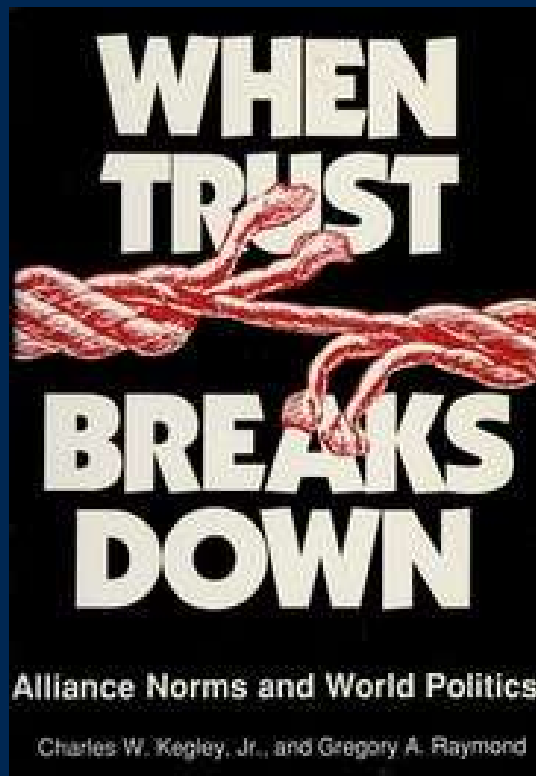


Technologie, Geopolitik, Zukunft

Professor Sylvia Schwaag Serger, vd IVA



Kungl. Ingenjörsvetenskaps
Akademien



"...adherence to commitments promotes harmony between states; the inclination to disregard does not. A world without honor is a world without order. To keep peace, allies would be advised to keep promises."

Die Geschehnisse in den letzten zwei Wochen haben uns mit aller Deutlichkeit gezeigt:

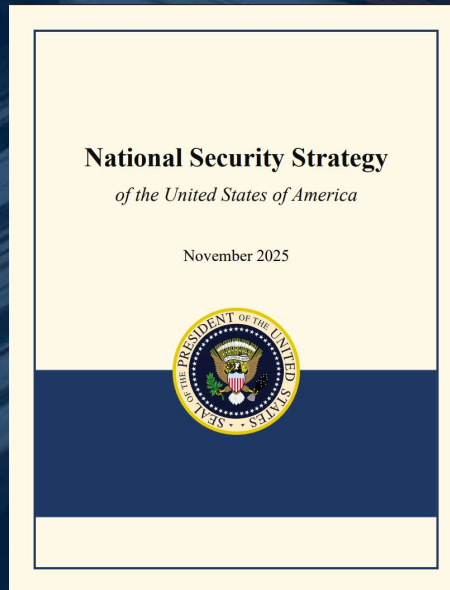
- Die Welt ist anders als vor nur einem Jahr: Eine Welt in der der Nobelpreis käuflich wird, in der 80-jährige Allianzen untergraben werden, in der die internationale regelbasierte Weltordnung ersetzt wird durch das Recht des Stärkeren ersetzt werden
- Wie eng Wirtschaft, Geopolitik, Technologie und Sicherheit miteinander verwoben sind und interagieren, aber auch wie sie gegeneinander ausgespielt werden können

A new world order...

Multipolar, anarchic, strongman's rule, hard power, instable, shaped by technology



Source: China News Service / Getty Images, CNN, Reuters



From the mechanization of the first industrial revolution in the 18th century, to the electrification of the second industrial revolution in the 19th century, to the informatization of the third industrial revolution in the 20th century, rounds of disruptive innovation have [...] fundamentally changed the development trajectory of human history

Xi Jinping 2018

Global technology competition is the issue of our time

US Senator Mark Warner, 2024

...driven by

- Geopolitics
- The decline of democracy
- Climate change and the anthropocene
- TECHNOLOGY

=> *"The Polycene" – science, technology and politics interacting in a way and at a pace not seen before* (Thomas Friedman)

What is happening?

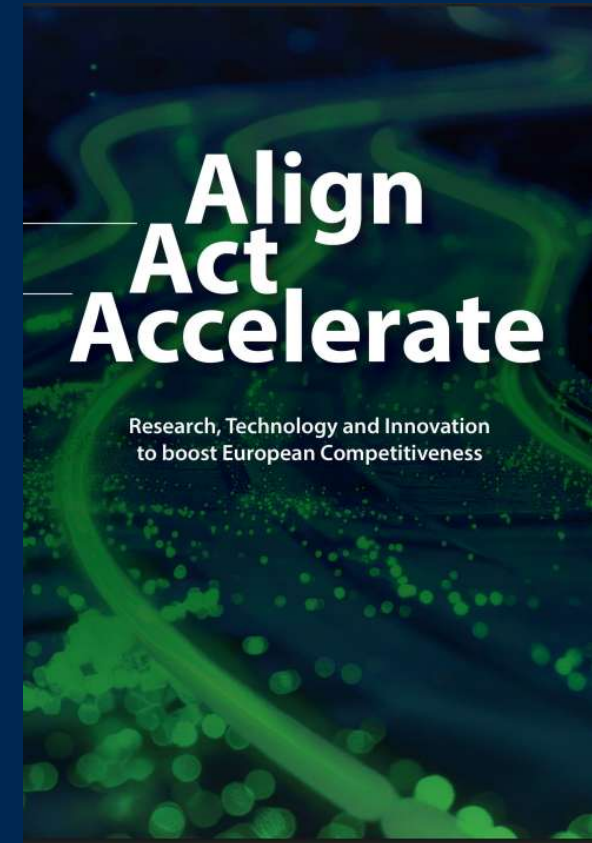
- Dawn of a new era: *the beginning of history* (Macaskill) – *crisis of the liberal, rules-based post-war world order* (German Science & Humanities Council)
- Technology is the driving force for power, security, development, society and shaping international relations
- Technology is also about values and framing (*Technology is society made durable*, Latour)
- Science is global but politics are increasingly national(ist) (again)
- The return of security concerns / war to Europe and of the link between defense, technology and innovation

Strategic competition

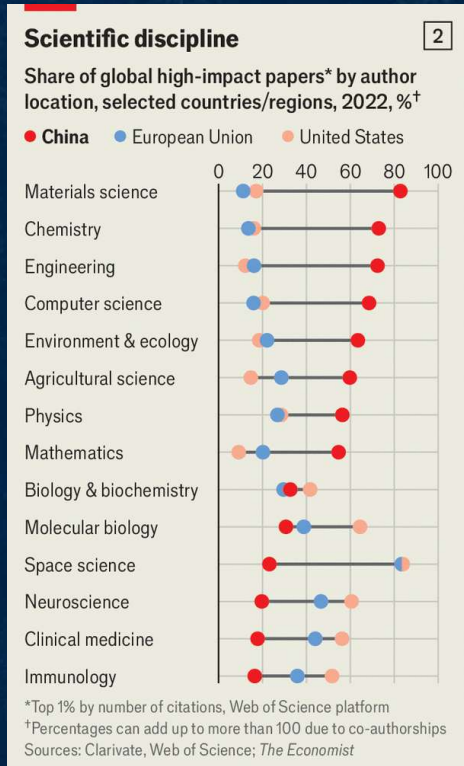
"... the period that began in the late 1980s, described as an era of "unprecedented openness" or "the collaborative era of science" is being replaced, or at least significantly reshaped, by "strategic competition"."

Strategic competition:

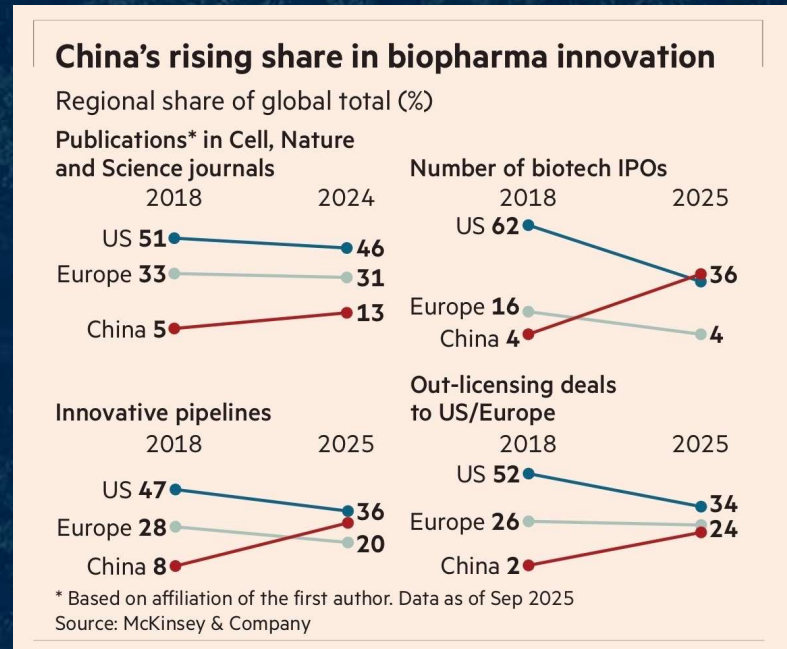
- Ideas
- Narratives
- Persuasion power
- Mobilization power



China



Source: FT



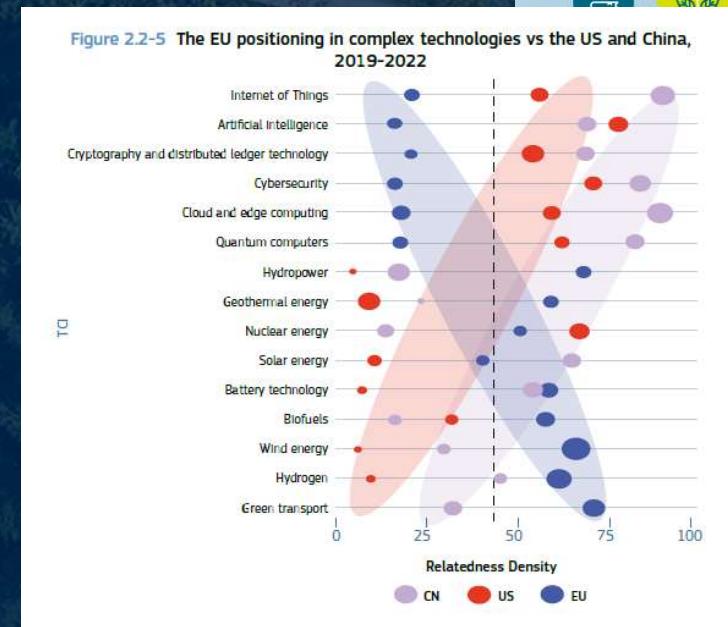
Source: FT

- Priorisierung und Strategie (whole-of-government)
- Abhängigkeiten meiden und Unentbehrlichkeit stärken
- "Leapfrogging"
- Ständiges Verbesserungsbestreben

"Science has no national boundaries, but scientists have a motherland"
 Xi Jinping 2020

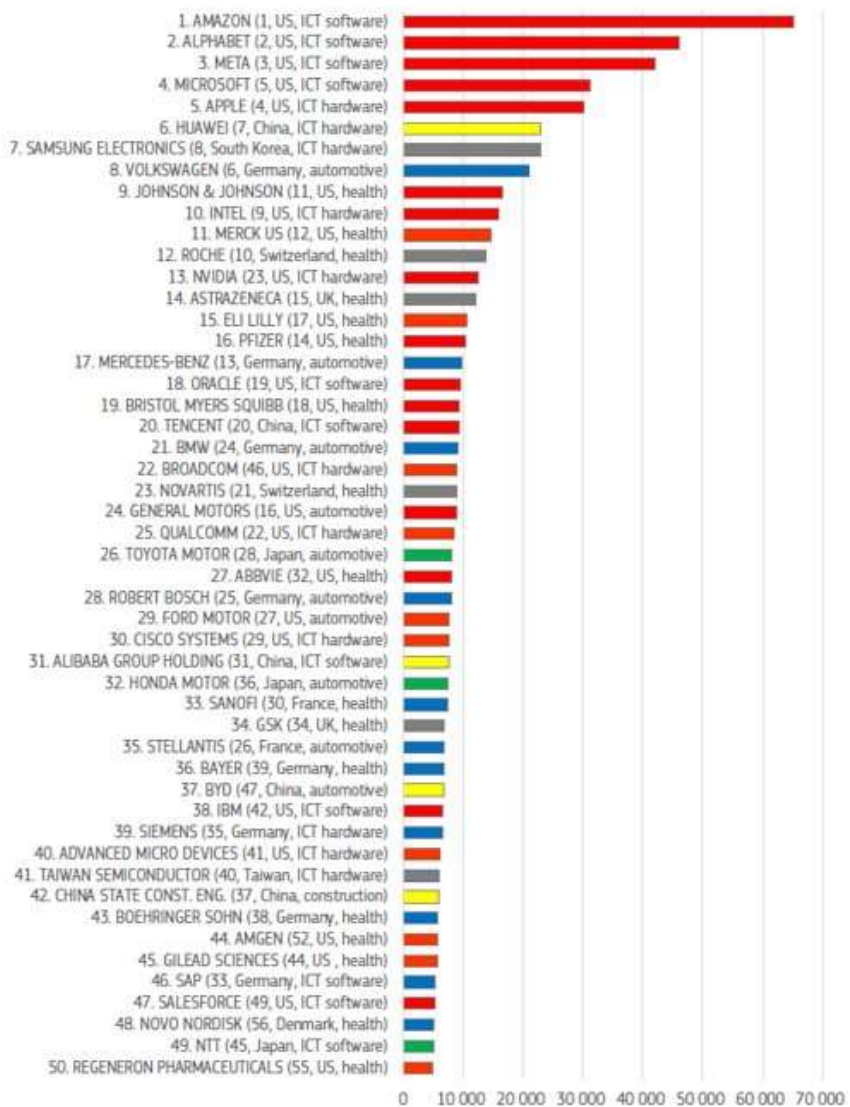
What does this mean for Europe?

- Technology increasingly critical for Europe's future economic competitiveness as well as security, democracy, power and agency ('securing a seat at the table')...
- ... but Europe is falling behind both the US and China
- Critical mass matters!!
- Return of dual use



Source: EU Commission 2024

Figure 10. World top 50 R&D investors in the 2025 Scoreboard

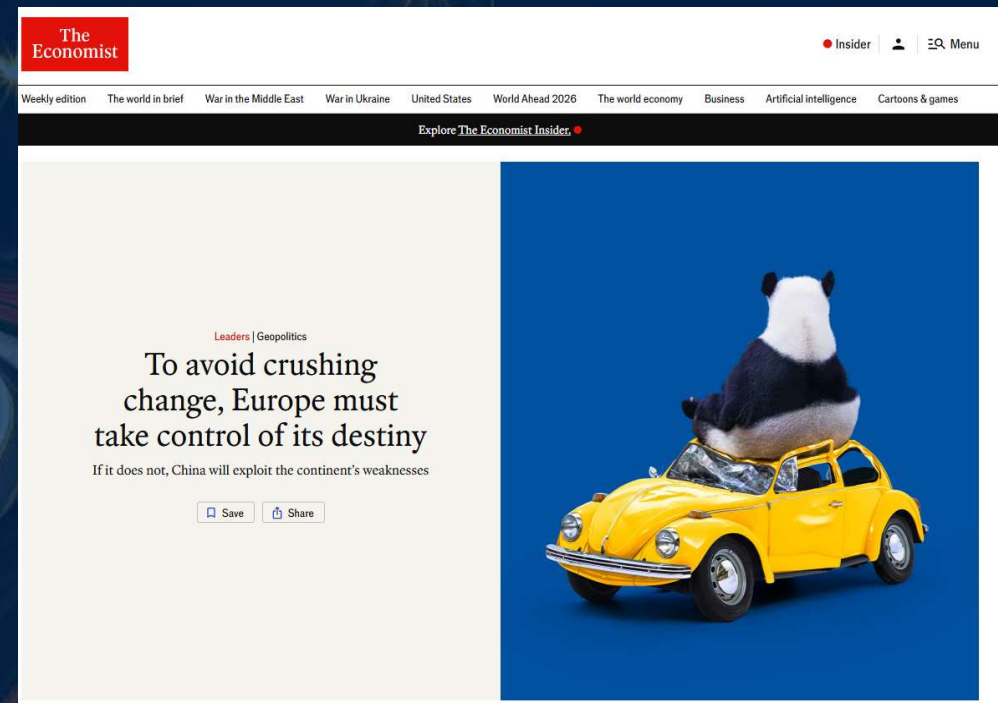


Note: Ranking based on 2023 R&D investment in brackets, R&D in EUR million (colours: US, China, EU, Japan, ROW)

Source: The 2025 EU Industrial R&D Investment Scoreboard, European Commission, JRC/DG R&I

Europe?

- “over-regulated” and “under-powered”?
- What should Europe do?
 - Invest in our strengths and in the future
 - Promote technology diffusion
 - Embrace creative destruction
 - Rediscover the magnificence of science (The Counter-Reformation of science: how to make magnificence democratic)
 - Defend rule-based economy
 - Increase our economic base (single market and trade alliances)



Economist cover story 21 November 2025

“Europa hat Angst vor seiner eigenen Macht”

Capitalism, Sustainability and Democracy

Future-proofing the European model

Executive Summary

Editors:

Luc Soete

Sylvia Schwaag Serger

Johari Stierna

Mikel Landabaso

- Collingridge dilemma and Thomas theorem
- Rethinking capitalism, sustainability AND democracy
- Oxenstierna 2.0?

Österreich?

Table 1. Countries: R&D investment (in EUR billion) and number of companies, 2024

EU countries	Companies	R&D	Non-EU countries	Companies	R&D
Germany	109 (110)	114.6	US	674 (705)	680.8
France	53 (52)	46.4	China	525 (518)	233.2
Sweden	26 (26)	17.4	Japan	192 (183)	112.4
Netherlands	24 (19)	12.5	South Korea	41 (41)	45.2
Denmark	23 (20)	11.3	UK	57 (55)	38.7
Italy	21 (21)	10.5	Switzerland	37 (37)	34.9
Spain	13 (12)	6.5	Taiwan	56 (52)	27.8
Finland	12 (9)	5.8	Canada	23 (24)	8.5
Belgium	11 (12)	4.1	Australia	9 (9)	6.9
Austria	10 (13)	1.8	India	17 (17)	6.4
Ireland	8 (6)	1.4	Israel	19 (19)	4.7
Luxembourg	2 (1)	0.37	Singapore	7 (7)	2.7
Poland	1 (1)	0.25	Saudia Arabia	2 (2)	1.9
Portugal	2 (2)	0.24	Brazil	5 (5)	1.9
Hungary	1 (1)	0.24	Uruguay	1 (1)	1.6
Slovenia	1 (1)	0.18	Norway	2 (2)	0.96
Romania	1 (1)	0.09	12 other countries	15 (15)	3.6
Total EU	318 (308)	233.7	Non-EU Total	1 682 (1 692)	1 212.5

Notes: Figures in brackets show the number of companies in the 2024 edition of the Scoreboard.

Source: *The 2025 EU Industrial R&D Investment Scoreboard*, European Commission, JRC/DG R&I.

Österreich

- Viele Dinge um die es andere beneiden ('kluge Köpfe', CSH, ISTA, FTI-Monitor, FuE-Pakt und Entwicklung FuE-Quote)
- Initiative Schlüsseltechnologien
- Effektive Priorisierung? Systems thinking? Whole of government?
- Different era – same toolkit?
- Verliert Österreich an Attraktivität als Kooperationspartner?
- Propositional AND Prescriptive knowledge (Joel Mokyr)
- Creative Destruction (Schumpeter, Aghion)

SPRIN-D HOME ACTIONS CHALLENGES FUNKE ANTI-DRONE RESPONSE 2.0

ACTIONS WORDS ABOUT US

FUNKE ANTI-DRONE RESPONSE 2.0

SPRIN-D X VINNOVA

TOPIC	GOAL	APPLICATION	FAQ
CONTACT			

Hello people with radical new ideas! We need breakthrough approaches that establish a new standard for safeguarding

Small and micro drones have rapidly evolved into a significant security challenge – whether in urban environments, at airports, during major events, or around critical infrastructure. They are inexpensive, readily available, adaptable, and increasingly equipped with autonomous capabilities. Existing countermeasures are overwhelmed by the speed, diversity, and agility of these systems.

The first SPRIN-D Funke "Anti-Drone Response" demonstrated that, despite strong and diverse technological approaches, no team was able to deliver an autonomous, civilian-compatible soft-kill system capable of reacting consistently, reproducibly, and in line with the specifications. Key components such as reliable



OM UTLYSNINGAR

NYHETER
Det senaste inom forskning

FORSKNING
Forskning som SSF stödjer

NYHETSRESEN

FILM

PODDEN OM VETENSKAP

ANSÖKNINGSPORTALEN



SSF satsar 60 miljoner på drönarsvärmar

Med utlysningen "Tekniker för autonoma svärmar av drönare" avsätter Stiftelsen för Strategisk Forskning, SSF, 60 miljoner kronor. Bidraget ska möjliggöra skapandet av ett strategiskt, forskningscentrum (SRC).



Source: SPRIN-D and Felix Adler

Vilket EU/Sverige har vi 2035?

Svenska framtider

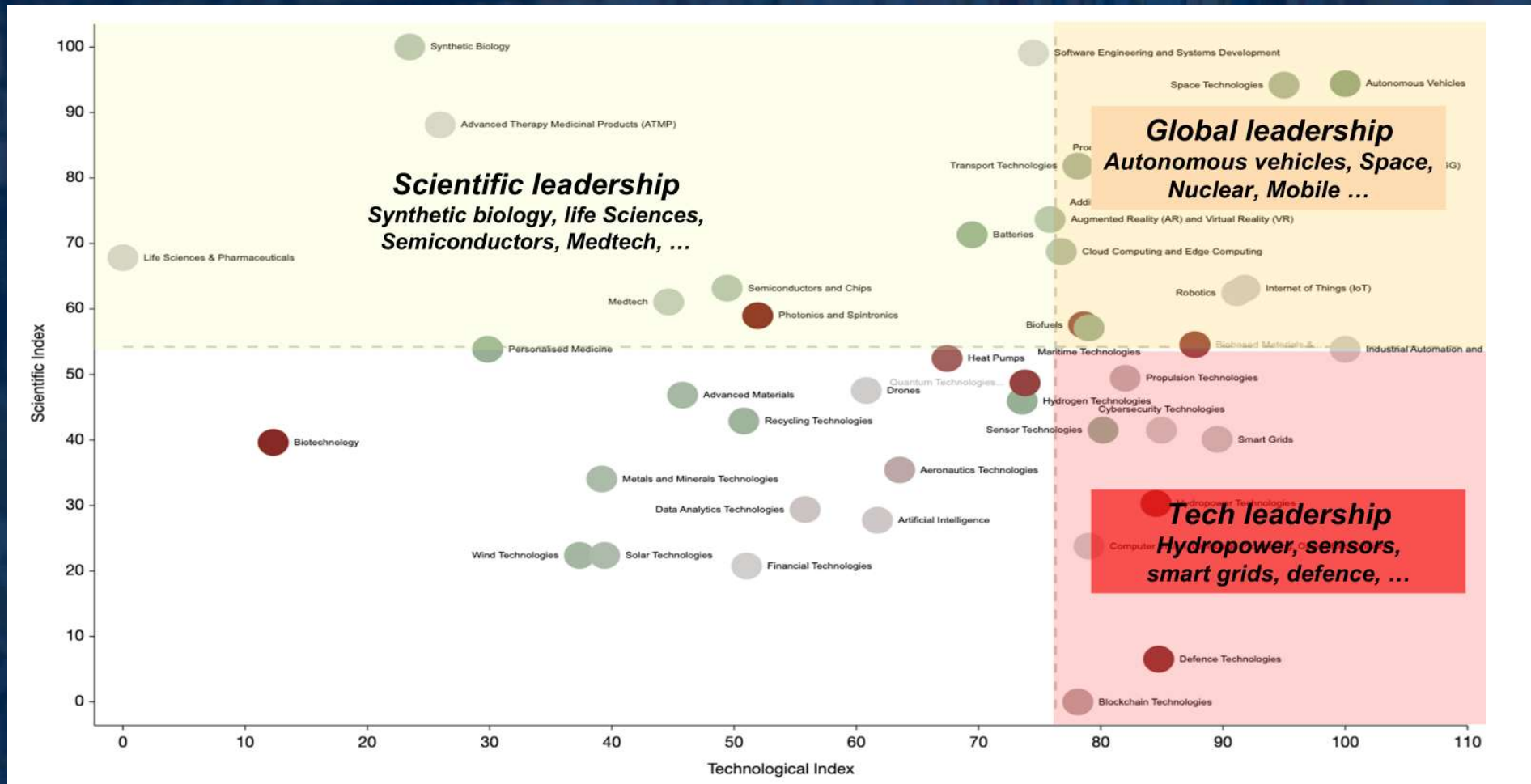
Sverige som världsledande teknik- och innovationsland 2035:

- Hur ser läget ut idag?
- Vart är vi på väg?
- Vart vill vi?

Ett visionsprojekt som engagerar IVAs 1 300 ledamöter, tillsammans med ett brett urval aktörer från samhällets olika delar: politiken, näringslivet, akademien, arbetsmarknadens parter, företrädare för offentlig sektor och ideell sektor.



Sveriges globala position – strategiska tekniker



- *Know yourself: Wissen*
- *Imagine the future: Vorstellungsvermögen*
- *Act: Handlungskraft*

"The most adaptive, resilient and productive communities in the Polycene will be those that can assemble ... complex adaptive coalitions. These bring together business, labor, government, social entrepreneurs, philanthropists, innovators, regulators and educators to solve problems through synthesis rather than by postponing them with binary mutual vetoes. That is the only way to move fast and make things" (Friedman)

Technologische Umbrüche sind Momente der Neuordnung – wer handelt, gewinnt.

“If there is one thing we learn from history, it is that in times of great technological disruption, the deck of cards is being reshuffled. But the hand we are dealt is not random. It is the result of our ability as a society to develop, adopt, diffuse and frame technology to ensure that it benefits people, prosperity and the planet.”

- Aufholen reicht nicht mehr und wir haben die falschen Referenzrahmen
- Dies sind einzigartige Zeiten – sie erfordern Mut, Vorstellungs- und Handlungskraft (Joel Mokyr: “don’t just think out of the box – break the box”); mehr Fokus auf Ergebnisse als auf Prozesse

Ein historischer Zeitpunkt

- Es war mir eine grosse Ehre, Österreich dienen zu dürfen
- Ich habe es getan, weil ich an Europa glaube: Europa braucht Österreich
- Wann macht Österreich den Schritt vom 'Follower' zum 'Leader'?
- Die Zukunft für Österreich (u. Schweden) ist Europa! Was haben China, USA und Russland gemeinsam: sie alle wollen ein schwaches Europa in dem Länder sich so benehmen wie sie selber.
- Institutioneller Mut, Vorstellungskraft und Selbstanspruch
- Sich trauen, die Zukunft zu bauen, anstatt die Gegenwart und Vergangenheit zu verteidigen (DOGE/OSTP) (Mokyr – die erfolgreichen Länder sind die, die an den Fortschritt glauben)