# Leveraging Intelligence for Proactive Security

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# Leveraging Intelligence

- **The Approaching Storm**
- What is Intelligence?
- Intelligence Sources
- Applying Intelligence

# The Global Threat – Frequency and Impact

EQUIFAX®

143 Million Customers

YAHOO!®

Up to 3 Billion Accounts


21.5 Million Personnel


Up to 2,250 Stores


Numerous Files and Tools

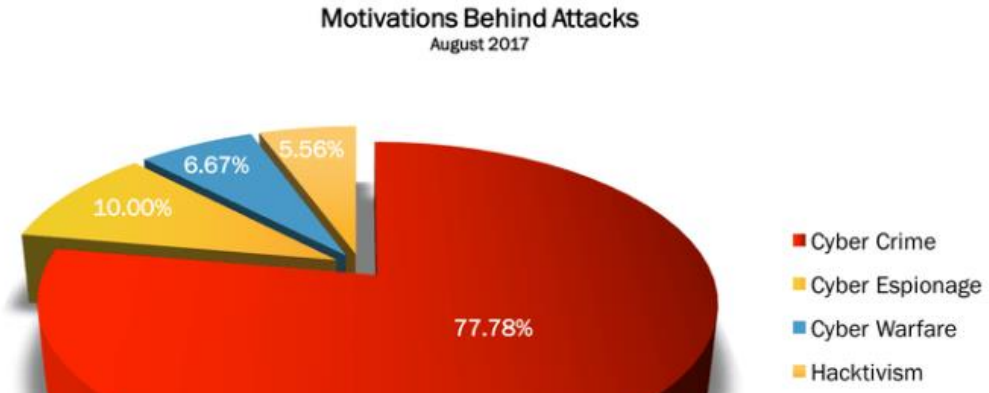
verizon✓

6 Million Customers

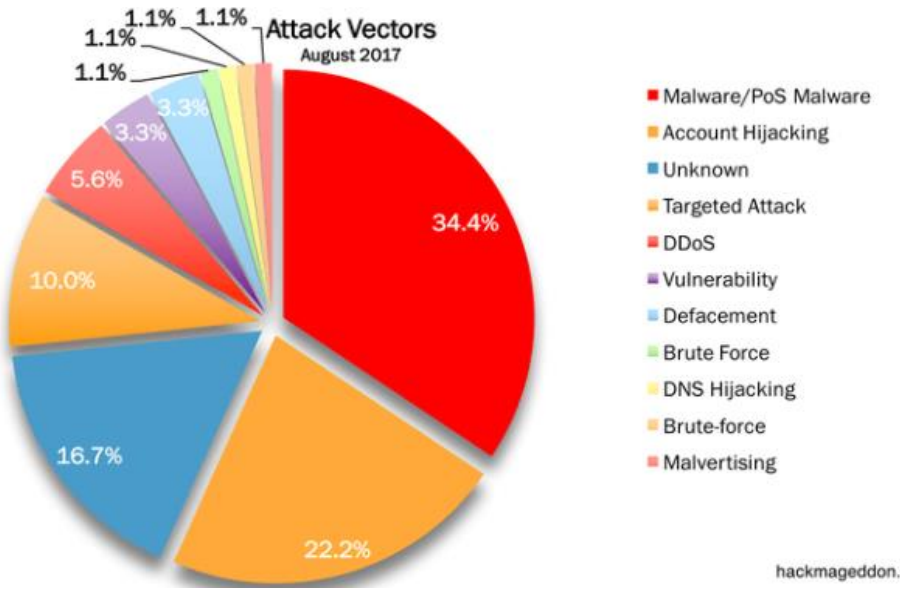

2.5 Million Accounts

# The Global Threat – Trends

## Current Cyber Attack Trends




**Nation-State activities such as cyber espionage and cyber warfare are increasing.**




**Over half of successful cyber attacks target people and computer-related behaviors.**

*Source: Hackmageddon.com*

# The Global Threat – The Bad Guys and Their Intent

| Criminals | Insiders | Hacktivists | Terrorists | Nation States |
|---|---|---|---|---|
|  |  |  |  |  |
| Intent on monetary gain | Ideology or monetary gain | Attention to their cause | Disruption of critical infrastructure | Support foreign nation's strategic objectives |

## Impacts

- System Disruptions / Outages
- Economic impacts
- Impacts to national security
- Financial loss
- Loss of Customer Information
- Reputational Impact
- Regulatory Impacts
- 3rd Party Impacts

# The Global Threat – The Rise of the Nation-State

## Our Industry is Being Targeted

### RUSSIA

**TARGETS**: Electricity, manufacturing, oil and gas
**CAPABILITY**: Penetrate IT, OT / ICS networks
**OBJECTIVES**: Geopolitically driven disruption and destruction of infrastructure
**RISK**: Likely to conduct attacks against US; likely to target ICS operators; unlikely to cause disruptions or destruction against US

### NORTH KOREA

**TARGETS**: Light rail and electricity
**CAPABILITY**: Penetrate IT and ICS networks
**OBJECTIVES**: Retaliatory strikes against national adversaries
**RISK**: Likely to conduct disruptive or destructive attacks outside US; possible disruptive or destructive attacks against US ICS operators

### IRAN

**TARGETS**: Electricity, water, and dams
**CAPABILITY**: Penetrate IT, OT / ICS networks
**OBJECTIVES**: Retaliatory strikes against national adversaries; establish persistent access as contingency for future conflicts
**RISK**: Likely to target US ICS operations; unlikely to cause disruptions or destruction

### CHINA

**TARGETS**: Electricity, manufacturing, oil and gas, light rail, water and dams
**CAPABILITY**: Penetrate IT, OT / ICS networks
**OBJECTIVES**: Traditional espionage; support of national economic interests through intellectual property theft; establish persistent access as contingency for future conflicts
**RISK**: Highly likely to conduct attacks against US; highly likely to target US ICS operations; unlikely to cause disruptions or destruction

*Source: "Industrial Cybersecurity Threat Briefing"; Booz, Allen, Hamilton; www.boozallen.com/ics.*

# A Gloomy Forecast

## Cyber Predictions – Financial
### Resource Impacts

- Cyber crime damage to reach $6 trillion annually by 2021.
- Cybersecurity spending to exceed $1 trillion annually by 2021.
- Unfilled cybersecurity jobs will triple by 2021.
- The number of people online will exceed 4 billion by 2020.
- Ransomware damage will exceed $5 billion by the end of 2017 (15 times larger than 2015 - $325 million).

*"Cyber crime is the greatest threat to every company in the world."*

*– Ginni Rometty, President and CEO, IBM*

# Global Cyber Threat

## Feeling Overwhelmed?

# Leveraging Intelligence

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# What is Cyber Intelligence?

## Intelligence is Multi-Faceted

- Cyber intelligence is information used to better anticipate a potential issue.
- Intelligence can be gained and subsequently used in multiple ways.
- It can be found in the news, from specific sources, or from things you learn about your own environment.
    - Articles
    - Intelligence Feeds
    - Self-Assessments
    - Penetration Tests

# What is Cyber Intelligence?

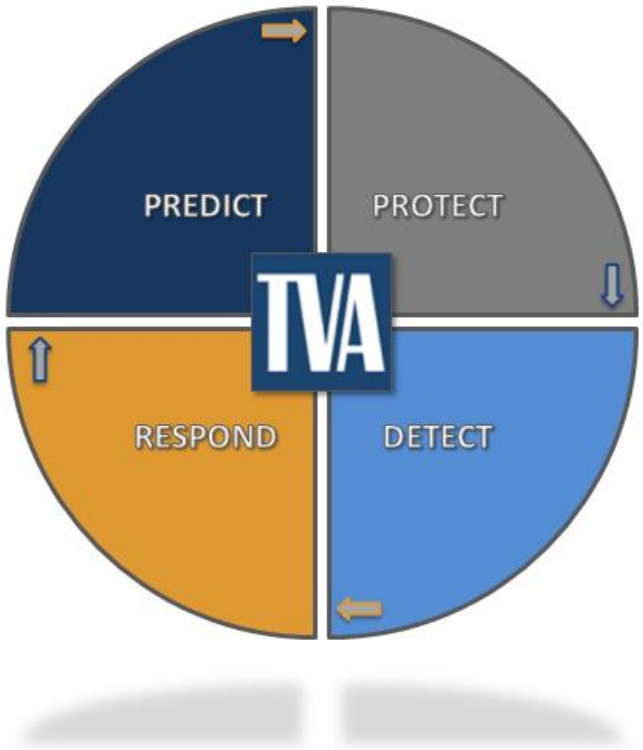
## Intelligence in Many Forms

- Articles, news reports, and simple current events can yield all manner of intelligence.
- Intelligence can be gained through a variety of commercial and free sources.
- It includes awareness of the people, processes, and technology in your company.
- Asset lists, assessments, and penetration testing results are great resources.
- Vendors, suppliers, and contracting agencies are also valuable sources.

# Leveraging Cyber Intelligence

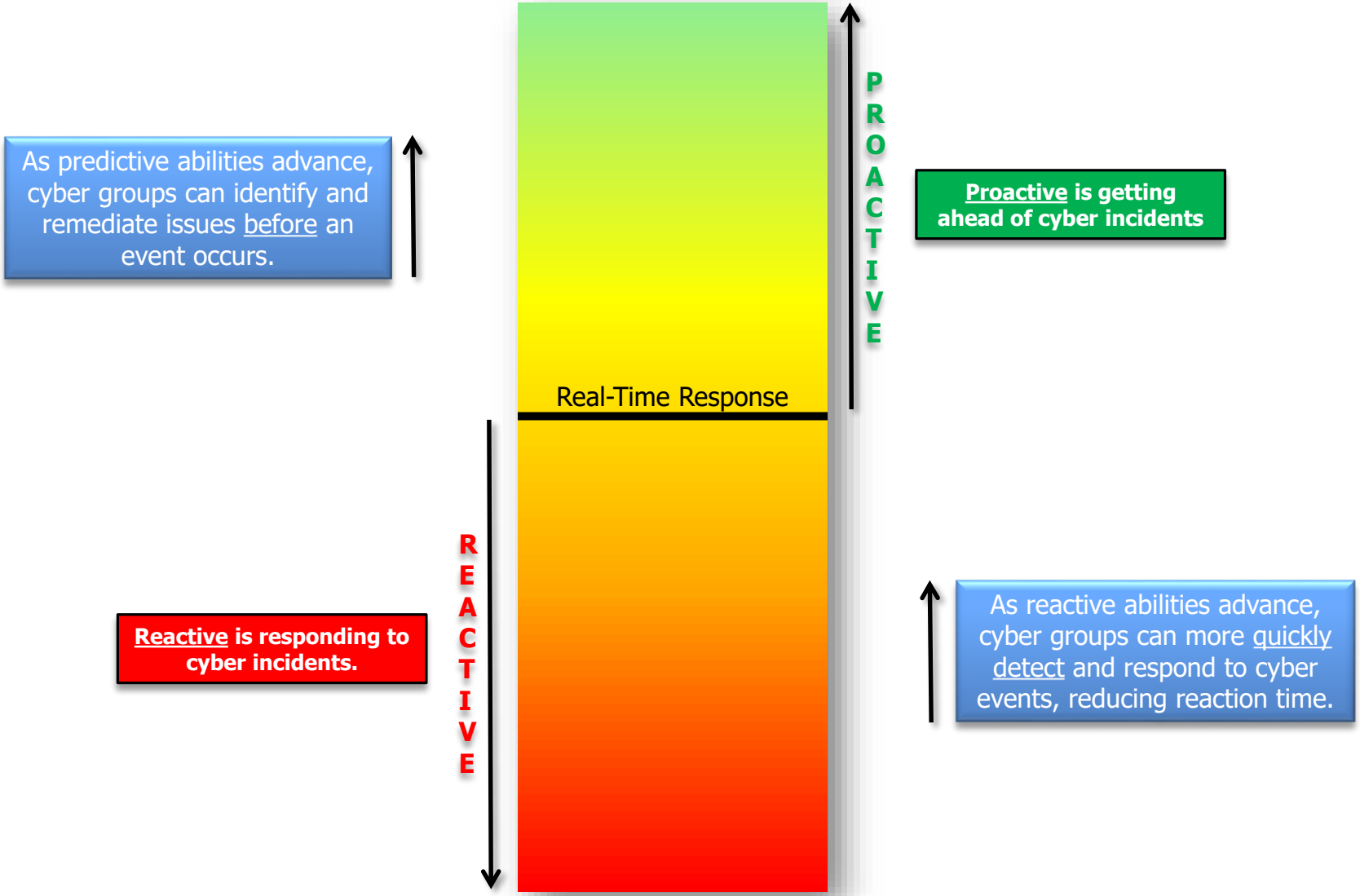
## Intelligence as a Tool

- Once gathered, intelligence can be used to advance security.
  - Implement patching processes
  - Tune or implement monitoring
  - Modify or isolate networks and systems
  - Drive system retirement
  - Drive investment
  - Identify at-risk staff or contractors
  - Insider Threats
- It is used to accelerate detection of an incident, or ultimately, to prevent an incident from occurring.



# Why is Intelligence Important?

## Intelligence to Drive Maturity



# Leveraging Intelligence

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# Intelligence Feeds

## Common Intelligence Sources

- Public / Open Sources:
  - Government:  FBI, DHS, ISACs, US-CERT, Defense Cyber Crime Center (DC3)
  - Open:  SANS Internet Storm Center, ThreatBrief
- Commercial Sources:
  - CrowdStrike, FireEye, AlienVault, RecordedFuture, many others
- Articles / Media:
  - Reports:  Mandiant M-Trends, Checkpoint, Verizon Data Breach, Cisco Security, Symantec, PWC Global State
  - Blogs:  Krebs on Security, MandiantBlog, Recorded Future, Cyveillance, OODAloop

# External Trends

## Cyber Predictions – Technical

### Most Likely Attacks in 2018

1. Socially Engineered Malware


2. Password Phishing Attacks

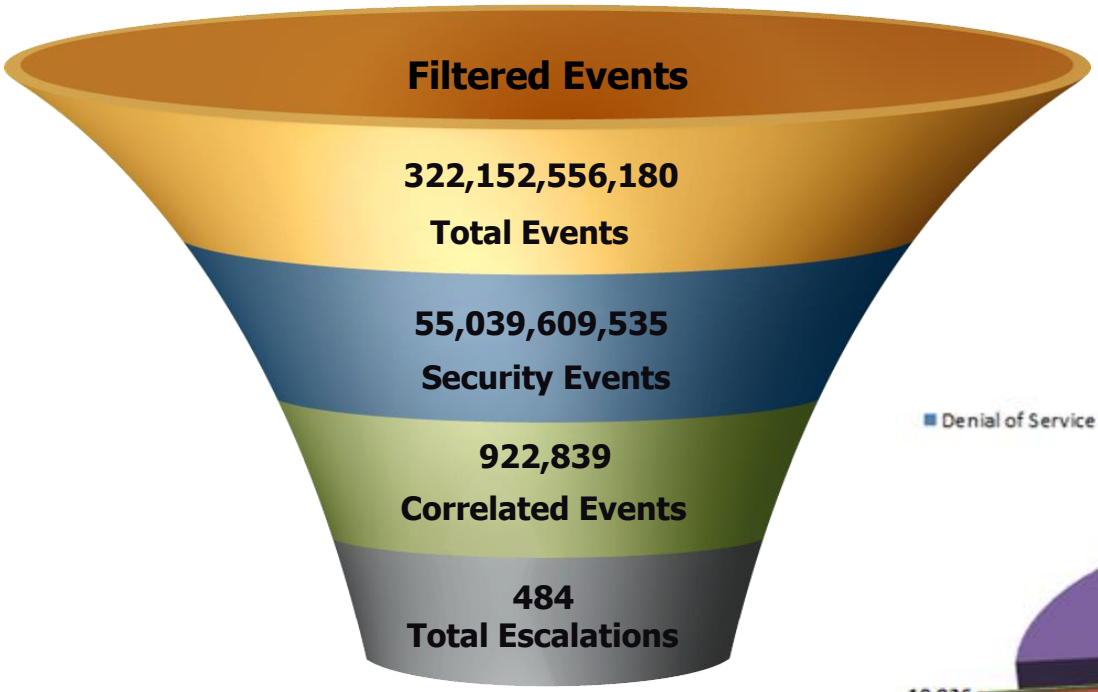
3. Unpatched Software


4. Social Media Attacks

5. Advanced Persistent Threats (aka, Nation-State)

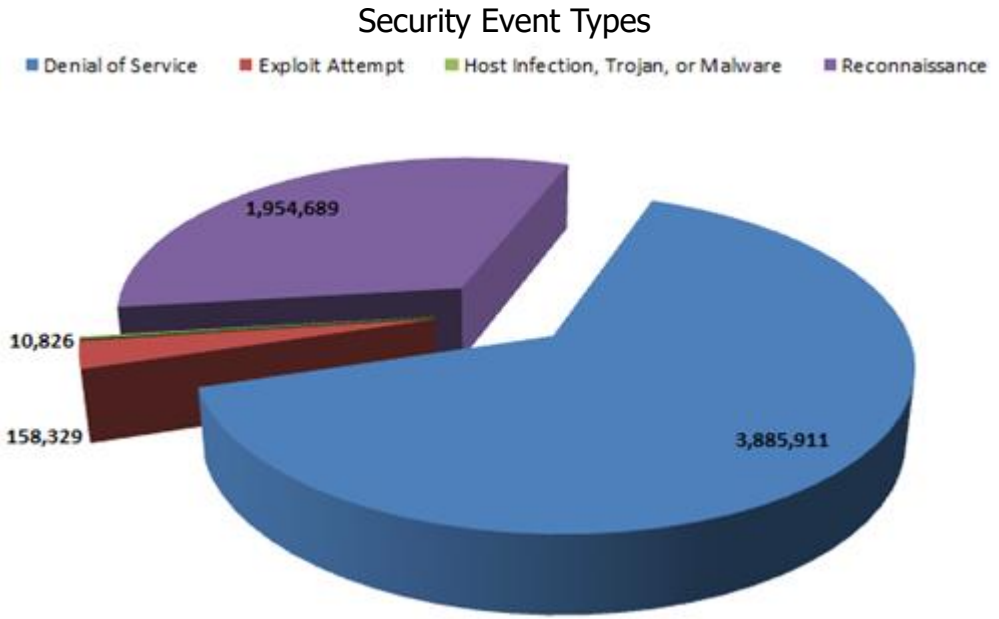
# Internal Trends

## Information Derived from Events



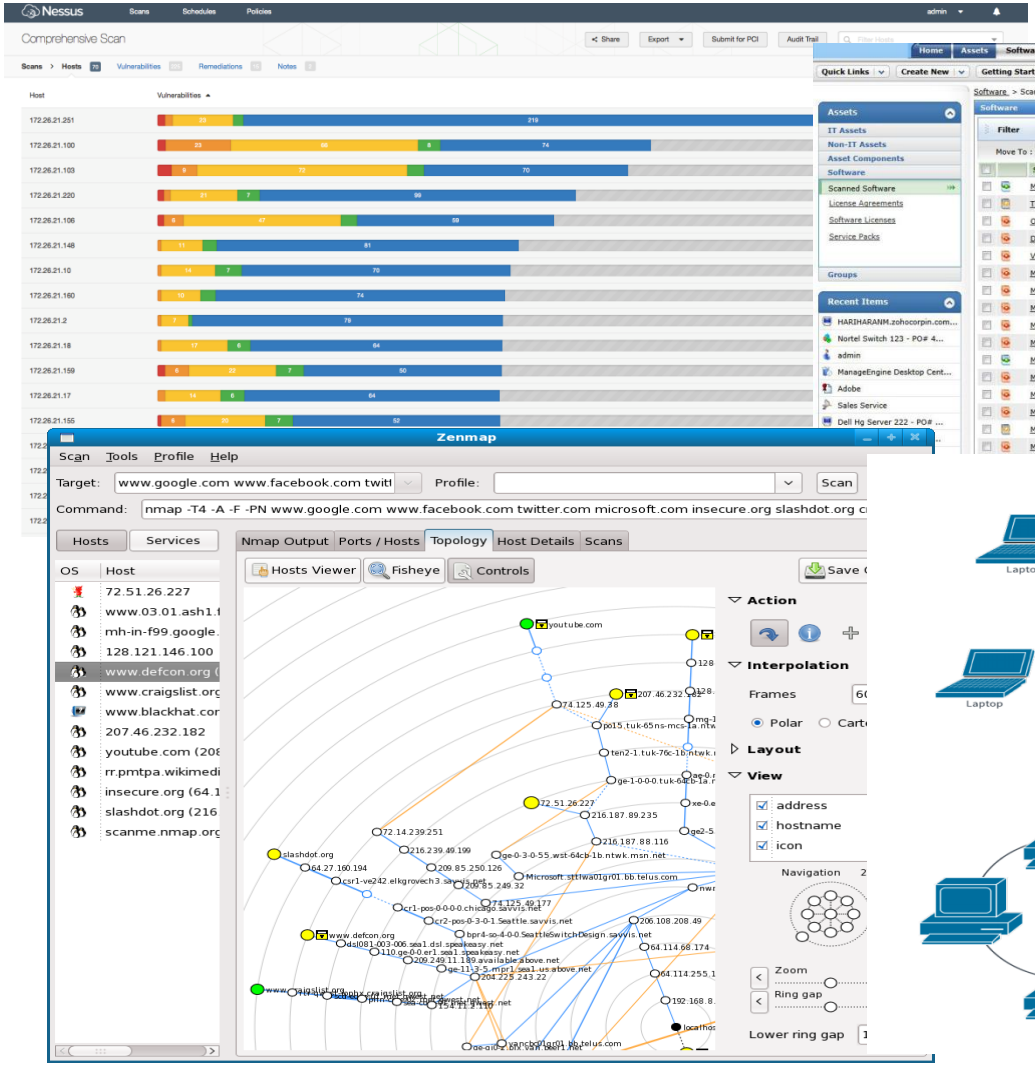

Events are processed via automation, then by security analysts as they escalate.

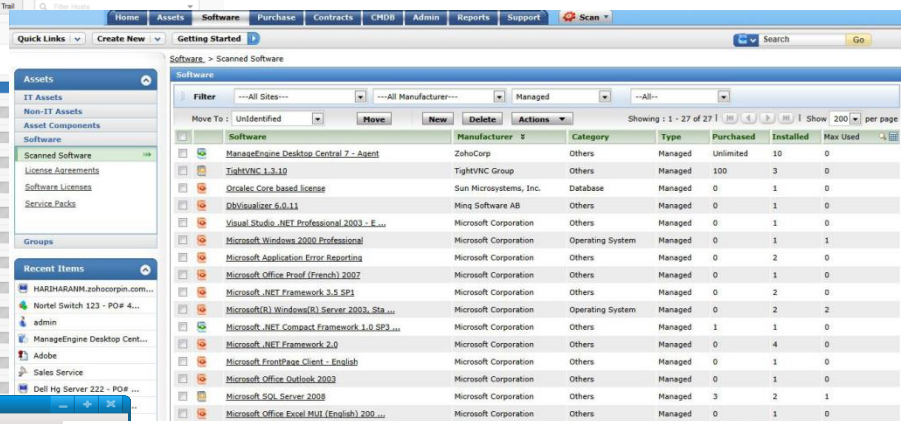
TVA also encounters a variety of attack types beyond email, again with analyst escalation. None have been successful to date.

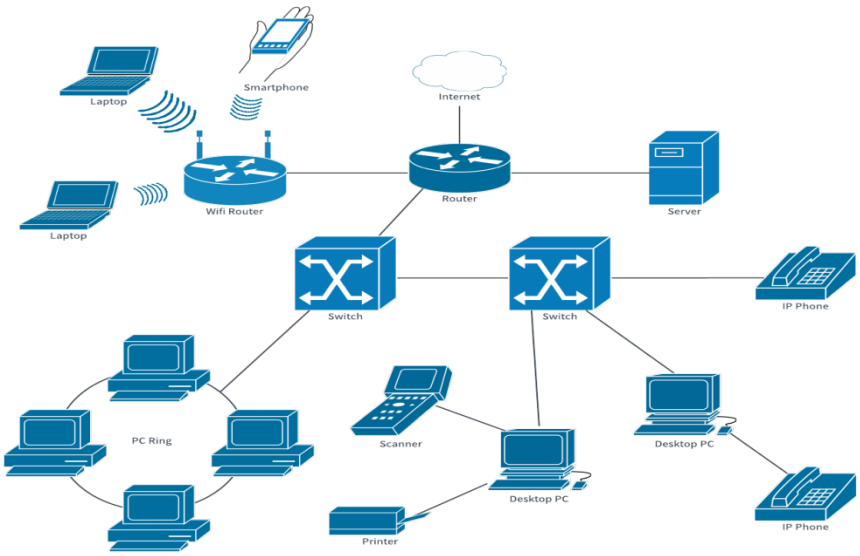


# Awareness and Assessments – Know Yourself

## Information Derived from Tools and Processes



# Leveraging Intelligence

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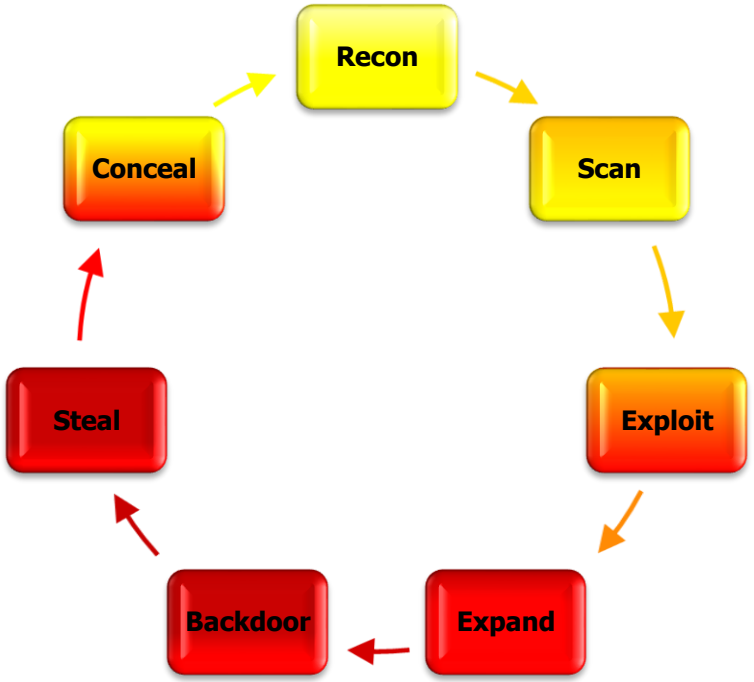
- **Applying Intelligence**

# Applying Intelligence – Know the Attacker

## The Attack Process, Simplified

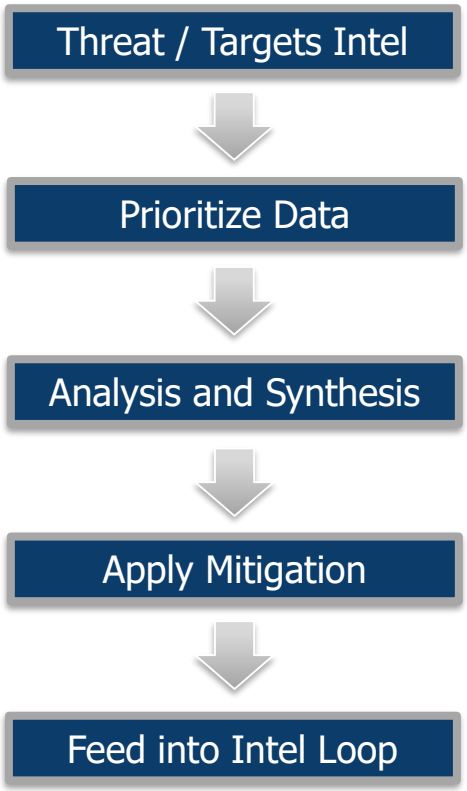
1. Research and Reconnaissance
   - Learn about target
2. Scan and Probe
   - Develop a blueprint
3. Exploit
   - Leverage discoveries
4. Elevate and Expand
   - Increase presence
5. Establish a Point of Return
   - Create a discrete door
6. Steal or Disrupt
   - Steal, disrupt, or disable
7. Cover and Conceal
   - Wipe and distract




**Intelligence can be leveraged to prevent or detect an attack at each step.**

# Applying Intelligence

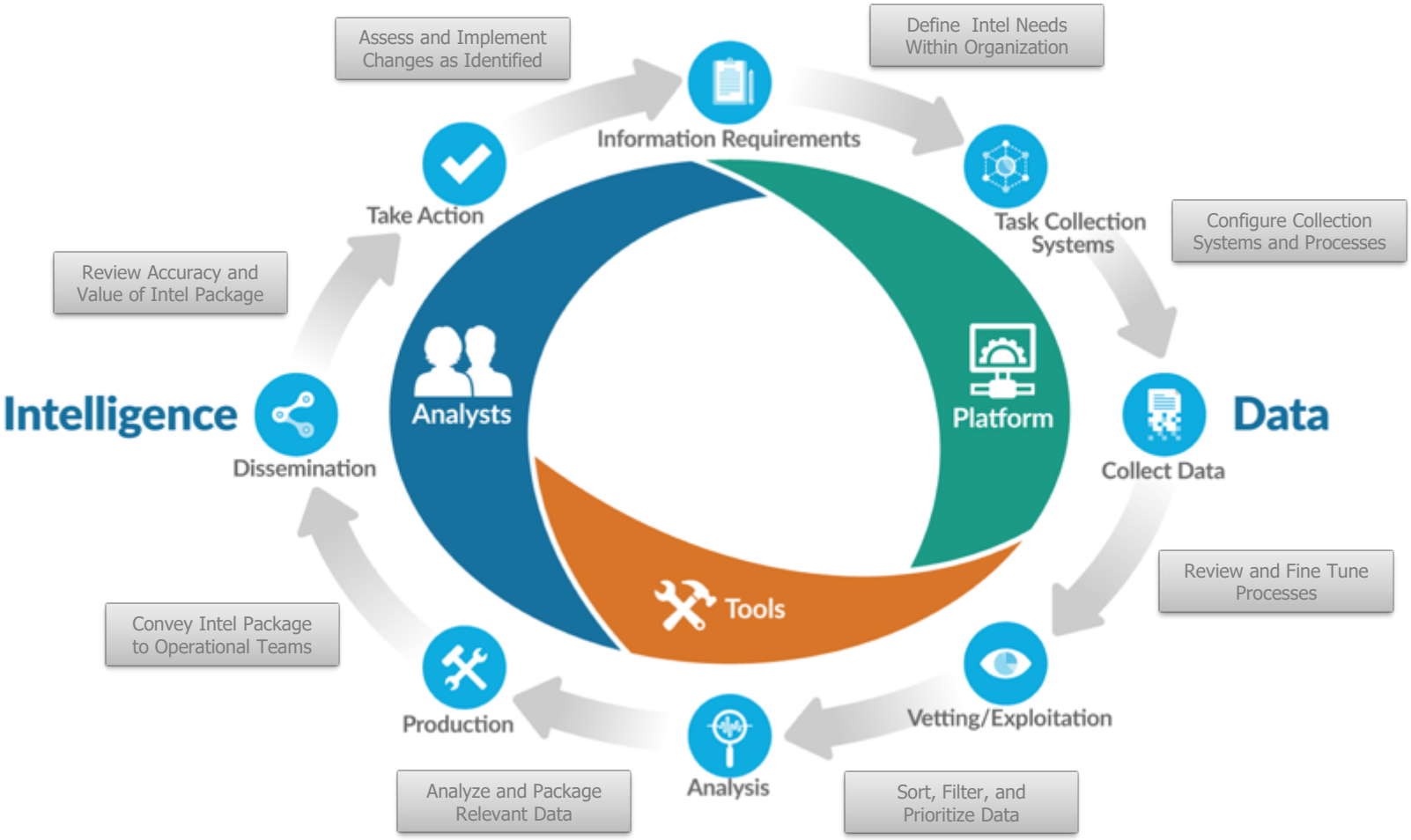
## Threat Intelligence Methodology




- Identify Attacker Types
- Identify Associated Threats
- Identify Potential Targets
- Associate with Recent Events
- Use Risk-Based Scoring to Rank
- Apply Mitigation Based on Rank
- Incorporate Mitigation
- Continuous Improvement Loop

# Applying Intelligence

## Continuous Improvement Loop



# Applying Intelligence

## Fusing Intelligence

- A cyber defender must combine known threats, existing vulnerabilities, and system criticality to properly prepare and integrate intelligence.


- This integration is realized through improved protective measures, tailored monitoring, and accelerated detection and response.

# A Collaborative Defense

# Establishing a Defense – A Collaborative Approach

## TVA Can Help

### TVA and Partner Information Sharing

- Establishing peer groups among cybersecurity experts
  - Event notices and updates
  - Real-time event communications


### Collaborative Security Opportunities

- Direct security support
  - Emergency surge support
  - TVA's unique intelligence sources

### Training Opportunities

- Staff Sharing / Training
  - Send staff to TVA for embedded training and experience
  - Targeted training opportunities

# Establishing a Defense – A Collaborative Approach

## TVA Cybersecurity Outreach Program

### Cybersecurity Coordination Forums

- Recurring cybersecurity meetings
- TVA and customer cybersecurity personnel
  - Sharing of best practices
  - Current threat information sharing
    - FBI and DHS intelligence updates
  - Cybersecurity compliance support

### Specialized Topical Groups

- Informal technical discussions
  - Incident response and monitoring
  - Intelligence and threat indicators
  - Hardware/software recommendations

**For More Information:**

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