

Ramping the UK's First 300mm Wafer Fab

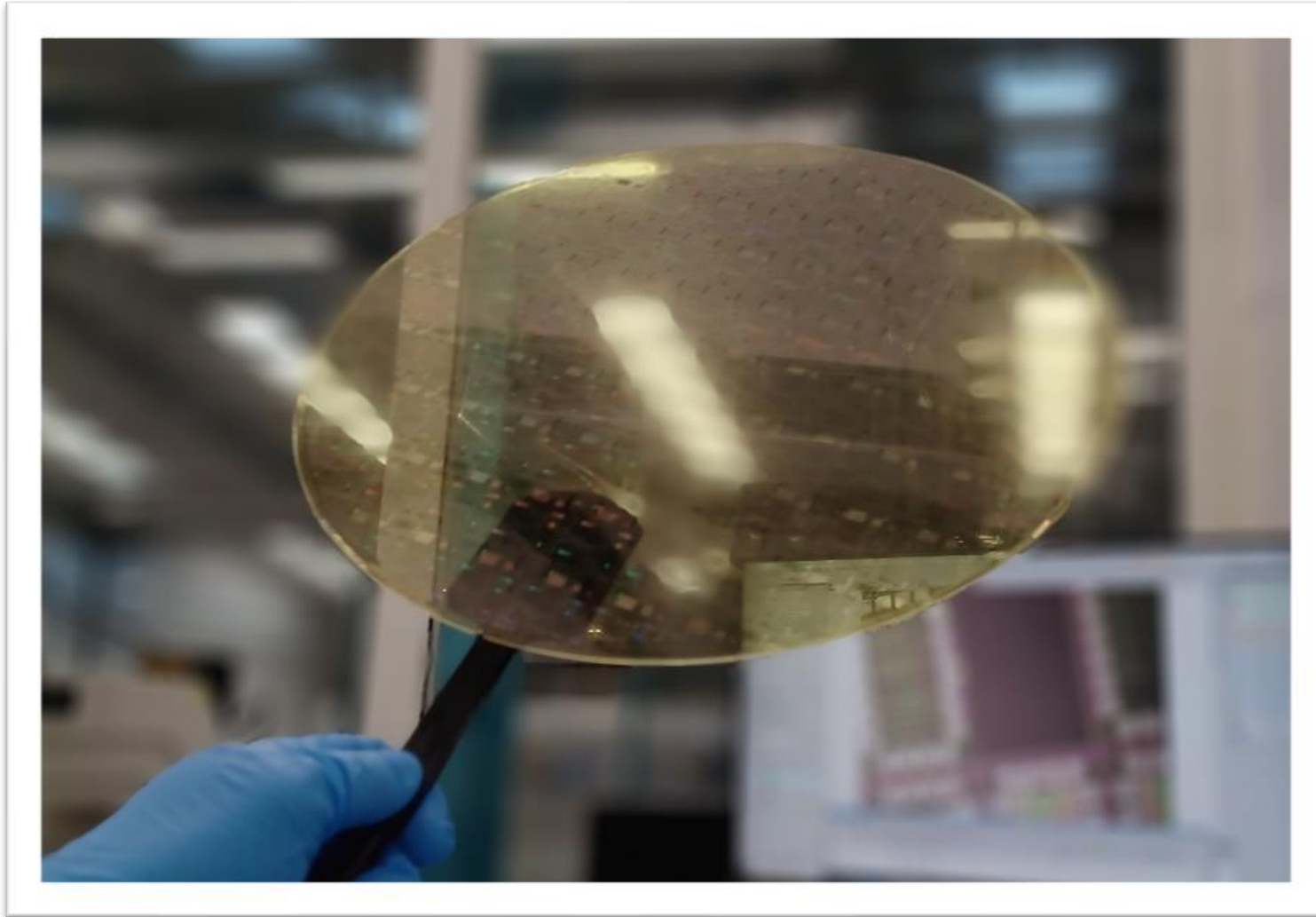
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Pragmatic Semiconductor

5th June 2024



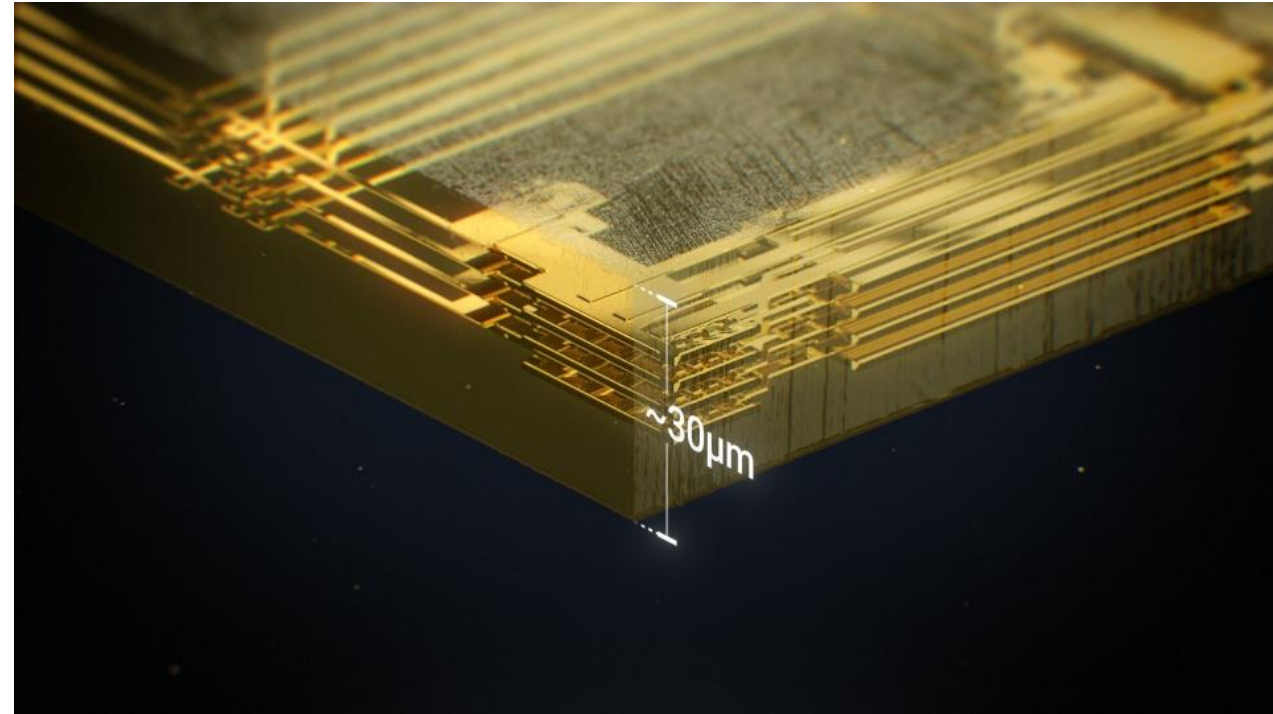
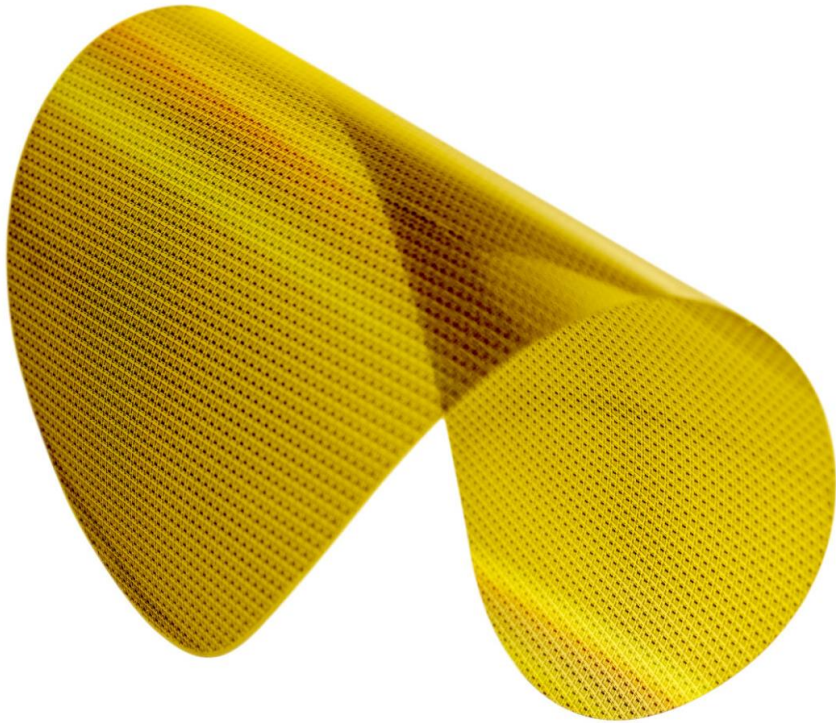
The mission

Sustainable innovation driving digital transformation at scale



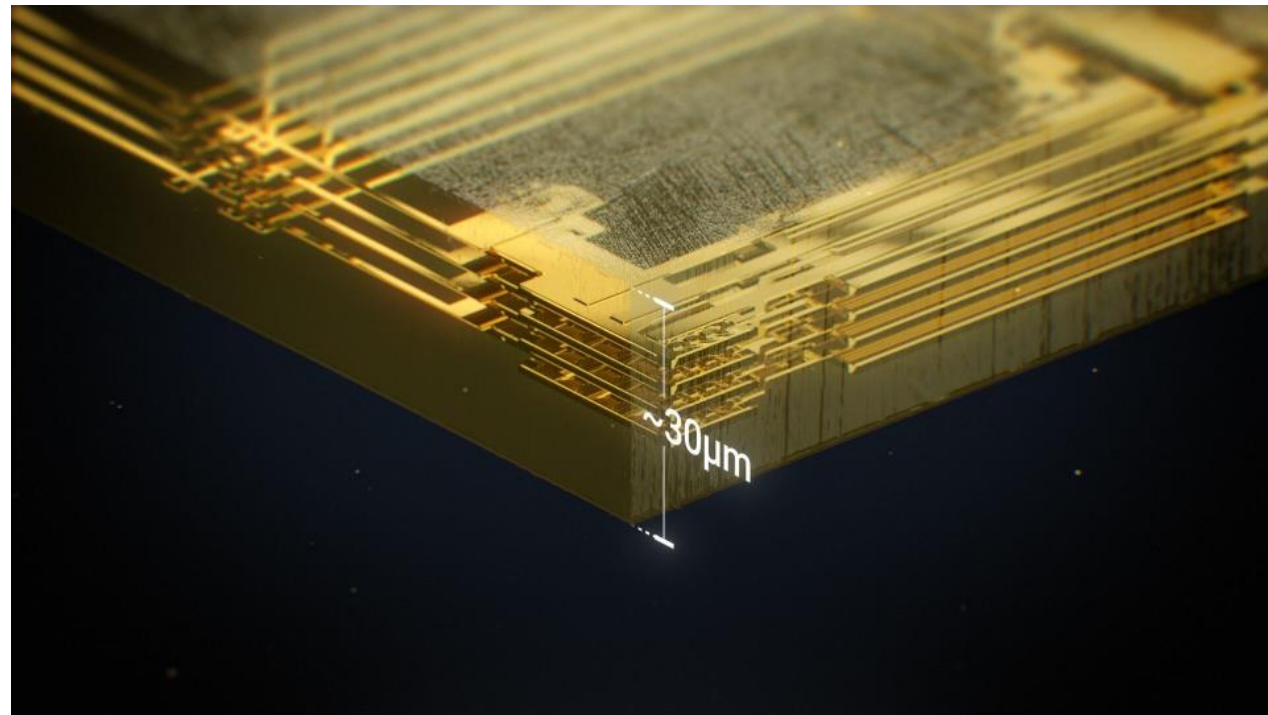


Flexible integrated circuits (FlexICs)



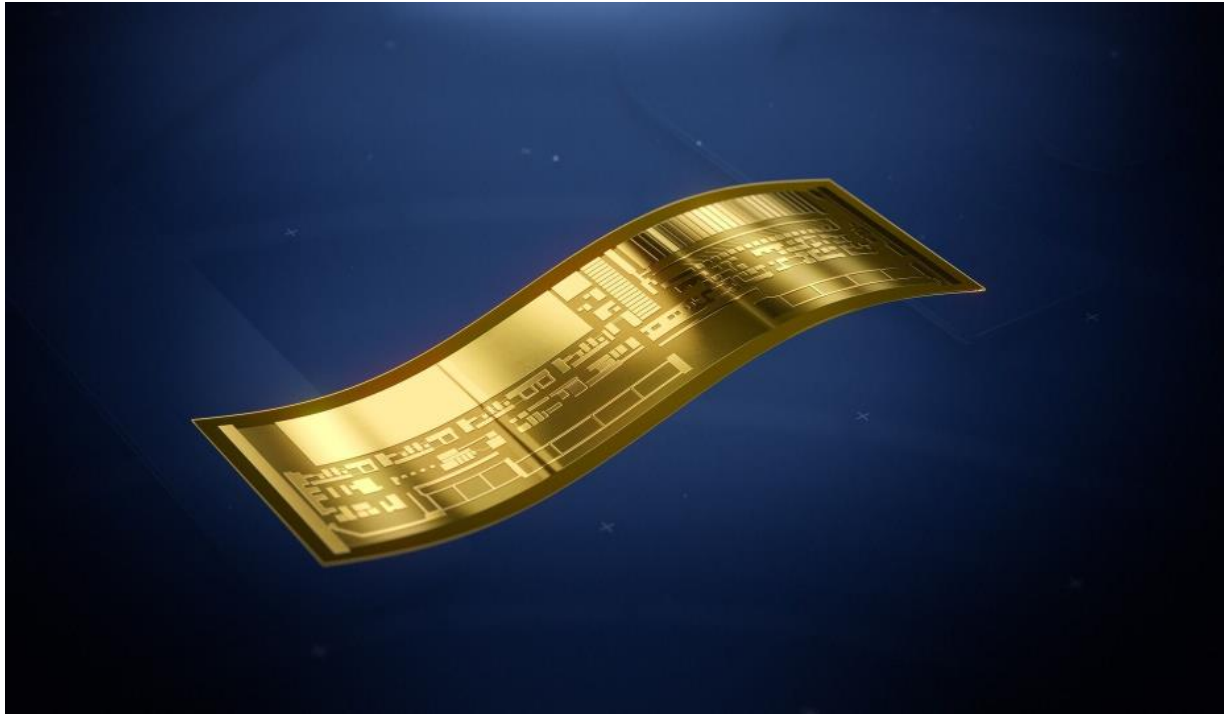


Flexible integrated circuits (FlexICs)





Flexible integrated circuits (FlexICs)



Low cost

More sustainable

Ultra-thin

Flexible

Durable


Shock resistant



Flexible integrated circuits (FlexICs)

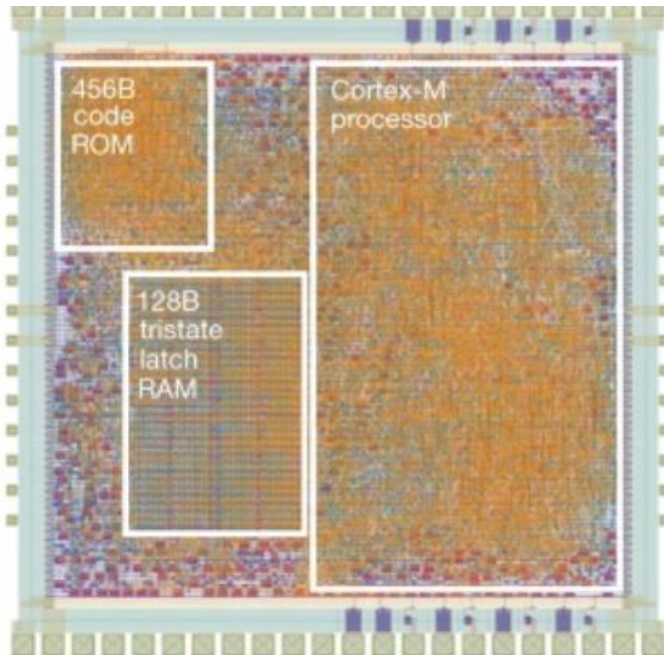
Article | Published: 21 July 2021

A natively flexible 32-bit Arm microprocessor

[John Biggs](#), [James Myers](#), [Jedrzejj Kufel](#), [Emre Ozer](#) , [Simon Craske](#), [Antony Sou](#), [Catherine Ramsdale](#), [Ken Williamson](#), [Richard Price](#) & [Scott White](#)

[Nature](#) **595**, 532–536 (2021) | [Cite this article](#)

77k Accesses | **149** Citations | **467** Altmetric | [Metrics](#)



Low cost

More sustainable

Ultra-thin

Flexible

Durable

Shock resistant









- Semiconductor heritage – North East / Scotland
- Large industrial base
- Brownfield site availability
- Talent availability – UK and beyond
- Research and Development support
- Universities
- Government Support



Revolutionising semiconductor manufacturing

Billions

of FlexICs per fab line per year

<48hr

production cycle time – versus months for silicon

Low-cost

design and production

Compact

<600sqm fab footprint for modular, on-site capacity

10-100x

lower carbon footprint



Less energy



Less water



Fewer harmful chemicals



300mm FlexIC wafer volume production



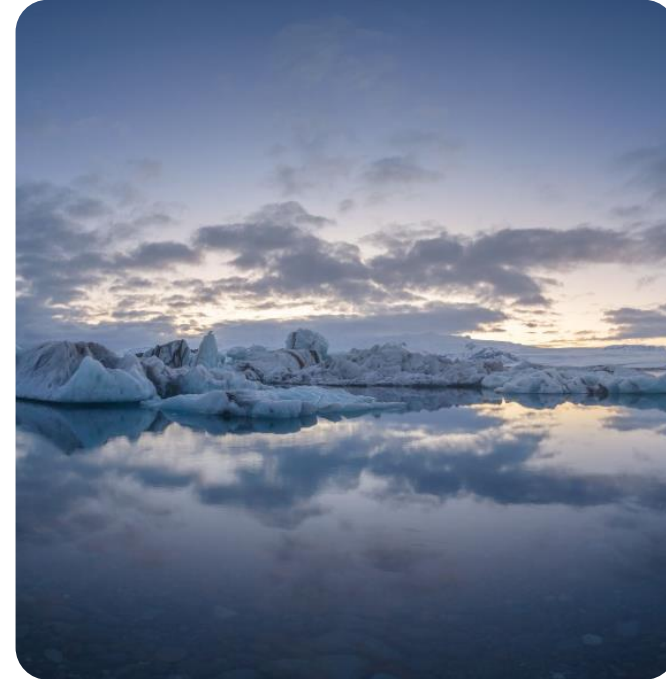
A confluence of global challenges confront the semiconductor industry



Broken supply chains



Geopolitical tension



Sustainability



Net Zero: the global challenge

Net Zero
emissions by 2050
required to achieve climate goals

20% emissions
reduction through
digital technologies
helping accelerate transformation
across multiple sectors





Driving down emissions of the food industry

25-30%
Greenhouse
gas emissions

attributable to food production,
processing and packaging





Tackling global food waste

33%
Food lost
or wasted
of total global production





Enabling smarter packaging at scale

189kg
Packaging waste
per person
in 2021 in the EU alone





Slashing the impact of the hospitality sector

99.75%
of coffee cups
go to landfill in the UK





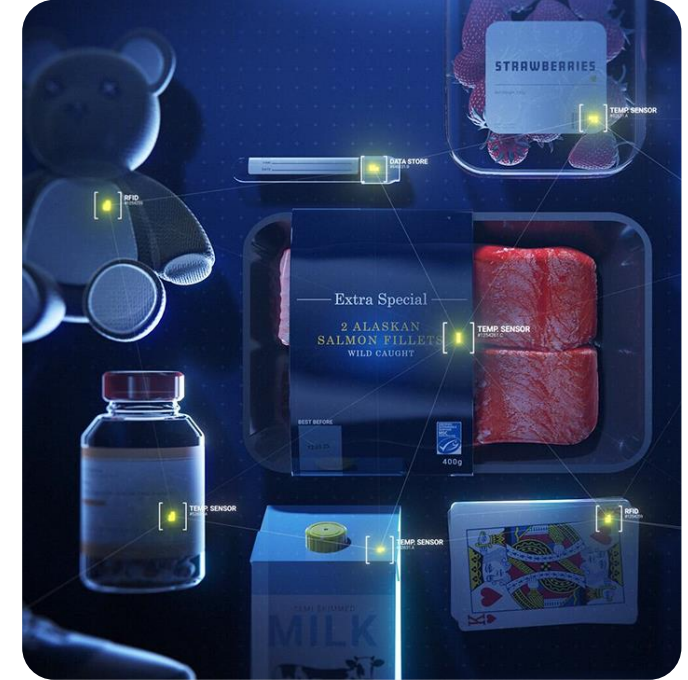
The role and impact of semiconductors in digital transformation



Cloud



Edge



Item



Item-level intelligence for *differentiated* NFC/RFID solutions at scale



NFC Forum, IEC 15693
compliant standard
products

Integrated
sensors

Cost-effective
NFC/UHF Dual
Mode

Custom
Optimisations



Cold chain
storage and
tracking



Health
monitoring/
wearables



Integrated
consumer/
logistics



Closed-loop
authenticated
interoperability



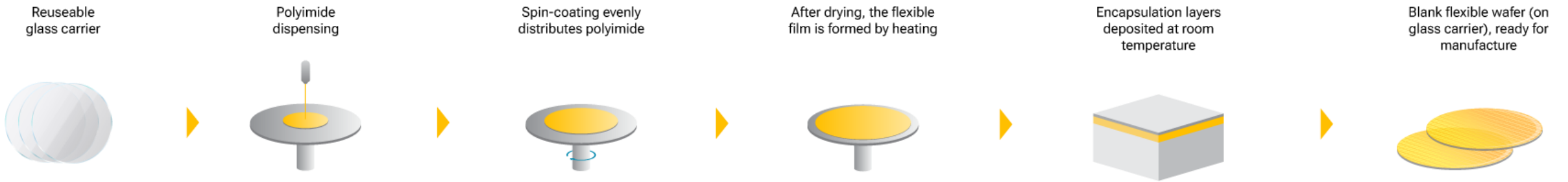
New experiences
in toys and
games



Substrate preparation

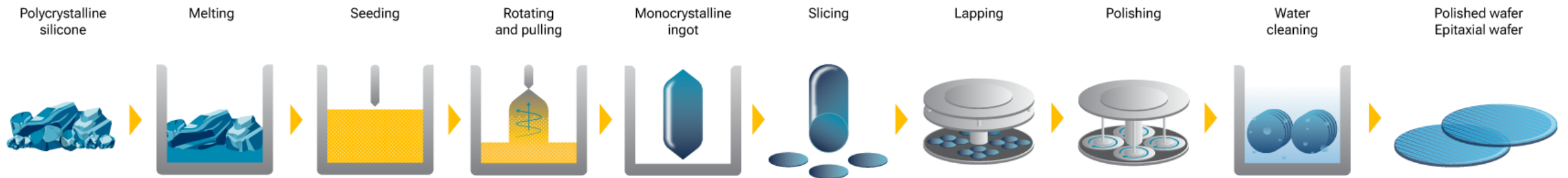
Flexible substrate

A high-purity (99.9+%) flexible (polyimide) substrate is prepared in-line on a reusable glass carrier



Silicon substrate

An ultra-high-purity (99.9999+%) silicon wafer is prepared





Semiconductors Fab and Packaging



- Efficiently optimised process
- Single site manufacturing
- Concentrated footprint



FlexIC Foundry[®] service

**Multiple fast tape-outs enable agile hardware design
for unprecedented optimisation of electronic solutions**

Affordable tape-out

<< lower than silicon ASIC

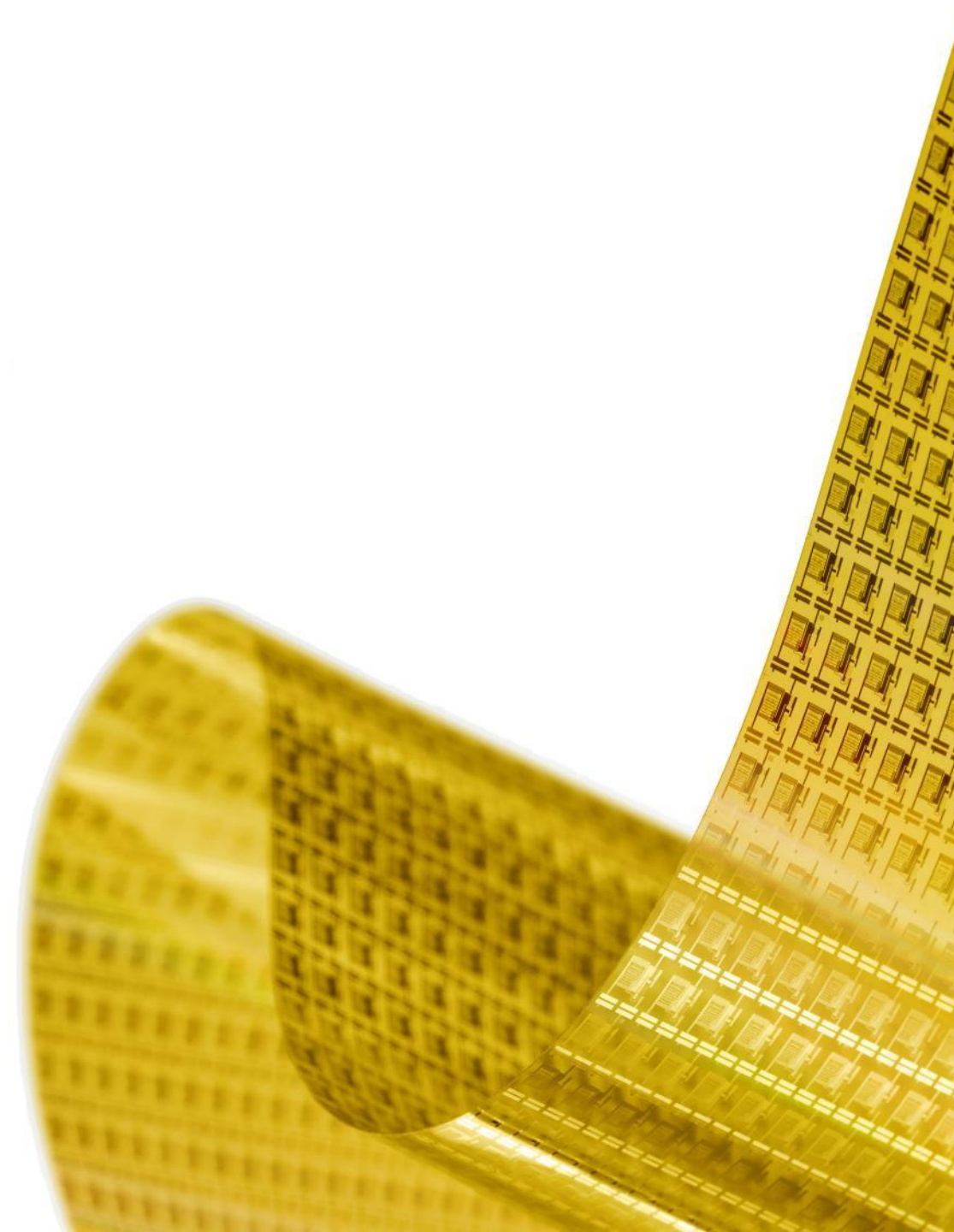
Rapid design iteration

From tape-out to production wafers within weeks

Process Design Kit (PDK)

Compatible with mainstream EDA tools

cādence **SIEMENS**





Thank you

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