

Semiconductors in defence – European view

EEVA VIINIKKA, PIRJO PASANEN, HANNU HOFFRÉN,
SPINVERSE OY

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Background

The “Semiconductors in defence” study focused on the role of semiconductor value chains in the European defence sector.

The study was commissioned by Business Tampere and managed by Finnish consulting company Spinverse.

The work included selected interviews* of key semiconductor and defence sector players, as well as a desk study.

This presentation summarizes the key findings.

*Due to the sensitive nature of the topic, the interviewees requested that their names and affiliations are not published. Business Tampere knows who they are, though.



KEY SEMICONDUCTOR AND MICROELECTRONICS TECHNOLOGIES NEEDED IN DEFENCE SECTOR

Different use, different technologies & drivers



Low-cost high-volume

Miniaturized,
energy efficient

High-end long-life

Secure, certified,
expensive

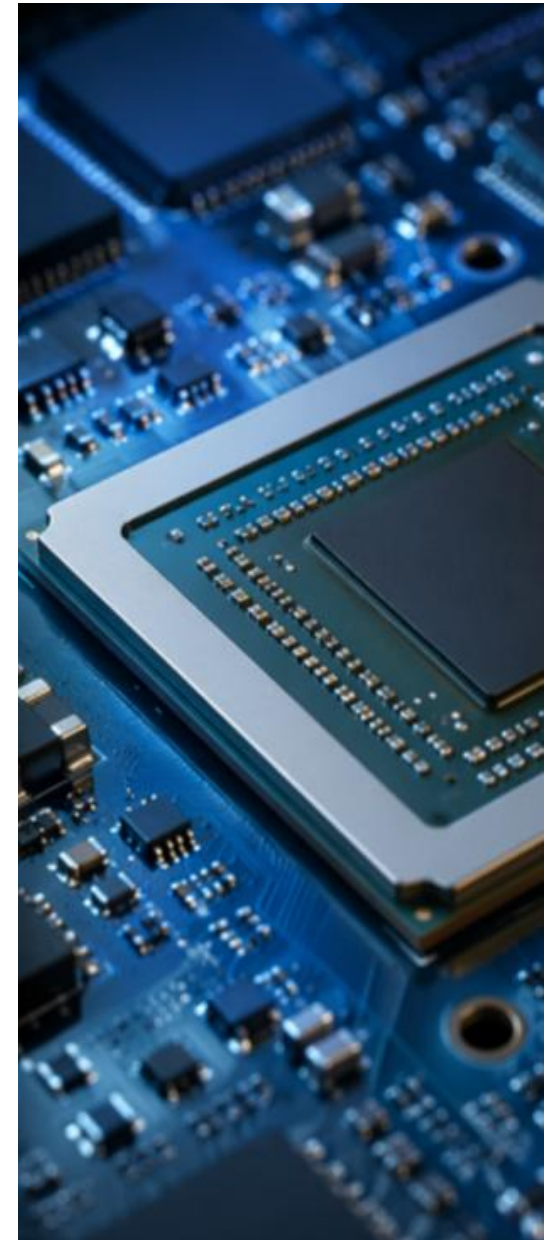
Performance

Robustness, reliability,
field operation

Critical technologies: Both gaps in value chain and strongholds

- **FPGA** based programmable solutions are central for low volume solutions, but rely on non-European sources
- **AI and Edge Computing** are central for autonomous systems and on-device intelligence, but also for completely new functionalities.
- **Electronics packaging**, PCBs are important, modular chiplet-based architectures make sense for low volumes
- **Power management** is central in field conditions
- **RF and robust, fast & secure communications** remain foundational
- **Sensors & imaging** play central role in autonomous systems
- **Integrated photonics** is next-generation enabler.

In addition, CPUs are critical



Market scales & drivers

European aerospace and defence semiconductor market USD 4.6 bn 2025 ⁽¹⁾

Global military and defence semiconductor market USD 12.9bn 2025 ⁽²⁾.

Global semiconductor market USD 891bn 2026. ⁽³⁾

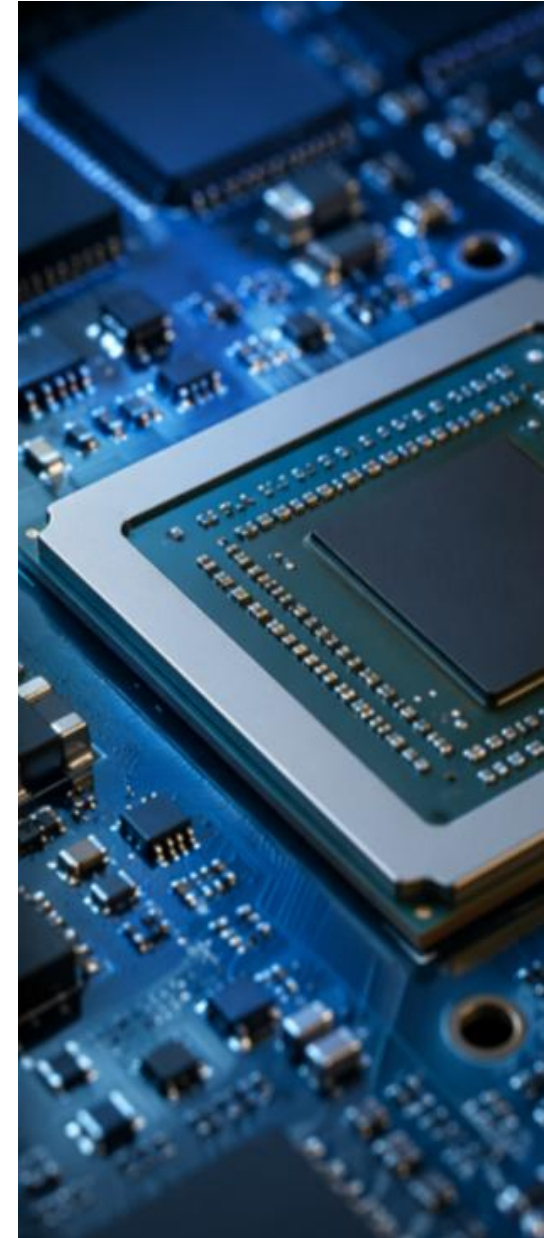
Drivers for growth include e.g. aircraft modernization, UAVs, AI, autonomous systems, and advanced radar, communication & navigation (1,2), expected growth x2...4 by 2040 (4)

EU member states have committed to procuring at least 50% of defence equipment from the European defence industrial base by 2030 and 60% by 2035. By 2030, MSs should procure at least 40% of defence equipment in a collaborative manner (5).

MARKET DYNAMICS

Volumes are very small, civilian sector drives the market & innovation

- Defence is strategically critical but economically small (~1% of semiconductor manufacturing volumes)
 - Low volumes require cost-efficient solutions like FPGA & chiplets
 - Need higher volumes to have lower prices – but lower prices could boost the volumes
- **Civilian sectors drive the market, innovation and investments**
 - Defence predominantly adopts and adapts commercially available tech (with some exceptions like IR)
 - Viable products must serve several sectors.
 - Dual use is essential for volumes.
- **Europe's position is constrained by lack of scale and fragmentation**



SUPPLY CHAIN

European supply requires policy actions and coordination

Geopolitics reveal vulnerabilities across the value chain

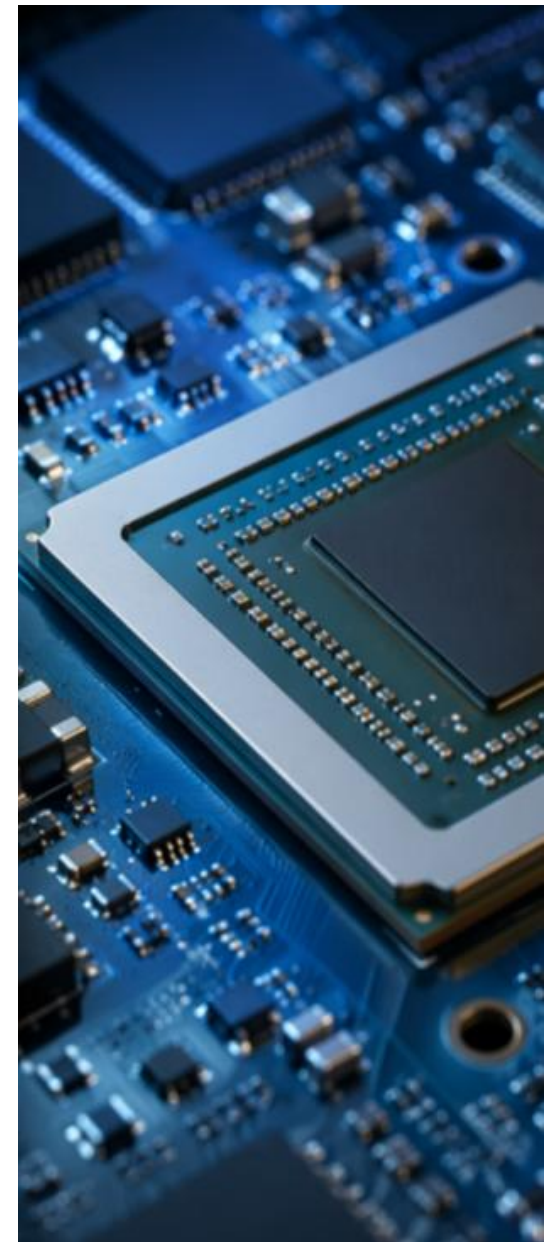
- European defence relies heavily on semiconductor components from the US and Asia, causing critical dependencies for e.g. advanced AI chips and packaging capacity, assembly, and raw materials.

Growing, but not yet dominating demand for European supply

- Security and supply chain concerns drive interest in European components
- Some willingness to pay premium for European components, while price, performance, and reliability still dominate sourcing decisions.

Resilience will require policy intervention and coordination

- Market forces alone are insufficient—public funding, industrial policy, and ecosystem collaboration are needed.



Chips Act 2.0 aspects for defence

Reduce strategic dependence on non-EU semiconductor suppliers.

Secure access to advanced chips needed for future defence technologies.

Protect defence supply chains during crises.

Develop European manufacturing and design capabilities in strategically important semiconductor technologies.

Integrate defence needs into semiconductor monitoring, preparedness and crisis-response mechanisms.

Supporting production and market uptake

KEY TAKE-AWAYS

For building resilience, we need more demand, focus on developing European solutions for critical dependencies and policy actions

Status now

Technology needs and supply chain risks are similar in defence and civilian sectors.

Global politics cause critical dependencies e.g. in FPGAs and packaging

Growing (but still small) interest in European supply for both security and supply stability

Some willingness to pay premium

Challenges

Currently, defence related semicon market in Europe is too small to drive the demand, innovation or investments alone

Lower prices would require more demand – lower prices could trigger more demand

Fragmented market

Maintaining real-life production capability of requires volumes

Opportunities

RISC-V for Europe-based computing power?

Chiplets & modularity for packaging?

Public policies for coordinating demand?

Market boost by dual use of European strongholds, European policies and investments in defence?

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Thank you!

Eeva Viinikka, Spinverse

Eeva.viinikka@spinverse.com

+358 400 244 099

Petri Räsänen, Business Tampere

Petri.rasanen@business tampere.com

+358 40 7723 008

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