National Cybersecurity Center of Excellence (NCCoE)

Energy Sector Supply Chain SWG

Energy Provider Community of Interest

27 January 2017

NIST
National Institute of Standards and Technology
U.S. Department of Commerce

NCCoE
NATIONAL CYBERSECURITY CENTER OF EXCELLENCE

Agenda

- Review of 01/13/2017 Meeting
- Jon Boyens, NIST: Other SCRM Initiatives & Supply Chain Updates in Cybersecurity Framework (CSF) v1.1 draft
- Potential Use Cases - Topics
- Development of Use Case Ideas - Open Discussion
- Action Items for Next Meeting

01/13/2017 Meeting Summary

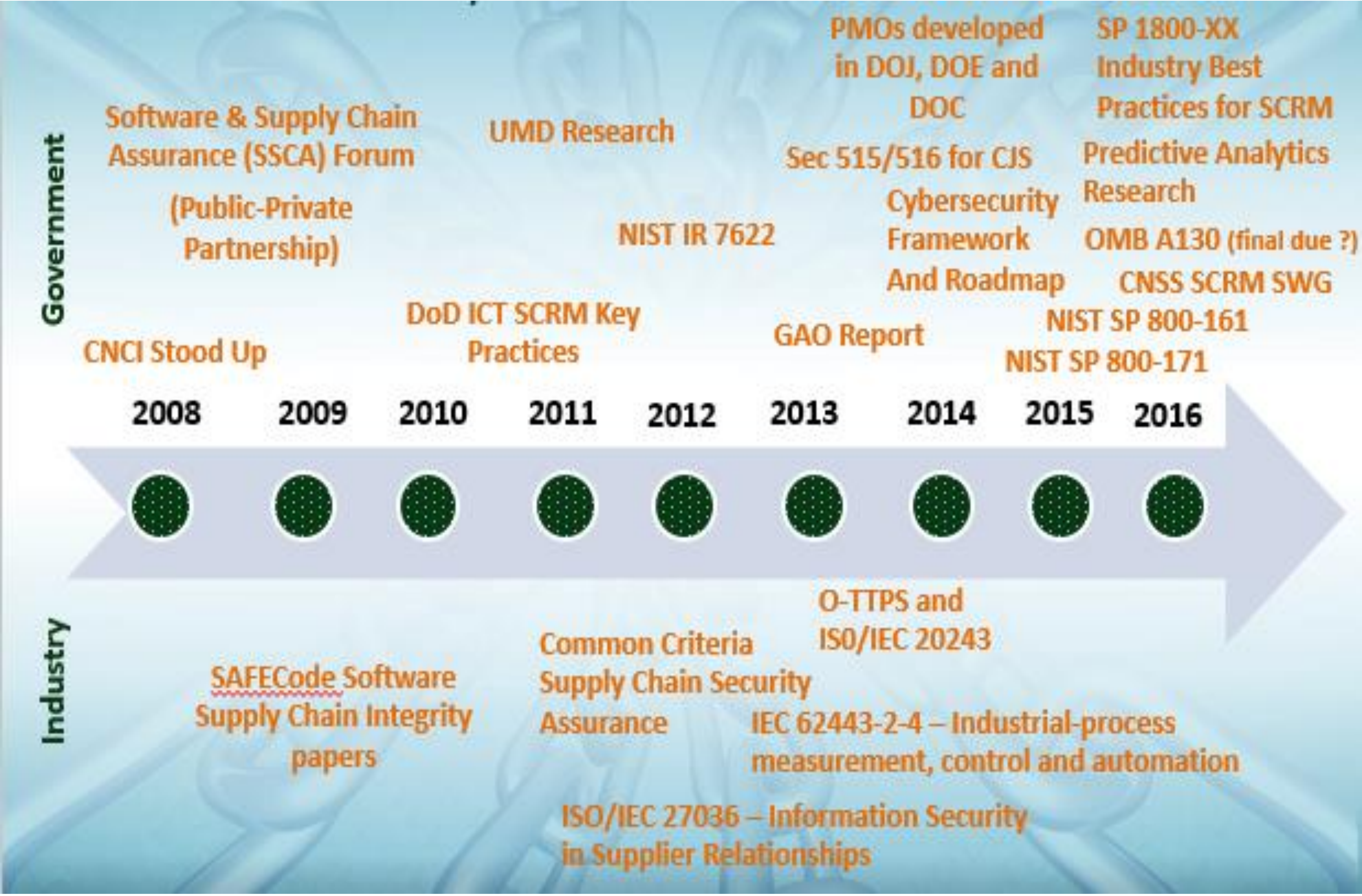
- Briefly discussed pending NERC-CIP supply chain guidance
- Agreed that the “technology “ areas identified in NERC-CIP guidance will serve as at least one guideline for use case ideas
- Members provided use case ideas regarding procurement language
- Tortuga Logic’s Jason Oberg provided overview of Supply Chain product

OTHER SCRM EFFORTS AND SUPPLY CHAIN IN CSF

Jon Boyens, NIST

- Overview of other SCRM Initiatives
- Cybersecurity Framework (CSF) v 1.1 draft - Supply Chain Updates

EXISTING AND EMERGING POLICY, STANDARDS AND PRACTICES



Government

CNCI Stood Up

Software & Supply Chain Assurance (SSCA) Forum

(Public-Private Partnership)

DoD ICT SCRM Key Practices

UMD Research

NIST IR 7622

GAO Report

Sec 515/516 for CJS

PMOs developed in DOJ, DOE and DOC

Cybersecurity Framework And Roadmap

NIST SP 800-171

NIST SP 800-161

SP 1800-XX Industry Best Practices for SCRM

Predictive Analytics Research

OMB A130 (final due ?)

CNSS SCRM SWG

2008 2009 2010 2011 2012 2013 2014 2015 2016

Industry

SAFECode Software Supply Chain Integrity papers

Common Criteria Supply Chain Security Assurance

ISO/IEC 27036 – Information Security in Supplier Relationships

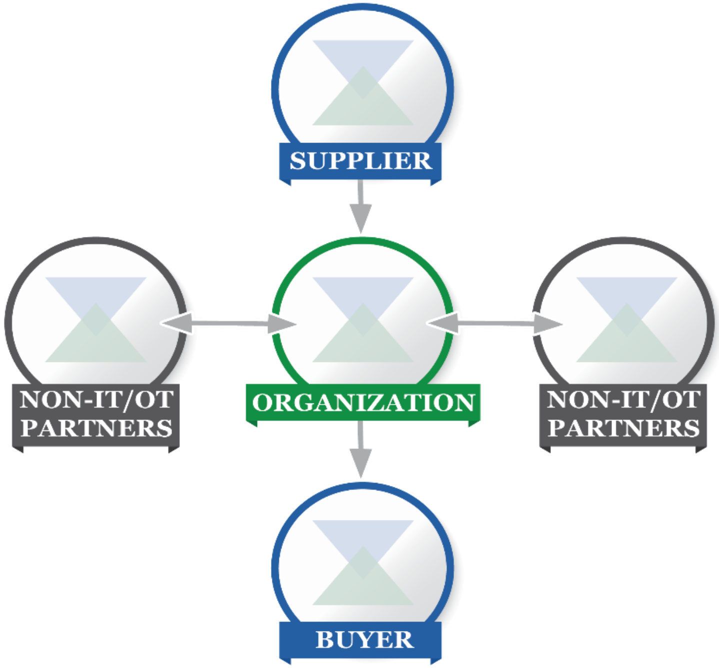
O-TTPS and ISO/IEC 20243

IEC 62443-2-4 – Industrial-process measurement, control and automation

ENERGY SECTOR SCRM ACTIVITIES

May 2012	ES-C2M2 Version 1, Supply Chain and External Dependencies Management Domain
February 2014	ES-C2M2 Version 2, O&G C2M2, C2M2, Supply Chain and External Dependencies Management Domain
April 2014	Cybersecurity Procurement Language for Energy Delivery Systems
April 2015	UTC Supply Chain Risk Management for Utilities – Roadmap for Implementation
July 2016	FERC expresses and interest in supply chain management standard
September 2015	EEI Cyber Supply Chain Principles
January 2016	FERC Supply Chain Risk Management Conference on Supply Chain Risk Management
July 2016	Final Rule: FERC directs NERC to develop a new or modified standard: (1) software integrity and authenticity; (2) vendor remote access; (3) information system planning; and (4) vendor risk management and procurement controls.

DRAFT CSF V1.1, 3.3 COMMUNICATING CYBERSECURITY REQUIREMENTS WITH STAKEHOLDERS



- Use Target Profile by organization to express cybersecurity risk management requirements to supplier/partner.
- Use by supplier/partner to express its cybersecurity state through a Current Profile to report results.

OT e.g. Subcategory selection (ID.BE-4, ID.SC-3, ID.SC-4, ID.SC-5, PR.DS-4, PR.DS-6, PR.DS-7, PR.DS-8, PR.IP-1, DE.AE-5, etc.).

Determine cybersecurity requirements for suppliers/partners.

Enact cybersecurity requirements through formal agreement (e.g. contracts).

Communicate to suppliers/partners how those cybersecurity requirements will be verified and validated.

Verify cybersecurity requirements are met through a variety of assessment methodologies.

DRAFT CSF V1.1, FRAMEWORK CORE

Supply Chain Risk Management (ID.SC): The organization's priorities, constraints, risk tolerances, and assumptions are established and used to support risk decisions associated with managing supply chain risk. The organization has in place the processes to identify, assess and manage supply chain risks.	**ID.SC-1:** Supply chain risk management processes are identified, established, assessed, managed, and agreed to by organizational stakeholders.
	ID.SC-2: Identify, prioritize and assess suppliers/providers of critical information systems, components and services using a supply chain risk assessment process.
	ID.SC-3: Suppliers/providers are required by contract to implement appropriate measures designed to meet the objectives of the Information Security program or Supply Chain Risk Management Plan.
	ID.SC-4: Suppliers/providers are monitored to confirm that they have satisfied their obligations as required. Reviews of audits, summaries of test results, or other equivalent evaluations of your suppliers/providers are conducted.
	ID.SC-5: Response and recovery planning and testing are conducted with critical suppliers/providers.
Data Security (PR.DS): Information and records (data) are managed consistent with the organization's risk strategy to protect the confidentiality, integrity, and availability of information	**PR.DS-1:** Data-at-rest is protected
	PR.DS-2: Data-in-transit is protected
	PR.DS-3: Assets are formally managed throughout removal, transfers, and disposition
	PR.DS-4: Adequate capacity to ensure availability is maintained
	PR.DS-5: Protections against data leaks are implemented
	PR.DS-6: Integrity checking mechanisms are used to verify software, firmware, and information integrity
	PR.DS-7: The development and testing environment(s) are separate from the production environment
	PR.DS-8: Integrity checking mechanisms are used to verify hardware integrity.

DRAFT CSF V1.1, FRAMEWORK IMPLEMENTATION TIERS

Cyber Supply Chain Risk Management

Tier 1 - Partial: An organization may not understand the full of cyber supply chain risks or have the processes in place to identify, assess and mitigate its cyber supply chain risks.

Tier 2 - Risk Informed: The organization understands the cyber supply chain risks associated with the products and services that either supports the business mission function of the organization or that are utilized in the organization's products or services. The organization has not formalized its capabilities to manage cyber supply chain risks internally or with its suppliers and partners and performs these activities inconsistently.

Tier 3 - Repeatable: An organization-wide approach to managing cyber supply chain risks is enacted via enterprise risk management policies, processes and procedures. This likely includes a governance structure (e.g. Risk Council) that manages cyber supply chain risks in balance with other enterprise risks. Policies, processes, and procedures are implemented consistently, as intended, and continuously monitored and reviewed. Personnel possess the knowledge and skills to perform their appointed cyber supply chain risk management responsibilities. The organization has formal agreements in place to communicate baseline requirements to its suppliers and partners.

DRAFT CSF V1.1, FRAMEWORK IMPLEMENTATION TIERS

Cyber Supply Chain Risk Management Cont’d

Tier 4 - Adaptive: The organization can quickly and efficiently account for emerging cyber supply chain risks using real-time or near real-time information and leveraging an institutionalized knowledge of cyber supply chain risk management with its external suppliers and partners as well as internally, in related functional areas and at all levels of the organization. The organization communicates proactively and uses formal (e.g. agreements) and informal mechanisms to develop and maintain strong relationships with its suppliers, partners, and individual and organizational buyers.

USE CASE TOPICS

NERC-CIP Compliance

- **Software Assurance**
- **Software Authenticity**
- **Vendor Remote Access**

SDLC Based (provided by Mike Cohen, MITRE)

- **System Acquisition Use Case**: a tool suite that specifies the SCRM requirements that must be met for both the system being acquired and the manufacturer/system integrator who supplies the system
- **Manufacturer/System Integrator Use Case**: a tool suite that checks all components being assembled into the system for both unintended and intentional SCRM vulnerabilities
- **System User Use Case**: a tool suite for use during user acceptance testing, initial and ongoing operations, maintenance and upgrade, and final system disposal.

USE CASE TOPICS CONTINUED

Procurement Language Related

- **Rich Donohue, BRG, has some procurement based supply chain language (per SWG call on 01/13) that includes discussion of technical controls**

Oil and Gas Sector (Drilling Platforms) Supply Chain Concerns

- **Siv Houmb, CTO, Secure-Nok & IADC Cybersecurity Committee Lead**

OPEN DISCUSSION

- Questions
- Action Items
- Schedule Next Meeting

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Thank You

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Goal

The purpose for establishing the NCCoE Supply Chain (SC) SWG is to identify one or more technology based use cases for Supply Chain Risk Management.

- Use case must solve a technology based SC challenge by utilizing a set of Cybersecurity tools and/or capabilities
- Use case should comport to existing or pending industry compliance standards
- Must be industry driven

WHO WE ARE AND WHAT WE DO

VISION

ADVANCE CYBERSECURITY

A secure cyber infrastructure that inspires technological innovation and fosters economic growth

MISSION

ACCELERATE ADOPTION OF SECURE TECHNOLOGIES

Collaborate with innovators to provide real-world, standards-based cybersecurity capabilities that address business needs

GOAL 1

PROVIDE PRACTICAL CYBERSECURITY

Help people secure their data and digital infrastructure by equipping them with practical ways to implement standards-based cybersecurity solutions that are modular, repeatable and scalable

GOAL 2

INCREASE RATE OF ADOPTION

Enable companies to rapidly deploy commercially available cybersecurity technologies by reducing technological, educational and economic barriers to adoption

GOAL 3

ACCELERATE INNOVATION

Empower innovators to creatively address businesses' most pressing cybersecurity challenges in a state-of-the-art, collaborative environment

The NCCoE seeks problems that are:

- Broadly applicable across much of a sector, or across sectors
- Addressable through one or more reference designs built in our labs
- Complex enough that our reference designs will need to be based on a combination of multiple commercially available technologies

Reference designs address:

- Sector-specific use cases that focus on a business-driven cybersecurity problem facing a particular sector (e.g., health care, energy, financial services)
- Technology-specific building blocks that cross sector boundaries (e.g., roots of trust in mobile devices, trusted cloud computing, software asset management, attribute based access control)

TENETS

Standards-based

Apply relevant local, national and international standards to each security implementation and account for each sector's individual needs; demonstrate reference designs for new standards

Modular

Develop reference designs with individual components that can be easily substituted with alternates that offer equivalent input-output specifications

Repeatable

Enable anyone to recreate the NCCoE builds and achieve the same results by providing a complete practice guide including a reference design, bill of materials, configuration files, relevant code, diagrams, tutorials and instructions

Commercially available

Work with the technology community to identify commercially available products that can be brought together in reference designs to address challenges identified by industry

Usable

Design usable blueprints that end users can easily and cost-effectively adopt and integrate into their businesses without disrupting day-to-day operations

Open and transparent

Use open and transparent processes to complete work, and seek and incorporate public comments on NCCoE documentation, artifacts and results