Cybersecurity 2025: Navigating the Evolving Threat Landscape

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Agenda

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Some Figures

Source : Global Threat Report 2025 – Crowdstrike

Micro and Small Enterprises (MSEs) represent 98.9% of the European enterprises.

43% of all data breaches involve small and medium-sized businesses.

61% of all MSEs have reported at least one cyber attack during the previous year.

40% of the small businesses that faced a severe cyber attack experienced at least 8 hours of downtime.

85% of MSPs consider ransomware one of the biggest threats to their SME clients.

30% of small businesses consider phishing attacks to be the biggest cyber threat

Some Figures

Source : Global Threat Report 2025 - Crowdstrike

83% of small and medium-sized businesses are not financially prepared to recover from a cyber attack.

91% of small businesses haven't purchased cyber liability insurance.

Only 14% of small businesses consider their cyber attack and risk mitigation ability as highly effective.

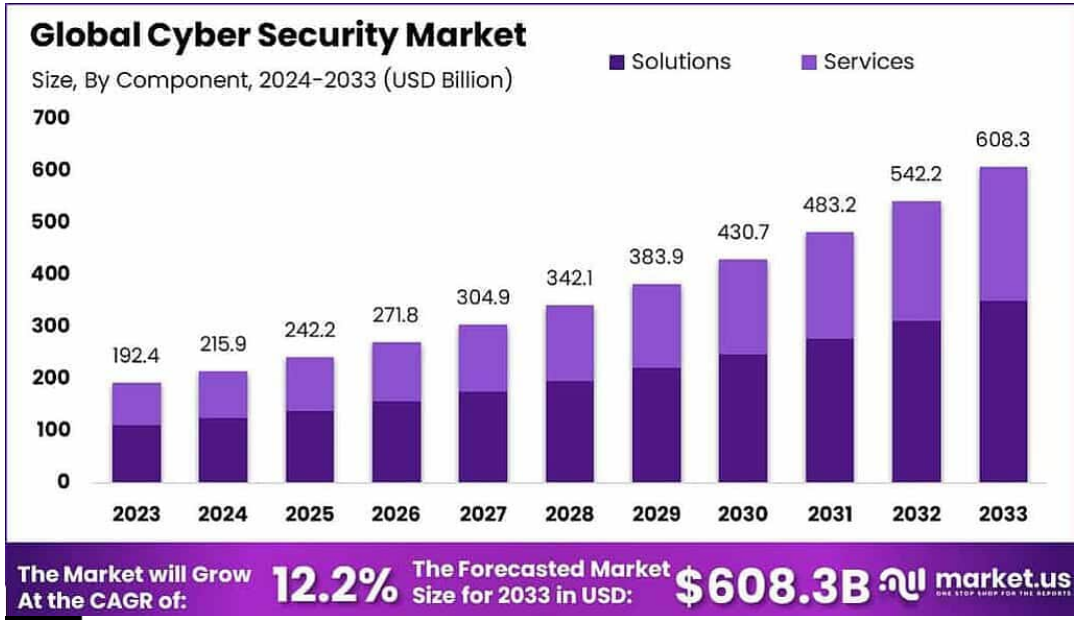
43% SMBs do not have any cybersecurity plan in place.

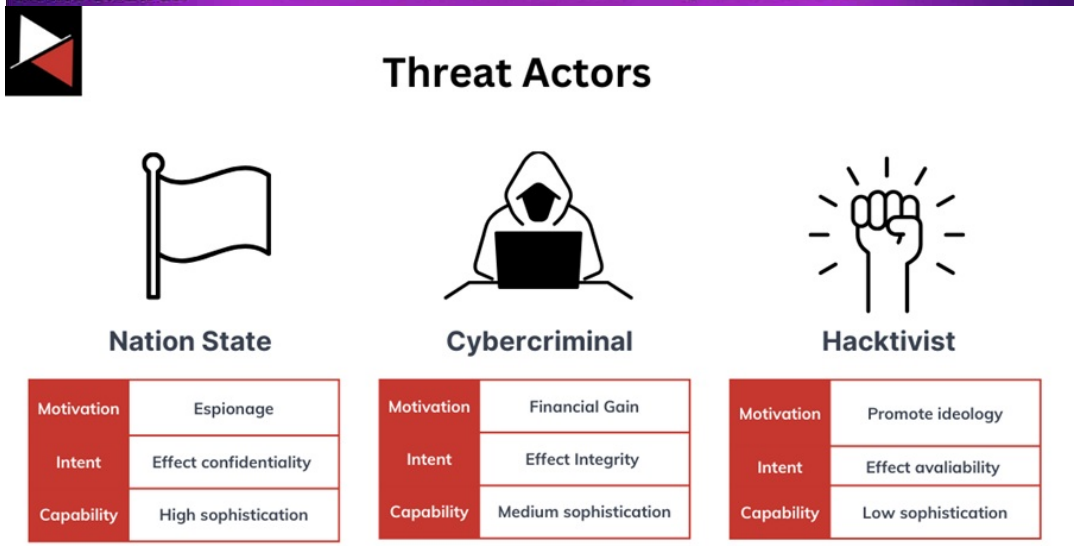
One in five small companies does not use endpoint security, and 52% SMEs do not have any IT security experts in-house.

87% of organizations reported experiencing AI-driven cyberattacks in the past year. 93% of businesses expect to face daily AI attacks over 2025.

The Evolving Threat Landscape

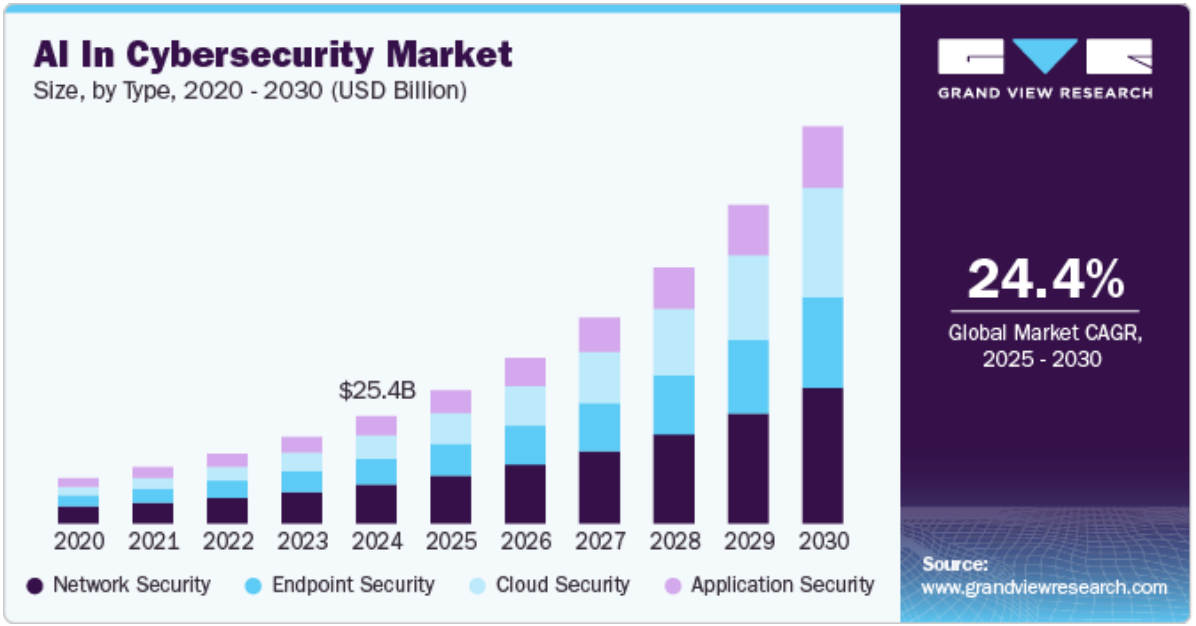
- Cybercrime is becoming more organized and industrialized (e.g., ransomware-as-a-service).
- Threat actors include state-sponsored groups, hacktivists, and cybercriminal syndicates.
- Increased attack surfaces due to IoT, remote work, and digital transformation.

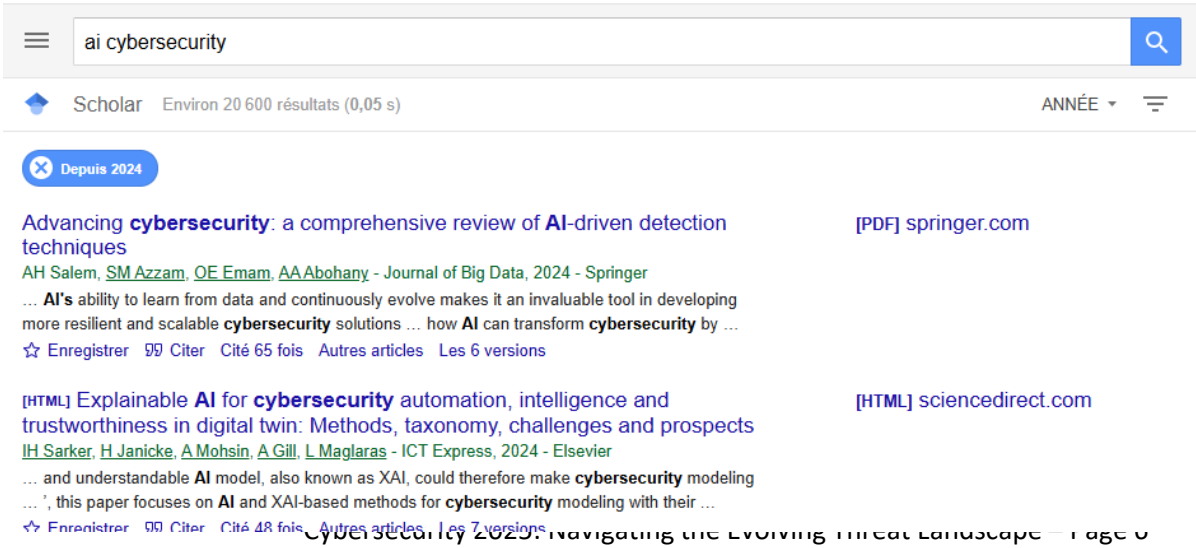




Rise of AI-Powered Attacks and Defenses

- Use of generative AI for phishing, deepfakes, and social engineering.
- AI models used to automate malware development and vulnerability discovery.
- LLM-based attack scripts generation
- Increased scale and sophistication of cyberattacks
- On the defense side: AI/ML for threat detection, anomaly detection, and behavior analysis etc.





AI-Driven Cyber Threats

Cyber threats are no longer manual and isolated…
They're increasingly automated and sophisticated, powered by AI.
Here are some examples:

AI-Powered Phishing

Mass-produced, highly personalised, realistic phishing emails at scale

AI Deepfake Scams

AI-generated videos/audio impersonating executives or trusted contacts

Adaptive Malware

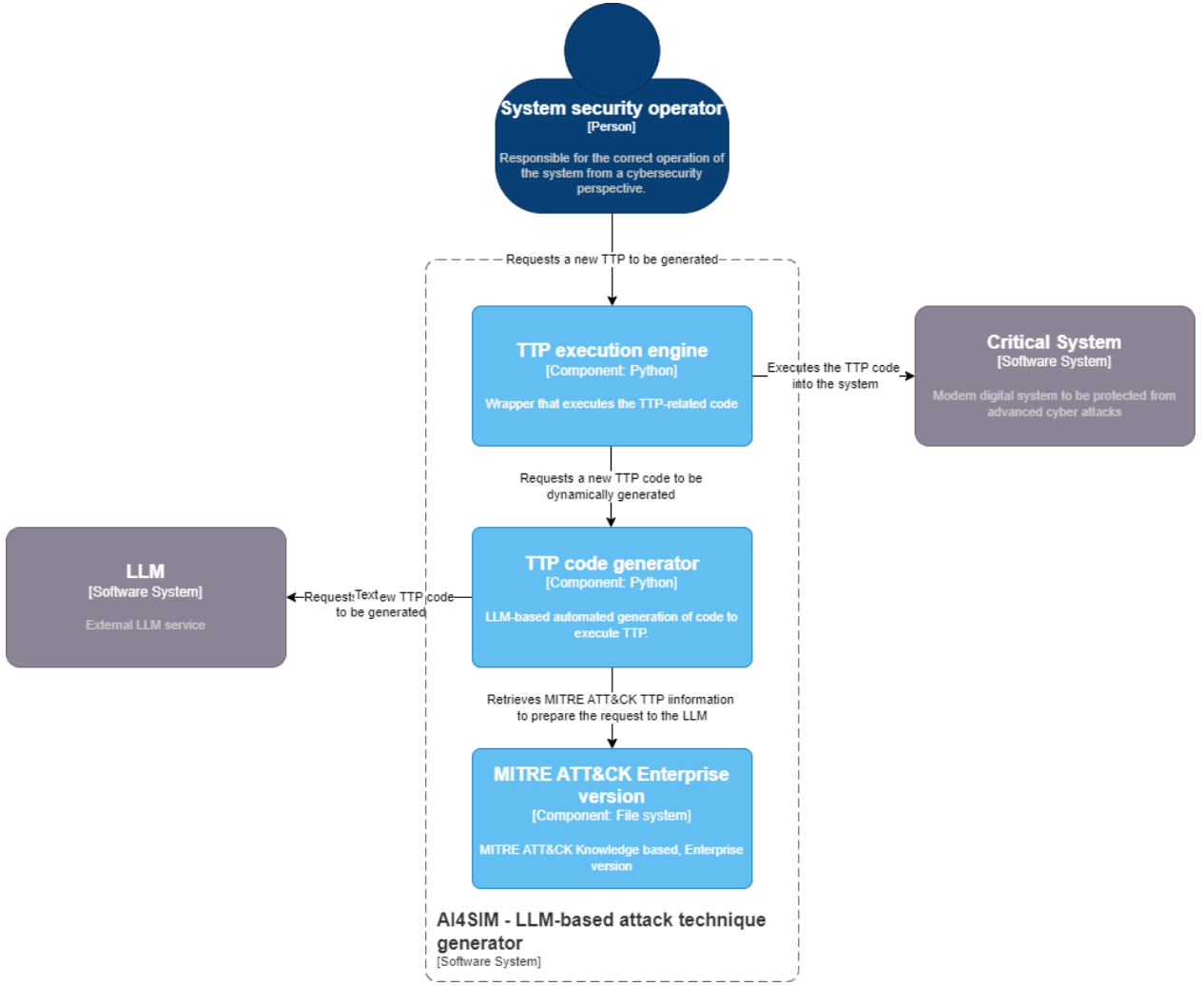
Malware that evolves autonomously, evading conventional detection and response mechanisms

LLM-based Attacks Scripts

Using Generative AI to generate attacks based on their description

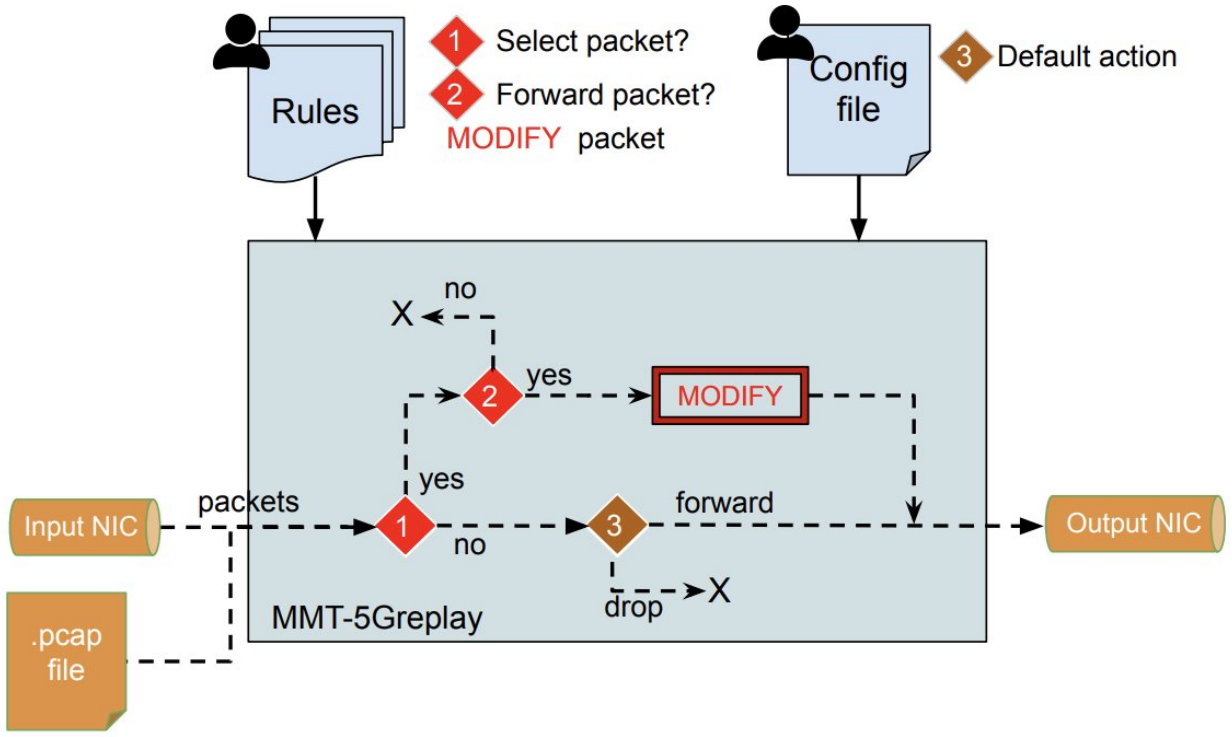
AI4CYBER – LLM based attack generation based on MITRE

- LLM-based automated generation of executable code of atomic TTPs from the MITRE ATT&CK model
- Implementation based on GPT 3.5
- Validation in AI4CYBER sandbox
  - A total of 565 distinct TTP codes have been automatically generated and executed
  - Windows and Linux OS
  - Success rate of 16%
    - Generated TTP codes that require major updates but still useful for a cyber security expert working on cyber security testing (35%)



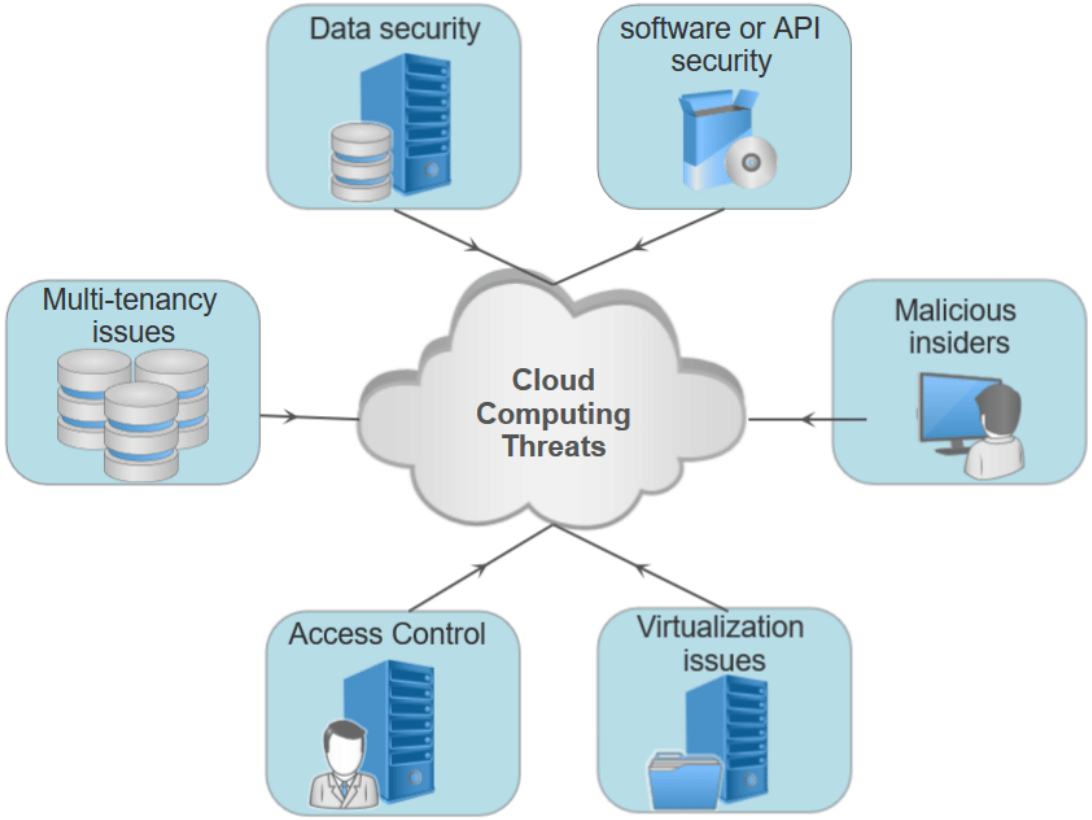
AI4CYBER – GAN-based Network Fuzzer

- Generative Adversarial Network
- The generator creates novel and potentially malicious input data
- the discriminator evaluates the responses of the target system to these inputs.
- The GAN learns to create inputs that are more likely to trigger vulnerabilities based on the feedback from the discriminator.
- If a novel vulnerability is discovered, it provides feedback to the GAN to refine the generation process further.



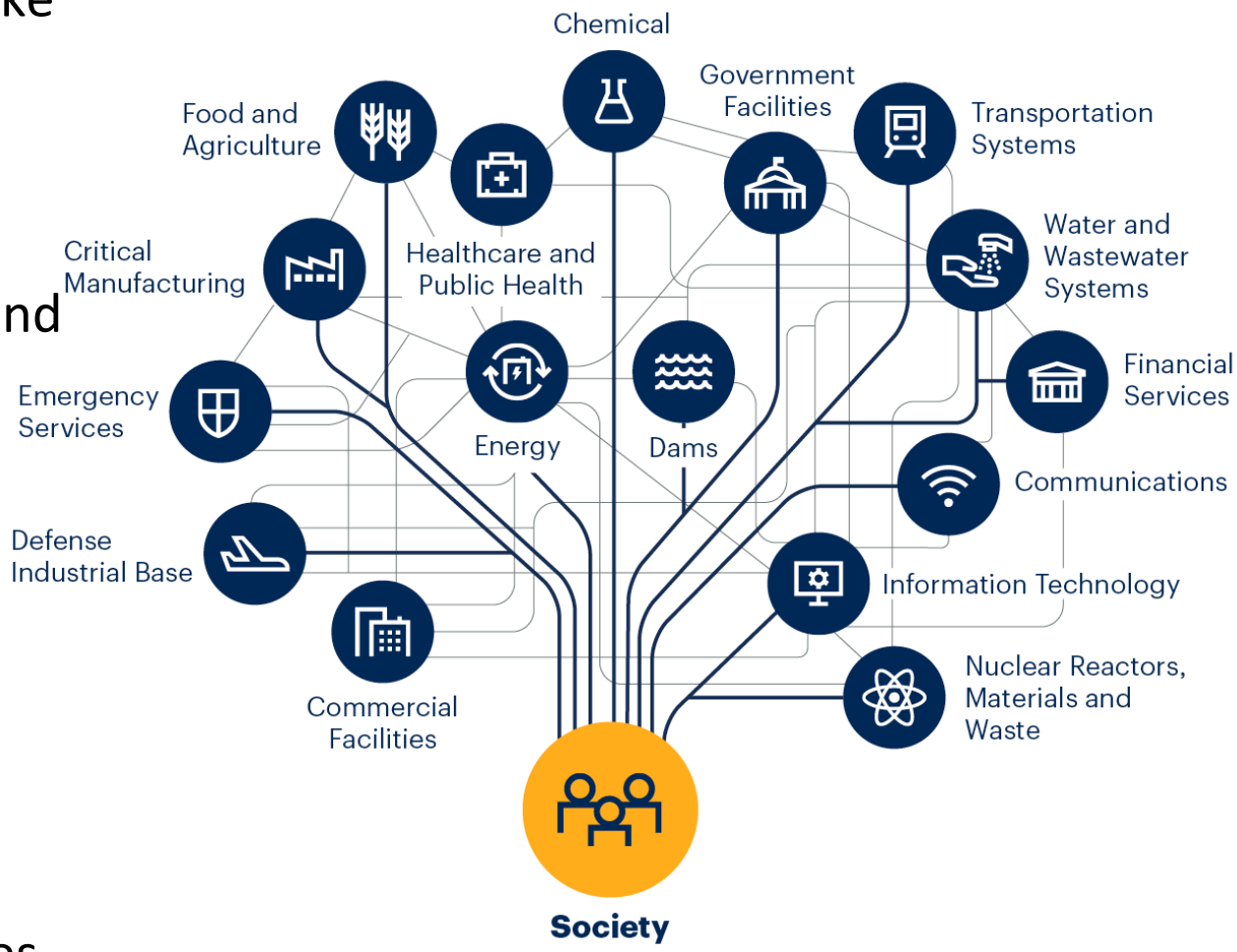
Cybersecurity in the Age of Cloud and Remote Work

- Cloud misconfigurations and shadow IT as major risks.
- Remote work blurs network perimeters, making endpoint security critical.
- Rise in insider threats and credential theft.



Critical Infrastructure and Supply Chain Under Threat

- Increased targeting of critical infrastructures like energy, transport, and healthcare sectors.
- Supply chain attacks (e.g., SolarWinds) show vulnerabilities beyond direct assets.
- Many industrial systems run legacy software and lack proper network isolation.
- The convergence of IT and OT increases the chance of cyber incidents having physical consequences.
- Nation-state actors: Well-funded, persistent threats are increasingly targeting strategic infrastructure.
- Frameworks like NIS2 push for stronger risk management and incident response capabilities.



Leveraging AI for SME Cybersecurity

“Best efforts are not enough, you have to know what to do.”

- **W. Edwards Deming**, American Economist, Statistician, and Quality Management Pioneer

SMEs

- ‼ Frequent cyber attack targets
- ‼ Limited Resources and Expertise
- ‼ Increasing threat levels from cyber threats leveraging AI

Enhance Defences

- ✓ Faster threat detection
- ✓ Proactive response automation
- ✓ Zero trust architectures
- ✓ Cybersecurity automation

With Efficient AI-Enhanced Tools

Build more resilient digital systems

Leveraging AI for SME Cybersecurity

- Threat Detection & Response
  - Re… …oring and anomaly detection.
  - Automat… …igate threats quickly.
- Endpoint Protection
  - AI-driven malware detection and pr…
  - Protects devices (laptops, mobiles, …s) from cyberattacks.
- Phishing & Fraud Preventi…
  - AI identifies an… …s and fraudulent activ…
  - Reduces human error in email security.
- Vulnerability Management
  - …I scans systems for vulnerabilities and prioritizes …s.
  - …elps SMEs f… …s.
- Managed S…
  - Outsourced AI-driven cybersecurity for SMEs with limited resources.
  - 24/7 monitoring and support.

Complexity

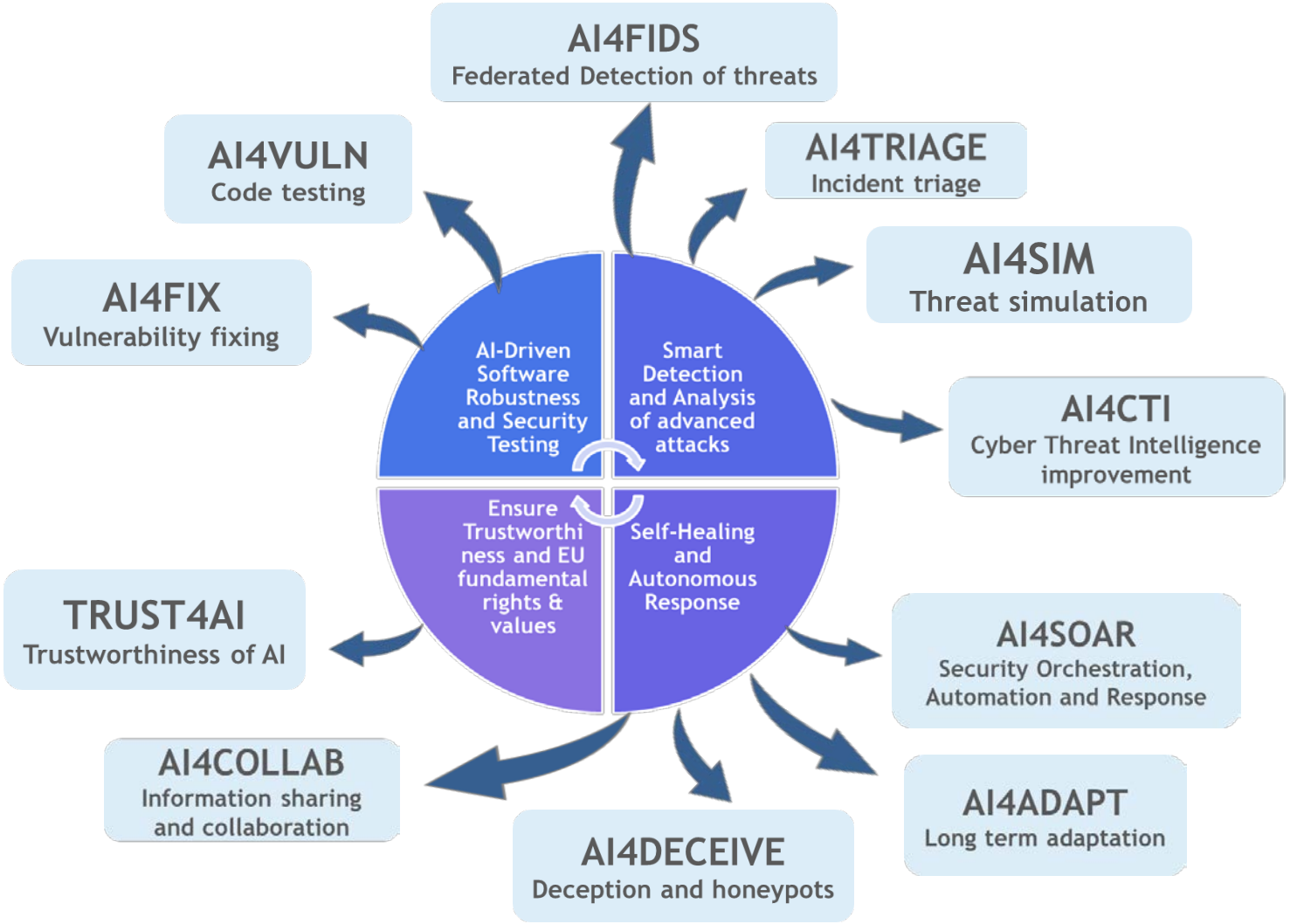
Budget, ressources

Data privacy

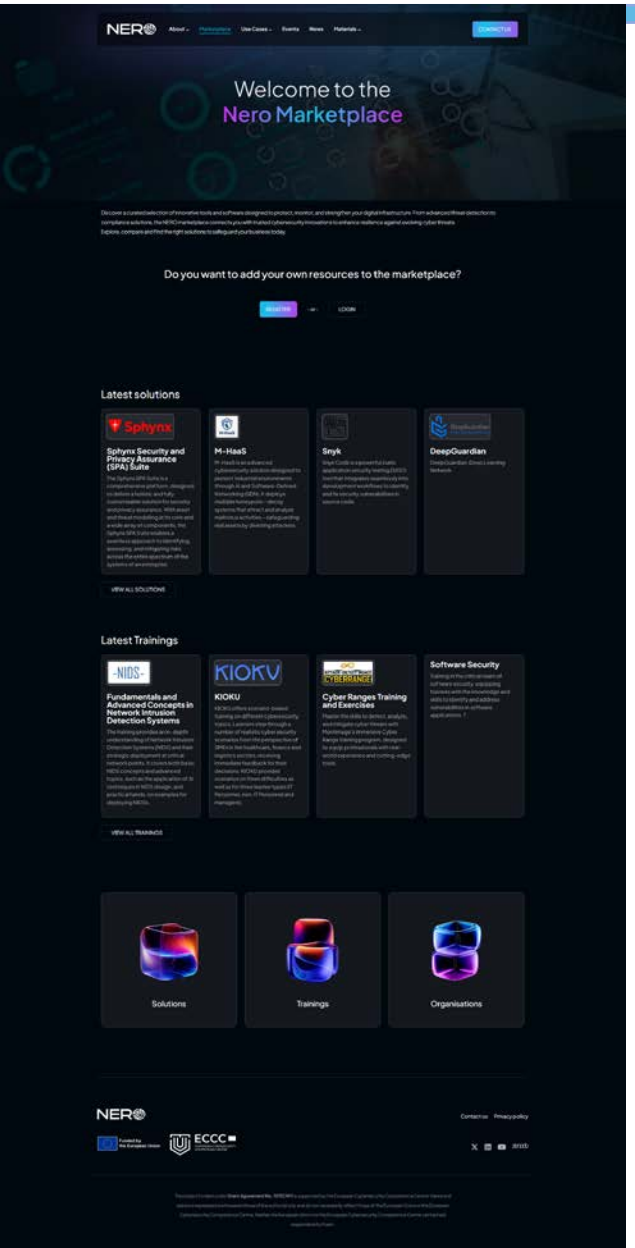
Skills

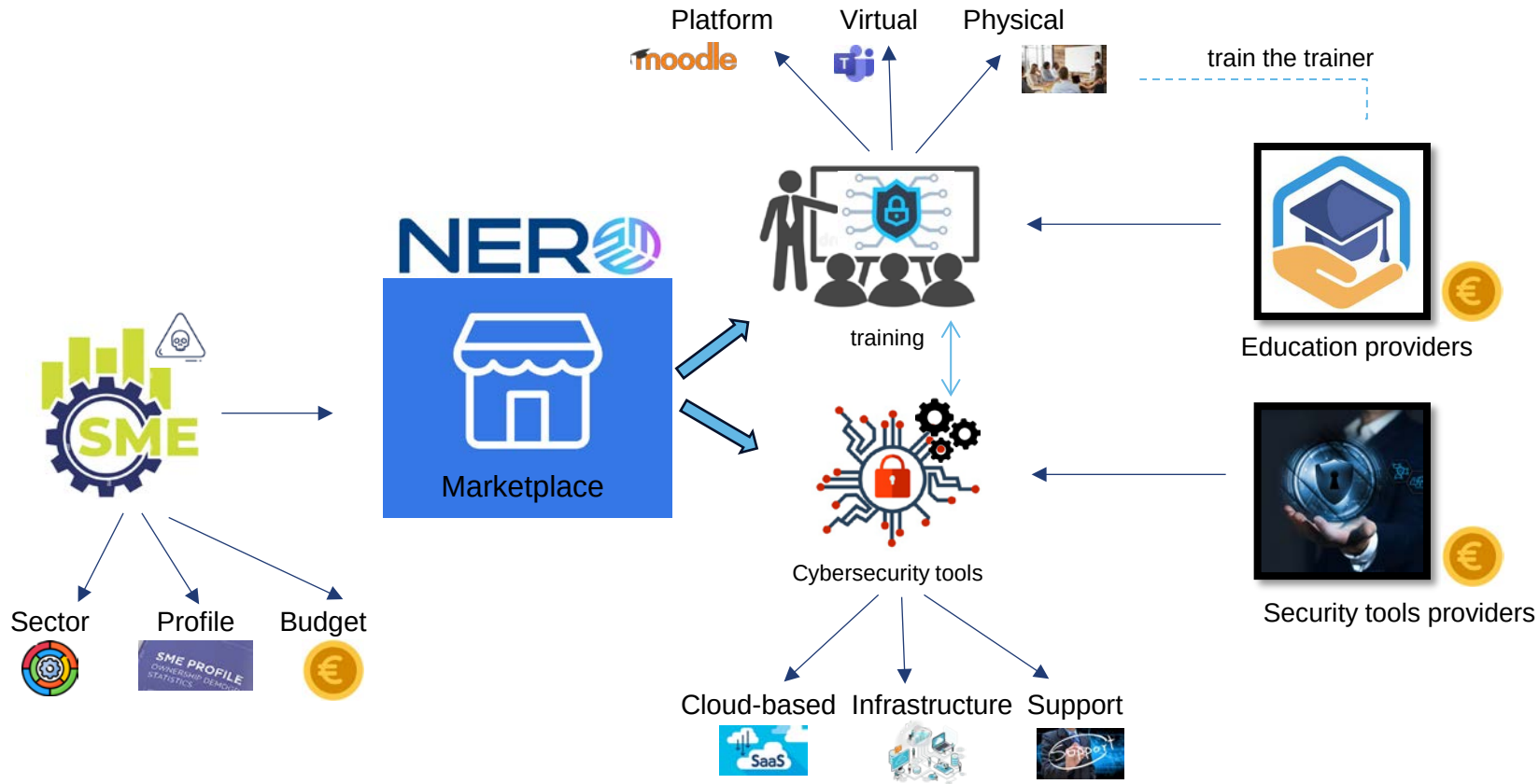
AI trustworthiness

Examples from AI4CYBER



The NERO marketplace





Conlusion

- Cyber threats are evolving rapidly, driven by AI, automation, and increasing digital interconnectivity.
- Ransomware and supply chain attacks remain among the top threats for all sectors.
- Critical infrastructure is highly vulnerable and must adopt resilience-by-design strategies.
- AI is both a threat and a defense tool — organizations must harness it wisely.
- Zero Trust and continuous monitoring are essential pillars of modern cybersecurity.
- Collaboration, awareness, and regulation are key to building a more secure digital future.

Thank you for your attention!

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