Developing a Comprehensive OT Cyber Security Strategy for Manufacturing Sites

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About Me – Reynaldo Gonzalez

- Principal Cybersecurity Architect @ Cummins
- Cisco Academy Instructor & Adjunct Professor @ Lonestar College
- Background (18+ yrs): Networking, Web Development, Cable, Architecture, Security, Cybersecurity, Consulting
- Member of CSNP, CS2AI, ISC2, InfraGard
- B.S in Applied Networking & System Administration @ RIT
- M.S in Cybersecurity: Cyber Operations @ Utica University
- Teaching 12+ years: Networking, Cybersecurity, Ethical Hacking
- Certifications: CISSP, CEH, CCNA/CCNP (R/S, Security, Design)
- Lived in Europe – Supported customers in EMEA, USA, Central/South America

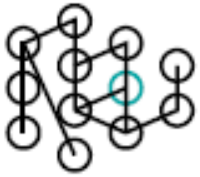
Any views or opinions expressed in this presentation are solely my own and do not reflect, represent, or associate with my current and previous employers including professional organizations I participate in.

The information presented is for information and educational purposes.

Overview

- OT State of Affairs
- OT Security & Business Priorities
- Stakeholder Engagement
- OT Cybersecurity in Manufacturing
- Involving Cybersecurity Architects for Guidance
- Technology Requirements and Implementation
- Leveraging Current Tech vs Investing in Solutions
- OT Security Strategy Plan
- Key Takeaways

Dragos 2023 Year-End Report



80%

of vulnerabilities **reside deep within the ICS network.**

70%

of all ransomware attacks targeted **638 manufacturing entities** in **33 unique manufacturing subsectors.**

16%

of advisories were **network exploitable and perimeter facing** in 2023.

50%

Ransomware attacks against industrial organizations **increased 50 percent** over last year.

31%

of advisories **contained errors** in 2023.

OT State of Affairs – Critical Infrastructures

- Nation State Actors
- Organized Crime
- Ransomware Gangs
- Cyber Warfare

Threat Actors Landscape = Critical Infrastructures including Manufacturing

Alignment with Business Priorities

Mapping out controls and policies

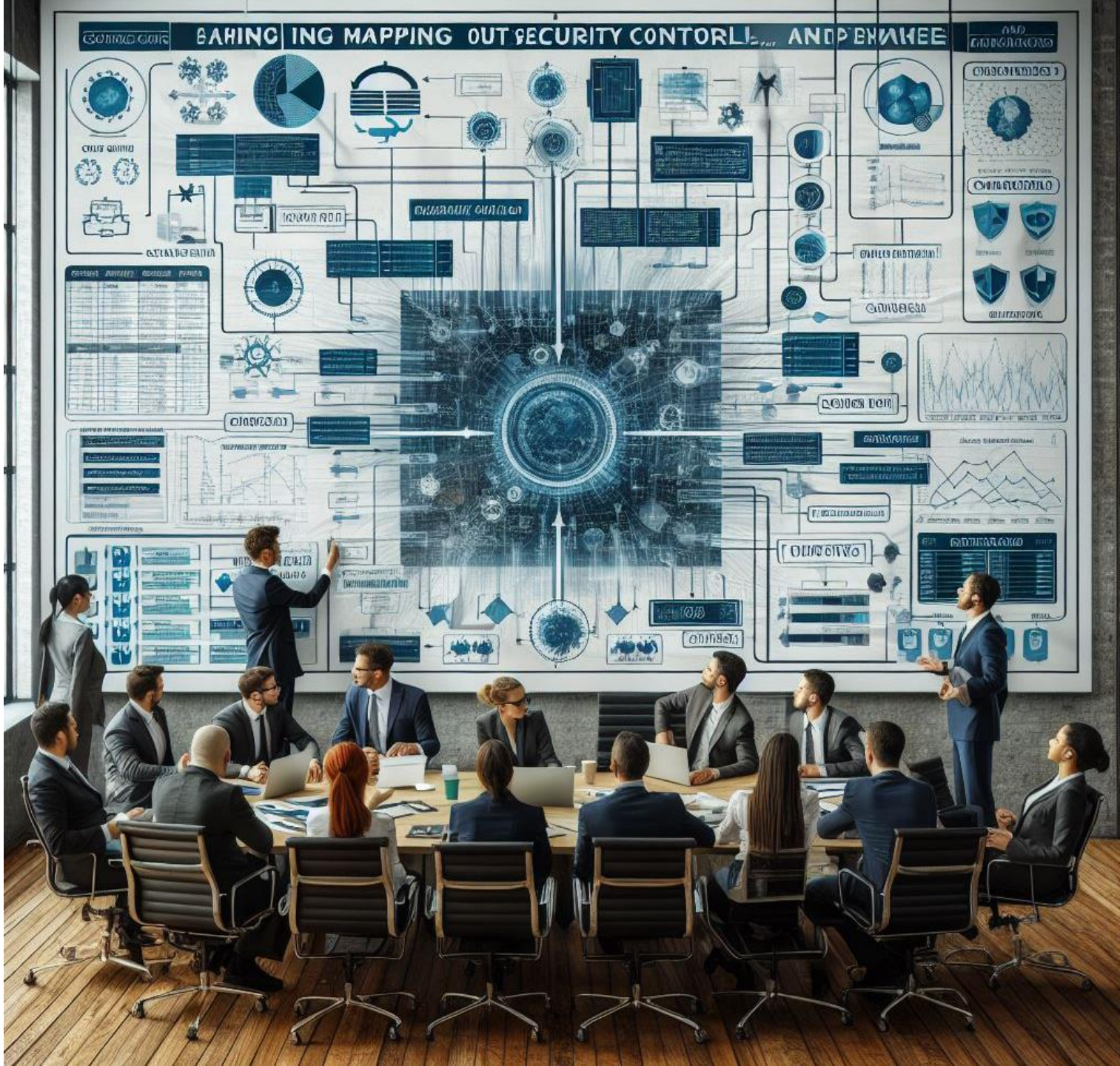
- Identify gaps and areas of improvement

OT security supports strategic goals

- Align security measures with business objectives

Adoption of frameworks and standards

- NIST CSF
- ISA/IEC 62443
- CMMC



Stakeholder Engagement and Risk Assessments

- Stakeholder Engagement
  - Operational teams
  - IT personnel
  - Network teams
  - Management
  - Security experts
- Risk assessments to prioritize security needs
  - Identify functional areas and risk tolerance levels
- Build trust and relationships across all levels
  - Culture of collaboration and communication
  - Importance of OT security in their roles

Importance of OT Cyber Security in Manufacturing

- Protects operational systems and processes
  - Practices
  - Strategies
  - Technologies
- Significance to Manufacturing
  - Protecting Critical Infrastructures
  - Mitigating Operational Risks
  - Preserving Product Integrity
  - Supply Chain Protection
  - Compliance with Regulations & Standards
  - Facilitating Innovation and Industry 4.0

Architecture and Design Principles – Start Early

CROSS COLLABORATION FOR DEFENSE IN-DEPTH ARCHITECTURE

INCORPORATE SECURITY BY DESIGN PRINCIPLES

RIGHT LEVEL OF GOVERNANCE: GUIDELINES, PROCESSES

Strategy & Implementation Planning

ASSESS TECHNOLOGY REQUIREMENTS

BUSINESS USE CASES

SECURITY REVIEW PROCESS

TRAINING IT/OT

DETAILED IMPLEMENTATION PLAN

Security Technology Evaluation

- Evaluate the effectiveness of current solutions
- Explore innovative solutions
- Balance cost of new investments versus improved security postures

Security Tooling Strategy for Manufacturing

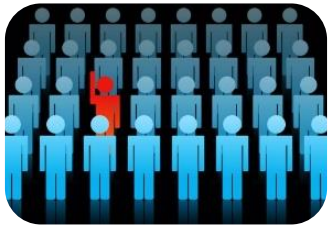
Endpoint Protection

Secure OT/IoT Remote Access

Asset Management

Vulnerability Management

Data Security



Identity Threat Protections

Segmentation

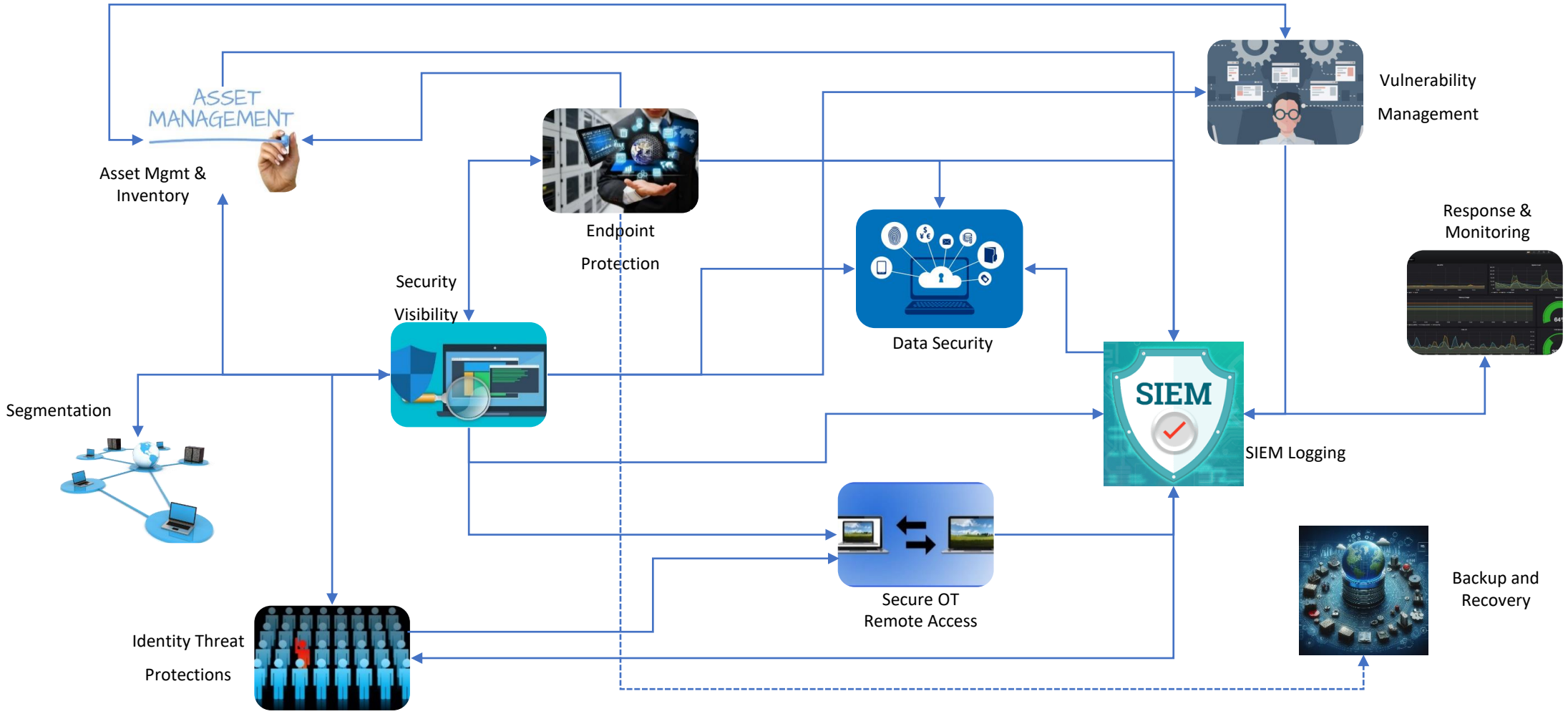
Response & Monitoring

Security Visibility

Backup & Recovery

Process: Cybersecurity Architecture Security Design Review: Security Controls, Requirements, Guidance, Reference Architectures

Why Security Technology Evaluations Matter?
Effectiveness of Integrations – *Data Enrichment*



OT Cybersecurity Strategy Plan for Increased Security Posture in Manufacturing

Phase 1

Build out strategy, identify stakeholders, programs, and projects

Assessments and Information Gathering: Define, Discover, Evaluate, Assess, Risk-Based

Building the Foundation

- Scope Definition
- Current State

Phase 2

Implement and deploy target state security posture

Reference Architecture Model and Guidance Framework, Security Tooling, Implementation & Configuration

Implement Strategic Plan

- Target State
- Action Plan

Phase 3

Monitor, Respond, & Measure OT Security Posture from OT Behaviors

Integration with SOC team, Incident Response Plan, Audit & Security Testing / Validation, Continuous Measurement & Improvement

Managing OT Behaviors & Refine

- Monitor
- Improve

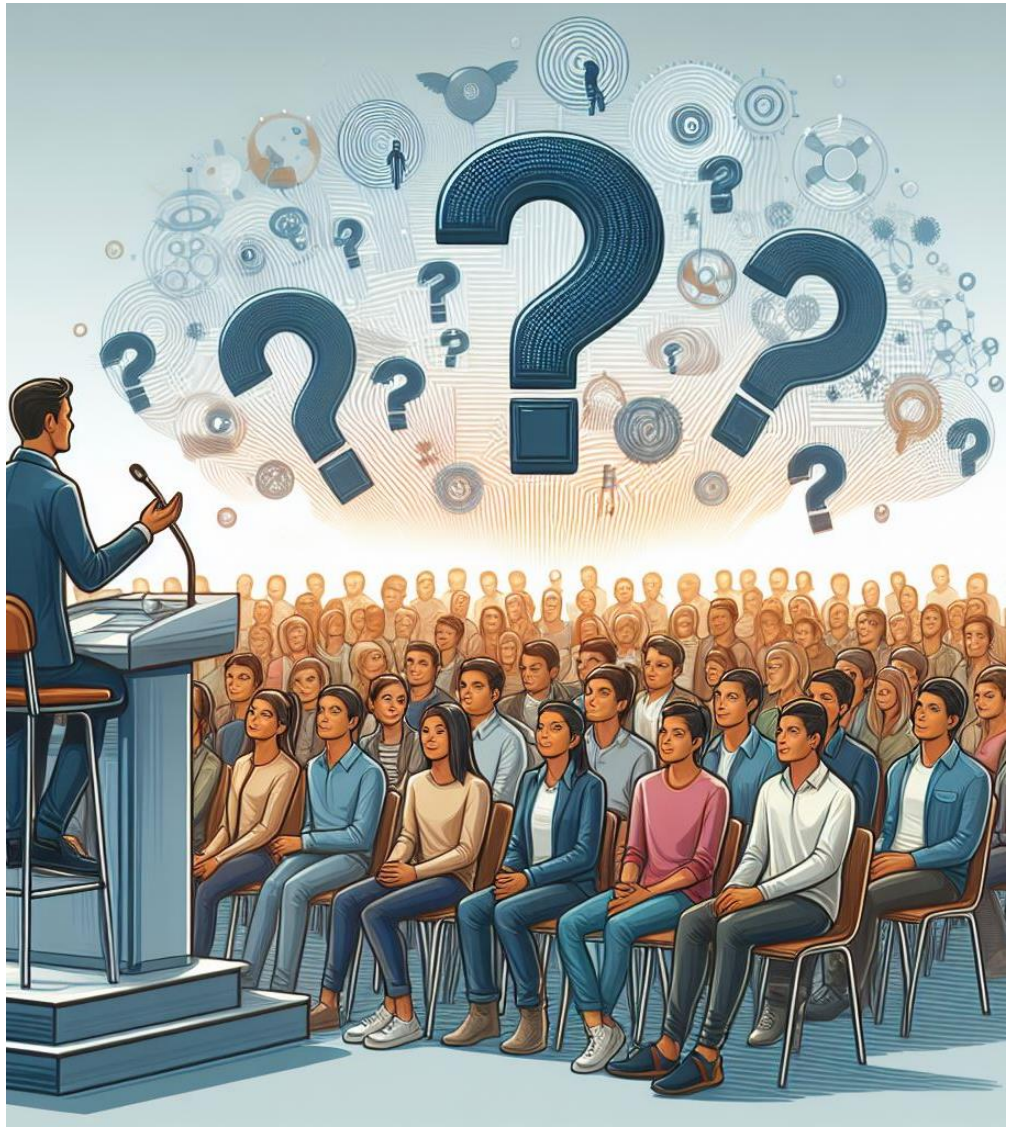
Takeaways: Proactive over Reactive

Collaboration is Key

Security By Design Approach

Continuous Evaluation

Comprehensive Strategy



Happy to connect further…

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