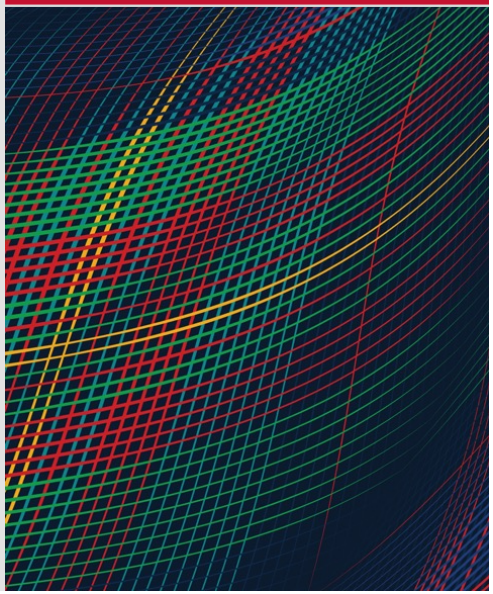
Insider Threat Vulnerability Assessment (ITVA)
Participants Briefing

Carnegie Mellon University
Software Engineering Institute



Document Markings

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Agenda

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- CMU SEI Insider Risk Overview
- ITVA Purpose and Background
- ITVA Process Overview
- Next Steps / Open Discussion

Insider Risk Research at CMU SEI

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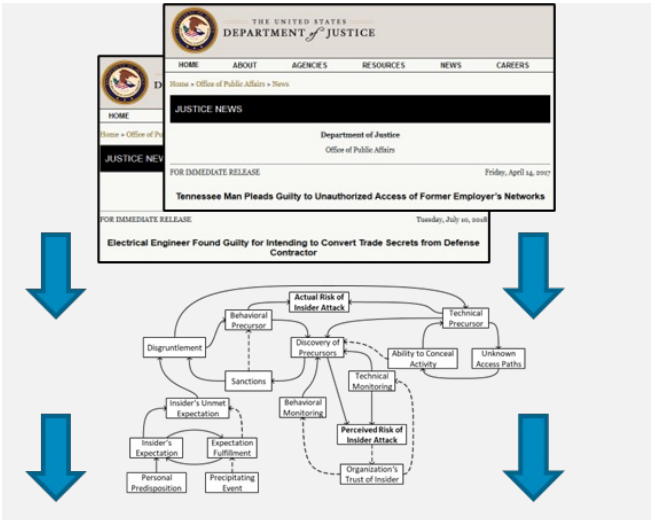


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Splunk Query Name: Last 30 Days - Possible Theft of IP
Terms: 'host=HECTOR [search host="seus.corp.merit.lab" Message="A user account was  disabled. *"
| eval Account_Name=mvindex(Account_Name, -1) | fields Account_Name | strcat Account_Name
"@corp.merit.lab" sender_address | fields - Account_Name] total_bytes > 50000 AND
recipient_address!="*corp.merit.lab" startdaysago=30 | fields client_ip, sender_address,
recipient_address, message_subject, total_bytes'
```

Conducting research, modeling, analysis, and outreach to develop socio-technical solutions to manage insider risk since 2001

Insider Threat Defined

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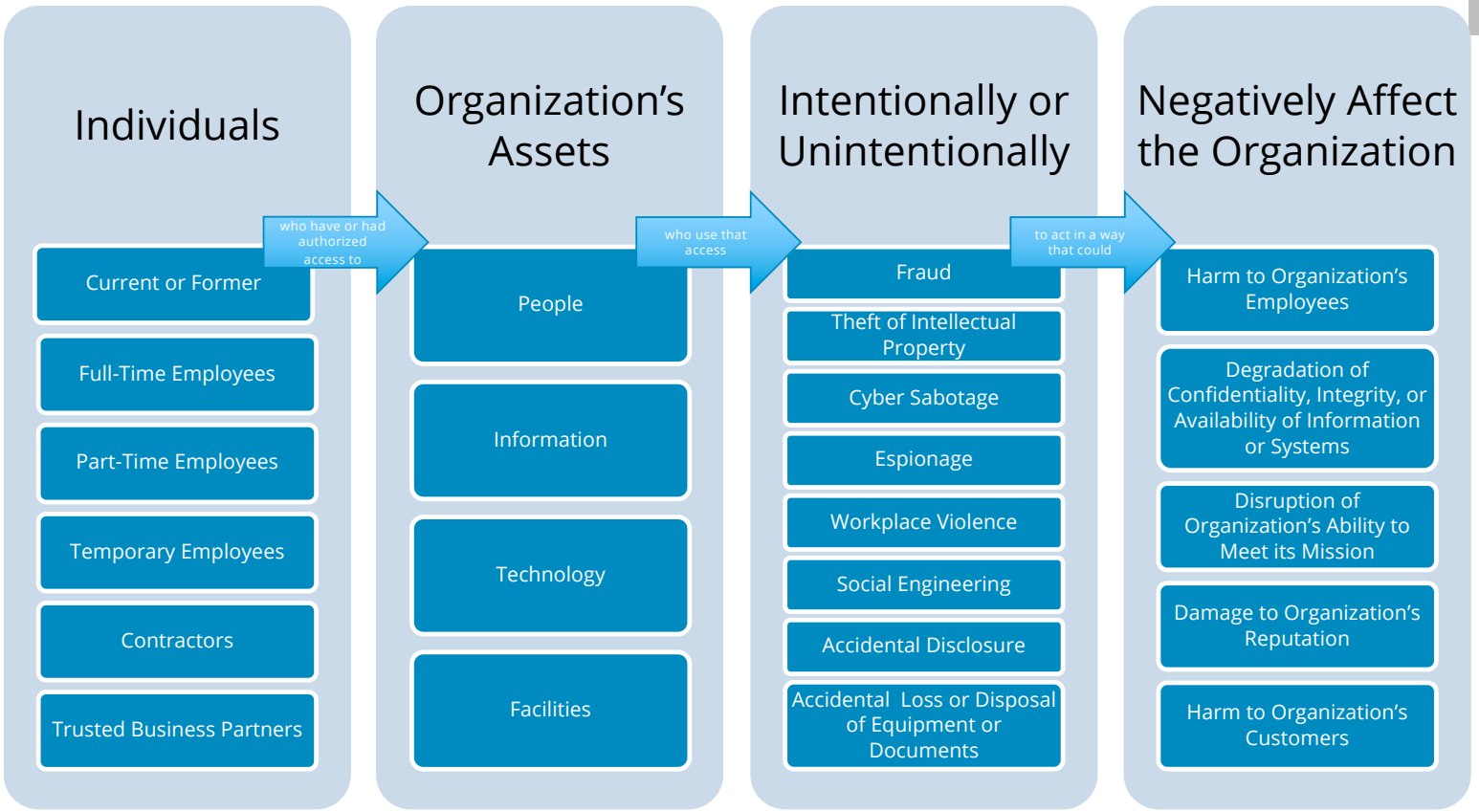
The potential for an individual who has or had authorized access to an organization's assets to use their access, either maliciously or unintentionally, to act in a way that could negatively affect the organization.

Scope of the Insider Threat



Scale of the Insider Threat

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1 in 3 cyber crimes are perpetrated by insiders

Insider incidents have increased by 47% since 2018 (Source: Ponemon 2022 Cost of Insider Threat Global Report)

1 in 4 insider incidents are perpetrated by trusted external entities

1 in 3 insider incidents are committed with malicious intent

Insider Threat Vulnerability Assessment (ITVA) Overview

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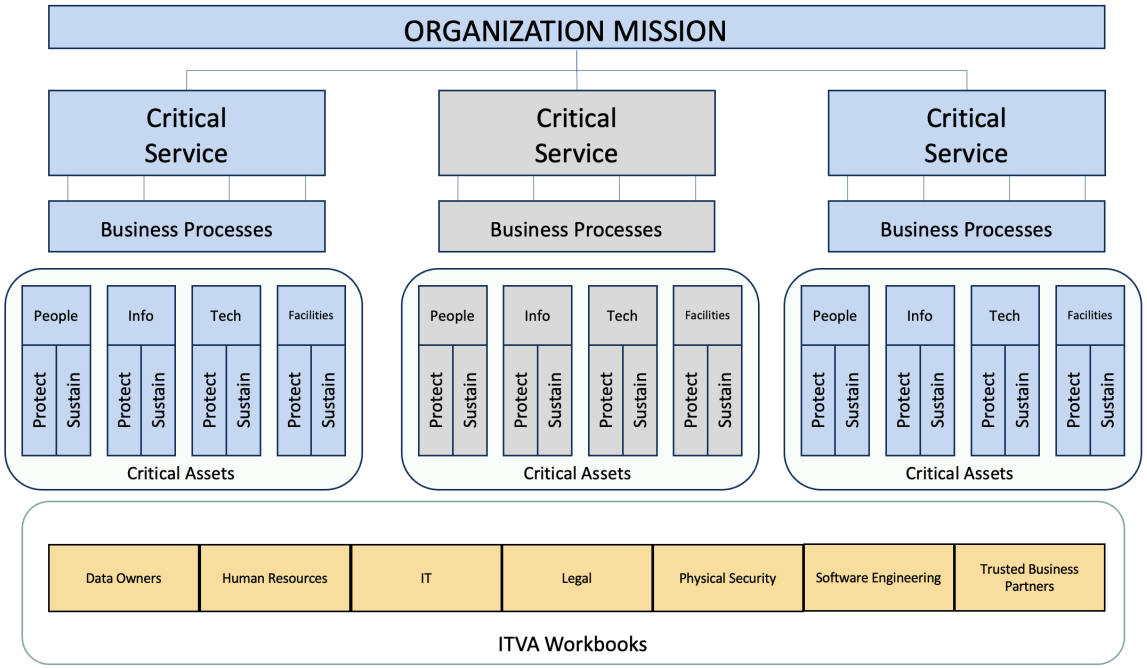

The SEI **measures organizations' preparedness to prevent, detect, and respond to insider threats** to critical assets using its ITVA capability

The ITVA **benchmarks** organizations' technical, physical, and administrative **controls** against the most prevalent **vulnerabilities** from the **CERT Insider Threat Incident Corpus**

The ITVA identifies key capability gaps in the protection of an organization's critical assets from authorized access misuse, and provides recommended mitigation strategies for vulnerabilities to specific assets

ITVA Myth-Busting

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The ITVA IS NOT:

- An audit
- An inspection
- A compliance certification
- An attempt to investigate potential insider incidents
- A direct response to an insider incident

The ITVA IS:

- A proactive attempt to understand an organization's current ability to prevent, detect, and respond to insider threat and holistically manage insider risk to acceptable levels.
- A reference model that can be used to plan for future improvements to an organization's security posture.

Methodology – 1

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Data Owners	Human Resources	Information Technology	Legal	Physical Security	Software Engineering	Trusted Business Partners
Access Control	Recruitment	Access Control	Agreements to Protect Sensitive Information	Facility Security	Technical Policies and Agreements	Screening/Hiring of Applicants
Modification of Data, Systems, or Logs	Policies and Practices	Modification of Data or Disruption of Services or Systems	Restrictions on Outside Employment	Physical Asset Security	Modification of Data or Systems	Management of Business Partners
Unauthorized Access, Download, or Transfer of Assets	Training and Education, Evaluation	Unauthorized Access, Download, or Transfer of Assets	Employee Behaviors in the Workplace		Asset Management	Asset Management
Incident Response	Policy and Practice Monitoring and Enforcement Programs	Detection and Identification	Conditions of Hire			Incident Response
Termination	Enforcement and Termination	Incident Response	Property Lending Agreements			Contractor/ Business Partner Agreements
		Termination	Contractor/ Business Partner Agreements			

The ITVA utilizes a capability-level assessment methodology, adapted from the *Standard CMMI Appraisal Method for Process Improvement (SCAMPI)*

- Goal: gain insight into an organization's **capability** by identifying strengths and weakness of current process relative to a reference model

Methodology – 2

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Level	Description
1 - Not Performed	The organization does not perform the minimal recommended practices
2 - Minimal	The organization has controls and processes in place to detect, but has issues preventing or responding to the issue of concern
3 - Enhanced	The organization has controls and processes in place to detect and respond, but has issues preventing the issue of concern
4 - Robust	The organization is prepared to prevent, detect, and respond to the issue of concern

Capability level ratings are derived from **indicators** of activities

- Indicators are individual yes / no questions designed to determine if a specific policy, process, procedure, practice, or other condition or activity exists within an organization
- Each capability has one or more indicators associated with each capability level

Capability Level Scoring Methodology

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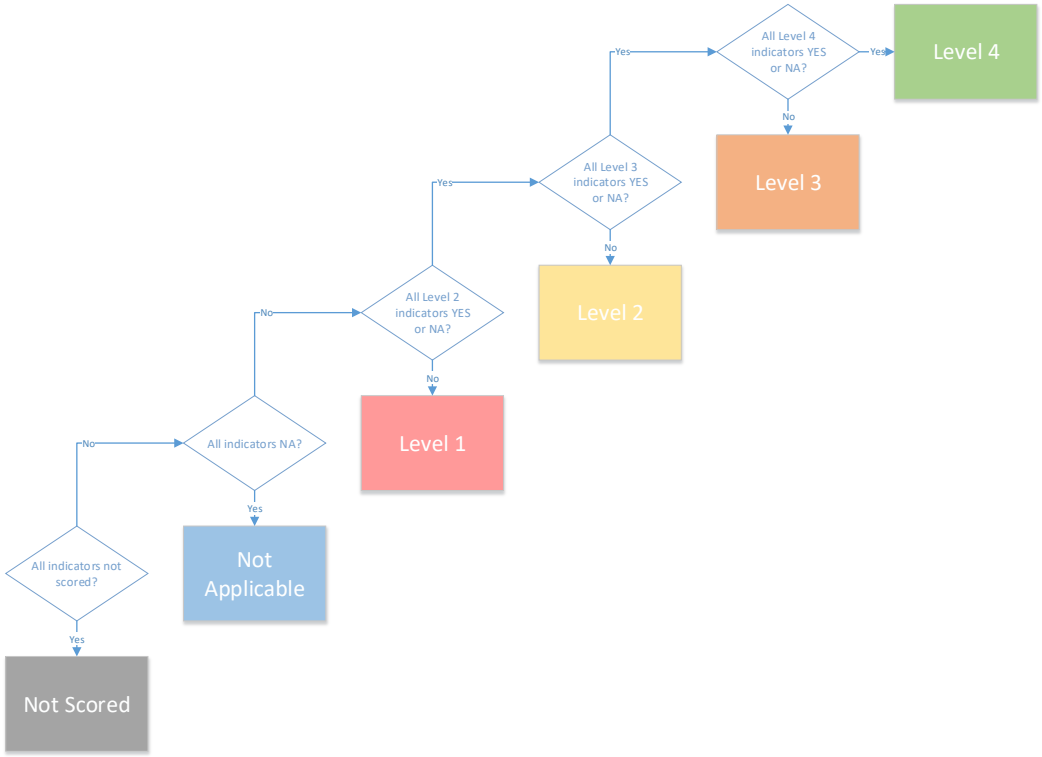

Methodology – 3

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Collect and analyze **evidence** that supports the absence or presence of indicators

- Review of documents that describe existing processes and procedures
- Interviews with personnel that perform key activities
- Direct observations of capability (e.g., tool demonstrations)

Minimum standards for evidence provide confidence in the capability level scoring

- 1 document + 1 observation
- 1 document + 2 interviews
- 1 observation + 2 interviews
- 3 interviews

Data Handling

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We take the protection of all data collected during this engagement seriously.

- All collected data is encrypted at-rest and in-transit, and access controlled to only those with a valid need-to-know.
- Pseudonyms are used to reference interview subjects in assessment team's notes.
- There is no attribution of any data collected.
- All project artifacts are securely destroyed at the completion of the effort.

ITVA Process Flow and Timeline

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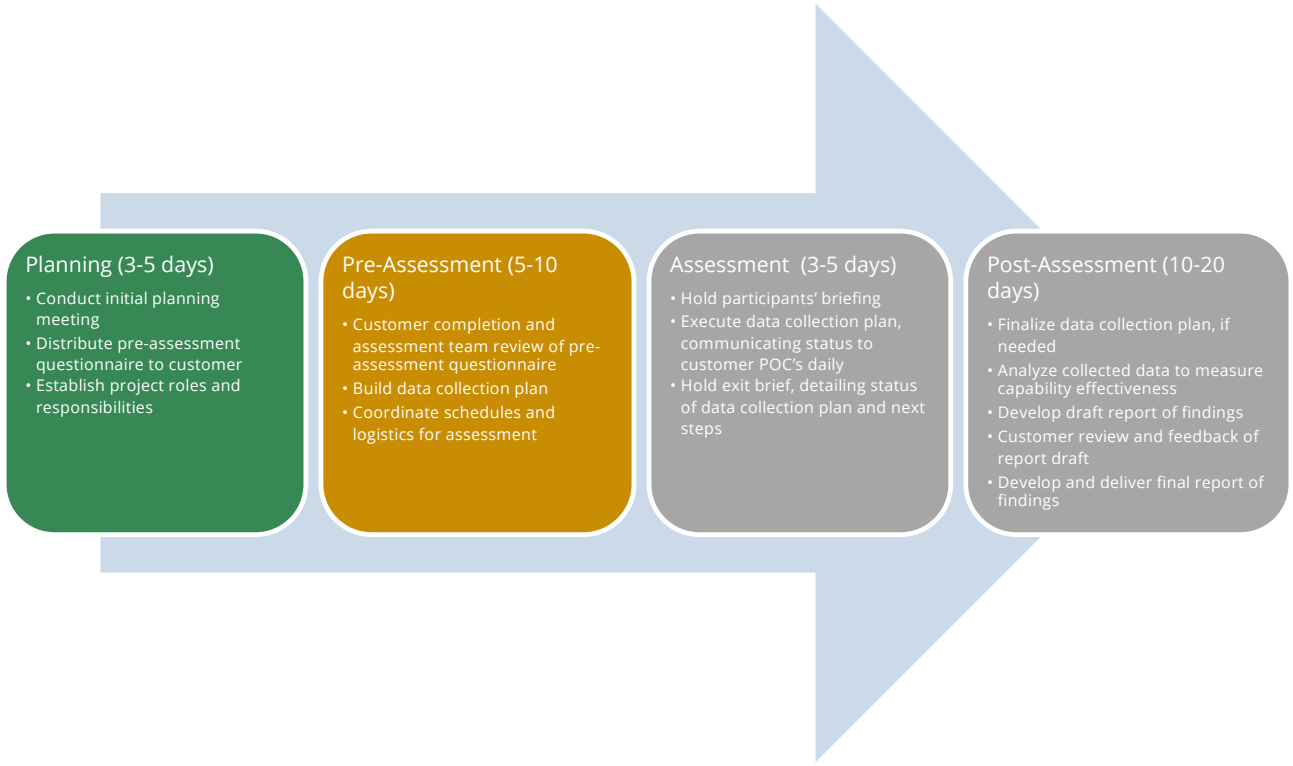

ITVA Roles and Responsibilities

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Customer POC

- Ensures appropriate customer personnel are notified of and participate in the project
- Makes management decisions regarding the assessment (scope, schedule, etc.)
- Identifies a staff member to fill the role of Customer Logistics Coordinator
- Provides feedback on the draft report of findings

Customer Logistics Coordinator

- Manages the interview and demonstration schedule
- Provides any requested documentation to the assessment team

Customer Management and Operational Staff

- Participate in scheduled interviews or demonstrations
- Provides any additional requested documentation to assessment team via the Customer Logistics Coordinator
- Work with the Customer Logistics Coordinator to reschedule interviews or demonstrations if needed

ITVA Team Lead

- Leads the initial planning and pre-assessment meetings
- Leads the assessment team activities
- Leads the development of the data collection plan
- Works with Customer Logistics Coordinator to schedule interviews and demonstrations
- Leads the data collection phase, to include the participants' briefing and out-brief
- Leads the data analysis and report development

ITVA Team Members

- Participate in planning briefing as needed
- Perform pre-assessment questionnaire review
- Assist with the development of the data collection plan
- Execute data collection plan
- Perform post-assessment data analysis
- Assist with drafting the report of findings

Questions / Discussion

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For More Information

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The Common Sense Guide to Mitigating Insider Threats, Seventh Edition

Balancing Organizational Incentives to Counter Insider Threat

Navigating the Insider Threat Tool Landscape: Low Cost Technical Solutions to Jump-Start an Insider Threat Program

Insider Threats Across Industry Sectors

Insider Threats in the Software Development Life Cycle

Effective Insider Threat Programs: Understanding and Avoiding Potential Pitfalls

Analytic Approaches to Detect Insider Threats

Spotlight On: Insider Theft of Intellectual Property Inside the United States Involving Foreign Governments

Workplace Violence & IT Sabotage: Two Sides of the Same Coin?

An Insider Threat Indicator Ontology