

# Industrial Control Systems Security in a Lifecycle Context

Addressing a Common Goal

Eric C. Cosman  
([eric.cosman@gmail.com](mailto:eric.cosman@gmail.com))

# Abstract

The conventional approach to describing the range of contributions to ICS security has been to focus on a limited set of stakeholder groups, such as asset owner, vendor, etc. A problem with this method is that individuals and roles do not fit neatly into the stated categories. Vendors offer system integration services, some asset owners do their own integration, or even develop their own automation products. A better approach is to consider the lifecycle of automation solutions, from requirement definition through development, implementation, operation and support. The roles involved and their respective contribution at each phase can be more clearly defined, as can the relationships between roles. This session describes how this approach can be used, using practical examples and case studies.

# Topics

- ▶ Purpose
- ▶ Perspectives
- ▶ Wants
- ▶ Coordinated View
- ▶ Collaboration Examples
- ▶ Implications

# Examining our Purpose

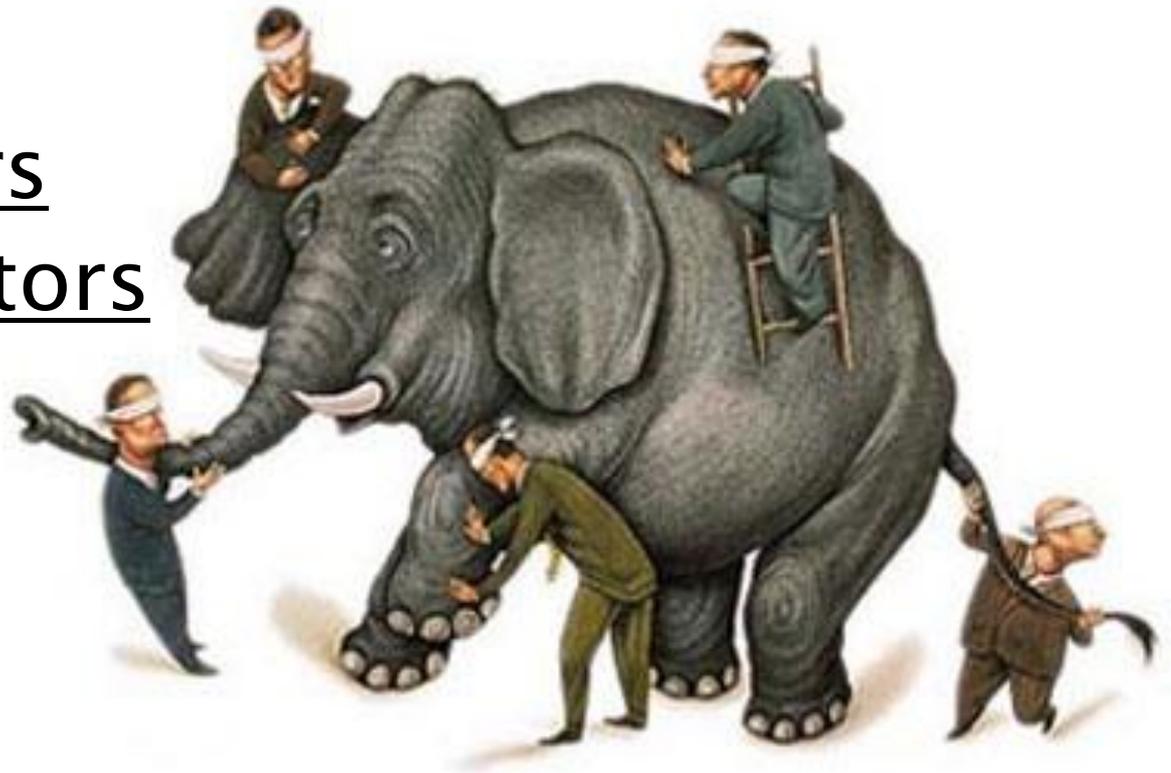
- ▶ Is it “security”... Really?
- ▶ How do we define “secure”?
- ▶ Do asset owners and operators value security?

Maybe a slightly different approach...

- ▶ Safe, Available, and Reliable facilities

# A Variety of Perspectives...

- ▶ Vendors
- ▶ Integrators
- ▶ Researchers
- ▶ Asset Owners
- ▶ Asset Operators
- ▶ Businesses
- ▶ Government
- ▶ The Public



# Participant Wants



- ▶ Vendors and Integrators want...
  - To sell products and services
- ▶ Researchers want ...
  - Improvements to the technology
- ▶ Asset Owners and Operators want ...
  - Safe and Productive operations
- ▶ Businesses want ...
  - Profitability and Manageable Risk
- ▶ Government and the Public want ...
  - Low risk and no adverse incidents

# The Automation Profession wants...

- ▶ Advance the practice of process automation
  - Security as an integral component
    - Working in cooperation with security “experts”



# Eye on the Prize

Safe ...

Available ...

Productive ...

Reliable ...



## Operations

# The Basic Formula

Accountability

X

Shared Authority

X

Shared Vision

=

***Partnerships***

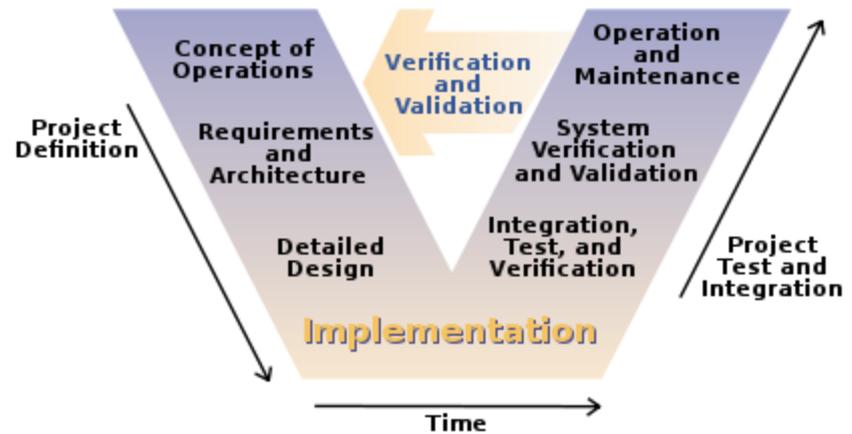
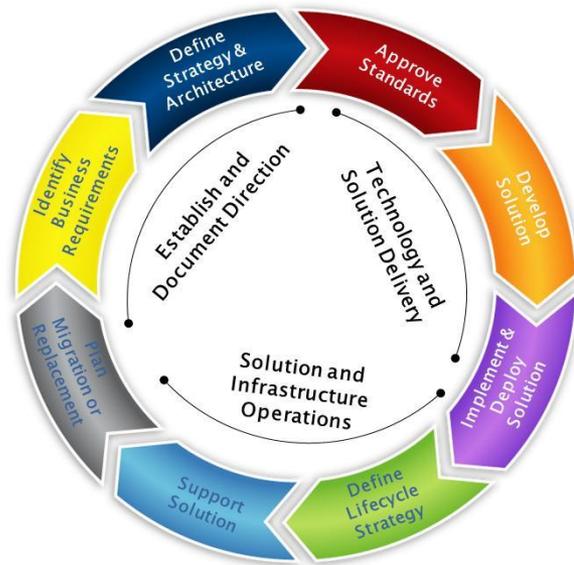
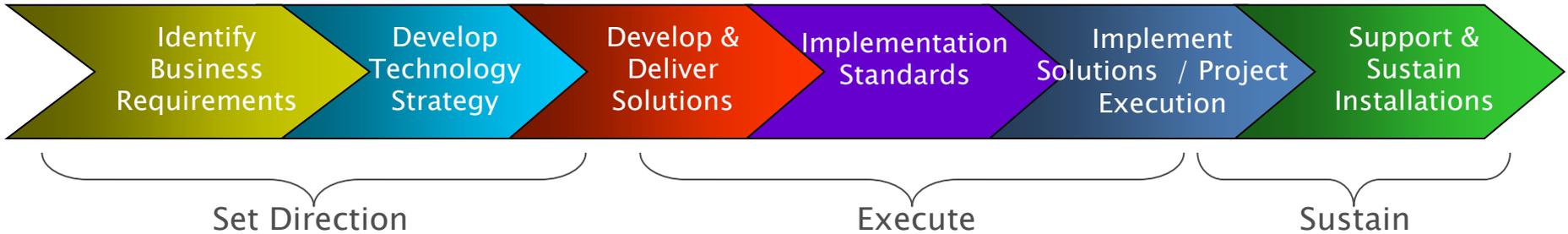


# A Coordinated View...

- ▶ Outcome Focused
- ▶ Draws in all Stakeholders
  - e.g., business leaders and asset owners
- ▶ With a common frame of reference...



# Life Cycle as a Reference



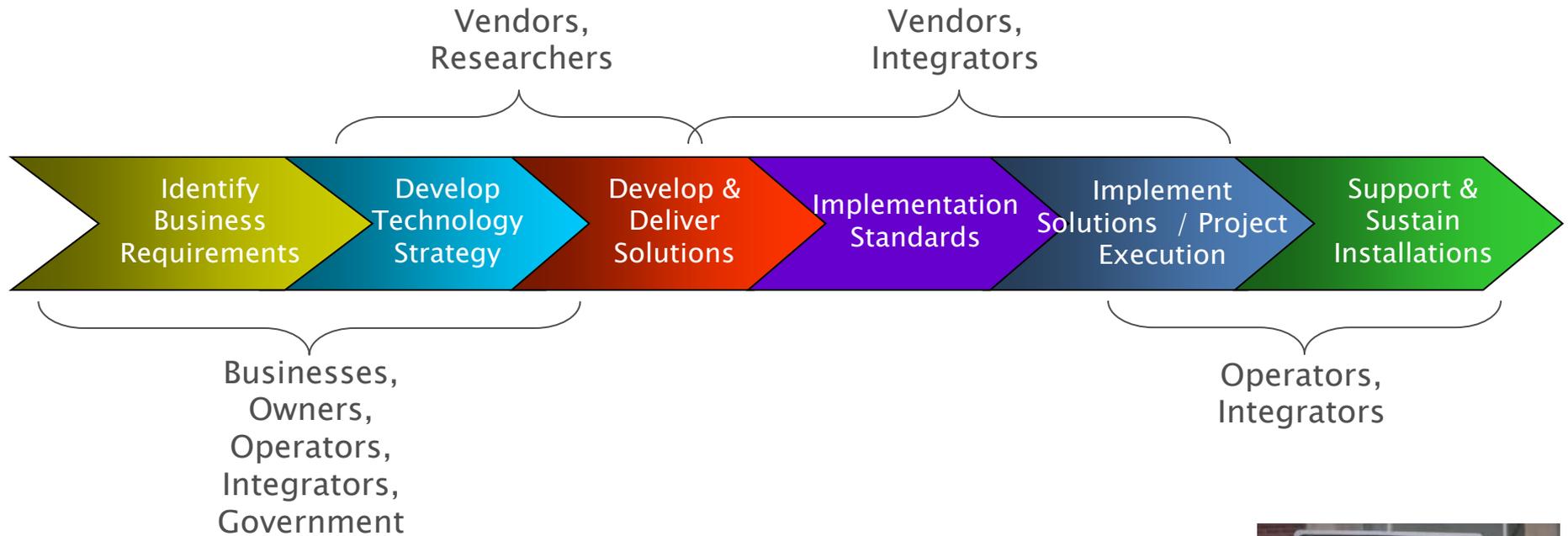
# Map to Participant Groups



	Identify Business Requirements	Develop Technology Strategy	Develop & Deliver Solutions	Implementation Standards	Implement Solutions / Project Execution	Support & Sustain Installations
Vendors			√	√	√	√
Integrators		√	√	√	√	√
Researchers	√			√		
Owners	√			√		
Operators	√	√		√	√	
Business	√					
Government	√	√		√		

*This is just an illustration...*

# Collaboration Opportunities



# (Just) A Few Examples...

- ▶ Prioritizing Product Enhancements
- ▶ Advocacy for Industrial IT
- ▶ Implementation Excellence

# Example #1 - Product Enhancements

- ▶ Setting priorities for COTS product enhancements
  - Traditionally a vendor–customer dialog
  - Have to move to the industry level
  - Ability to deliver remains a competitive differentiator

# Example #2 – Advocacy

- ▶ Advocate for industrial needs in Information Technology
- ▶ Currently a lack of a single voice
  - Vendor to Vendor, and Customer to Vendor,
  - But what does the Industry want?

# Example #3 - Implementation Excellence

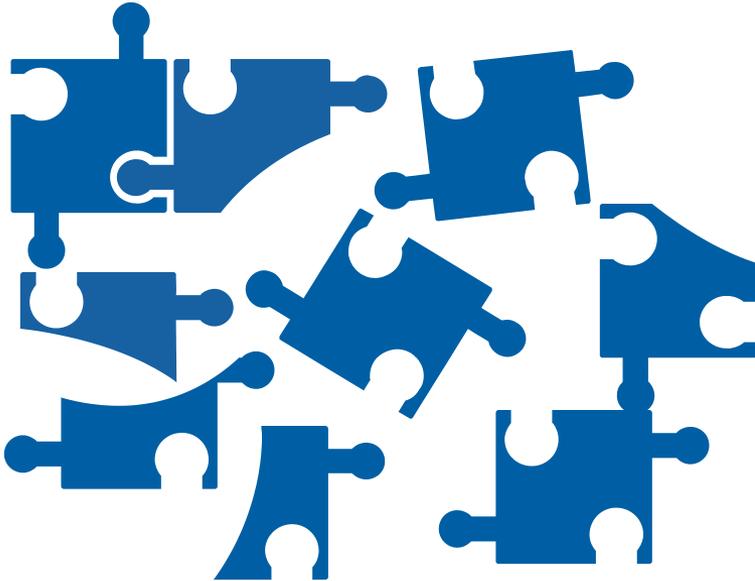
- ▶ Define, share and promote good engineering practices
  - Establish performance measures for implementers
- ▶ Extends into support phases

# Conclusions



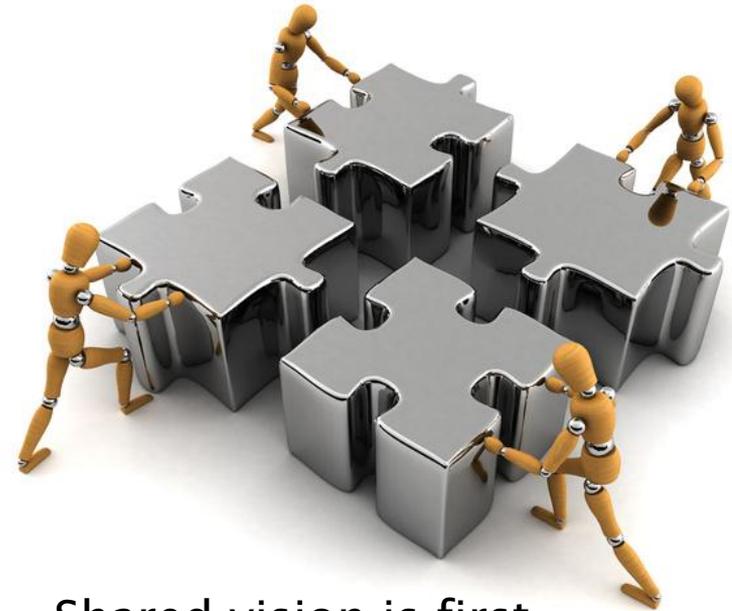
# Implications for ICSJWG

From This...



- Plan around activities
- Shared vision not well stated
- Ad-hoc collaboration

To This...



- Shared vision is first
- Plan around wants and needs
- Planned collaboration



**QUESTIONS**  
And  
**Answers**