The Friends We Made Along the Way

The MITRE ATT&CK Edition

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whoami

This talk represents the speaker's personal views and not the views of Google or Alphabet

MITRE ATT&CK™ is a globally-accessible knowledge base of adversary tactics and techniques based on real-world observations.


MATWICES
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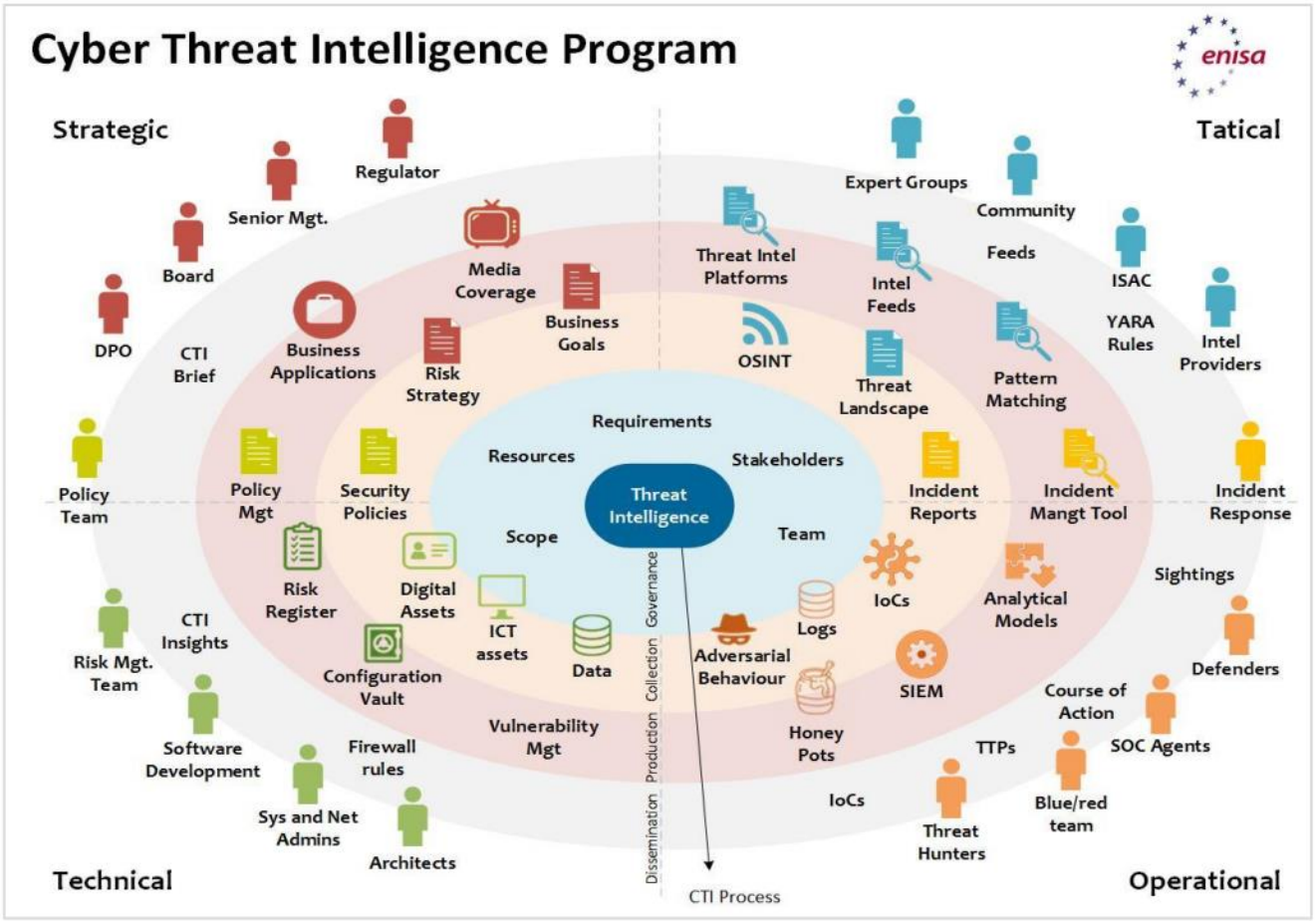
The purpose of intelligence is to drive a decision advantage



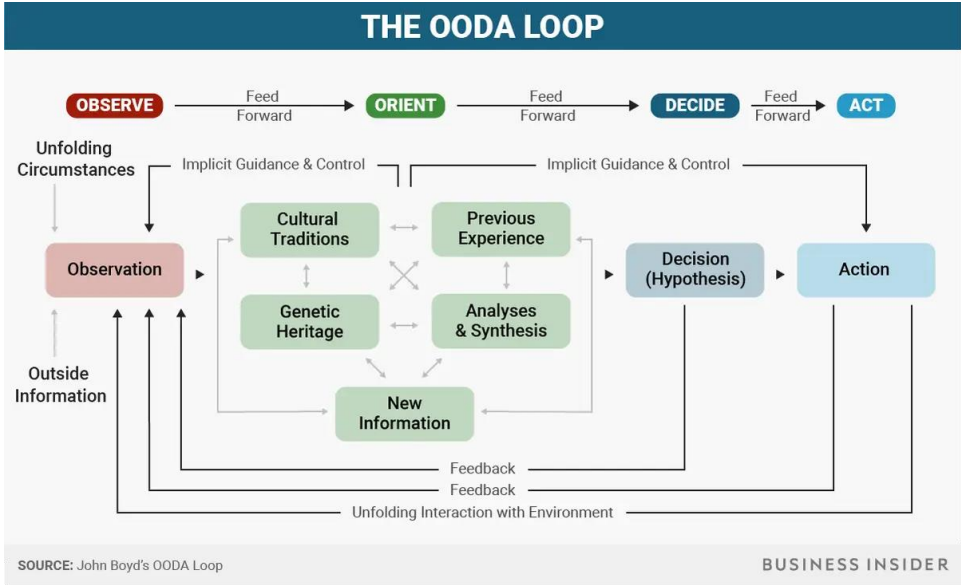
Source: ENISA Threat Landscape Report 2018

The side that learns the fastest, wins

Developed for fighter pilots

Useful framework for thinking about decision making

Leveraging intelligence well shrinks your OODA loop



How do we know if it's working?

Measure of Performance

Am I doing things right?

What are we analyzing? Finding?

Largely within the intel team's control

Measure of Effectiveness

Am I doing the right things?

Is intel actually changing my org's decisions or behavior?

Requires strong partnership with who intel enables (ops? IR? execs?)

This makes intel people uncomfortable

What holds us back from being more effective?

Intel drawn to novel, unique, next

Lives in the details

Often retrospective

Stronger on the diagnostic side

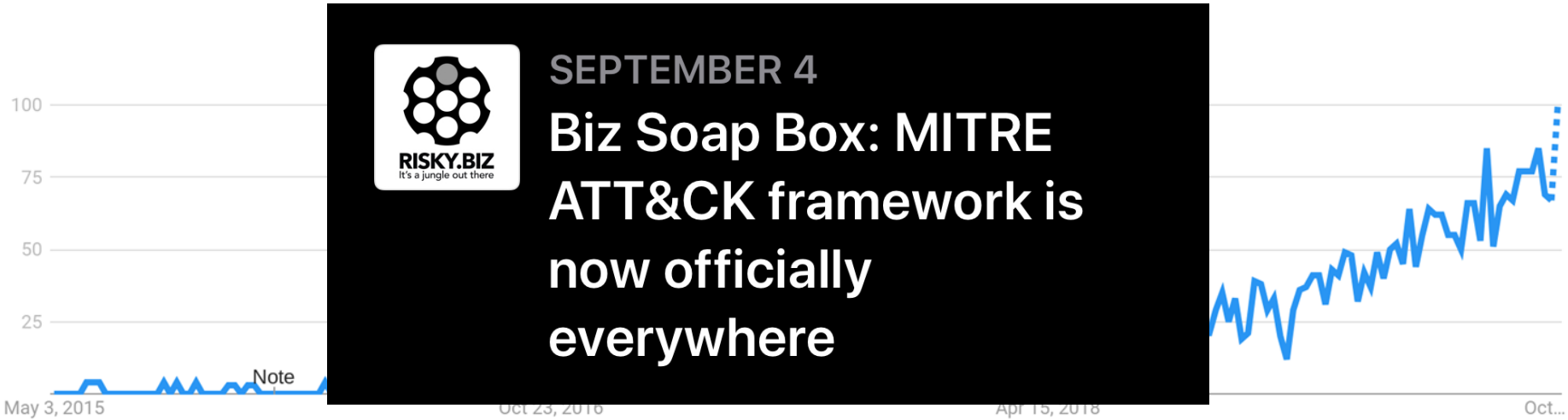
Ops needs stability of signal

Works on a different, longer timeline than intel

Needs intel to be more prognostic

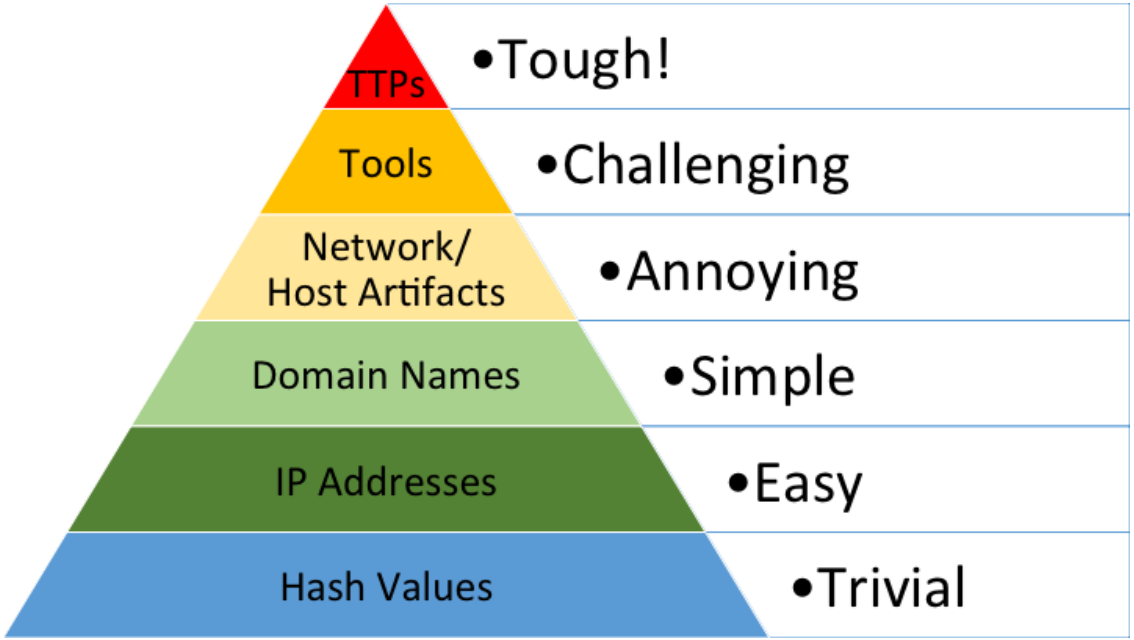
Enter ATT&CK

ATT&CK growing in popularity



Interest in MITRE ATT&CK as a search term between May 2015 - October 2019. Source: Google Trends

Value: Moving up from the tactical



Source: Pyramid of Pain by David Bianco

APT-28

filters

stages: act

Initial Access 11 items	Execution 34 items	Persistence 62 items	Privilege Escalation 32 items	Defense Evasion 69 items	Credential Access 21 items	Discovery 23 items	Lateral Movement 18 items	Collection 13 items	Command And Control 22 items	Exfiltration 9 items	Impact 16 items
Drive-by Compromise	AppleScript	.bash_profile and .bashrc	Access Token Manipulation	Access Token Manipulation	Account Manipulation	Account Discovery	AppleScript	Audio Capture	Commonly Used Port	Automated Exfiltration	Account Access Removal
Exploit Public-facing Application	CMSTP	Accessibility Features	Accessibility Features	Binary Padding	Bash History	Application Window Discovery	Application Deployment Software	Automated Collection	Communication Through Removable Media	Data Compressed	Data Destruction
External Remote Services	Command-Line Interface	Account Manipulation	AppCert DLLs	BITS Jobs	Brute Force	Browser Bookmark Discovery	Component Object Model and Distributed COM	Clipboard Data	Connection Proxy	Data Encrypted	Data Encrypted for Impact
Hardware Additions	Compiled HTML File	AppCert DLLs	AppInit DLLs	Bypass User Account Control	Credential Dumping	Domain Trust Discovery	Exploitation of Remote Services	Data from Information Repositories	Custom Command and Control Protocol	Data Transfer Size Limits	Defacement
Replication Through Removable Media	Component Object Model and Distributed COM	AppInit DLLs	Application Shimming	Clear Command History	Credentials from Web Browsers	File and Directory Discovery	Internal Spearphishing	Data from Local System	Custom Cryptographic Protocol	Exfiltration Over Alternative Protocol	Disk Content Wipe
Spearphishing Attachment	Control Panel Items	Application Shimming	Bypass User Account Control	CMSTP	Credentials in Files	Network Service Scanning	Logon Scripts	Data from Network Shared Drive	Data Encoding	Exfiltration Over Command and Control Channel	Disk Structure Wipe
Spearphishing Link	Dynamic Data Exchange	Authentication Package	DLL Search Order Hijacking	Code Signing	Credentials in Registry	Network Share Discovery	Pass the Hash	Data from Removable Media	Data Obfuscation	Exfiltration Over Other Network Medium	Endpoint Denial of Service
Spearphishing via Service	Execution through API	BITS Jobs	Dylib Hijacking	Compile After Delivery	Exploitation for Credential Access	Network Sniffing	Pass the Ticket	Data Staged	Domain Fronting	Exfiltration Over Physical Medium	Firmware Corruption
Supply Chain Compromise	Execution through Module Load	Bootkit	Elevated Execution with Prompt	Compiled HTML File	Forced Authentication	Password Policy Discovery	Remote Desktop Protocol	Email Collection	Domain Generation Algorithms	Scheduled Transfer	Inhibit System Recovery
Trusted Relationship	Exploitation for Client Execution	Browser Extensions	Emond	Component Firmware	Hooking	Peripheral Device Discovery	Remote File Copy	Input Capture	Fallback Channels		Network Denial of Service
Valid Accounts	Graphical User Interface	Change Default File Association	Exploitation for Privilege Escalation	Component Object Model Hijacking	Input Capture	Permission Groups Discovery	Remote Services	Man in the Browser	Multi-hop Proxy		Resource Hijacking
	InstallUtil	Component Firmware	Extra Window Memory Injection	Connection Proxy	Input Prompt	Process Discovery	Replication Through Removable Media	Screen Capture	Multi-Stage Channels		Runtime Data Manipulation
	Launchctl	Component Object Model Hijacking	File System Permissions Weakness	Control Panel Items	Kerberoasting	Query Registry	Shared Webroot	Video Capture	Multiband Communication		Service Stop
	Local Job Scheduling	Create Account	Hooking	DCShadow	Keychain	Remote System Discovery	SSH Hijacking		Multilayer Encryption		Stored Data Manipulation
	LSASS Driver	DLL Search Order Hijacking	Image File Execution Options Injection	Deobfuscate/Decode Files or Information	LLMNR/NBT-NS Poisoning and Relay	Security Software Discovery	Taint Shared Content		Port Knocking		System Shutdown/Reboot
	Mshta	Dylib Hijacking	Launch Daemon	Disabling Security Tools	Network Sniffing	Software Discovery	Third-party Software		Remote Access Tools		Transmitted Data Manipulation
	PowerShell	Emond	New Service	DLL Search Order Hijacking	Password Filter DLL	System Information Discovery	Windows Admin Shares		Remote File Copy		
	Regsvcs/Regasm	External Remote Services	Parent PID Spoofing	DLL Side-Loading	Private Keys	System Network Configuration Discovery	Windows Remote Management		Standard Application Layer Protocol		
	Regsvr32	File System Permissions Weakness	Path Interception	Execution Guardrails	Securityd Memory	System Network Connections Discovery			Standard Cryptographic Protocol		
	Rundll32	Hidden Files and Directories	Plist Modification	Exploitation for Defense Evasion	Steal Web Session Cookie	System Owner/User Discovery			Standard Non-Application Layer Protocol		
	Scheduled Task	Hooking	Port Monitors	Extra Window Memory Injection	Two-Factor Authentication Interception	System Service Discovery			Uncommonly Used Port		
	Scripting	Hypervisor	PowerShell Profile	File and Directory Permissions Modification		System Time Discovery			Web Service		
	Service Execution	Image File Execution Options Injection	Process Injection	File Deletion		Virtualization/Sandbox Evasion					
	Signed Binary Proxy Execution	Kernel Modules and Extensions	Scheduled Task	File System Logical Offsets							
	Signed Script Proxy Execution	Launch Agent	Service Registry Permissions Weakness	Gatekeeper Bypass							
	Source	Launch Daemon	Setuid and Setgid	Group Policy Modification							
	Space after Filename	Launchctl	SID-History Injection	Hidden Files and Directories							
	Third-party Software	LC_LOAD_DYLIB Addition	Startup Items	Hidden Users							
	Trap	Local Job Scheduling	Sudo	Hidden Window							
	Trusted Developer Utilities	Login Item	Sudo Caching	HISTCONTROL							
	User Execution	Logon Scripts	Valid Accounts	Image File Execution Options Injection							
	Windows Management Instrumentation	LSASS Driver	Web Shell	Indicator Blocking							
	Windows Remote Management	Modify Existing Service		Indicator Removal from Tools							
	XSL Script Processing	Netsh Helper DLL		Indicator Removal on Host							
		New Service		Indirect Command Execution							
		Office Application Startup		Install Root Certificate							
		Path Interception		InstallUtil							
		Plist Modification		Launchctl							
		Port Knocking		LC_MAIN Hijacking							
		Port Monitors		Masquerading							
		PowerShell Profile		Modify Registry							
		Rc.common		Mshta							
		Re-opened Applications		Network Share Connection Removal							
		Redundant Access		NTFS File Attributes							
		Registry Run Keys / Startup Folder		Obfuscated Files or Information							
		Scheduled Task		Parent PID Spoofing							
		Screensaver		Plist Modification							
		Security Support Provider		Port Knocking							
		Server Software Component		Process Doppelgänging							
		Service Registry Permissions Weakness		Process Hollowing							
		Setuid and Setgid		Process Injection							
		Shortcut Modification		Redundant Access							
		SIP and Trust Provider Hijacking		Regsvcs/Regasm							
		Startup Items		Regsvr32							
		System Firmware		Rootkit							
		Systemd Service		Rundll32							
		Time Providers		Scripting							
		Trap		Signed Binary Proxy Execution							
		Valid Accounts		Signed Script Proxy Execution							
		Web Shell		SIP and Trust Provider Hijacking							
		Windows Management Instrumentation Event Subscription		Software Packing							
		Winlogon Helper DLL		Space after Filename							
				Template Injection							
				Timestomp							
				Trusted Developer Utilities							
				Valid Accounts							

GROUPS

Overview

admin@338

APT1

APT12

APT16

APT17

APT18

APT19

APT28

APT29

APT3

APT30

APT28

APT28 is a threat group that has been attributed to Russia's Main Intelligence Directorate of the Russian General Staff by a July 2018 U.S. Department of Justice indictment. This group reportedly compromised the Hillary Clinton campaign, the Democratic National Committee, and the Democratic Congressional Campaign Committee in 2016 in an attempt to interfere with the U.S. presidential election. APT28 has been active since at least 2004.[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] [11]

ID: G0007

Associated Groups: SNAKEMACKEREL, Swallowtail, Group 74, Sednit, Sofacy, Pawn Storm, Fancy Bear, STRONTIUM, Tsar Team, Threat Group-4127, TG-4127

Contributors: Drew Church, Splunk, Emily Ratliff, IBM, Richard Gold, Digital Shadows

Version: 2.2

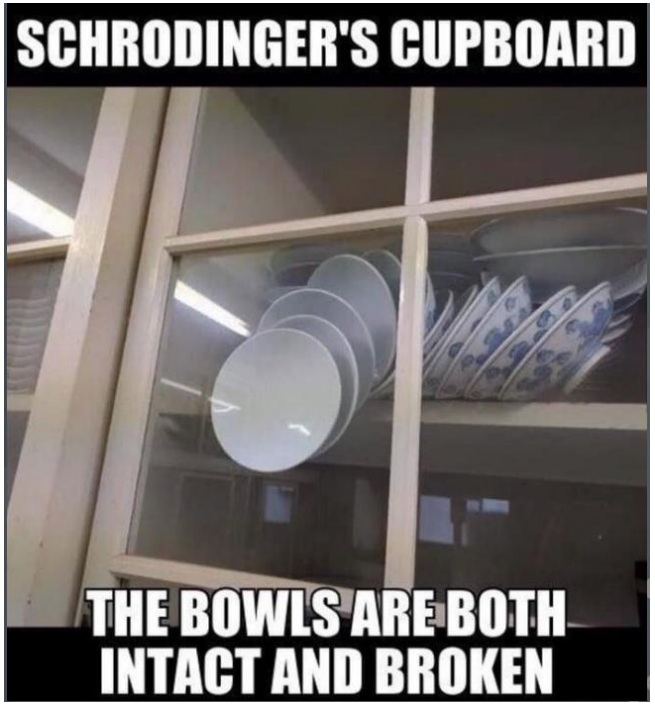
A common nomenclature enables a common operational picture


BUT WAIT
THERE'S MORE!

ATT&CK's Jedi Mind Trick

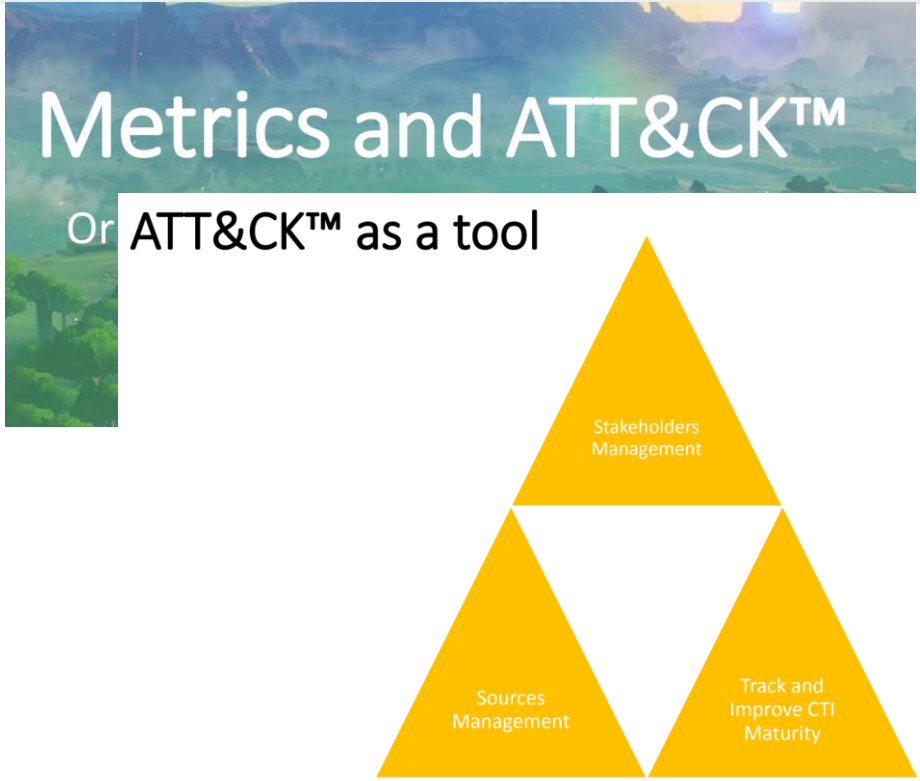
Improving detection and visibility

Be careful….it probably looks worse before it gets better



Planning and Mapping Requirements

Take executive's top-level intel requirements and map those attack types and what key systems are involved against ATT&CK



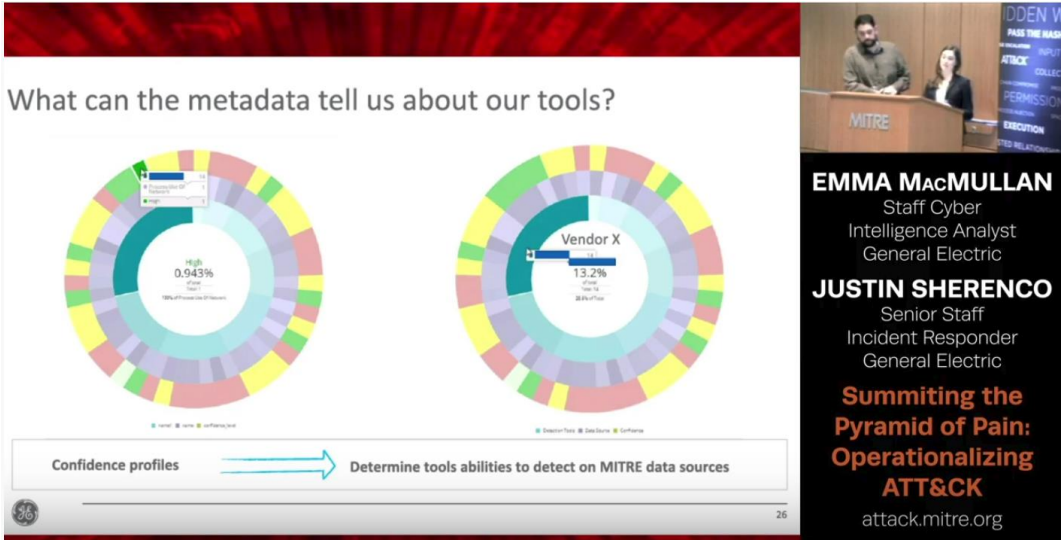
Presented by Francesco Bigarella at FIRST CTI Symposium 2019

https://www.first.org/resources/papers/london2019/Metrics-and-attack-website.pdf

Supporting your product evals

What are the gaps I need to close?

Does this product do what it says it will?



Presented at ATT&CKcon 2018

https://www.youtube.com/watch?v=YhsN5pBDrGY

“Plans are worthless, but planning is everything”

~ Dwight D. Eisenhower (maybe)

Sign me up!

I want to do all these amazing things with ATT&CK. Full steam ahead, right?

Complexity

266 Techniques in Enterprise ATT&CK

Many teams find themselves extending further

Time

Done right, ATT&CK changes your inputs, processes, and outputs

Expect a solid 6 months-1 year of sustained effort when getting started

Will wider vendor adoption bend this curve?

Buy in

Who needs to commit for this to be successful?

Focus on the why and the how - and then the what becomes easier

Manage expectations

Use the community!

Closing Thoughts

Thank you!