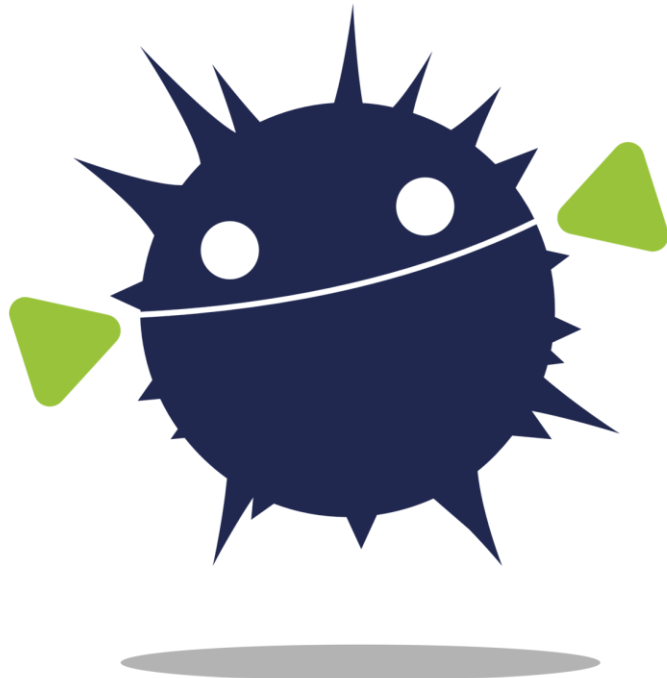# ORSHIN High–level Overview

ORSHSEC, Halifax, September 2024

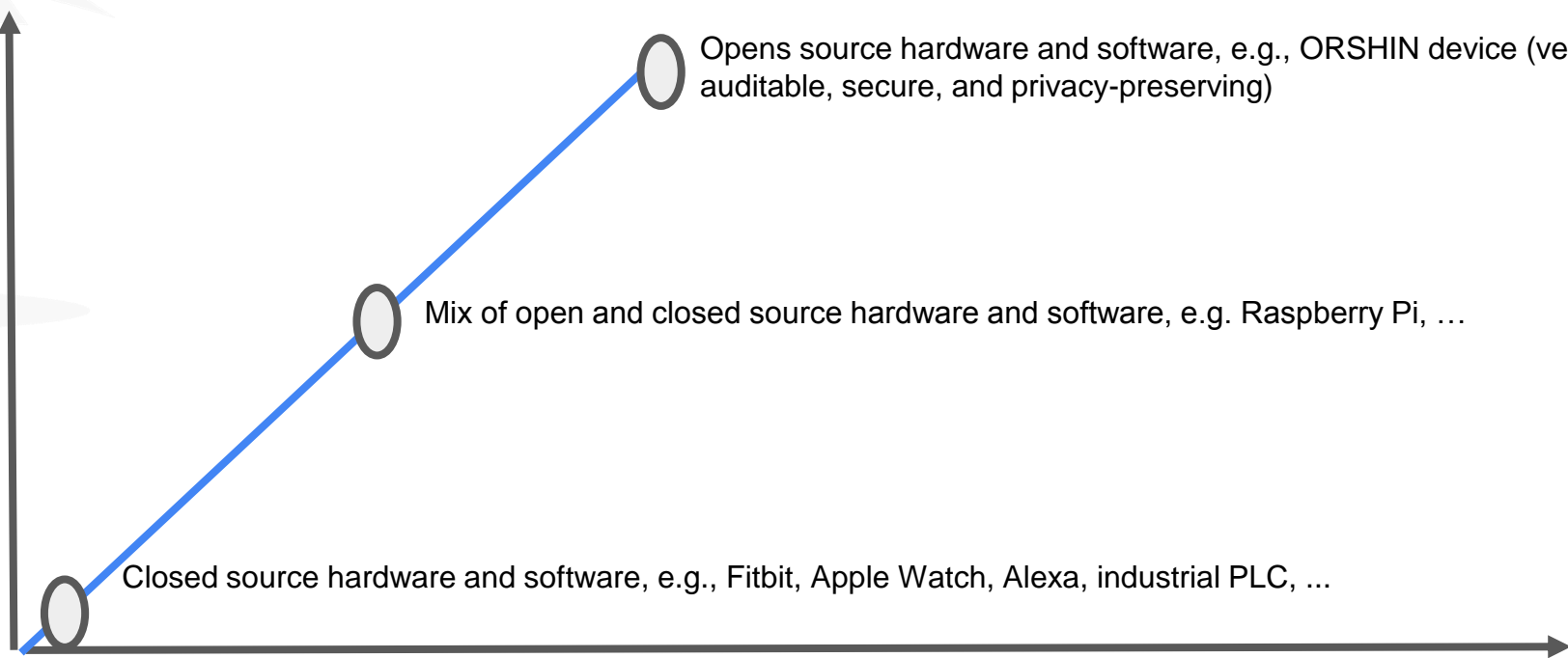## Benedikt Gierlichs (KU Leuven)

ORSHIN

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ORSHIN Context

Device Trustworthiness

Opens source hardware and software, e.g., ORSHIN device (verifiable, auditable, secure, and privacy-preserving)

Mix of open and closed source hardware and software, e.g. Raspberry Pi, …

Closed source hardware and software, e.g., Fitbit, Apple Watch, Alexa, industrial PLC, ...

Device Openness

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ORSHIN Context

- o IoT and iIoT devices are typically closed–source
- o Design, implementation and entire life cycle not transparent
- o Limited trustworthiness and auditability
- o Security and privacy add cost, devices are very cost competitive
- o Resource constrained devices routinely lack security or privacy

- o IoT and iIoT devices gain importance, "smart" critical infrastructure
- o Security and privacy are a must

- o Open-source approach revolutionized software
- o Overall goal of ORSHIN: toward similar revolution in hardware
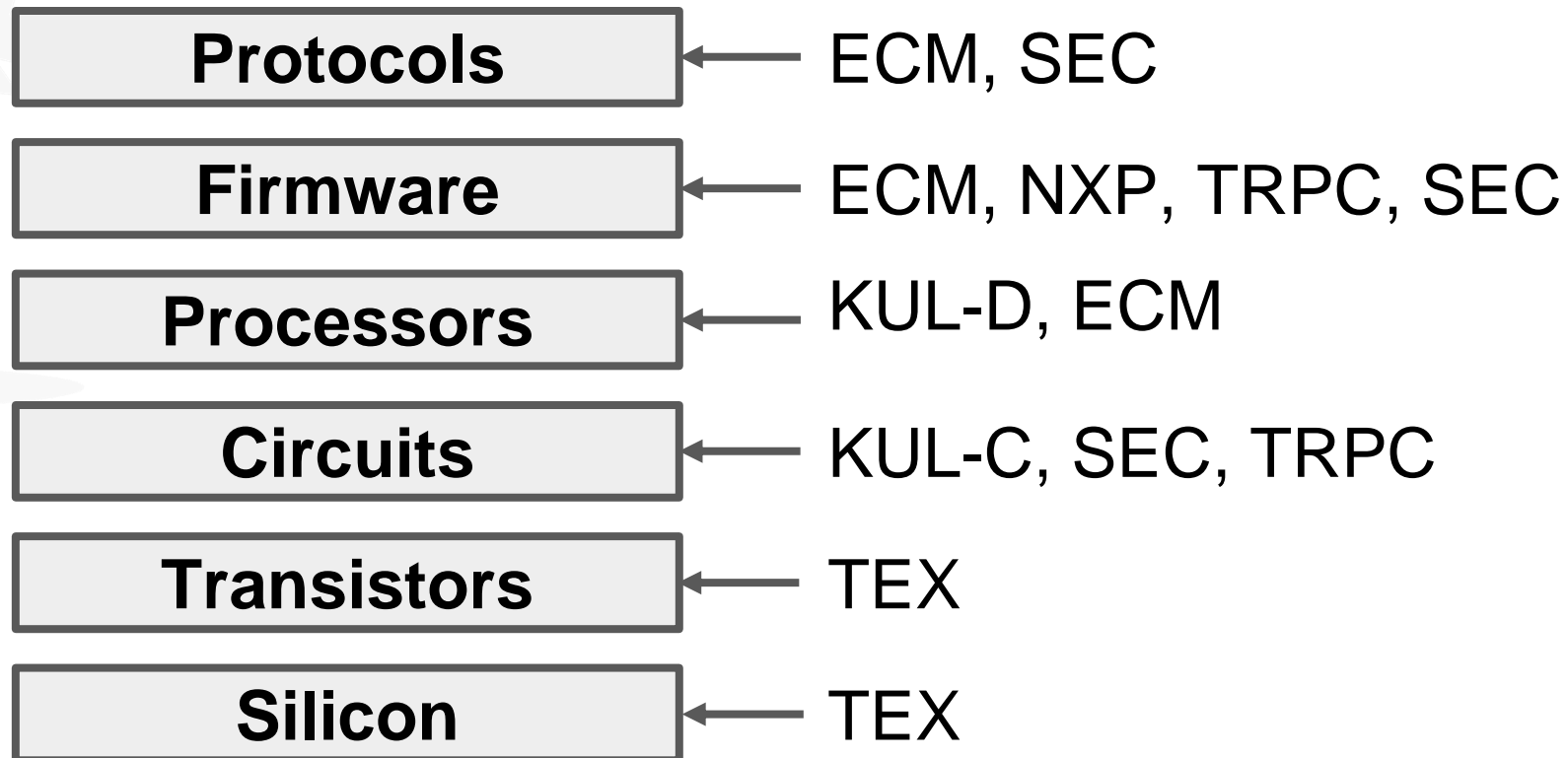
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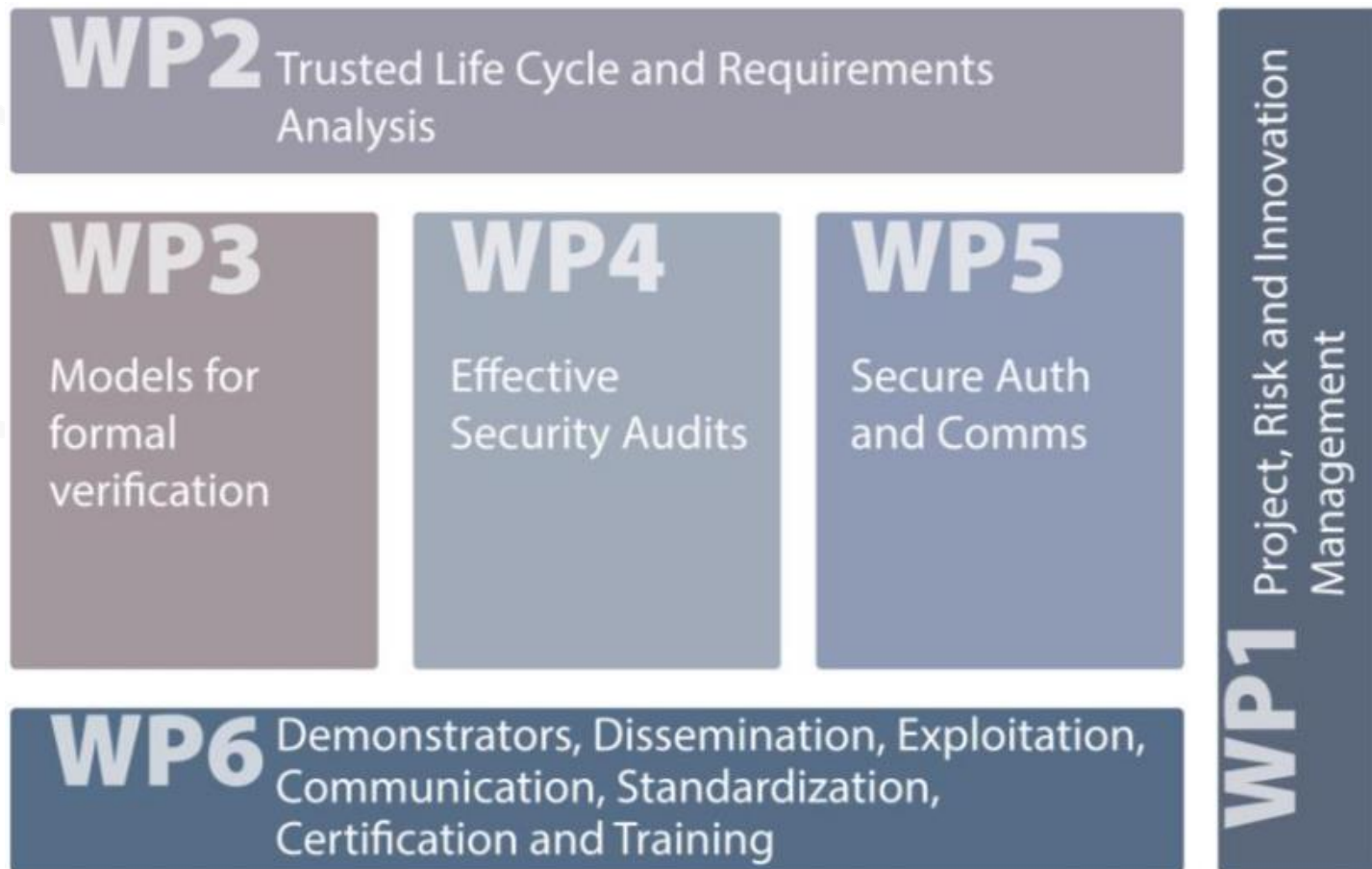# ORSHIN Consortium: Seven Members from Six Countries

- Academia
  - EURECOM (ECM)
  - Katholieke Universiteit Leuven (KUL)
- Industry (incl SME)
  - Security Pattern (SEP)
  - NXP Semiconductors (NXP)
  - Texplained (TEX)
  - Tropic Square (TRPC)
- Project management
  - Technikon (TEC)

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ORSHIN Consortium Full–Stack Capabilities

Protocols	← ECM, SEC
Firmware	← ECM, NXP, TRPC, SEC
Processors	← KUL-D, ECM
Circuits	← KUL-C, SEC, TRPC
Transistors	← TEX
Silicon	← TEX

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ORSHIN has Six Work Packages (WPs)

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Practical

o Provision real-world challenges, requirements and use cases
- o By ORSHIN's industrial partners and SMEs (NXP, SEC, TRPC, TEX)

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ORSHIN Excellent Scientific Impact

o Published 9 papers at top conferences
  o Usenix Security 2023, COSADE 2023,
    DATE 2023, IEEE HOST 2023,
    ACM WiSEC 2023, IEEE Euro S&P 2023,
    CARDIS 2023, ACM CCS 2023,
    IEEE S&P 2024
o Recently 2 papers accepted at top venues
  o TCHES, ESORICS

Categories > Engineering & Computer Science > Computer Security & Cryptography ▼

	Publication
1.	IEEE Symposium on Security and Privacy
2.	IEEE Transactions on Information Forensics and Security
3.	ACM Symposium on Computer and Communications Security
4.	USENIX Security Symposium
5.	Computers & Security
6.	Network and Distributed System Security Symposium (NDSS)
7.	IEEE Transactions on Dependable and Secure Computing
8.	International Conference on Theory and Applications of Cryptographic Techniques (EUROCRYPT)
9.	International Cryptology Conference (CRYPTO)
10.	Journal of Information Security and Applications
11.	IACR Transactions on Cryptographic Hardware and Embedded Systems
12.	Security and Communication Networks
13.	International Conference on Financial Cryptography and Data Security
14.	IEEE European Symposium on Security and Privacy
15.	International Conference on The Theory and Application of Cryptology and Information Security (ASIACRYPT)
16.	ACM Asia Conference on Computer and Communications Security
17.	Symposium On Usable Privacy and Security
18.	IEEE Security & Privacy
19.	Computer Security Applications Conference
20.	IEEE International Conference on Trust, Security and Privacy in Computing and Communications (TrustCom)

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ORSHIN Extra-academic Dissemination

o Presented ORSHIN at many (inter)national events
  o CHES, ST Micro summit, RESSI, THCON, Hardwear.io, RECON, ACSW, ESREF, COSADE, Deeptech cyber
o We participated in two winter/summer schools
  o Cyber in Sophia summer school, NECS winter school
o We published many open source research artifacts
  o E-Spoofer, Prospect, BLUFFS, LCE demo, MORE?

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Thank you!

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ORSHIN Grant Agreement No. 101070008

If you need further information, please contact the coordinator:

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