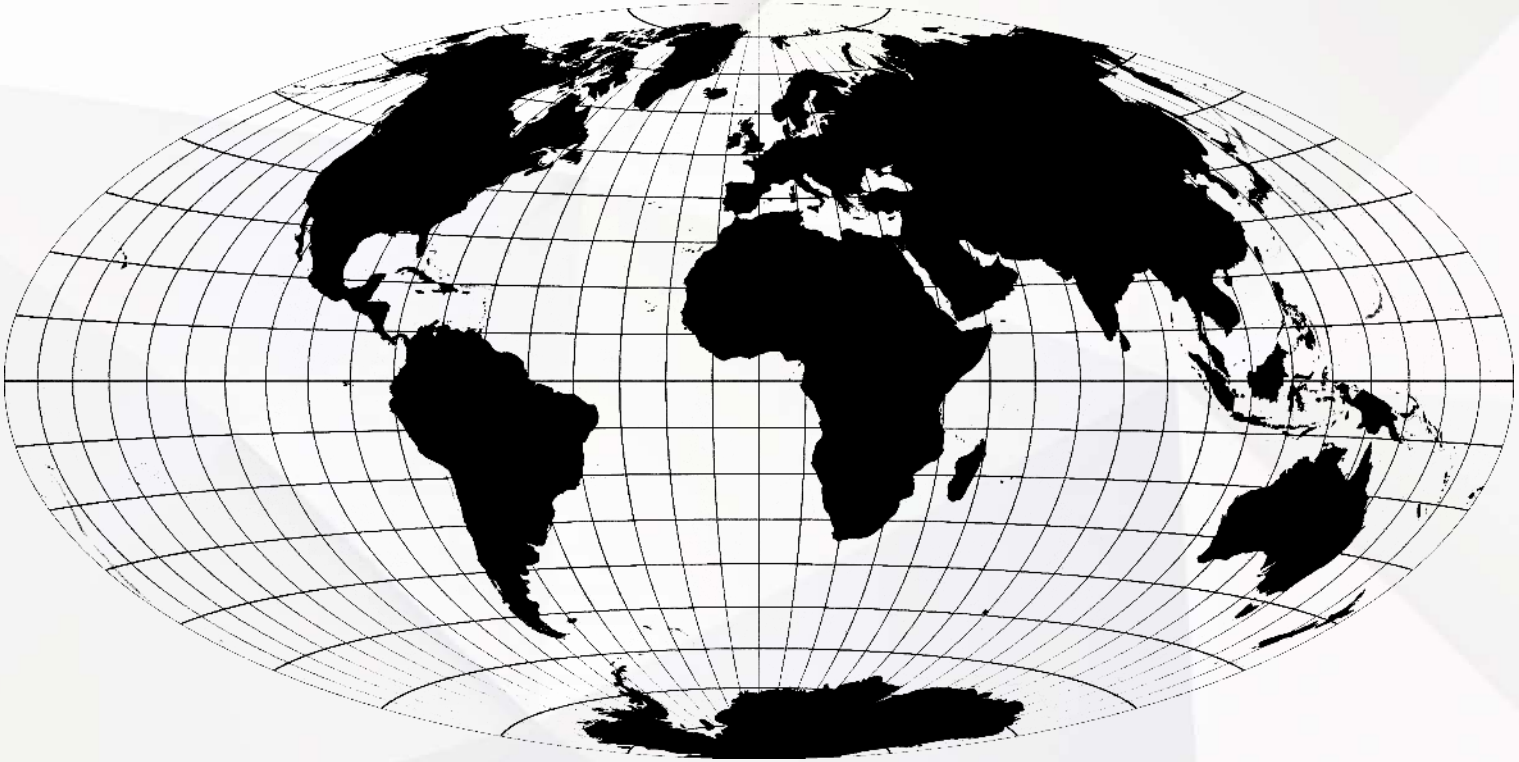
POST-MORTEM OF A DATA BREACH

Janne Kauhanen

@jkauhanen

F-Secure Cyber Security Services



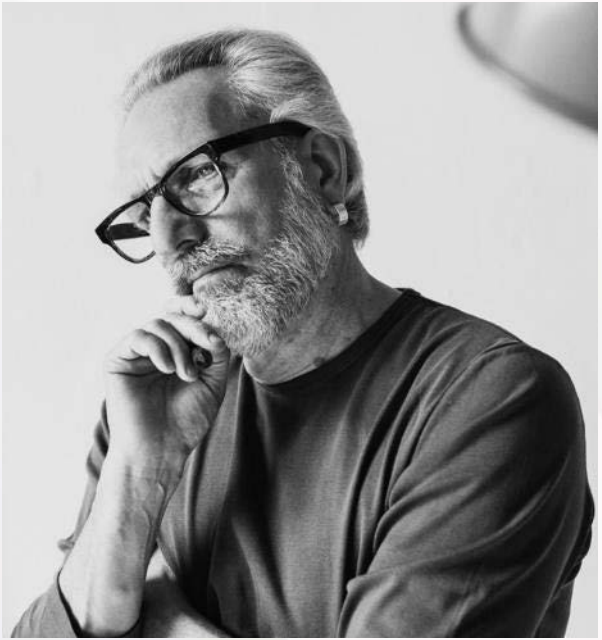
100+ ASSIGNMENTS / 3 YEARS

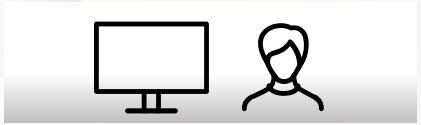
SERVICE PROVIDER ”CORP X”

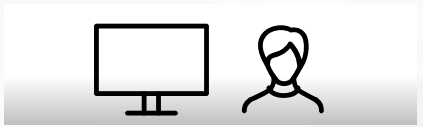
- Listed on several international stock exchanges
- Provides application services, e.g. to financial sector
- Never thought they could be targeted – ”we’re just a regular company”

SITUATION ONE MORNING IN SEPT 2015

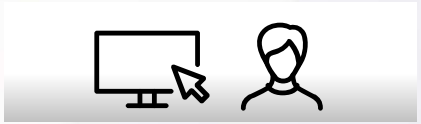
- ”7GB of data was sent from one financial department employees PC to IP-address xxx.xxx.xxx.xxx.”
- F-Secure Labs confirmed the address as a known data exfiltration server, used in a recently activated campaign







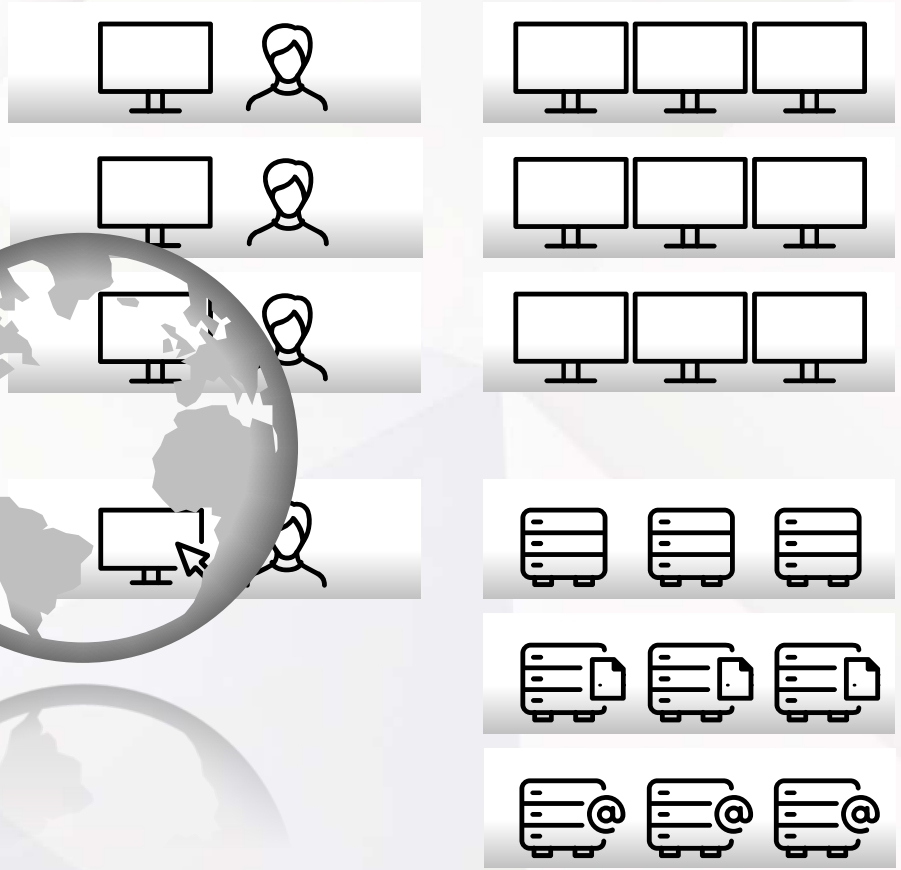
Watering hole



Command & Control

Data Exfiltration

RECON



Watering hole

Command & Control

Data Exfiltration

RECON

Watering hole

Command & Control

Data Exfiltration

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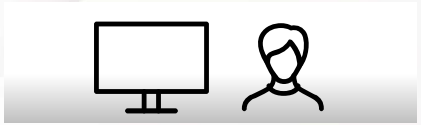

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Command & Control

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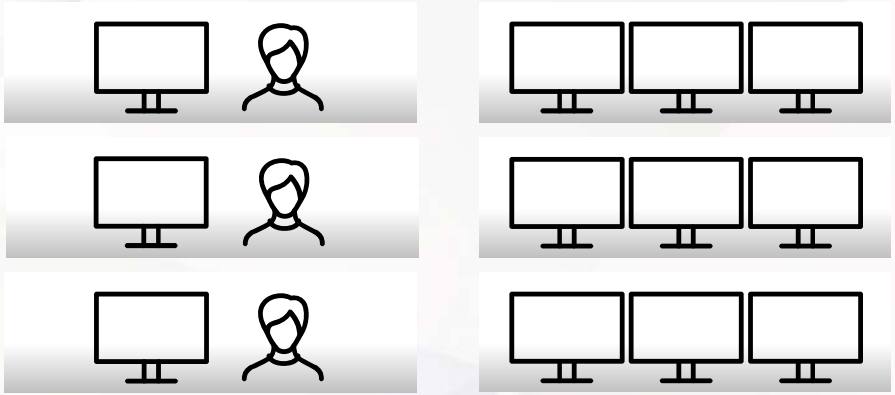

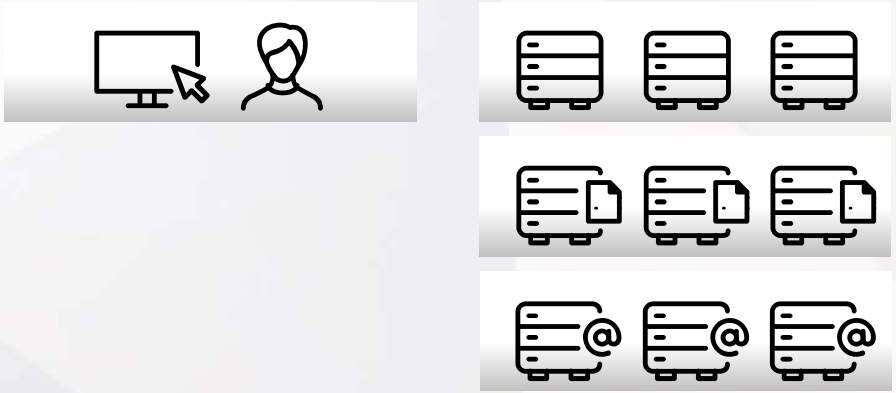

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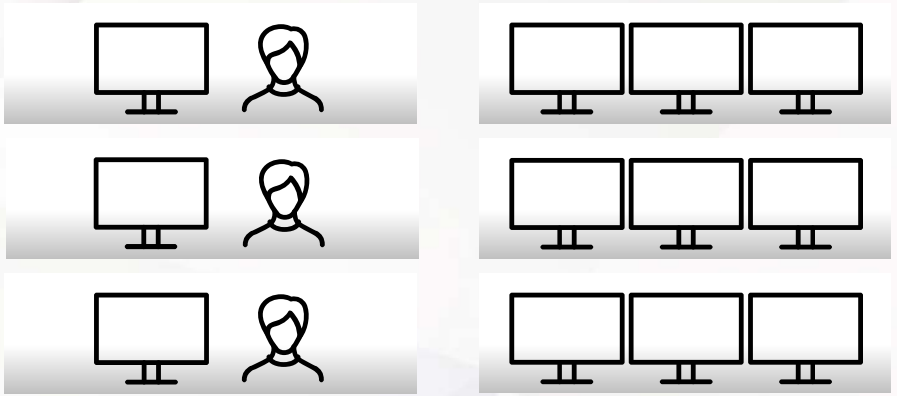
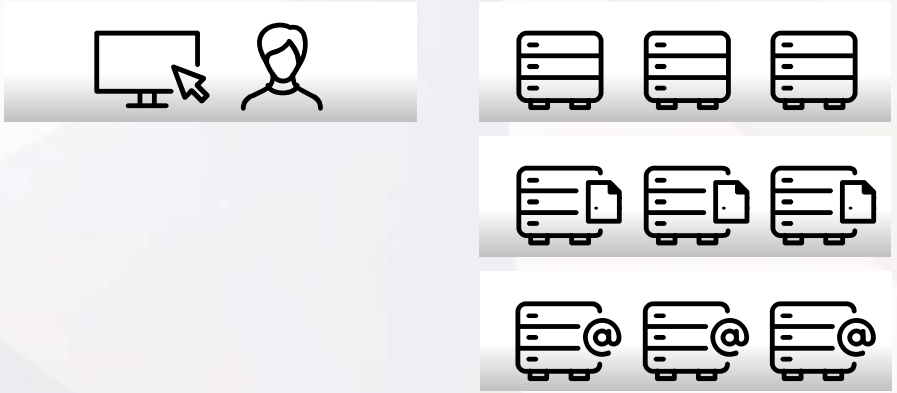
Command & Control

Data Exfiltration





Watering hole

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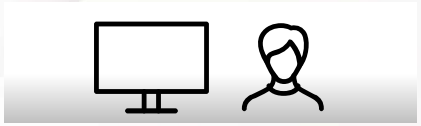

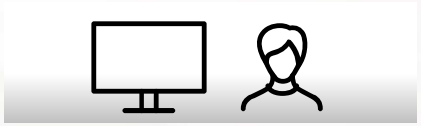

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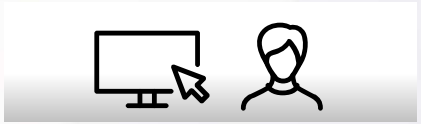

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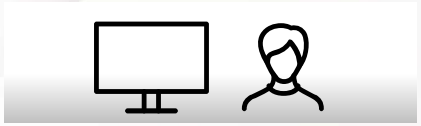

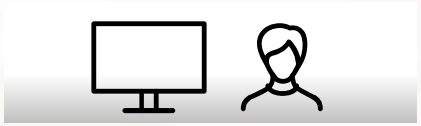

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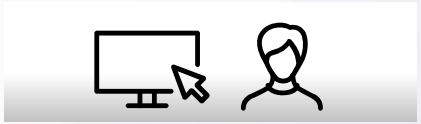
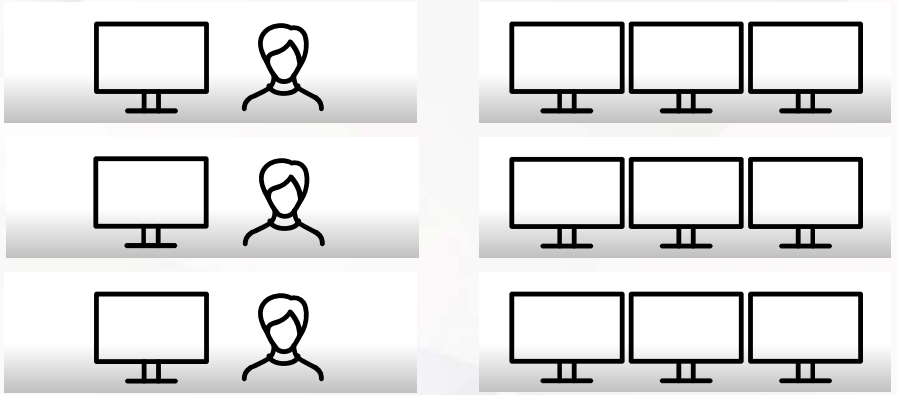


Command & Control

Data Exfiltration

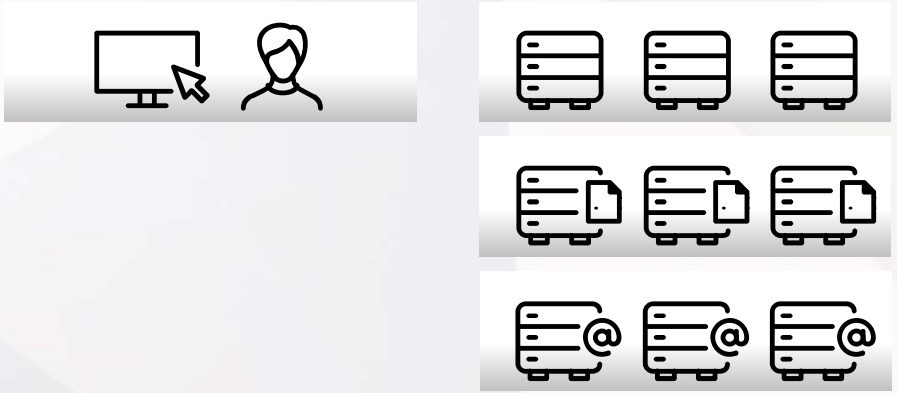
EXPLOITATION



Watering hole

Command & Control

Data Exfiltration



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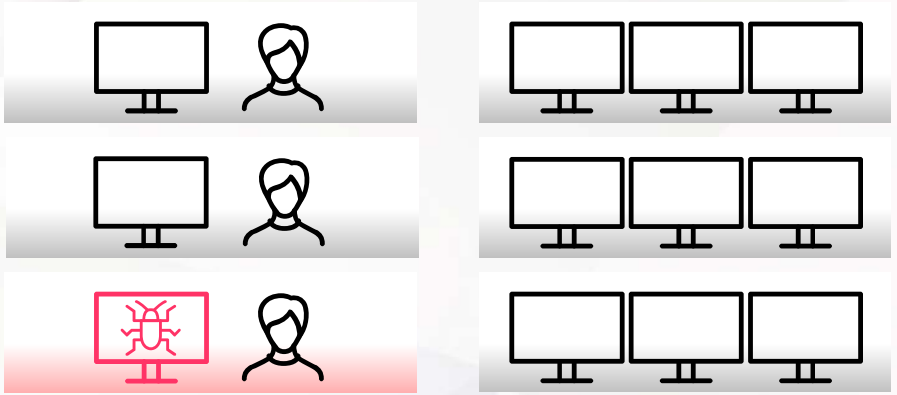
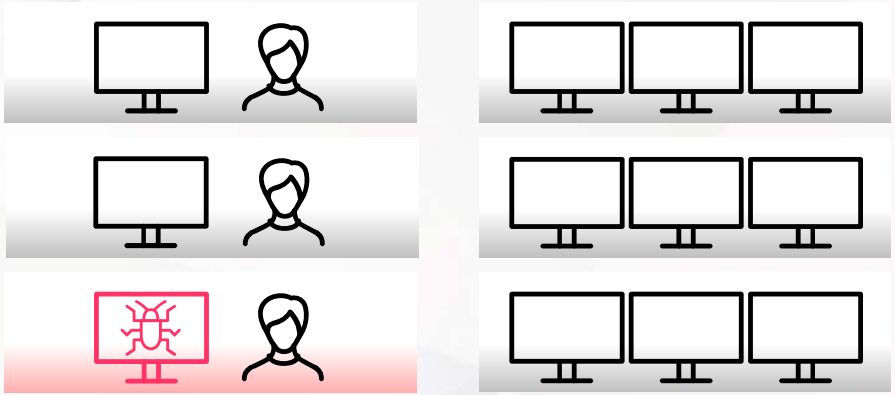


Watering hole

Command & Control

Data Exfiltration

ATTACK KIT DELIVERY



Watering hole

Command & Control

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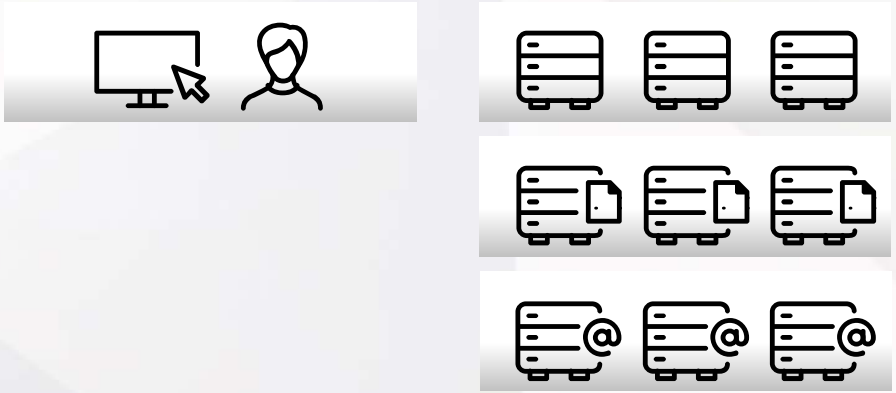

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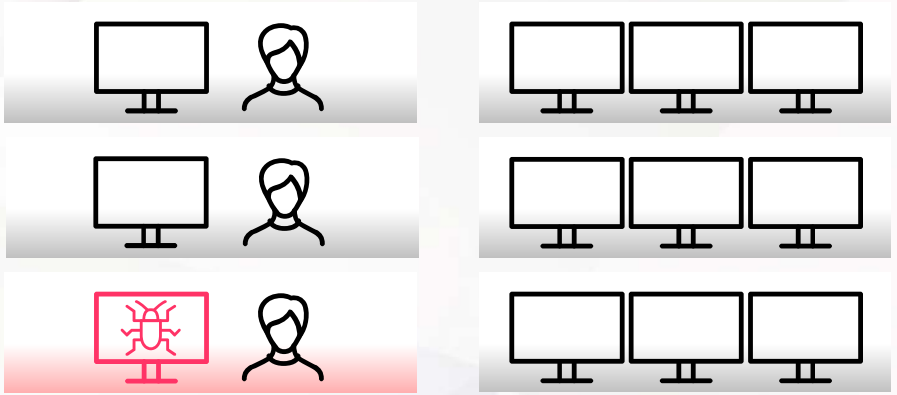

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Command & Control

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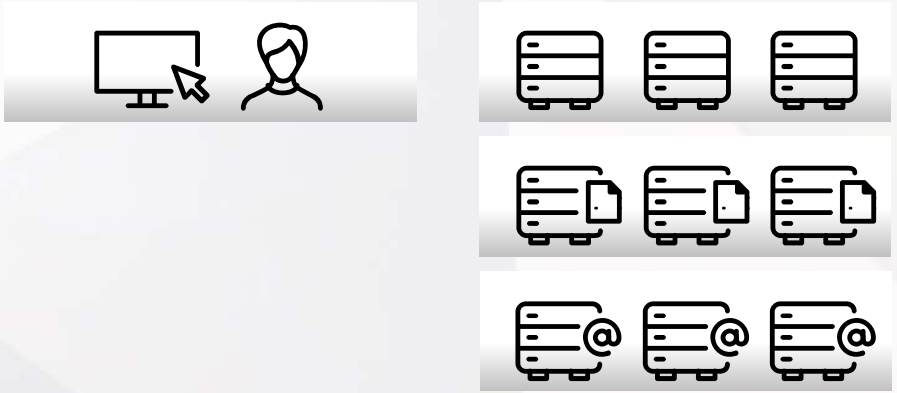

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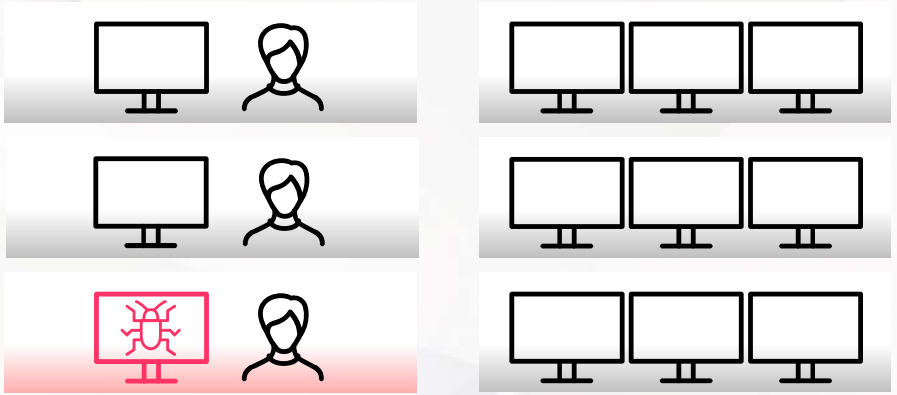

Watering hole

Command & Control

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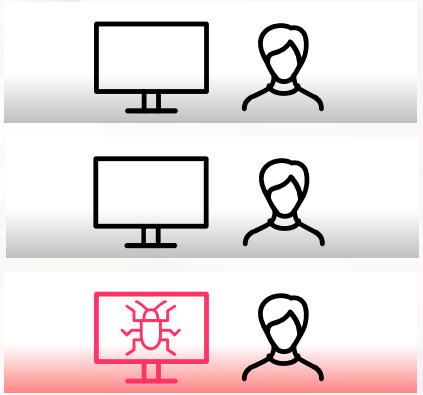

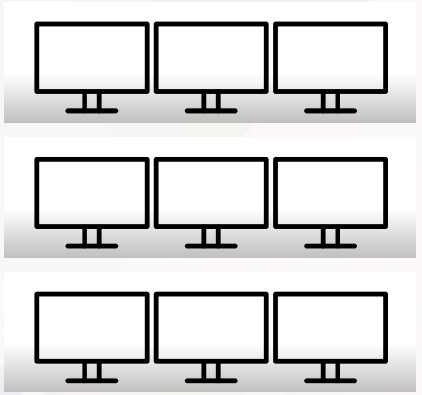

Watering hole

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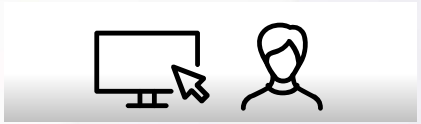
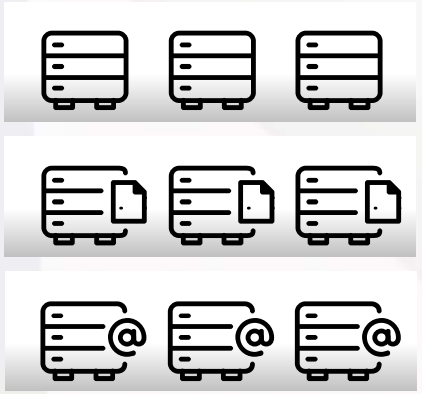
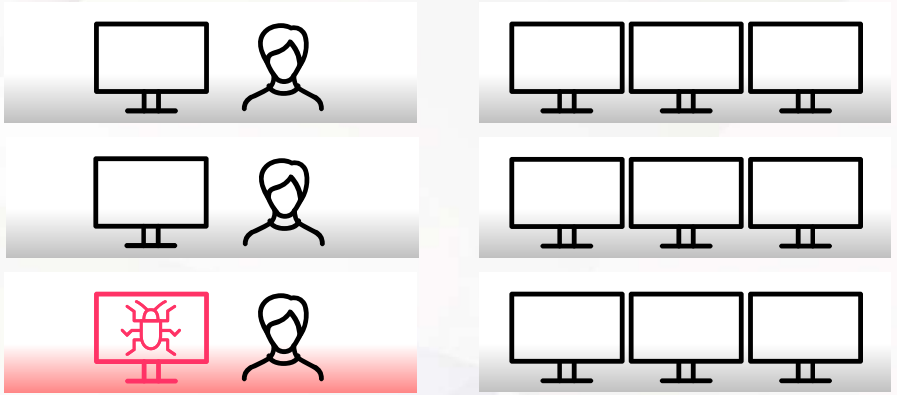




LATERAL MOVEMENT



Watering hole

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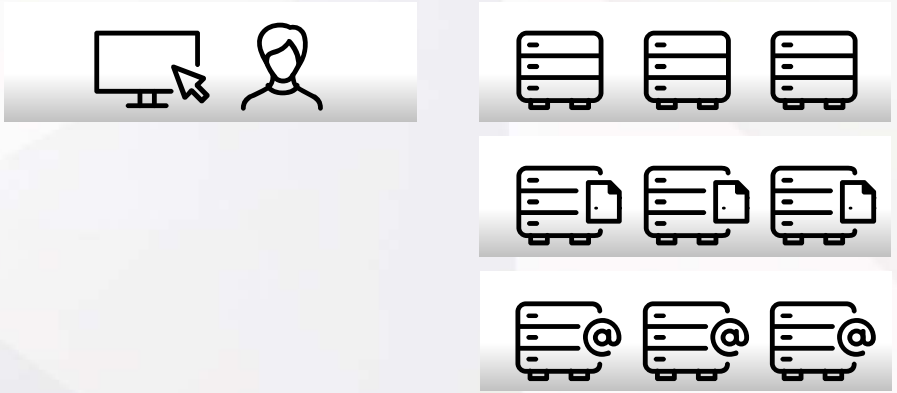

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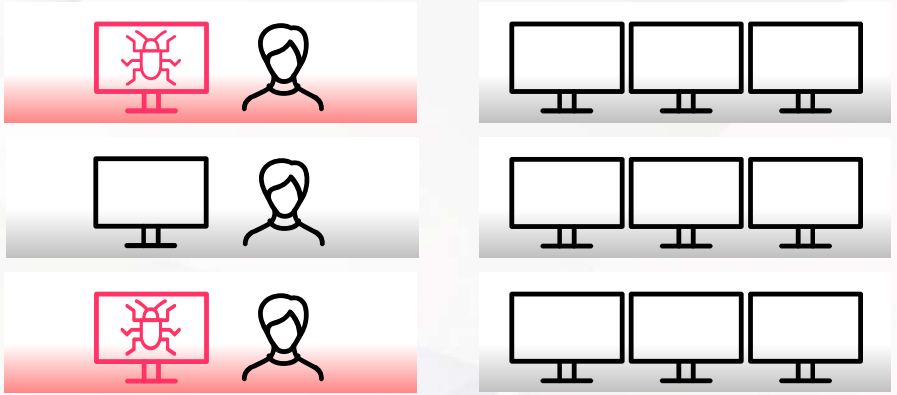

Watering hole

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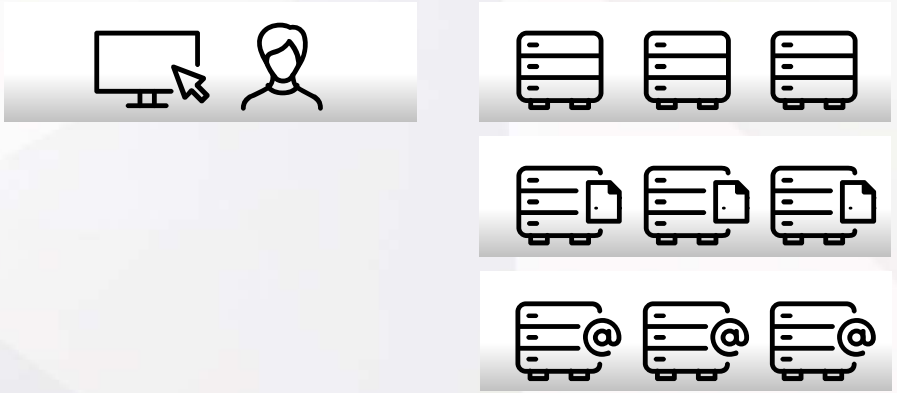

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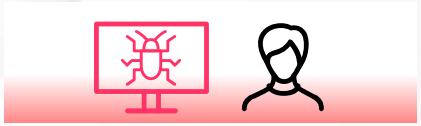

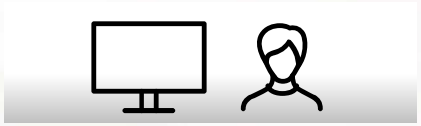

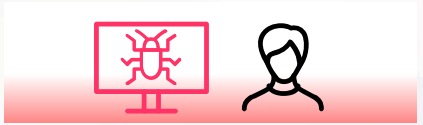

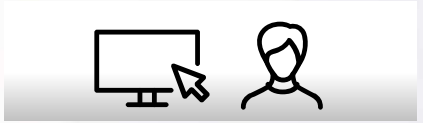

Watering hole

Command & Control

Data Exfiltration

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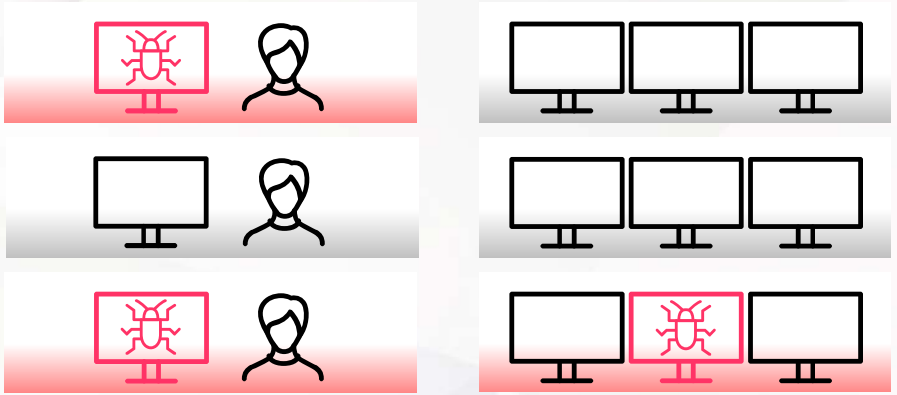

Watering hole

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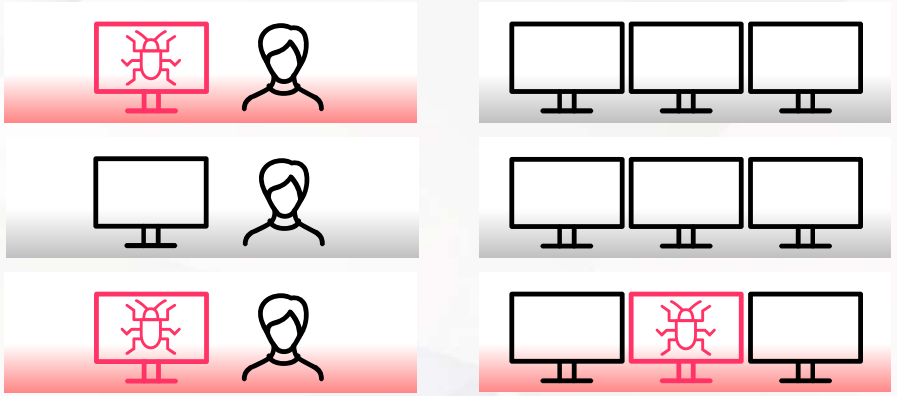
DATA COLLECTION



Watering hole

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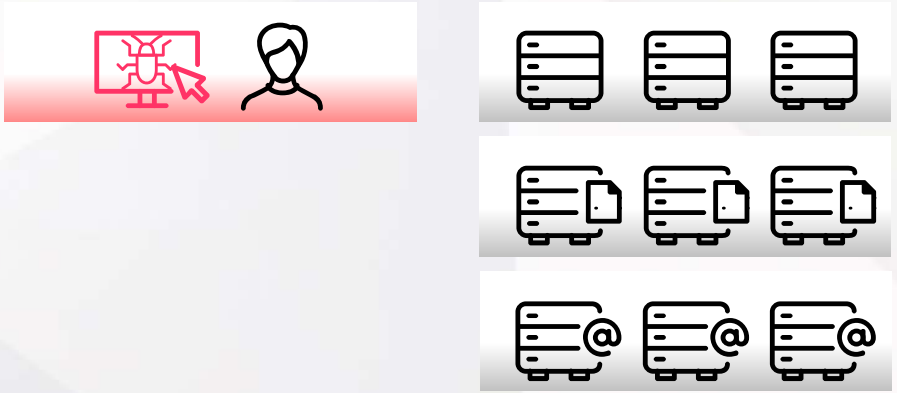

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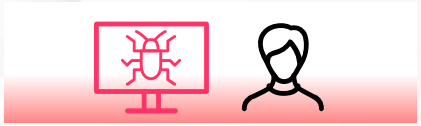

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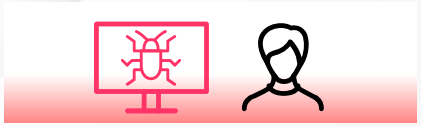

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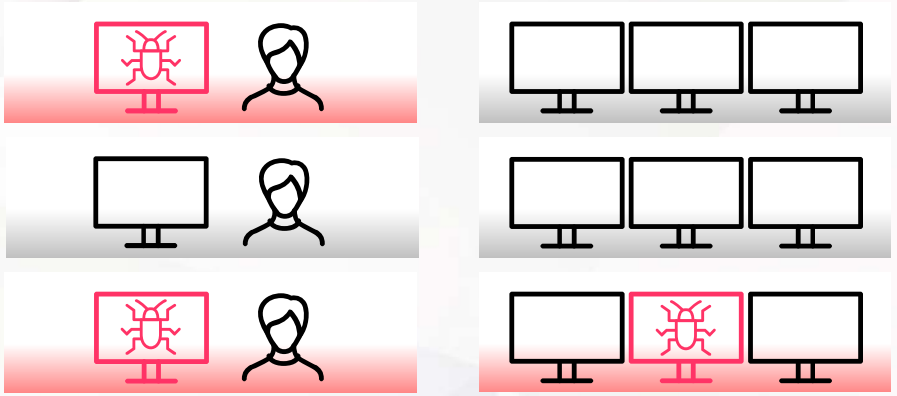

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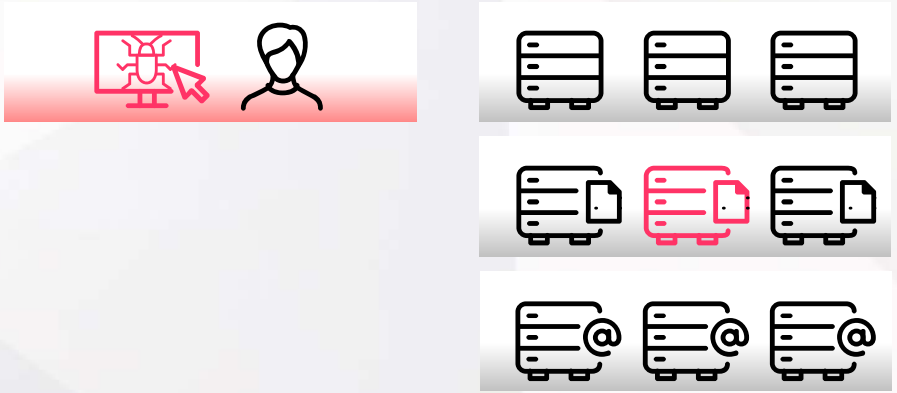

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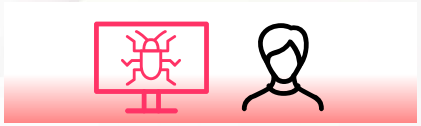

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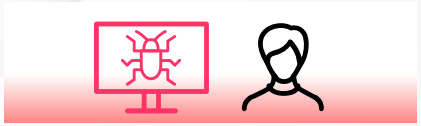

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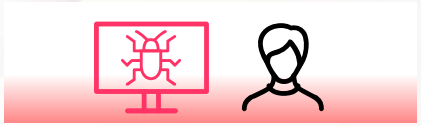

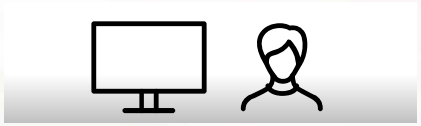

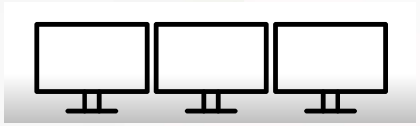

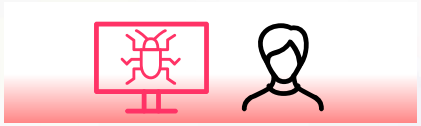

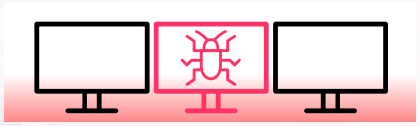

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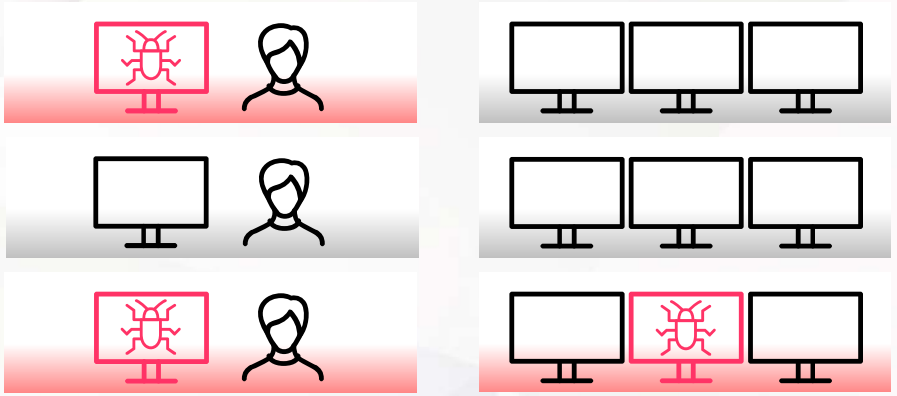

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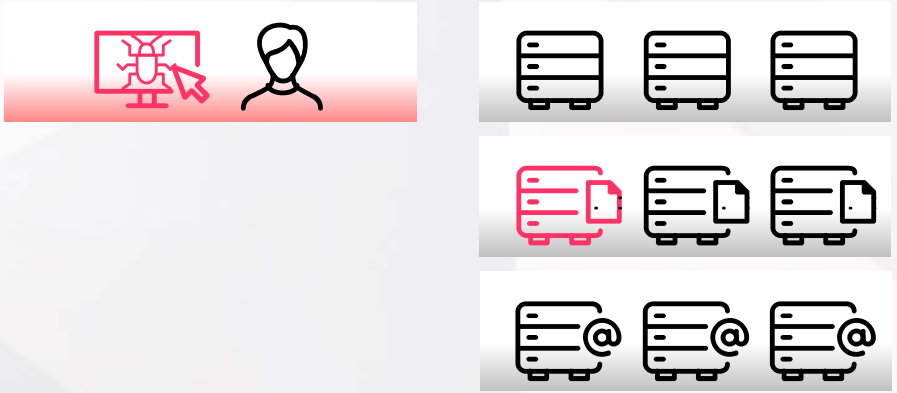
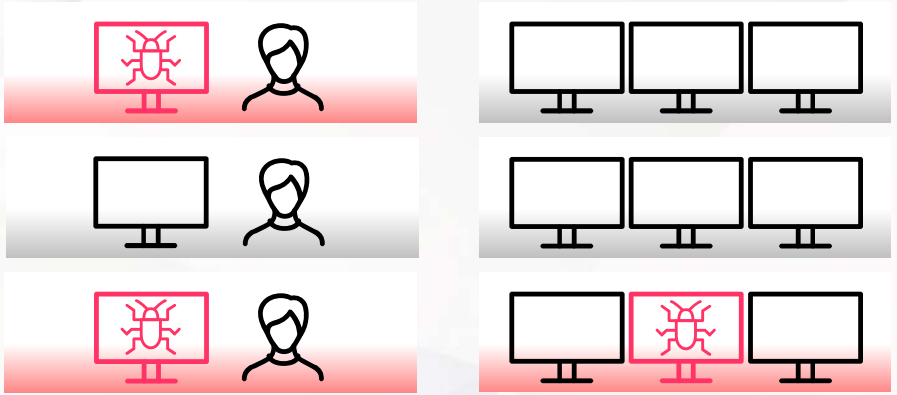


DATA EXFILTRATION



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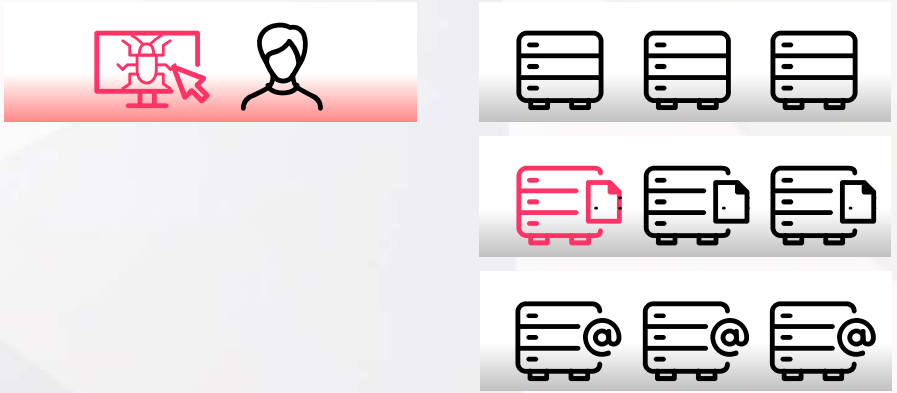
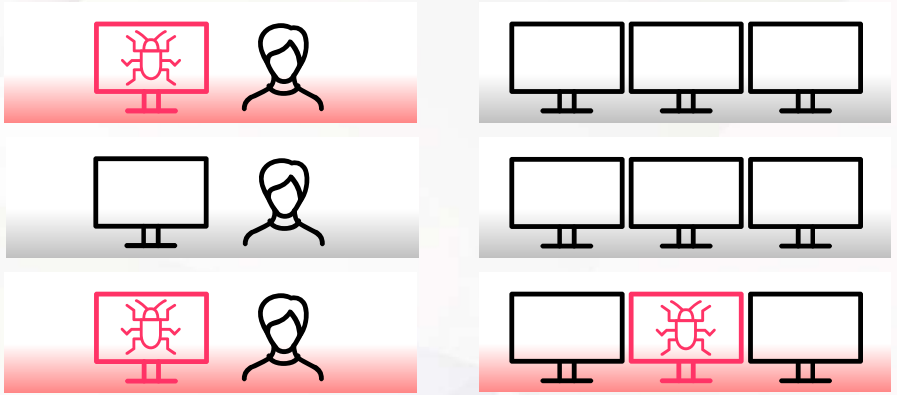
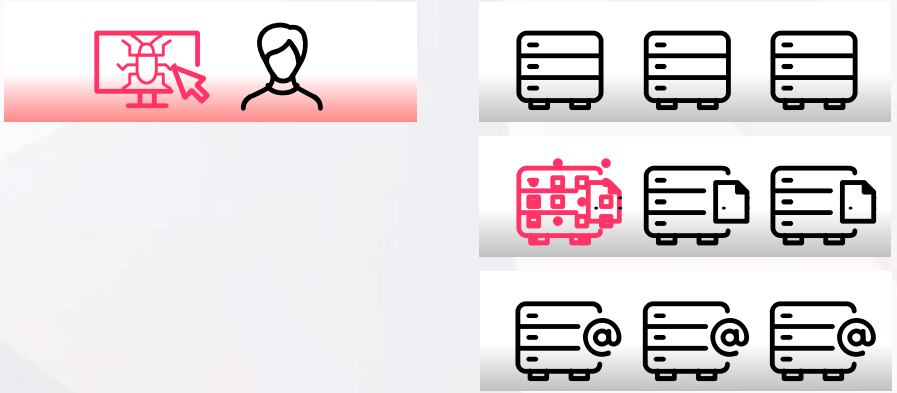


DATA EXFILTRATION



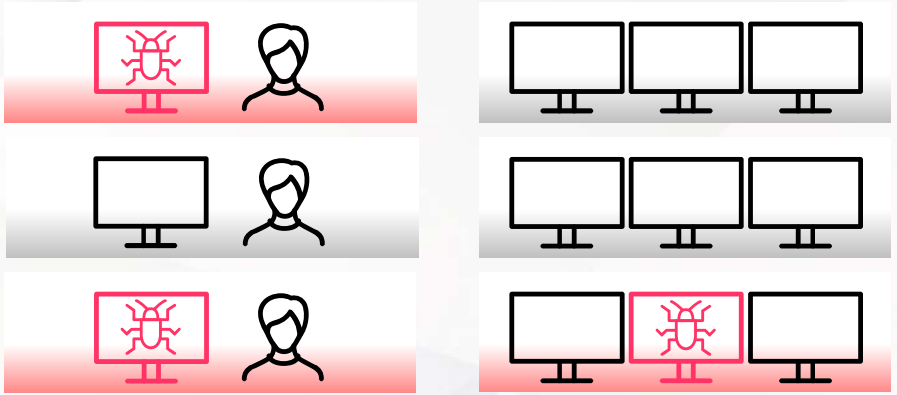


Watering hole

Command & Control

Data Exfiltration

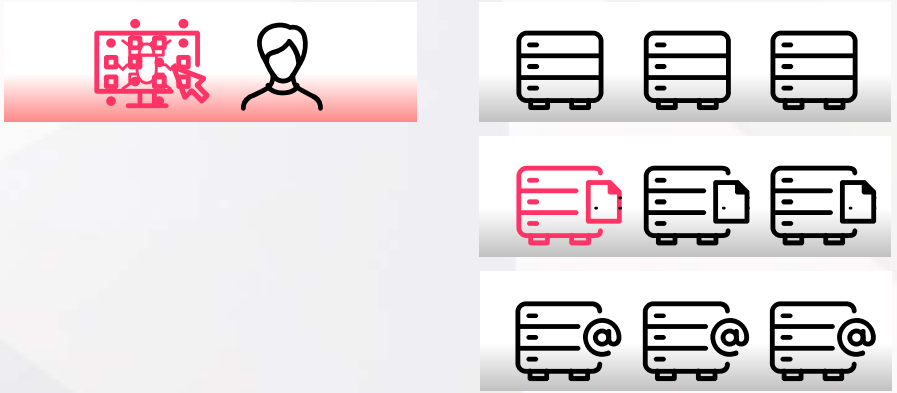
DATA EXFILTRATION



Watering hole

Command & Control

Data Exfiltration



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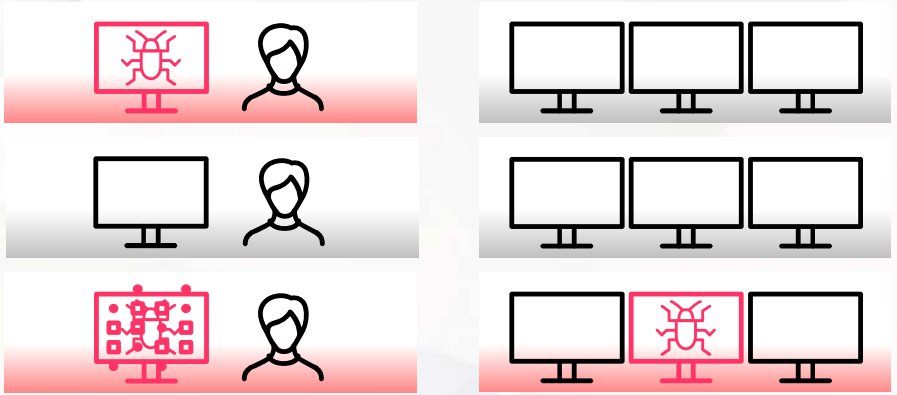
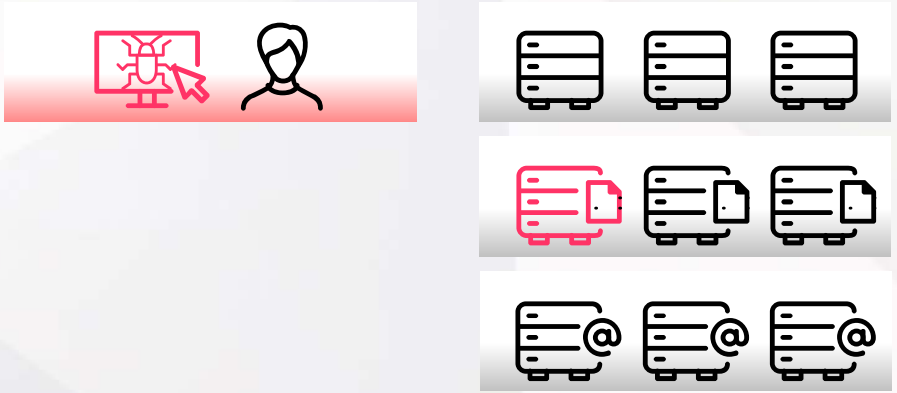


Watering hole

Command & Control

Data Exfiltration



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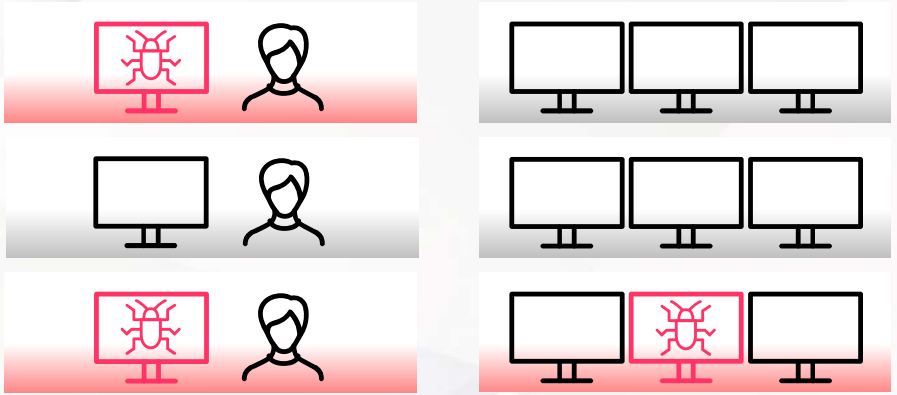
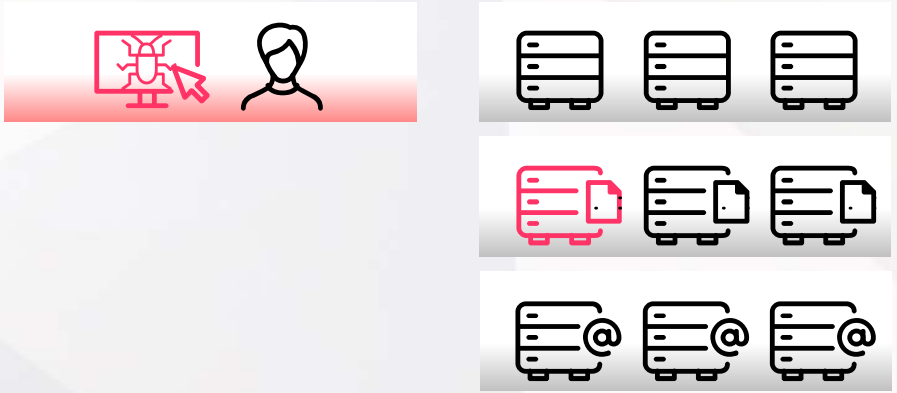




Watering hole

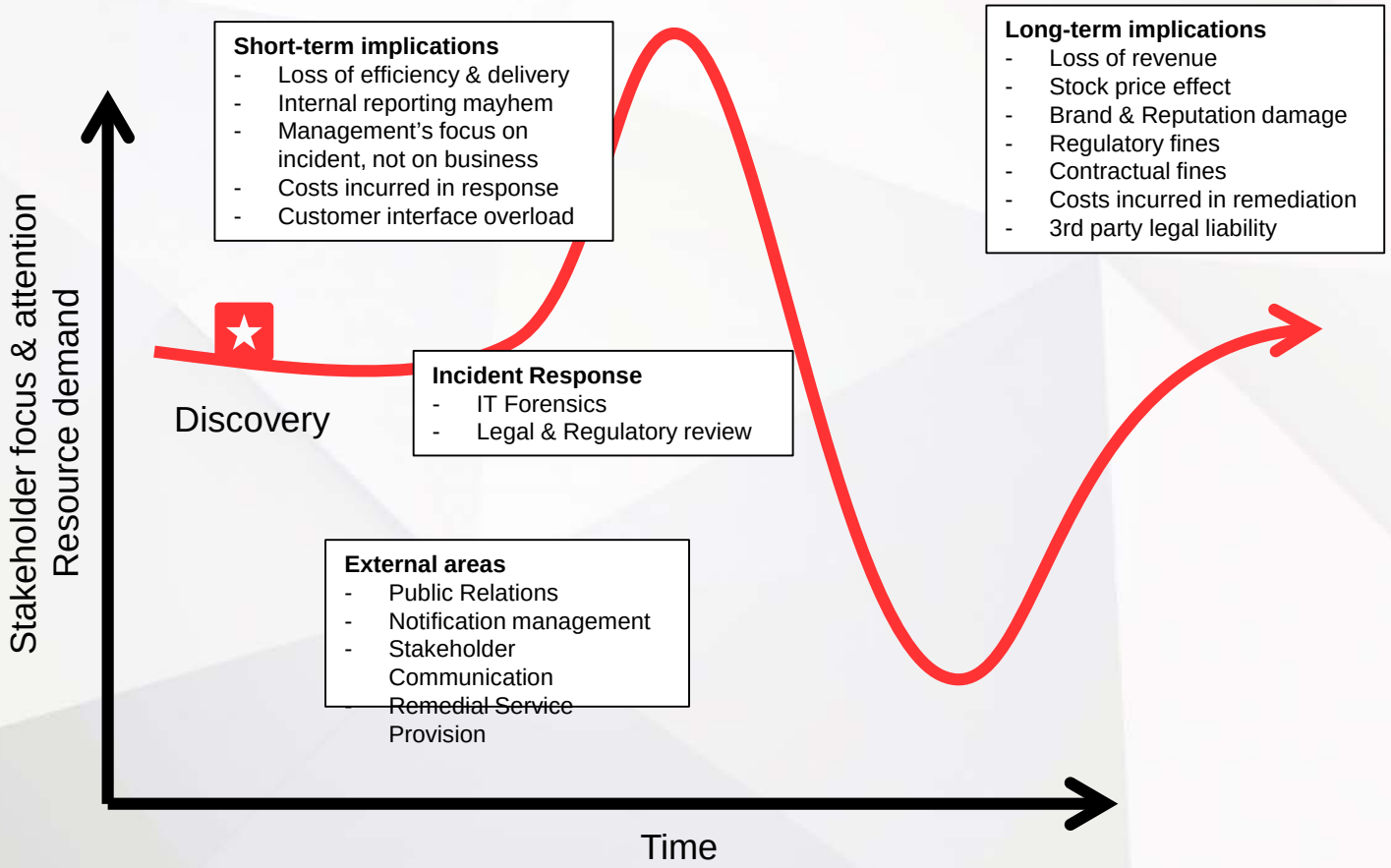
Command & Control

Data Exfiltration

WHAT WAS THE BUSINESS IMPACT ON ”CORP X” ?

F-Secure

SIMPLIFIED CYBER BREACH'S BUSINESS IMPACT TIMELINE



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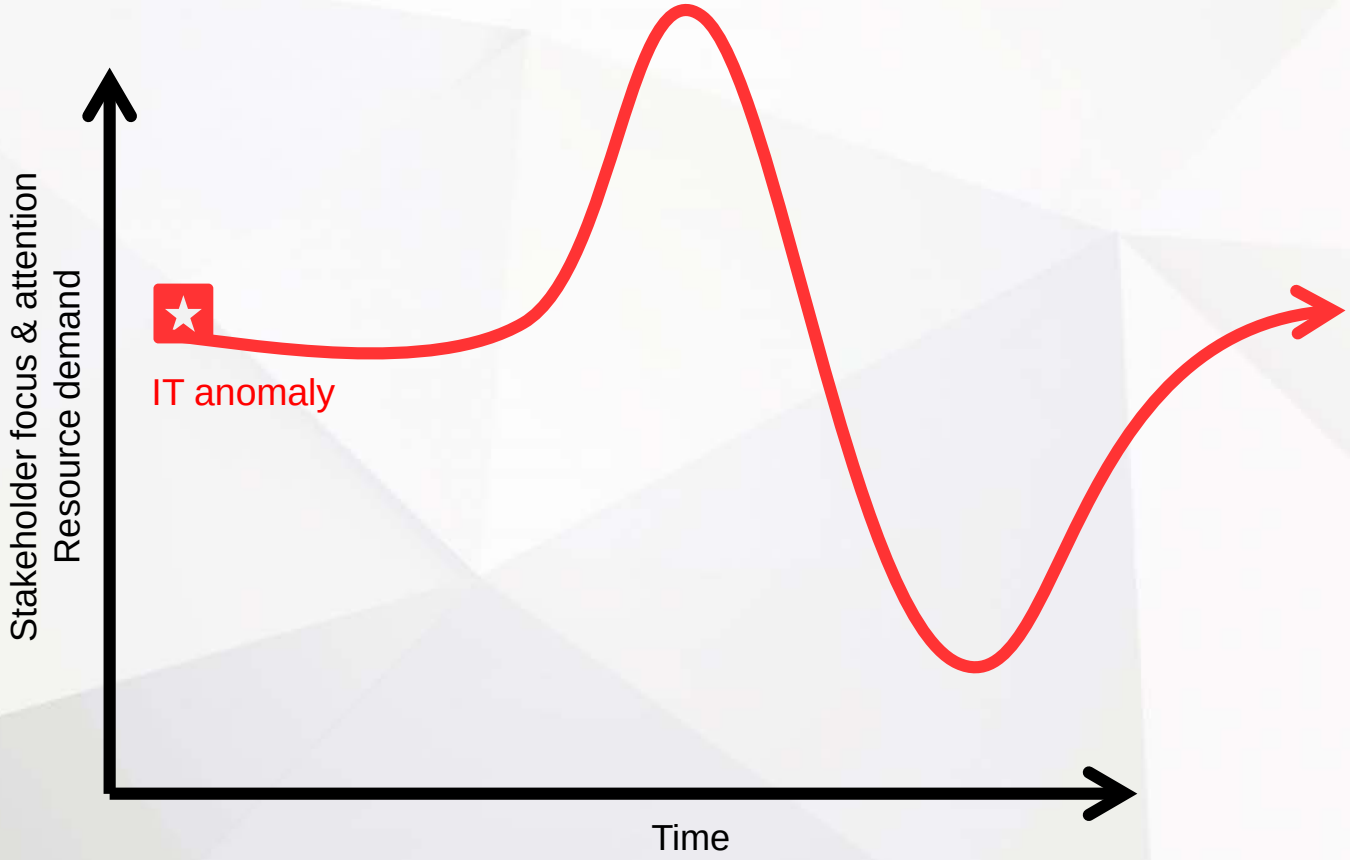

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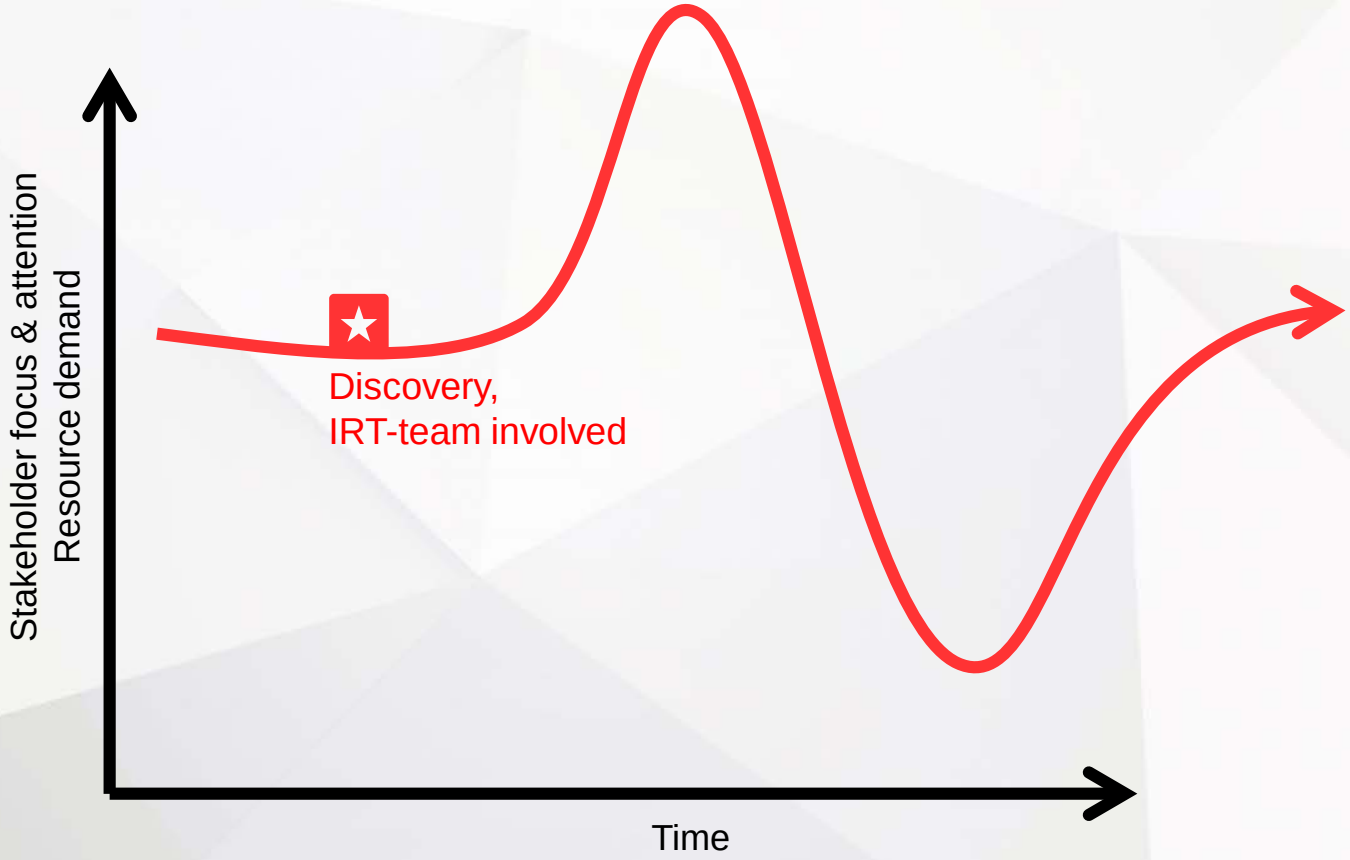

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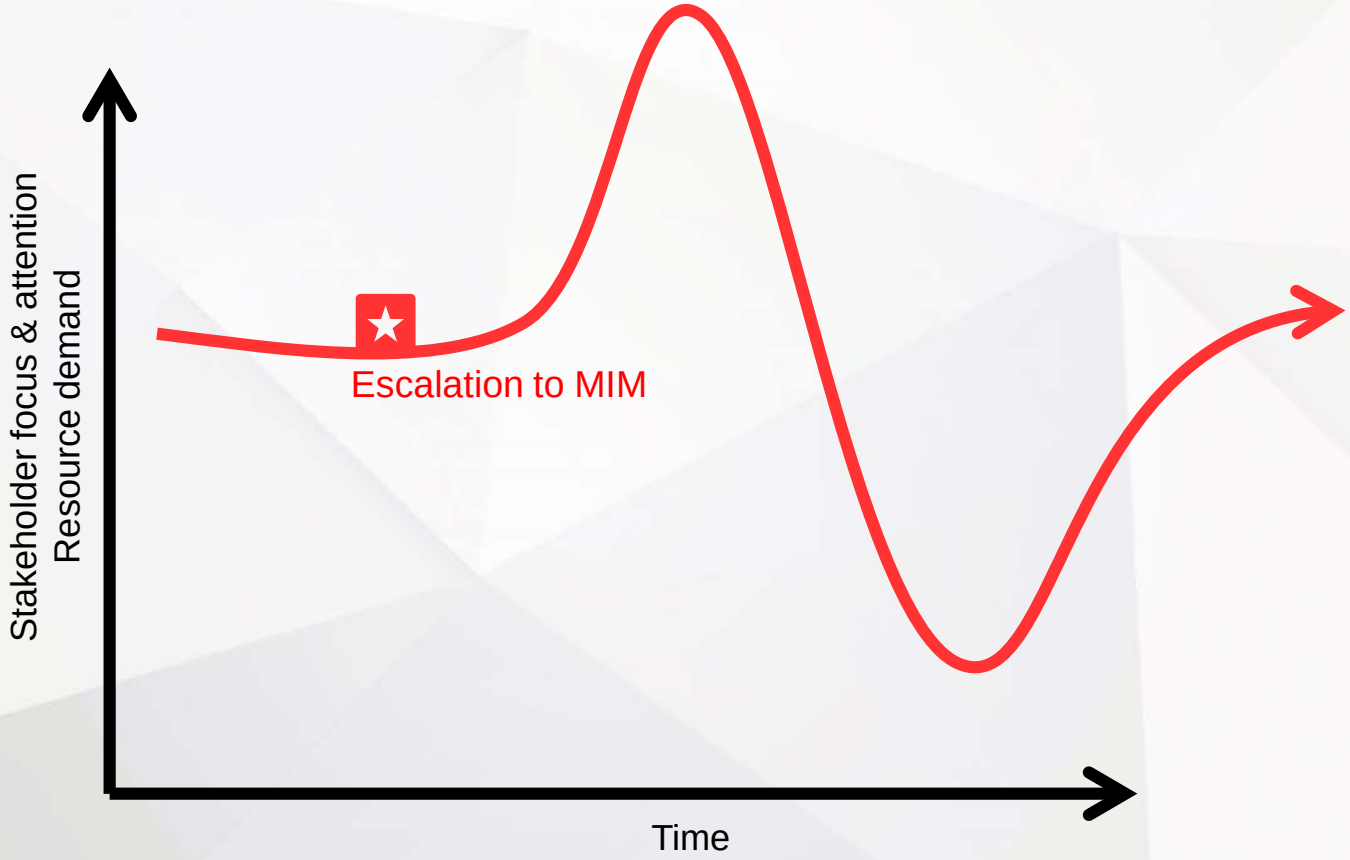

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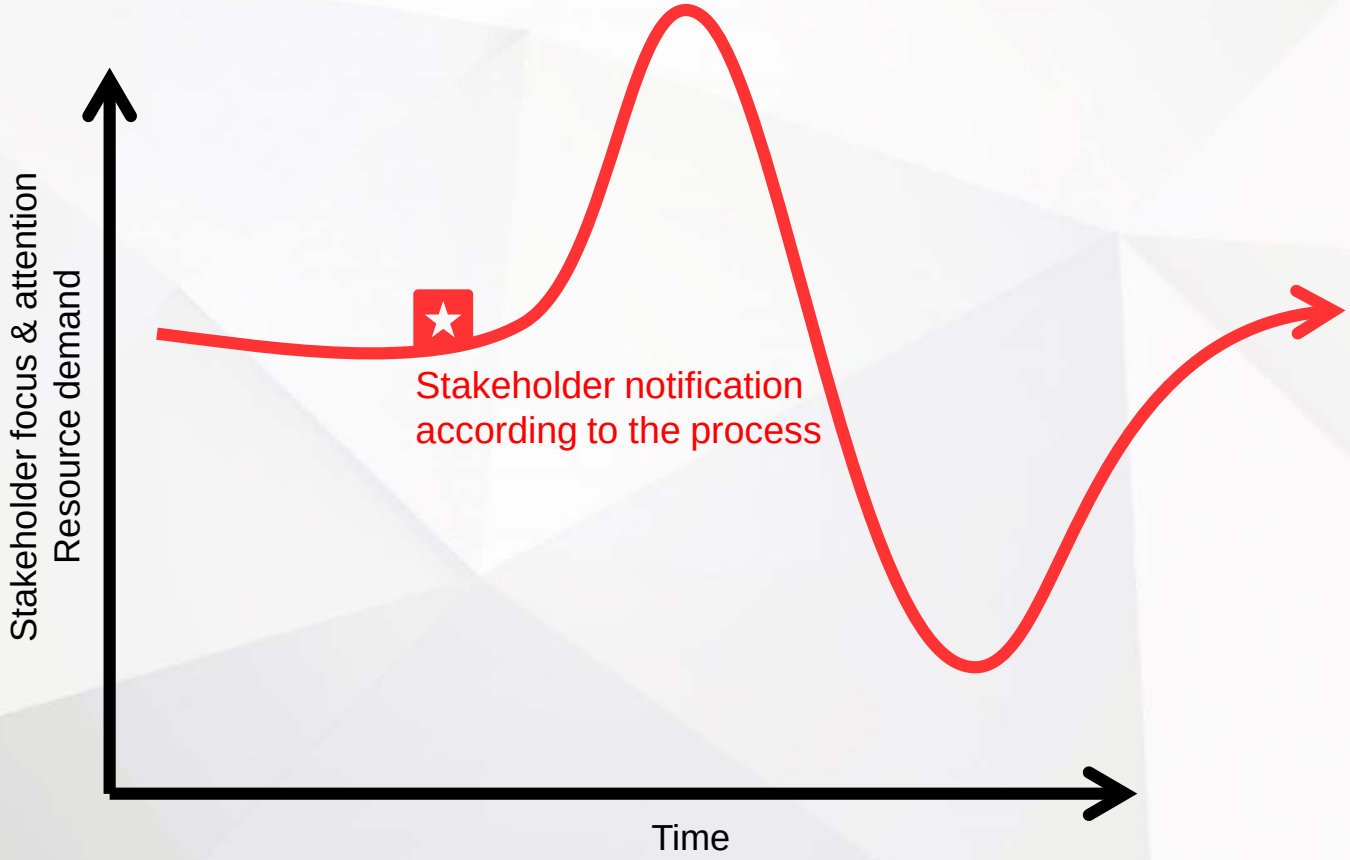

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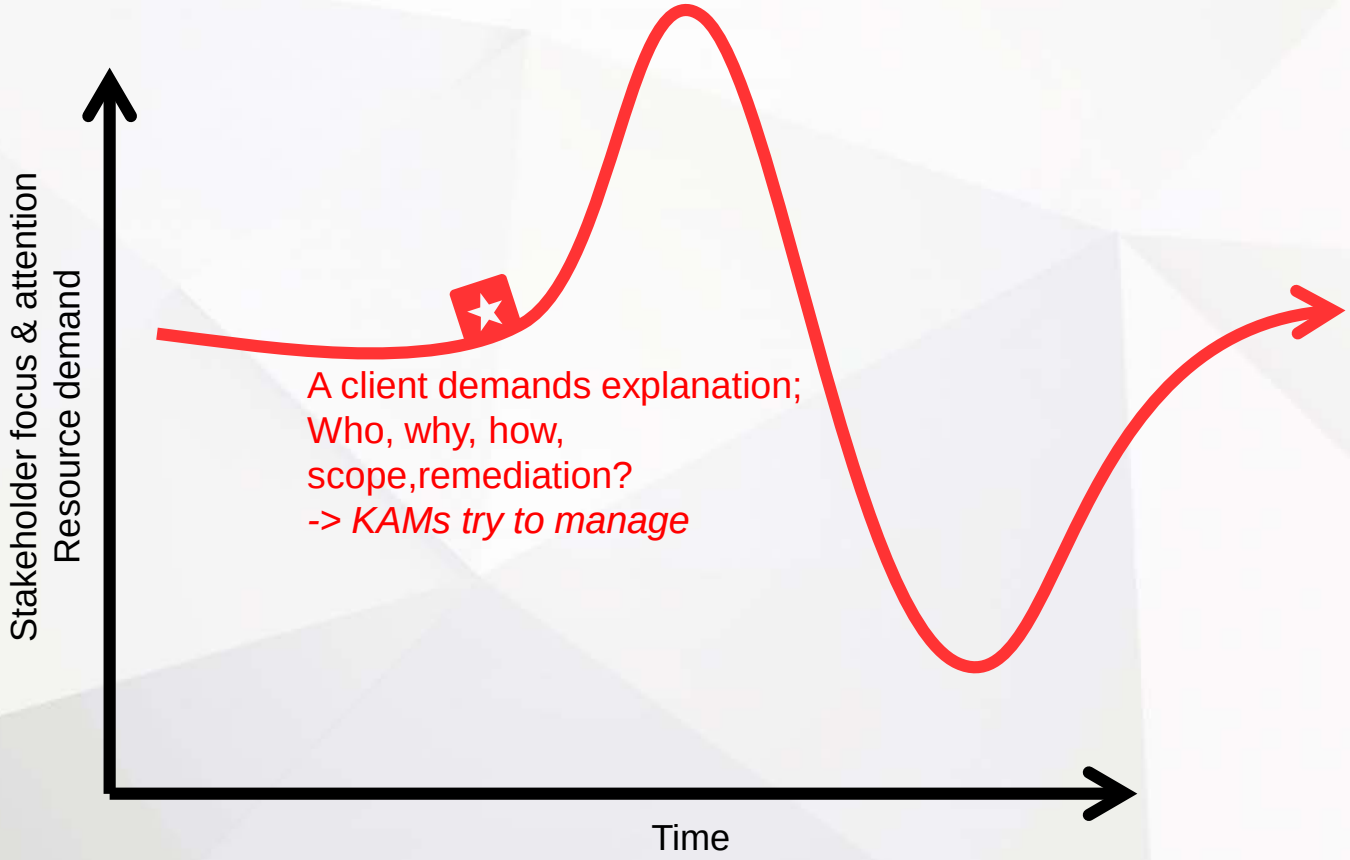

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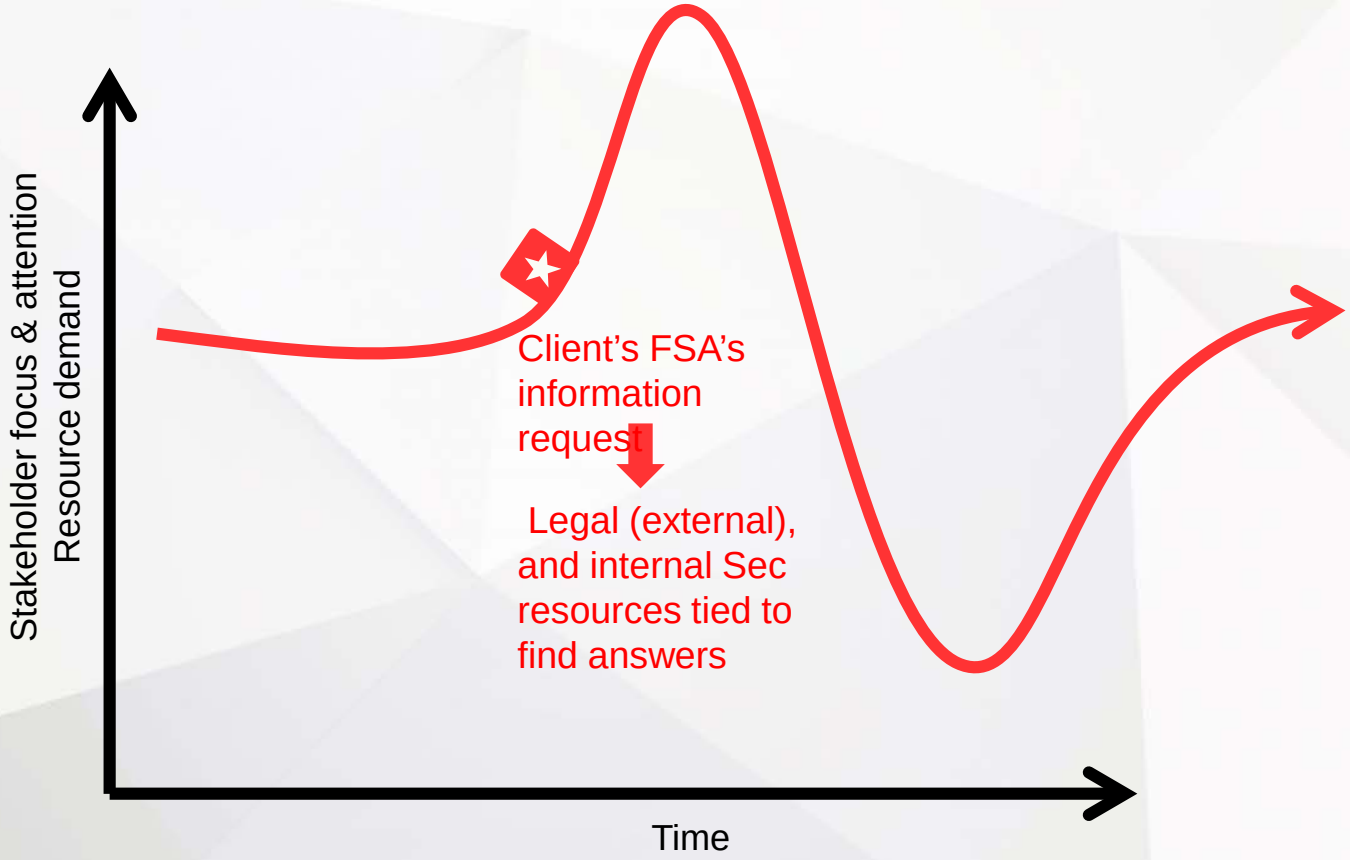

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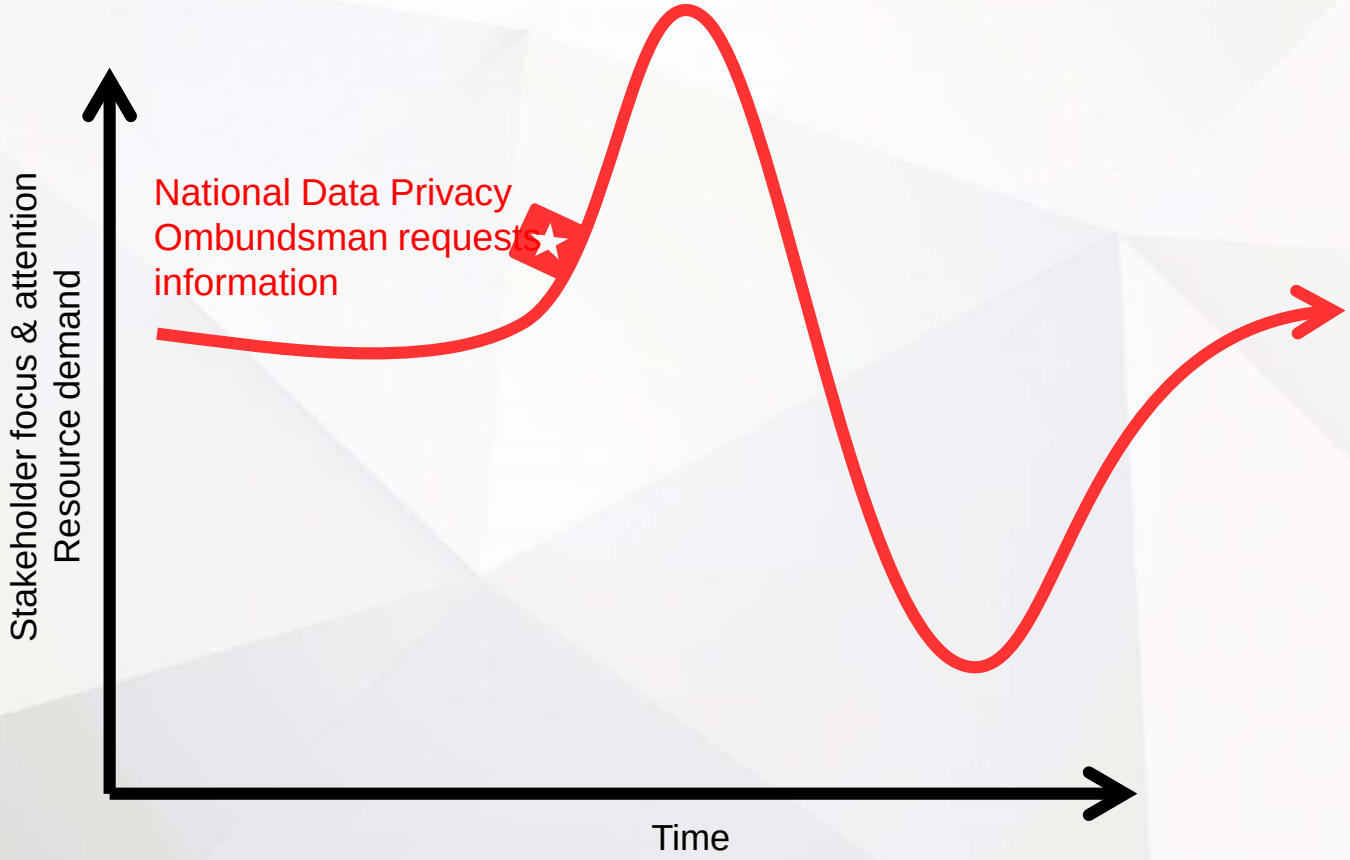

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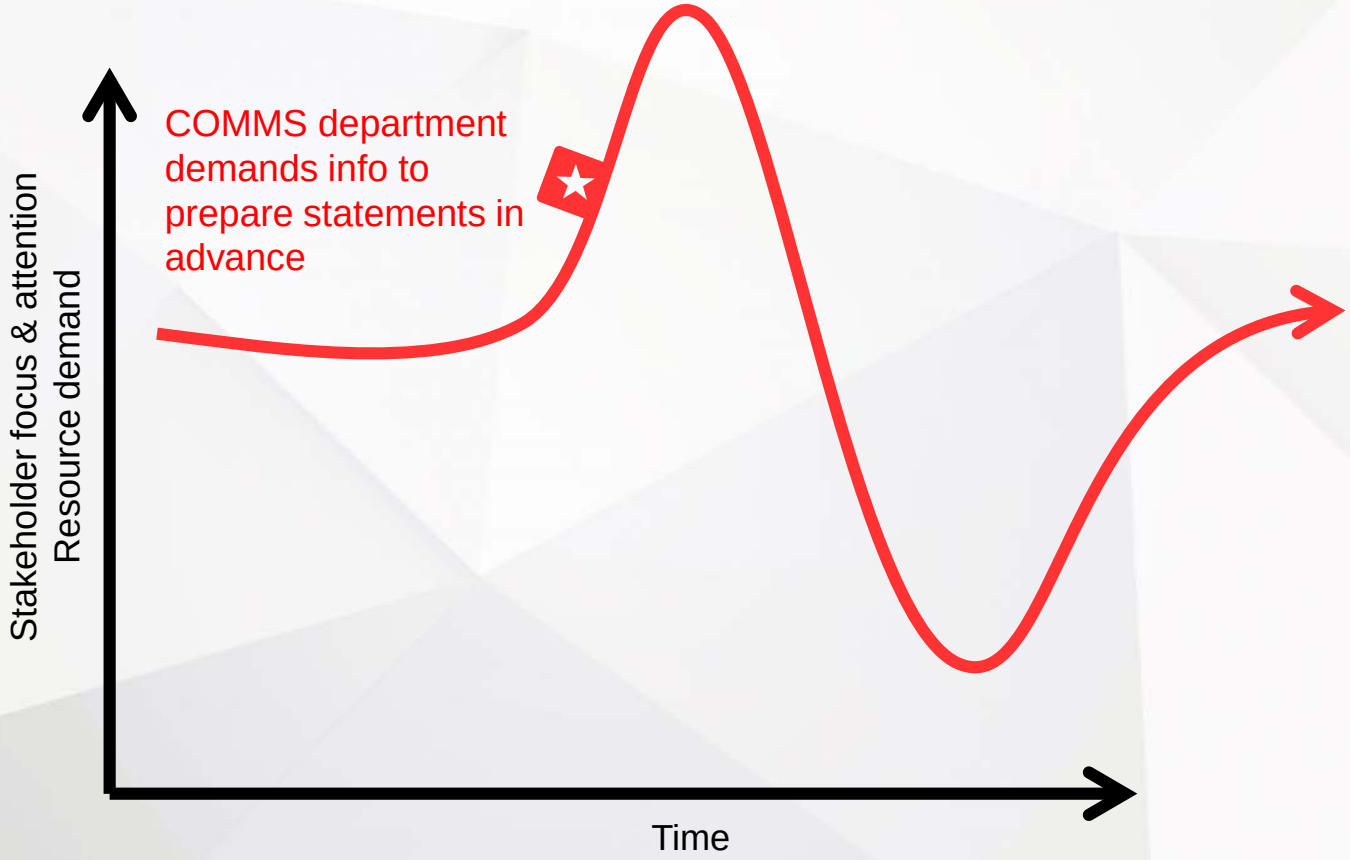

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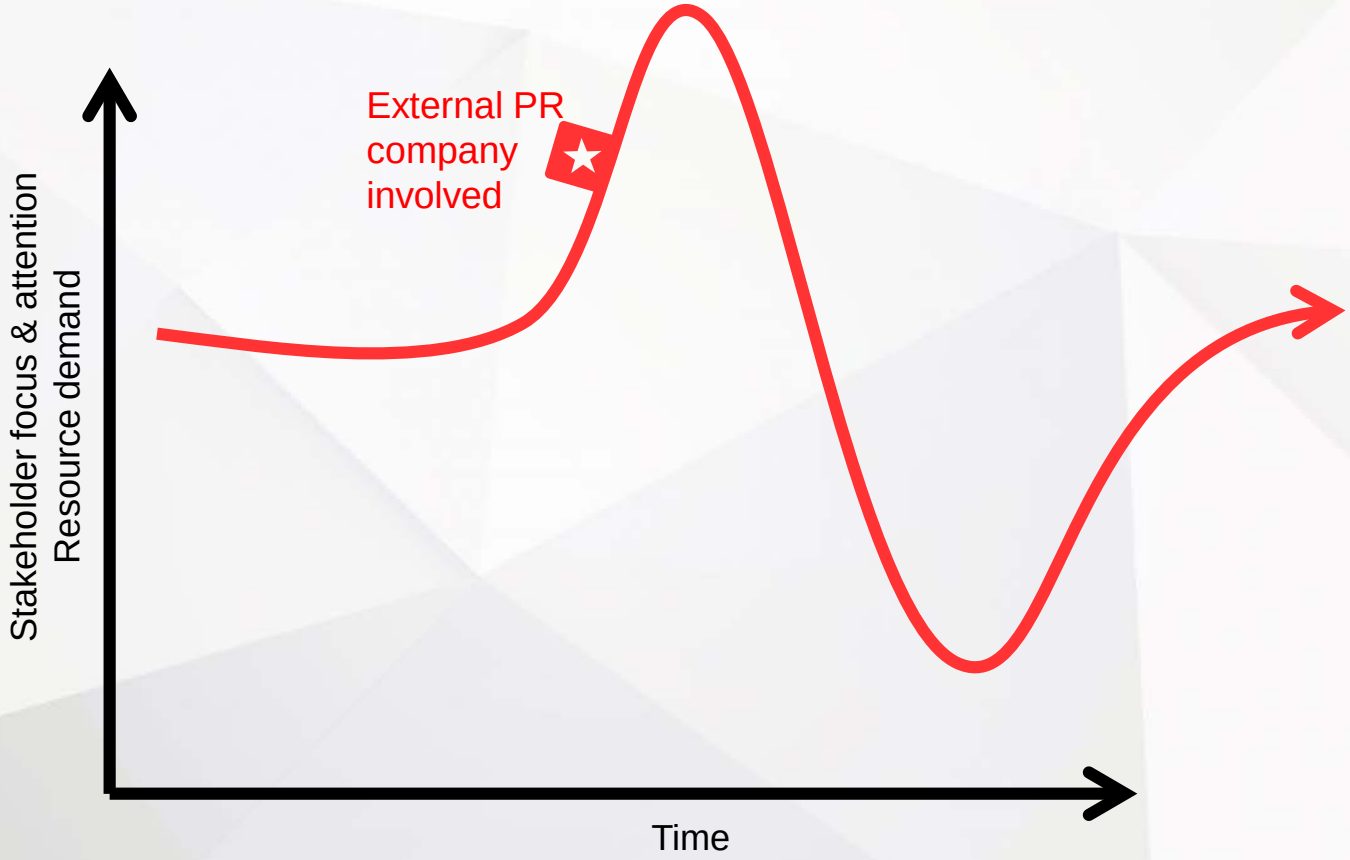

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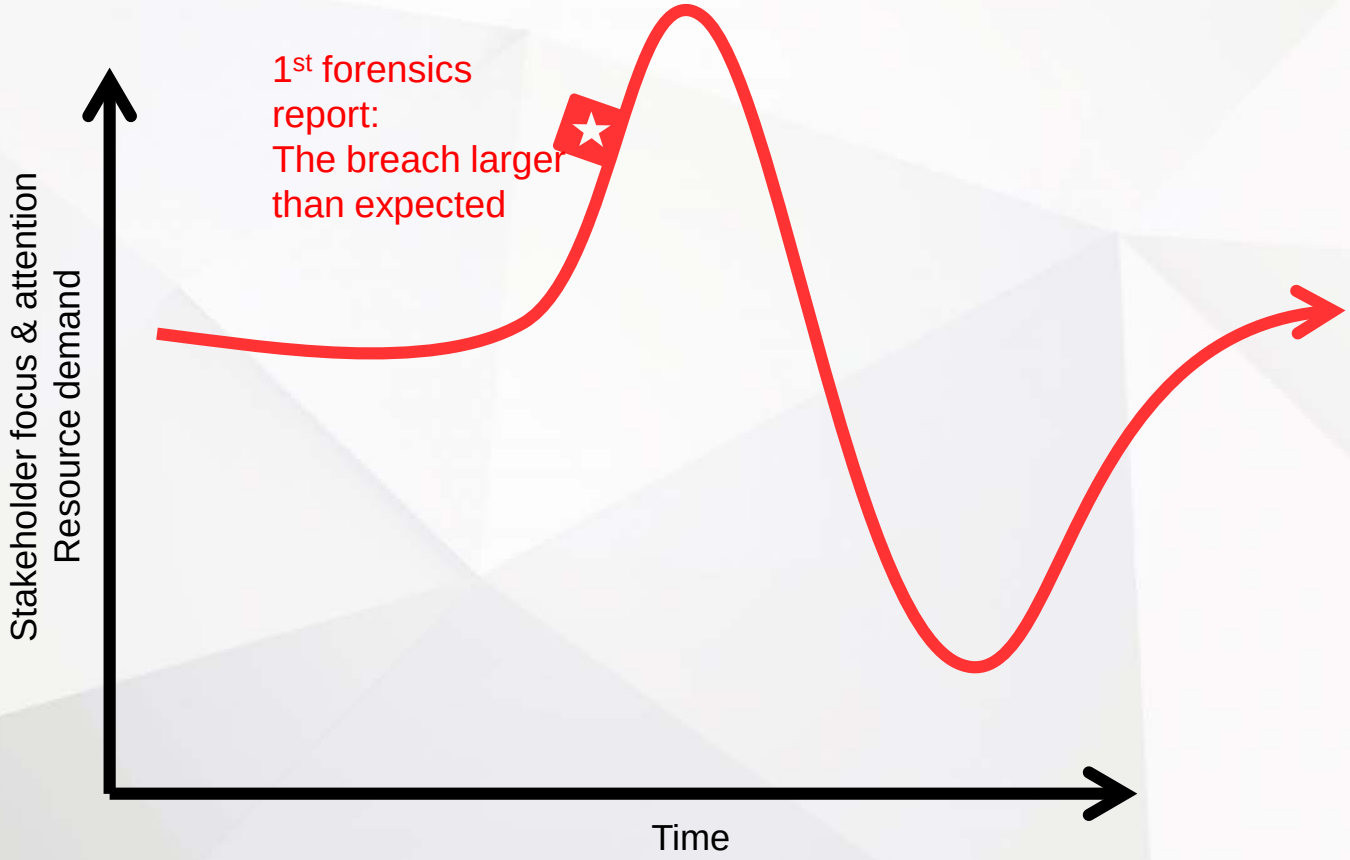

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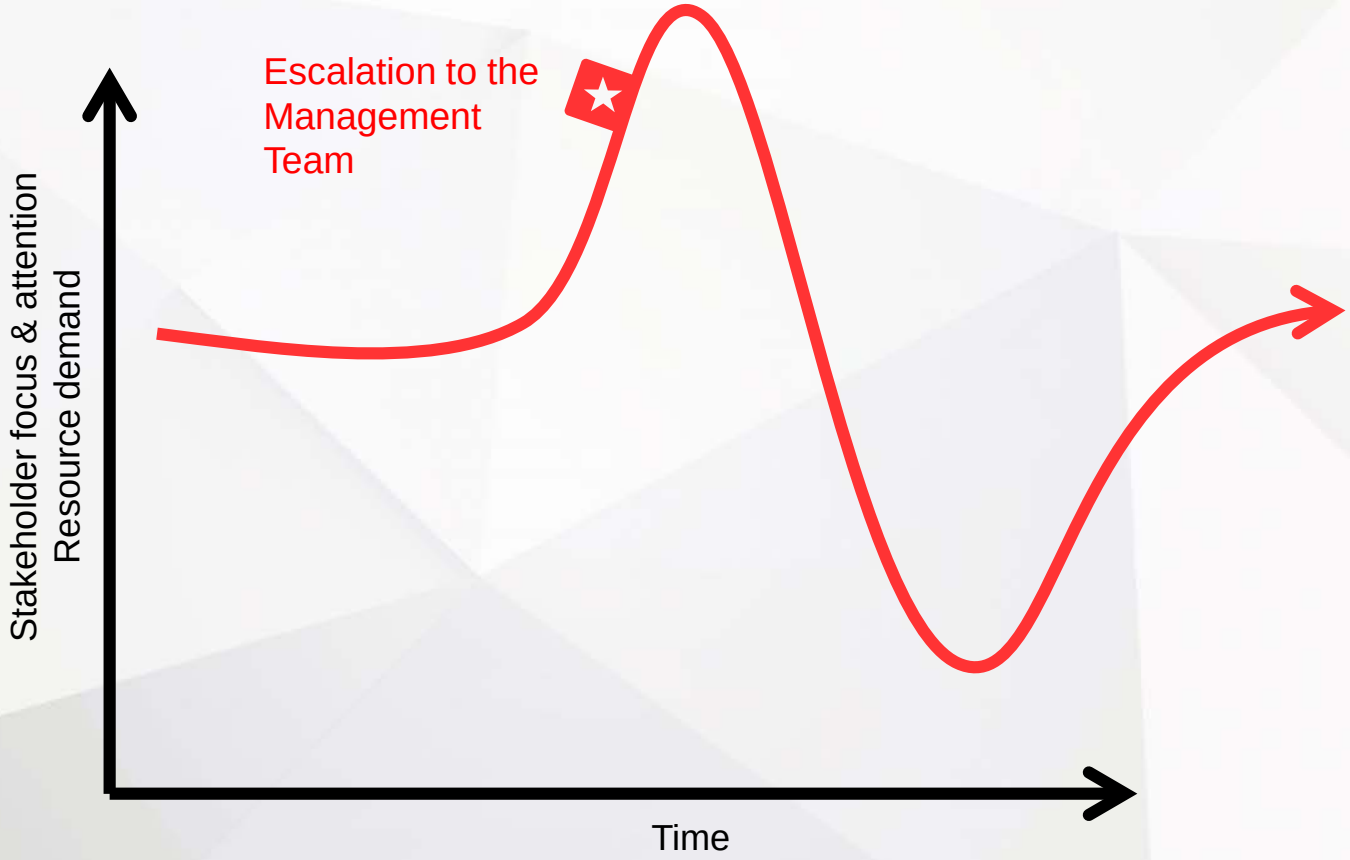

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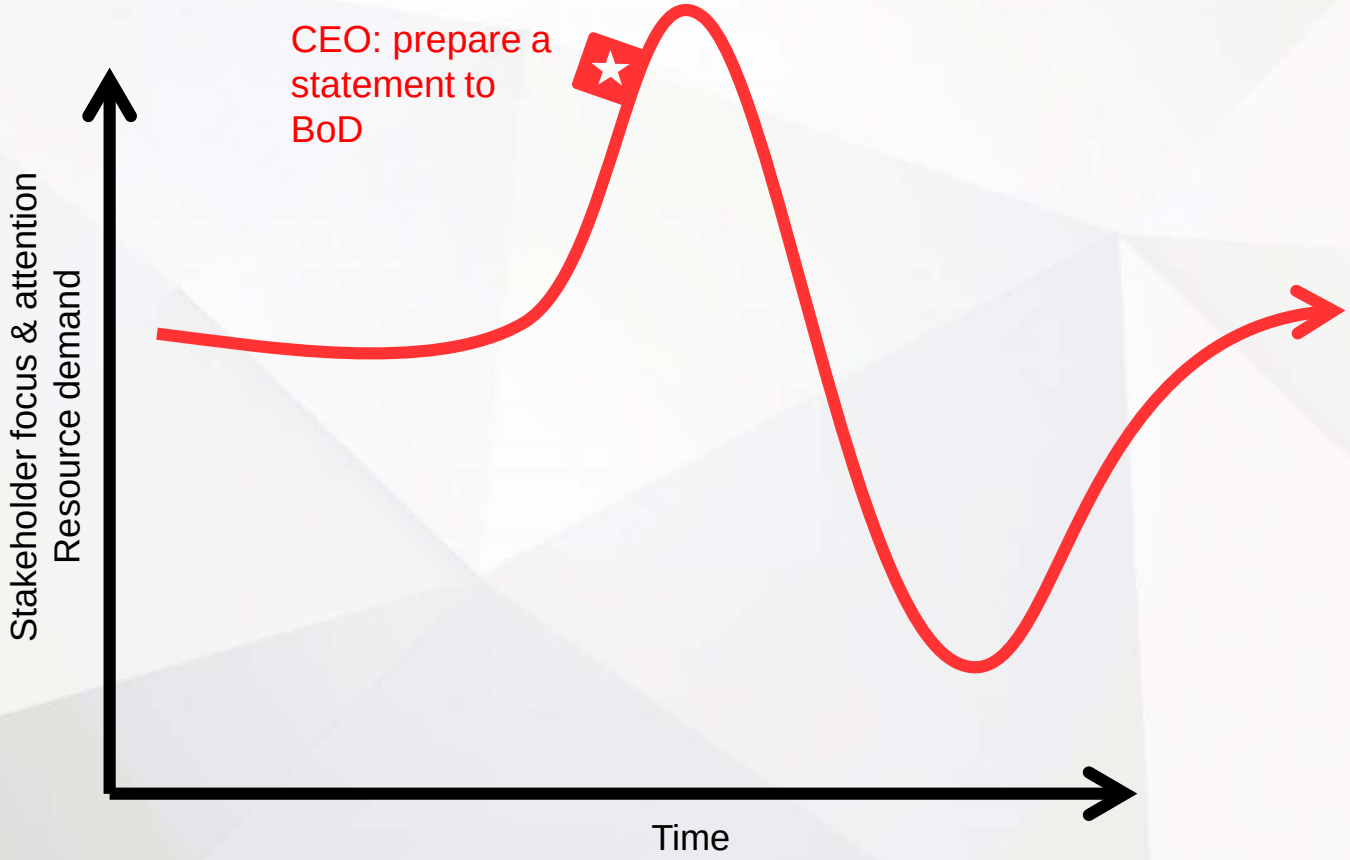

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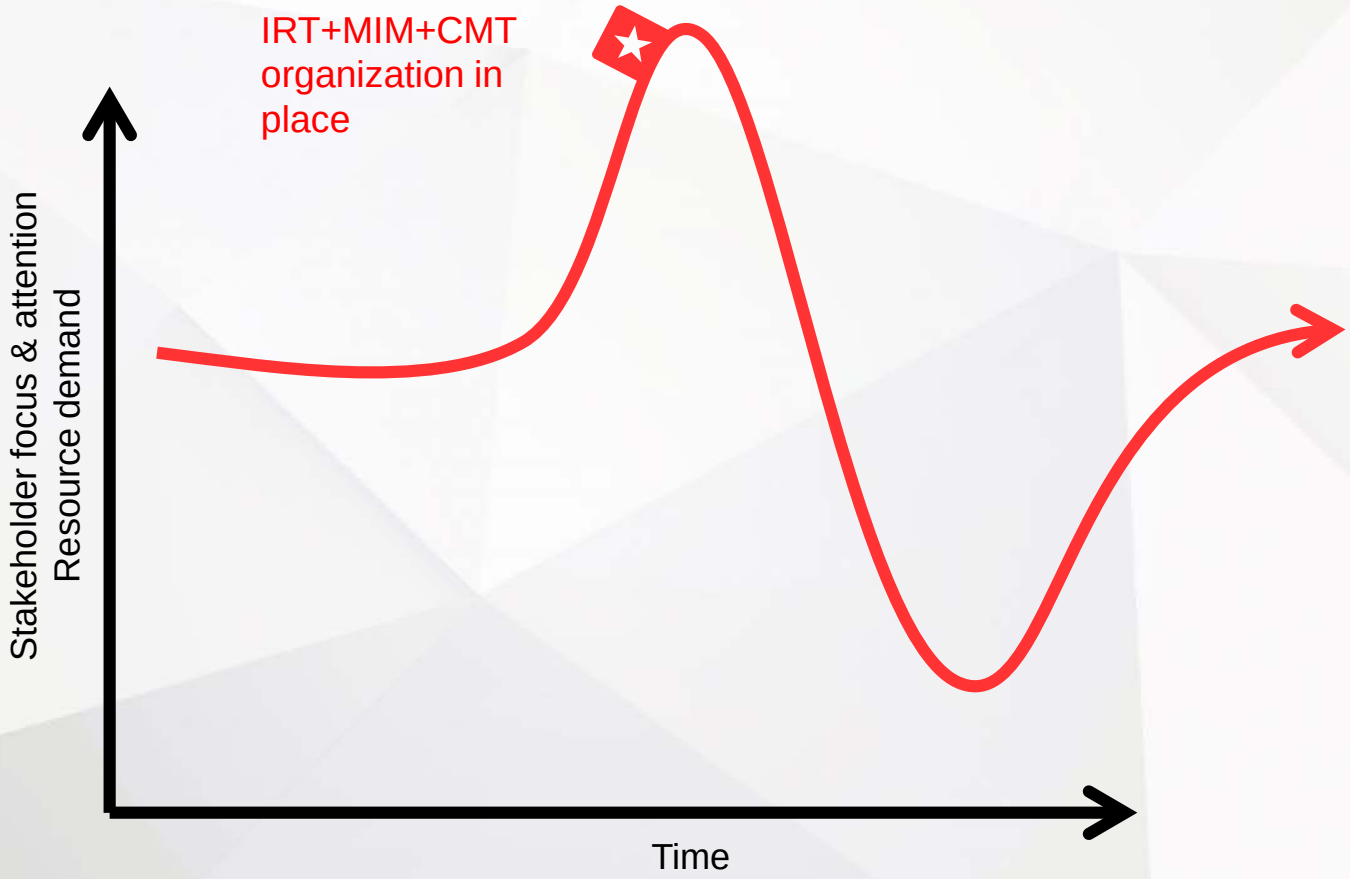

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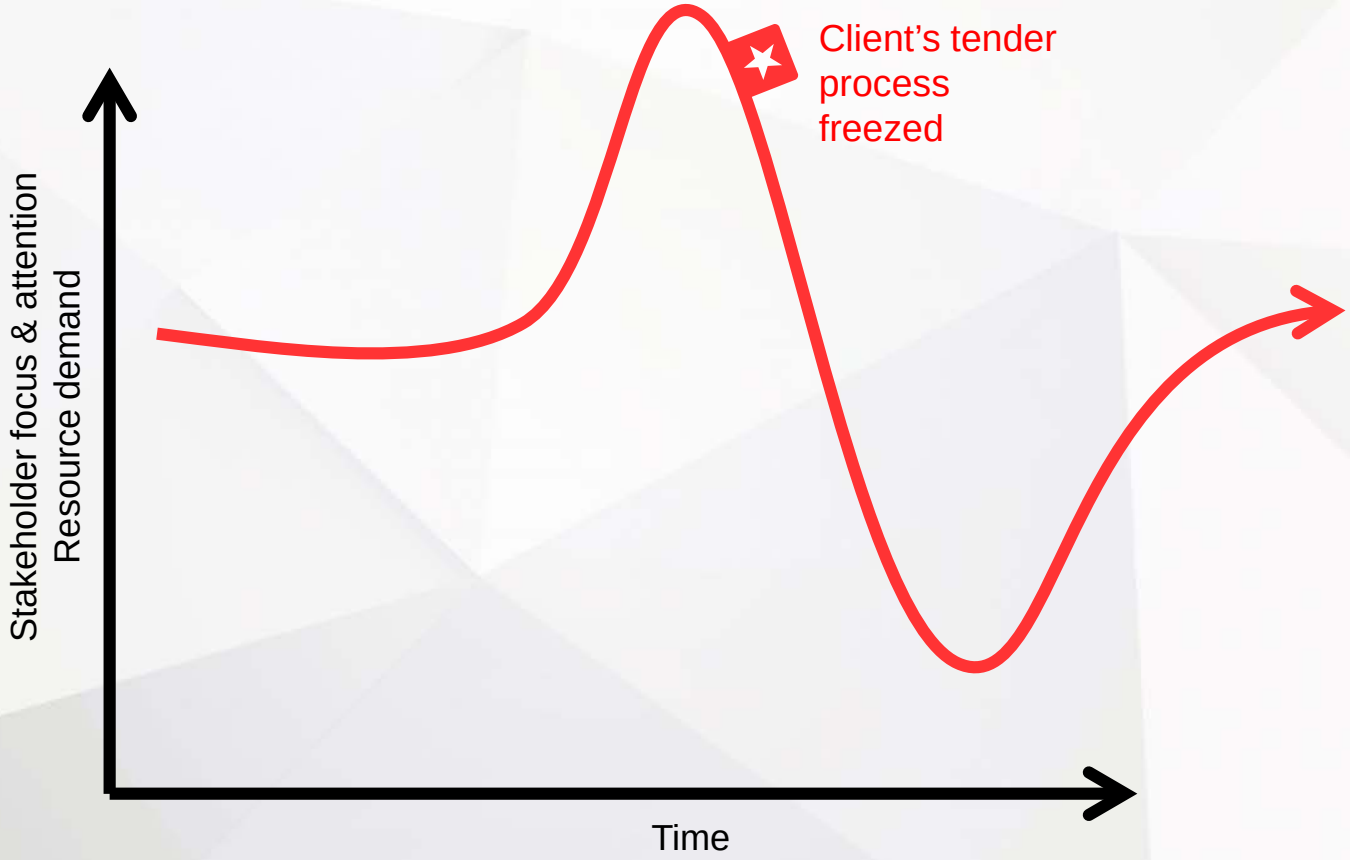

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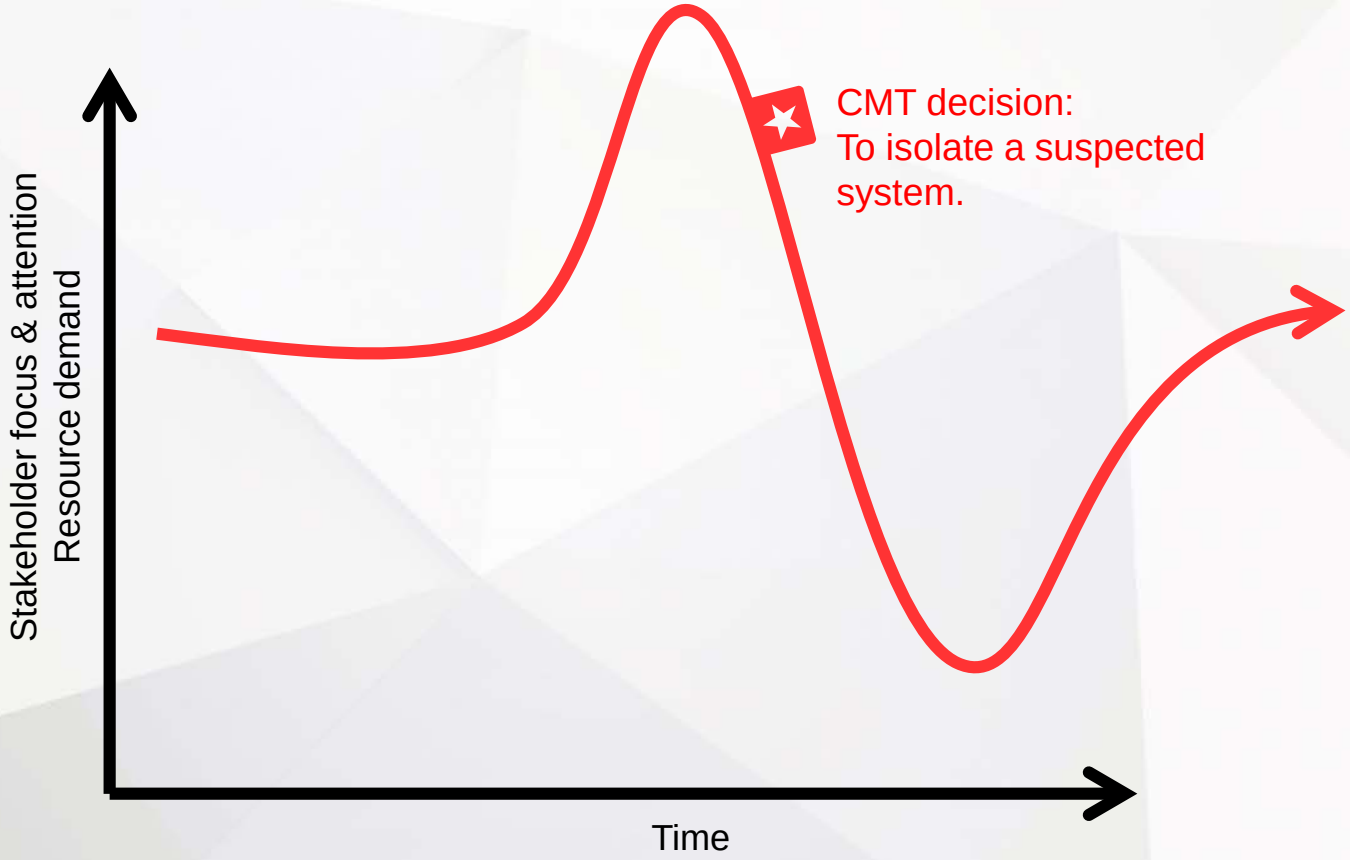

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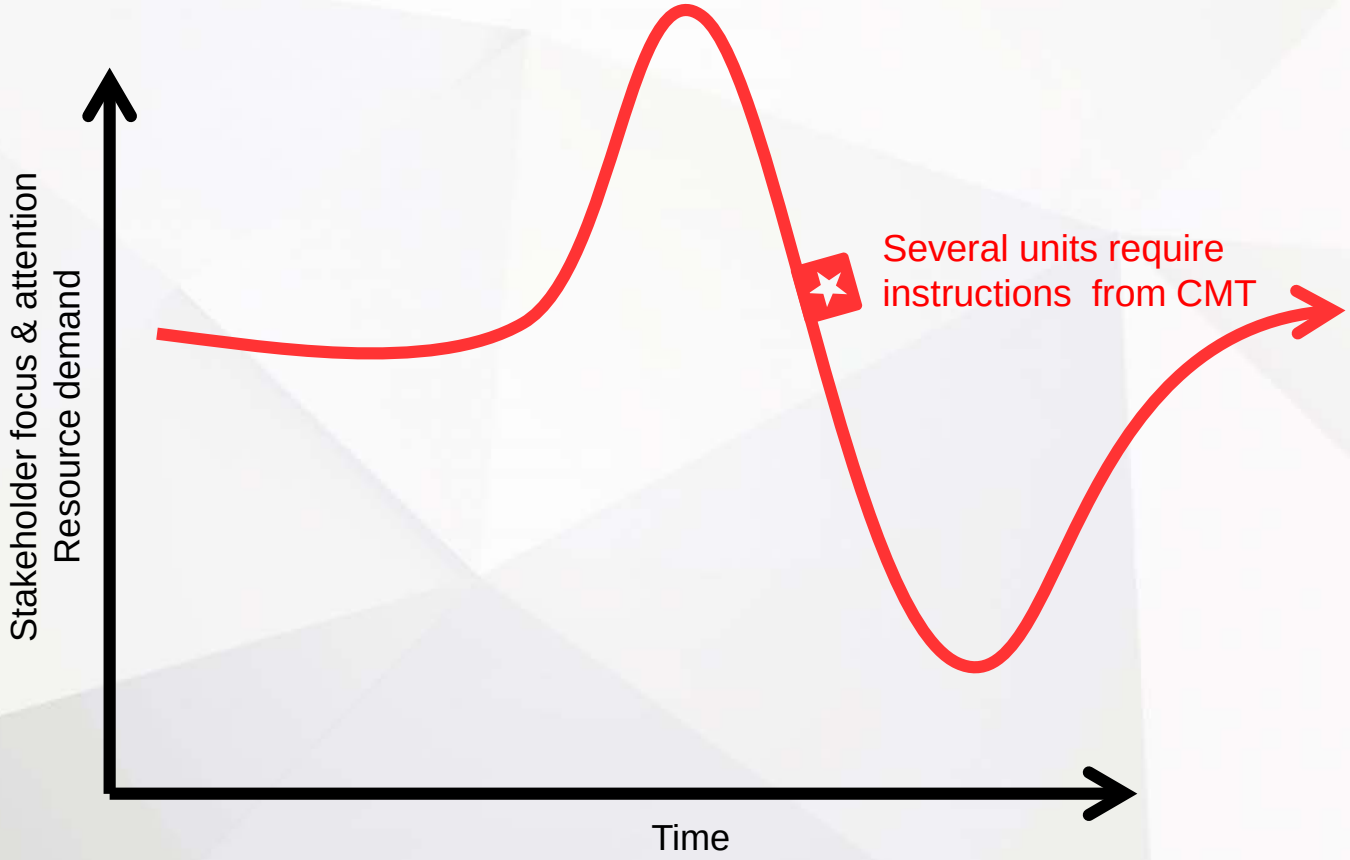

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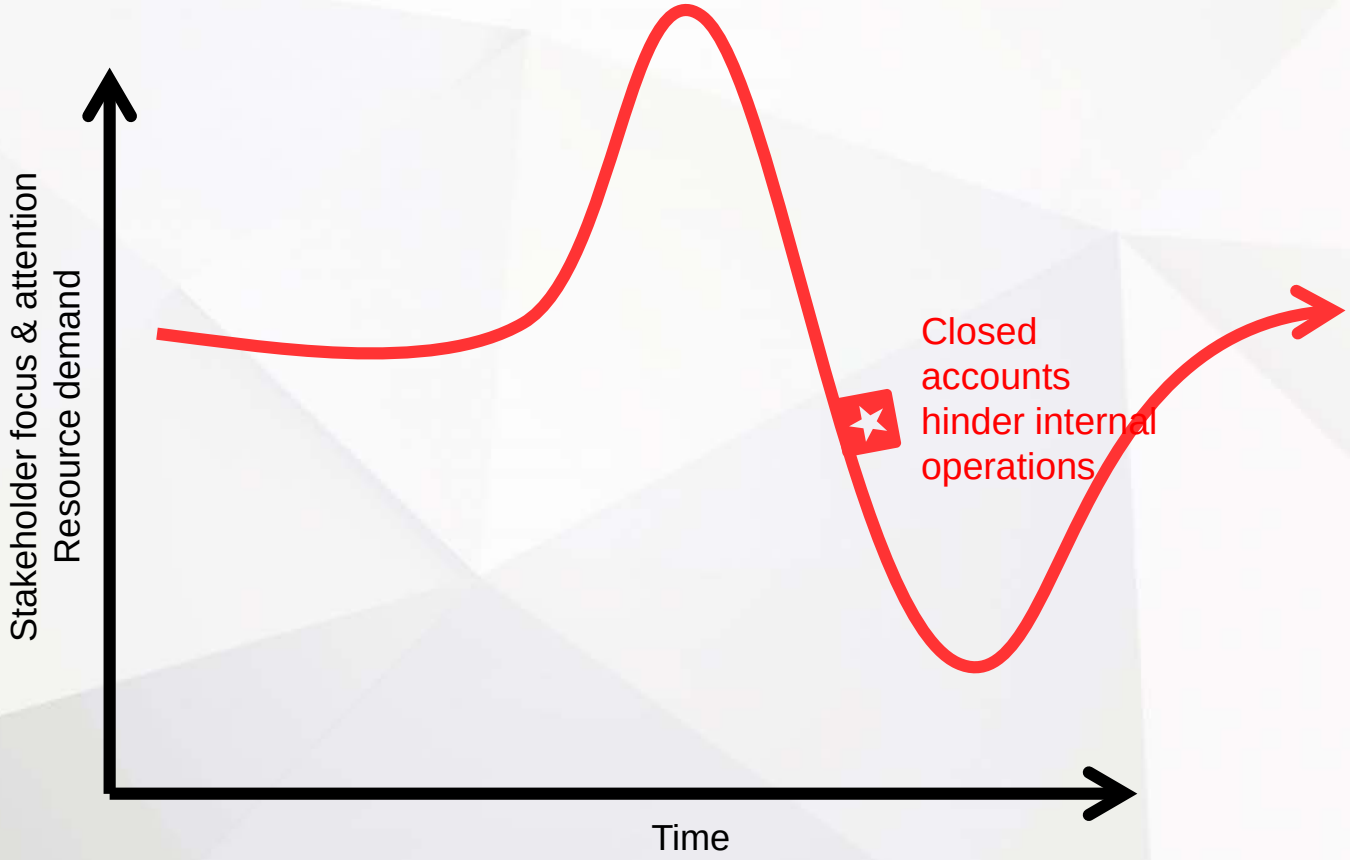

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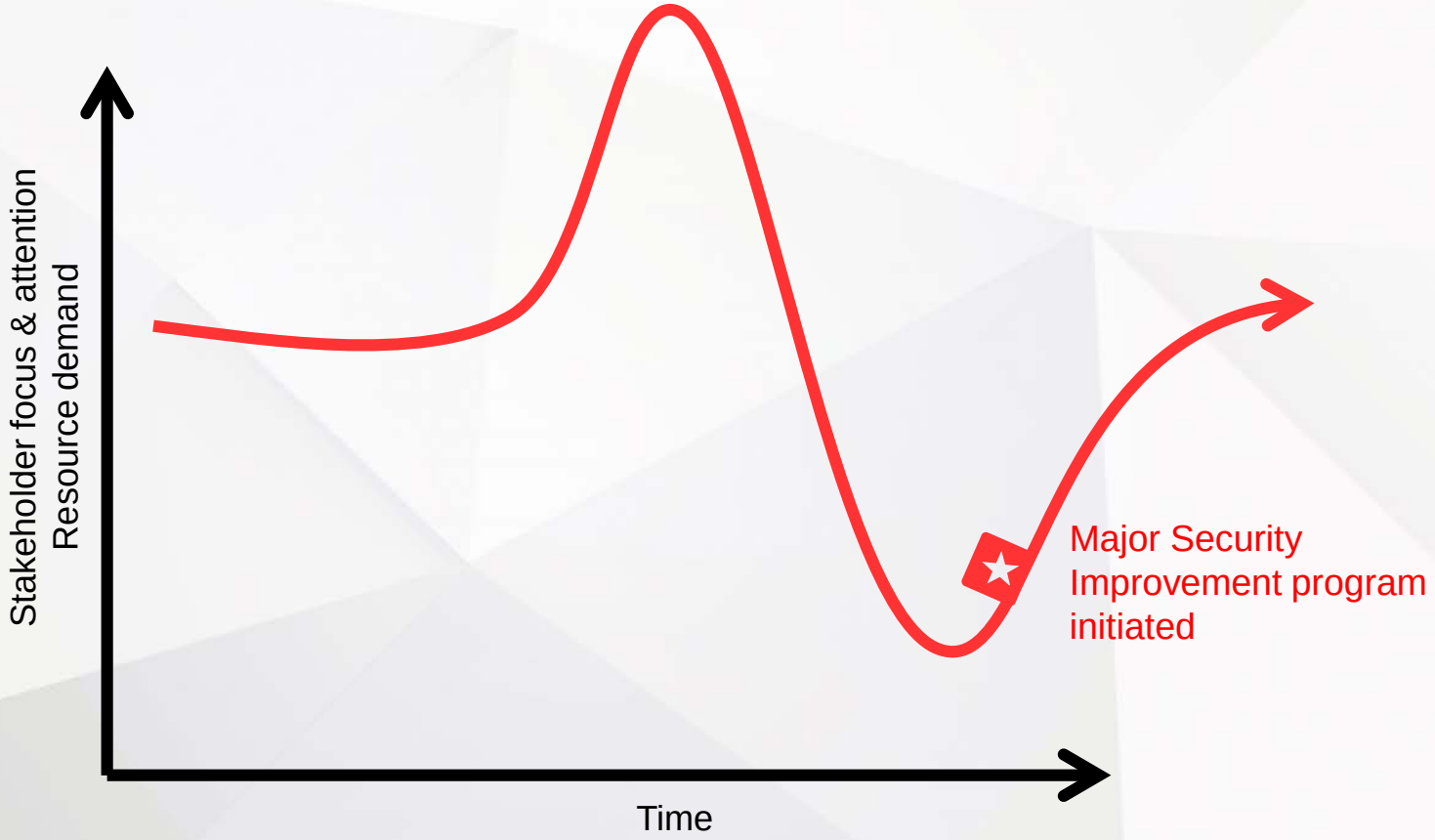

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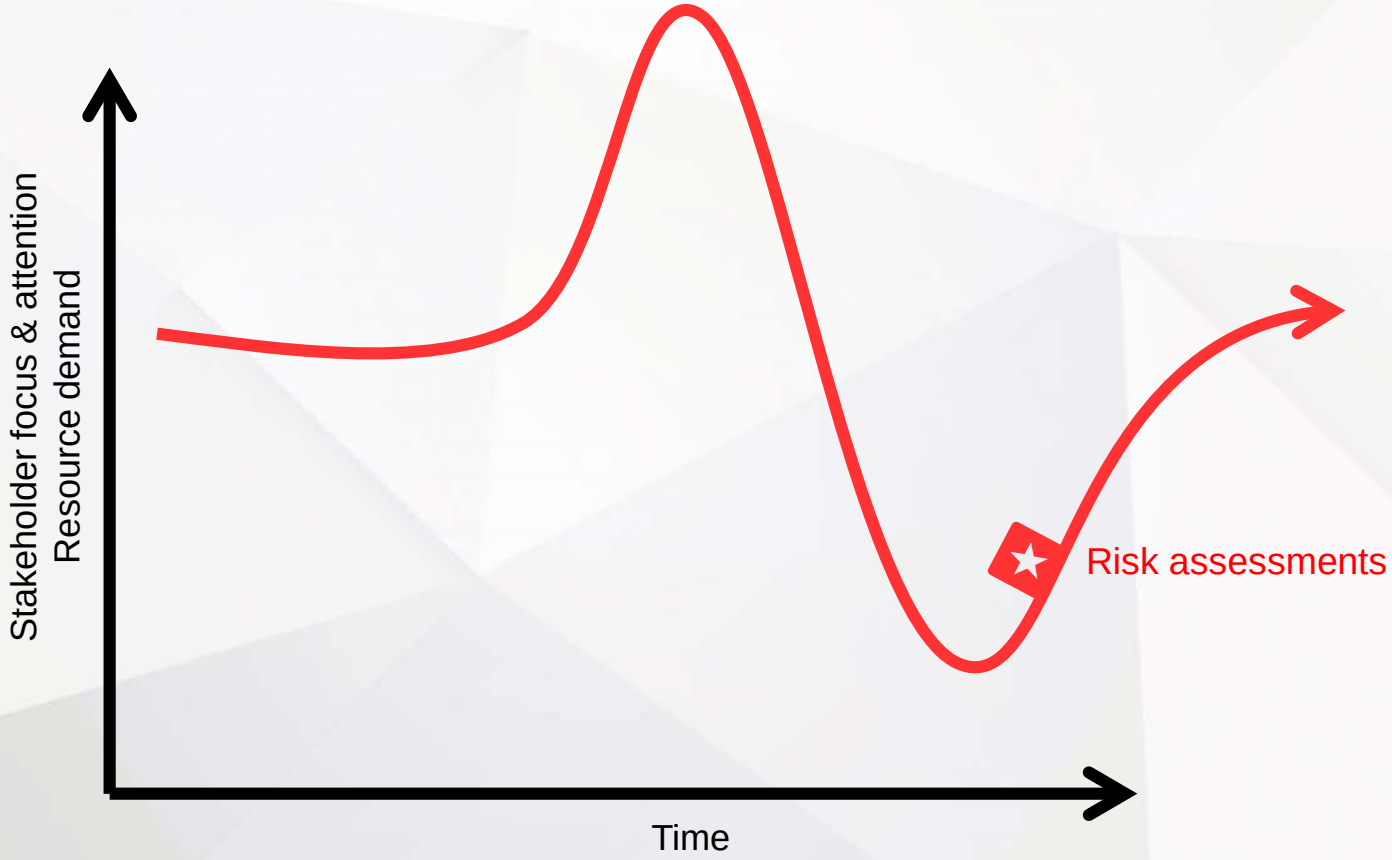

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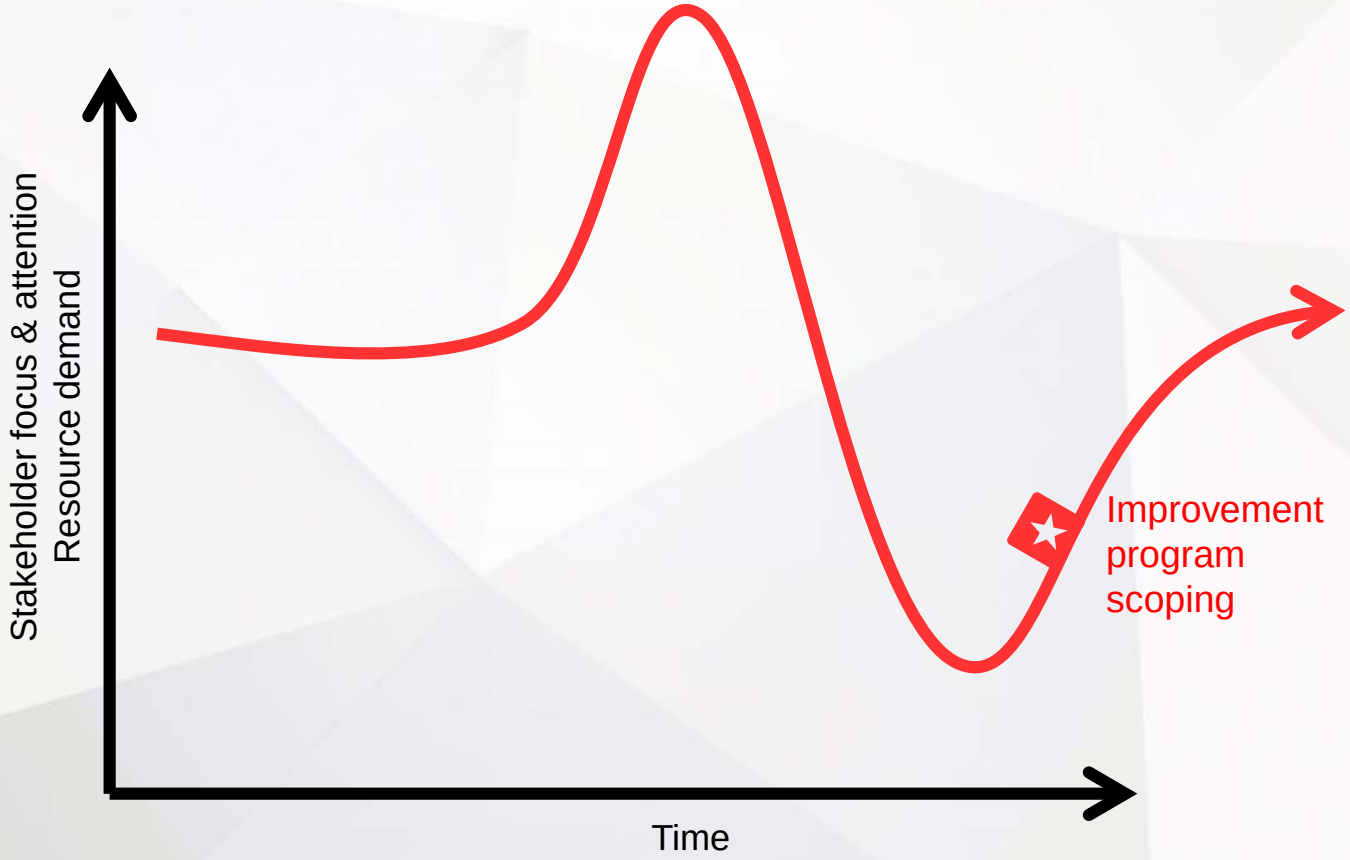


SIMPLIFIED CYBER BREACH'S BUSINESS IMPACT TIMELINE

SUMMARY

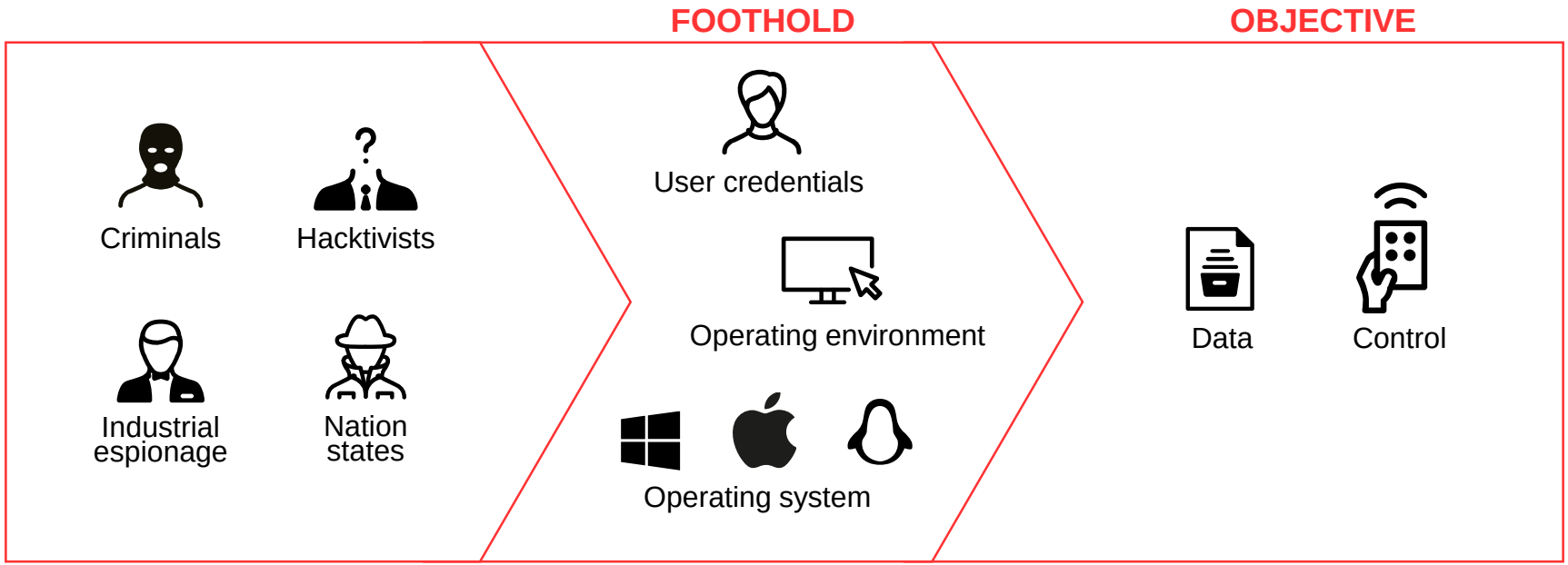
- Succesfull business makes you a potential target
- This case was a textbook example
- Although prepared, the level of business disruption came as a surprise
- You have firedrills – why not cyberdrills ?

HOW TO PREVENT A DATA BREACH

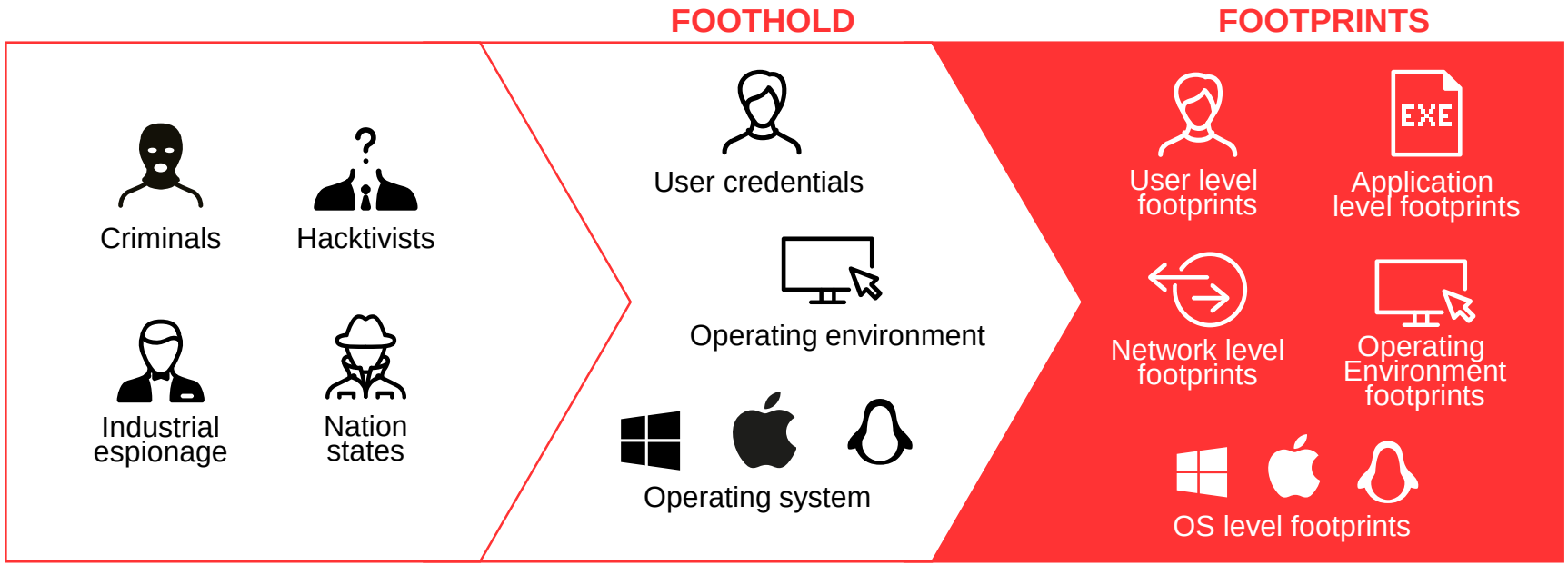
Marko
Finnig

ON AVERAGE IT TAKES TOO LONG TO REACT TO A BREACH

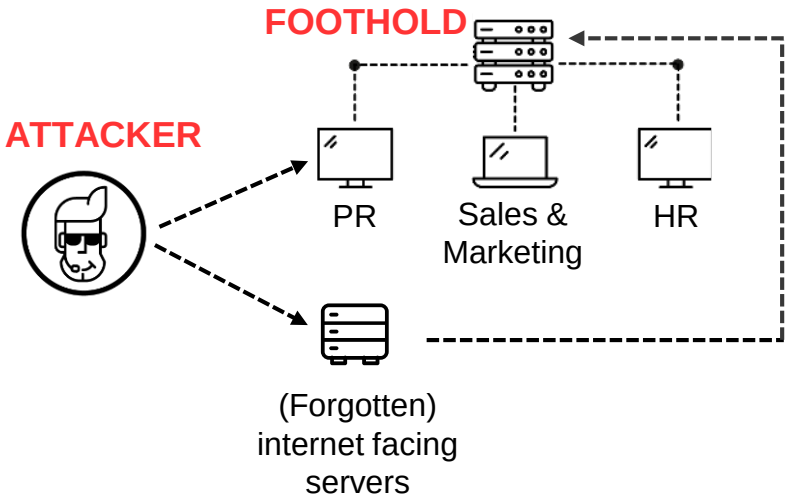
LETS LOOK AT HOW ATTACKERS OPERATE AND WHAT THEY ARE AFTER



IN THE PROCESS, THEY WILL ALWAYS LEAVE (SOMETIMES VERY SUBTLE) FOOTPRINTS



2 COMMON WAYS TO GAIN FOOTHOLD ARE VIA PUBLIC FACING EMPLOYEES AND (FORGOTTEN) SERVERS



99,9 % DO LITTLE DAMAGE

0,1 % DO THE MOST DAMAGE

Usually well covered by the current security solutions in organizations

- Address machine conducted attacks
  - Phishing & exploit (email as vector)
  - Ransomware
  - 99,9 % of the malware
- Solutions (Prevent):
  - Firewall
  - Email security
  - End-point protection
  - ..

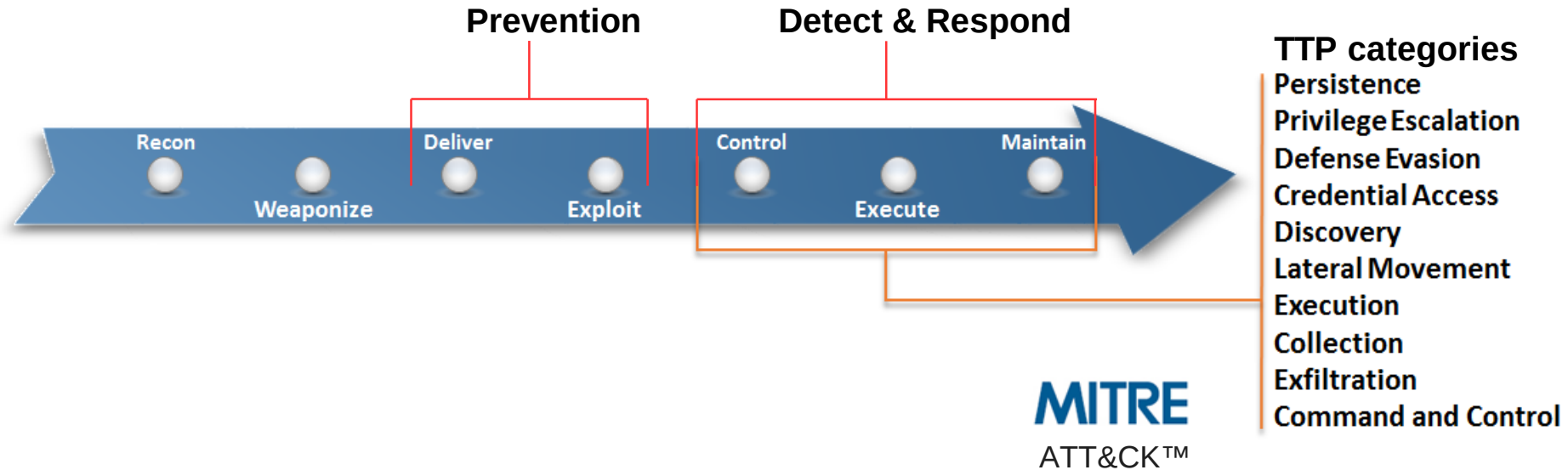
99,9 % DO LITTLE DAMAGE

Usually not covered at all by the current security solutions in organizations...

- Address human conducted attacks
  - Spear-Phishing & exploit (in-memory backdoor)
  - Use of system internals - PowerShell, WMIC, Service Commands ..
  - Use of remote admin tools (RAT) and hacking tools – Orcus, Litemanager, LuminosityLink, Mimikatz
  - Hide command & control traffic – Office365, GMail, HTTPS
- Solutions (Detect & Respond):
  - Managed Detection and Response (end-points)

0,1 % DO THE MOST DAMAGE

EXPAND YOUR CAPABILITIES TO DETECT TECHNIQUES TACTICS PROCEDURES USED BY SKILLED ADVERSARIES



F-Secure

PREVENTION AND DETECTION & RESPONSE APPROACHES ARE FUNDAMENTALLY DIFFERENT

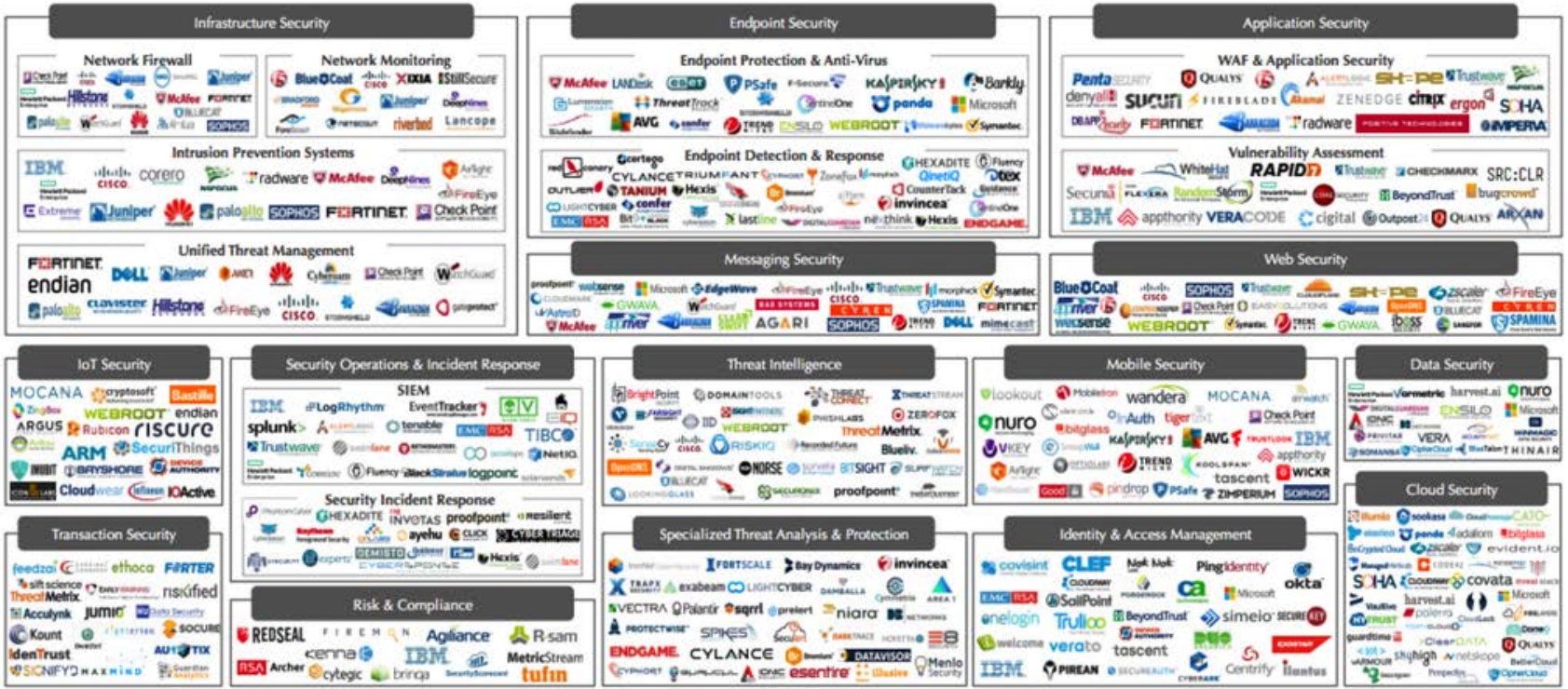
PREVENTION:

- Defenders dilemma: Be right every time, attacker needs to be right only once. Products can be bought and tested by the attacker.

DETECTION & RESPONSE:

- Attackers dilemma: Be right every time, defender needs to be right only once. Services cannot be bought and tested by the attacker.

HOW DO YOU EVALUATE ALL THESE OPTIONS?



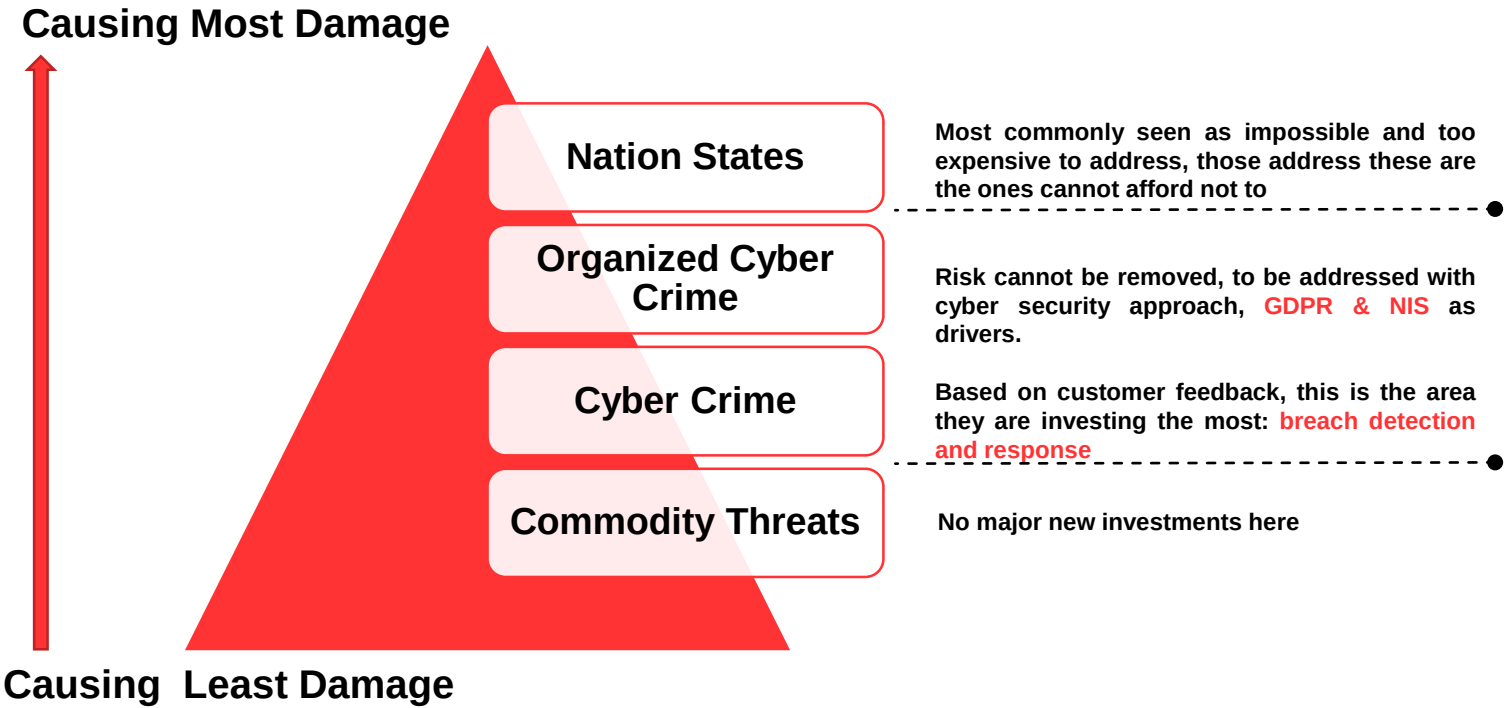
F-Secure.

..OR HOW DO YOU EVEN KNOW HOW GOOD YOUR EXISTING DEFENCES ARE?

THE ONLY WAY TO KNOW FOR SURE IS TO RUN DRILLS

F-Secure

SEPARATE THREAT ACTORS INTO GROUPS TO SUPPORT INVESTMENTS



Most commonly seen as impossible and too expensive to address, those address these are the ones cannot afford not to

Risk cannot be removed, to be addressed with cyber security approach, GDPR & NIS as drivers.

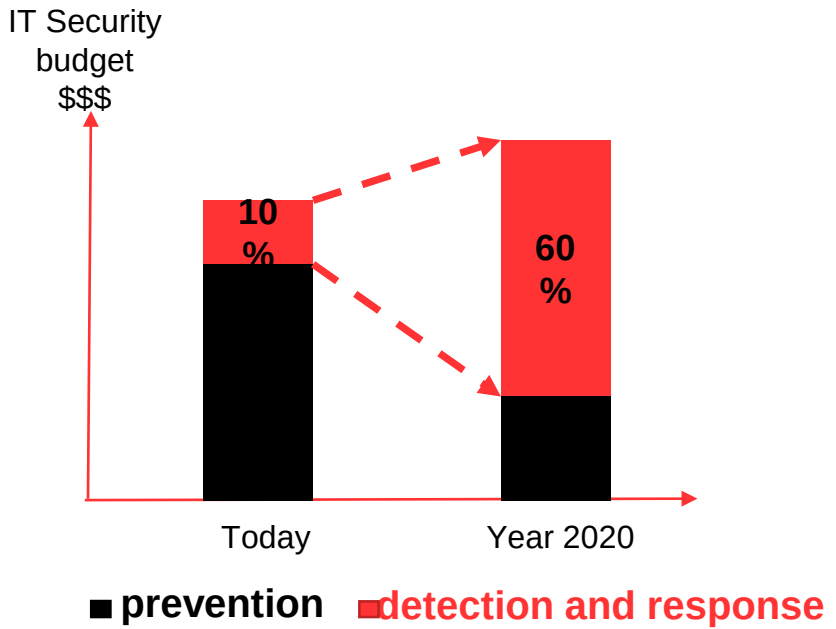
Based on customer feedback, this is the area they are investing the most: breach detection and response

No major new investments here

LARGE SHIFT FROM PREVENTION TO DETECTION AND RESPONSE APPROACHES

Gartner: By 2020, **60 percent** of enterprise information security budgets will be allocated for **rapid detection and response** approaches

Source: Gartner Special Report 'Cybersecurity at the Speed of Digital Business'



SUMMARY

1. Separate threat actors in risk management to support investments
2. Map your “foothold” areas and
3. Extend your capabilities to cover TTPs (with D&R approaches)
4. Establish recurring red vs. blue drill practice

f-secure.com

SWITCH ON FREEDOM