

# TRUSTED VALUE CHAIN IN INDUSTRY 4.0

SUMMIT INDUSTRIE 4.0 ÖSTERREICH

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SECURE CONNECTIONS  
FOR A SMARTER WORLD

PUBLIC

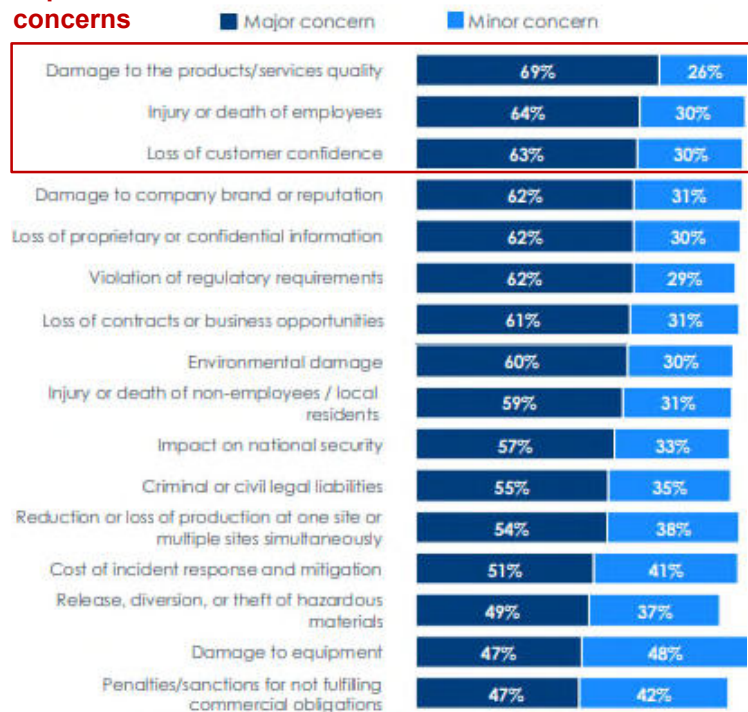
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# IMPACTS OF ATTACKS IN INDUSTRIAL SYSTEMS

## Concerns about industrial security incidents

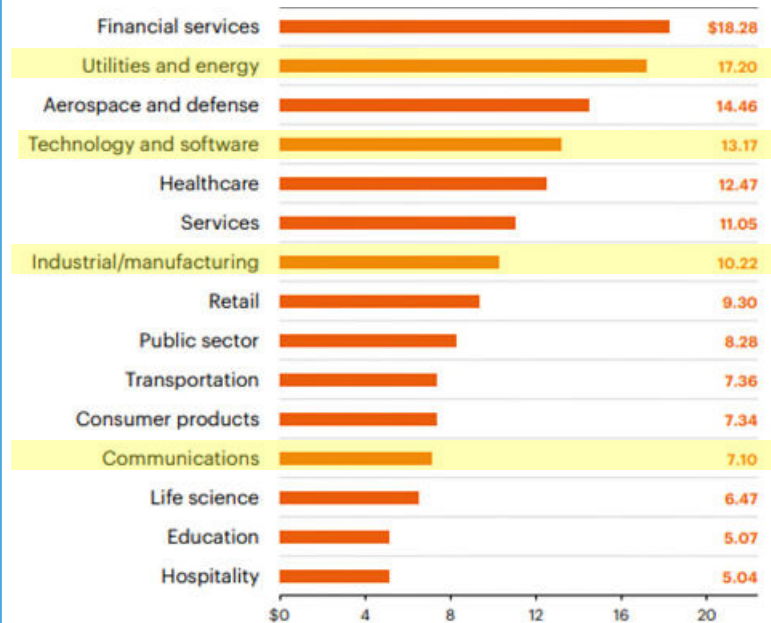
### Top 3 concerns



Source: Kaspersky, 2018.  
<https://ics.kaspersky.com/media/2018-Kaspersky-ICS-Whitepaper.pdf>

## Average annualized cost of cyber crime by sector (US\$ millions)

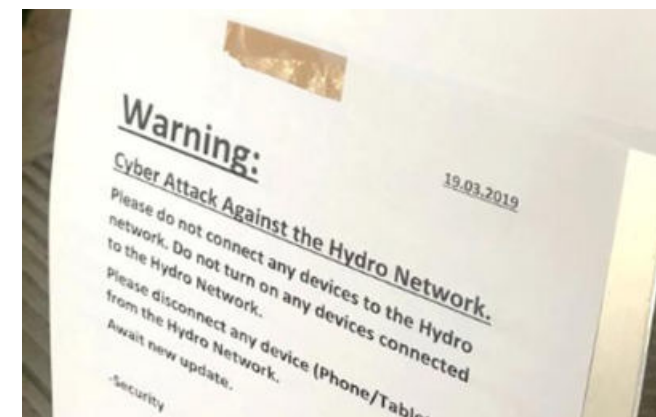
\*Sample data: 254 companies



Source: Accenture, 2017.  
[https://www.accenture.com/t20170926t072837z\\_w\\_/us-en/\\_acnmedia/pdf-61/accenture-2017-costcybercrimestudy.pdf](https://www.accenture.com/t20170926t072837z_w_/us-en/_acnmedia/pdf-61/accenture-2017-costcybercrimestudy.pdf)

## It is not only statistics – It is real and now!! Year: 2019

OSLO (Reuters) - Norwegian aluminum maker Norsk Hydro may have lost more than \$40 million in the week that followed a cyber attack that paralyzed parts of its operations, and a full recovery of IT systems will take weeks or more, the company said.

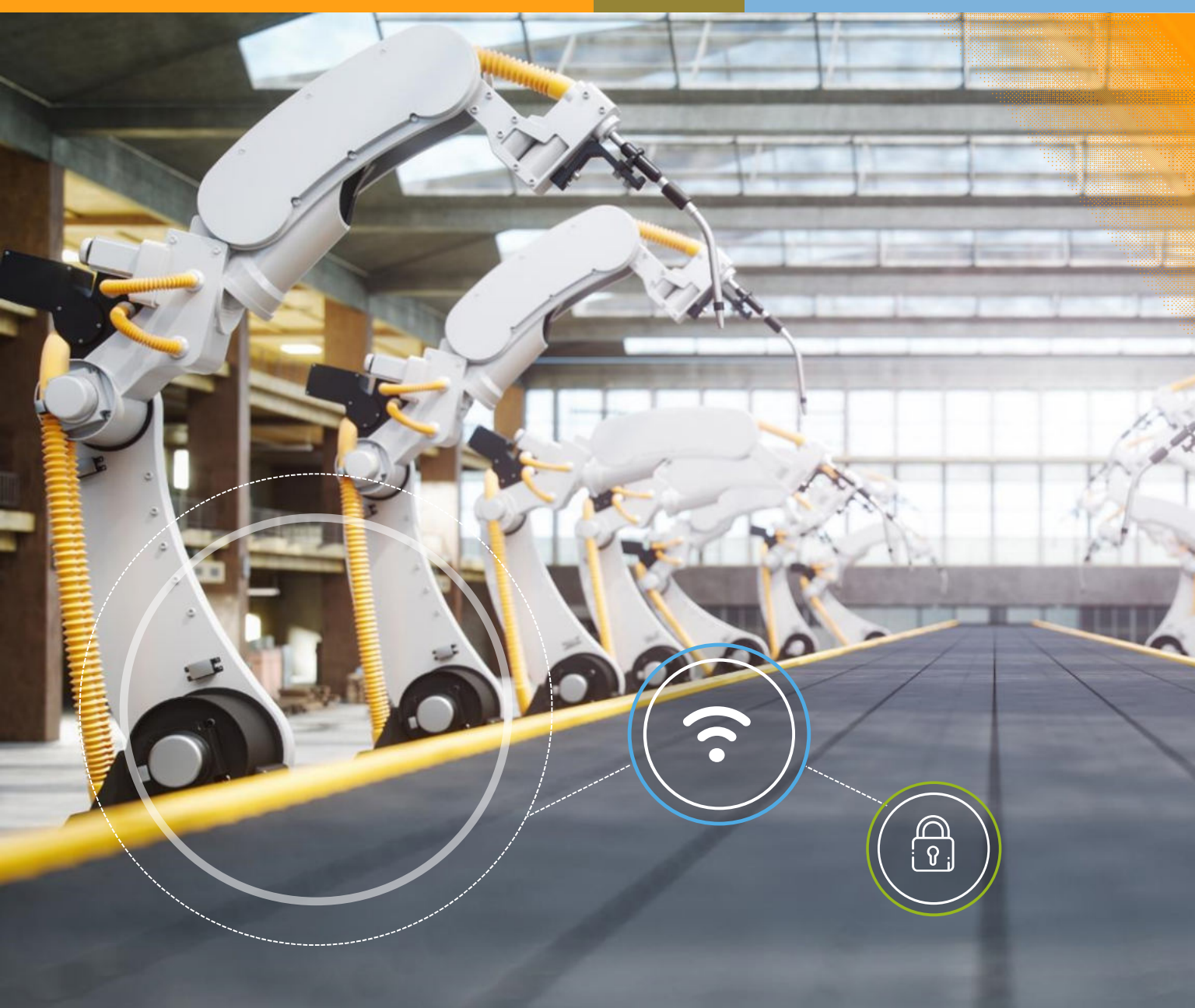


Norsk Hydro had to halt some of its production on March 19 and switch other units to manual operation after hackers blocked its systems with ransomware.

Source: Reuters, 2019.  
<https://www.reuters.com/article/us-norway-cyber/norsk-hydros-initial-loss-from-cyber-attack-may-exceed-40-million-idUSKCN1R71X9>

# WHAT ARE THE THREE MOST RELEVANT SECURITY CHALLENGES FOR INDUSTRY 4.0?





# INDUSTRY 4.0

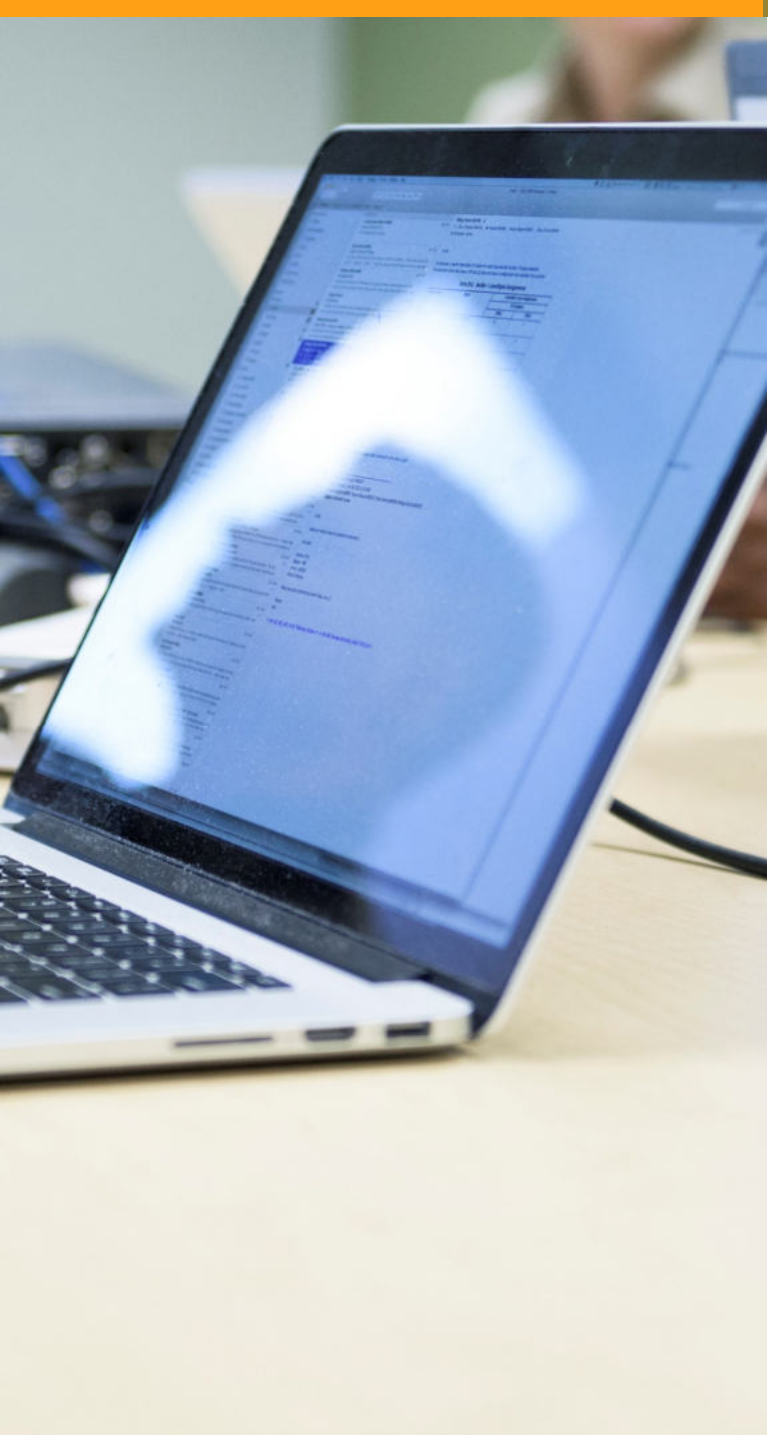
Trustworthy secure solutions and connected ecosystems for Industry 4.0





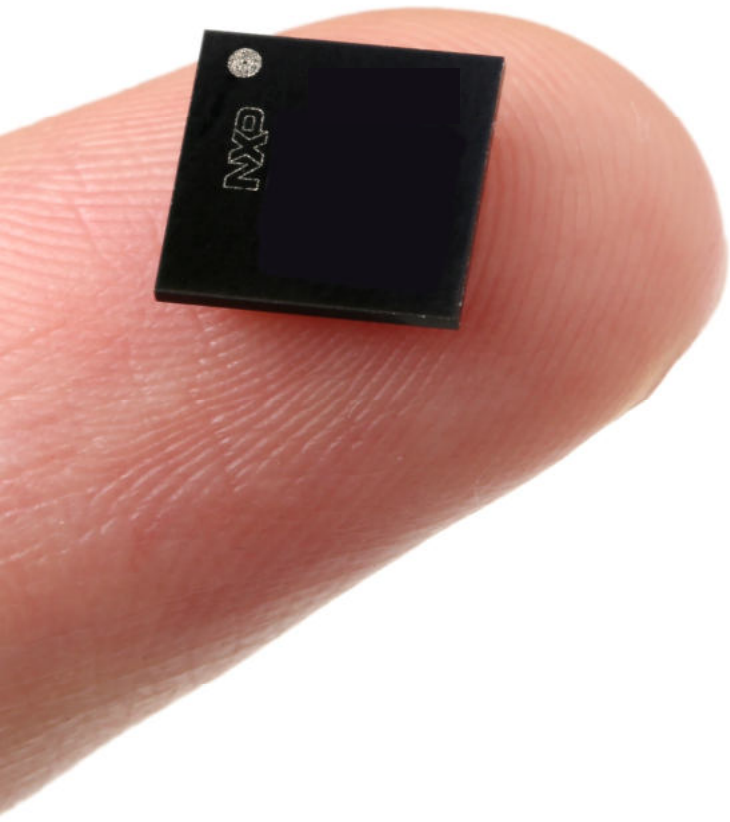
## TRUSTWORTHY SECURE SOLUTION

- Can your customers trust your (I)IoT application?  
Let's assume you...
  - use cryptography to secure assets and customer data
  - have developed it according to security-by-design
  - have your solution reviewed and hardened for security  
... to reach compliance and certification
- Is this enough?
- Can you trust the components you build upon?



## TRUSTWORTHY SECURE SOLUTION

- Consider software components
  - What about the third-party libraries, frameworks, or the OS?  
What about the cloud?
  - What about if someone changes these?  
What about if someone exchanges the application?
  - Leverage hardware components to stay in control
    - Sign images and enforce secure boot
    - Implement secure update procedures
    - Leverage HW security functionality
- Can you trust the hardware components?



## TRUSTWORTHY SECURE SOLUTION

- Consider hardware components and assume you leverage its security functionality
  - Can you trust the vendor/manufacturer/supplier?
  - Is your device manufactured by a third party (contract) manufacturer? Can you trust them?
- Mitigations
  - Establish trust in your software component suppliers through
    - Compliance and certification
    - Trusted hand-over



Security needs to be considered on all levels!

## TRUSTED VALUE CHAIN



- Trustworthy partners/suppliers required
  - Security must be considered from the start, through design to deployment
  - Suppliers and partners must be trustworthy throughout the value chain
  - Compliance and certification



- The story does not end here...
  - (I)IoT solutions are systems of systems
  - Devices must be onboarded, maintained, and off-boarded
  - All lifecycle stages of a device must be considered!



- NXP has a strong history of providing solutions to ecosystems that require heightened security and privacy; for end nodes via the edge and to the cloud
  - i.e. NXP EdgeVerse™ and NXP EdgeLock™ SE portfolio





**EDGELOCK™**  
**ASSURANCE**  
by NXP

## EdgeLock™ Assurance

Security is fundamental to the solutions we create. When you see EdgeLock™ Assurance, you'll know it's designed to meet industry standards. Proven processes and validation assessments help ensure we deliver trusted solutions for your security challenges. Together, we can advance the world securely with confidence.

[www.nxp.com/EdgeLockAssurance](http://www.nxp.com/EdgeLockAssurance)

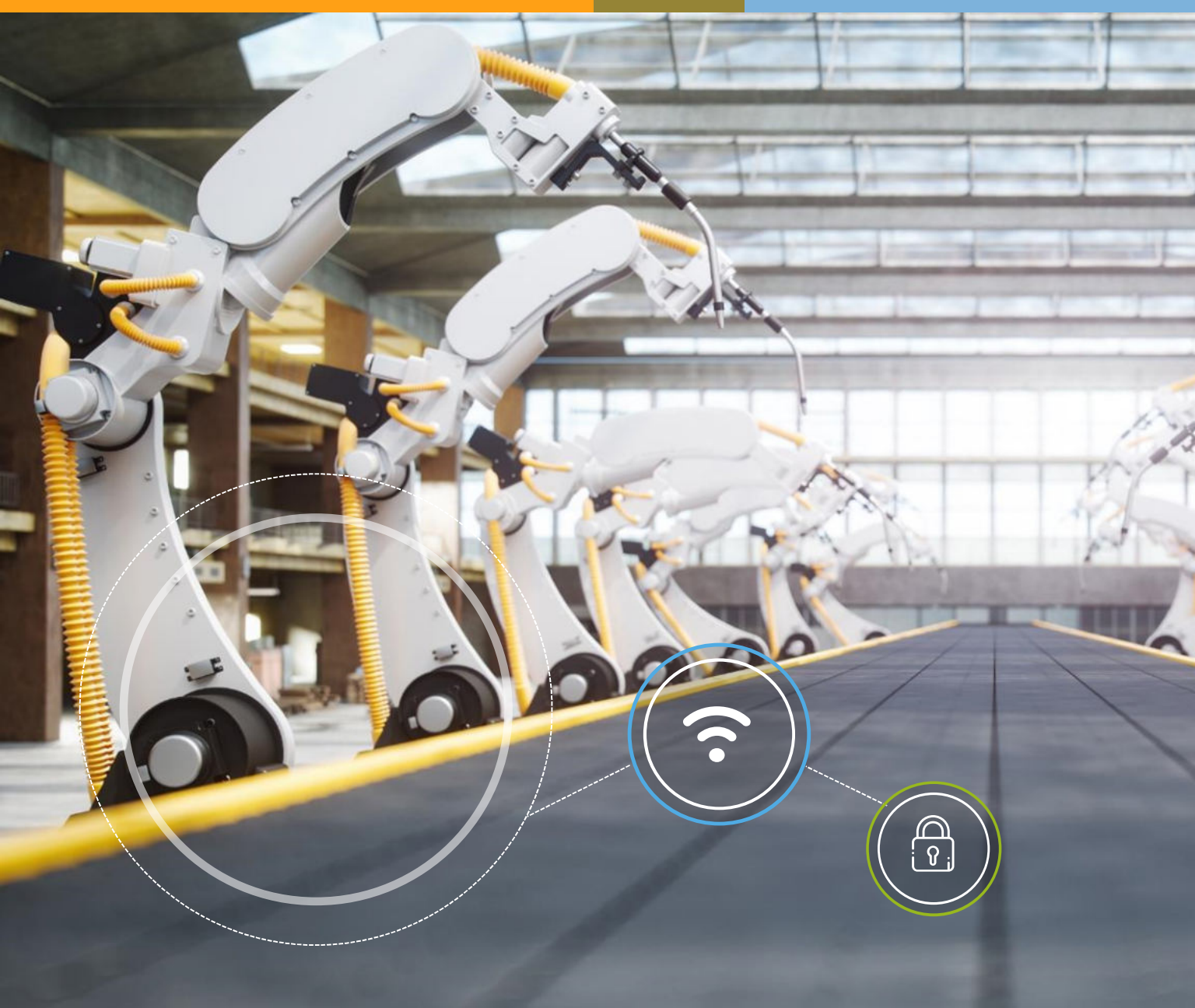


PROCESS	COMPLIANCE AND CERTIFICATION	SUPPORT AND PARTNERS
<p>Security is an integral part of our way-of-working, and to ensure security- and privacy-by-design, we continuously invest in our people and processes</p> <ul style="list-style-type: none"><li>• NXP <b>Security Maturity Process (SMP)</b> addresses security in the concept-to-release lifecycle</li><li>• NXP Dedicated <b>Product Security Incident Response Team (PSIRT)</b> addresses security in the post release lifecycle</li><li>• NXP utilizes <b>Third Party Assessments</b> of security in our products and our organization</li></ul>	<p>Our products are not only designed to be compliant with industry standards and regulations – we participate in standard groups and work with third-parties for independent assessments.</p> <ul style="list-style-type: none"><li>• NXP complies with <b>IEC 62443-4-1</b> (industrial) and targets <b>ISO/SAE 21434</b> (auto) compliance at release</li><li>• NXP participates in <b>Charter of Trust and Auto-ISAC</b></li><li>• NXP is <b>ISO 27001 certified</b></li><li>• NXP drives and applies certification schemes to address the market needs via e.g. <b>Global Platform SESIP<sup>1</sup></b>, Arm PSA, Common Criteria EAL and many more</li></ul>	<p>NXP helps customers select the right security product or system solution for their use cases.</p> <ul style="list-style-type: none"><li>• NXP provides <b>support and documentation</b>, making it easier for our customers to integrate security</li><li>• NXP works with <b>ecosystem partners</b> to help customers achieve end-to-end security</li><li>• NXP develops and deploys methods to analyze and map requirements through e.g. <b>Security Primitives<sup>2</sup></b></li><li>• NXP provide though leadership in new technologies and trends like <b>Post Quantum Cryptography<sup>3</sup></b></li></ul>

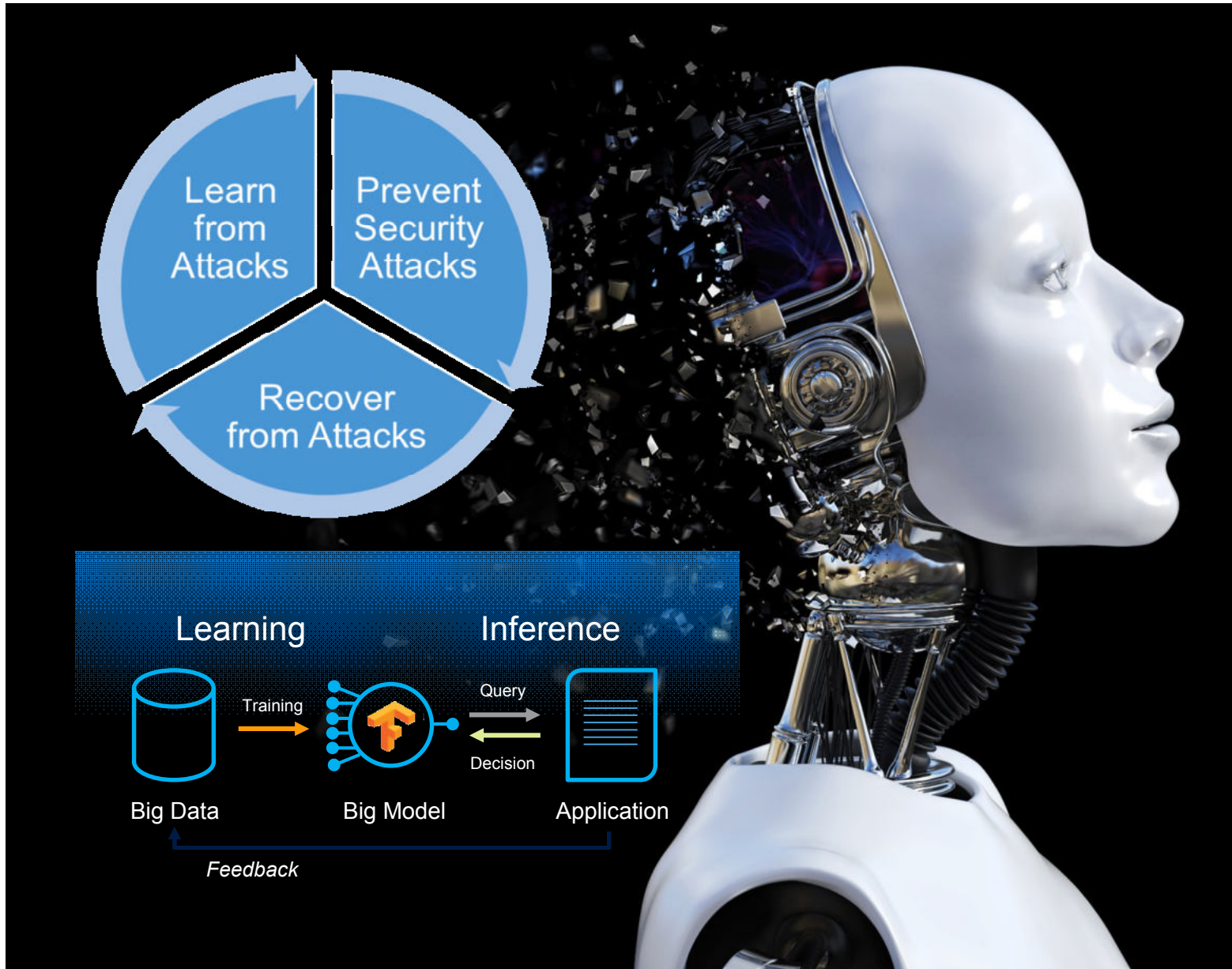
<sup>1</sup> <https://globalplatform.wpengine.com/sesip/>

<sup>2</sup> <https://nxp.com/SecurityPrimitives>

<sup>3</sup> <https://www.nxp.com/company/blog/the-emergence-of-post-quantum-cryptography:BL-POST-QUANTUM-CRYPTOGRAPHY>



## BEYOND TRUSTED VALUE CHAIN



- Longevity, especially for industrial products, requires high initial security levels and lifetime maintenance
- Connected devices will be monitored for unusual behavior using AI in the cloud and also at the edge
- Security profiles can be loaded and adapted in real time
- Security is verified and certified to comply with industry standards and regulations

# THANK YOU.

TOGETHER, WE'RE NOT JUST ADVANCING  
TECHNOLOGY, WE'RE ADVANCING SOCIETY.



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