



# **Commercial Microelectronics Security Challenges**

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# Challenges as Security Becomes Ubiquitous

## Who is your Adversary?

- Question elicits a very interesting response
- Sophisticated Low-cost Attacks are on rise
  - Thermal Laser Stimulation<sup>4</sup> (TLS)
  - Electro-Optical Probing<sup>5</sup> (EOP)
- Emerging Sensing Capabilities
  - PLATYPUS<sup>1</sup>, CPAmmap<sup>2</sup>, Sideline<sup>3</sup>

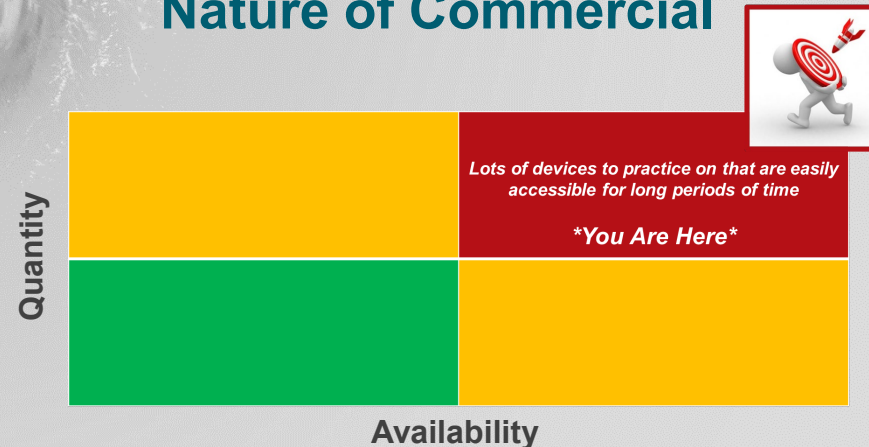
## Emerging Requirements

- Multi-Tenancy
- Confidential Compute
- Close Physical Access
- Cost is Rising but how to monetize?

## Multiple Standards

- |                             |                                   |
|-----------------------------|-----------------------------------|
| • NO Standards              | • ISO21434                        |
| • FIPS 140-3                | • IEC62443                        |
| • PCIe-IDE / TDISP          | • J3101 / J3201                   |
| • Digital Cinema Initiative | • Open Compute Platform           |
| • IEEE 802.11               | • ISO / IEC 15408 Common Criteria |
| • Payment Card Industry     | • Trusted Computing Group         |

## Nature of Commercial



Automotive



Communications



Defense



Data Center



Industrial, Vision and Healthcare

# References

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2. Krautter, Gnad, Tahoori (2021), CPAmap: On the Complexity of Secure FPGA Virtualization, Multi-Tenancy and Physical Design, *IACR Transactions on Cryptographic Hardware and Embedded Systems*, 2020(3), 121-146, <https://doi.org/10.13154/tches.v2020.i3.121-146>
3. Vravellier, Dutertre, Teglia, Moundi (2020), SideLine: How Delay-Lines (May) Leak Secrets from your SoC, <https://eprint.iacr.org/2020/1127.pdf>
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5. Tajik, S., Lohrke, H., Seifert, J.-P. and Boit, C. (2017) 'On the Power of Optical Contactless Probing', *Proceedings of the 2017 ACM SIGSAC Conference on Computer and Communications Security*. ACM. doi: 10.1145/3133956.3134039.

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