

XIPHERA

PEACE OF MIND IN A DANGEROUS WORLD

Securing the Future of Space

Gaisler 25 years in Space

Matti Tommiska, Xiphera



Matti Tommiska



- CEO and co-founder of Xiphera
- Doctoral degree in electrical engineering from Helsinki University of Technology (2005)
- Electronics professional
- 10 years of academic career
- 13 years of expertise in international semiconductor business



About Xiphera



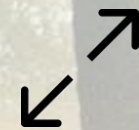
Finnish company
founded **2017**



Secure and optimised
**cryptographic IP
cores** for SoCs and
FPGAs



Hardware-based
security solutions with
proven **cryptographic**
algorithms



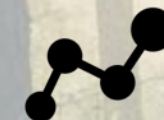
Largest dedicated
cryptographic IP
provider in the world
with wide **portfolio** of
cryptographic IP



Uniform codebase
across SoC and FPGA
designs



Entire product line
**designed fully in-
house**



Committed **roadmap** to
evolving cryptographic
standards



Nearly Half of GEO Satellite Internet Traffic is Unencrypted

Study shows cleartext IP links on geostationary satellites illustrating the lack of unified cybersecurity standards in space.

Zhang, W. M., Dai, A., Ryan, K., Levin, D., Heninger, N., & Schulman, A.
“Don’t Look Up: There Are Sensitive Internal Links in the Clear on GEO Satellites.”

<https://doi.org/10.1145/3719027.3765198>



Threats to Space Technology



Unauthorized access of
ground control station



Eavesdropping



Corruption/Modification of
spacecraft commands



The Time Is Now

SW-based
information
security is
highly
vulnerable

Digital
sovereignty and
resilience

PQC typhoon
and quantum
threat



Software supply chain security

Why this matters in space?

A satellite must only run:

- the exact software version
- approved by the operator
- verified with cryptographic signatures



A malicious update = permanent loss of mission

Quantum-Resilient Security in Space

- Collaboration with **European Space Agency (ESA)** and **Frontgrade Gaisler**
- Developing Authenticated Boot & Hardware Root of Trust for space-grade semiconductor architectures
- Ensures quantum-resilient, future-proof security for space infrastructures
- Secure Boot integration is planned for Frontgrade Gaisler's GR765 space-grade processor.

Other collaborations

beyond gravity

FRONTGRADE
Gaisler



LOCKHEED MARTIN 



XIPHOS

 Creating a new future
Shinsou Denshi Co.,Ltd.

...and many others.



How to secure space?



Secure Boot



Hardware Root of Trust



TRNG



AES256-GCM

Thank you!

XIPHERA

PEACE OF MIND IN A DANGEROUS WORLD

www.xiphera.com