



Setting the Standard for Automation™

ISA Belgium Section Presentation Security in Industrial Automation Control Systems

Standards
Certification
Education & Training
Publishing
Conferences & Exhibits

March 2016

Agenda



- Welcome
- Overview ISA & ISA Belgium
- Figures, Trends & Scope
- Introduction to the standard
- Q&A



Who is ISA ?



- International Society of Automation
- Headquarter in North Carolina, USA
- European Headquarter in Eindhoven, The Netherlands
- > 30.000 members worldwide
- Activities:
 - Develop standards
 - Certify industry professionals
 - Provide training
 - Publish books
 - Organize conferences



- Part of EMEA organization ISA (known as District 12)
- Section was not active since 1999 and is reactivated in 2011

- www.isa-belgium.org
www.isa.org/belgium

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✓ Independent distributor of hard- and software since 1976

✓ 3 divisions:

- Automation Solutions
- Electrical Test Solutions
- Fire Protection Solutions

✓ Automation Solutions:

- GE Digital: Software & Security Solutions
- GE Automation & Controls: Hardware
- Kepware Connectivity Solutions

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Distributor
Digital


Distributor
Automation & Controls


A GE Company

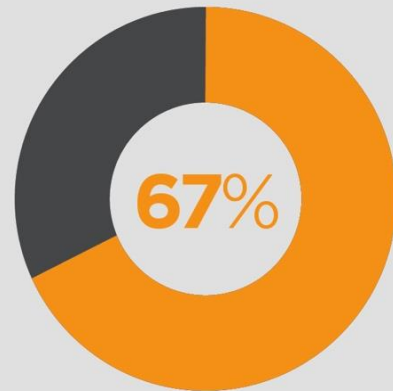




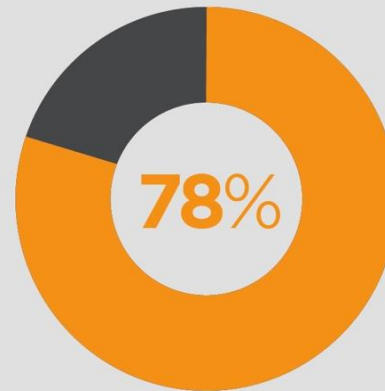
Introduction to Process Control Security

In Critical Infrastructure, cyber attacks are real.

Attacks are real...



of companies with critical infrastructure suffered at least one attack in the past 12 months



expect a successful exploit of their ICS/SCADA systems within the next two years

Critical Infrastructure: Security Preparedness and Maturity (July 2014), Unisys and Ponemon

...and organizations are not prepared.

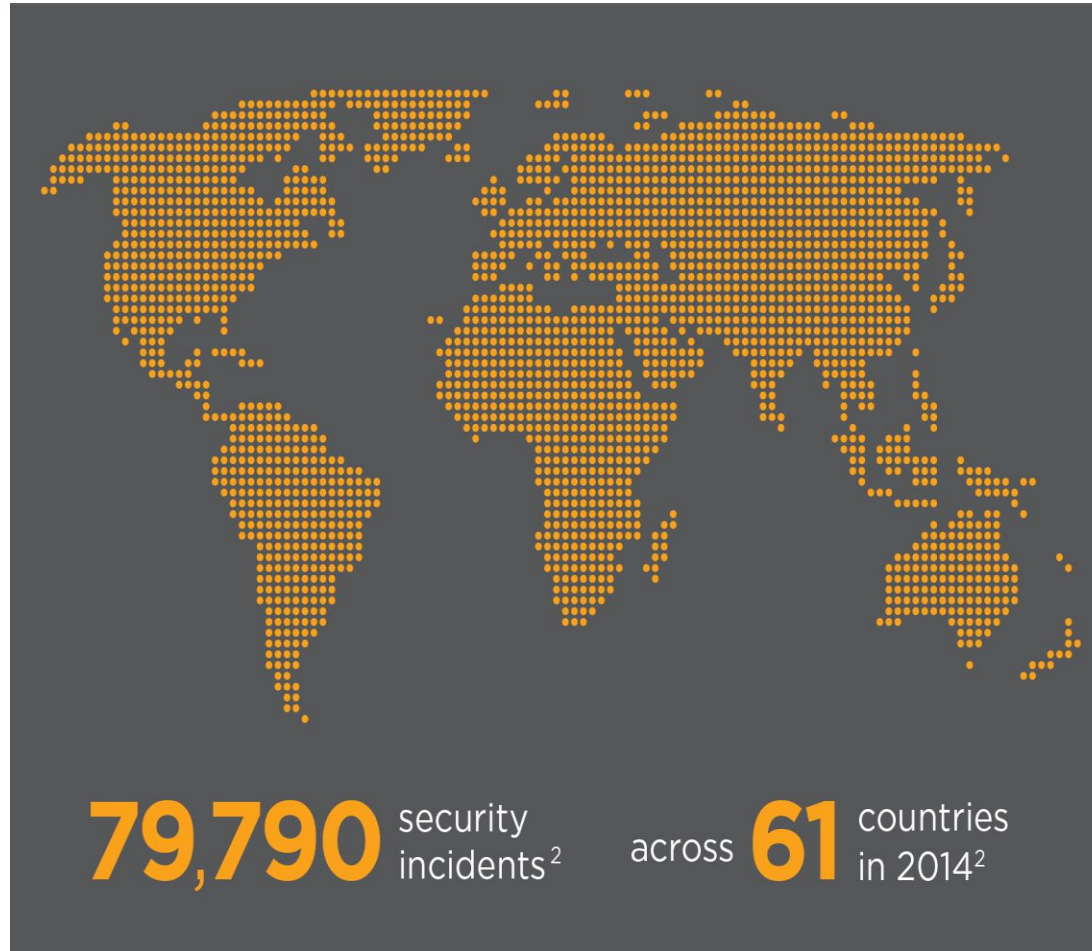
66%

of organizations are not
ready to address security
issues for OT



2015 Global Megatrends in Cybersecurity, Raytheon and Ponemon

Security incidents happen everyday...






IT **WHAT'S THE** BIG OT

DIFFERENCE?





Security is *about*
data



Security is *about critical*
assets

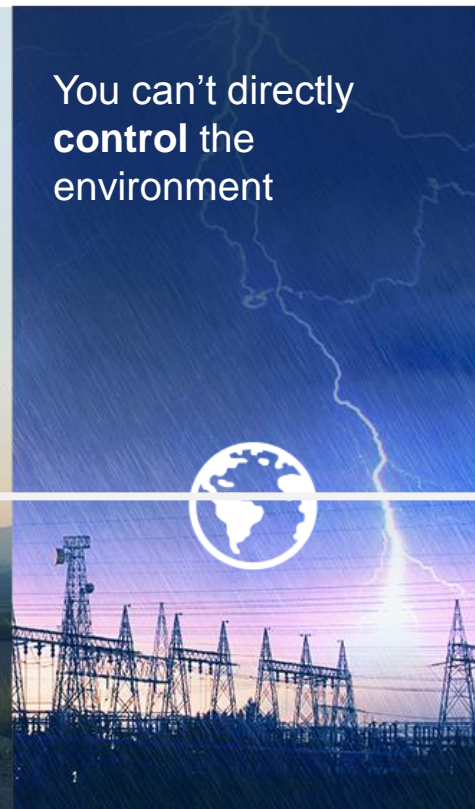
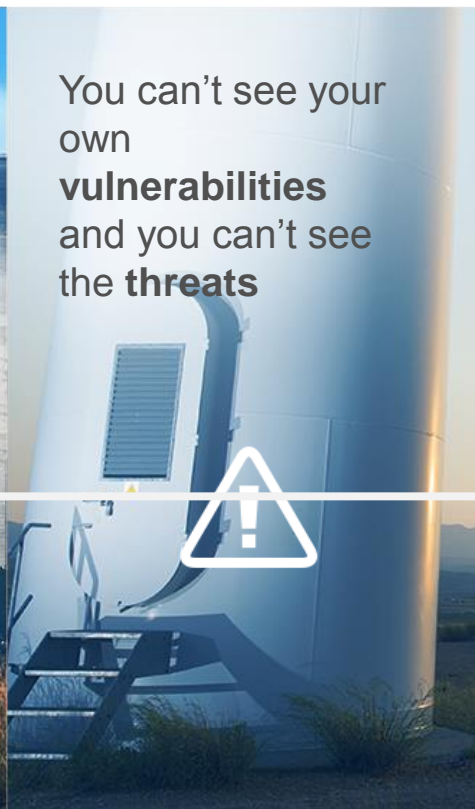
RISK and SAFETY

people
environment
assets

UPTIME

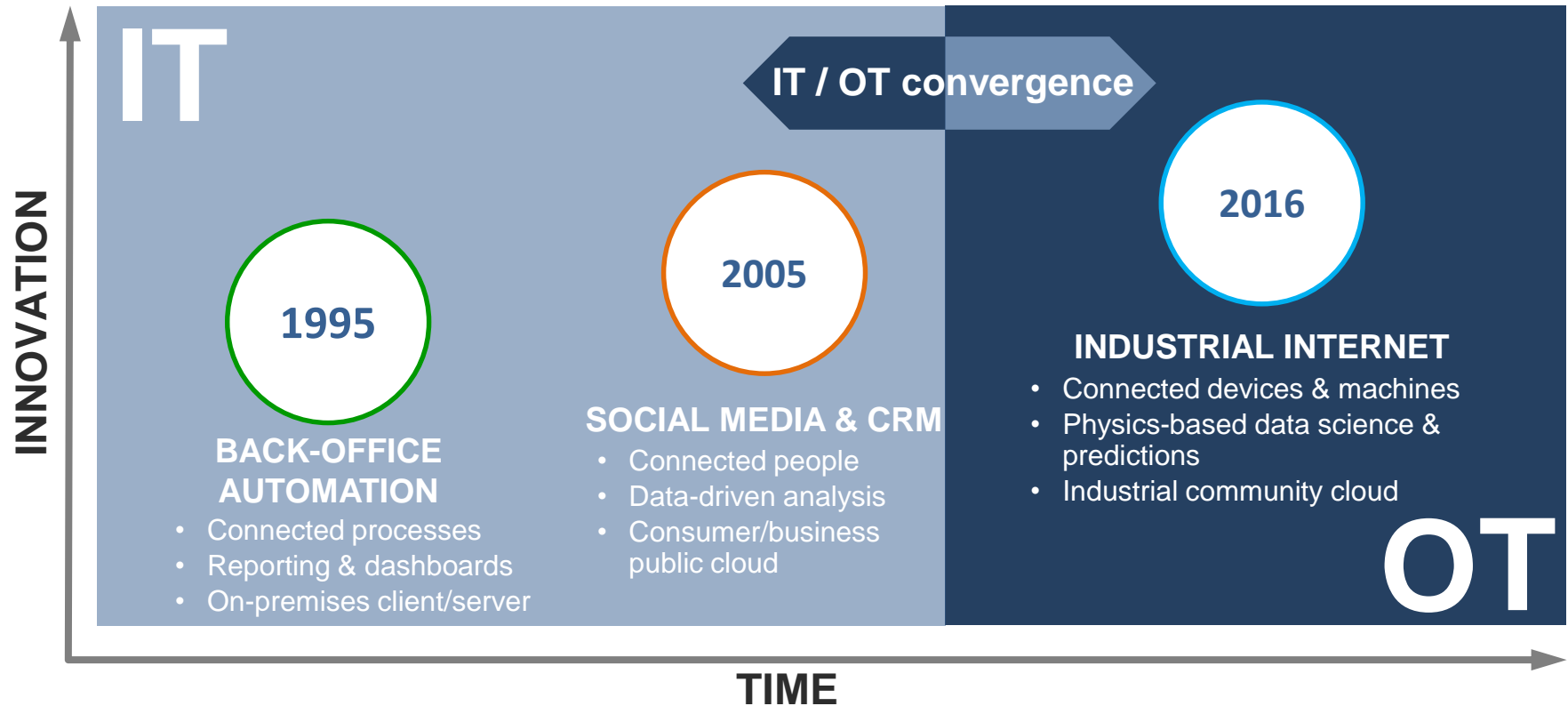
quality and performance

YOUR ENVIRONMENT IS ALREADY CHALLENGING...

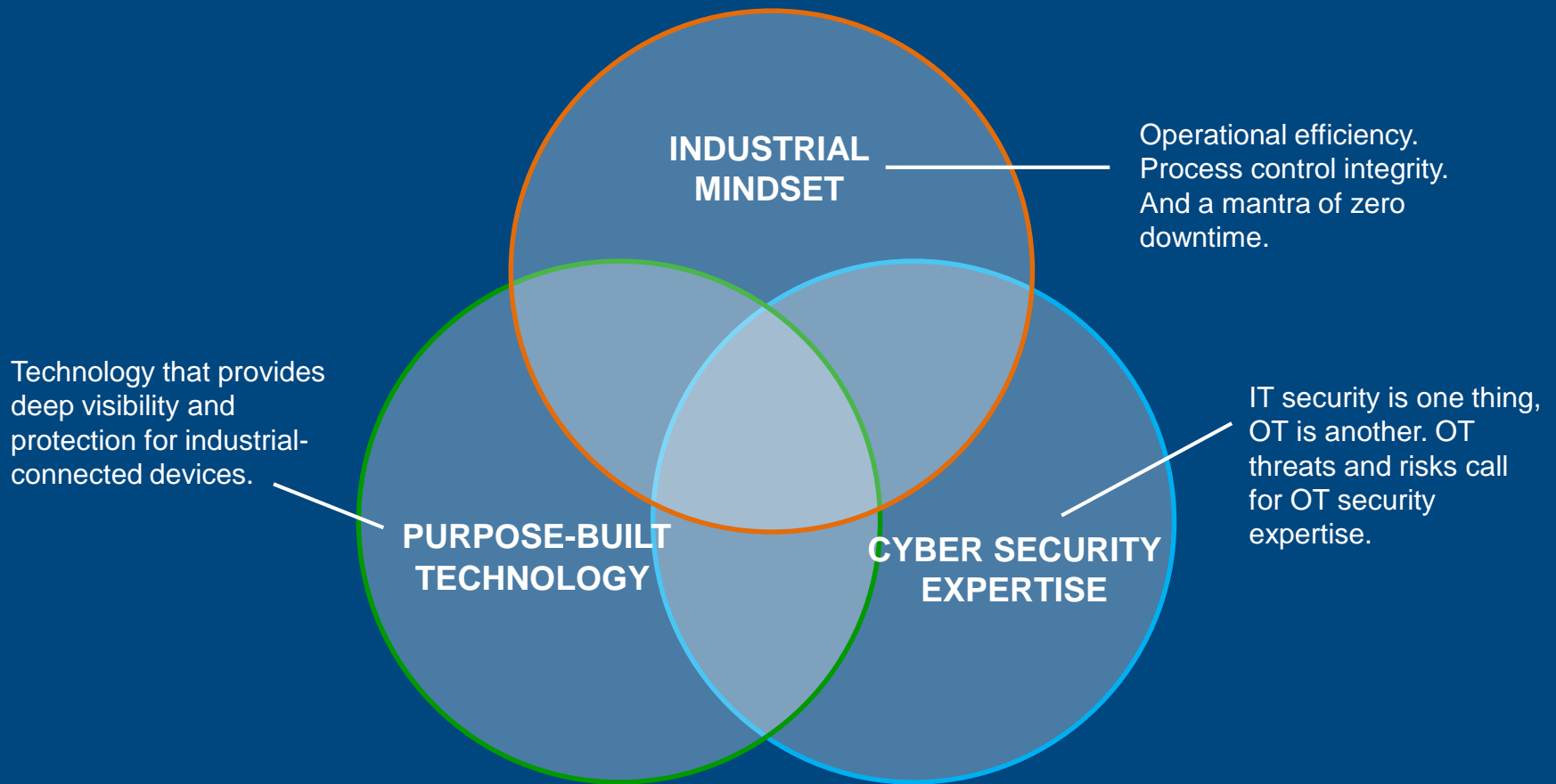


INDUSTRIAL INTERNET DRIVES BETTER OUTCOMES

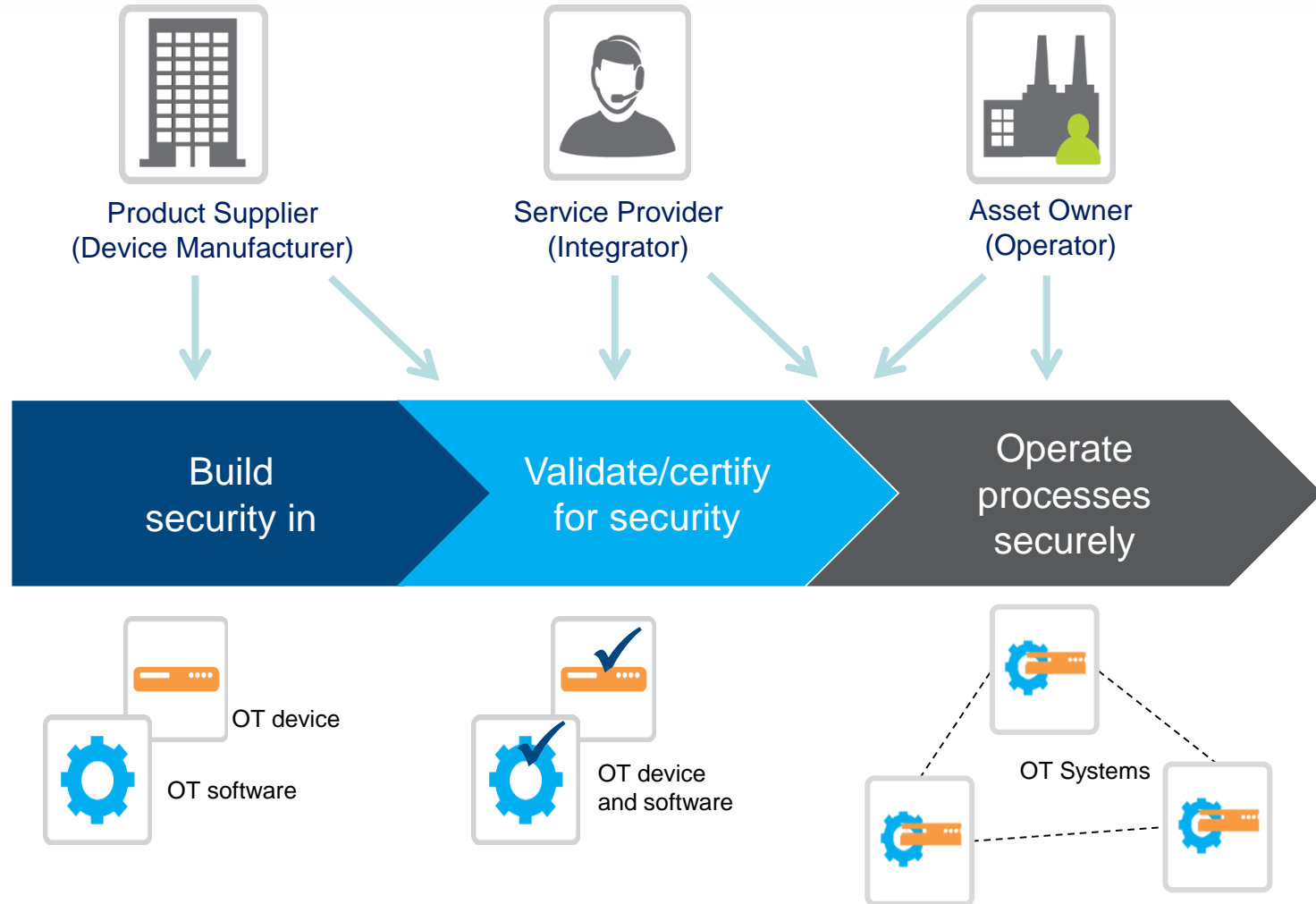
CONNECTIVITY LEADS TO EFFICIENCIES & GROWTH



WHAT DOES IT MEAN TO SECURE THE INDUSTRIAL INTERNET?



OT Security: from build to operate



Introduction to

ISA/IEC-62443 (Formerly ISA-99)

ISA99 and ISA/IEC 62443

- ISA/IEC 62443 is a Series of Standards
- Being Developed by 3 Groups
 - ISA99 → ANSI/ISA-62443
 - IEC TC65/WG10 → IEC 62443
 - ISO/IEC JTC1/SC27 → ISO/IEC 2700x



Other Partners for Related Topics

- Process Safety (ISA84)
- Wireless Communications (ISA100)
- Certification (ISCI)
- Information Sharing (ICSJWG)
- Security Framework (NIST)
- International Reach (IEC/ISO)
- etc.



The Basics

- General Concepts
- Fundamental Concepts



General Concepts

- Security Context
- Security Objectives
- Least Privilege
- Defense in Depth
- Threat-Risk Assessment
- Policies and Procedures



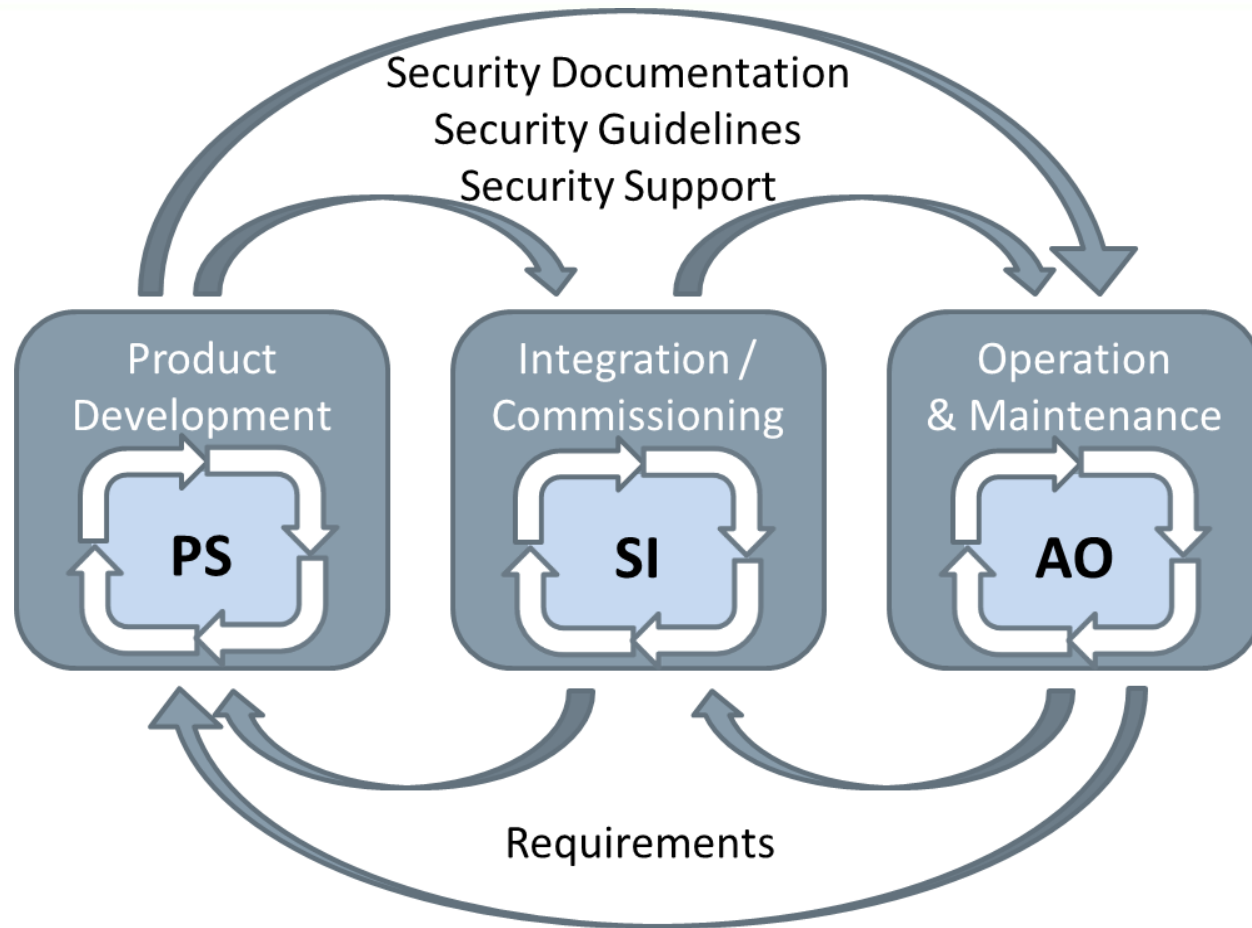
Fundamental Concepts

- Security Life Cycle
- Zones and Conduits
- Security Levels
- Foundational Requirements
- Program Maturity
- Safety and Security



Source: ISA-62443-1-1, 2nd Edition (Under development)

Security Life Cycle

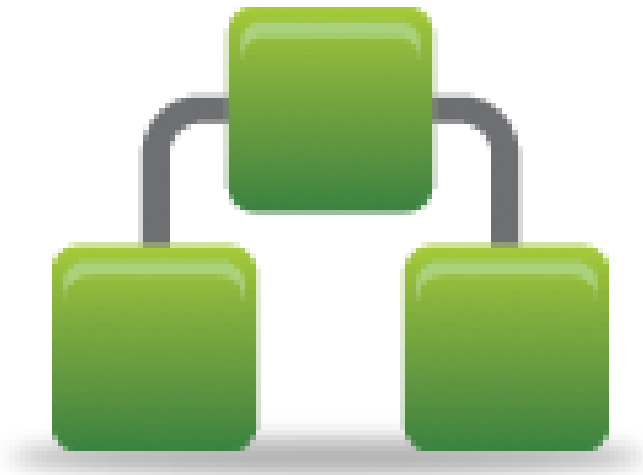


Source: ISA-62443-1-1, 2nd Edition (Under development)

Zones and Conduits

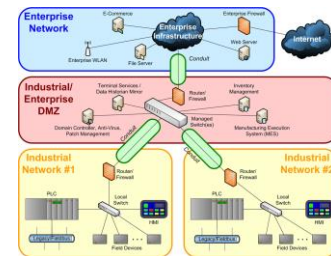
A network & system segmentation technique:

- Prevents the spread of an incident
- Provides a front-line set of defenses
- The basis for risk assessment in system design

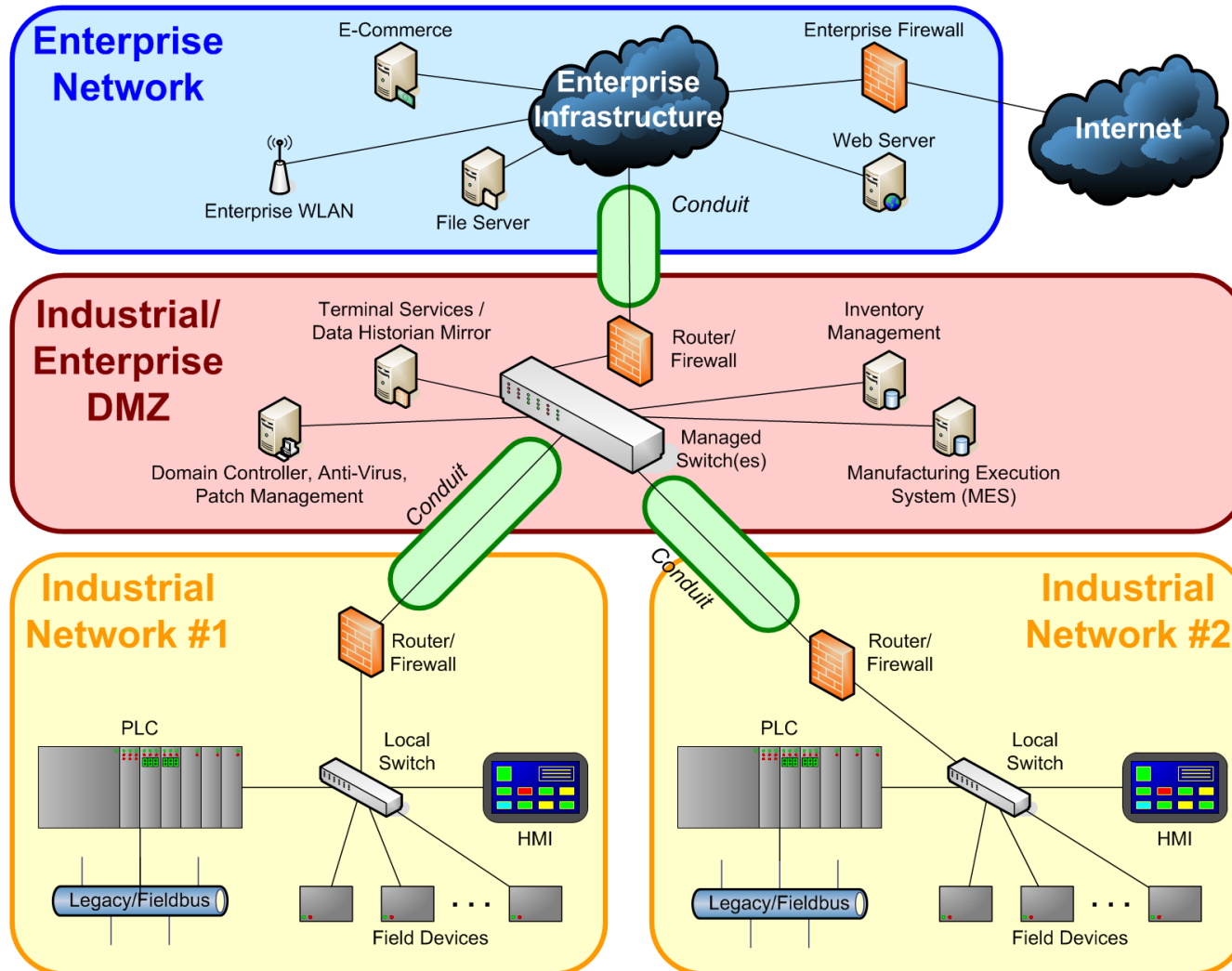


System Segmentation

- A process to understand:
 - How different systems interact
 - Where information flows between systems
 - What form that information takes
 - What devices communicate
 - How fast/often those devices communicate
 - The security differences between system components
- Technology helps, but architecture is more important



Example



Security Levels

1

Casual or Coincidental Violation

2

Intentional Violation Using Simple Means with Low Resources, Generic Skills & Low Motivation

3

Intentional Violation Using Sophisticated Means with Moderate Resources, IACS Specific Skills & Moderate Motivation

4

Intentional Violation Using Sophisticated Means with Extended Resources, IACS Specific Skills & High Motivation

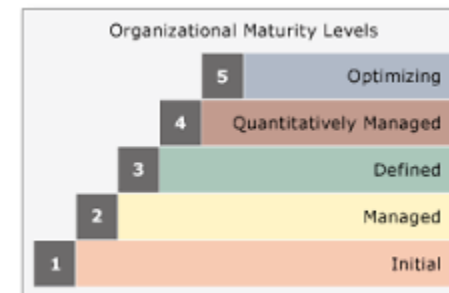
Foundational Requirements

- FR 1 – Identification & authentication control
- FR 2 – Use control
- FR 3 – System integrity
- FR 4 – Data confidentiality
- FR 5 – Restricted data flow
- FR 6 – Timely response to events
- FR 7 – Resource availability



Program Maturity

- A means of assessing capability
- Similar in concept to Capability Maturity Models
 - e.g., SEI-CMM
- An evolving concept in the standards
 - Applicability to IACS-SMS



Safety and Security

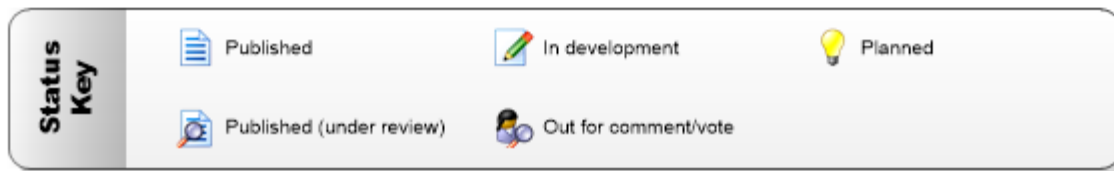
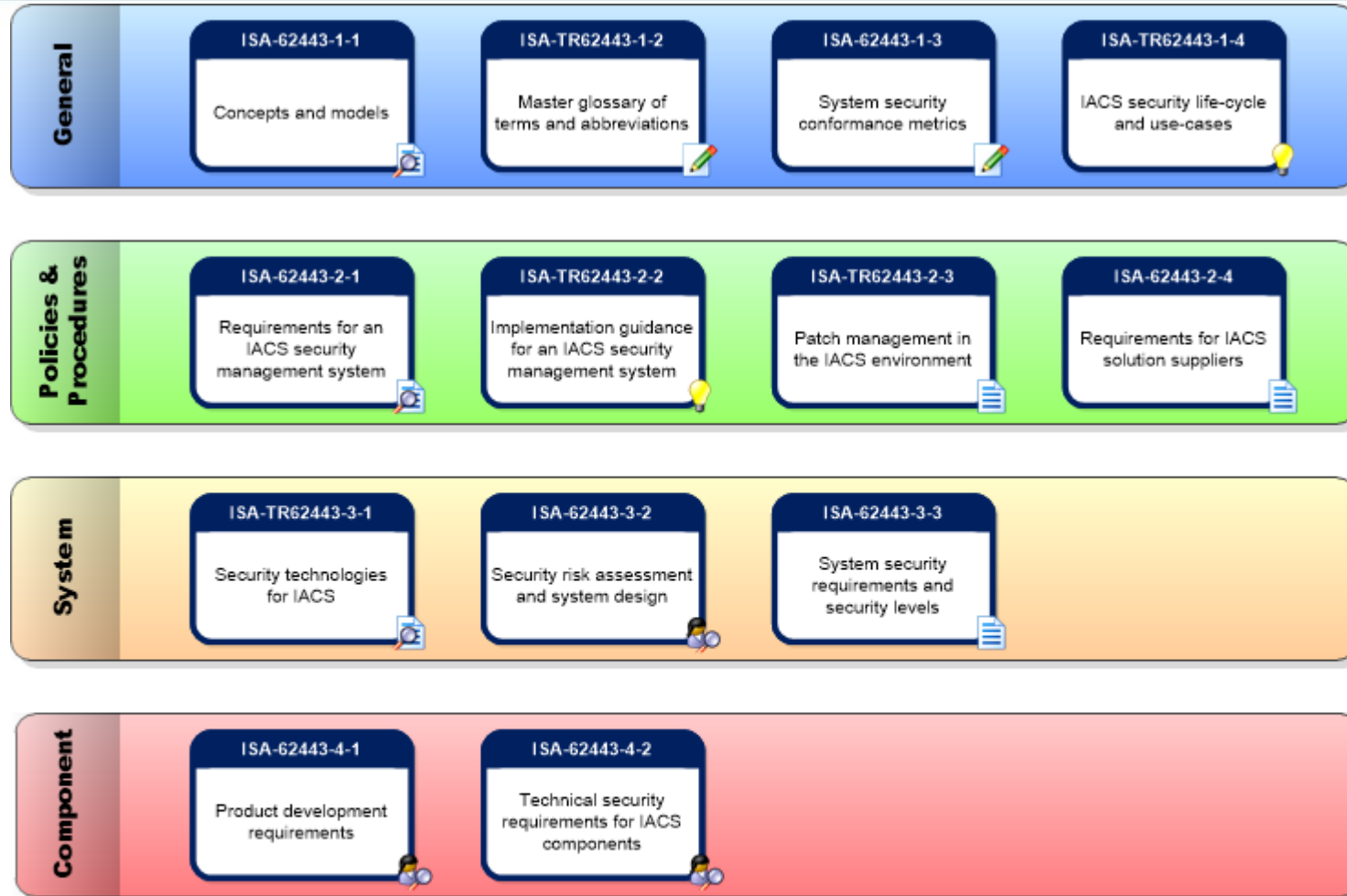
- Safety is much of the “raison d’etre” for security
 - Presenting consequences
- Much to be learned from the Security community
- Collaboration
 - ISA99-ISA84 joint efforts
 - ISA Safety and Security Division



Work Products



The ISA-62443/IEC 62443 Series



What is Happening



Recent Developments

- ISA-TR62443-1-3
 - Formally assigned to a new WG12 for development
- ISA-TR62443-2-3
 - Published in July 2015
- IEC-62443-2-4
 - Published by IEC
 - Proposed adoption by ISA

Recent Developments

- ISA-TR62443-3-2
 - Submitted to committee for approval
- ISA-TR62443-4-1
 - Submitted to committee for comment
- ISA-TR62443-4-2
 - Submitted to committee for comment

Current Areas of Attention

- Alignment of Management System with ISO 27001:2013
- Affirming of Fundamental Concepts
- Detailed Requirements
 - Component Technical
 - Product Development
- The relationship between security and safety

Questions, Comments, Contributions...

- ISA99 Wiki – <http://isa99.isa.org>
- Twitter – @ISA99Chair
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- Membership:
 - 120 US\$/year
 - Access to standards



Please provide contact information & area of expertise or interest

Thank you.

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**Belgium
Section**