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SWISS COGNITIVE

Applying Machine Learning to Cyber Security

CognitiveTank

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swiss made software

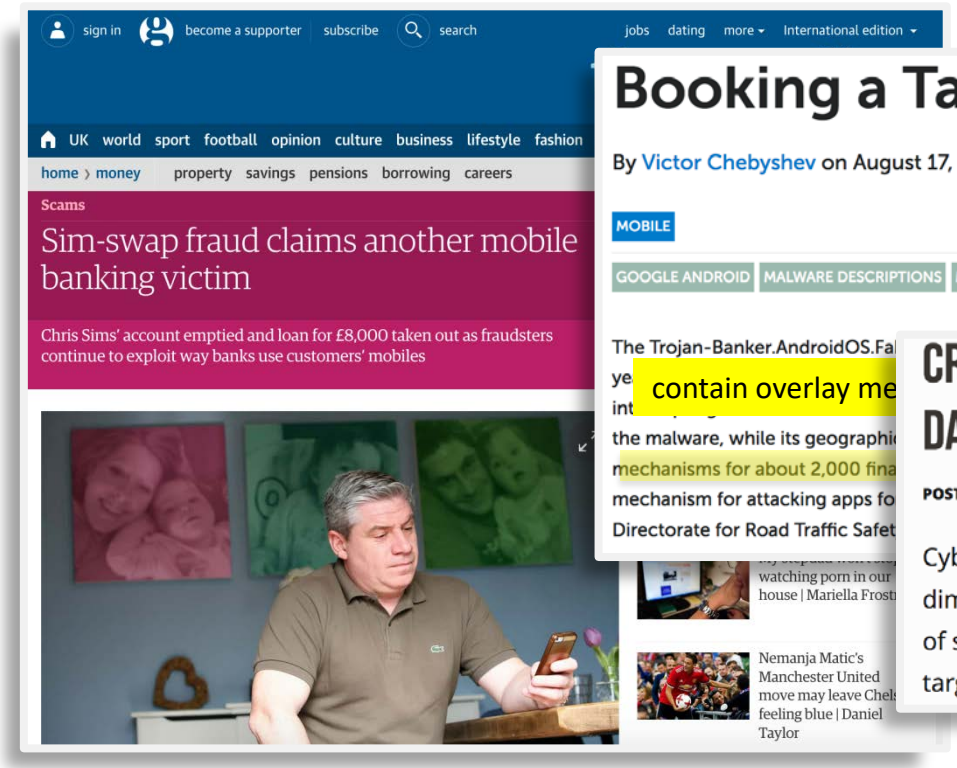
Agenda

- Situation Today
- Approaches with ML
- Putting It All Together
- Conclusion

Situation Today

Increasing Trends

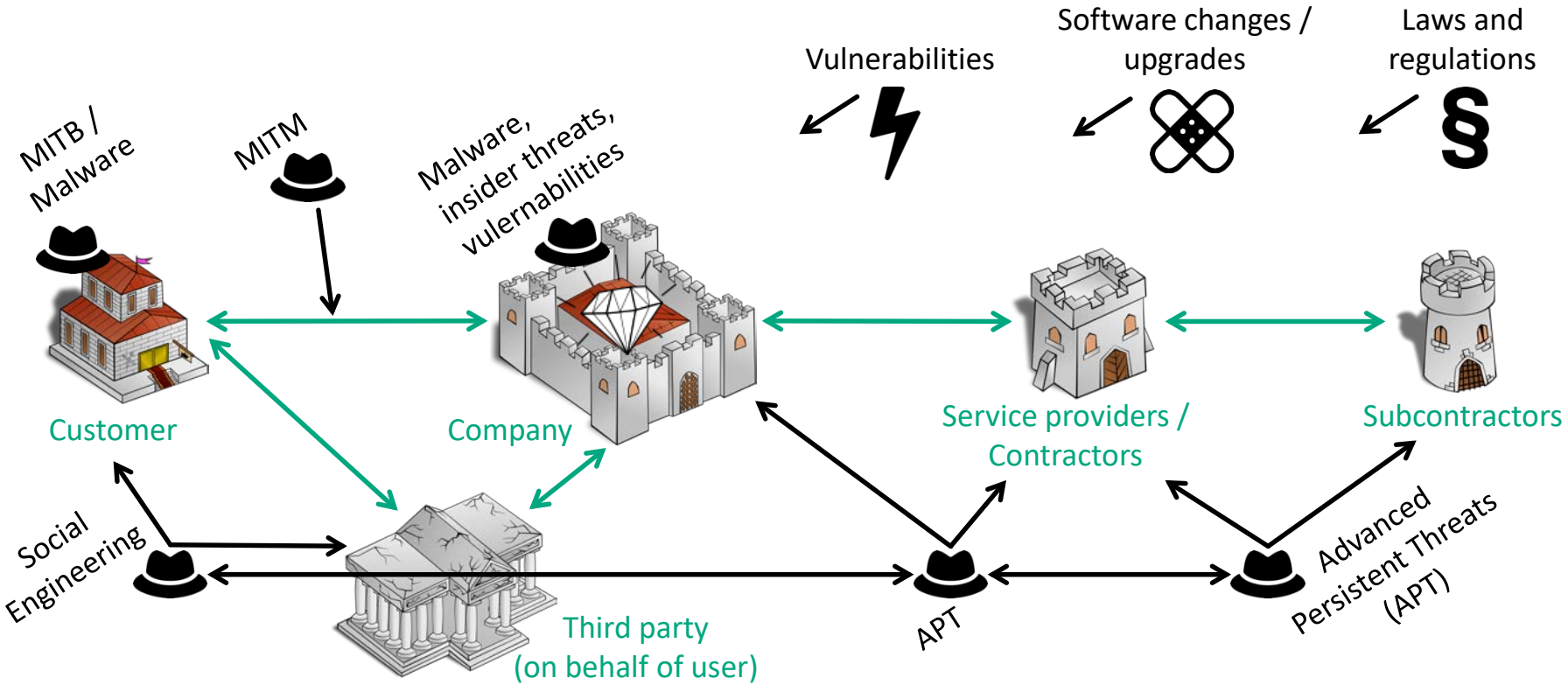
Source: https://securelist.com



Source: https://www.theguardian.com

Source: https://www.deepdotweb.com

Enterprise Landscape



Challenges Today

- Cost of IT security (infrastructure, staff with a lot of manual tasks)
- Too many false positives of security events
- Too long incident and response time as well as resolution time
  - The more time required – the bigger the risks
- Getting the right security people
- Keeping up knowledge on new threats and vulnerabilities

→ **Today's security measures cannot cope with today's business requirements**

Approaches with ML

Categories of Available Data

Device and network information

- All information that is only influenced by the device of the user. In case of a web application, this might be e.g. the used OS or browser version.

Context information

- Through the physical context defined data, such as geolocation, time or noise.

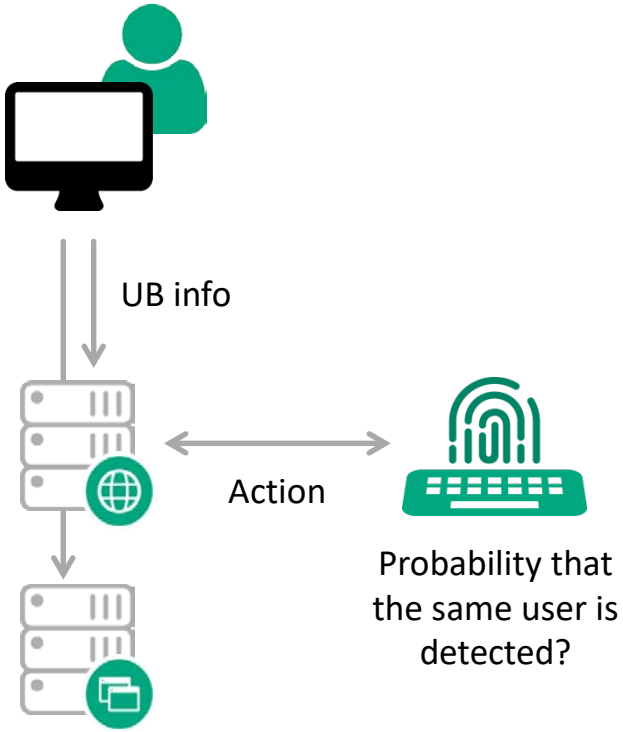
Biometric information

- Information that is defined by the user or its behavior itself, such as how the user looks or sounds and how he uses his keyboard or touchpad.

Application-specific information

- Transaction data and usage patterns

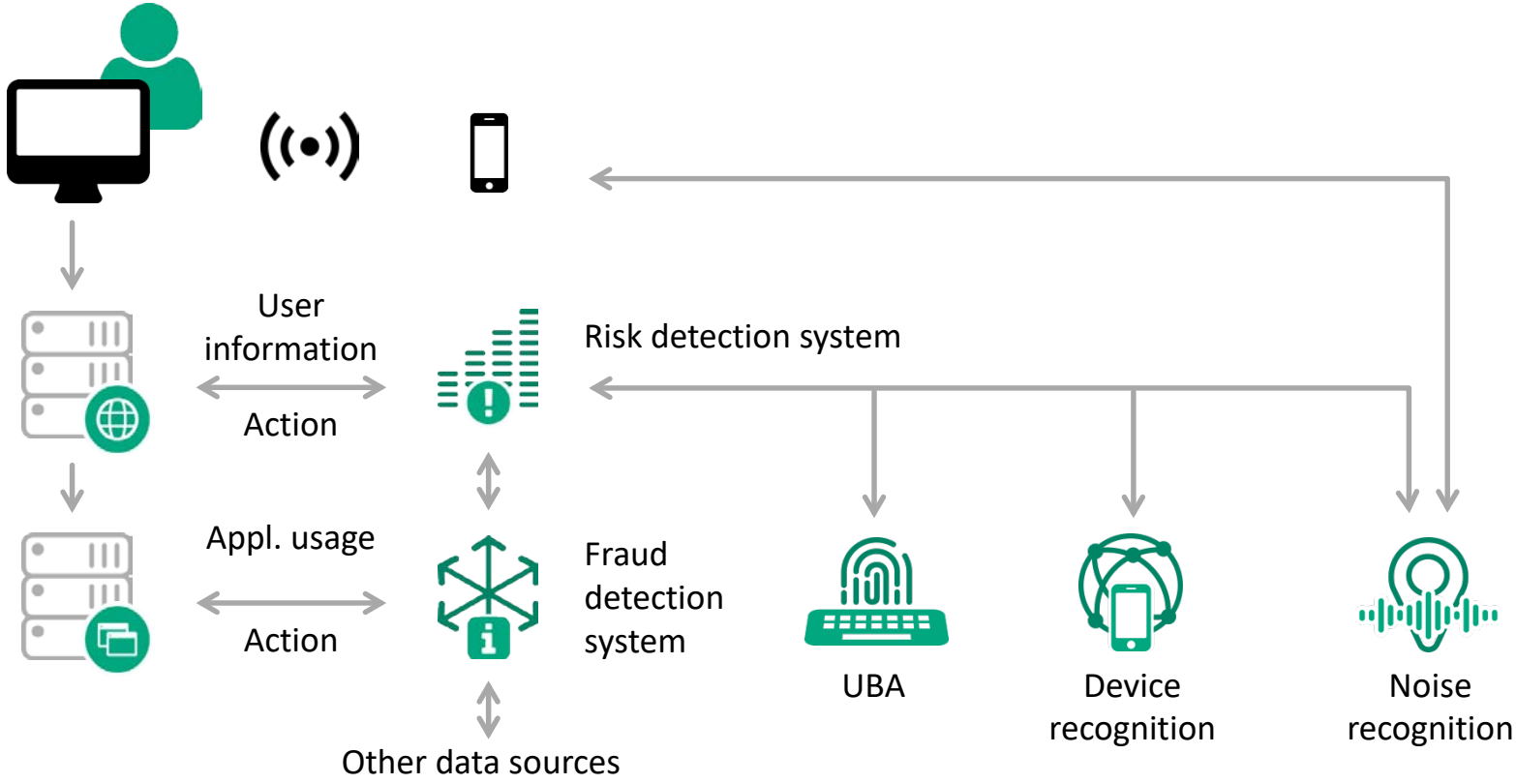
Biometric Information – User Behavior Analytics



- User behavior analytics (UBA)
  - Keyboard interaction, device position, etc.
- User needs to train the system
- Profile required for each user and device
- Once the system is trained, the method is without user interaction
- Continuous authentication possible

Putting It All Together

Central Risk Detection System



Conclusion

What Did We Gain?

Threat	Measures today	Limitation with today's measures	Status Today	Status with ML
Customer / Employee impersonification	Two-factor authentication	Only at the start of a session; not compatible with "always logged on" mentality Stolen credentials can only be detected by the user		
MITM (Network)	Transport Layer Security			
Malware, MITB	AV, awareness trainings	Diffucult to detect client-side malware Detecting 0-days is very difficult		
Vulnerabilities (OWASP Top 10)	Secure coding; Web application firewall; keep up with patches	Almost impossible to get all things right		
Social Engineering	Awareness trainings	Even after training – impossible to be aware of all forms of social engineering attacks		
Rogue employee	Monitoring, DLP			
Advanced Persistent Threats	Mix of above measures DLP tools (rule-based)	With current tools almost impossible to detect		

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