AEROSYSTEMS

A VENDOR PERSPECTIVE IN SUPPORT OF CYBERSECURITY OF (INSTRUMENTATION) SYSTEMS

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SAFRAN

Agenda

1. Background – Zodiac Data Systems, Inc.
2. Overview of Implementing RMF at ZDS
3. ZDS Product Lifecycle Threat and Risk Assessment Process
4. Comprehensive Security Review by Department of Security Services (DSS)
5. Summary

ZDS Product Lines

Market leader in two fields : Instrumentation & Space

Air & Space Systems	Tracking Ground Systems

INSTRUMENTATION
Flight Test

Data Acquisition Units & Recorders

Flight Termination Receiver

DataLink

Tracking & Processing Ground Flight Test Station

Flight Termination Station

SPACE
Ground Solutions for Satellites & Launchers

No ZDS equipment on satellites

DataLink

Tracking antennas

RF

Critical Modems

A UNIQUE VALUE PROPOSITION

XMA DAU

MDR Data Recorder

Zodiac Data Systems, Inc.

40 year legacy in Instrumentation and Telemetry

U.S. Regional / Responsive Expertise

- Expert Sales Force
- Local Field Application Engineers for product training/support/sales

Small business attached to large business resources

- Small business agility and customer connection
- Large engineering work force located in France and Germany

U.S. Entity with ability to work U.S. classified contracts

- Operating under Special Security Agreement (SSA)
- Structured and monitored by U.S. Defense Security Service
- Mitigates Foreign Ownership and Controlling Influence (FOCI)

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ZDS Commitment to Cyber Security

- DFARS 252.204-7012
  - Protect Covered Defense Information (CDI)
  - ZDS compliant with NIST800-171
- Federal Information Security Management Act (FISMA)
  - Protect Information Systems
  - ZDS routinely supports Authorization to Operate (ATO)
  - New focus area for U.S. Defense Security Services Audits for Cleared Defense Contractors

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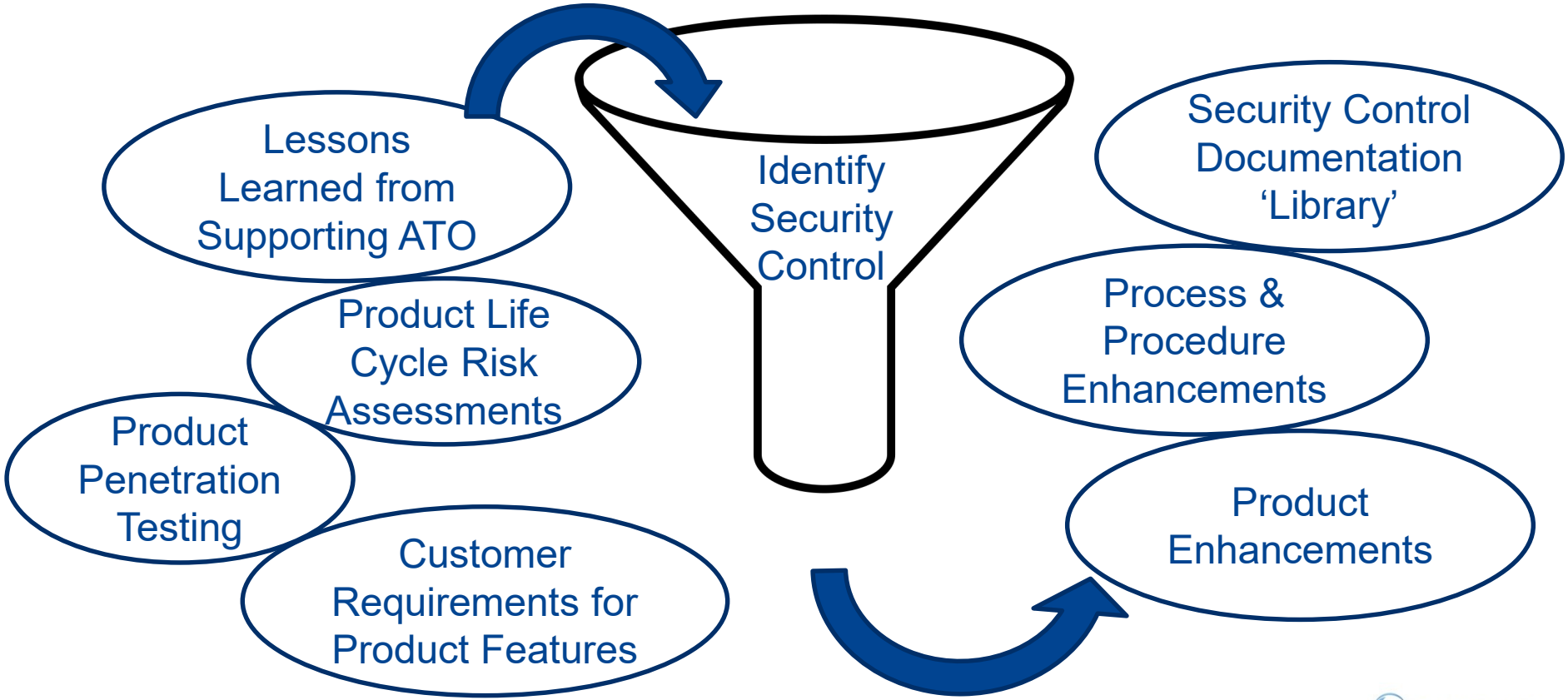
Overview of Implementing RMF at ZDS

RMF & Security Controls

- **NIST SP 800-37** Guide for Applying the Risk Management Framework
- **NIST SP 800-53** Security and Privacy Controls for Federal Information Systems and Organizations
- **Challenge:** Our products are used on a wide range of application each with unique RMF, risk tolerance, common controls, etc.
  - **How do vendors proactively establish RMF and Security Controls that supports every customers' needs?**

Approach to Implementing Security Controls



Select Implemented Security Controls

No.	Security Control
RA-3	Risk Assessments
CA-8	Penetration Testing
CM-9	Configuration Management Plan
RA-5	Vulnerability Scanning
SA-10	Developer Configuration Management
SA-12	Supply Chain Protection
SA-19	Component Authenticity
SI-12	Information Handling and Retention
SI-16	Memory Retention

Select Supporting Documents for Controls

- Detailed Statement of Volatility
- Statement of Safety for Databus Interfaces
- Vulnerability and Conformity Scans
- Firmware/Software/FPGA Development Policy
- Firmware Release Policy
- Supply Chain Protection Policy
- Prevention of Counterfeit Parts Policy

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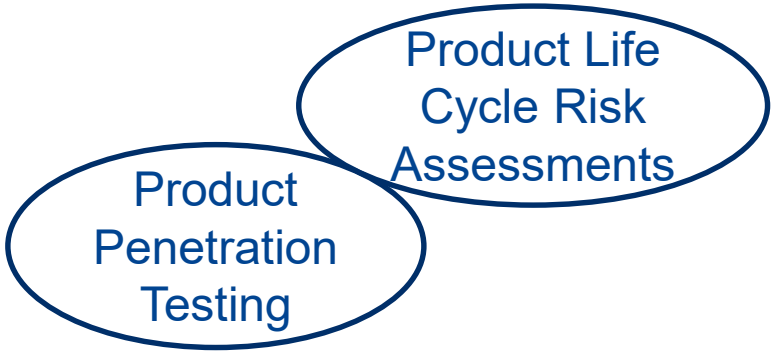
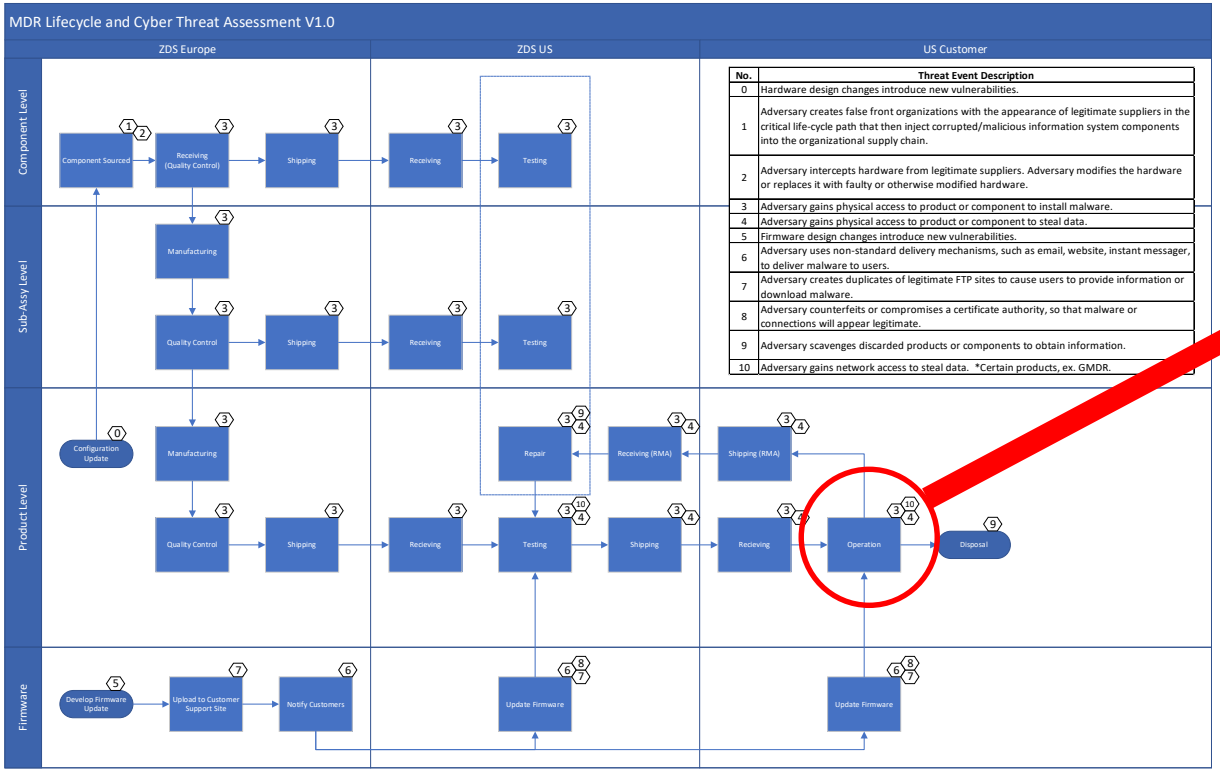
PRODUCT LIFECYCLE THREAT AND RISK MANAGEMENT



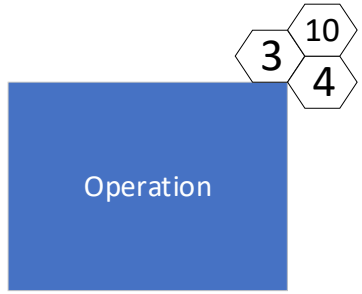
Product Lifecycle Risk Management

- Focus Areas:
  - From component sourcing to customer delivery
  - Service and repair
  - Firmware updates
  - Typical components and interconnections for instrumentation system
- Priority is to protect Confidentiality

Lifecycle Threat Assessment - Example



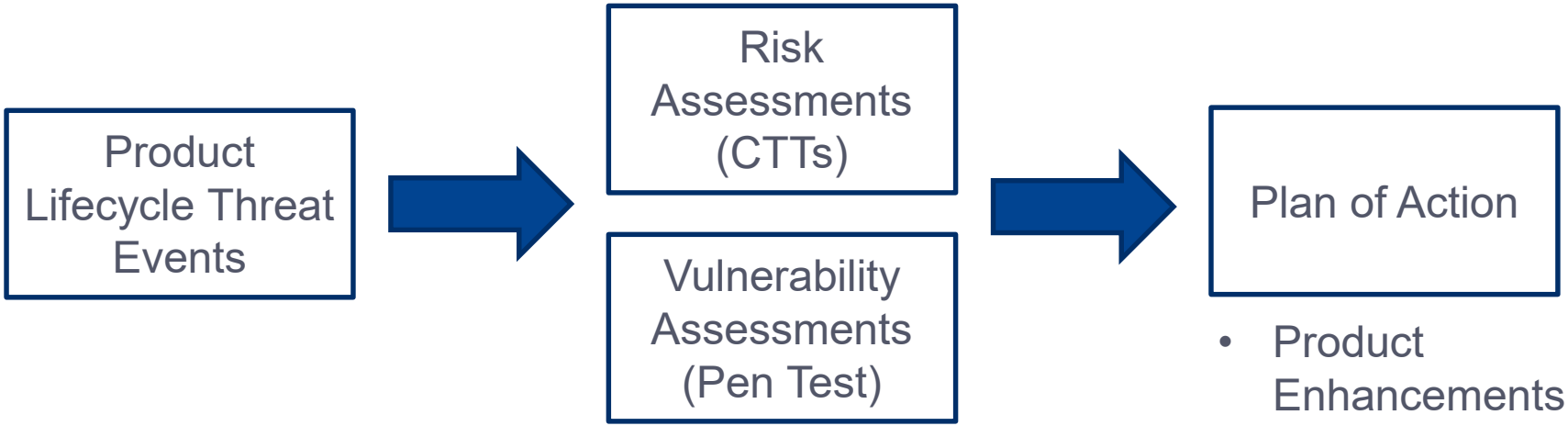
No.	Threat Event Description
0	Hardware design changes introduce new vulnerabilities.
1	Adversary creates false front organizations with the appearance of legitimate suppliers in the critical life-cycle path that then inject corrupted/malicious information system components into the organizational supply chain.
2	Adversary intercepts hardware from legitimate suppliers. Adversary modifies the hardware or replaces it with faulty or otherwise modified hardware.
3	Adversary gains physical access to product or component to install malware.
4	Adversary gains physical access to product or component to steal data.
5	Firmware design changes introduce new vulnerabilities.
6	Adversary uses non-standard delivery mechanisms, such as email, website, instant messager, to deliver malware to users.
7	Adversary creates duplicates of legitimate FTP sites to cause users to provide information or download malware.
8	Adversary counterfeits or compromises a certificate authority, so that malware or connections will appear legitimate.
9	Adversary scavenges discarded products or components to obtain information.
10	Adversary gains network access to steal data. *Certain products, ex. GMDR.



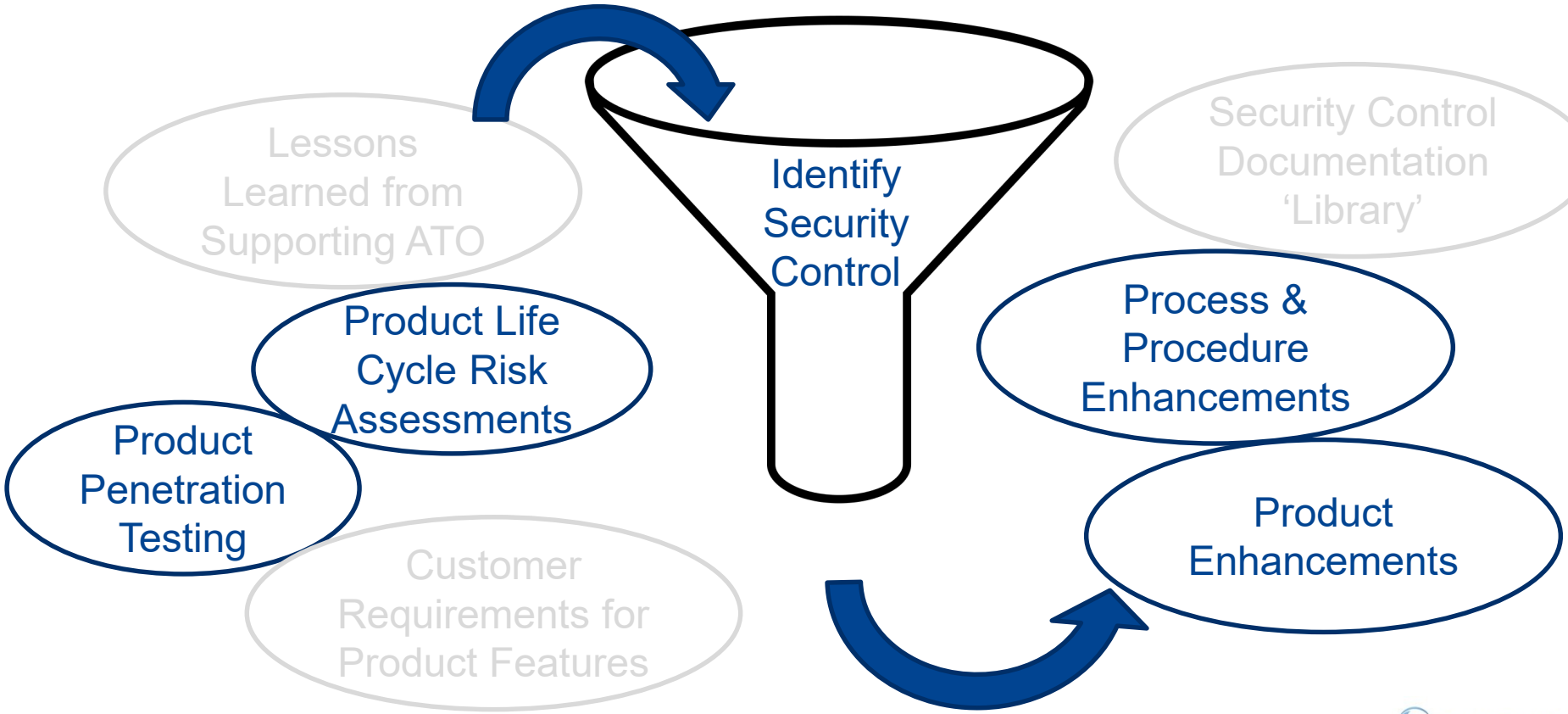
3,4) Adversary gains access to product to install malware[3] or steal data[4]

10) Adversary gains network access to steal data.

Threat and Risk Assessment Process



Approach to Implementing Security Controls



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Comprehensive Security Review by Department of Security Services (DSS), 2018

DSS Addressing Cyber Security Concerns

Moving Ahead

- National Industrial Security Program (NISP) designed for vastly different time
- Moving to an intelligence-led, asset-focused, and threat-driven approach that:
  - ✓ Prioritizes assets and facility engagement based on national intelligence information
  - ✓ Identifies assets at each cleared facility
  - ✓ Considers the threat and vulnerabilities
  - ✓ Partners with cleared industry to develop tailored security programs

Defense Security Service

Audit Focus – FPGA

- Functionality – purpose and functions of FPGA in device
- Suppliers – current vendors providing FPGAs
- Supply chain process – supplier management, risk management and component authentication
- Process integrity of firmware development
- Software toolsets used for firmware development

Audit Process

- Safeguards found to in place to protect sensitive information
- ZDS is in compliance with NISPOM
- ZDS received favorable remarks for FPGA Supply Chain Integrity, Process Integrity and Software Toolset…BUT…
- Specific feedback not provided:
  - Threat source and events considered
  - Opportunities to improve vulnerabilities and controls

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Summary

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- ZDS is proactively managing cyber security of products and supporting customers achieve ATO
- Each application is different and vendors are challenged with anticipating security requirements
- Vendors need specific Cyber Security requirements from customers to effectively support ATO
- Vendors need ongoing support from customers security experts to understand emerging trends and threats

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