

EUCCNC

THE CONNECTIVITY REVOLUTION

European Conference
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Communications

Dubrovnik
Croatia
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VIRTUAL CONFERENCE



Threats and Security drivers, Layers of Defence, Security assurance

John Hickey - Nokia
June 16th , 2020



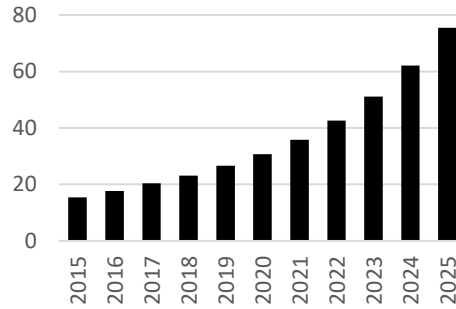
Trends impacting cybersecurity

Expanding threat landscape

IoT

~80 billion IoT devices in 2025

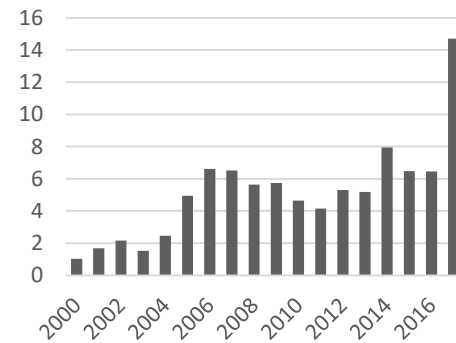
“All devices which can connect to the Internet ... are potentially at risk of a cyberattack.” (Interpol, 2018)



Software

~15k new SW vulnerabilities in 2017

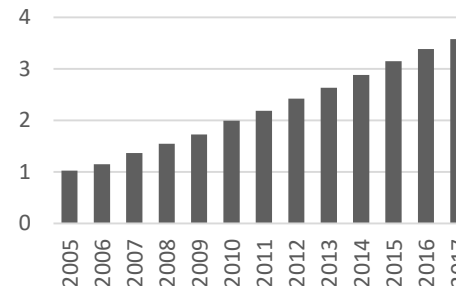
“111 billion lines of new SW code is created every year with billions of vulnerabilities included” (cybersecurity ventures, 2017)



Humans

> 4 billion internet users today

- 95% of all incidents recognize “human error” as a contributing factor. (IBM, 2014)

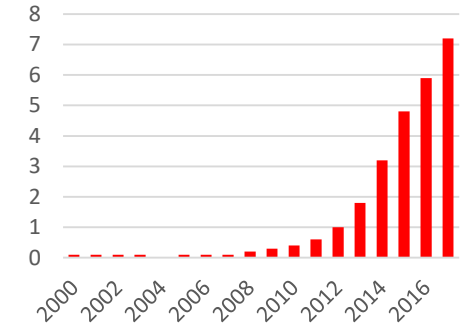


Increasing sophistication

Wide Diversity of malware

> 700 million malware samples in 2017

350k new malware samples per day (AV-test)



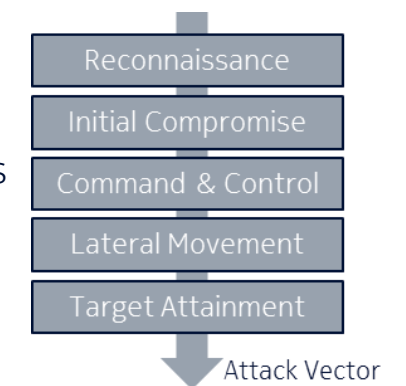
Automation & criminal ecosystems

80 billion malicious scans detected on AT&T’s network a day



Multi-stage attacks

101 days median time from compromise to detection (M-Trends 2018, FireEye)



5G Security Drivers

5G Security

New use cases

Growing need for flexibility

Growing need for reliability

New networking paradigms

New threats

Changing ecosystem

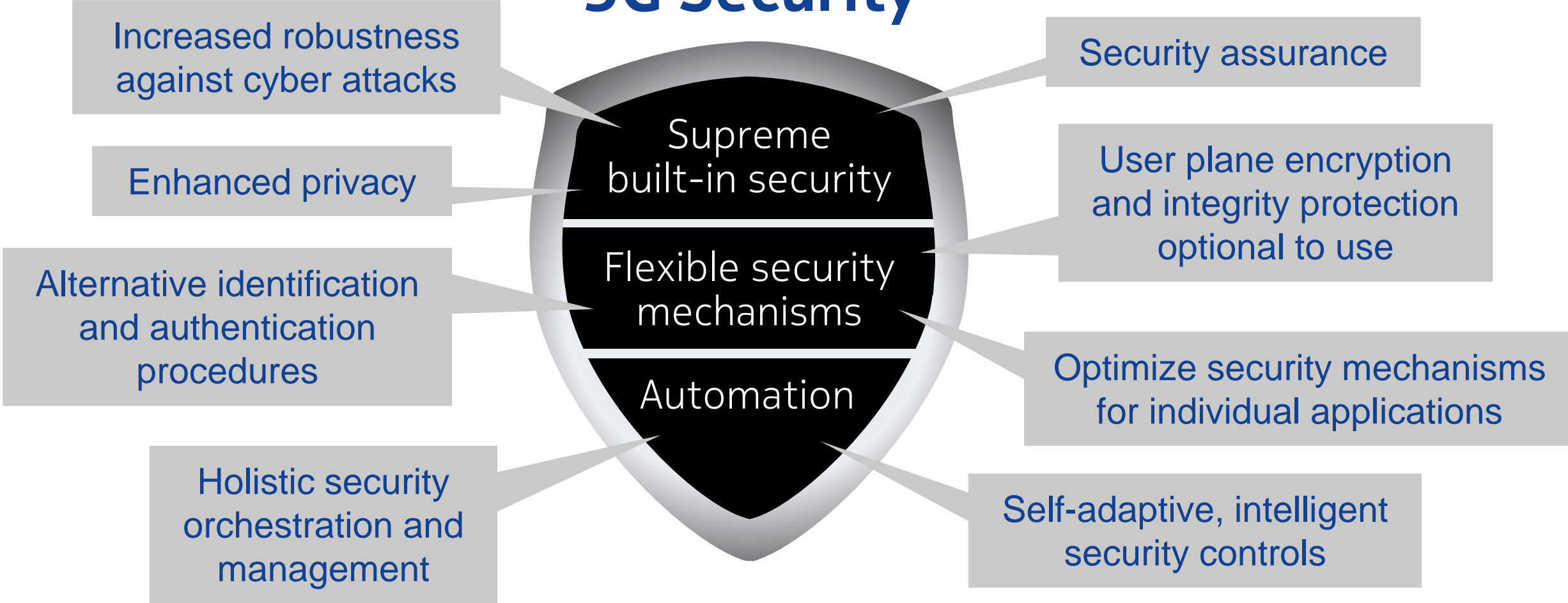
Supreme
built-in security

Flexible security
mechanisms

Automation

5G Security requirements - Examples

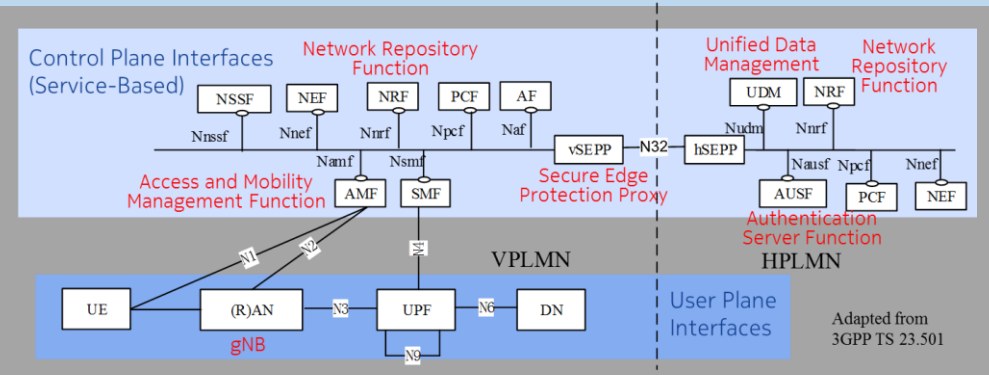
5G Security



Layers of Security

Security architecture specified by Standards (e.g. 3GPP)

Nokia Products are 3GPP compliant and implement 3GPP security



Network element security measures

Security by Design: *VNF Hardening, OS Hardening, Hypervisor Hardening, Secure Boot, Root of Trust, Software Integrity Protection, Secure Key & file storage, Memory Protection, Account Management*

Network security unspecified by Standards

Architecture and e2e safeguards, which are on top of standards and product security, but still essential for proper risk management

