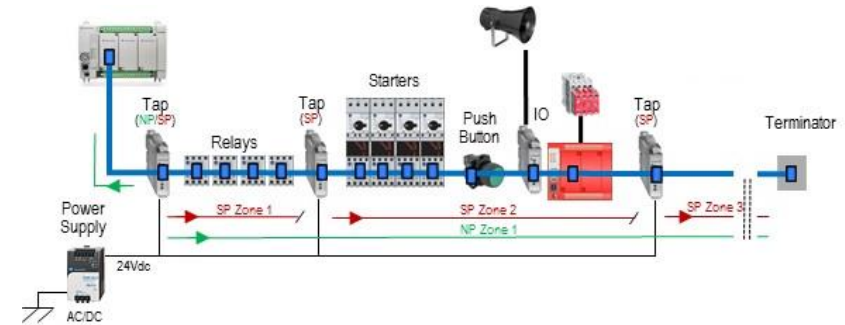
- Proposed plans for next 12-18 months

  - Specification enhancements
    - Finalization
    - Publication in Volume 7B

  - Conformance Test Plan
    - Setup and finalization

THANK YOU