Application Security ISO

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Introduction

Speaker Introduction

- Tak Chijiiwa has 12+ years of IT security experience
- He has been involved in a wide spectrum of information security strategy and advisory engagements for various Fortune 500 clients
- Prior to joining Security Compass, he worked at Deloitte & Touche, LLP as a Manager of the Vulnerability Management team in Toronto, Ontario for 6 years and at Kasten Chase Applied Research as a Development Manager in Mississauga, Ontario for 4 years

Abstract

Abstract

- ISO/IEC 27034 - Part 1 was published in November 2011 and the remaining parts (Part 2-6) are expected to be published soon
- What does this mean to your organization or your clients who wish to adopt or incorporate this ISO standard for their application?
- This overview will walk through the sections of standard and highlight the process approach to specifying, designing, developing, testing, implementing and maintaining security functions and controls in application systems

Agenda

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1. ISO Series Background
2. ISO Stages
3. ISO 27034 Walkthrough
4. Q&A

ISO Series Background

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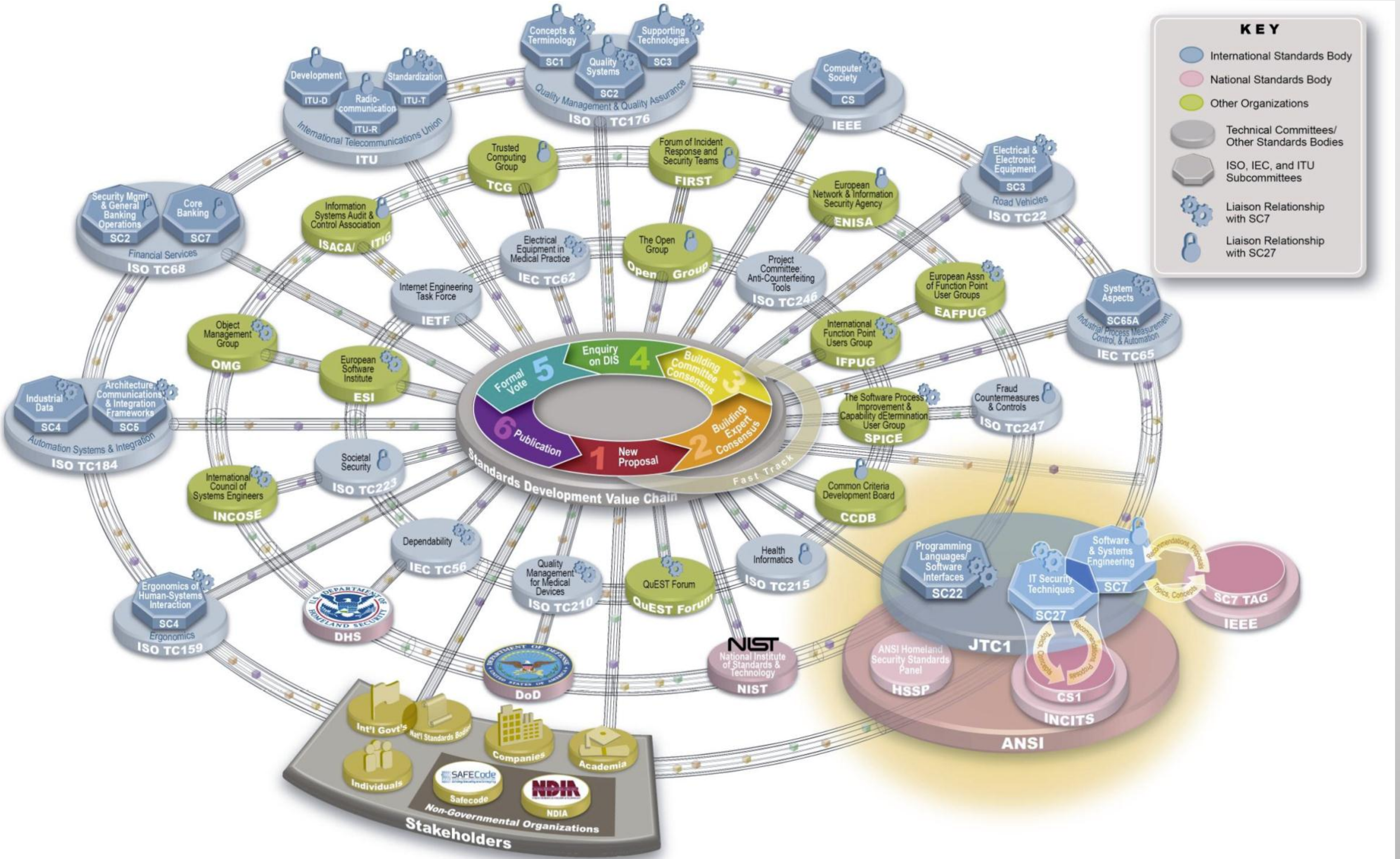


KEY
International Standards Body
National Standards Body
Other Organizations
Technical Committees/ Other Standards Bodies
ISO, IEC, and ITU Subcommittees
Liaison Relationship with SC7
Liaison Relationship with SC27
Concepts & Terminology
SC1
Quality Systems
SC2
Supporting Technologies
SC3
Quality Management & Quality Assurance
ISO TC176
Development
ITU-D
Radio-communication
ITU-R
Standardization
ITU-T
International Telecommunications Union
ITU
Computer Society
CS
IEEE
Electrical & Electronic Equipment
SC3
Road Vehicles
ISO TC22
Security Mgmt & General Banking Operations
SC2
Core Banking
SC7
Financial Services
ISO TC68
Trusted Computing Group
TCG
Forum of Incident Response and Security Teams
FIRST
European Network & Information Security Agency
ENISA
Information Systems Audit & Control Association
ISACA/ITIG
Electrical Equipment in Medical Practice
IEC TC62
The Open Group
Open Group
Project Committee: Anti-Counterfeiting Tools
ISO TC246
European Assn of Function Point User Groups
EAFPUG
System Aspects
SC65A
Industrial Process Measurement, Control, & Automation
IEC TC65
Internet Engineering Task Force
IETF
Object Management Group
OMG
European Software Institute
ESI
International Function Point Users Group
IFPUG
Industrial Data
SC4
Architecture, Communications & Integration Frameworks
SC5
Automation Systems & Integration
ISO TC184
The Software Process Improvement & Capability dEtermination User Group
SPICE
Fraud Countermeasures & Controls
ISO TC247
Enquiry on DIS
4
Building Committee Consensus
3
Building Expert Consensus
2
New Proposal
1
Publication
6
Formal Vote
5
Fast Track
Standards Development Value Chain
Societal Security
ISO TC223
International Council of Systems Engineers
INCOSE
Common Criteria Development Board
CCDB
Dependability
IEC TC56
Quality Management for Medical Devices
ISO TC210
QuEST Forum
QuEST Forum
Health Informatics
ISO TC215
Programming Languages/ Software Interfaces
SC22
IT Security Techniques
SC27
Software & Systems Engineering
SC7
Recommendations, Proposals
Topics, Concepts
SC7 TAG
IEEE
JTC1
Ergonomics of Human-Systems Interaction
SC4
Ergonomics
ISO TC159
DHS
NIST
National Institute of Standards & Technology
NIST
ANSI Homeland Security Standards Panel
HSSP
CS1
INCITS
ANSI
DoD
Int'l Govt's
Nat'l Standards Bodies
Companies
Academia
Individuals
SAFECode
Safecode
NDIA
NDIA
Non-Governmental Organizations
Stakeholders

Image from: https://buildsecurityin.us-cert.gov/swa/presentations_032011/NadyaBartol-ICTSCRM-ISOStandardsUpdate.pdf

ISO Series Background - continued

- Standards are essential for ensuring interoperability within an IT environment
- Goal is to incorporate the views of all interested parties from manufacturers, vendors and users to research organizations and governments
- ISO 27000 series involves various technical committees, subcommittees, and working groups

ISO Series Background - continued

1. International Organization for Standardization (ISO)

   - Non-governmental consensus-building network of the national standards institutes of 156 countries

   - Do NOT represent governments but closely works with both governments and industries

ISO Series Background - continued

IEC International Electrotechnical Commission

2. International Electrotechnical Commission (IEC)

   - Develops international standards for government, business and society for all electrical, electronic and related technologies

   - These standards are relied upon for international commercial contracts and agreements

ISO Series Background - continued

DIN ISO/IEC JTC 1/SC 27

3. Joint Technical Committee 1/Sub-committee 27

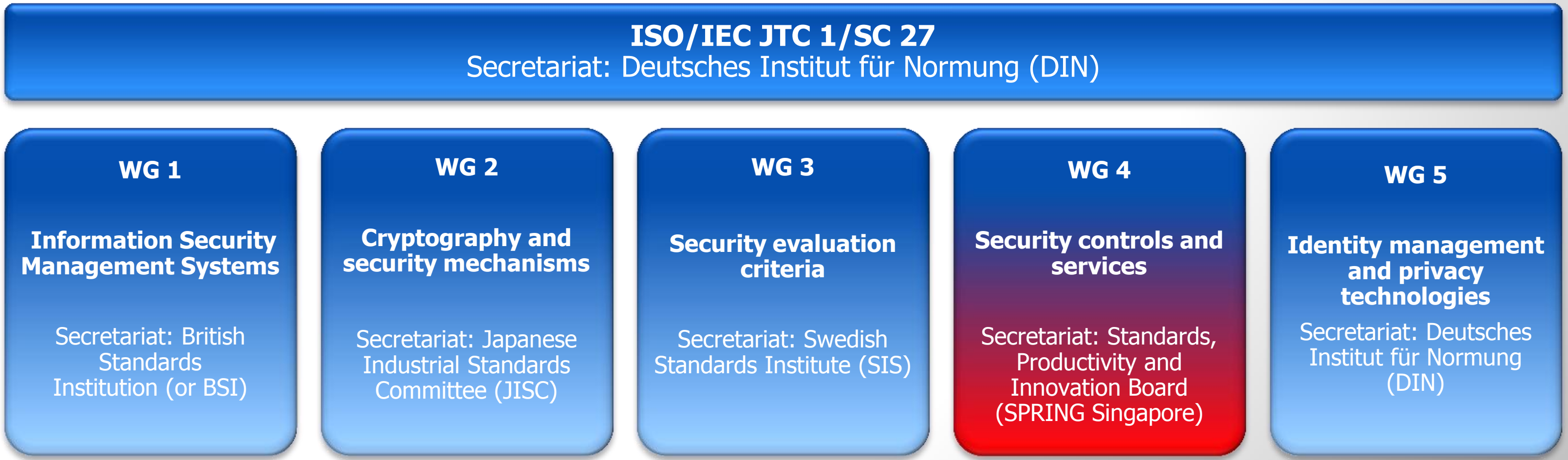
   - Draft International Standards from joint technical committees from around the world

   - Requires approval by at least 75% of the national bodies to publish as an International Standard

   - Secretariat is Deutschen Institut für Normung (DIN) in Germany

ISO Series Background - continued

- Within JCT 1/SC 27, there are 5 working groups which further focuses on the elements of IT Security
- Each working group (WG) has been assigned a national secretariat



ISO/IEC JTC 1/SC 27
Secretariat: Deutsches Institut für Normung (DIN)

WG 1
Information Security Management Systems
Secretariat: British Standards Institution (or BSI)

WG 2
Cryptography and security mechanisms
Secretariat: Japanese Industrial Standards Committee (JISC)

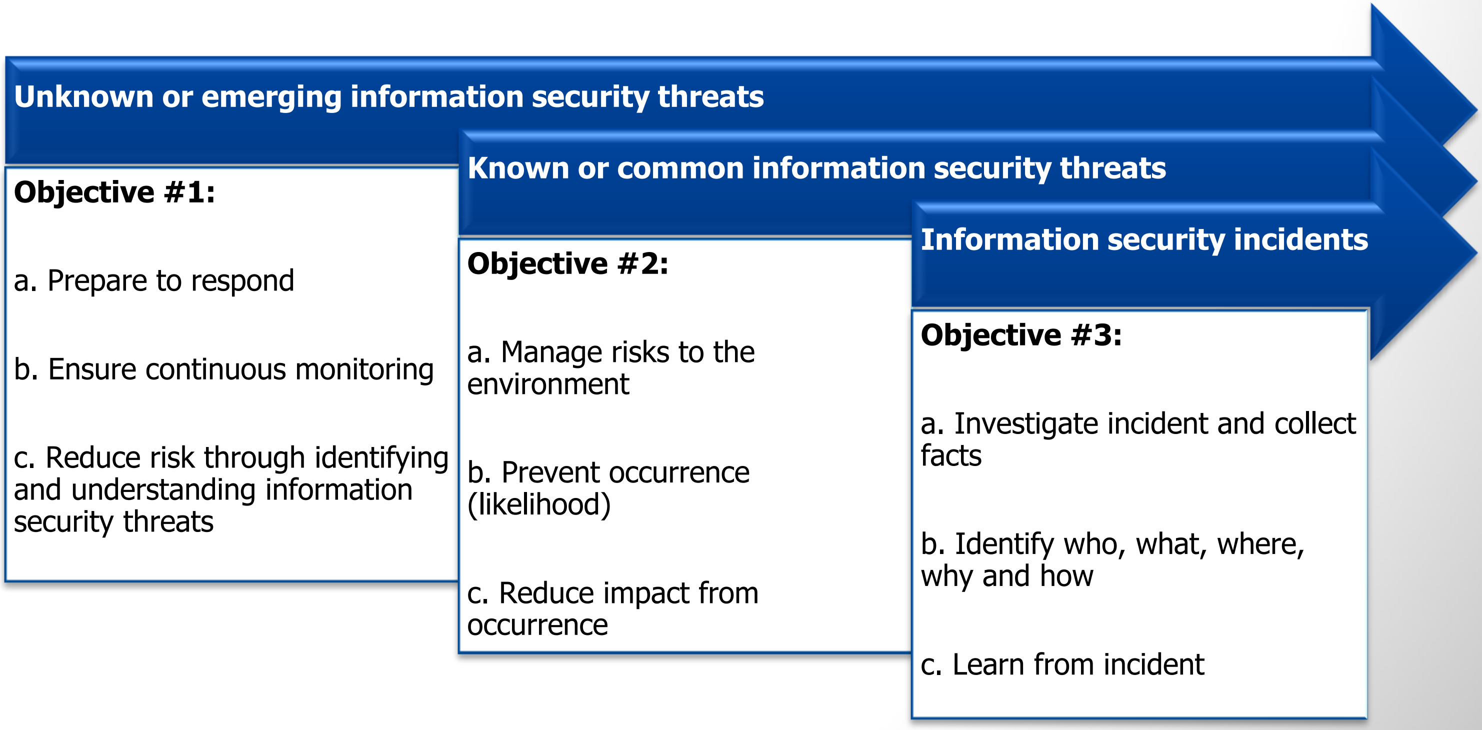
WG 3
Security evaluation criteria
Secretariat: Swedish Standards Institute (SIS)

WG 4
Security controls and services
Secretariat: Standards, Productivity and Innovation Board (SPRING Singapore)

WG 5
Identity management and privacy technologies
Secretariat: Deutsches Institut für Normung (DIN)

ISO Series Background - continued

- Objectives of Working Group 4 – Security Controls and Services



Unknown or emerging information security threats

Objective #1:

a. Prepare to respond

b. Ensure continuous monitoring

c. Reduce risk through identifying and understanding information security threats

Known or common information security threats

Objective #2:

a. Manage risks to the environment

b. Prevent occurrence (likelihood)

c. Reduce impact from occurrence

Information security incidents

Objective #3:

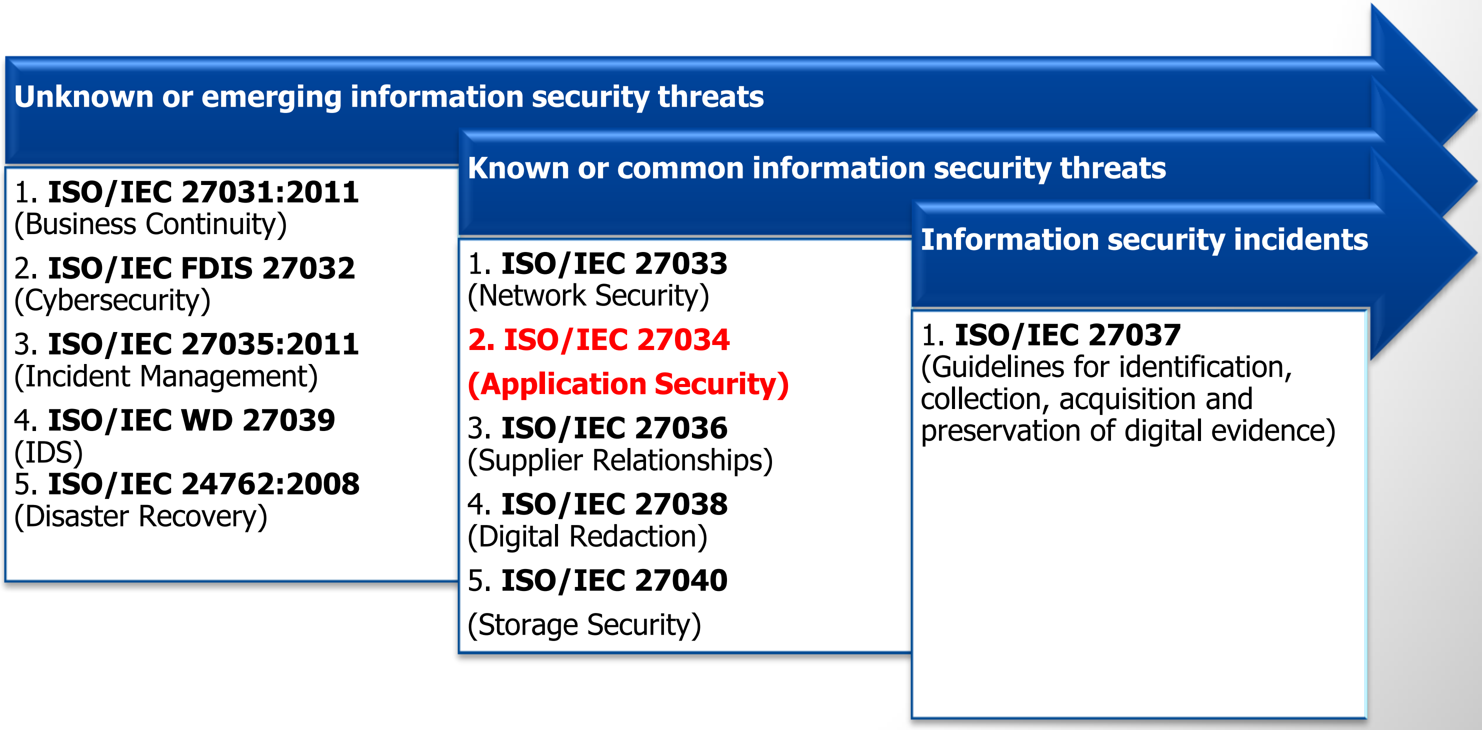
a. Investigate incident and collect facts

b. Identify who, what, where, why and how

c. Learn from incident

ISO Series Background - continued

- Current published standards and projects in progress (review or draft)



Unknown or emerging information security threats

1. **ISO/IEC 27031:2011** (Business Continuity)
2. **ISO/IEC FDIS 27032** (Cybersecurity)
3. **ISO/IEC 27035:2011** (Incident Management)
4. **ISO/IEC WD 27039** (IDS)
5. **ISO/IEC 24762:2008** (Disaster Recovery)

Known or common information security threats

1. **ISO/IEC 27033** (Network Security)
2. **ISO/IEC 27034** **(Application Security)**
3. **ISO/IEC 27036** (Supplier Relationships)
4. **ISO/IEC 27038** (Digital Redaction)
5. **ISO/IEC 27040** (Storage Security)

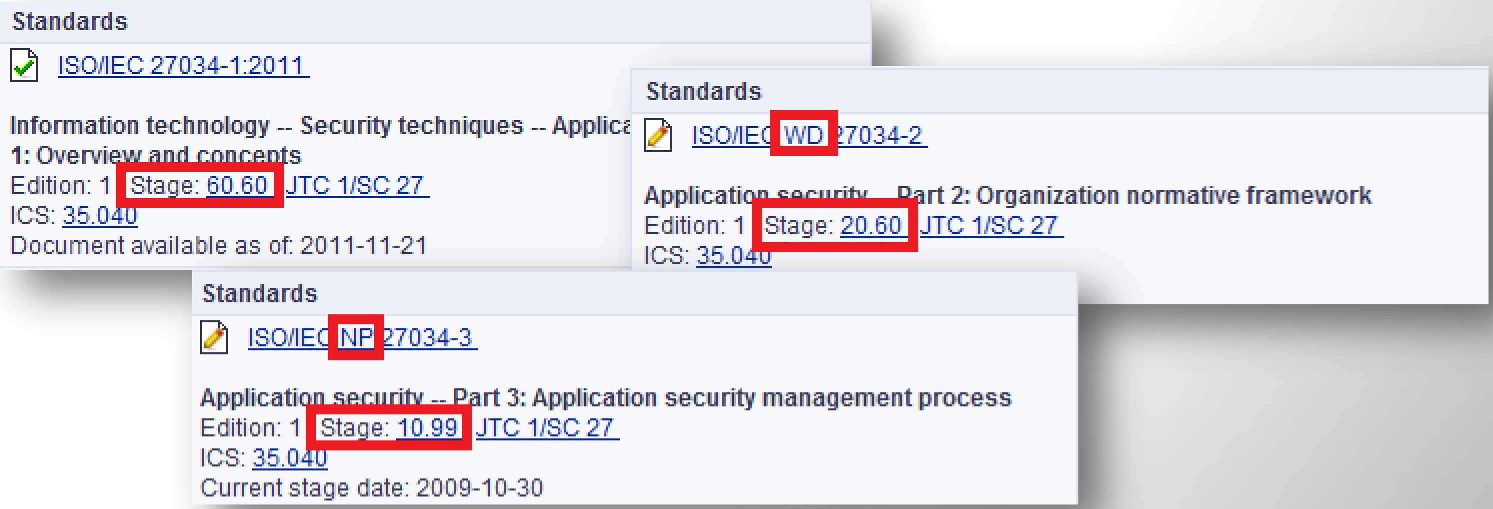
Information security incidents

1. **ISO/IEC 27037** (Guidelines for identification, collection, acquisition and preservation of digital evidence)

ISO Stages

ISO Stages

- There are various defined stages and sub-stages during the development of International Standards
- Other definitions include:
  - NP = New Work Item Proposal
  - WD = Working draft



Standards

ISO/IEC 27034-1:2011

Information technology -- Security techniques -- Applica
1: Overview and concepts
Edition: 1 Stage: 60.60 JTC 1/SC 27
ICS: 35.040
Document available as of: 2011-11-21

Standards

ISO/IEC WD 27034-2

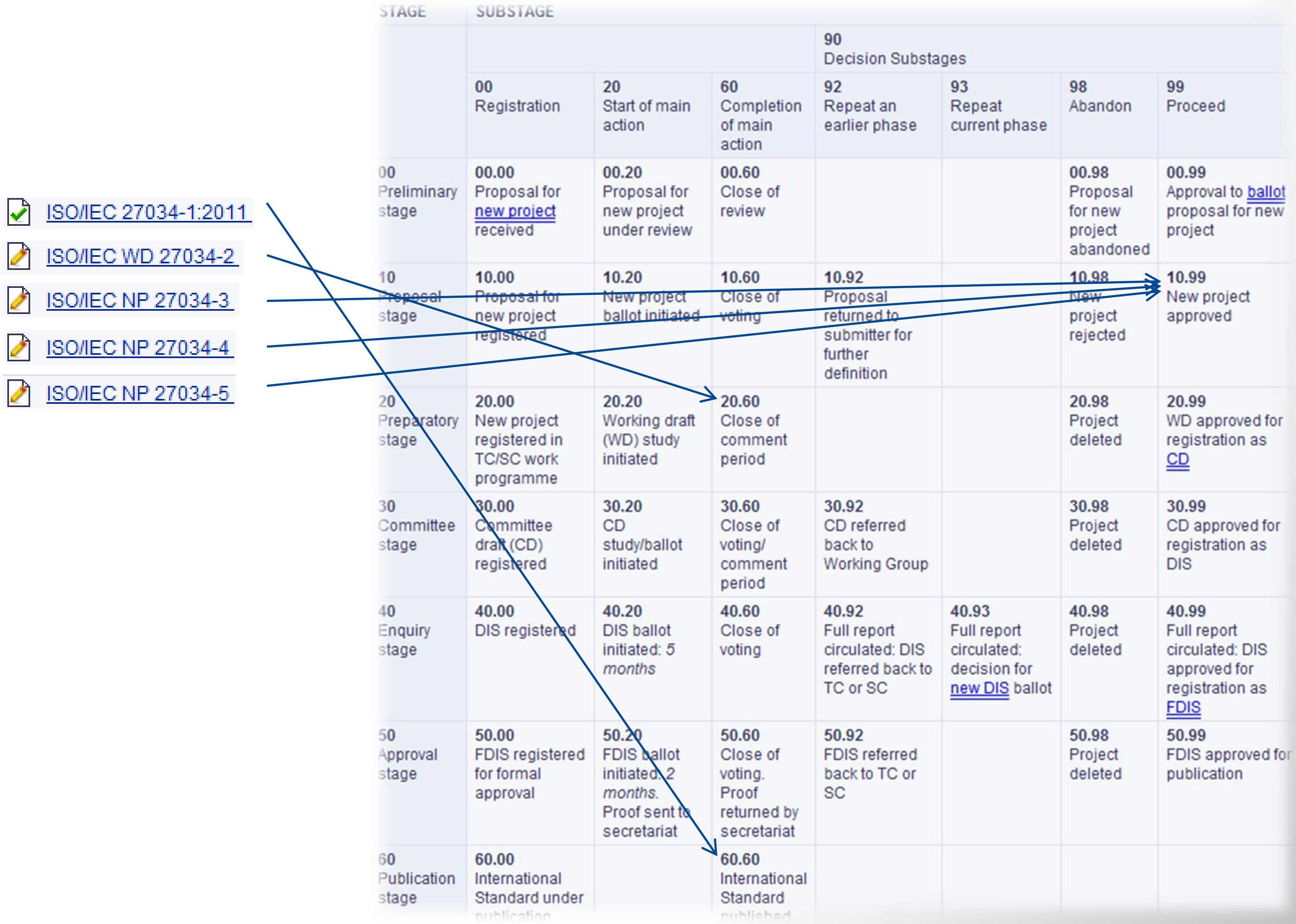
Application security -- Part 2: Organization normative framework
Edition: 1 Stage: 20.60 JTC 1/SC 27
ICS: 35.040

Standards

ISO/IEC NP 27034-3

Application security -- Part 3: Application security management process
Edition: 1 Stage: 10.99 JTC 1/SC 27
ICS: 35.040
Current stage date: 2009-10-30

ISO Stages - continued



- ✓ ISO/IEC 27034-1:2011
- ✎ ISO/IEC WD 27034-2
- ✎ ISO/IEC NP 27034-3
- ✎ ISO/IEC NP 27034-4
- ✎ ISO/IEC NP 27034-5

STAGE	SUBSTAGE						
				90 Decision Substages			
	00 Registration	20 Start of main action	60 Completion of main action	92 Repeat an earlier phase	93 Repeat current phase	98 Abandon	99 Proceed
00 Preliminary stage	00.00 Proposal for new project received	00.20 Proposal for new project under review	00.60 Close of review			00.98 Proposal for new project abandoned	00.99 Approval to ballot proposal for new project
10 Proposal stage	10.00 Proposal for new project registered	10.20 New project ballot initiated	10.60 Close of voting	10.92 Proposal returned to submitter for further definition		10.98 New project rejected	10.99 New project approved
20 Preparatory stage	20.00 New project registered in TC/SC work programme	20.20 Working draft (WD) study initiated	20.60 Close of comment period			20.98 Project deleted	20.99 WD approved for registration as CD
30 Committee stage	30.00 Committee draft (CD) registered	30.20 CD study/ballot initiated	30.60 Close of voting/ comment period	30.92 CD referred back to Working Group		30.98 Project deleted	30.99 CD approved for registration as DIS
40 Enquiry stage	40.00 DIS registered	40.20 DIS ballot initiated: *5 months*	40.60 Close of voting	40.92 Full report circulated: DIS referred back to TC or SC	40.93 Full report circulated: decision for new DIS ballot	40.98 Project deleted	40.99 Full report circulated: DIS approved for registration as FDIS
50 Approval stage	50.00 FDIS registered for formal approval	50.20 FDIS ballot initiated: *2 months.* Proof sent to secretariat	50.60 Close of voting. Proof returned by secretariat	50.92 FDIS referred back to TC or SC		50.98 Project deleted	50.99 FDIS approved for publication
60 Publication stage	60.00 International Standard under publication		60.60 International Standard published				

ISO 27034 Walkthrough

ISO 27034 Walkthrough

- Part 1: Overview & concepts
- Part 2: Organization normative framework
- Part 3: Application security management process
- Part 4: Application security validation
- Part 5: Protocols and application security controls data structure
- *Part 6: Security guidance for specific applications (if needed)*

Overview

- Provides guidance for organizations in integrating security into the **processes** used for managing their applications

- Explicitly takes a **process approach** to specifying, designing, developing, testing, implementing and maintaining security functions and controls in application systems

- Defines application security **not** as a state of security but as "a process an organization can perform for applying controls and measurements to its applications in order the manage the risk of using them"

Overview - continued

- ISO/IEC 27034 is **not**:
  - Development standard for software applications
  - Application project management standard
  - Software Development Lifecycle (SDLC) standard
- ISO/IEC 27034 does **not**:
  - Provide guidelines for physical and network security
  - Provide controls or measurements (metrics)
  - Provide secure coding strategies for any programming language

Part 1

ISO/IEC 27034-1:2011 – Overview & concepts

- Published November 21, 2011
- Provides and overview of application security
- Introduces definitions, concepts, principles and processes involved in application security
- Designed to be used in conjunction with other standards in the ISO27000 family

Part 1 - continued

- Applicable to applications:
  1. developed (in-house)
  2. acquired from third parties
  3. where development or operation is outsourced

- The intended use and benefits are highlighted below:

Roles	Responsibility	Benefit
Managers	Manage the cost of implementing and maintaining application security	Leverage ISO/IEC 27034 processes to prove that the application has attained and maintained a targeted level of trust
Developers	Understand what security should be applied at each phase of the application life cycle	Leverage ISO/IEC 27034 processes to identify control points and safety functions to be implemented
Auditors	Verify controls to prove the application has reached the required level of trust	Leverage ISO/IEC 27034 processes to standardize the application security certification
End users	N/A	Assurance that it is deemed secure to use the application

Part 1 - continued

Key principles defined for this standard include:

"Security is a requirement"

Requirements should be defined and analyzed for each and every stage of the application's life cycle and managed on a continuous basis.

"Application security is context-dependent"

The type and scope of application security requirements are influenced by the risks associated with the application which come in the form of (1) business; (2) regulatory; and (3) technological.

"Appropriate investment for application security"

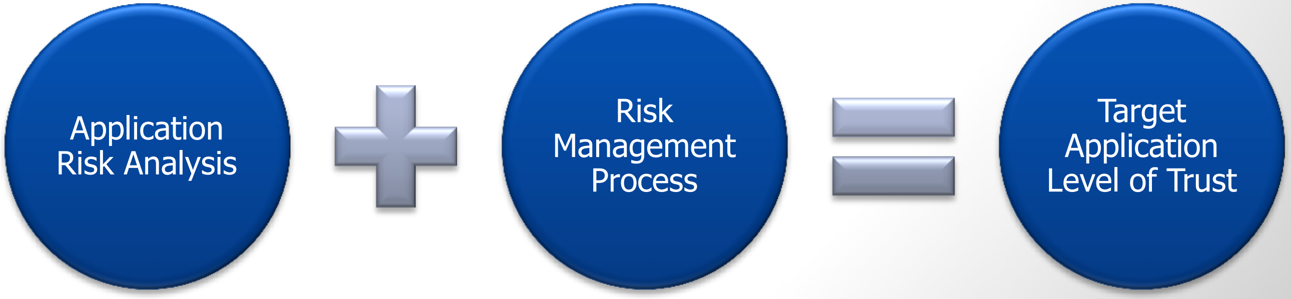
Costs for applying Application Security Controls and performing audit measurements should align with the Targeted Level of Trust.

"Application security should be demonstrated"

Auditing process leverage the verifiable evidence provided by Application Security Controls to confirm if it has reached management's Targeted Level of Trust.

Part 1 - continued

- "Target application level of trust" definition:
  - Confidence level required by the organization using the application
  - Defined when establishing the Organization Normative Framework (ONF)



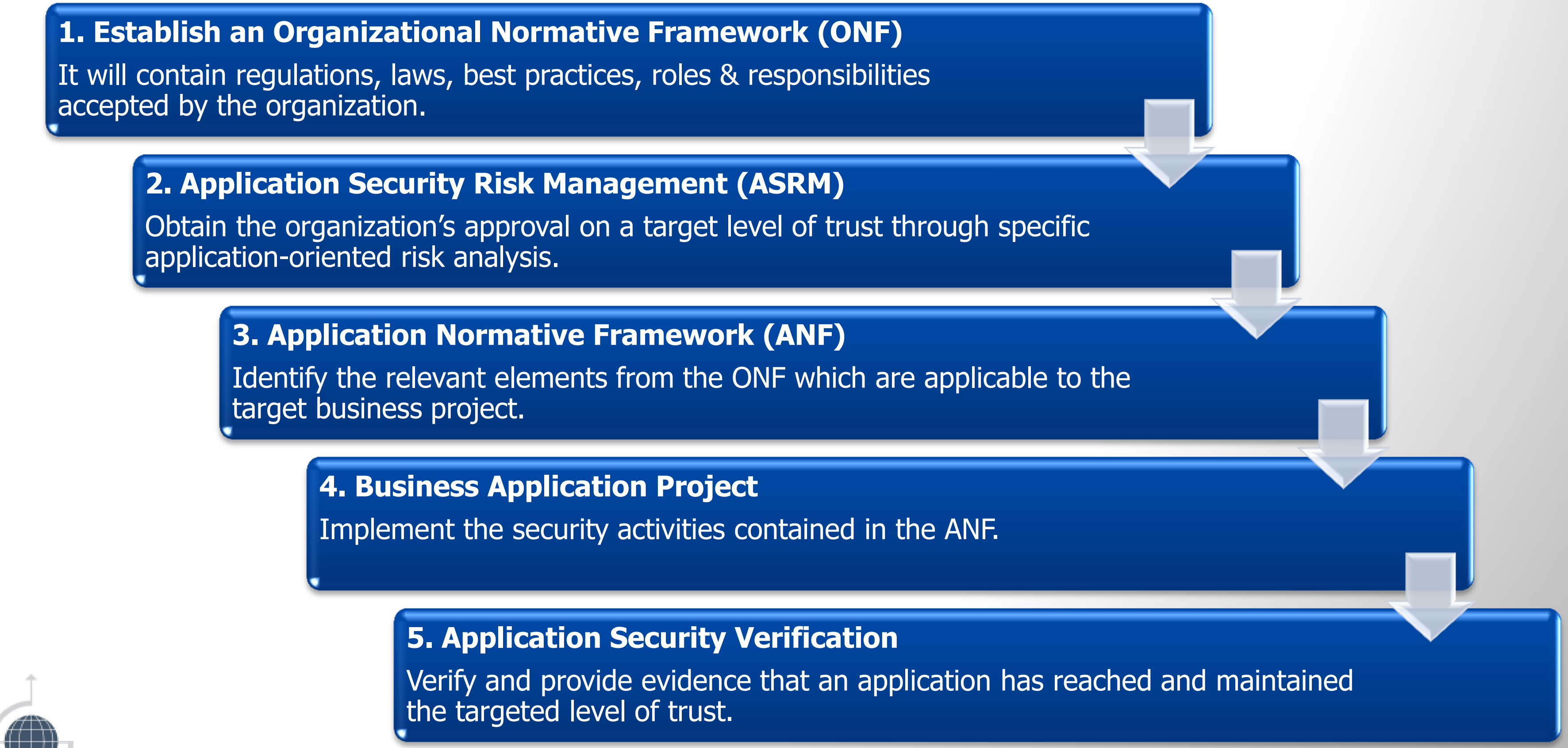
Part 2

ISO/IEC WD 27034-2 – Organization normative framework

- Standards under development
- Describes the relationships and interdependencies between processes in the Organization Normative Framework (ONF)
- Processes include creating, maintaining and adapting it to the organization’s needs and contexts (e.g. business, regulatory, technological)

Part 2 - continued

- Describes how to implement an Application Security Management Process (ASMP) for an organization



1. Establish an Organizational Normative Framework (ONF)

It will contain regulations, laws, best practices, roles & responsibilities accepted by the organization.

2. Application Security Risk Management (ASRM)

Obtain the organization's approval on a target level of trust through specific application-oriented risk analysis.

3. Application Normative Framework (ANF)

Identify the relevant elements from the ONF which are applicable to the target business project.

4. Business Application Project

Implement the security activities contained in the ANF.

5. Application Security Verification

Verify and provide evidence that an application has reached and maintained the targeted level of trust.

- Part 1: Overview & concepts
- Part 2: Organization normative framework
- **Part 3: Application security management process**
- Part 4: Application security validation
- Part 5: Protocols and application security controls data structure
- *Part 6: Security guidance for specific applications (if needed)*

Part 3

ISO/IEC NP 27034-3 – Application security management process

- Standards under development
- Considered to be widely applicable and useful to organizations dealing with application security
- Describes information security relevant processes within an application development project
- Attempts to highlight process relationships and interdependencies

- Part 1: Overview & concepts
- Part 2: Organization normative framework
- Part 3: Application security management process
- **Part 4: Application security validation**
- Part 5: Protocols and application security controls data structure
- *Part 6: Security guidance for specific applications (if needed)*

Part 4

ISO/IEC NP 27034-4 – Application security validation

- Standards under development
- Describes application security certification and validation processes
- Methods for assessing and comparing the Level of Trust against information security requirements

- Part 1: Overview & concepts
- Part 2: Organization normative framework
- Part 3: Application security management process
- Part 4: Application security validation
- **Part 5: Protocols and application security controls data structure**
- *Part 6: Security guidance for specific applications (if needed)*

Part 5

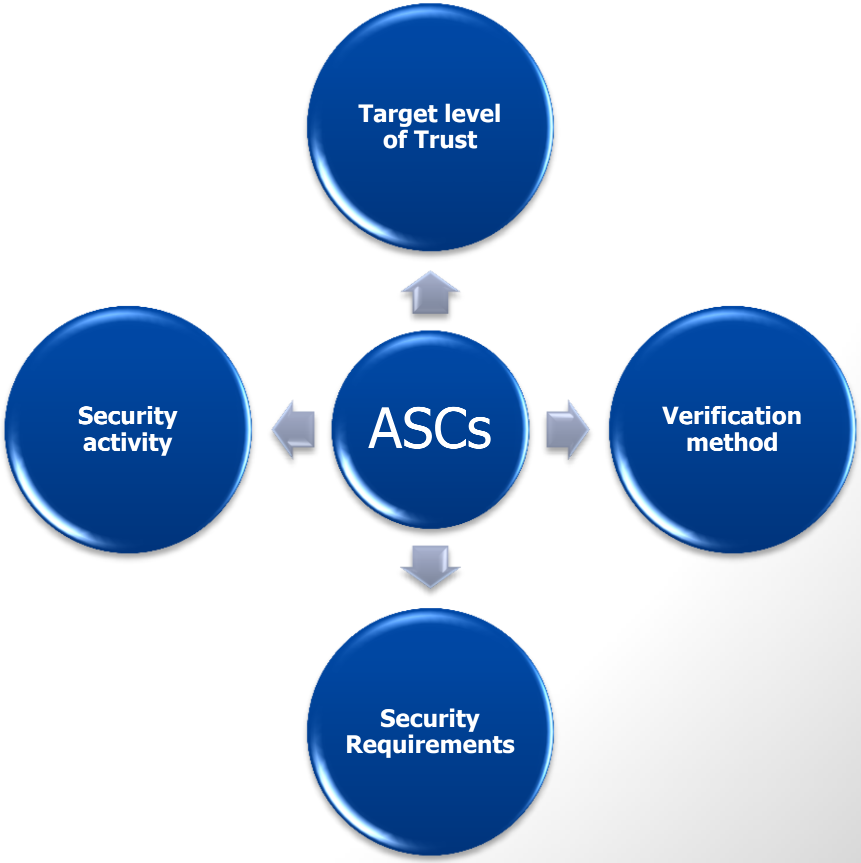
ISO/IEC NP 27034-5 – Protocols and application security controls data structure

- Standards under development (preliminary text released recently ~April 2012)
- Defines the Application Security Control (ASC) data structure
- Electronic business eXtensible Markup Language (ebXML) designated as the format to establish libraries of reusable security functions that may be shared both within and between organizations

- Part 1: Overview & concepts
- Part 2: Organization normative framework
- Part 3: Application security management process
- Part 4: Application security validation
- **Part 5: Protocols and application security controls data structure**
- *Part 6: Security guidance for specific applications (if needed)*

Part 5 - continued

- An Application Security Control (ASC) may satisfy various aspects of information security



Part 6

ISO/IEC NP 27034-6 – Security guidance for specific applications (if needed)

- Standards under development and **<u>may</u>** be considered for inclusion
- Identifies Application Security Controls corresponding to "specific application security requirements" (if applicable)
- For example:
  - N-Tier and web applications security
  - Client/Server applications security

Considerations

- The requirements and processes specified in ISO/IEC 27034 are **<u>not</u>** intended to be implemented in isolation but rather integrated into an organization's existing processes

- Annex A of ISO/IEC 27034-1 presents a case study on how to **<u>map</u>** an existing software development process to some of the components of ISO/IEC 27034 (to reduce overall effort to conform with this standard)

Q&A

Thank you!

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Please let me know your comments and thoughts!