ATT&CK®

Using MITRE ATT&CK to improve SOC operations

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#WeFightBullies

Quorum Cyber

About Me

ATT&CK®

Federico Charosky
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- Managing Director of Quorum Cyber
- Microsoft Azure Sentinel SOC & MDR
- Microsoft Azure security engineering
- Using MITRE ATT&CK threat modelling to drive SOC and risk management since 2016

- We defend teams and organisations that feel overwhelmed by the increasing risk of cyber security breaches and attacks

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Methodology

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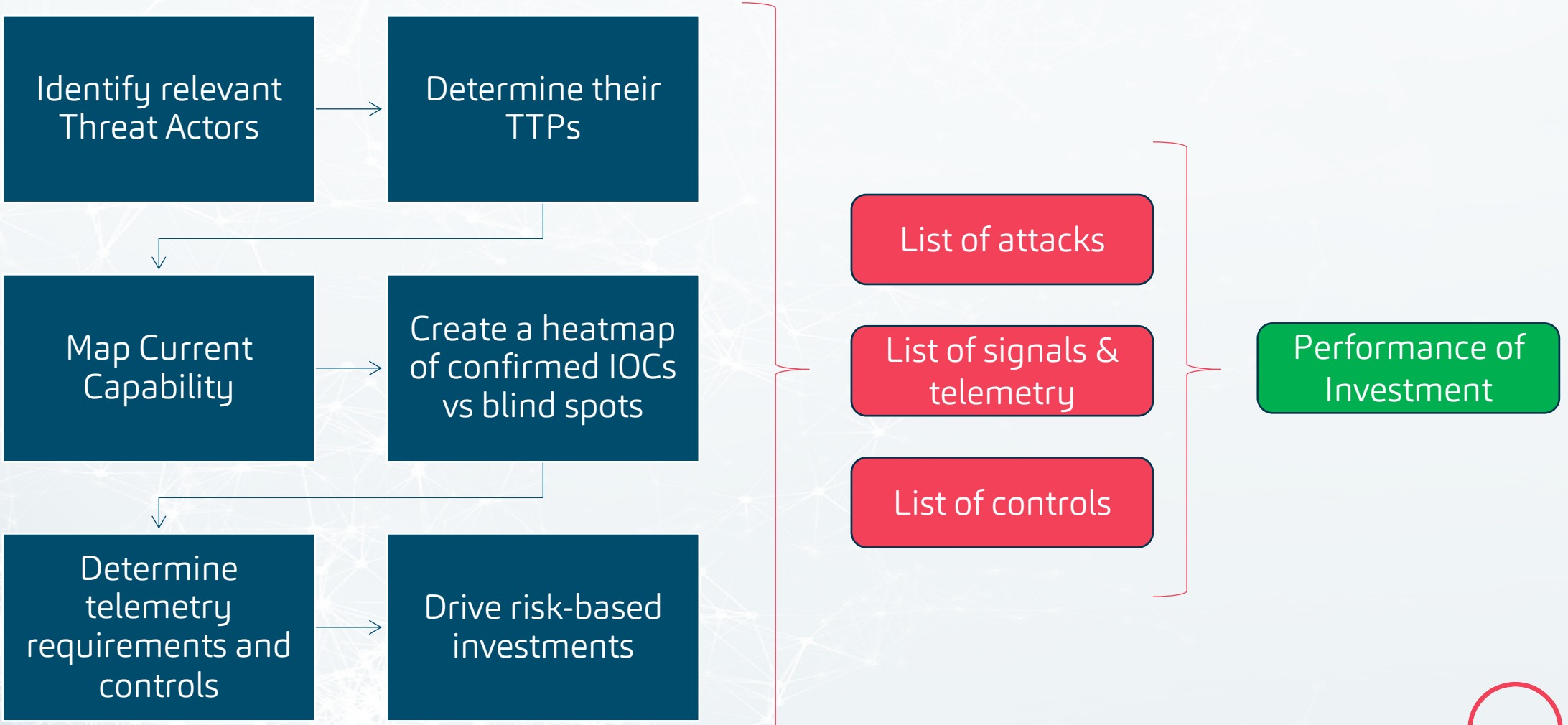

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1) Identify

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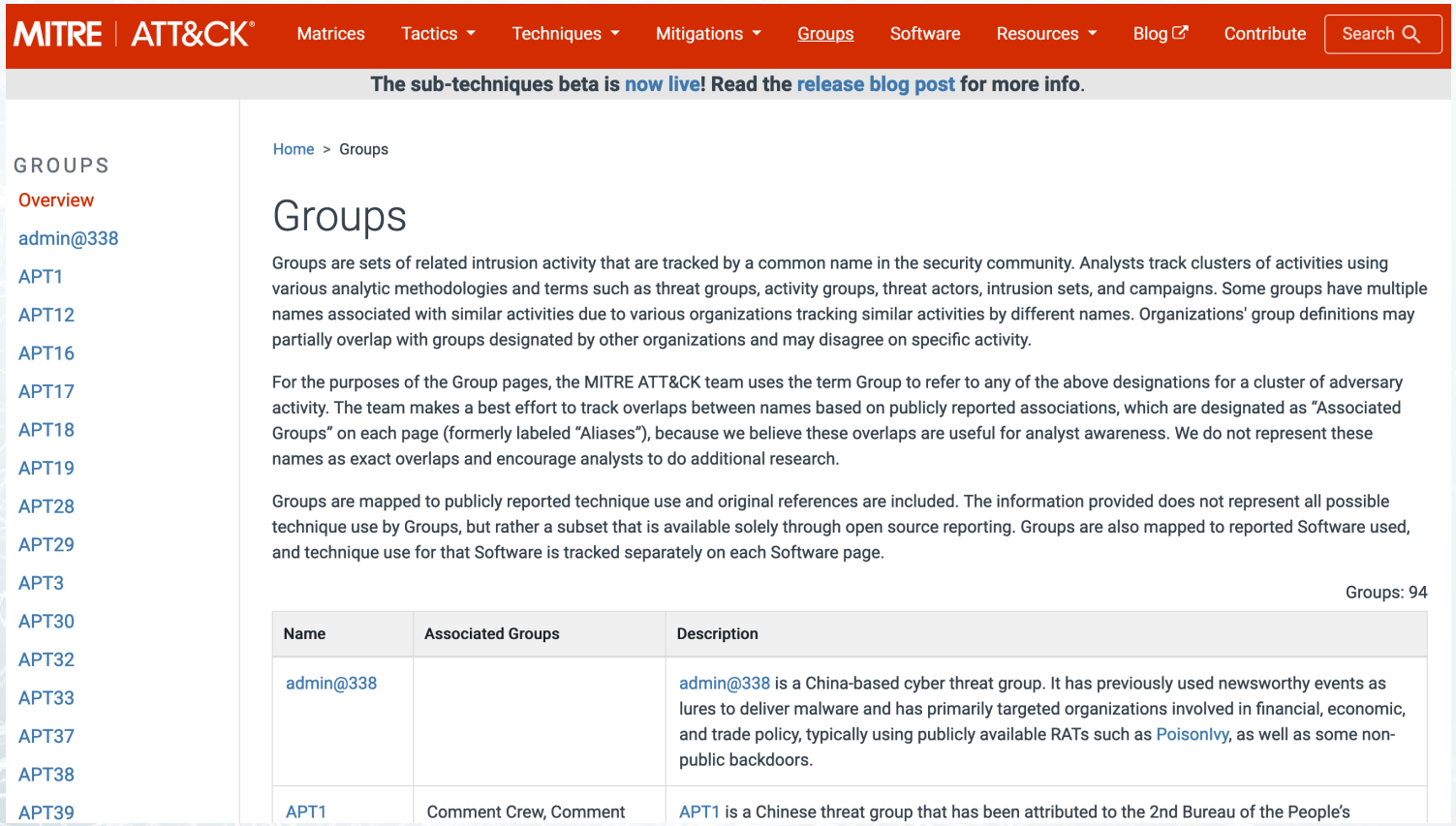

Focus on Industry

Focus on Region

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2) TTPs

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Initial Access	Execution	Persistence	Privilege Escalation	Defense Evasion	Credential Access	Discovery	Lateral Movement	Collection	Command And Control	Exfiltration	Impact
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	Data Destruction
Exploit Public-Facing Application	CMSTP	Accessibility Features	Accessibility Features	Binary Padding	Bash History	Application Window Discovery	Application Deployment Software	Automated Collection	Communication Through Removal	Data Compressed	Data Encrypted for Impact
External Remote Services	Command-Line Interface	Account Manipulation	AppCert DLLs	BITS Jobs	Brute Force	Browser Bookmark Discovery	Distributed Component Object M	Clipboard Data	Connection Proxy	Data Encrypted	Defacement
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 Repositori	Custom Command and Control Pr	Data Transfer Size Limits	Disk Content Wipe
Replication Through Removable M	Control Panel Items	AppInit DLLs	Application Shimming	Clear Command History	Credentials in Files	File and Directory Discovery	Logon Scripts	Data from Local System	Custom Cryptographic Protocol	Exfiltration Over Alternative Protc	Disk Structure Wipe
Spearphishing Attachment	Dynamic Data Exchange	Application Shimming	Bypass User Account Control	CMSTP	Credentials in Registry	Network Service Scanning	Pass the Hash	Data from Network Shared Drive	Data Encoding	Exfiltration Over Command and C	Endpoint Denial of Service
Spearphishing Link	Execution through API	Authentication Package	DLL Search Order Hijacking	Code Signing	Exploitation for Credential Access	Network Share Discovery	Pass the Ticket	Data from Removable Media	Data Obfuscation	Exfiltration Over Other Network M	Firmware Corruption
Spearphishing via Service	Execution through Module Load	BITS Jobs	Dylib Hijacking	Compile After Delivery	Forced Authentication	Network Sniffing	Remote Desktop Protocol	Data Staged	Domain Fronting	Exfiltration Over Physical Medium	Inhibit System Recovery
Supply Chain Compromise	Exploitation for Client Execution	Bootkit	Exploitation for Privilege Escalatic	Compiled HTML File	Hooking	Password Policy Discovery	Remote File Copy	Email Collection	Domain Generation Algorithms	Scheduled Transfer	Network Denial of Service
Trusted Relationship	Graphical User Interface	Browser Extensions	Extra Window Memory Injection	Component Firmware	Input Capture	Peripheral Device Discovery	Remote Services	Input Capture	Fallback Channels		Resource Hijacking
Valid Accounts	InstallUtil	Change Default File Association	File System Permissions Weakness	Component Object Model Hijackii	Input Prompt	Permission Groups Discovery	Replication Through Removable M	Man in the Browser	Multi-hop Proxy		Runtime Data Manipulation
	Launchctl	Component Firmware	Hooking	Control Panel Items	Kerberoasting	Process Discovery	Shared Webroot	Screen Capture	Multi-Stage Channels		Service Stop
	Local Job Scheduling	Component Object Model Hijackii	Image File Execution Options Injec	DCShadow	Keychain	Query Registry	SSH Hijacking	Video Capture	Multiband Communication		Stored Data Manipulation
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	Regsvcs/Regasm	External Remote Services	Plist Modification	DLL Side-Loading	Private Keys	System Network Configuration Di	Windows Remote Management		Remote File Copy		
	Regsvr32	File System Permissions Weakness	Port Monitors	Execution Guardrails	Securityd Memory	System Network Connections Discovery			Standard Application Layer Protocol		
	Rundll32	Hidden Files and Directories	Process Injection	Exploitation for Defense Evasion	Two-Factor Authentication Interc	System Owner/User Discovery			Standard Cryptographic Protocol		
	Scheduled Task	Hooking	Scheduled Task	Extra Window Memory Injection		System Service Discovery			Standard Non-Application Layer Protocol		
	Scripting	Hypervisor	Service Registry Permissions Weak	File Deletion		System Time Discovery			Uncommonly Used Port		
	Service Execution	Image File Execution Options Injec	Setuid and Setgid	File Permissions Modification		Virtualization/Sandbox Evasion			Web Service		
	Signed Binary Proxy Execution	Kernel Modules and Extensions	SID-History Injection	File System Logical Offsets							
	Signed Script Proxy Execution	Launch Agent	Startup Items	Gatekeeper Bypass							
	Source	Launch Daemon	Sudo	Group Policy Modification							
	Space after Filename	Launchctl	Sudo Caching	Hidden Files and Directories							
	Third-party Software	LC_LOAD_DYLIB Addition	Valid Accounts	Hidden Users							
	Trap	Local Job Scheduling	Web Shell	Hidden Window							
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		Registry Run Keys / Startup Folder		NTFS File Attributes							
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		Valid Accounts		Signed Binary Proxy Execution							
		Web Shell		Signed Script Proxy Execution							
		Windows Management Instrumentation Event Subscription		SIP and Trust Provider Hijacking							
		Winlogon Helper DLL		Software Packing							
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				Timestomp							
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				Valid Accounts							
				Virtualization/Sandbox Evasion							
				Web Service							
				XSL Script Processing							

APT3

- Construction and Engineering

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	Signed Binary Proxy Execution	Kernel Modules and Extensions	SID-History Injection	File System Logical Offsets							
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	Source	Launch Daemon	Sudo	Group Policy Modification							
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	Third-party Software	LC_LOAD_DYLIB Addition	Valid Accounts	Hidden Users							
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				Template Injection							
				Timestomp							
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				Valid Accounts							
				Virtualization/Sandbox Evasion							
				Web Service							
				XSL Script Processing							

LeafMiner

- Targeting Middle East

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3) Map Current Capabilities

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	Third-party Software	LC_LOAD_DYLIB Addition	Valid Accounts	Hidden Users							
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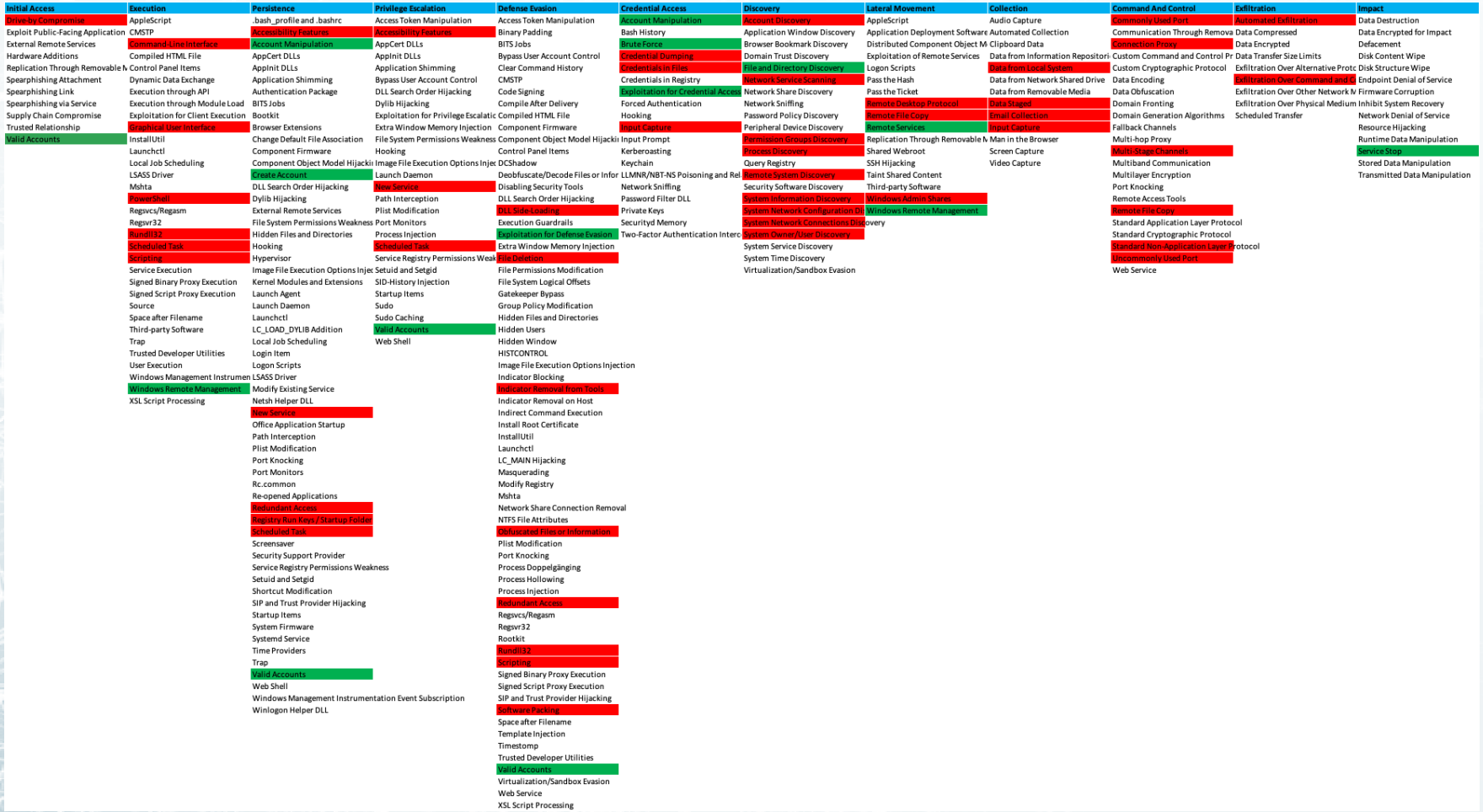
4) Heatmap



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		Rc.common		Modify Registry							
		Re-opened Applications		Mshta							
		Redundant Access		Network Share Connection Removal							
		Registry Run Keys / Startup Folder		NTFS File Attributes							
		Scheduled Task		Obfuscated Files or Information							
		Screensaver		Plist Modification							
		Security Support Provider		Port Knocking							
		Service Registry Permissions Weakness		Process Doppelgänging							
		Setuid and Setgid		Process Hollowing							
		Shortcut Modification		Process Injection							
		SIP and Trust Provider Hijacking		Redundant Access							
		Startup Items		Regsvcs/Regasm							
		System Firmware		Regsvr32							
		Systemd Service		Rootkit							
		Time Providers		Rundll32							
		Trap		Scripting							
		Valid Accounts		Signed Binary Proxy Execution							
		Web Shell		Signed Script Proxy Execution							
		Windows Management Instrumentation Event Subscription		SIP and Trust Provider Hijacking							
		Winlogon Helper DLL		Software Packing							
				Space after Filename							
				Template Injection							
				Timestomp							
				Trusted Developer Utilities							
				Valid Accounts							
				Virtualization/Sandbox Evasion							
				Web Service							
				XSL Script Processing							

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5) Telemetry and Controls

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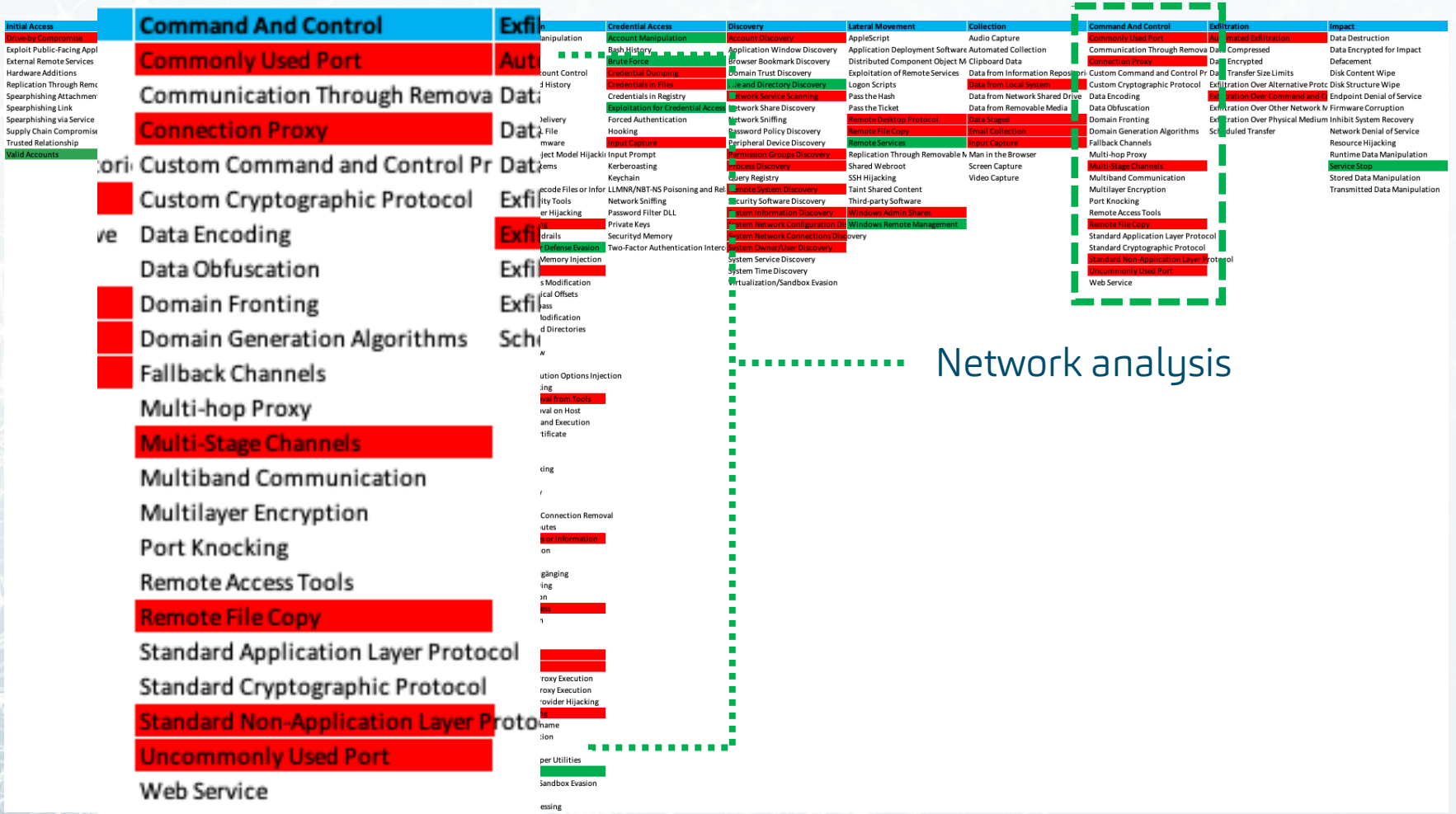

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So now we have…

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1. A list of relevant actors
2. A list of relevant TTPs
3. Positive coverage (list of things we know we can find)
4. Known blind spots (list of things we know we can’t find)
5. A list of controls to mitigate those blind spots (investment needs)
6. How do we drive investment?

SOC Framework

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7 Threat actors

50 TTPs, 150 IOCs

45 IOCs - confirmed

105 IOCs - blind

7 Controls (750K CAPEX)
4 Controls (350K OPEX)

Risk Coverage
30%

Residual risk
70%

Performance of
Investment
(Confirmed / Known)

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Performance of Investment

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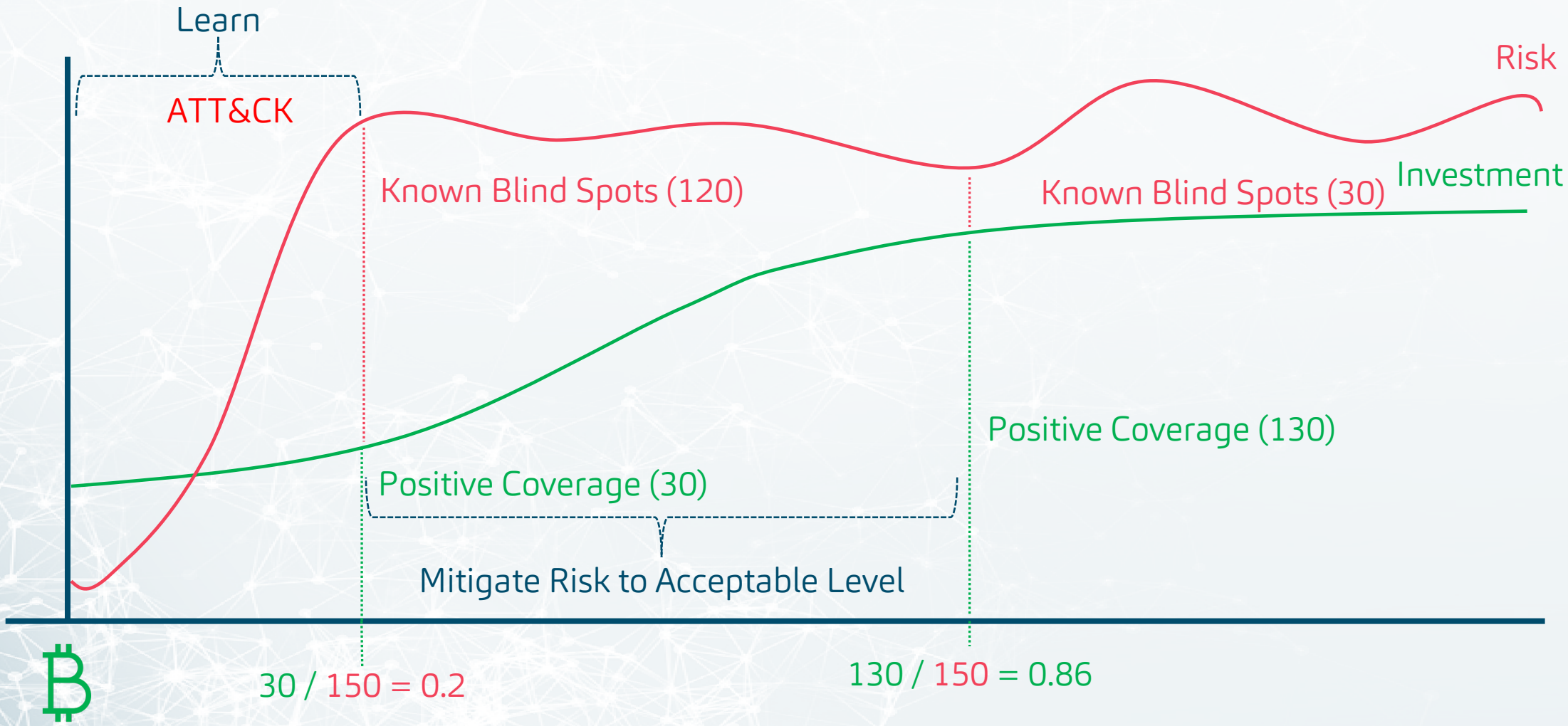

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1) Threat-focused SOC (not volume)

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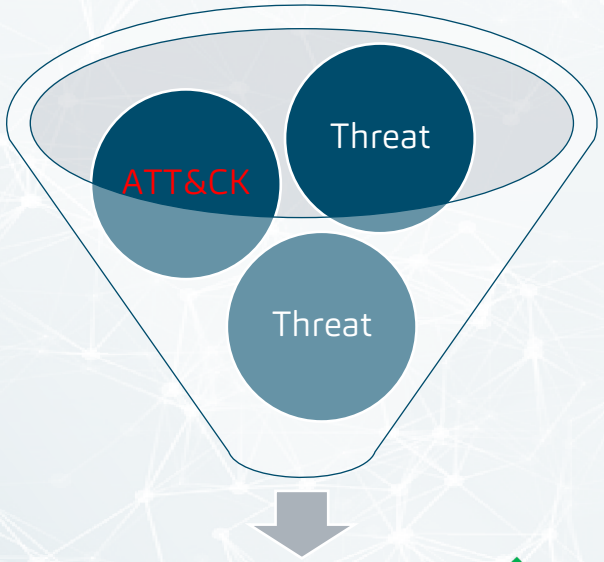
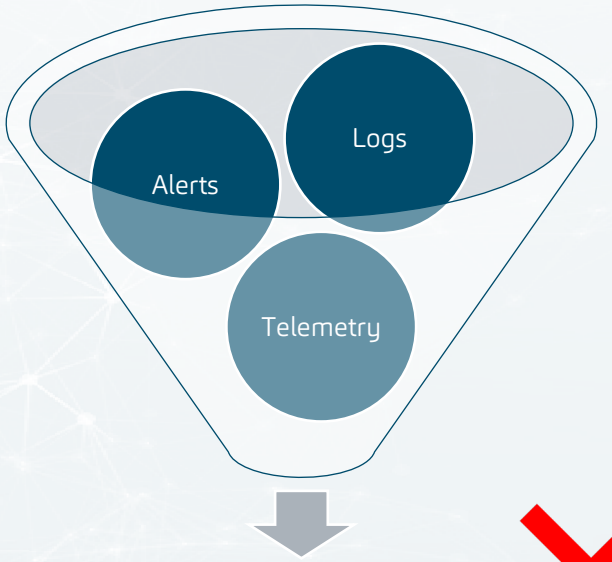
- Your threats should determine the signals and telemetry you need (not the other way around!)



Use Cases



Use Cases

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2) Investment Performance

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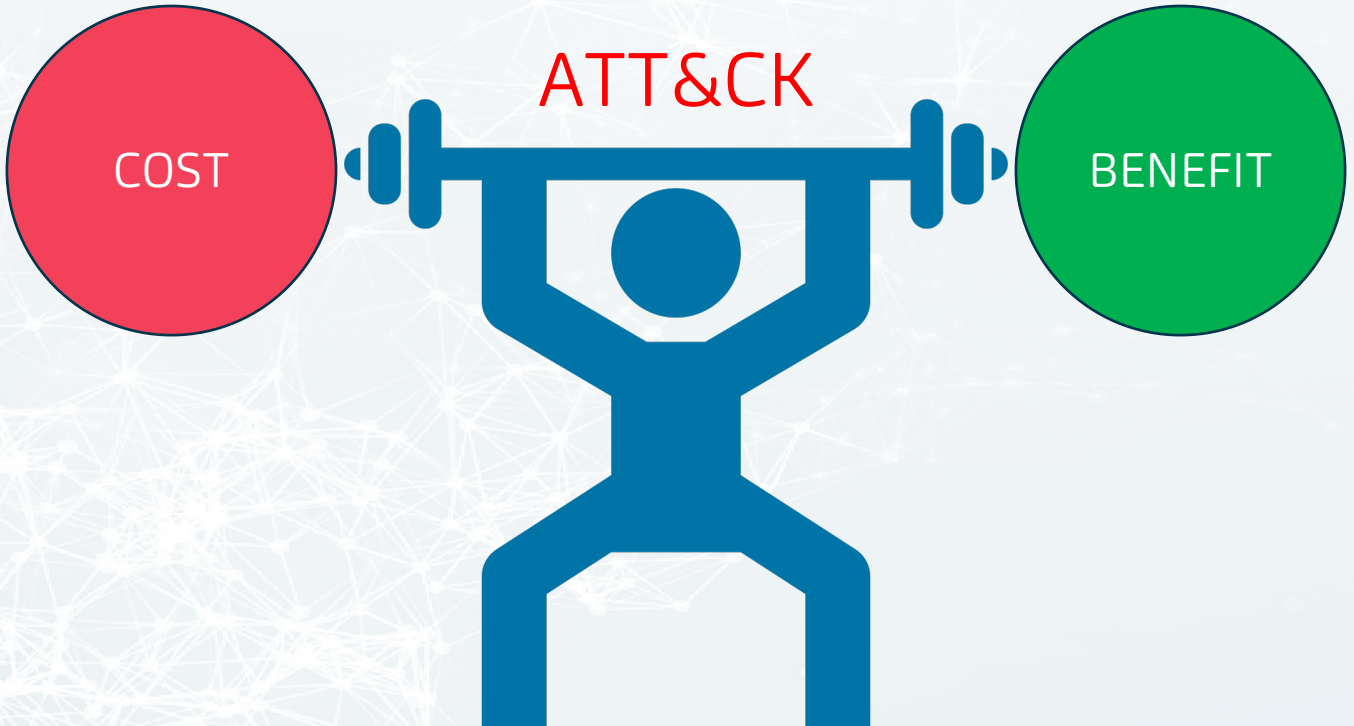
- Measuring risk coverage and investment performance is essential to communicating the Business Value of the SOC



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3) Continuous Improvement

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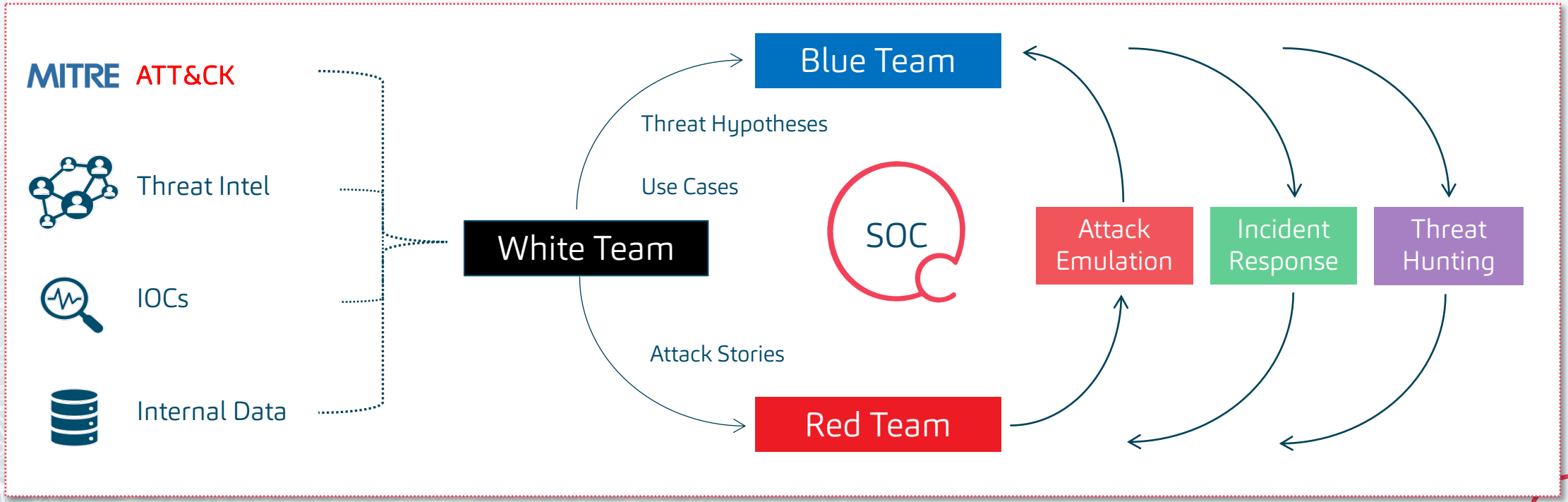
- A SOC is a living, breathing organism: ATT&CK Threat Modelling is the key for continuous improvement!



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Thank You!

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