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Dutch Blockchain Coalition
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David Regeczi

TNO

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Technology layers of digital sovereignty

It’s more than data…

Layers of sovereignty

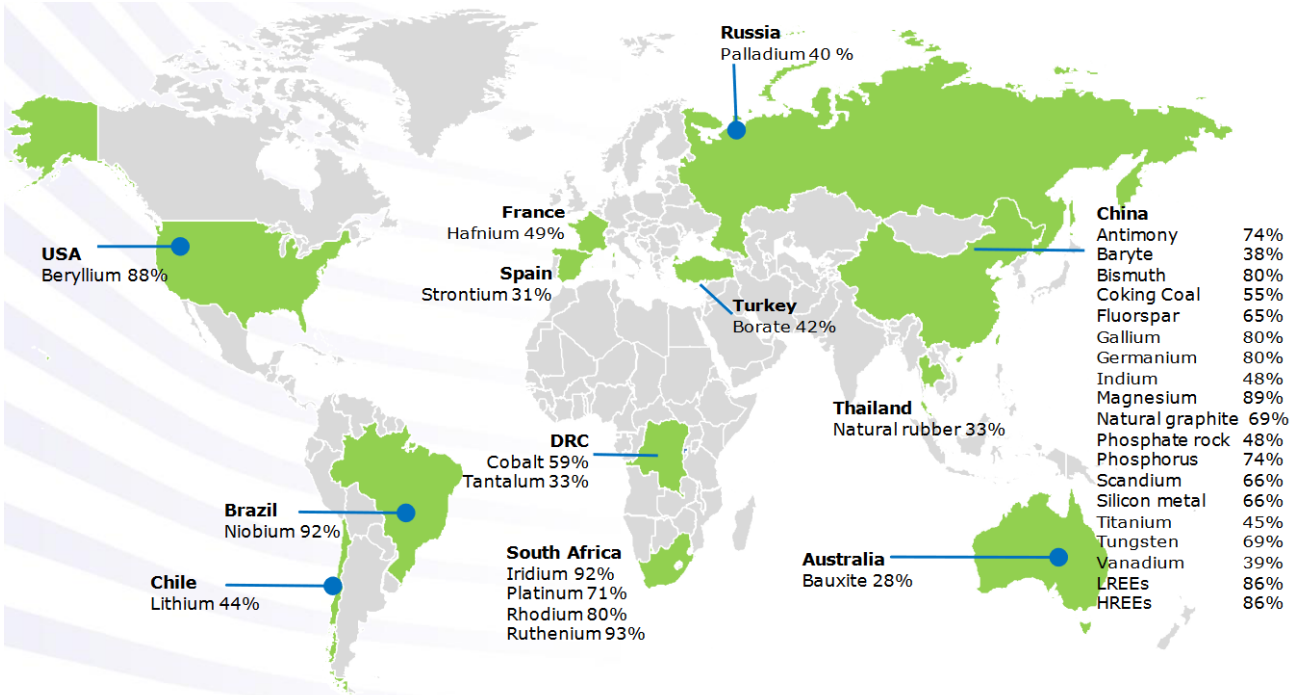
Digital technology layers

- Data (duh!)
- Hardware
  - Networks & connectivity
    - Next generation wireless (5G / 6G) and high-bandwidth fixed connections
  - Data storage & cloud
- Software
  - Information & data sharing infrastructures
  - Algorithms
  - Applications

Influencing layers

What's needed to build the hardware

- Materials and components
  - Microchips
    - Importance of ASML and NXP
    - Questions over Taiwan
  - Rare earth elements
  - High-purity, high-quality process chemicals
  - Batteries



Source. Study on the EU's list of Critical Raw Materials (2020)

Dependencies of concern

Within the technology stack

- Europe led on development of 2G, 3G, and 4G, whereas 5G is led from Asia
- Dependence on US-led hyperscalers (Amazon, Google, Microsoft)
  - Decentralised alternatives of Gaia-X and IDS not fully implemented
  - US Cloud Act
- Important application layers, where added value is created, also largely American

Opportunities

And resilience

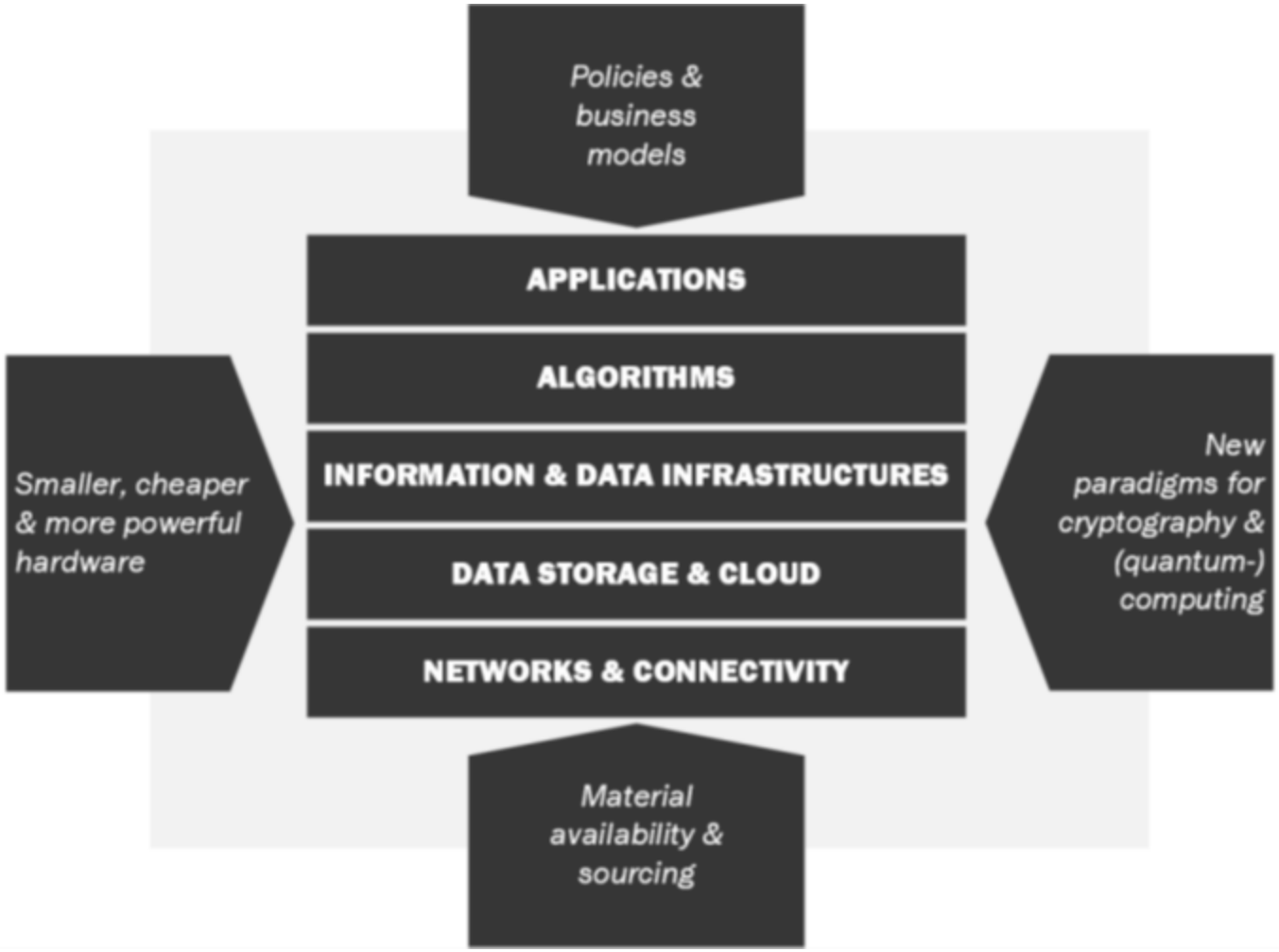
- Invest in upcoming tech (to retake the technology edge)
  - Smaller, cheaper and more powerful hardware such as extreme ultraviolet lithography (EUV) for integrated circuits, better batteries and antennas – enabling more pervasive computing
  - New paradigms for cryptography and quantum technology
  - Development of 6G
- Invest in technology infrastructure (to control the digital infrastructure)
  - European cloud services, such as Gaia-X
  - Edge computing
  - Decentralised data infrastructures
- Promote open technology and data standards (to break the data lock)

Policy instruments of sovereignty

Innovation policy meets geopolitical realities

- Digital policy
  - Data spaces
- Innovation policy and SME development
- Trade and investment policy
  - The changing role of foreign direct investment (FDI)
- Competition policy
  - A vehicle to open locked datasets and businesses that rely heavily on network effects
- Industrial policy
  - Swinging back to interventionist policies?

A model for digital sovereignty



Trade-offs of sovereignty

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- Digital sovereignty incurs (potential) costs
  - Reduced innovation
  - Increased costs
- Digital sovereignty cannot be a self-contained ecosystem
  - Sovereignty is not a binary concept
  - Importance of rule-setting
  - The Brussels Effect and its influence on markets

Have a read

(Securely) texting and calling is good too

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TNO report

TNO 2022 R10507

Bridging the Dutch and European Digital Sovereignty gap

https://publications.tno.nl/publication/34639349/urAkBu/TNO-2022-R10507.pdf

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Köszönöm!

Thank you!

Hvala!

BEDANKT!

Merci!