ASML company presentation

Updated for Q2 2023 (July 2023)

Q2 2023

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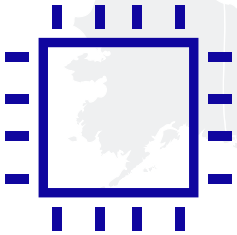
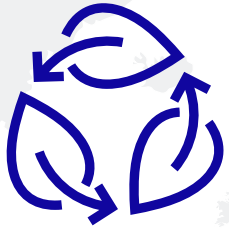
Chips are everywhere

The world is changing faster than ever before



Connected world

- Smarter cities, factories, homes, cars
- Connecting billions of ‘things’
- Unprecedented data volumes
- Privacy in a connected world
- Cybersecurity
- …



Climate change and resource scarcity

- Rising energy use
- Exploding energy costs
- Accelerating climate change
- More waste and pollution
- Fragile food chains
- Material shortages
- …

Social and economic shifts

- Rising population
- Higher medical costs
- Faster urbanization
- Need for tech talent
- Deglobalization
- Technological sovereignty
- …

And this industry can help unlock the potential

Connected world

- Cloud infrastructure
- Artificial intelligence
- Hyperconnectivity
- Edge computing

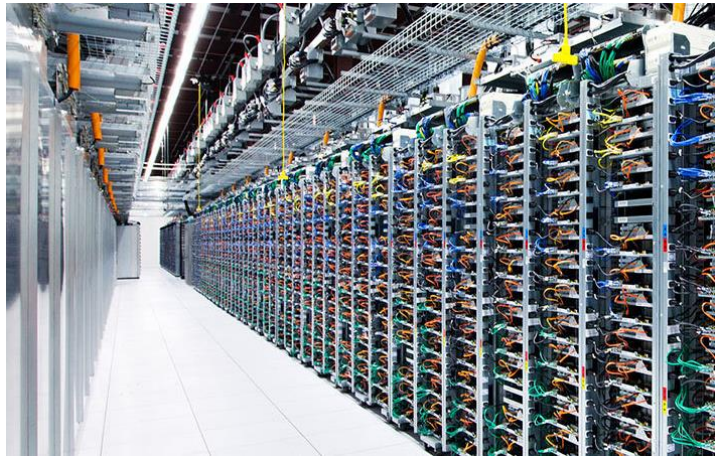
Climate change and resource scarcity

- Energy transition
- Electrification, smart mobility
- Agricultural innovation
- Smarter use of limited resources

Social and economic shifts

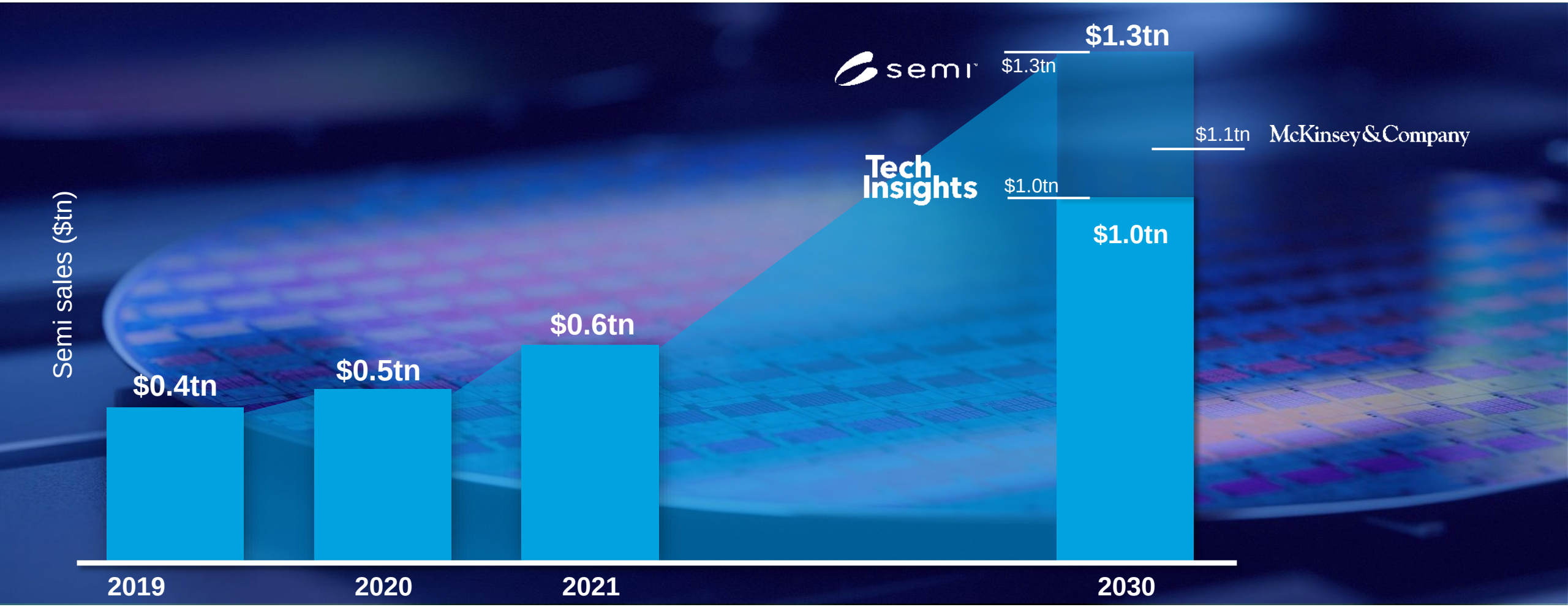
- Working, learning remotely
- Healthcare, medical tech
- Technological sovereignty
- Automation

Chips are already the fabric of our modern world



And the semiconductor market is expected to double in 10 years

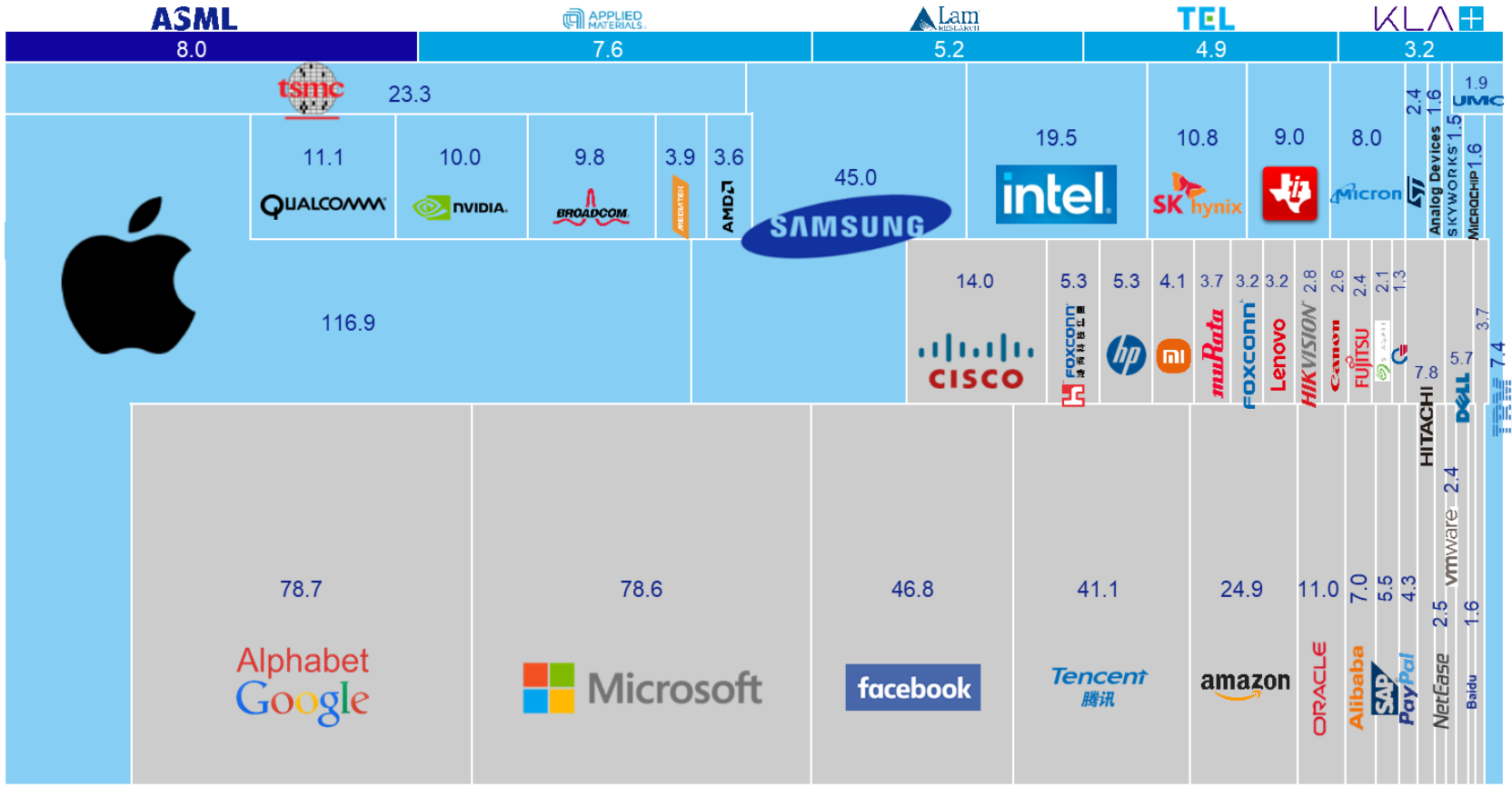
Analysts' views on 2030 market are ranging from $1.0tn to $1.3tn

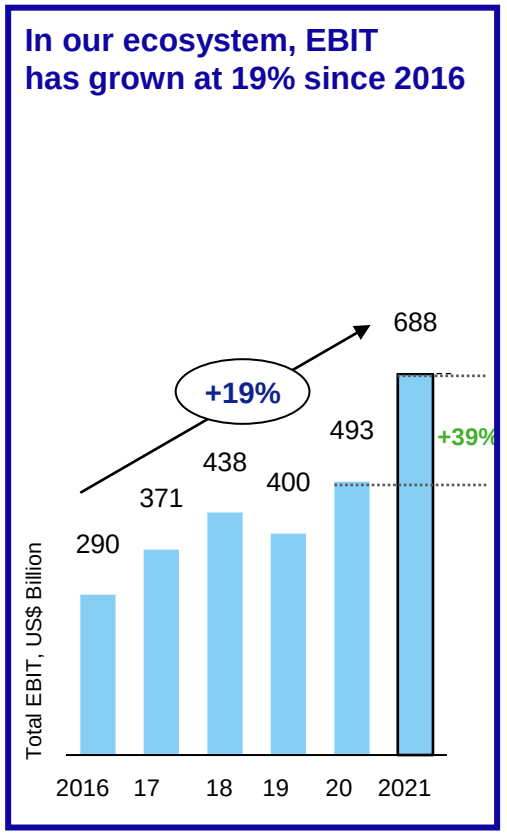


Sources: TechInsights, McKinsey, SEMI.org

Our ecosystem has considerable means to drive further innovation

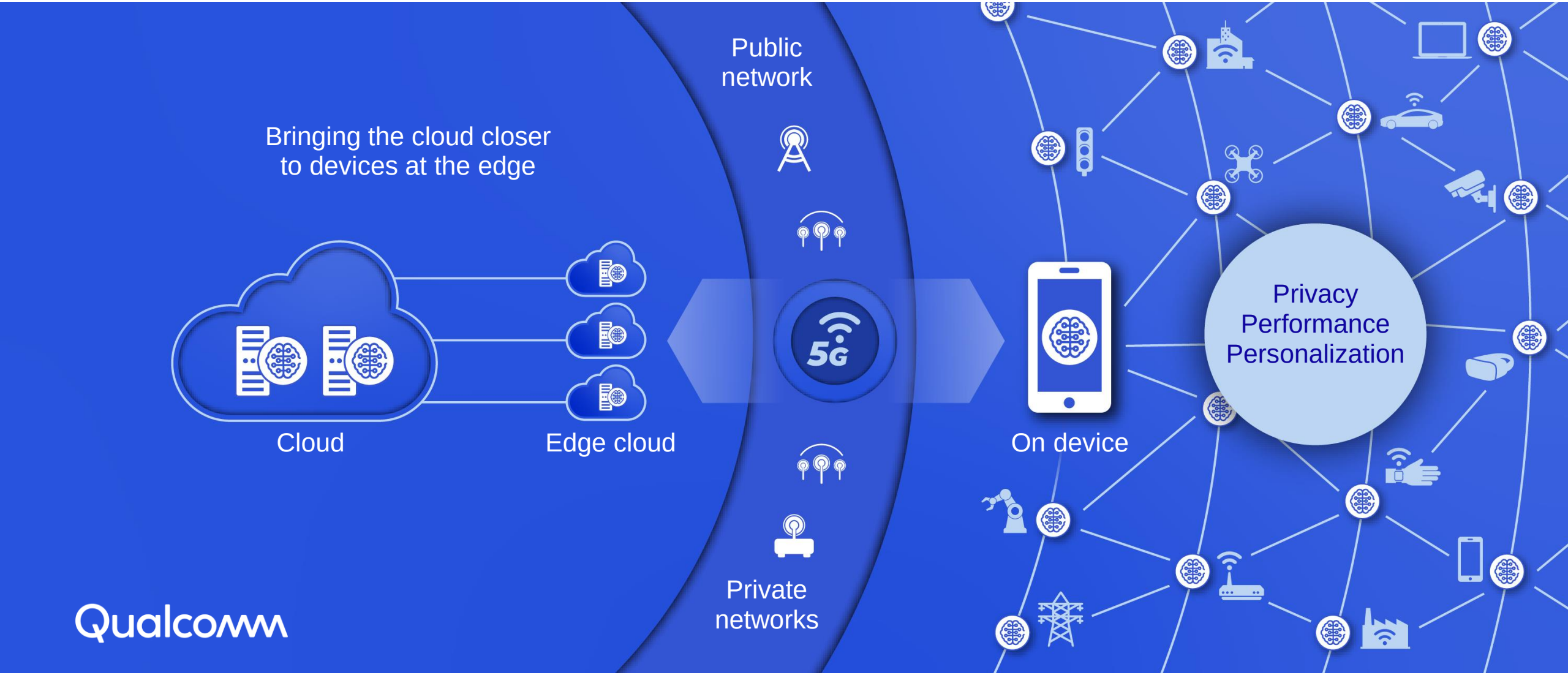
50 top technology companies in our ecosystem generated $688 billion of EBIT in 2021





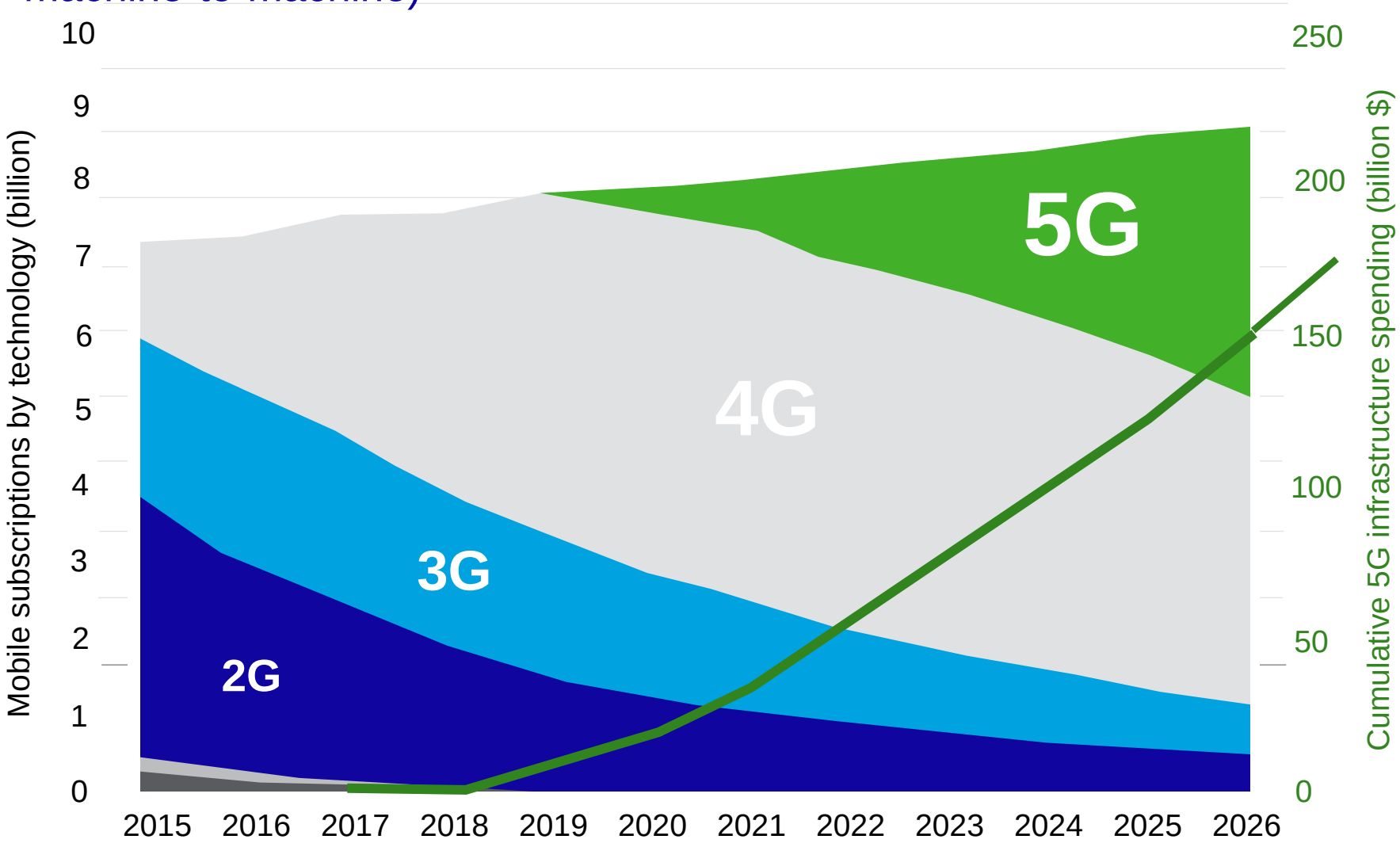
Source: Bloomberg, companies' annual reports, and ASML analysis. Note: EBIT = Earnings before Interest & Taxes; 50 top companies are top IT companies from the GICS 45 classification, according to EBIT rankings, plus Amazon, which is categorized as a retail company by the GICS(= Global Industry Classification Standard). This chart uses the total EBIT of a company.

The future will be all about distributed computing



And the next wave of connectivity is just starting

Lower latency, higher bandwidth will enable a connected world (human-to-machine and machine-to-machine)



By 2026, global 5G subscriptions are estimated to top 3.5 billion with infrastructure investment of $150B

By 2030, that investment is expected to grow to $250B

This transformation has only just begun

Introducing ASML

ASML in 1 minute

Click here: https://www.youtube.com/watch?v=wl6nCmG-PpI

Our story begins in the Philips lab in 1984

Humble beginnings make for a strong can-do culture

Started as a joint venture by Philips and ASMI

Just 31 employees with a can-do attitude

It took a decade of perseverance to break into the market

Innovation and perseverance have brought us here

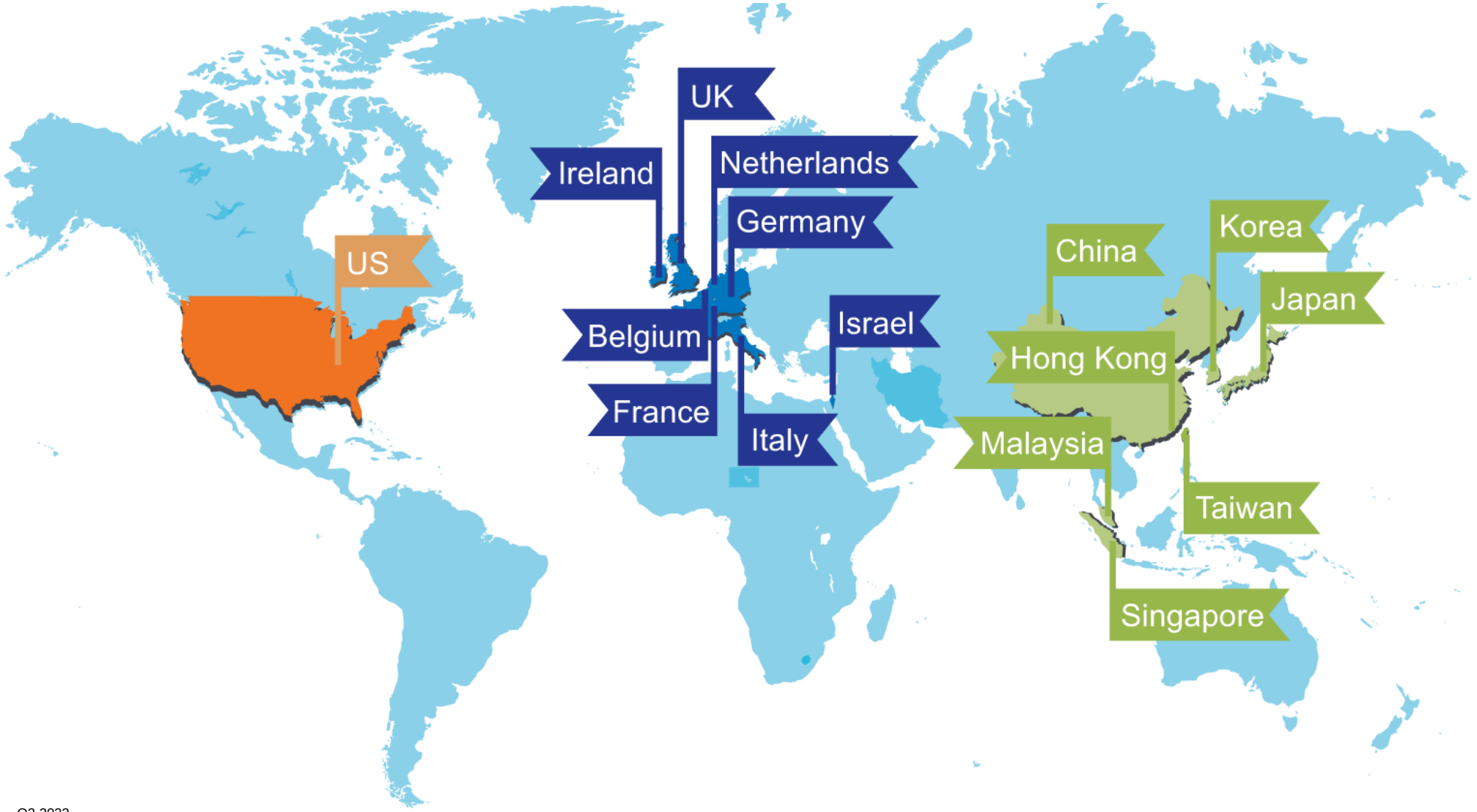
All major chipmakers use ASML's technology

Europe's biggest tech company by market cap

Annual R&D budget of >€3bn

A global presence with >40,000 employees (year-end 2022)

Offices in over 60 cities in 16 locations worldwide



Some of our key industrial sites around the world

Wilton (CT)

Veldhoven

Berlin

Korea

Silicon Valley (CA)

San Diego(CA)

Tainan (Taiwan)

Linkou (Taiwan)

All major chipmakers are our customers

Customer	HQ	2023 capex est. ($B)
TSMC	Taiwan	33
Samsung	Korea	26
Intel Corporation	USA	23
SK Hynix	Korea	7
Micron	USA	6
SMIC	China	6
GlobalFoundries	USA	3.7
STMicroelectronics	Europe	2.8
UMC	Taiwan	2.5
Texas Instruments	USA	2
Others		25,2
Total (Gartner, Dec 2022)		**137.2**

ASML

OUR PURPOSE
Why we exist

Unlocking the potential of people and society by pushing technology to new limits.

OUR VISION
What we try to achieve

We enable groundbreaking technology to solve some of humanity's toughest challenges.

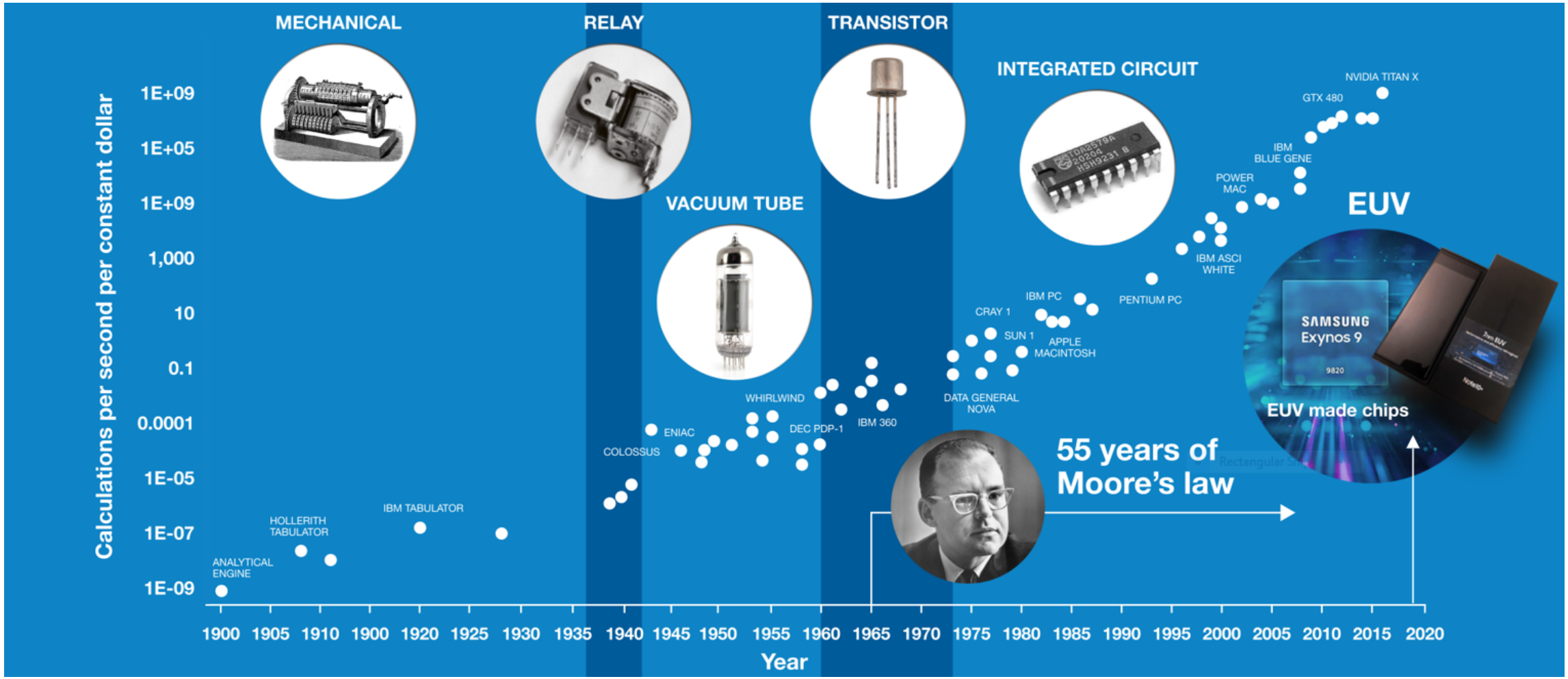
OUR MISSION
What we uniquely do

Together with our partners, we provide leading patterning solutions that drive the advancement of microchips.

ASML’s place in the industry

The world has been improving computer power for 120 years

18 orders of magnitude increase of calculation speed per dollar, and continuing



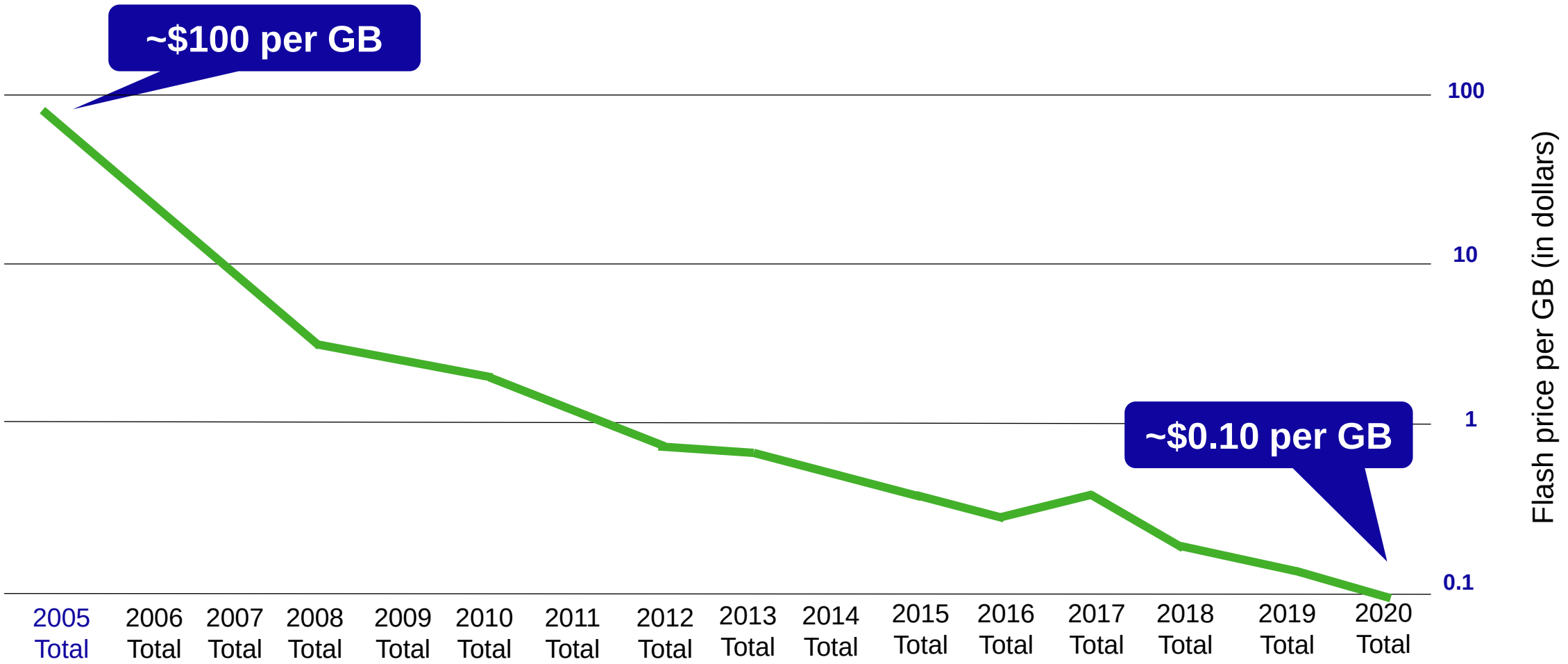
Source: Ray Kurzweil, Steve Jurvetson

For over 50 years, Moore’s Law has been a law of economics

- Imagine printing the book The Hitchhiker’s Guide To The Galaxy (by the late great Douglas Adams)
- That’s 227 pages at font size 14
- Now shrink all text to font size 7 and observe Moore’s Law at work

- You’ve halved the cost to print the book
- You’ve halved the time to print the book
- You’ve doubled the information density of the book

So Moore's Law makes chips cheaper…



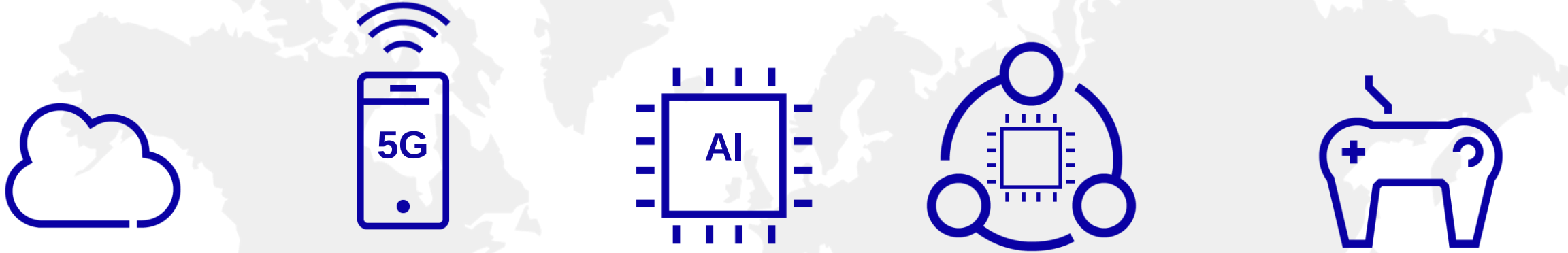
…and electronic devices much more powerful

IBM 5150

IBM 5150		Apple iPhone 14 Pro Max
1984	year manufactured	2022
$1500-$3000 ($3500-$7000 today)	price	$1099-$1599
16-bit Intel 8088 4.77 MHz	processor	Apple A16 bionic chip (4 nm EUV)
16-265 kB	working memory	6 GB
5” floppy disk 160 kB	internal storage	up to 1 TB
640x200 pixels	monitor	2796 x 1190 pixels
29,000	transistor count	16 billion
12.7 kilogram	weight	240 grams

Apple iPhone 14 Pro Max

Today, Moore’s Law drives megatrends that shape our connected world



Cloud

5G & infrastructure

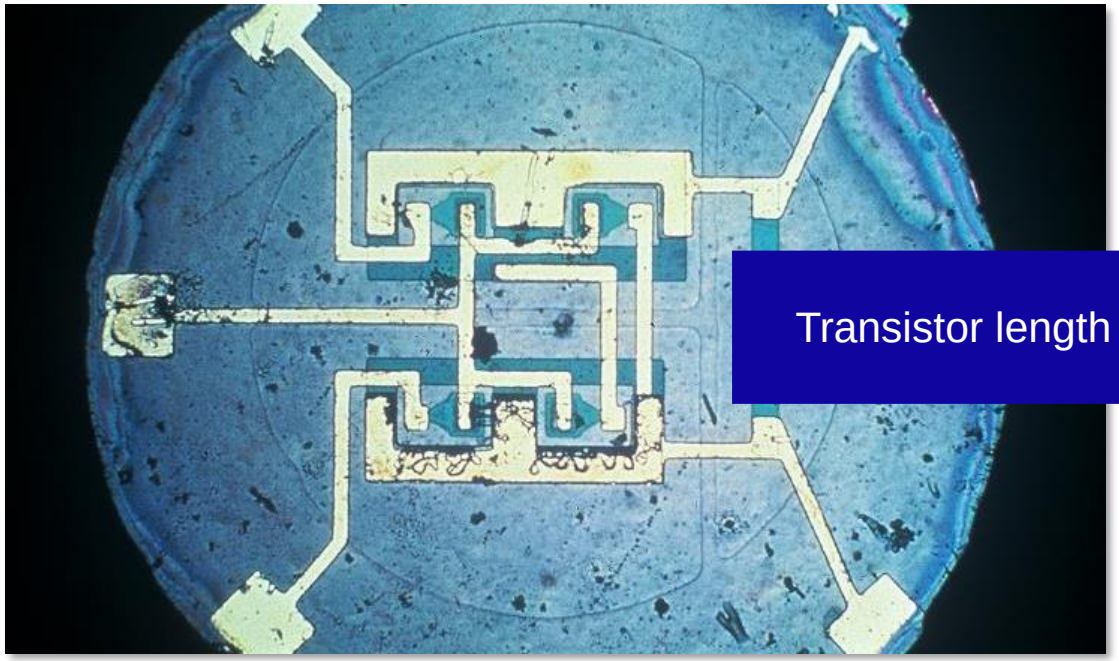
Artificial intelligence

Intelligent edge

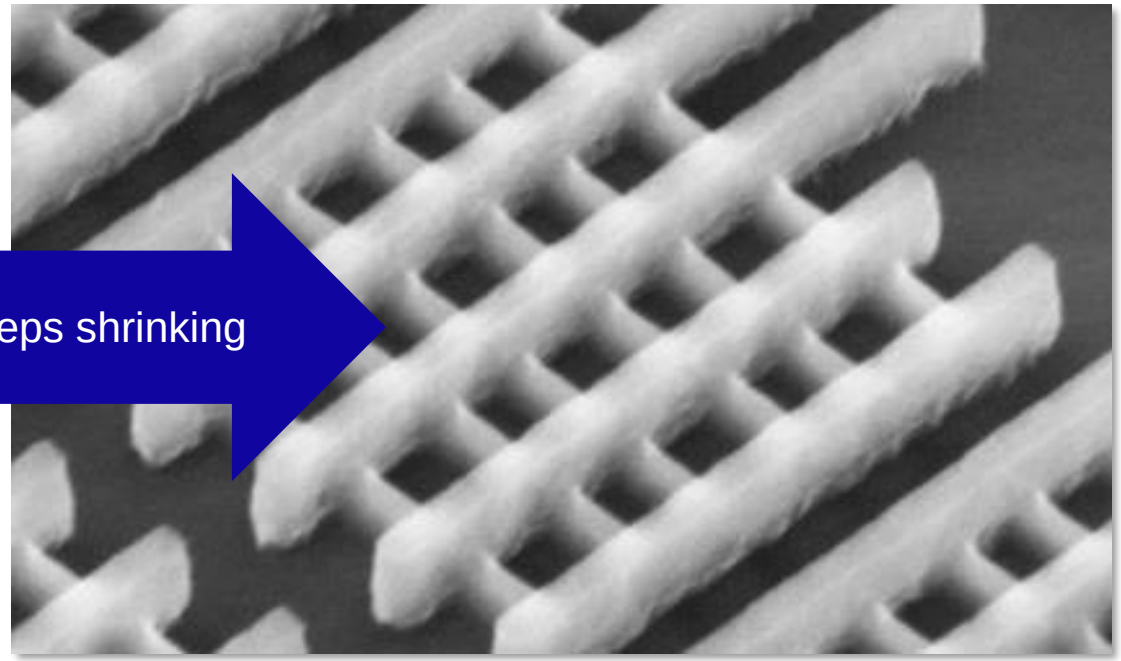
Gaming, simulation & visualization

Lithography drives IC innovation

Key to Moore’s Law: Making smaller transistors



Transistor length keeps shrinking

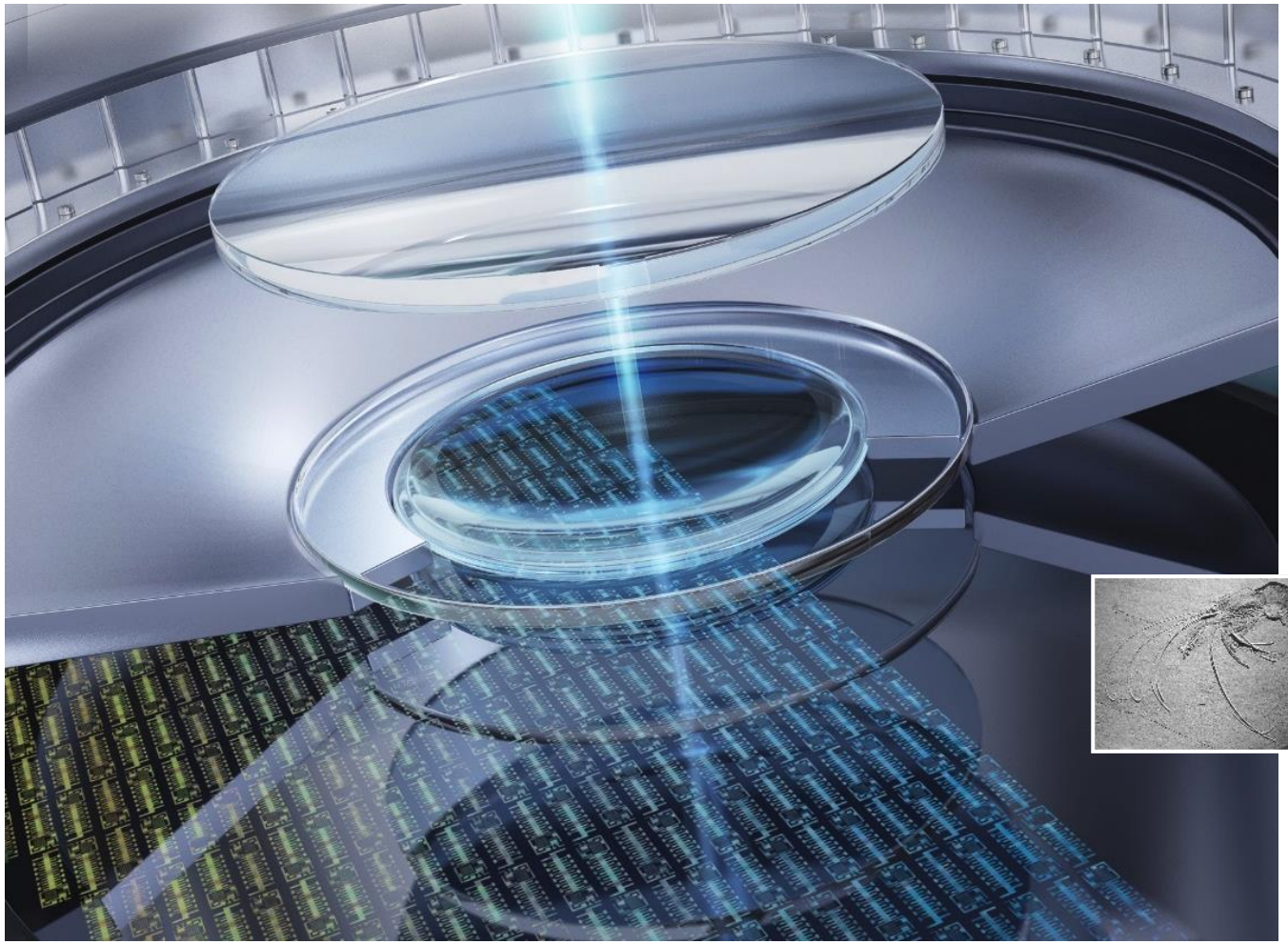


The first integrated circuit on silicon, on a wafer the size of a fingernail

(Fairchild Semiconductor, 1959)

Today: Billions of transistors on the same area

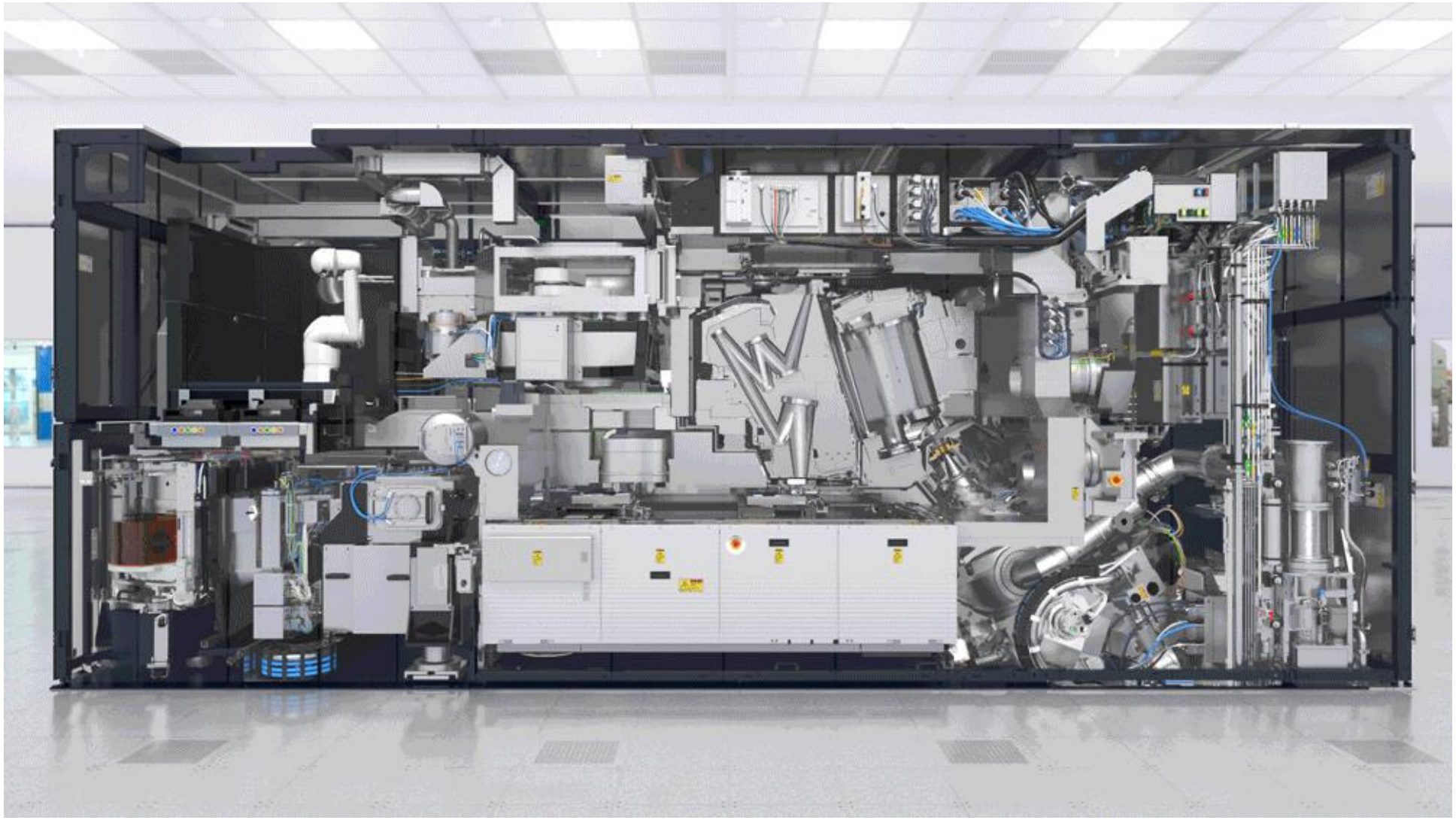
Lithography is critical for shrinking transistors



Lithography is the only semiconductor production step to process the wafer die per die, in contrast with all other production steps. This makes ASML's technology so pivotal in getting the highest yield and best performance in chip manufacturing

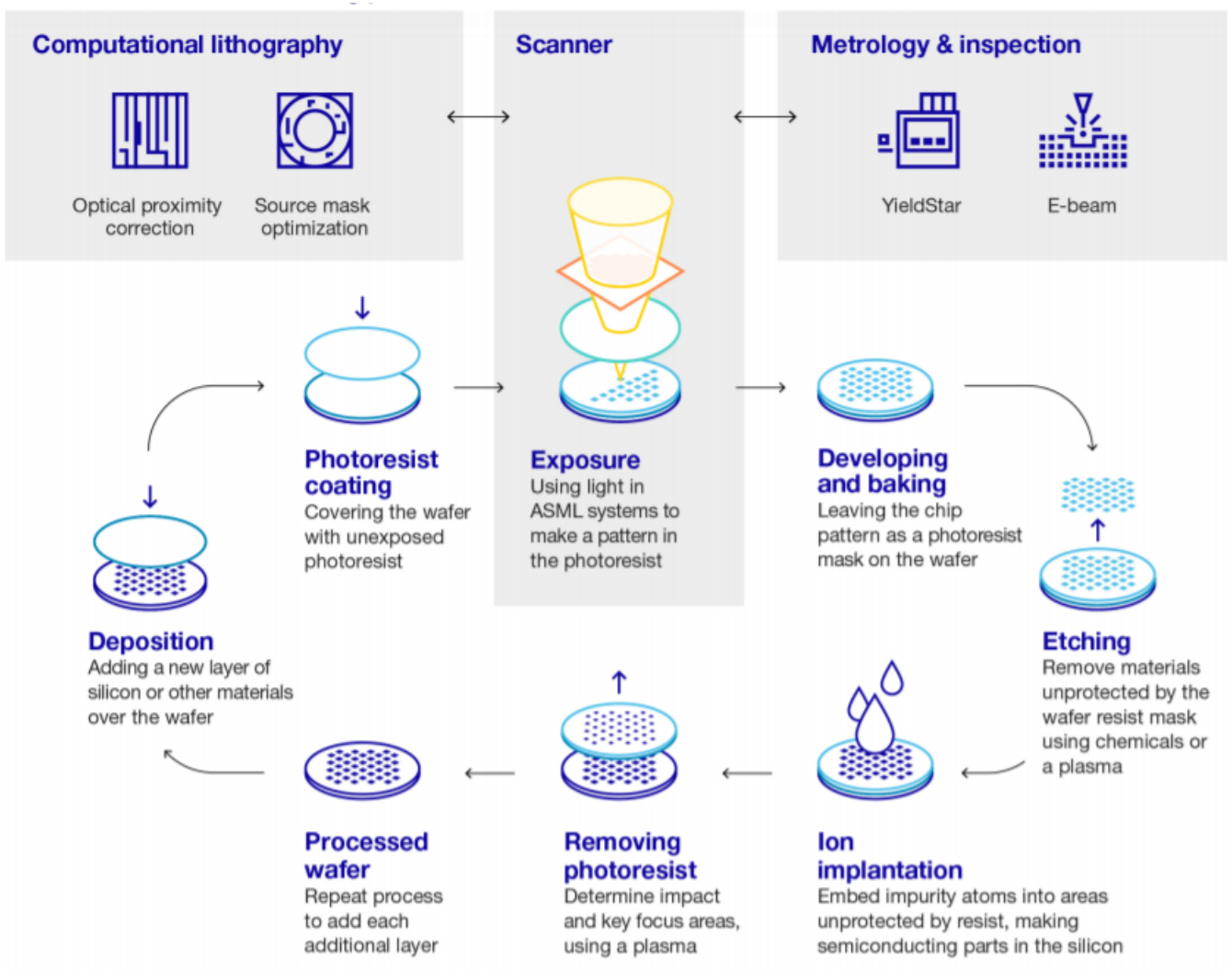
Lithography: Ancient Greek λίθος, lithos, meaning 'stone', and γράφειν, graphein, meaning 'to write')

How a lithography system works

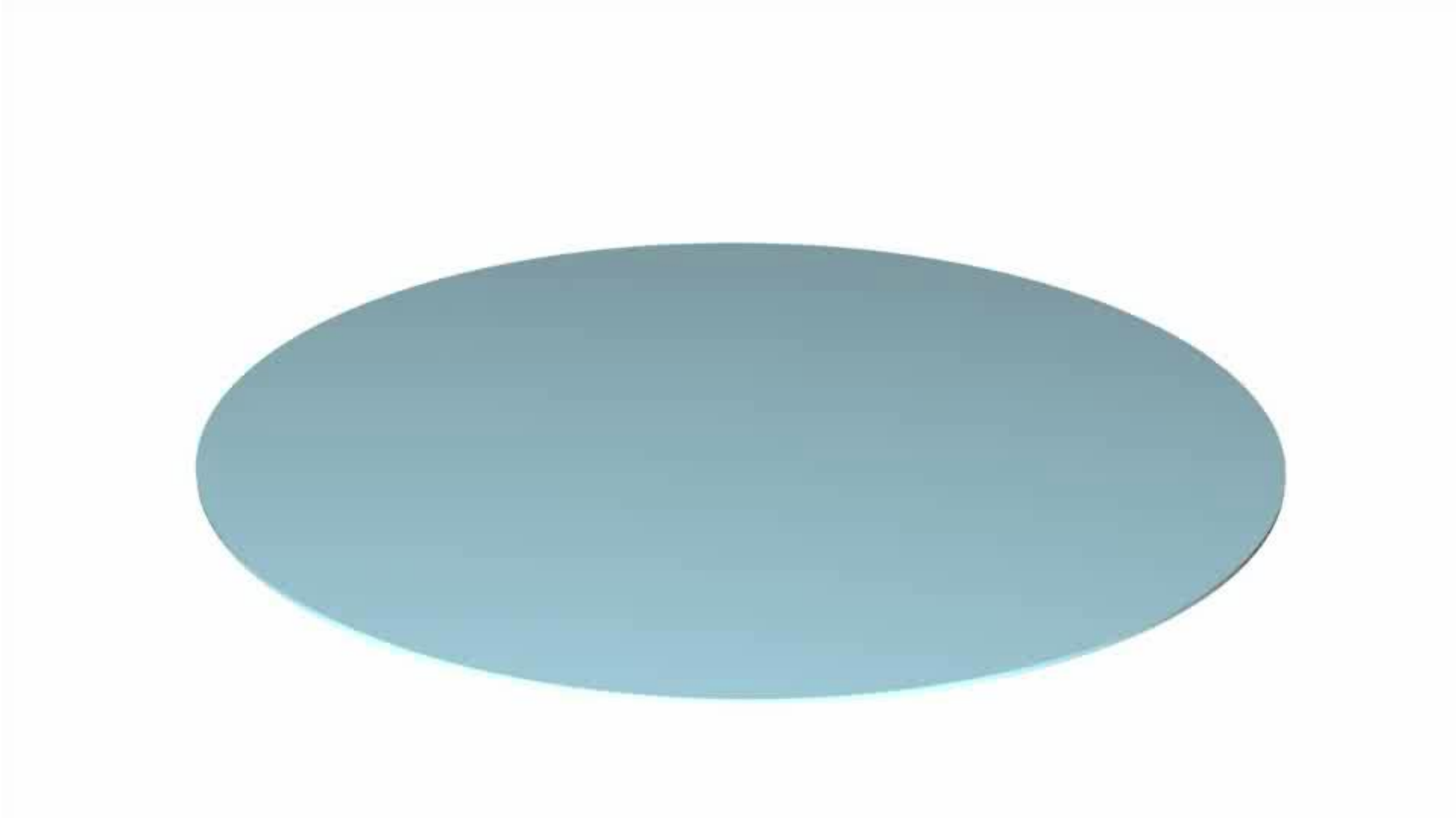


A chip is made of dozens of layers

The semiconductor manufacturing loop



Making a transistor



Technology

Lithography innovation keeps chip manufacturing affordable

PAS 2500/10
Res: 900nm
W: 150mm
Wph: 66

80s

436 nm → 365 nm light
100 mm → 150 mm wafers

PAS 5500/60
Res: 450nm
W: 200mm
Wph: 48

90s

248 nm → 193 nm light
150 mm → 200 mm wafers
'step & repeat' → 'step & scan'

TWINSCAN AT:850
Res: 110nm
W: 300mm
Wph: 102

TWINSCAN XT:1400
Res: 65nm
W: 300mm
Wph: 145

00s

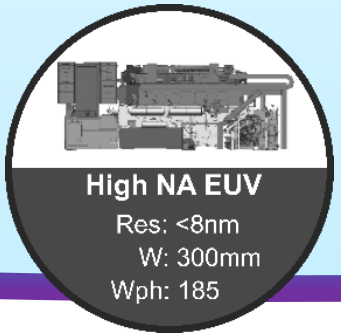
200 mm → 300 mm wafers
Dry → immersion lithography
Single stage → dual stage

TWINSCAN NXT:1950i
Res: 38nm
W: 300mm
Wph: 190

TWINSCAN NXE:3400B
Res: 13nm
W: 300mm
Wph: 125

10s/20s

Litho → Holistic litho
Immersion → EUV
Letho 0.33 → EUV 0.55



High NA EUV
Res: <8nm
W: 300mm
Wph: 185

Relative cost per pixel

Technology-wise, we had to move mountains

Sometimes it seemed impossible– until we did it

80s

436 nm → 365 nm light
100 mm → 150 mm wafers

90s

248 nm → 193 nm light
150 mm → 200 mm wafers
'step & repeat' → 'step & scan'

00s

200 mm → 300 mm wafers
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Single stage → dual stage

10s/20s

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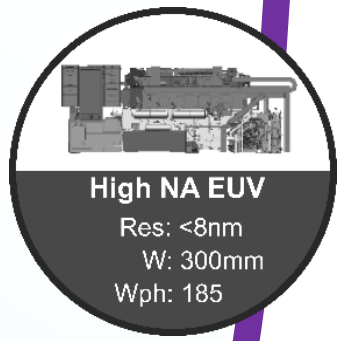
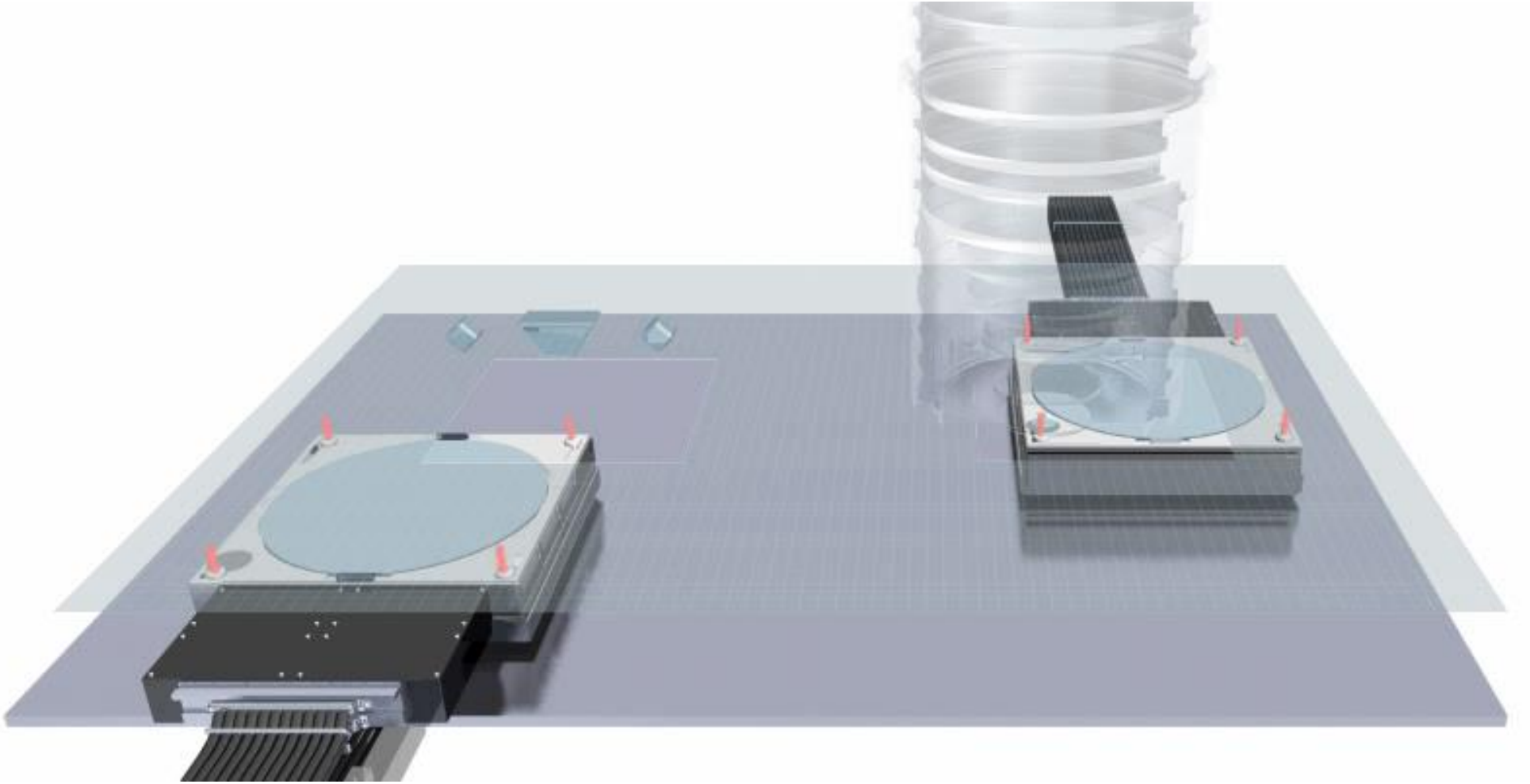
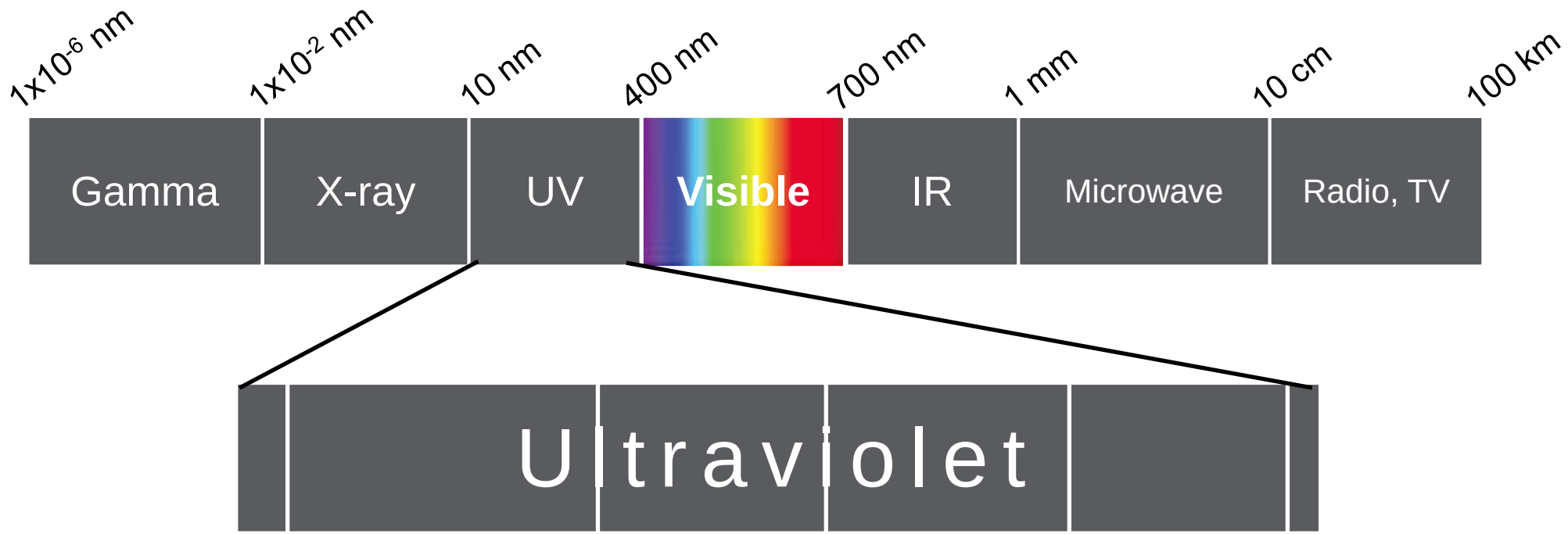


System complexity

Key innovation: TWINSCAN

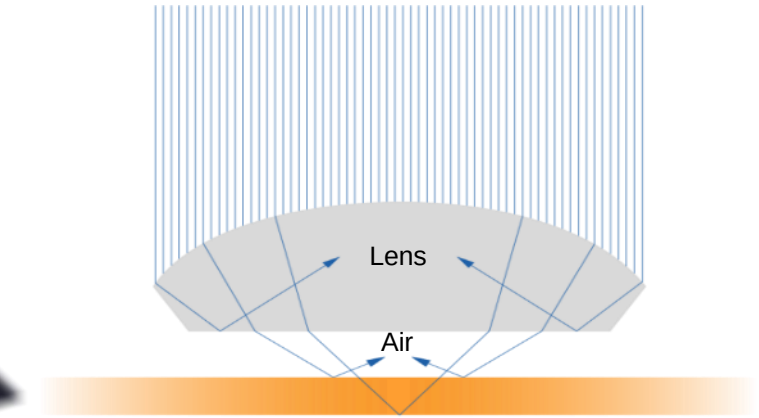


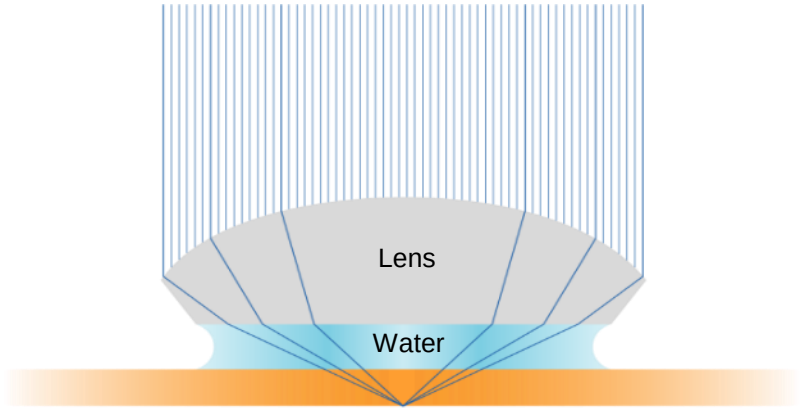
Key innovation: Wavelength changes



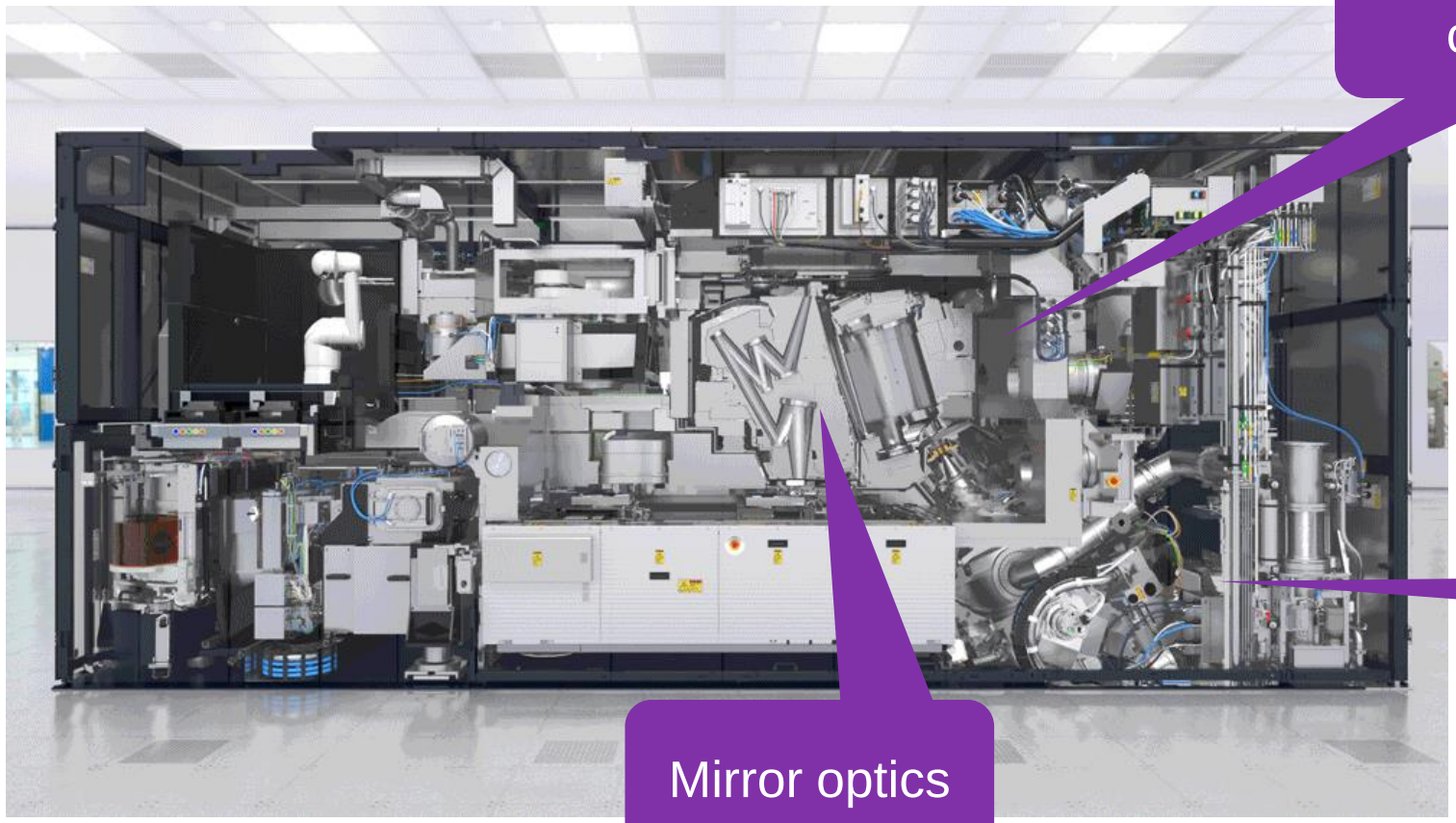
Wavelength	**13.5 nm**	**193 nm**	**248 nm**	**365 nm**	**436 nm**
Year	2011	2003	1992	1986	1984
Platform	EUV	Immersion	PAS 5500	PAS 5000	PAS 2000

Key innovation: Immersion lens

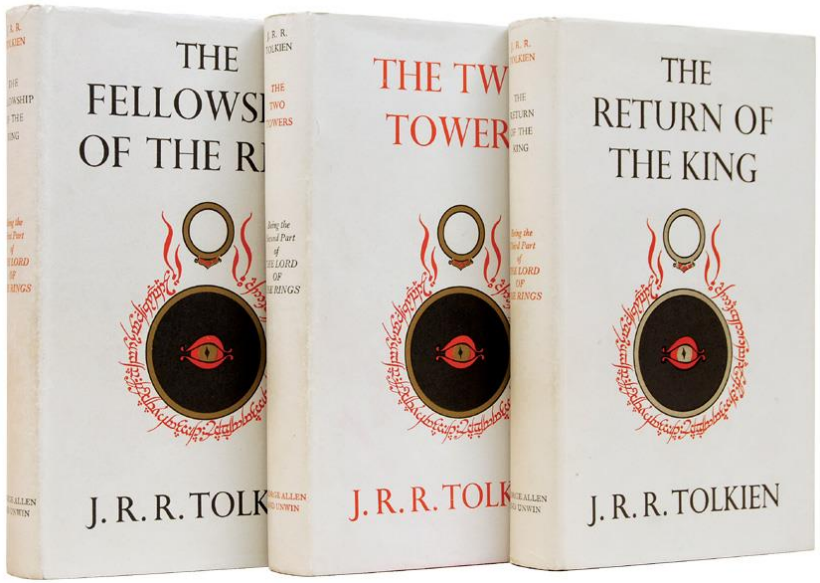




Key changes from DUV to EUV lithography



EUV’s crisper resolution means higher information density



EUV’s 13 nanometer resolution means that we could print the entire Lord of the Rings trilogy on the side of an A4 sheet of paper…

2,625 times!

In the world of EUV, everything is bigger

Transportation takes 40 containers, 20 trucks and 3 fully loaded 747s

NXE has over 100,000 individual parts, 3,000 cables, 40,000 bolts and 2 km of hosing…

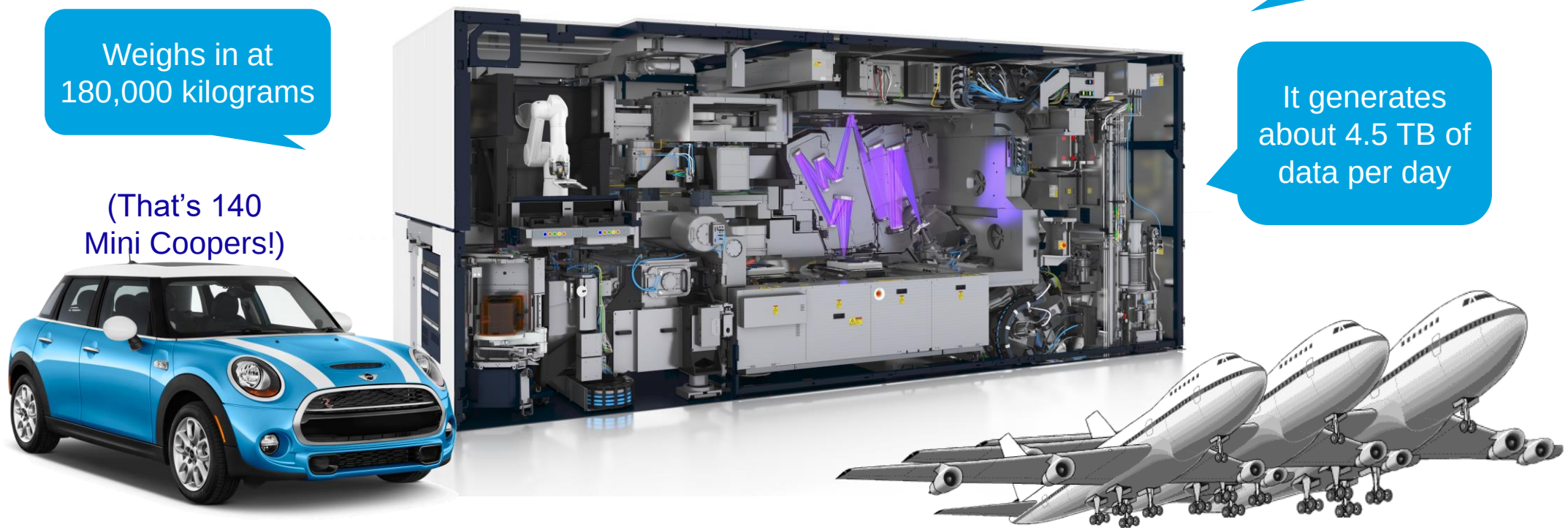
20 years of sustained R&D

Transportation takes 40 containers, 20 trucks and 3 fully loaded 747s

It has about 1,500 sensors to capture imaging data

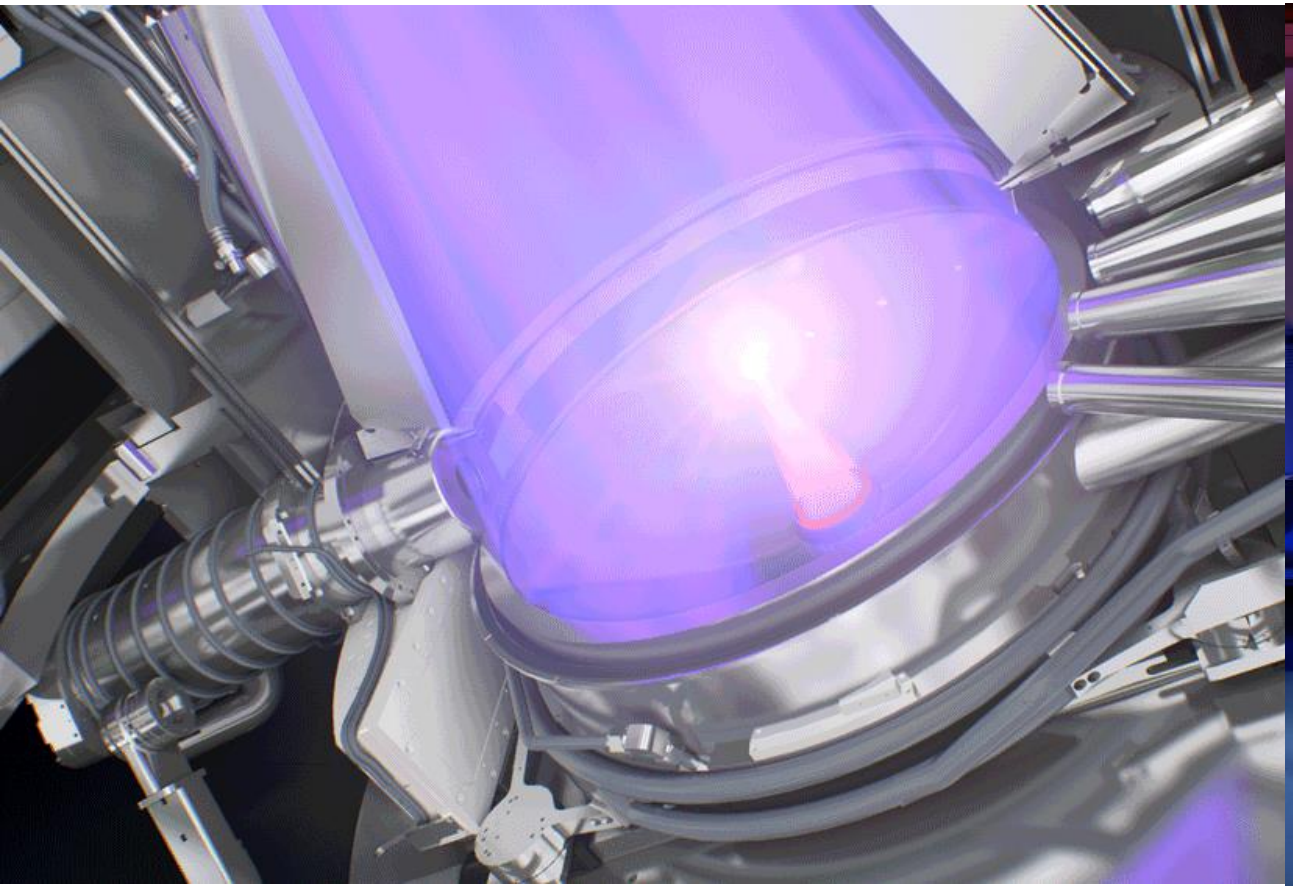
Weighs in at 180,000 kilograms

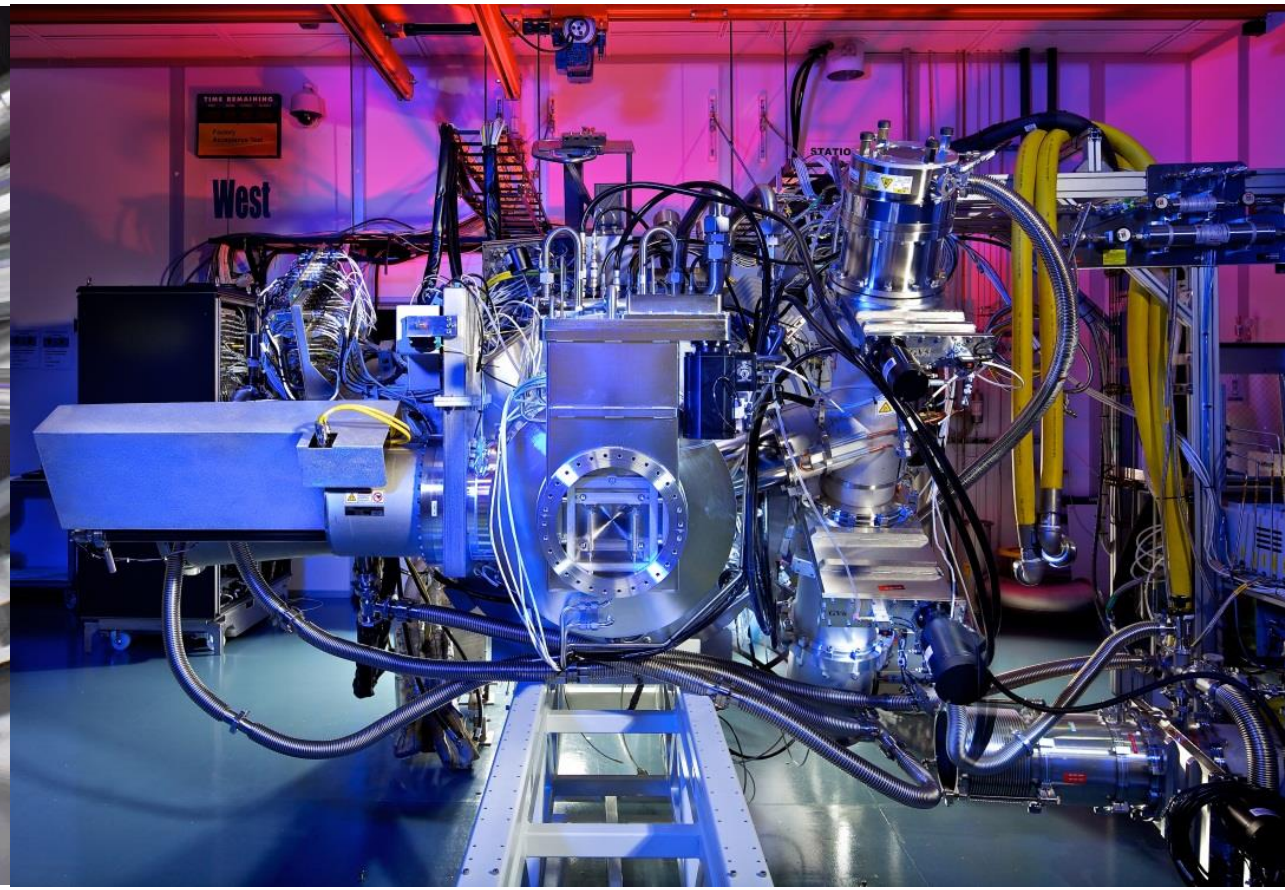
(That's 140 Mini Coopers!)



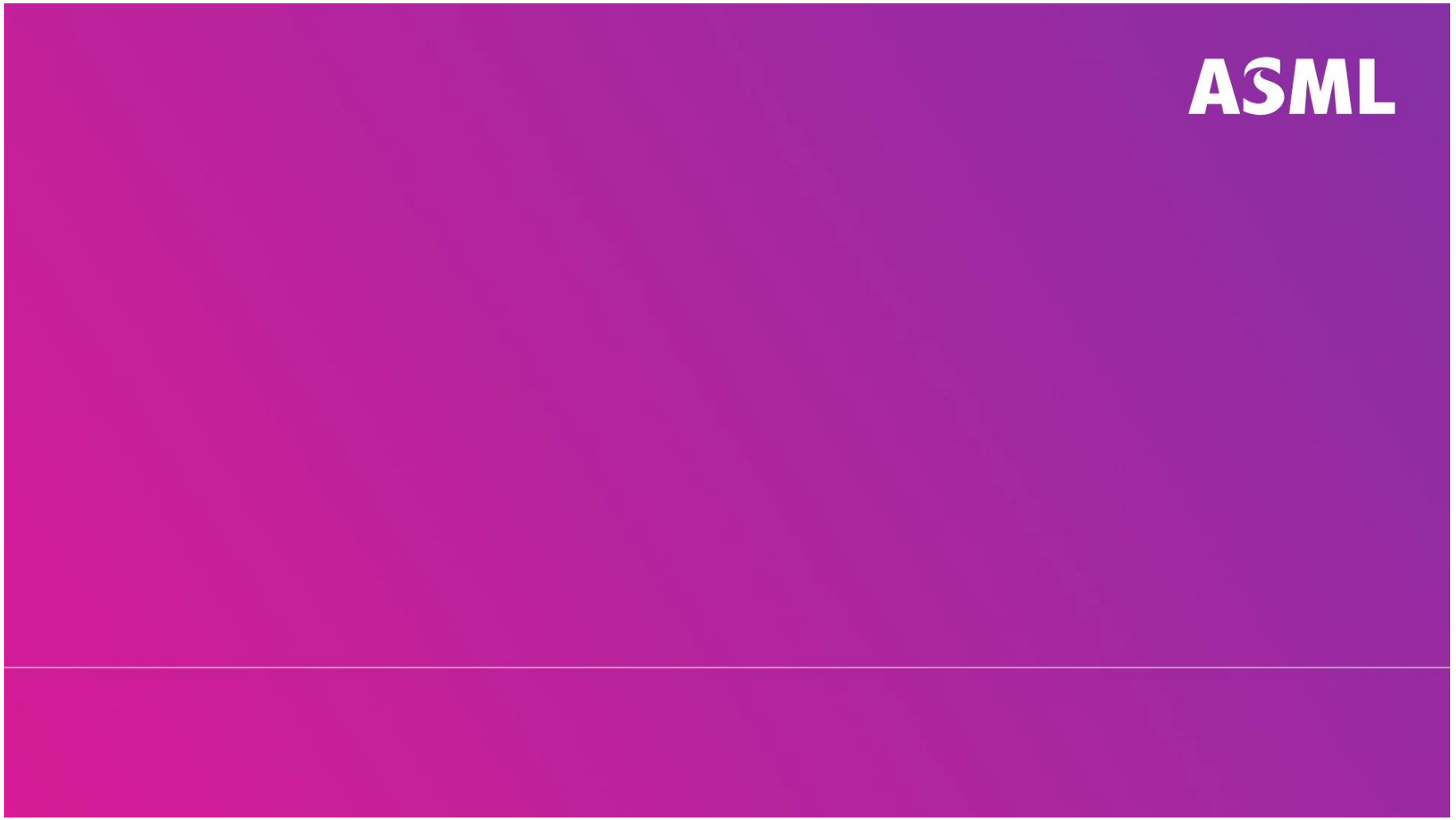
It generates about 4.5 TB of data per day

Firing a laser on a tin droplet 50,000 times a second





Firing a laser on a tin droplet 50,000 times a second

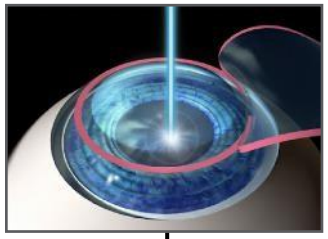


So, how strong is this CO_2 laser ?

Laser pen

1 mW

Laser surgery



50 - 250 mW

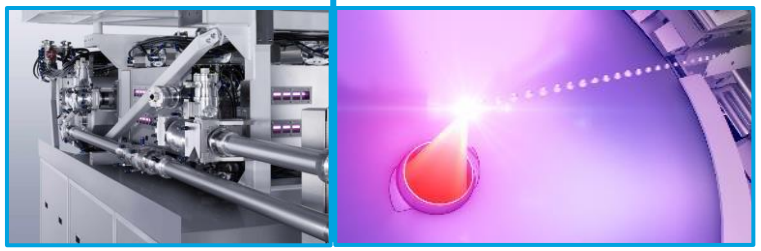
Laser blue ray

400 mW

Laser industrial cutting

1.5 – 6 kW

25 kW



Laser defense system

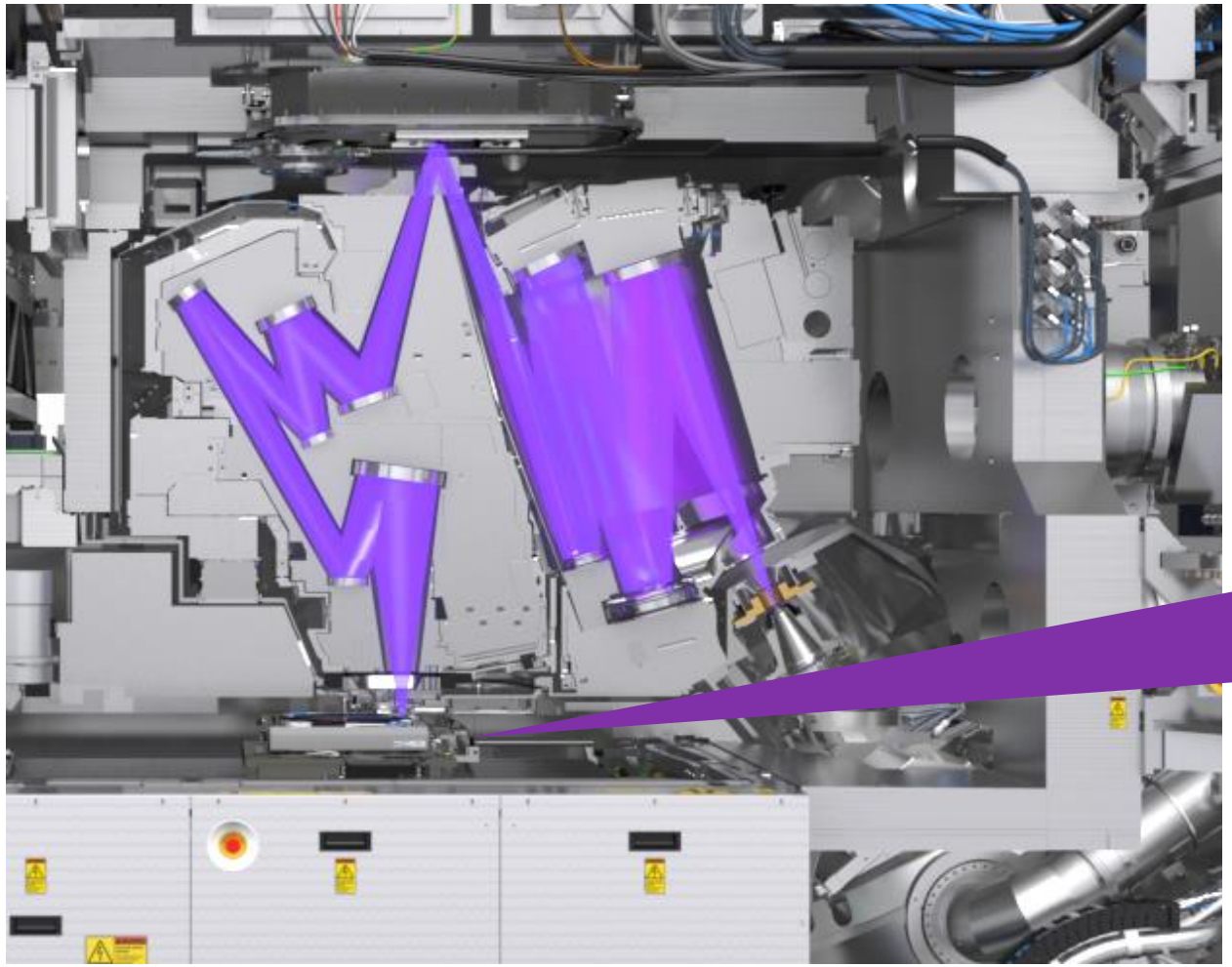
30 kW

Mirrors: Polished to sub-nanometer accuracy

EUV mirrors are polished to an accuracy of ~50 picometers – less than the diameter of a silicon atom.

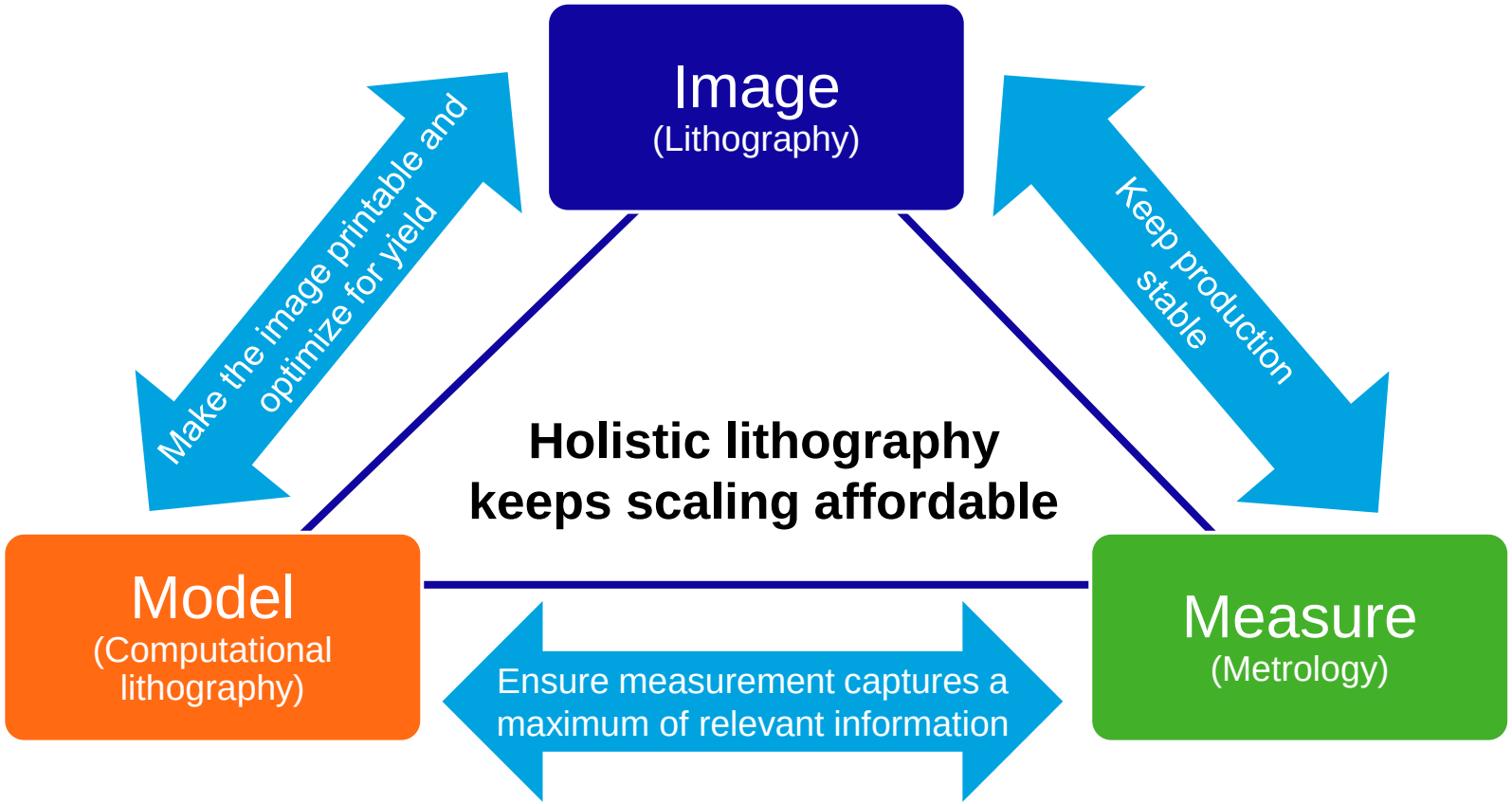
Blown up to the size of Germany, the biggest difference in height would be less than a millimeter.

Maintaining a clean vacuum

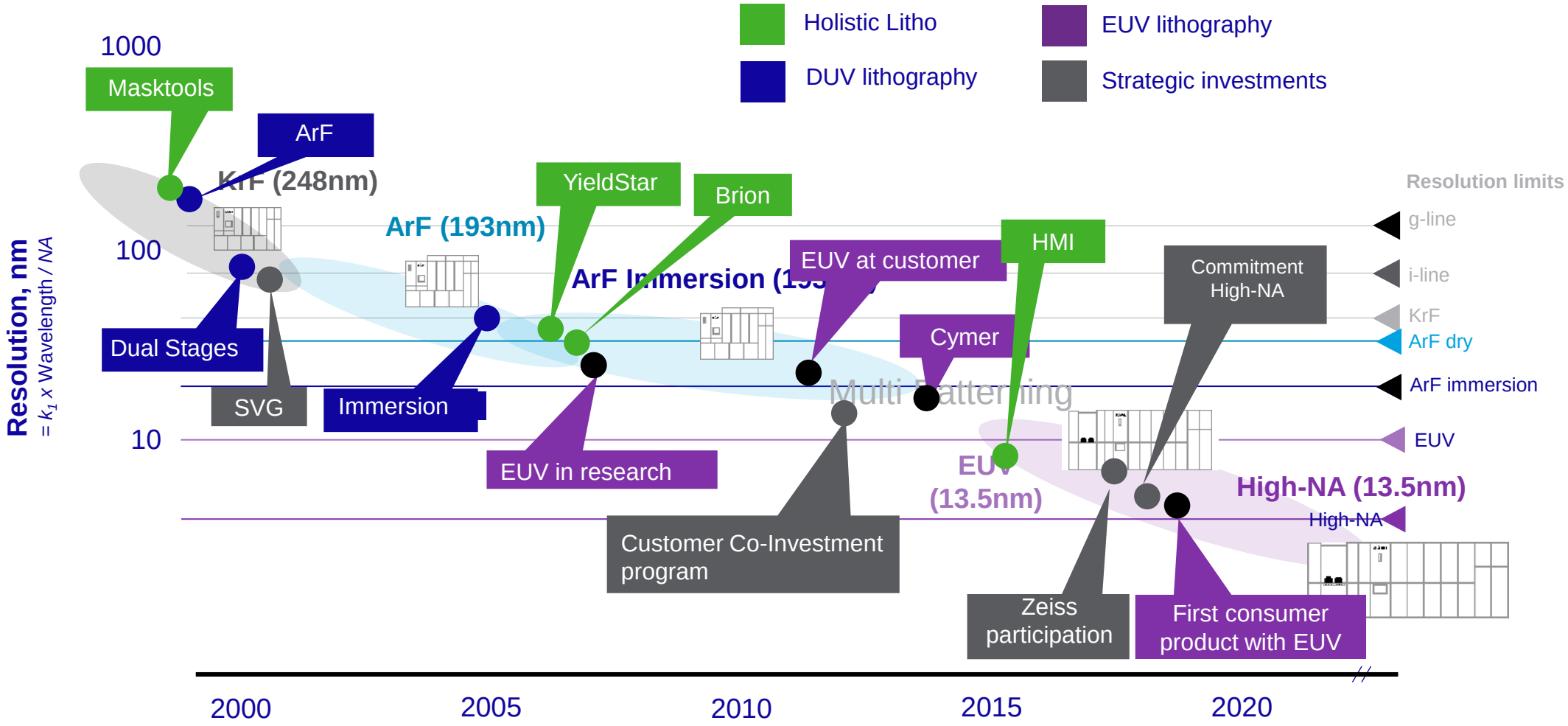


We need to maintain a clean vacuum, but every time we expose a wafer, the photoresist releases trillions of particles

A tightly integrated set of solutions for scaling and yield



ASML has been on a journey to keep scaling affordable



How do we do it

R&D is our life blood: this is how we push technology further

Our R&D investments amount to >€3 billion per year

1980s:

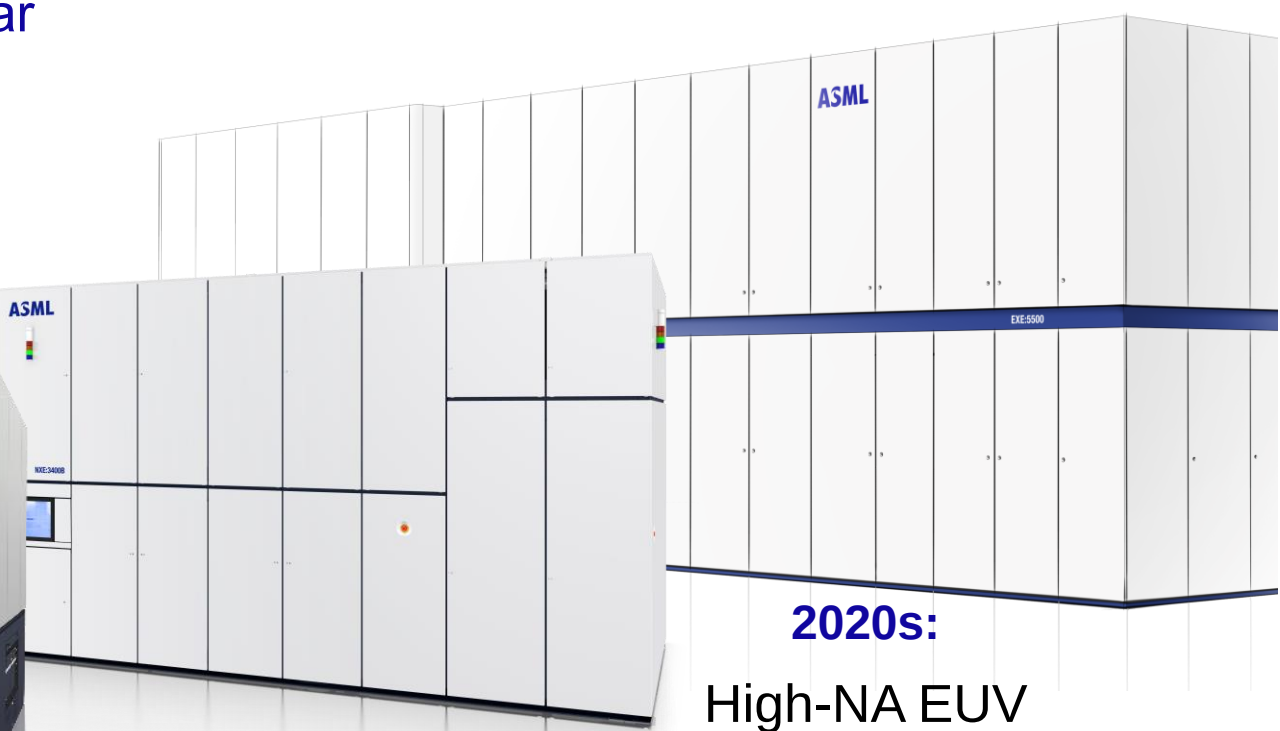
PAS 2000/5000

1990s:

PAS 5500

2000s:

TWINSCAN



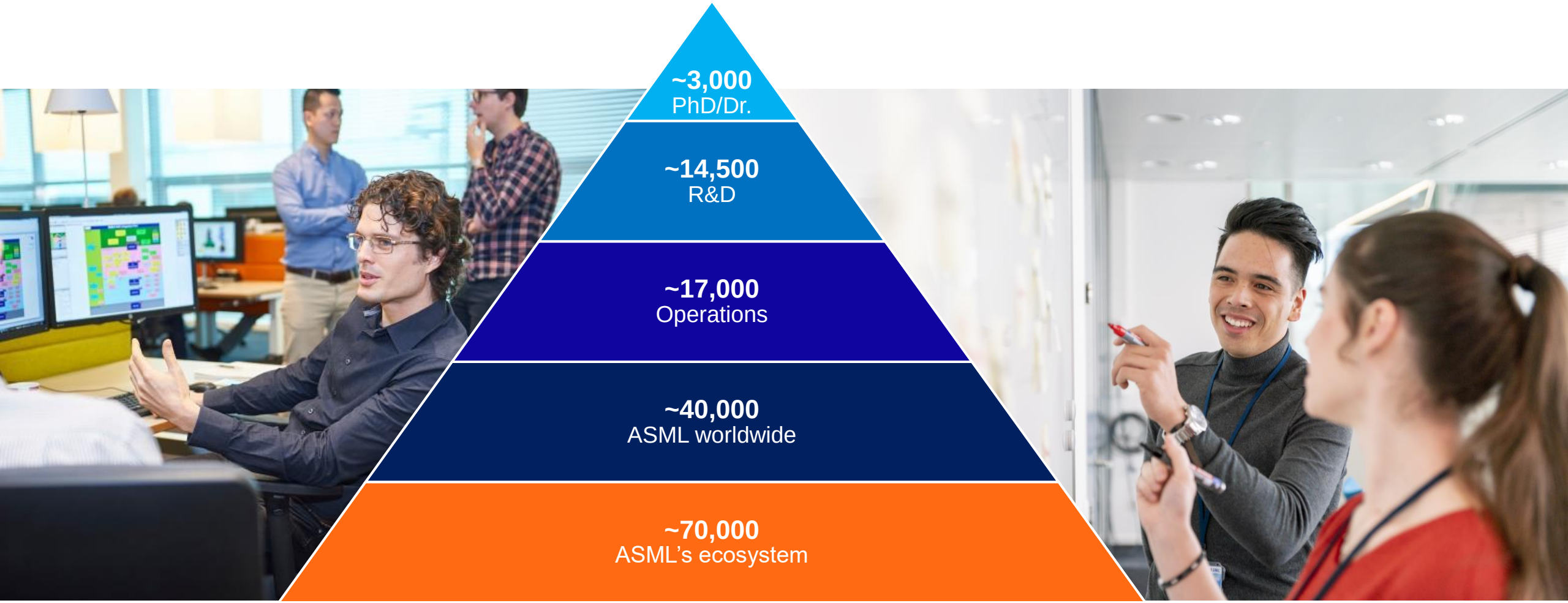
2010s:

EUV

2020s:

High-NA EUV

Great people in an integrated supply chain



Open Innovation from design to manufacturing

Customers

- Commit early to innovation path
- Test, qualify, scale lithography
- Drive ecosystem for innovation

Peers

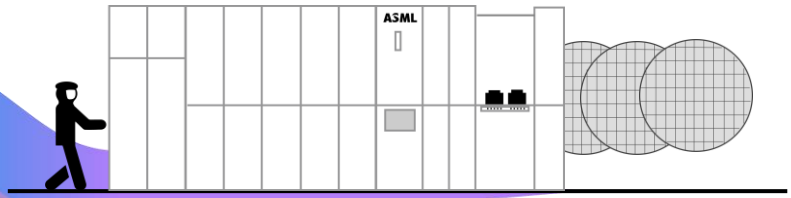
- Deliver critical infrastructure
- Innovate manufacturing process steps

Academic partners

- Long-term academic tracks yield advances across fields (physics, chemistry, material sciences, etc)

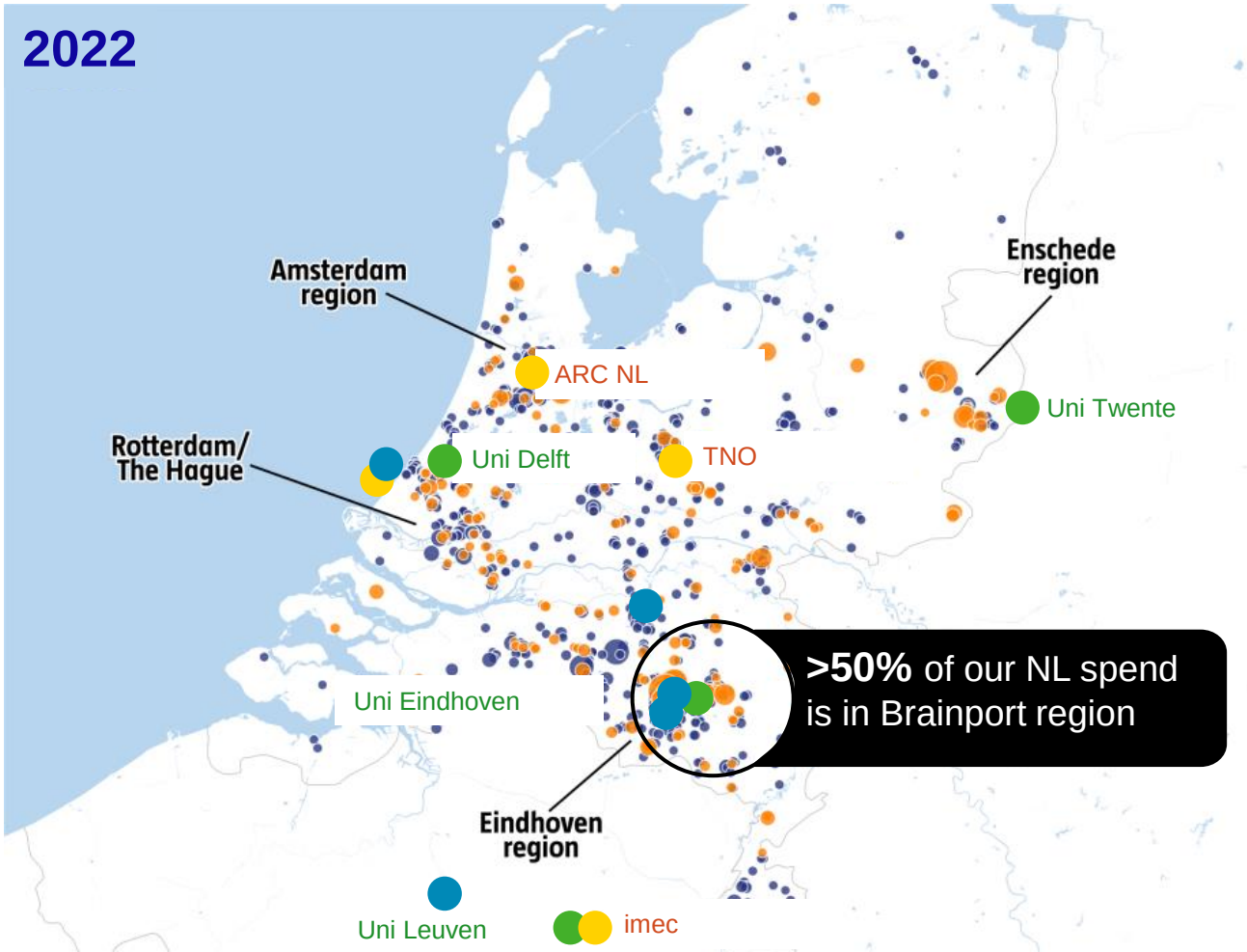
Suppliers

- Drive innovation and cost roadmap
- Share risk and reward



ASML

Example: our supply chain in The Netherlands



Suppliers

We see ourselves as **architects and integrators:**

Some **85%** of the bill of materials of our machines is **manufactured by suppliers**

Universities

Research institutes

Government

Real magic happens when R&D meets manufacturing

Partners reduce cost, improve design and can adapt tech for othe markets

Advanced thermal and edge sensors

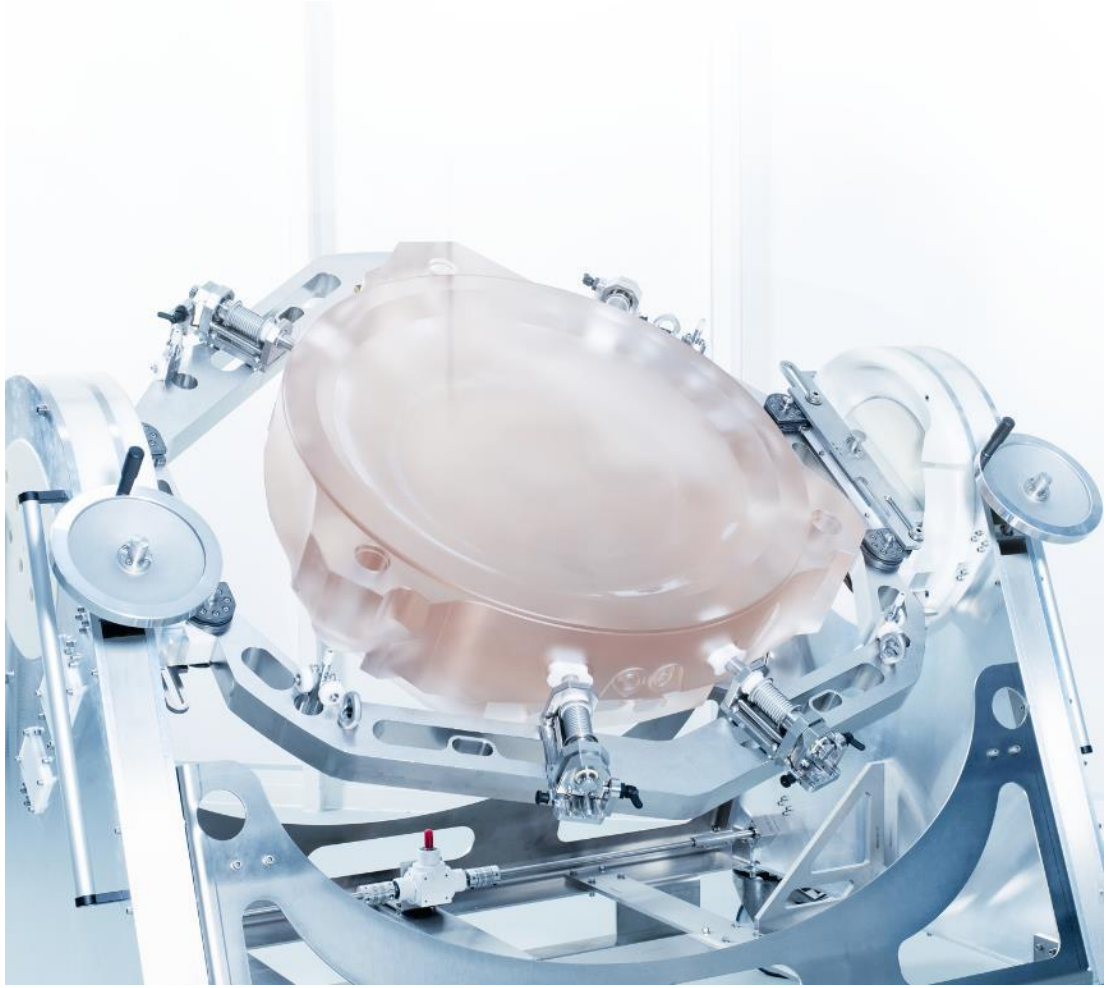
- Collaboration on these parts runs all the way from early design to actual manufacturing
- These next generation sensors cover a very broad range of industrial requirements, so Neways can leverage the knowledge in other markets

CO2 drive laser for EUV

- Delivering this critical technology for generation of EUV light meant close collaboration for the long term
- The key is sharing knowledge and sharing people with the same DNA on R&D
- Trust and Win-Win: long term business model

ASML and ZEISS makes for another perfect example

Long-time partnership powers the future of chip manufacturing with EUV lithography



A mirror for High-NA EUV in production at ZEISS SMT (source: ZEISS SMT media library)

- Strategic partners since the 1980s under the creed “two companies, one business”
- Sharing risk and reward to create value for our stakeholders
- R&D and manufacturing capabilities in a European technology ecosystem, generating over 60,000 jobs in Europe
- Building the future of semiconductor manufacturing with High-NA EUV lithography systems

High-NA cleanroom under construction on ASML’s campus in Veldhoven

Our sustainability commitment

Our innovation must be up to the challenge that the chip industry faces:

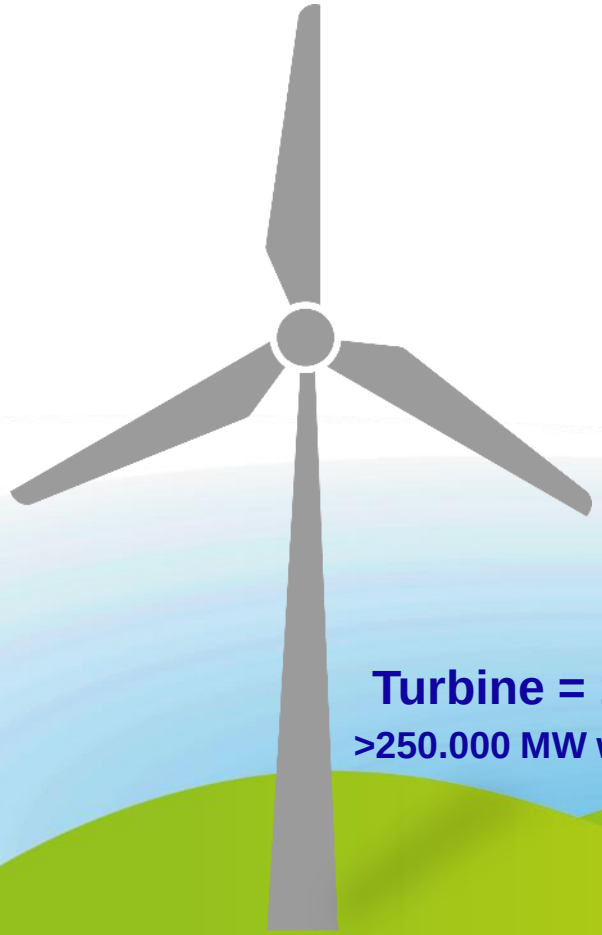
Continue to drive Moore's law with a clear path towards zero emission

Challenges

- Growth of our industry & company
- Increased power comsumption of new machines

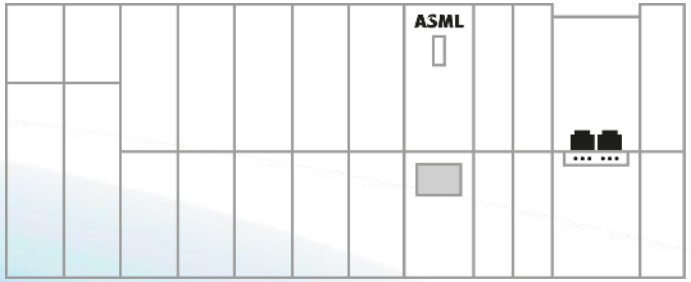
Our targets

- Reduce EUV energy use per wafer by 60% in 2025
- Net zero emissions by 2040
- No waste to landfill & incineration by 2030



Turbine = 1 MW

>250.000 MW worldwide ▶ >1.200.000 MW* in 2040



EUV system: 1,2 MW

>200 MW worldwide ▶ >1.500 MW in 2040

Power use	1,3 MW
Utilization %	90%
Avg. power use:	1,2 MW
Global number of EUV systems	>170
Global averaged power use	200 MW

*Source: IEA projection for 2025

How we drive ESG Sustainability: our ambitions

Environment	1	**Energy efficiency & climate action**	Net zero greenhouse gas emissions in our value chain by 2040
	2	**Circular economy**	Zero waste from operations to landfill and incineration by 2030
Social	3	**Attractive workplace for all**	ASML attracts and retains a healthy, diverse and engaged workforce
	4	**Responsible supply chain**	Engaged suppliers who are committed to minimize negative environmental and social impacts in our supply chain
	5	**Innovation ecosystem**	A thriving, multi-regional innovation ecosystem which helps solve some of humanity's toughest challenges
	6	**Valued partner in our communities**	ASML and communities benefit from each other's presence and support each other's development
Governance	7	**Integrated governance**	ESG is part of all regular, day-to-day decision making
	8	**Engaged stakeholders**	Our stakeholders view ASML as a top performer on ESG Sustainability
	9	**Transparent reporting**	'Best-in-class' reporting, according to our stakeholders

Example: how we reduce energy consumption & emissions on our sites

Towards Net Zero scope 1+2 emissions by 2025

- Energy efficiency & climate action
- Circular economy
- Attractive workplace for all
- Responsible supply chain
- Innovation ecosystem
- Valued partner in our communities
- Integrated governance
- Engaged stakholders
- Transparant reporting

'21	'Actual	'23	'24	'25	metric
39	**26.7**	30	25	0	$ktCO_2$

KPI

Q3 | 2022 UPDATE

Net scope 1+2 CO2 emissions

Definition
Emissions from Manufacturing & Buildings

Examples of actions

Energy measurement & reporting

2021: 57 locations: covering >95% of CO2 emissions

Renewable energy

- Global share renewable electricity: 92%
- NL & US: 100% renewable electricity

Energy grid

Total annual savings CRE masterplan:
100 TJ (~100,000 solar panels)

Solar Run cooperative

First project: €70k invested by 150 colleagues, panels delivered by year-end

Enabling colleagues to put solar panels on ASML roofs

Example: Re-use is the biggest learning opportunity for all of us

We drive to zero waste ASML

- Energy efficiency & climate action
- **Circular economy**
- Attractive workplace for all
- Responsible supply chain
- Innovation ecosystem
- Valued partner in our communities
- Integrated governance
- Engaged stakholders
- Transparant reporting

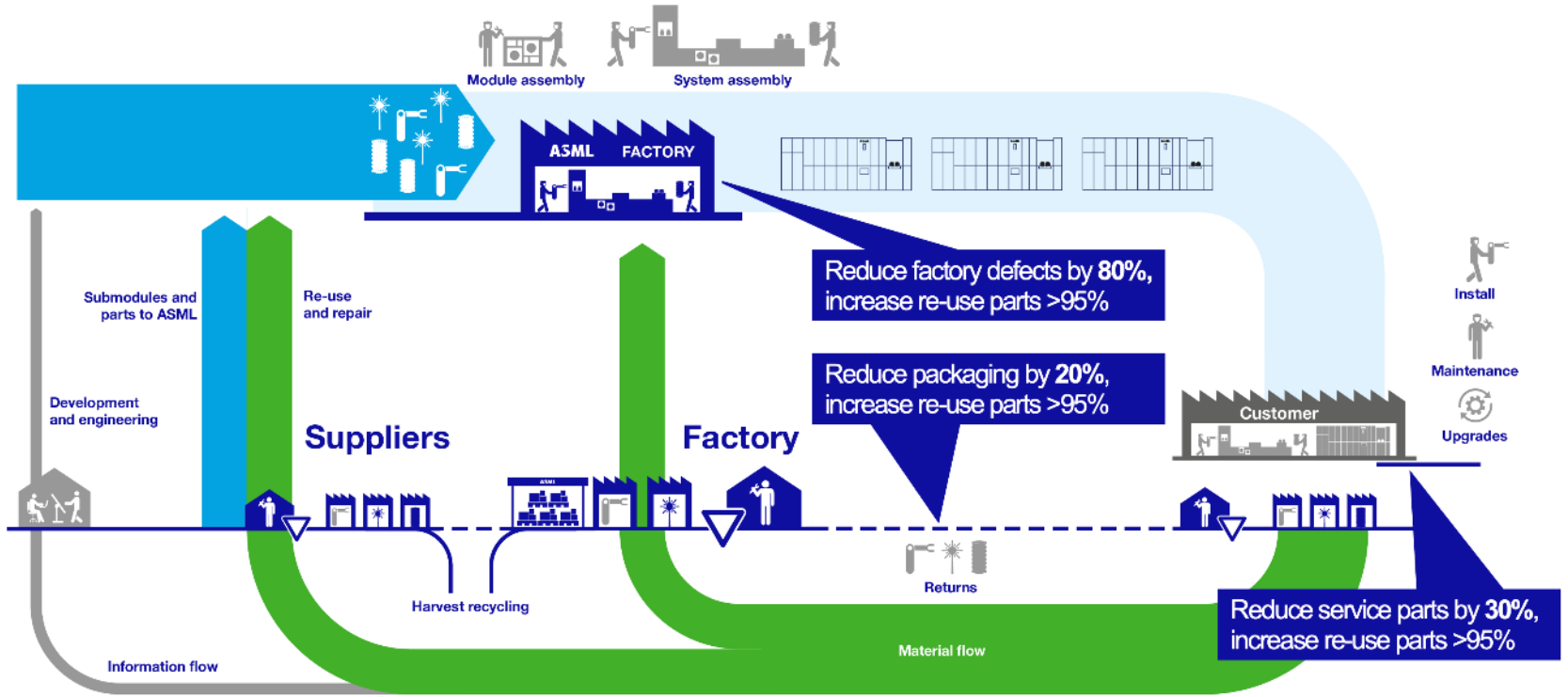
'21	'Actual	'23	'24	'25	metric
86%	**86%**	88%	90%	95%	Re-use % parts

KPI **Q3 | 2022 UPDATE**

% Re-use rate

Definition
% Re-use rate of parts returned from field and factory

Examples of actions



Business update

Investor key messages

- Global megatrends in the electronics industry, supported by a highly profitable and fiercely innovative ecosystem, are expected to continue to fuel growth across the semiconductor market
- Growth in semiconductor end markets and increasing lithography intensity are driving demand for our products and services
- ASML's comprehensive product portfolio is aligned with our customers' roadmaps, delivering cost effective solutions in support of all applications from leading edge to mature nodes
- Based on different market scenarios[1] as presented during our Investor Day in November 2022, we modeled an opportunity to reach annual revenue in 2025 between approximately €30 billion and €40 billion, with a gross margin between approximately 54% and 56% and in 2030 an annual revenue between approximately €44 billion and €60 billion, with a gross margin between approximately 56% and 60%
- ASML and its supply chain partners are actively adding and improving capacity to meet current and future customer demand
- We continue to accelerate the execution of our ESG Sustainability strategy and have shared the latest progress and actions to reach our ambitious targets in our integrated Annual Report 2022
- We expect to continue to return significant amounts of cash to our shareholders through a combination of growing dividends and share buybacks

[1] based on third party research and our assumptions

Q2 results highlights

- Net sales of €6.9 billion, net system sales of €5.6 billion, Installed Base Management[1] sales of €1.3 billion
- Gross margin of 51.3%
- Operating margin[2] of 32.8%
- Net income as a percentage of net sales of 28.1%
- Earnings per share (basic) of €4.93
- Net bookings[3] of €4.5 billion
    - including EUV bookings of €1.6 billion

[1] Installed Base Management equals our net service and field option sales

[2] Income from operations as a percentage of Total net sales

[3] Net bookings include all system sales orders and inflation related adjustments, for which written authorizations have been accepted.

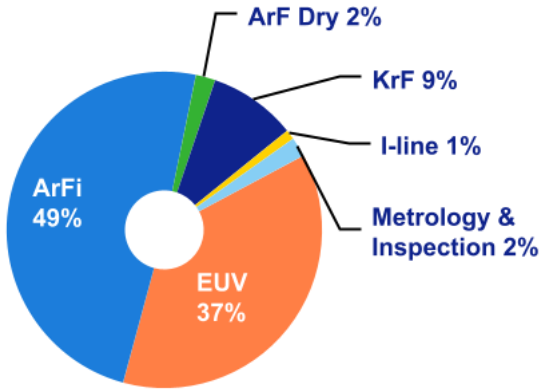
Net system sales breakdown (Quarterly)

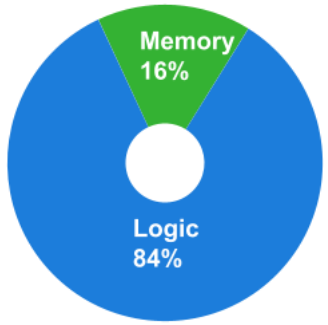
Technology

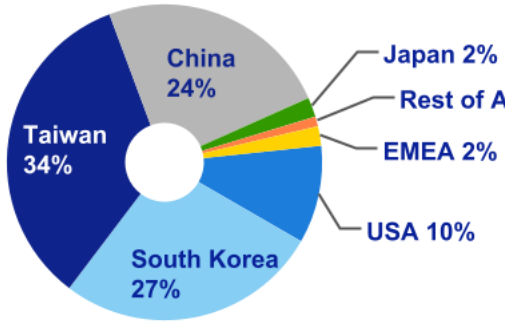
End-Use

Region (ship to location)

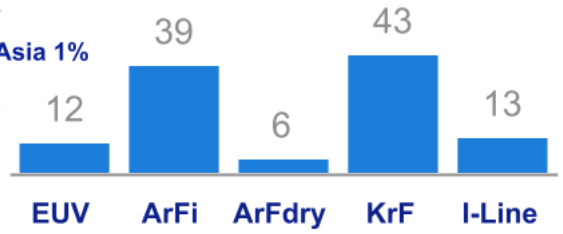
Q2'23
Net system sales
€5,606 million



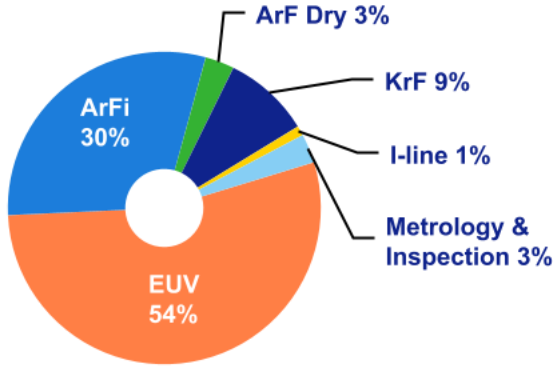


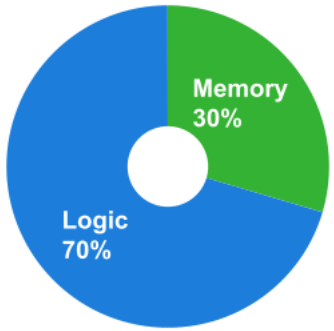


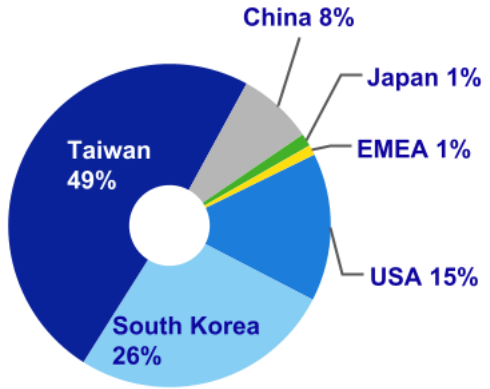
Sales in lithography units

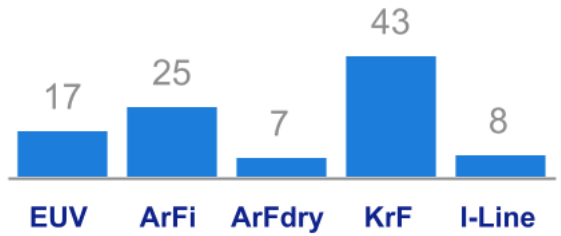


Q1'23
Net system sales
€5,342 million



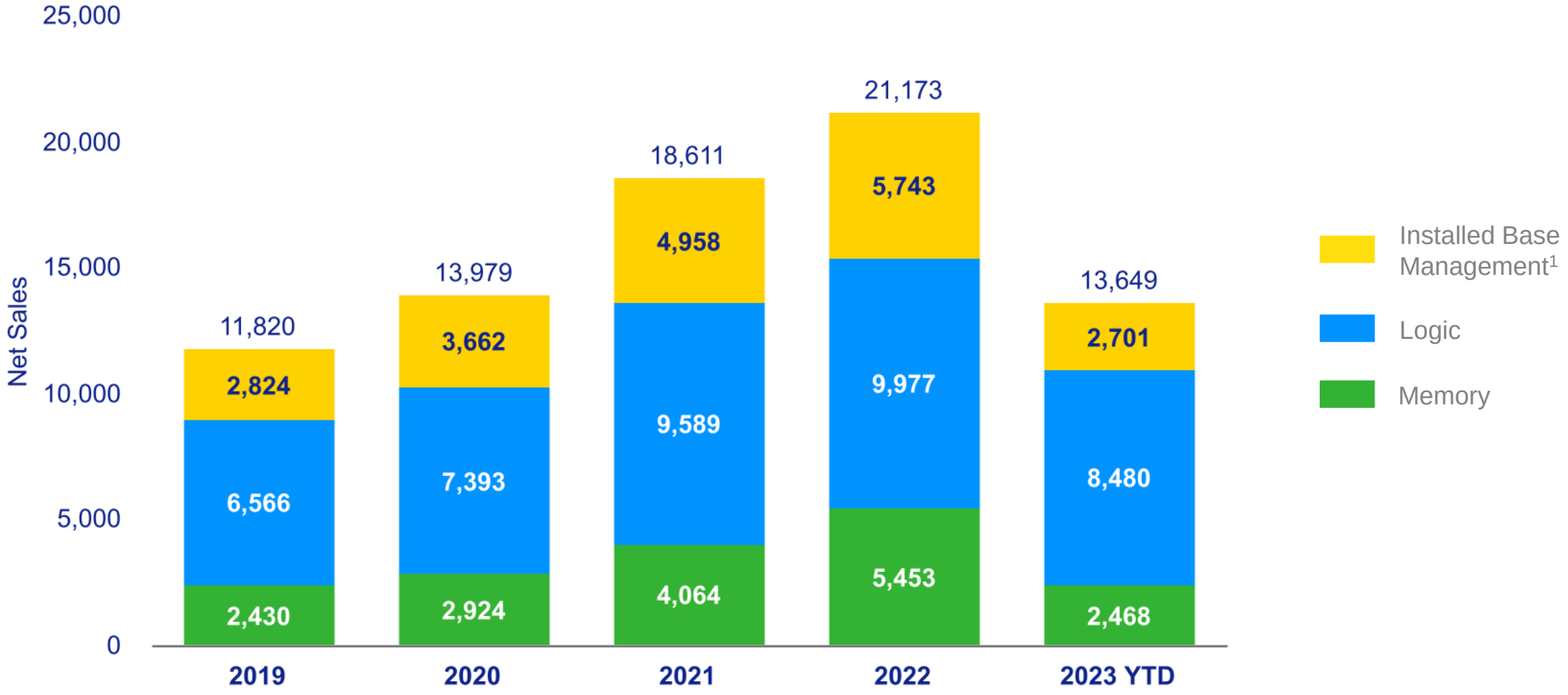






ASML

Total net sales € million by End-use



[1] Installed Base Management equals our net service and field option sales

Outlook

Q3

- Net sales between €6.5 billion and €7.0 billion, including
  - Installed Base Management[1] sales of around €1.4 billion
- Gross margin of around 50%
- R&D costs of around €1.0 billion
- SG&A costs of around €285 million

2023

- Expected net sales growth towards 30% with a slight improvement in gross margin, relative to 2022
- Estimated annualized effective tax rate between 15% and 16%

[1] Installed Base Management equals our net service and field option sales

Thanks