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# 2022 REPORT ON FUTURE RESEARCH

TRENDS IN SECURE HARDWARE AND EMBEDDED  
SYSTEMS

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# Why?

- To provide a view of the future trends for RISE,
- To help predict the underlying hardware and embedded systems security research needed,
- Next five to ten years to meet industry requirements,
- Our best efforts!
- **Context -> Sectors -> Critical industries -> CONCLUSIONS**
- *RISE ISAB has been created to allow member companies and stakeholders to engage with the research community and to inform funding calls around their real-world challenges.*

# Context and Sectors

## ■ Context

- Geo-political tensions
- Global reach and democratisation of technologies
- Complexity of underpinning socio-technical networks
- Supply chain challenges
- Climate change
- Demands for energy efficiency

## ■ Sectors

- Space
- Automotive
- Semiconductors
- Unmanned systems, such as drones
- Telecommunications infrastructure
- Built environment (smart cities etc)
- Maritime (autonomous boats)
- Trucks and transport

# Critical industries

- **Critical industries**

- Critical infrastructures,
- Cryptography,
- Communications,
- Internet of Things
- Data science and analytics,
- Assured Artificial Intelligence (AI)/  
Machine Learning (ML)
- Resilient systems
- Model based Systems Engineering

- High Performance Computing and ICT
- Increasing virtualisation
- Supply chains
- Human Machine Teaming,
- Education
- Healthcare
- Manufacturing (private networks and  
robotics, industry 4.0)

# ISAB thoughts for future areas

## ■ CONCLUSIONS

- Cryptography alternatives
- Improved security to meet legislation and physical security
- Supporting hardware security techniques
- Attacks mitigation
- Cloud secure hardware
- Supply chain security
- Energy efficiency
- Hardware management
- Testing stratagemms
- Standards for interworking and protocols

# Example: Telecommunications

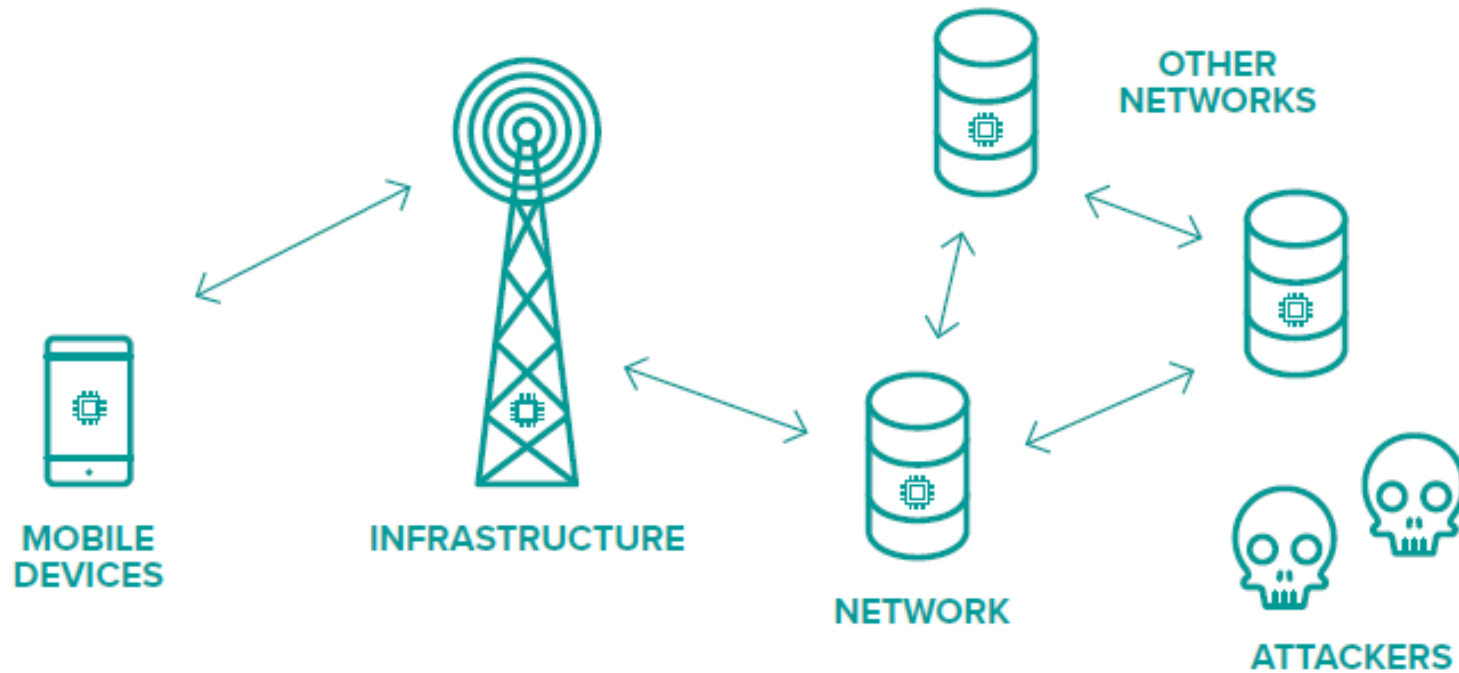
Efficiency

Secure hardware

Secure cloud

Testing

Standards



# Example: Maritime

Secure standards  
Security testing  
**Secure hardware**  
Secure communications  
Crypto

