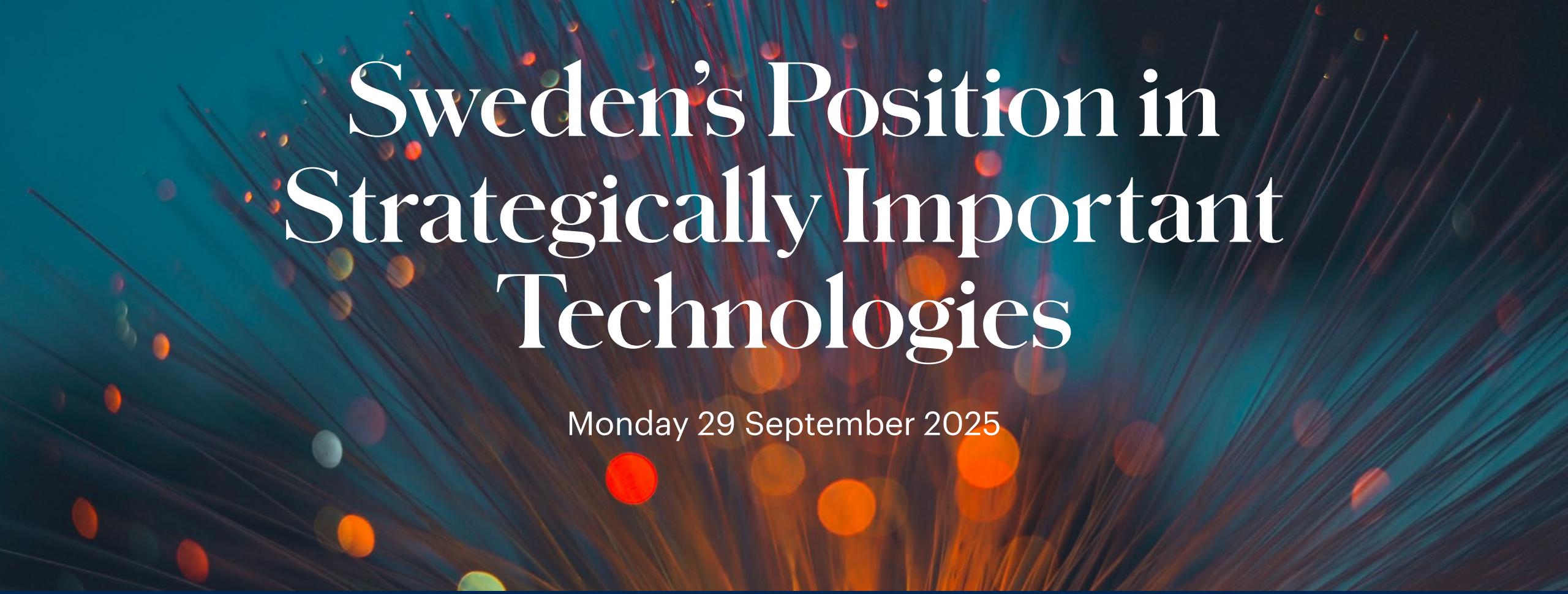


# Sweden's Position in Strategically Important Technologies

Monday 29 September 2025

Royal Swedish Academy of Engineering Sciences

IVA | Swedish Futures

# Sweden's Competitiveness and Investment Priorities

Mapping Sweden's Competitiveness and Investment Priorities in Key Strategic Technologies

# Background and Purpose of the Initiative

Professor Sylvia Schwaag Serger
President IVA

IVA

# Key Findings and Conclusions

Andrea Renda,
Director of Research, CEPS

Pierre-Alexandre Balland,
Chief Data Scientist, CEPS

# Sweden's Competitiveness & Investment Priorities

Pierre-Alexandre Balland & Andrea Renda
Centre for European Policy Studies

# A favourable but fragile outlook

Consistently ranked **EU's top innovation performer**, leading in R&D intensity, with business R&D expenditure at 2.65% of GDP

After a period of sluggish growth, **Sweden entered 2025 with signs of recovery**, though the rebound remains fragile

Fiscal policy space (low public debt), resilient revenues, but **high exposure to global shocks and new constraints to discretionary spending** (e.g. defence)

**Great infrastructure, strong talent** (but looming shortages), a **unique approach to capitalism** and **sustainable development**

**Sweden cannot rest on its past achievements**: relaunching R&I policy in the broader European context is essential to remain competitive

# Strategic investments to stay ahead

Prosperity, sovereignty, and resilience increasingly depend on the capacity to **lead in key strategic technologies**

This report delivers a data-driven assessment of **Sweden's standing across 48 technologies**

It provides a systematic overview of Sweden's strengths and gaps, outlining clear **priorities for research and innovation investment**

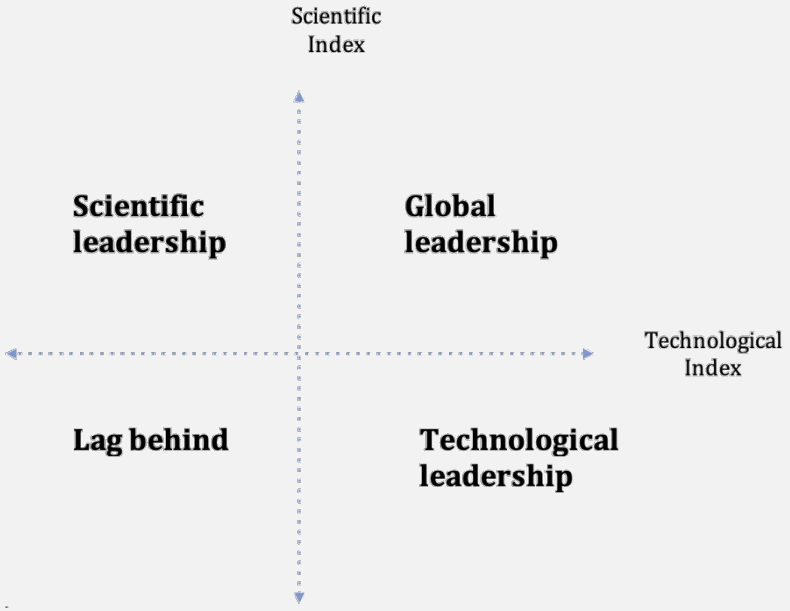
# Letting the data speak

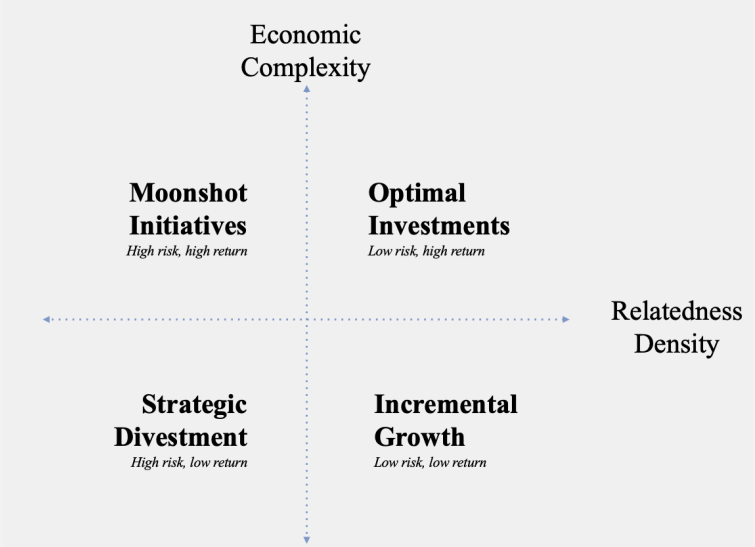
***Patents*** *reveal the technological relatedness between KSTs, based on normalised co-occurrences on the same patent (OECD RegPat data 2010-2024)*

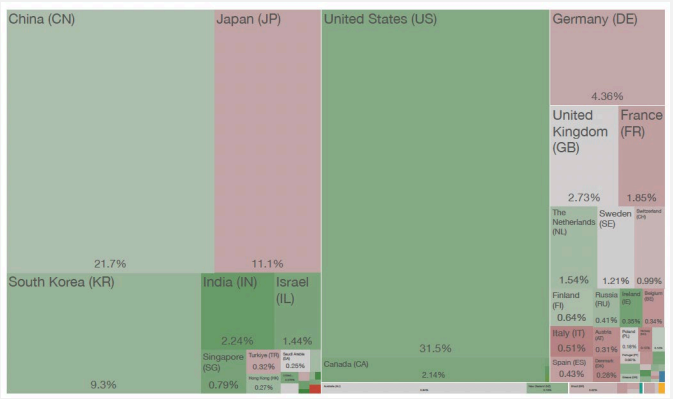
***Publications*** *unveil the scientific relatedness between KSTs, based on normalised co-occurrences on the same scientific publication (OpenAlex data 2010-2025)*

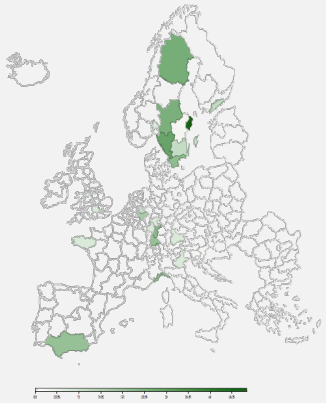
***Investment*** *measures investment relatedness between key strategic domains, and refers to funded startups (Crunchbase Pro, 2010-2025)* - the report does not include private R&D investments in large companies

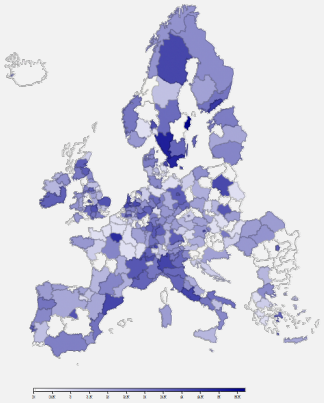
# 1,846 interactive graphs!

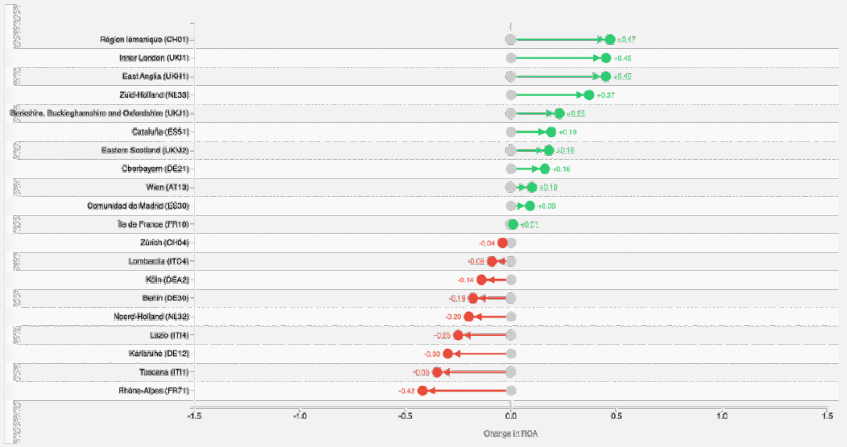





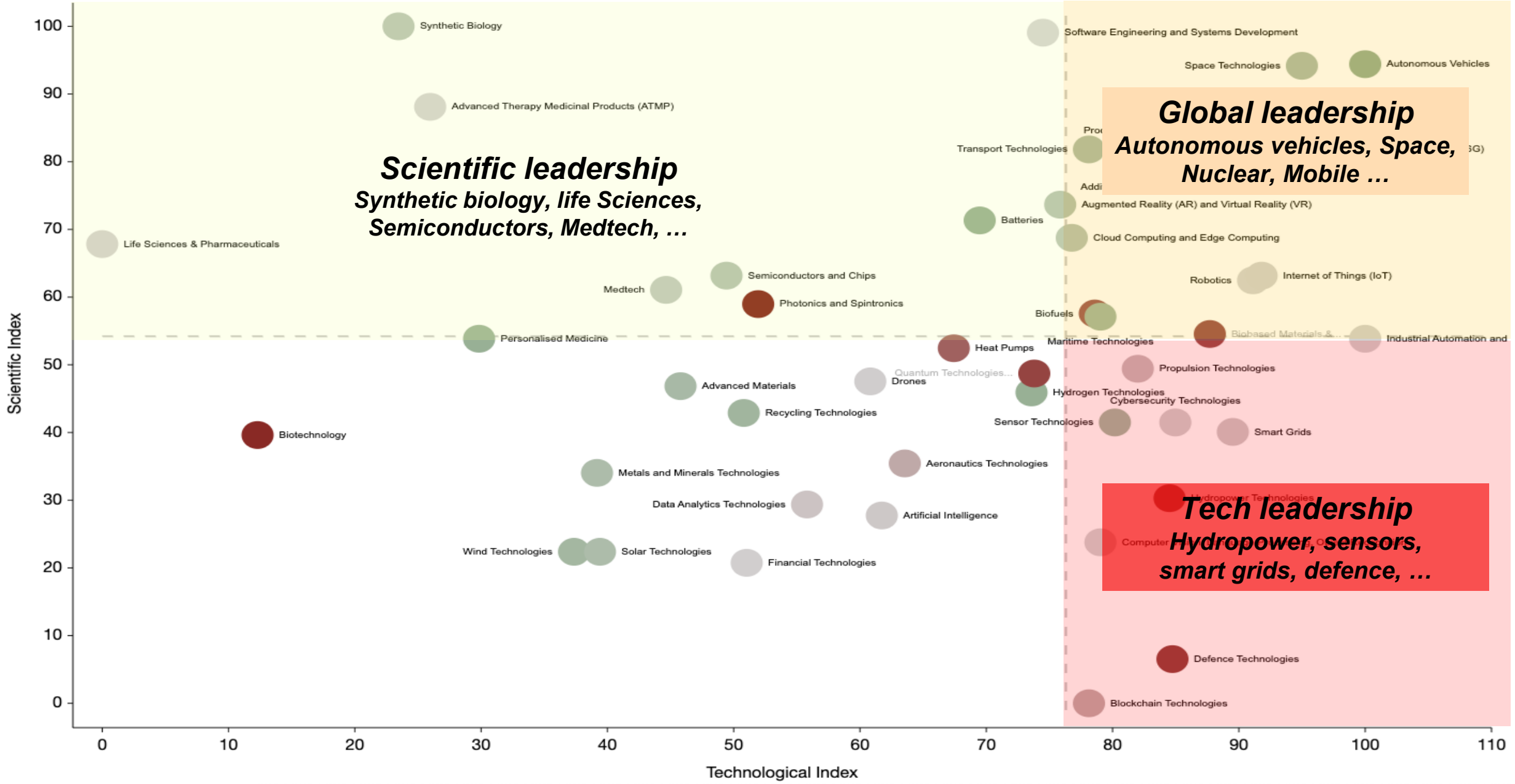


# Mapping Sweden's competitiveness and investment priorities in Key Strategic Technologies:

## 5 Core Components.

**1.**
**Current position of Sweden**

Sweden's global standing in these technologies through comprehensive empirical data.




## Summary graph

The 3 indices combine four different ranking measures: raw count, per capita, RCA & relatedness density by averaging and scaling their values from 0-100. The indices balance absolute and relative strengths of Sweden.

# Mapping Sweden's competitiveness and investment priorities in Key Strategic Technologies:

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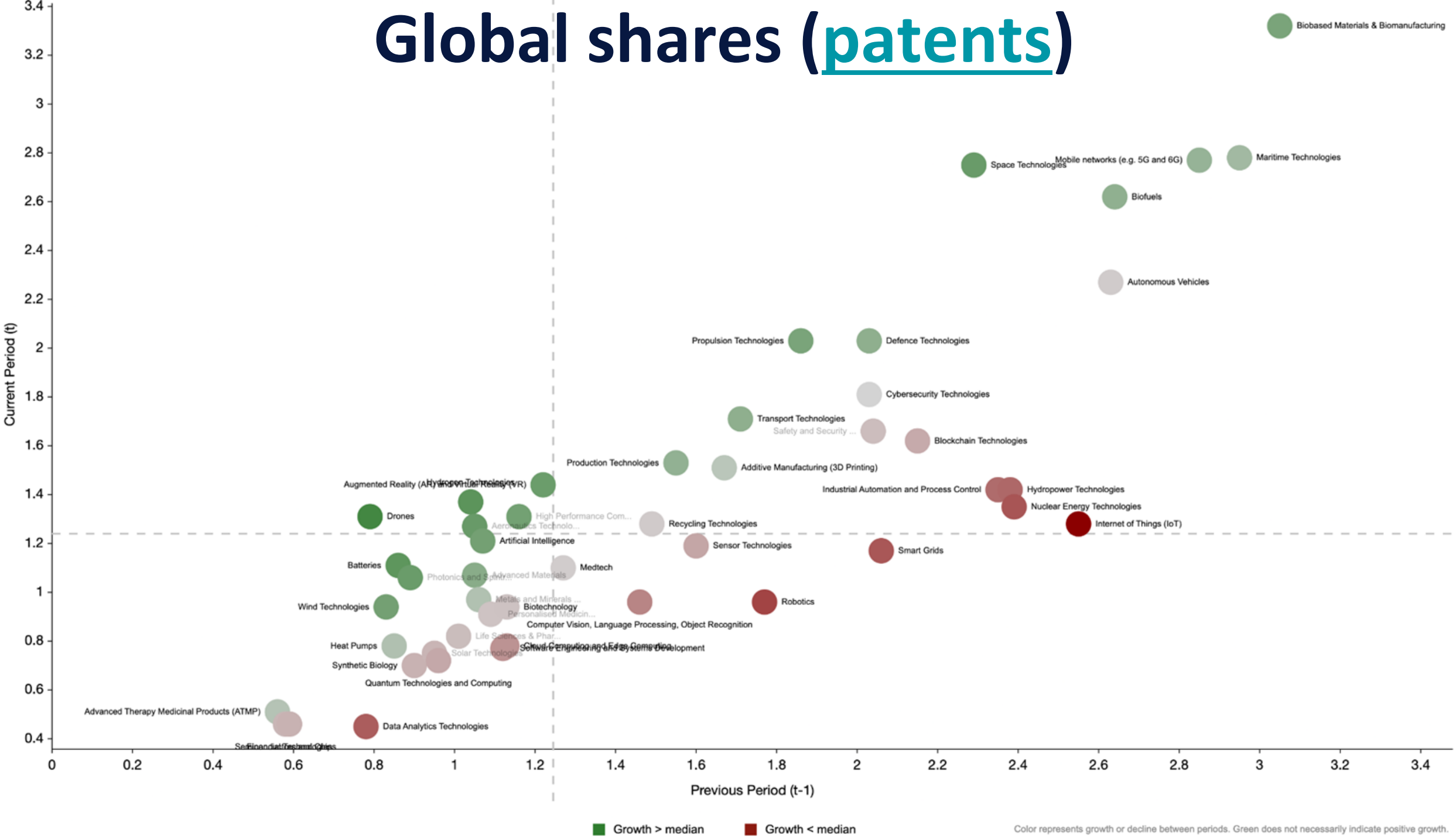
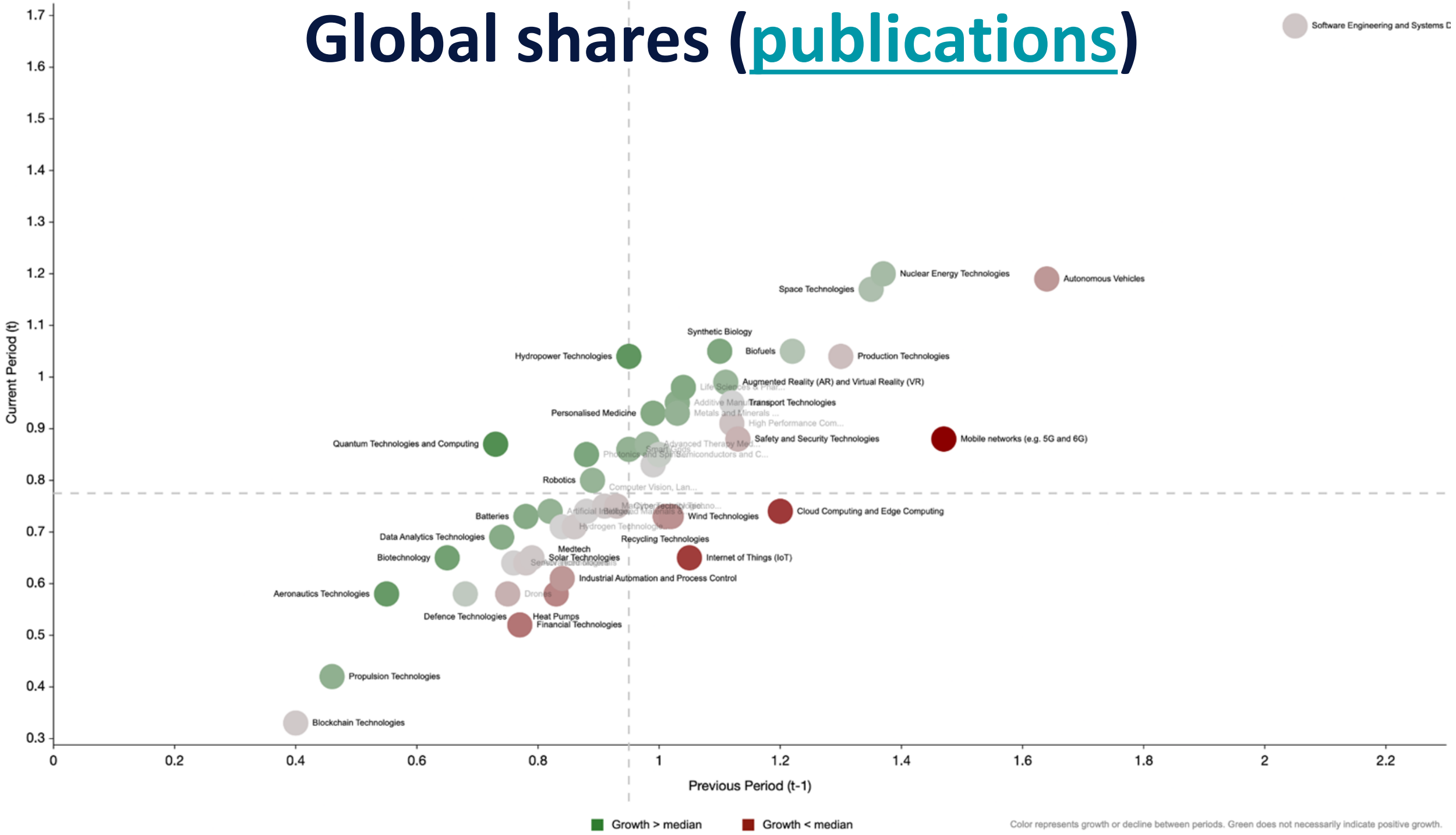
How Sweden's position has evolved over time to identify key trends and shifts.

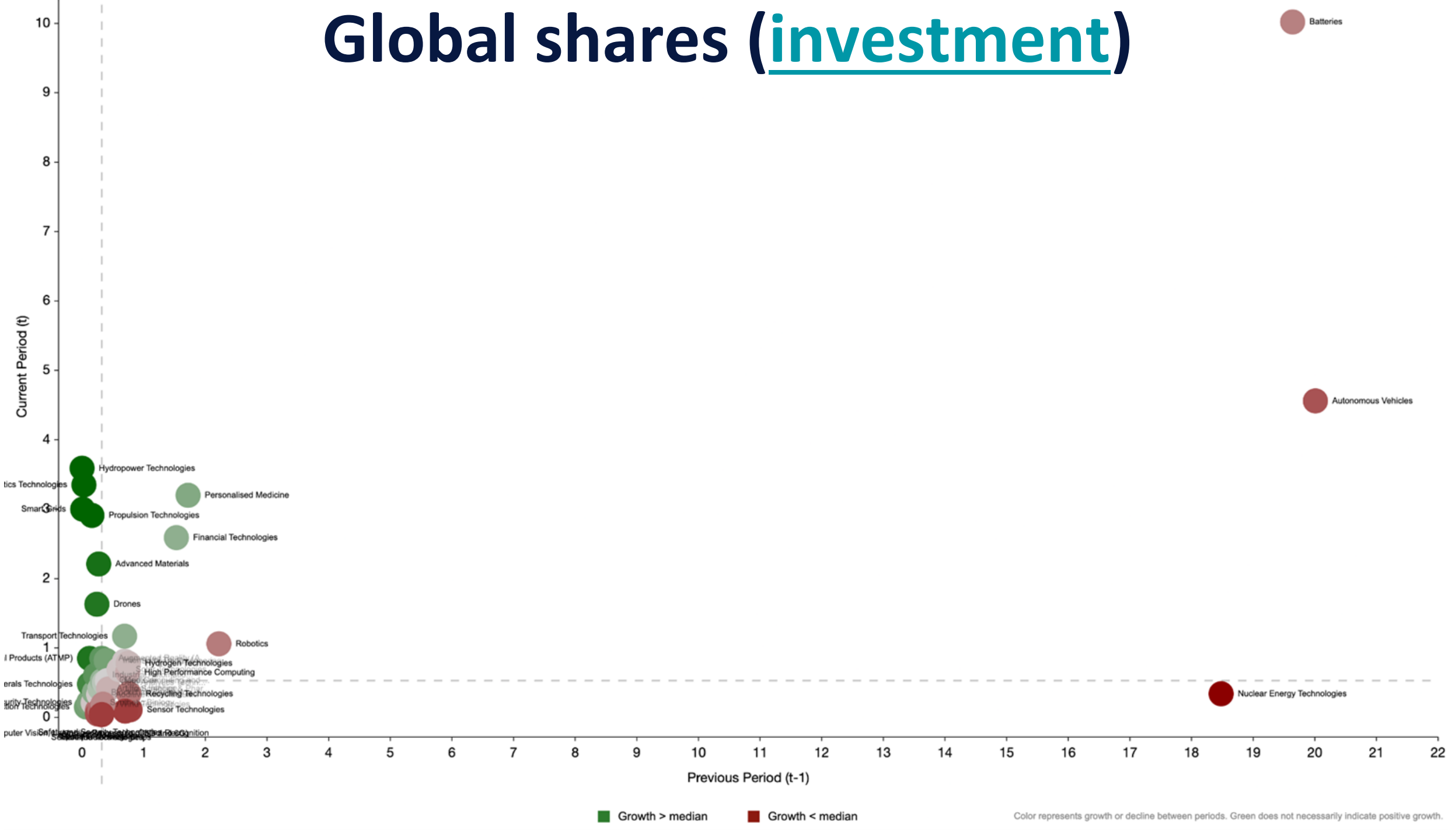
# Global shares (patents)



# Global shares (publications)



# Global shares (investment)



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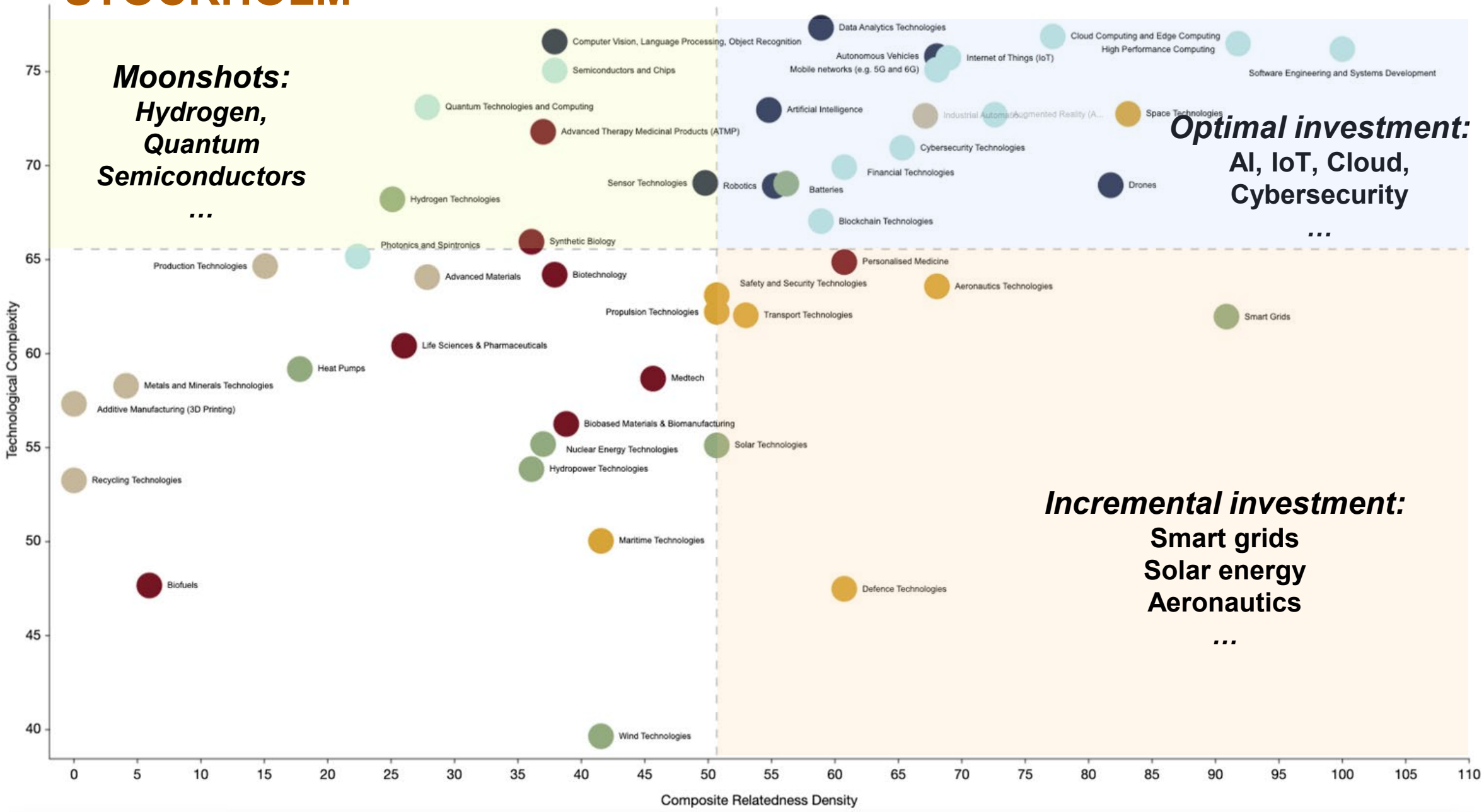
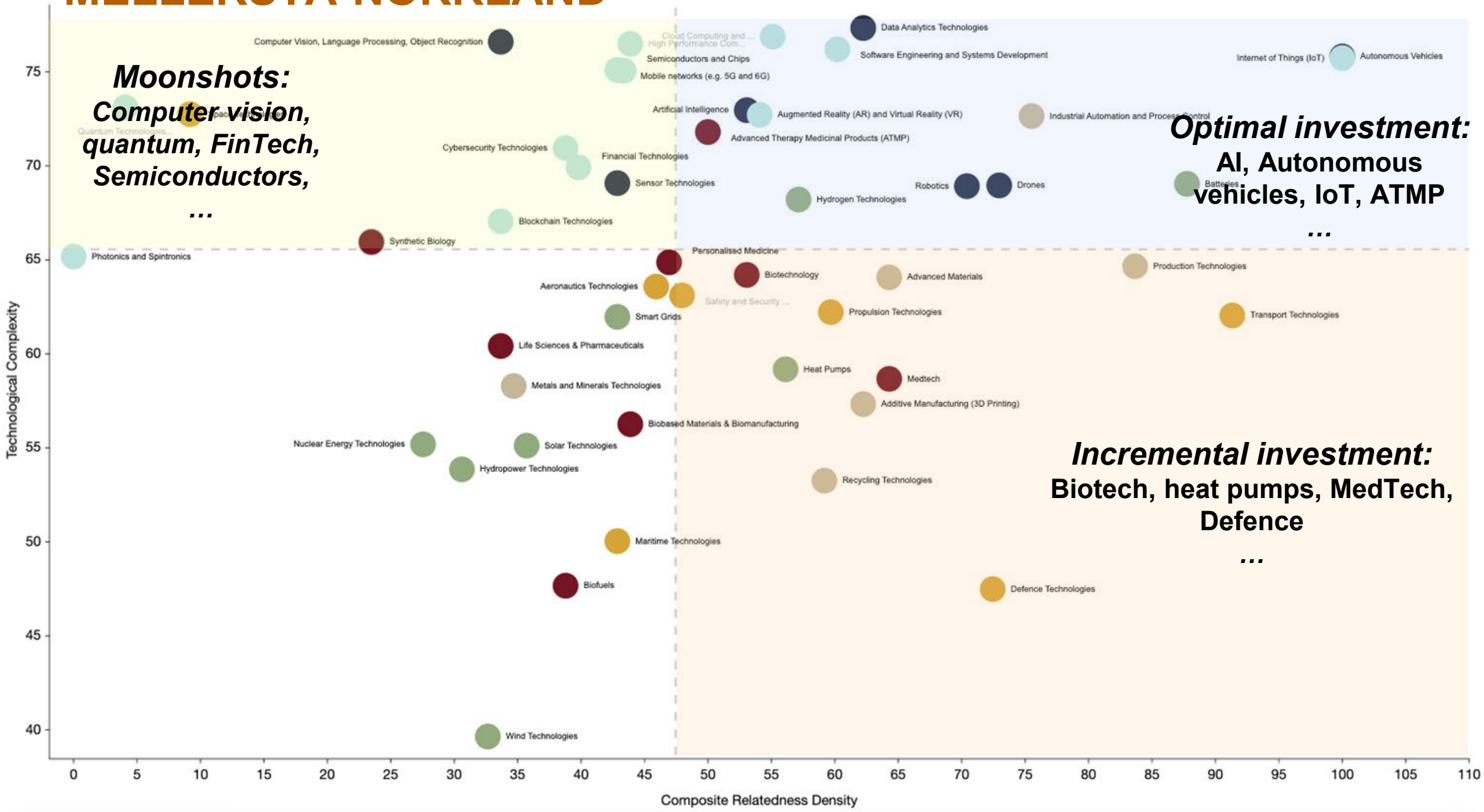
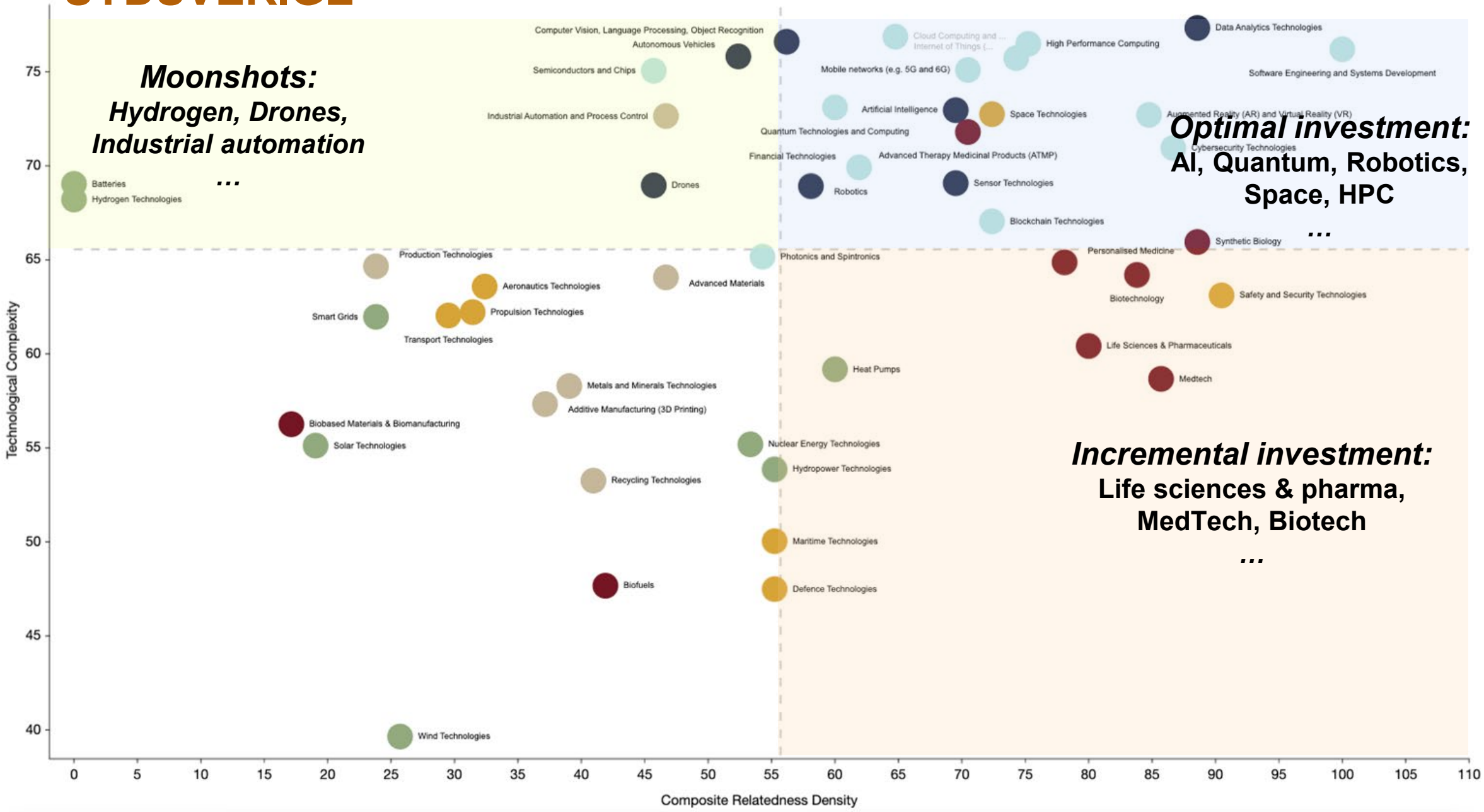
# STOCKHOLM


Moonshots:
Hydrogen,
Quantum
Semiconductors
…
Optimal investment:
AI, IoT, Cloud,
Cybersecurity
…
Incremental investment:
Smart grids
Solar energy
Aeronautics
…
Technological Complexity
Composite Relatedness Density
Computer Vision, Language Processing, Object Recognition
Semiconductors and Chips
Data Analytics Technologies
Cloud Computing and Edge Computing
High Performance Computing
Autonomous Vehicles
Mobile networks (e.g. 5G and 6G)
Internet of Things (IoT)
Software Engineering and Systems Development
Quantum Technologies and Computing
Artificial Intelligence
Space Technologies
Advanced Therapy Medicinal Products (ATMP)
Cybersecurity Technologies
Financial Technologies
Sensor Technologies
Robotics
Batteries
Drones
Hydrogen Technologies
Blockchain Technologies
Photonics and Spintronics
Synthetic Biology
Production Technologies
Personalised Medicine
Advanced Materials
Biotechnology
Safety and Security Technologies
Aeronautics Technologies
Propulsion Technologies
Transport Technologies
Smart Grids
Life Sciences & Pharmaceuticals
Heat Pumps
Medtech
Metals and Minerals Technologies
Additive Manufacturing (3D Printing)
Biobased Materials & Biomanufacturing
Nuclear Energy Technologies
Solar Technologies
Hydropower Technologies
Recycling Technologies
Maritime Technologies
Biofuels
Defence Technologies
Wind Technologies
Materials and Production Technologies
Biotechnologies and Life Sciences
Transportation, Aerospace, and Security Technologies
Artificial Intelligence and Autonomous Systems Technologies
Digital Technologies
Energy and Electrification Technologies

# MELLERSTA-NORRLAND



# SYDSVERIGE


Moonshots:
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Semiconductors and Chips
Industrial Automation and Process Control
Batteries
Hydrogen Technologies
Drones
Cloud Computing and ... Internet of Things (...
High Performance Computing
Data Analytics Technologies
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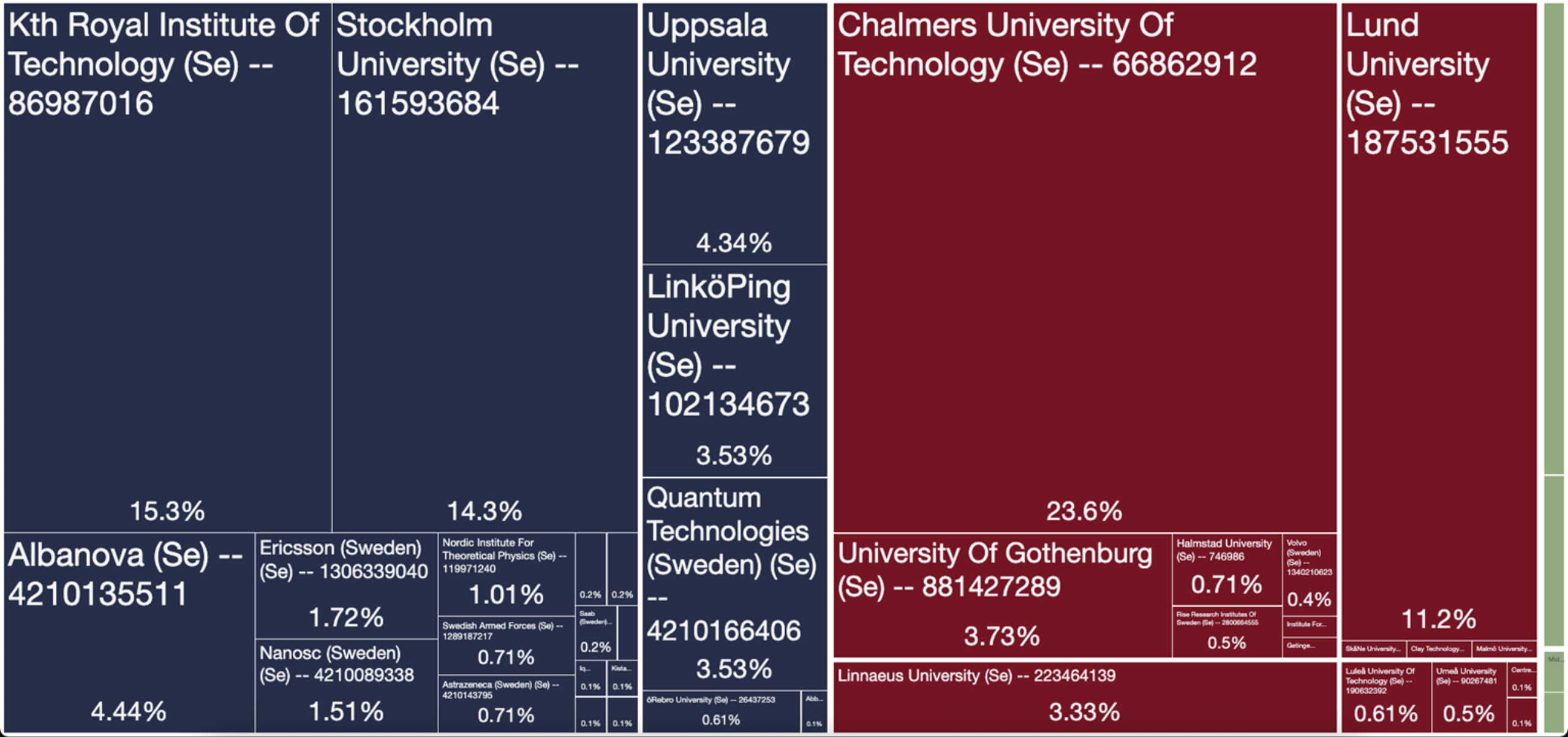
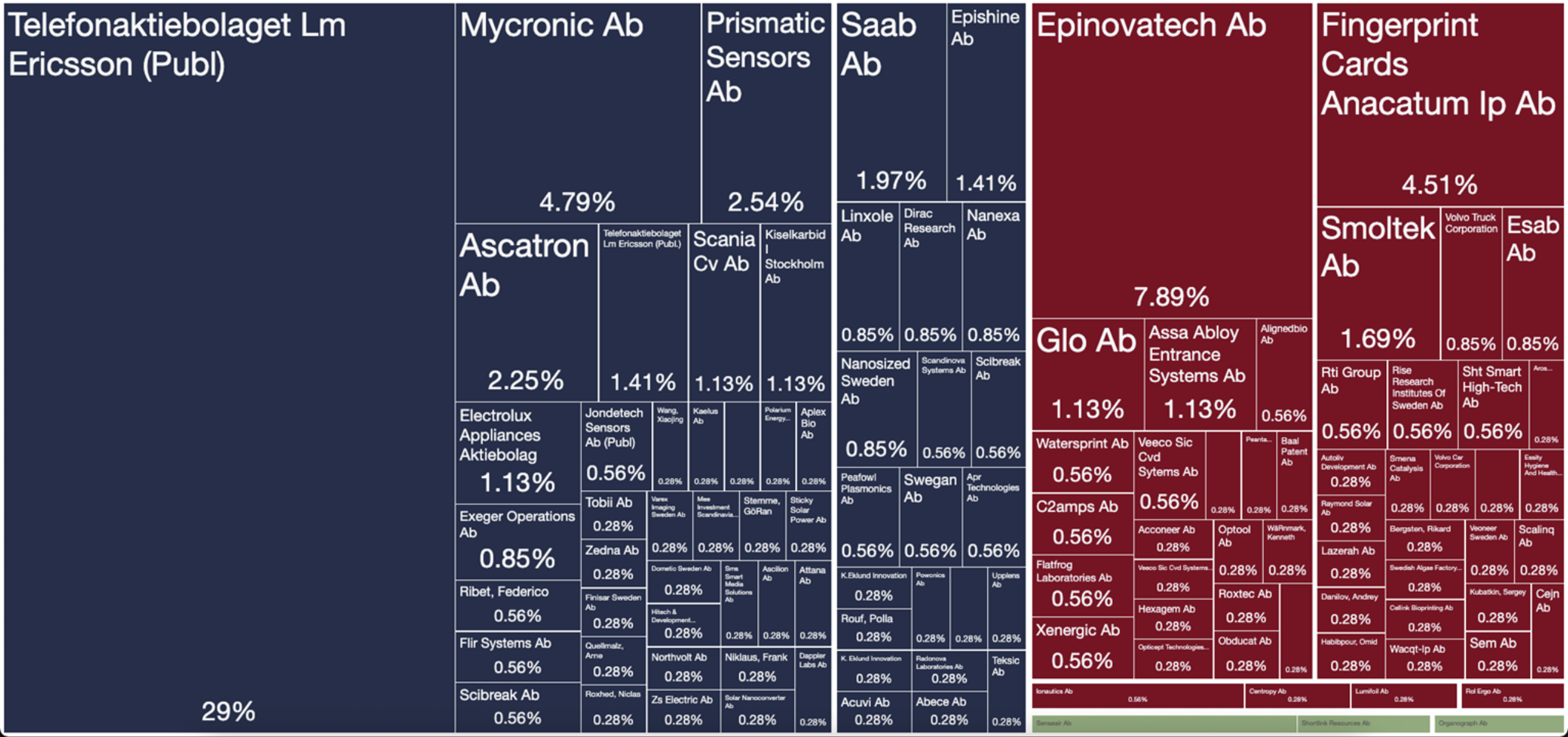
We map out the organizational ecosystems that drive innovation in these fields.

# QUANTUM (PUBLICATIONS)



# SEMICONDUCTORS AND CHIPS (PATENTS)



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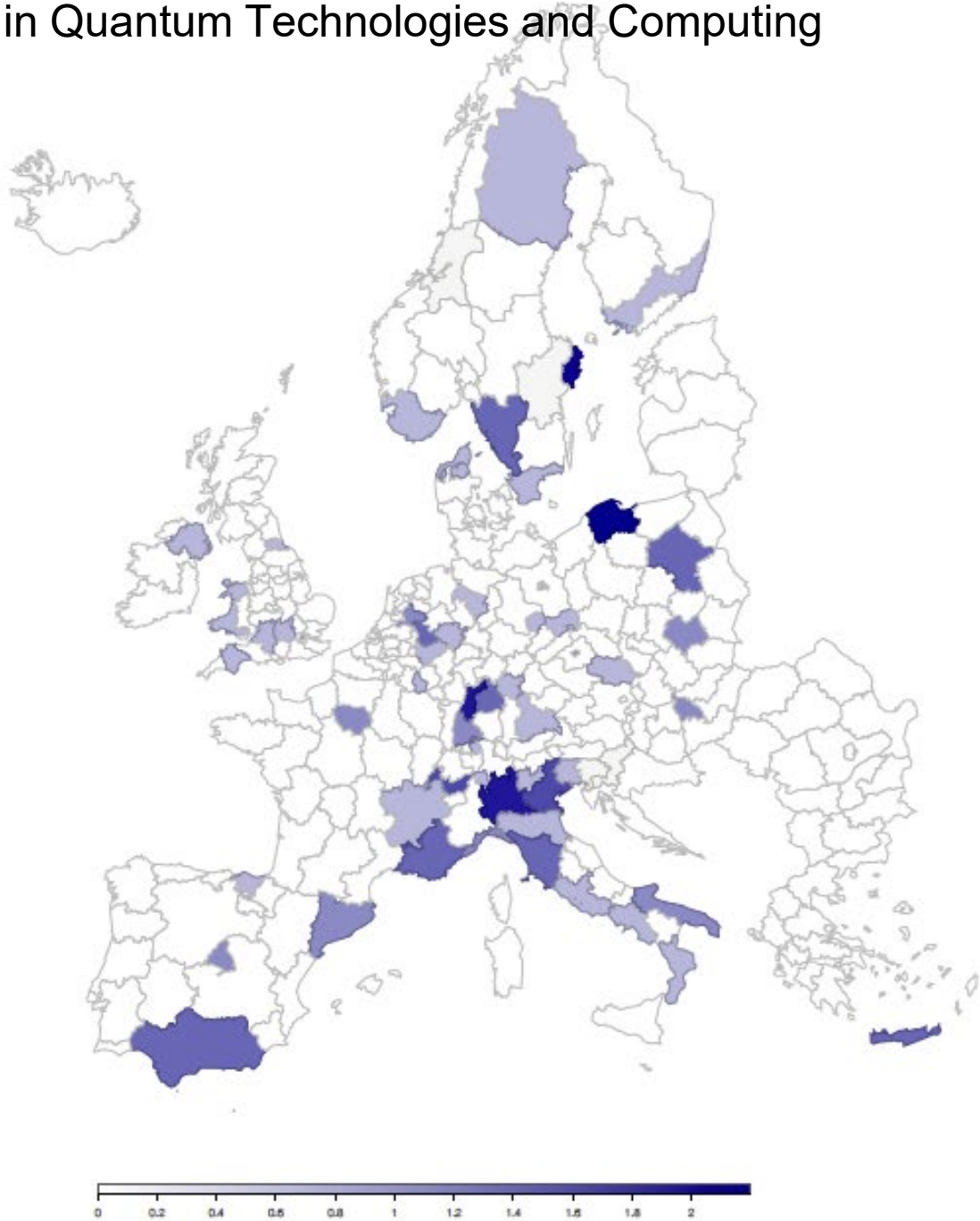
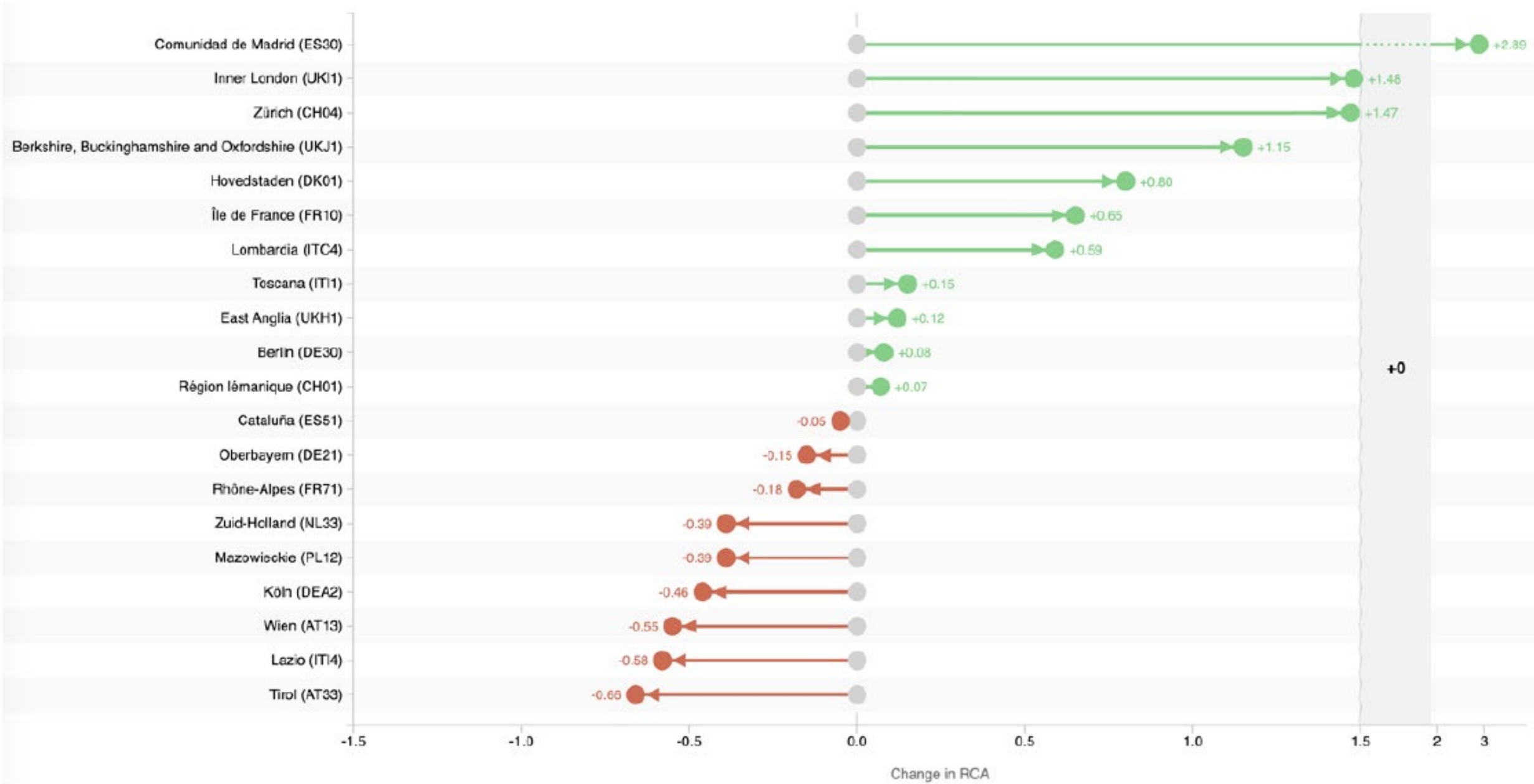
### 5. Collaboration Networks

We analyse Sweden's network of collaborations and complementarities at both national and international levels.

# R&I collaborations of the Västsverige region in Quantum Technologies and Computing

# Links between the Västsverige region and the top 20 leading European hubs on Quantum (publications)



# Key highlights (1)

Sweden punches above its weight in several KST (including **space tech**, **autonomous vehicles**, **nuclear energy, batteries, propulsion tech**)

The country could make **stronger progress in foundational technologies** like **AI**, as well as in **personalised medicine**, **sensors**, and **data analytics**

**Example:** In AI, Sweden's global patent share is just 1.21%, the share of global startup investment 0.42%, and its ranking in the Global AI Index fell from 17th in 2023 to 25th in 2024.

Some strategic domains show declining competitiveness over time, signalling a **need for intervention (robotics and smart grids)**.

# Key highlights (2)

**Scientific leadership** has not always been converted into technological leadership, e.g. in **MedTech**, **Synthetic Biology**, **semiconductors**, **Virtual/Augmented Reality**

**Innovation is highly concentrated** in the regions of Stockholm, Västra Götaland, and Skåne.

**R&I policy need to be adapted** to the distribution of R&I capabilities

Sweden has **strong scientific collaboration networks**, yet tech cooperation on patents with other European hubs is sometimes underexploited

# Strategic recommendations

**Launch targeted investment programs for priority KSTs**, focusing on high-potential and/or weakening areas (where strategic)

**Pursue high-complementarity collaborations** with EU partners in strategically aligned technologies to leverage mutual strengths and address gaps

**Encourage regional specialisation** by tailoring investment to the distinct opportunities in each region, pursuing highly related and complex opportunities but also by allowing selected **"moonshot"** projects.

Maintain and expand **analytical capabilities** to continuously track Sweden’s competitive position and adapt its strategy in a rapidly changing global landscape

# What now? Enhancing Sweden's situational awareness and influence

**A fast-changing geo-political environment** may shift priorities and open opportunities/imperatives that data cannot fully capture (tariffs, tech sovereignty, cyber, defence, etc.)

**Emphasis on defence** is increasing the importance of **foundational and dual use technologies** like AI, quantum, IoT, synthetic biology, cyber

Sweden's potential also depends on **future EU policy decisions**: e.g. the MFF, Horizon Europe, the Competitiveness Fund bring new opportunities

As a frontrunner in innovation and in sustainable competitiveness, Sweden must become **more prominent and visible in Brussels**

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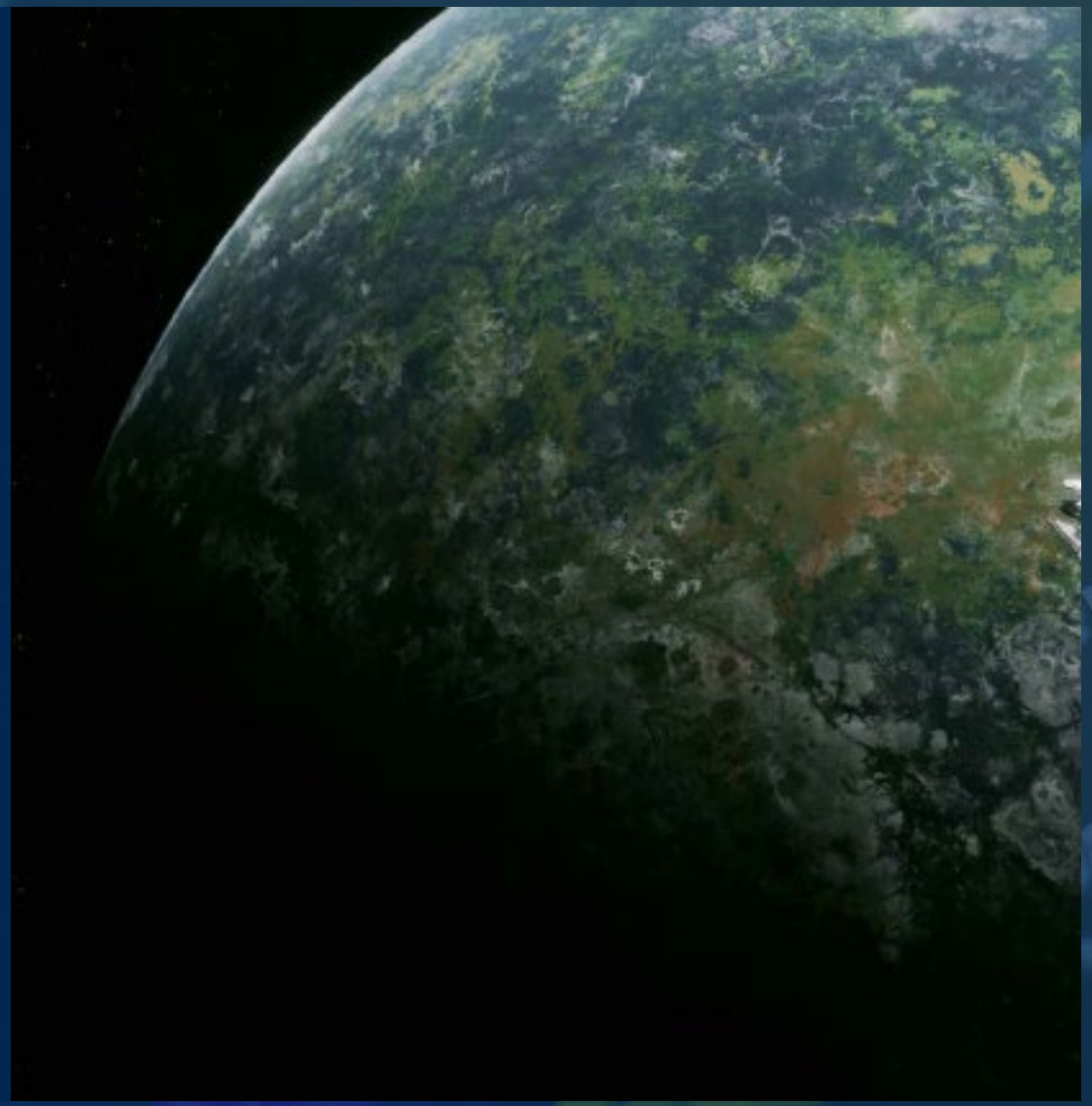
# Panel Discussion #1

**Malin Frenning,** CEO RISE, IVA Fellow

**David Sonnek, CEO, Navigare Ventures**

**Pia Sandvik,** CEO Teknikföretagen, IVA Fellow



# Panel Discussion #2

**Katarina Bjelke**, Director General, The Swedish Research Council

**Darja Isaksson**, Director General, Vinnova, IVA-fellow

**Jan-Ingvar Jönsson**, Vice-Chancellor, Linköping University

# Closing Reflections

Professor **Sylvia Schwaag Serger,**
**President IVA**

# Thank You!

# Download the report here