

DIGITAL SOVEREIGNTY = HYPERSCALING SOVEREIGNTY?

Why Digital Sovereignty requires a European hyperscaler!



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Cyber Defence**

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GEOPOLITICS OF DIGITAL SOVEREIGNTY: SEARCH ENGINES



GEOPOLITICS OF DIGITAL SOVEREIGNTY: SOCIAL NETWORKS



GEOPOLITICS OF DIGITAL SOVEREIGNTY: ONLINE RETAILING



GEOPOLITICS OF DIGITAL SOVEREIGNTY: HYPERSCALE CLOUDS



TOP 20 LARGEST INTERNET COMPANIES

Company	Rank
Amazon	#1
Google	#2
Facebook	#4
Netflix	#8
PayPal	#10
Salesforce.com	#11
Booking	#13
Uber	#14
Expedia	#16
Adobe	#18
eBay	#19
Bloomberg	#20



12



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Company	Rank
JD.com	#3
Alibaba	#5
Tencent	#6
Sunin.com	#7
ByteDance	#9
Baidu	#12
Meituan-Dianping	#15

PERSPECTIVES ON DIGITAL SOVEREIGNTY

Individuals

Industry

Governments

Military

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- Lack of options for self-determination
- Potential targets in disinformation campaigns
- Loss of sensitive private data
- Data generation & collection for machine learning

PERSPECTIVES ON DIGITAL SOVEREIGNTY

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- Industrial espionage
 - *Passive* through analysis of search engine results and user behavior
 - Transfer of enormous amounts of European R&D investments
- Industrial sabotage
 - Indirect influence of market capitalization and valuations

Endangering European Economic competitiveness

PERSPECTIVES ON DIGITAL SOVEREIGNTY

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- Political instability through disinformation campaigns
- Economic instability through induced volatility & loss of competitiveness
 - Reduction of taxes
 - Limitation of political scope

PERSPECTIVES ON DIGITAL SOVEREIGNTY

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Military

- Severe disadvantage in future warfare
 - “Hyperwarfare”
 - split-second decision-making w/o humans through automation/AI
 - automated control of massive amounts of UAVs
- Large-scale attacks in cyber domain, overwhelming decision making, reconnaissance, situational awareness

ANALYSIS & INTERPRETATION

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*Europe **must** act in a principled way to close the gap.*

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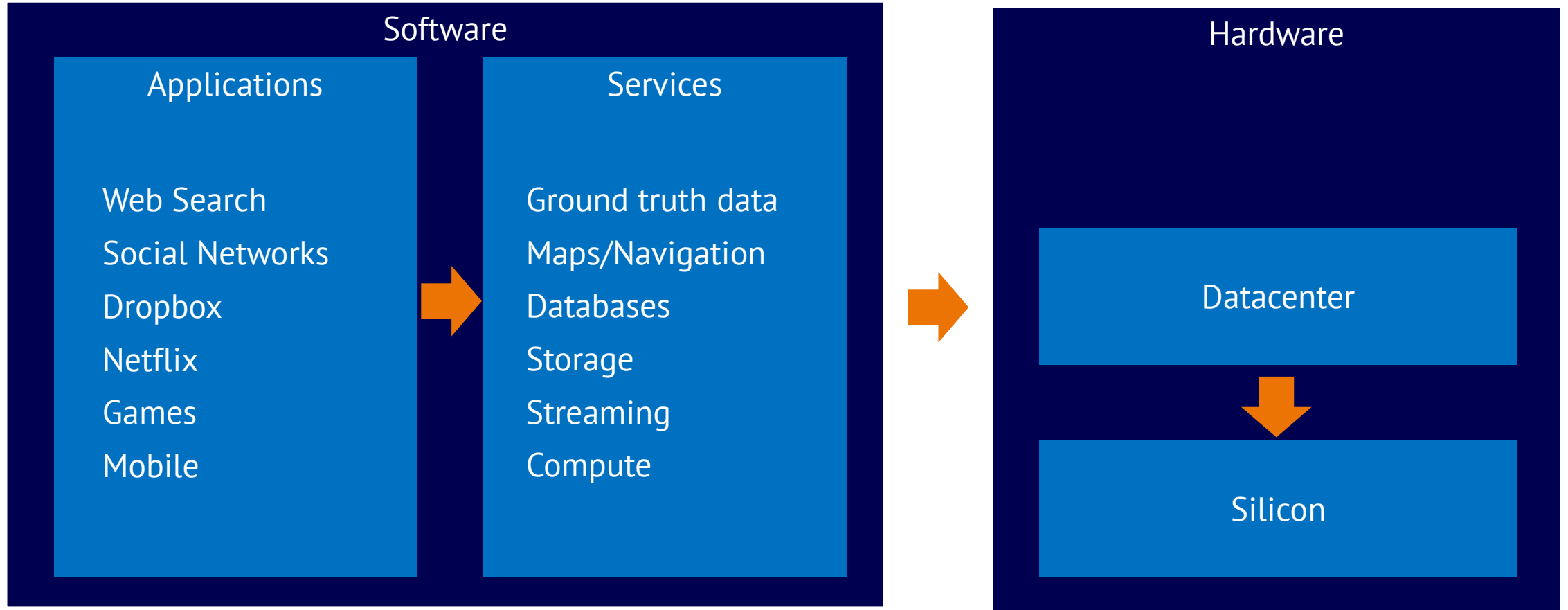
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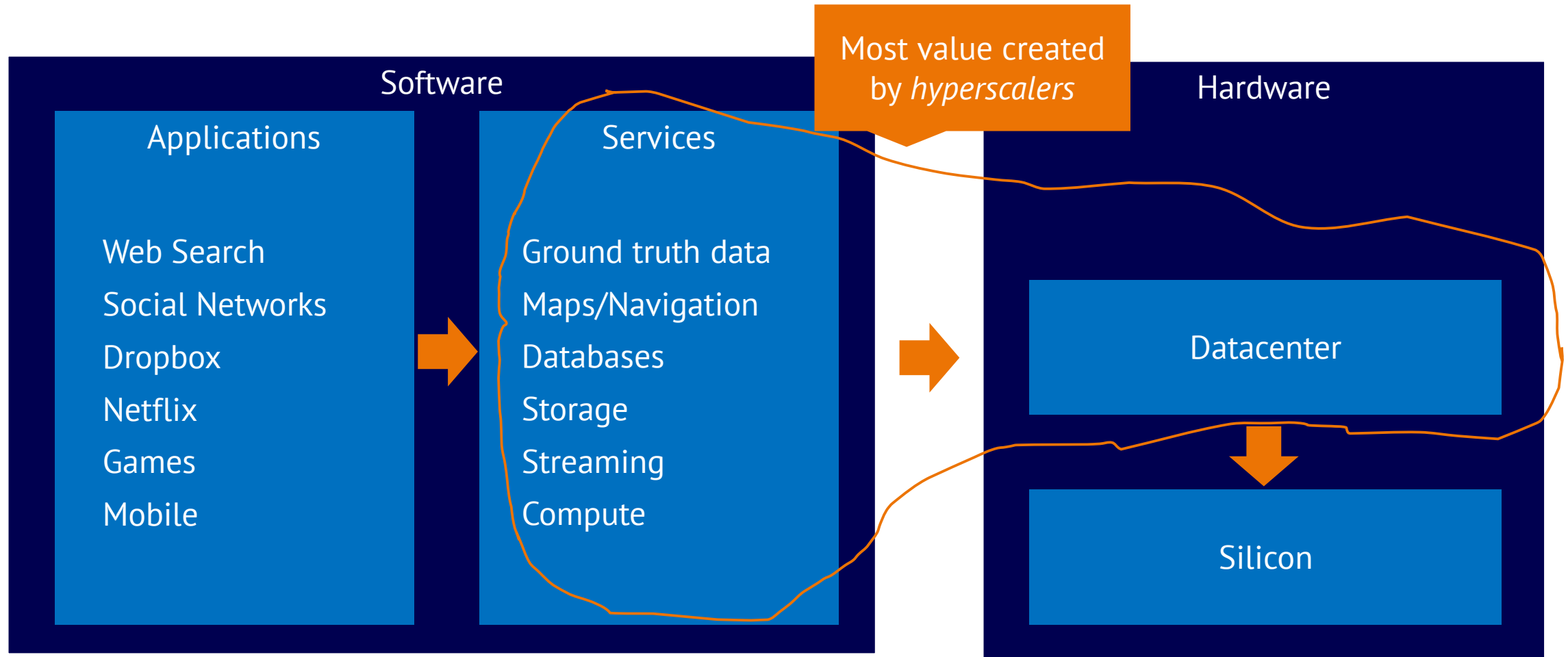
*Europe **must** act in a principled way to close the gap.*

- systematic
- strategic
- sound

TAKING A CLOSER LOOK AT TODAY'S COMPUTING LANDSCAPE



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What we
want!

Software

Applications

Web Search
Social Networks
Dropbox
Netflix
Games
Mobile

Services

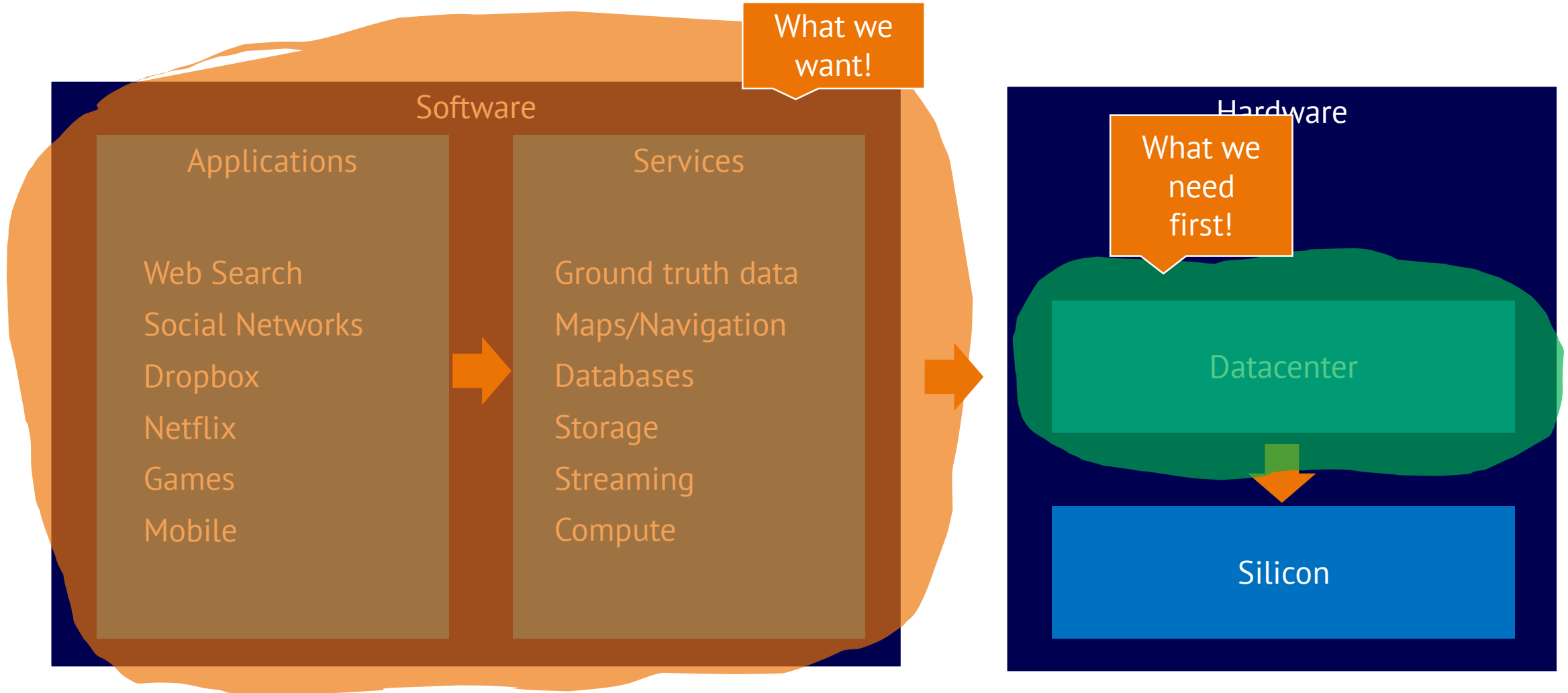
Ground truth data
Maps/Navigation
Databases
Storage
Streaming
Compute

Hardware

Datacenter

Silicon

TAKING A CLOSER LOOK AT TODAY'S COMPUTING LANDSCAPE



HYPERSCALING IN THE UNITED STATES

Two advantages

- Efficiency
- Specialization

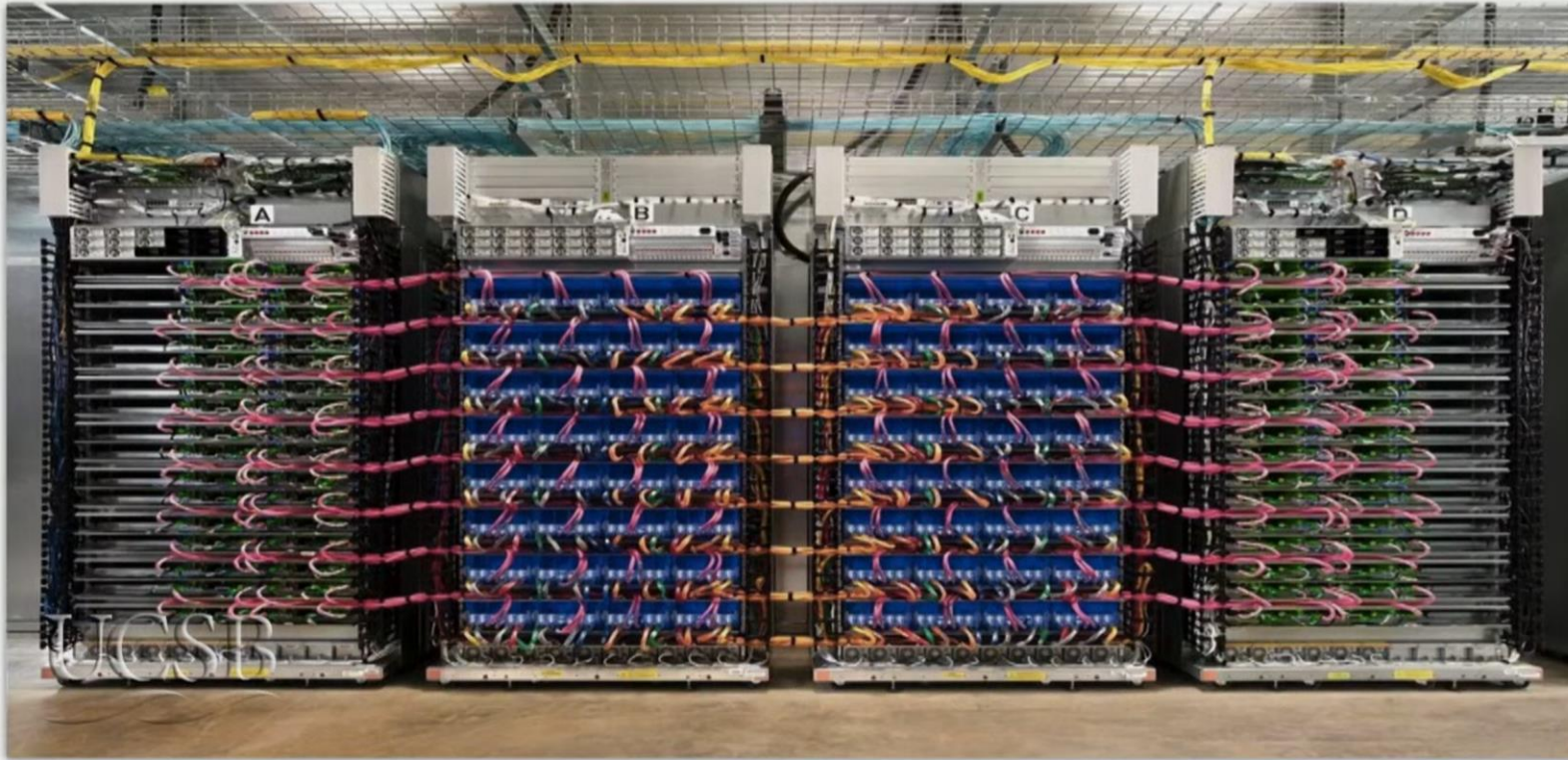
HYPERSCALING EFFICIENCY

Leadership USA, China

- Efficient Google datacenters
 - 88c/\$1 → compute power
 - 20c/\$1 for traditional datacenters
- Equal compute power of Google
 - **\$4.4** → 88% compute power
 - **~5** datacenters to compete with just one of Google's

HYPERSCALING SPECIALIZATION

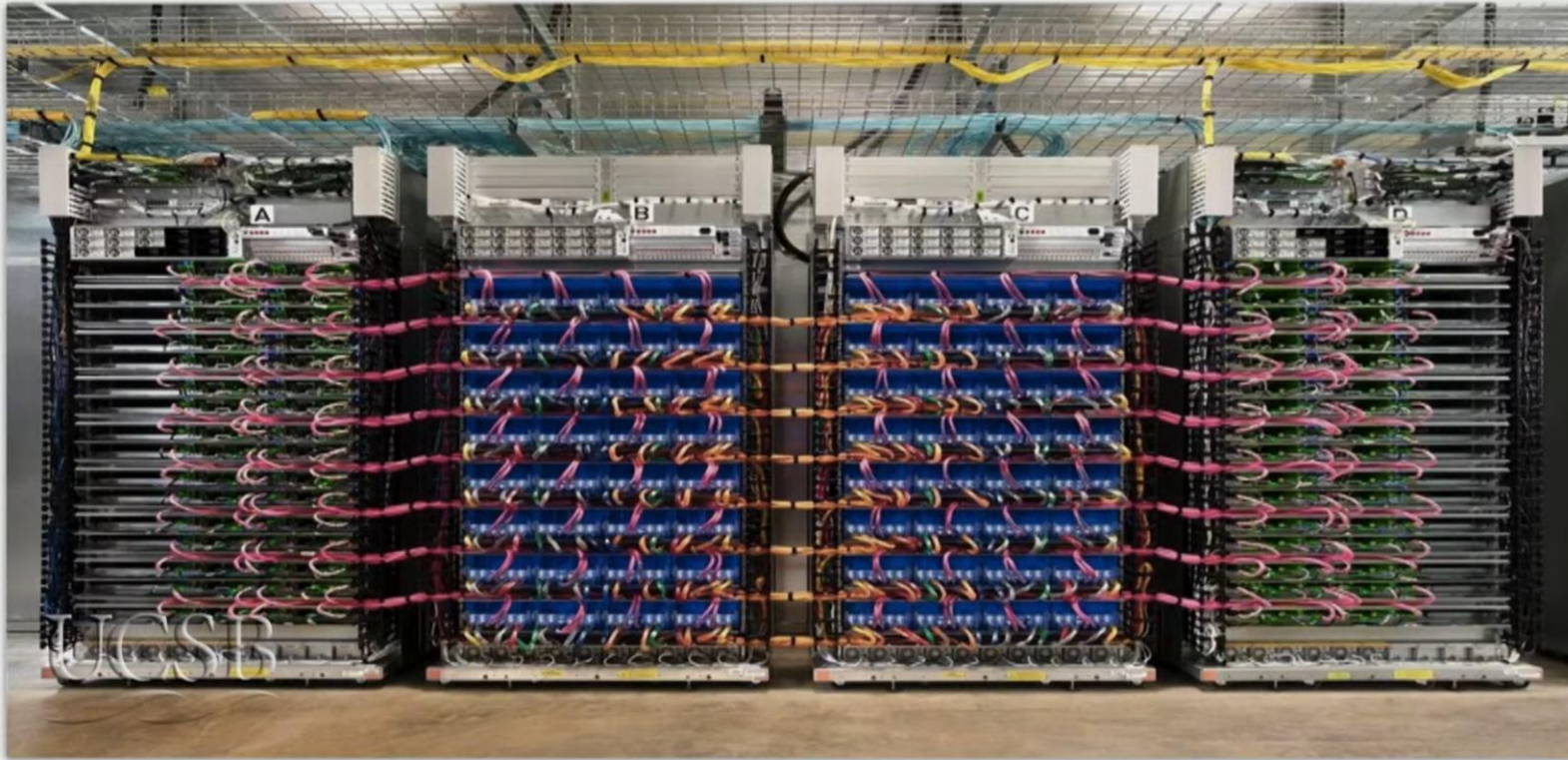
Specialization: <200kW vs 2.5MW For 11.5 PFlops



Urs Hoelzle, Google; UCSB, 2017

HYPERSCALING SPECIALIZATION

Specialization: <200kW vs 2.5MW For 11.5 PFlops



12.5x

Less power

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Less space

--

Less A/C

--

Specialized
for ML
tasks

Urs Hoelzle, Google; UCSB, 2017



HYPERSCALING IN EUROPE

- Dedicated research efforts to create knowledge
 - Interdisciplinary, rethink datacenters from the ground up
 - Specialization towards European needs
- Build-up of hyperscaling resources
 - Complemented by enabling policy, such as giving startups free credits
 - Prevent loss of knowledge/talent through undesirable foreign acquisitions
- Tight integration with key European industries
 - Transportation, Manufacturing, Biotech, Chemistry, Electrical Engineering

- global competition economically unviable
- lack of data and compute power inhibit European AI/ML efforts
- severe impacts for European economic competitiveness, innovation potential, and military capabilities

HYPERSCALING IN EUROPE

Indispensable prerequisite for European Digital Sovereignty

→ Needs to receive focal attention

Otherwise:

- Impacts economically unviable
- inhibit European AI/ML efforts
- impacts for European economic competitiveness, innovation potential, and military capabilities

HYPERSCALING IN EUROPE

We're facing a tremendous, formidable challenge. It won't be easy and there will be setbacks.

Rising up to that challenge has transformative character that will drive European innovation and wellbeing in the 21st century.

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