Understanding Product Characteristics Throughout the SDLC

SwA Working Groups June 22, 2010

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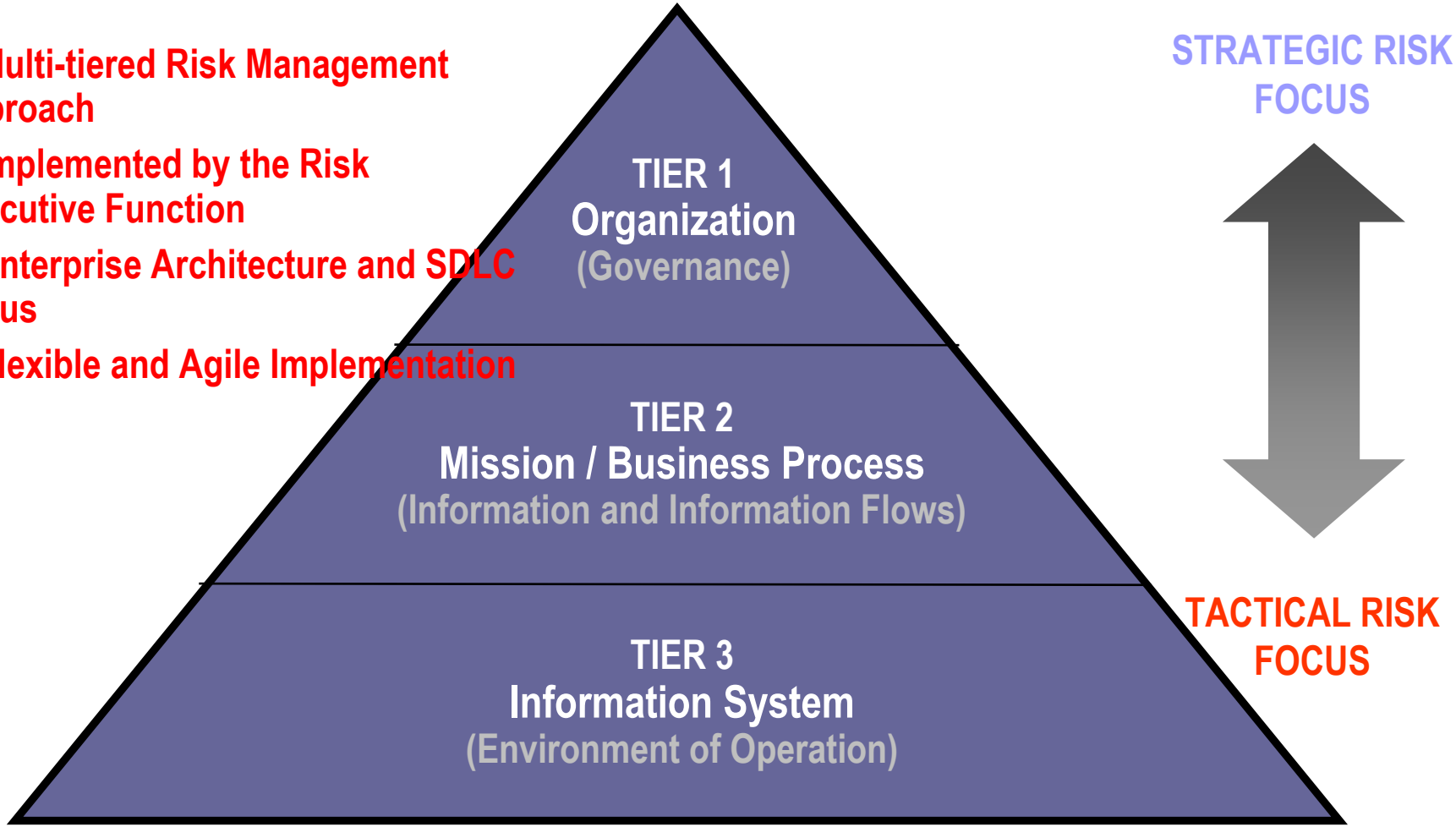
- Overview of Tools for the Phases Where They Are Most Beneficial
  - Requirements
  - Design
  - Implementation
    - Keys to success
    - Potential use of Common Enumerations
    - Value to Development Stakeholders
    - Value to Acquisition Stakeholders
  - Testing
  - Acquisition
  - Operations (?)

Tool	Skills	Benefits	Drawbacks
Static Analysis Code Scanning	Understanding of the implementing language	• Reduces cost over system life • Educates developers about secure programming • Rechecks legacy code • Automates repetitive and tedious aspects of source code security audits • Checks for good programming style • No disassembly	• No architectural-level flaws
Pedigree Analysis	None	• Reduces cost over system life • Educates developers about secure programming • Rechecks legacy code • Automates repetitive and tedious aspects of source code security audits • Reduces the amount of testing necessary • No disassembly	• No architectural-level flaws • Requires use of open source software
Byte Code Analysis	Understanding of byte code Understanding of testing methodology	• Reduces cost over system life • Rechecks legacy code • Checks for good programming style • No need for source code • Guarantees that the analysis is performed on the actual product	• No architectural-level flaws • Requires additional analysis • Limited to a single language

- **Value Provided to Development Stakeholders**
  - Independent verification of expected security mechanisms surrounding critical business functions [SAMM]
  - High-level due diligence toward security testing [SAMM]
  - Ad hoc growth of a security test suite for each software project [SAMM]
  - Deeper and more consistent verification of software functionality for security [SAMM]
  - Development teams enabled to self-check and correct problems before release [SAMM]
- **Value Provided to Acquisition Stakeholders**
  - Stakeholders better aware of open vulnerabilities when making risk acceptance decisions [SAMM]

Enterprise-Wide Risk Management

- Multi-tiered Risk Management Approach
- Implemented by the Risk Executive Function
- Enterprise Architecture and SDLC Focus
- Flexible and Agile Implementation



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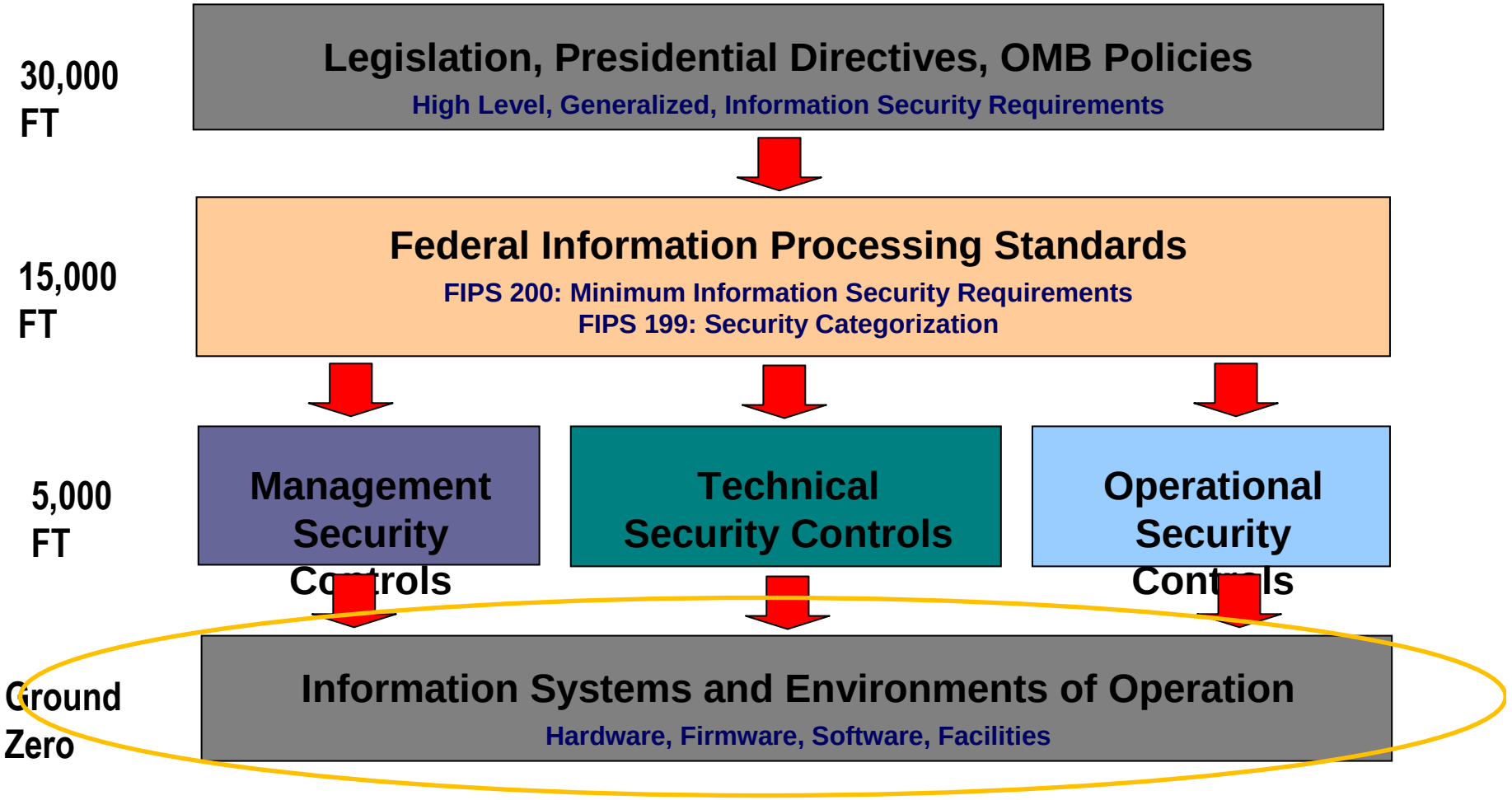
Security Requirements Traceability



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SP 800-53 Security Control Families

Supporting Software Assurance

- Configuration Management
  - Configuration Change Control
  - Security Impact Analysis
  - Access Restrictions for Change
  - Configuration Settings
  - Least Functionality
- System and Information Integrity
  - Security Functionality Verification
  - Software and Information Integrity
  - Information Input Validation
  - Error Handling
  - Predictable Failure Prevention

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SP 800-53 Security Control Families

Supporting Software Assurance

- Program Management
  - Mission/Business Process Definition
  - Enterprise Architecture
  - Risk Management Strategy
  - Information Security Resources
  - Information Security Measures of Performance
- System and Services Acquisition
  - Resource Allocation
  - Acquisition and Life Cycle Support
  - Security Engineering Principles
  - Developer Configuration Management and Testing
  - Trustworthiness and Critical Information System Components
  - Supply Chain

SP 800-53 Control ID	Control Name
AT-3	**Security Awareness** -The organization …provides appropriate information system security training:
RA-3	**Risk Assessment -** The organization conducts assessments of the risk and magnitude of harm…
RA-5	**Vulnerability Scanning -** The organization scans for vulnerabilities in the information system
SI-2	**Flaw Remediation** - The organization identifies, reports, and corrects information system flaws.
SI-3	**Malicious Code Protection** - The information system implements malicious code protection.
SI-10	**Information Accuracy, Completeness, Validity, and Authenticity** - IS checks information for accuracy, completeness, validity, and authenticity.

- Study NIST SP 800-53 for possible contribution to efforts related to the Information System level of Enterprise Risk Management
  - Explore expanding the content through collaboration with
    - MAEC efforts
    - SwA Practice Self-Assessment efforts
    - Contributions from industry implementation
- What knowledge do we need to share with NIST?
- How to collaborate?
- Continue discussions at future SwA events