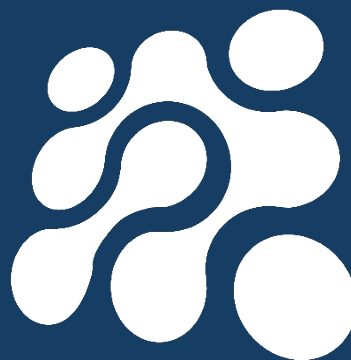




**UK Electronics
Skills Foundation**

**Semiconductor Talent Award
Induction Event
IET London 8th Sept 2026**

Whilst we
wait to
begin, here
is a puzzle.

**This lock has a 3-digit code.
Can you crack it
using only these hints?**



⑦ ⑨ ③

One number is correct
and in the right place

⑦ ② ⑤

One number is correct
but in the wrong place

③ ① ⑦

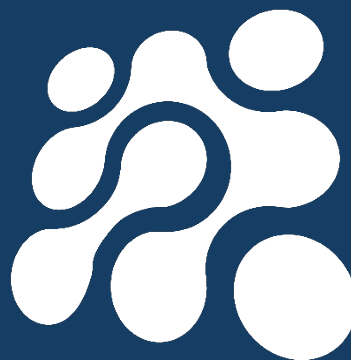
Two numbers are correct
but in the wrong place

⑧ ④ ⑨

Nothing is correct

⑧ ⑨ ①

One number is correct
but in the wrong place



**UK Electronics
Skills Foundation**

Semiconductor Talent Award Induction Event

IET London 8th Sept 2026

Stewart Edmondson, CEO of the UKESF

Agenda. What's coming up this afternoon?

- Welcome, Introductions & Housekeeping
- Semiconductors and the UK
- University – Research and study
- Break. Meet some Engineers, networking with semiconductor companies.
- Hear from industry speakers.
- Information about the Award and plans for the programme this year.
- Any questions & Feedback.
- Group Photo

Congratulations and well done!



- Achieving successful exam results
- Acceptance on University course
- Being a recipient of the Semiconductor Talent Award.
 - One of 400 students across the UK.





PRINCESS ROYAL
TRAINING AWARD
2025

Tackling the Skills Challenge in the UK's Electronics Industry



Connecting the most
capable students from
top universities with
leading employers



University



**UK Electronics
Skills Foundation**



Industry

Skills advocacy on
behalf of the
Electronics Industry



Encouraging more
young people to
study Electronics



School

Founded in 2010, the UKESF is the only STEM organisation in the UK solely focused on Electronics and semiconductors. We are a multi award winning charity, and our purpose is to provide opportunities to young people and to encourage them to pursue study and careers in the industry.

Technology is the future

Technology depends on Electronics & Semiconductors



**UK Electronics
Skills Foundation**



Advanced transport systems



Medicine and healthcare



Smart Agriculture



Internet of things



Net Zero



Virtual reality

And so much more!

2007 – the year of the Smart Phone



On January 9, 2007, Steve Jobs announced the iPhone at the Macworld convention. He said that the first iPhone would be released later that year. On June 29, 2007, the world's first Smart Phone was released.

iPhone 14 - Processor and Transistors



**UK Electronics
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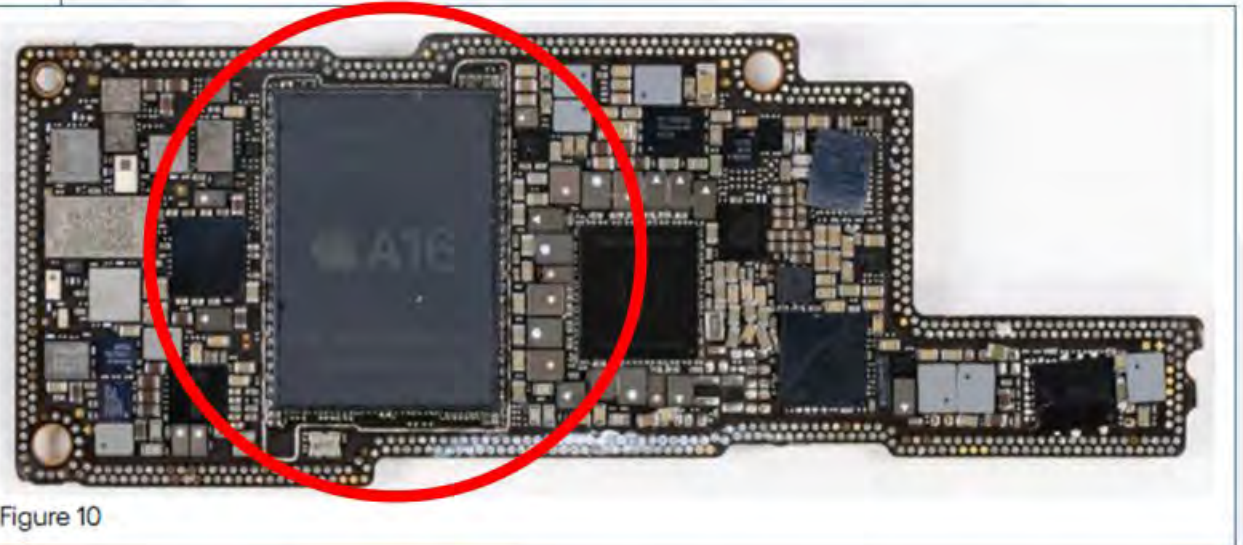
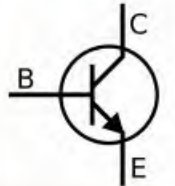


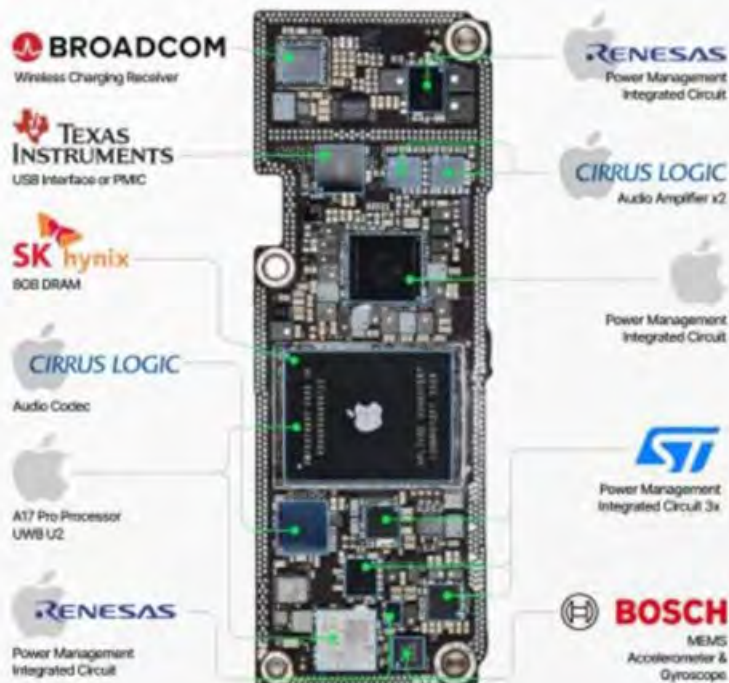
Figure 10

iPhone 15 – Semiconductor Suppliers



UK Electronics
Skills Foundation

Logic Board



Memory Board



Radio Frequency Board



Latest Trends in Semiconductor Technology (2026)



Advanced Nodes (2nm & Beyond)

Smaller, faster and more efficient



Chiplet Architecture

Better performance, scalability and lower cost



3D IC Stacking

Higher density and improved performance



AI-Driven Chip Design

AI/ML for faster, smarter and optimized design



SiC / GaN Power Devices

High efficiency for EVs, 5G and renewable energy



Wide Bandgap & New Materials

Enhancing performance, reliability and sustainability



Smaller. Smarter. Faster. More Efficient.

Driving the future of technology.



**UK Electronics
Skills Foundation**

Semiconductor Talent Award 2026



**UK Electronics
Skills Foundation**



"This Award has been phenomenal, and has made a huge difference in my first year at University. Beyond financial support, the exposure to the industry and professional development opportunities have provided me with a clearer pathway into the electronics/semiconductor industry."

Semiconductor Talent Award-holder 2025

The Semiconductor Talent Award 2026 is a Government funded initiative to address underrepresentation and improve social mobility in the UK Semiconductor Industry, to ensure that more capable and motivated students have the opportunity to enter this exciting and growing field.

For 2026/27, a total of 400 awards will be made, 300 to individuals starting an Electrical and Electronic Engineering (EEE) degree (or a closely related subject) and a further 100 Awards to individuals starting Computer Science, Materials Science or Physics degrees. To be eligible, you must be studying at a UKESF Partner University starting in September/October 2026. Read our [Application Guide](#) for the full eligibility criteria.



**Funded by
UK Government**





UK Electronics
Skills Foundation

The Rt Hon Kanishka Narayan MP

Minister for Artificial Intelligence



Department for
Business, Innovation,
Science and Trade







UK Electronics
Skills Foundation

Chris Bush
Deputy Director, Semiconductors
Department for Business, Innovation,
Science and Trade



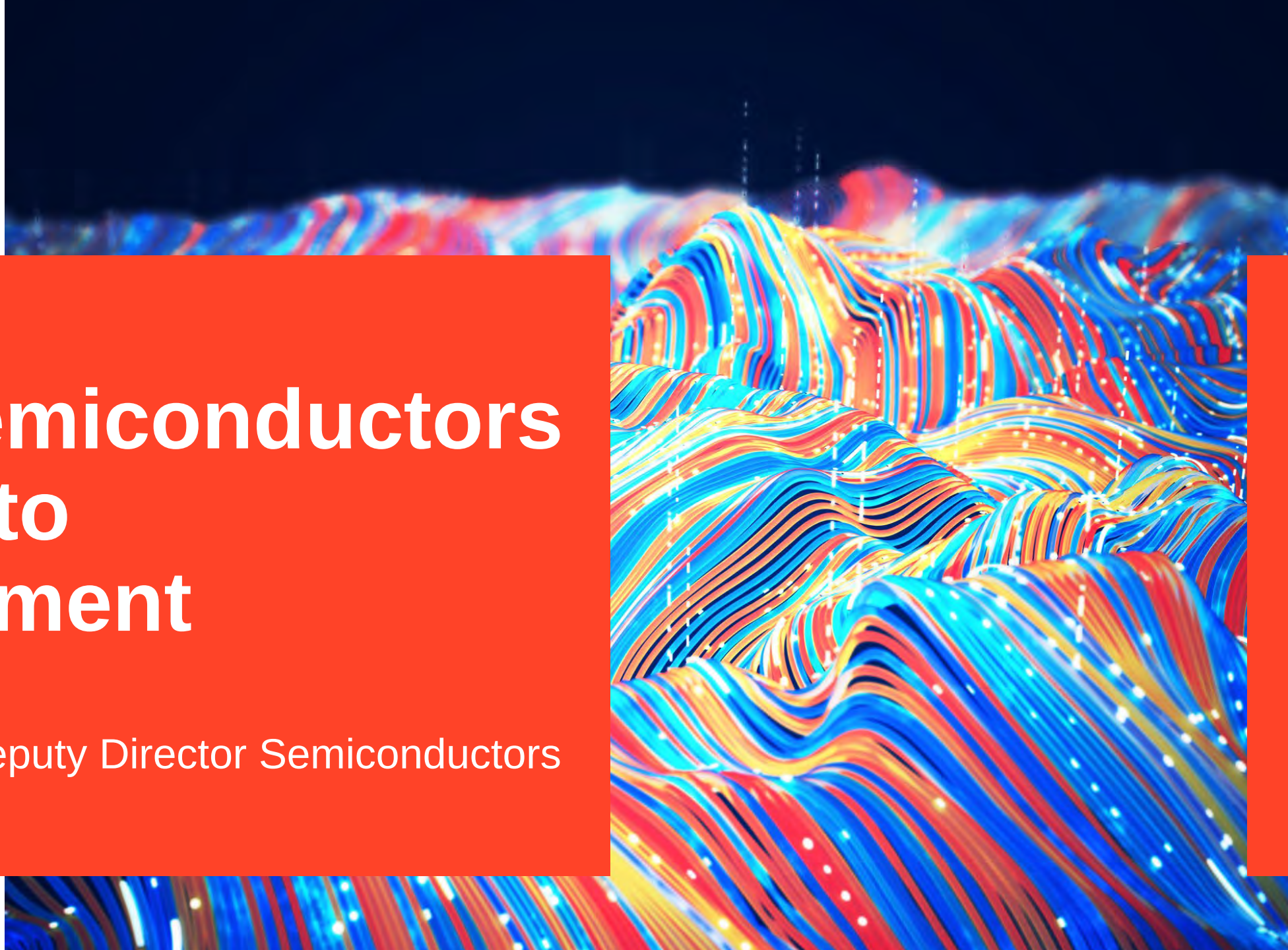
Department for
Business, Innovation,
Science and Trade



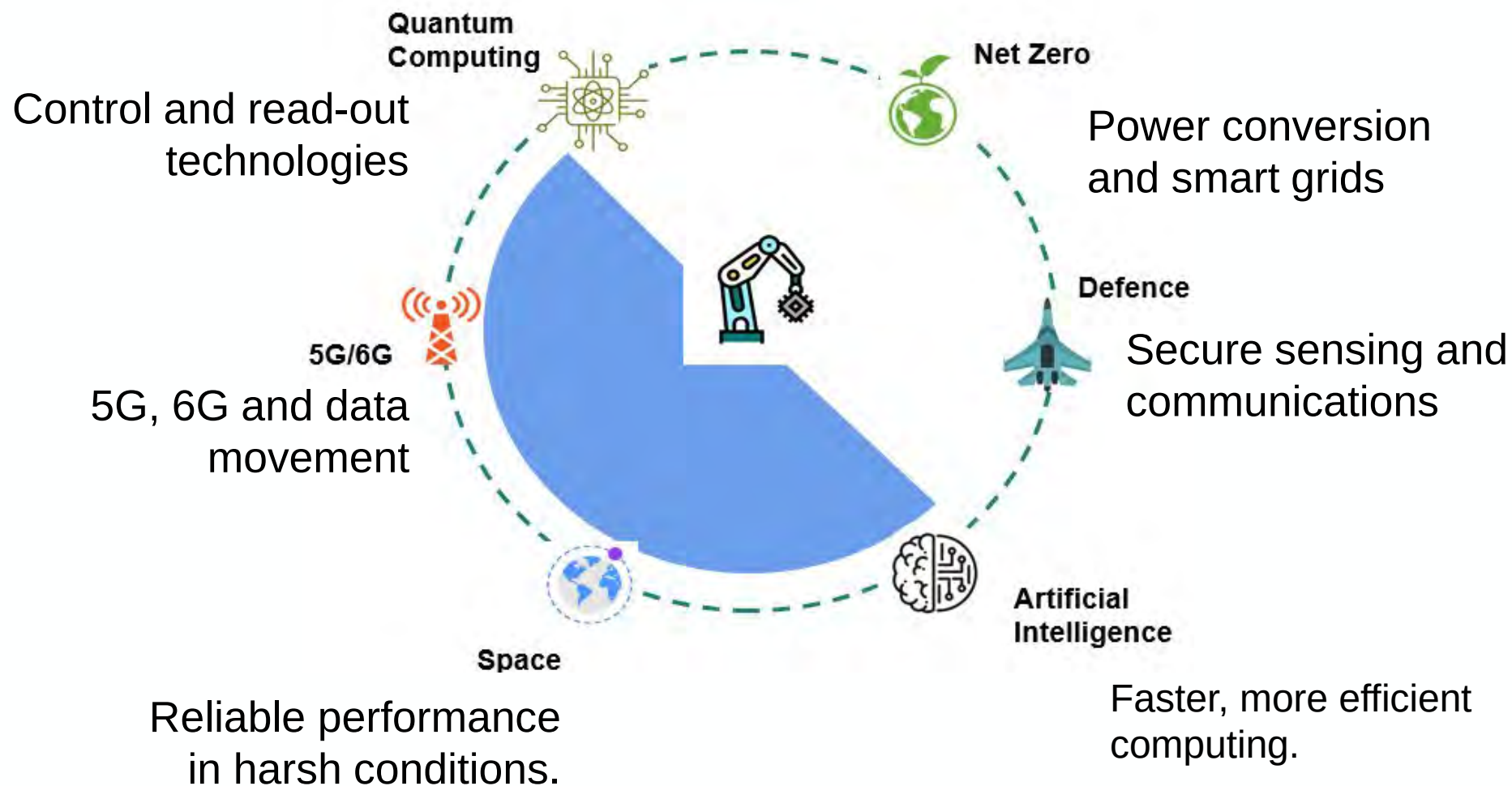
Department for
Business, Innovation,
Science and Trade

Why semiconductors matter to government

Chris Bush, Deputy Director Semiconductors
8th September



Semiconductors – foundation of modern technology

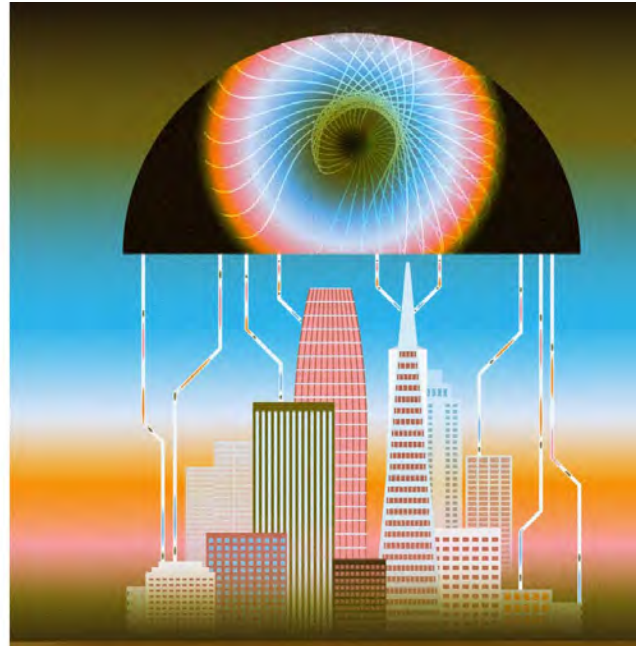
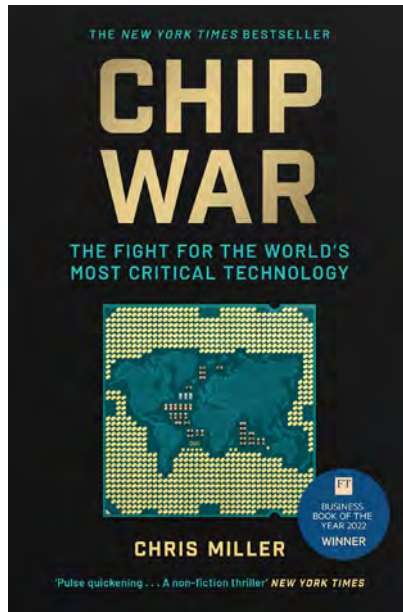


Global attention and some of the world's most valuable companies

The New York Times

Silicon Valley Is in Its 'Hard Tech' Era

Goodbye to the age of consumer websites and mobile apps. Artificial intelligence has ushered in an era of what insiders in the nation's innovation capital call "hard tech."



A global race to build semiconductor capability

US US CHIPS Act: > \$50bn

EU EU Chips Act: > €40bn

Rank	Name	Market Cap
1	 NVIDIA NVDA	£3.893 T
2	 Apple AAPL	£3.518 T
3	 Alphabet (Google) GOOGL	£3.011 T
4	 Microsoft MSFT	£2.758 T
5	 Amazon AMZN	£2.039 T
6	 TSMC TSM	£1.592 T
7	 SpaceX SPX	£1.390 T
8	 Broadcom AVGO	£1.304 T
9	 Saudi Aramco ARAMCO	£1.245 T
10	 Meta Platforms (Facebook) META	£1.092 T

Semiconductors are a UK wide sector creating high value jobs and growth

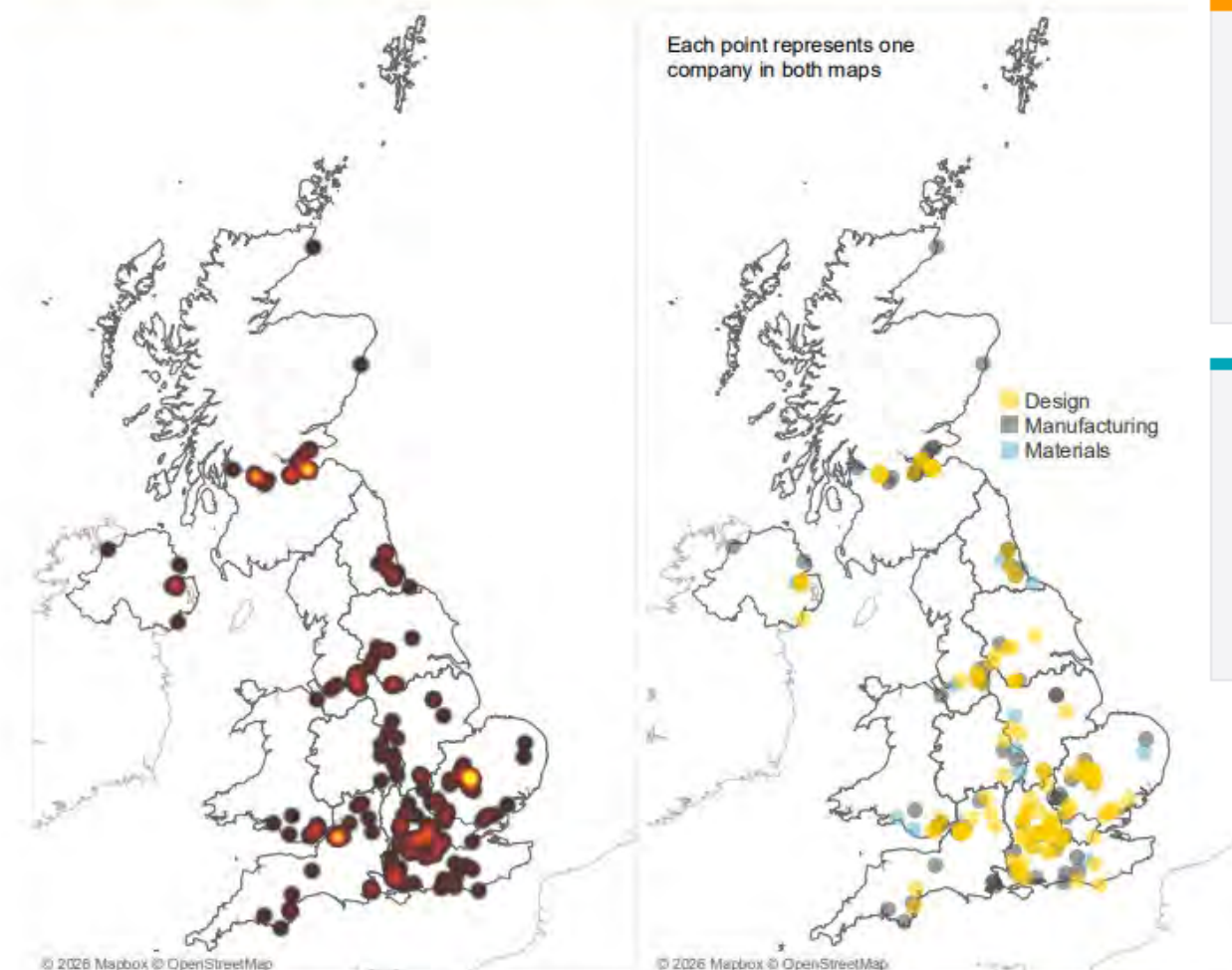
Cross-UK spread with clusters of activity present in all four nations

Design clusters in and around London, particularly in Cambridge. Other clusters near Bristol and Southampton

Main manufacturing clusters are in Scotland, Wales and the North East.

However, there is significant design activity in Scotland, and manufacturing in Cambridge.

FIGURE 3.6 – UK SEMICONDUCTOR CLUSTERS (DEDICATED COMPANIES)



HIGH-VALUE JOBS

£52,000

Average semiconductor fab salary in South Wales

60% higher than the UK average

FUTURE GROWTH OPPORTUNITY

~8% a year

Forecast average growth in the UK sector, every year to 2030

Compounding – growth that builds year on year

World leading home-grown companies

Across the UK, the sector spans long-standing firms alongside newer startups, and some 92% of dedicated semiconductor companies qualify as SMEs.

Global leader	 Founded: 1990 HQ: Cambridge	ARM The UK’s most significant semiconductor company. Its chip-design technology is used across smartphones, data centres and AI systems.		
Established	 Founded: 1977 HQ: Leeds	FILTRONIC Designs and manufactures high-performance RF, microwave and mmWave technologies for space, defence and telecommunications.	 Founded: 1988 HQ: Cardiff	IQE Supplies advanced wafers and material solutions and anchors the South Wales compound semiconductor cluster.
	 Founded: 2010 HQ: Cambridge	PRAGMATIC Manufactures ultra-thin, flexible integrated circuits for item-level intelligence using a lower-carbon process.	 Founded: 2018 HQ: Cambridge	PARAGRAF Develops graphene-based electronic devices and custom 2D-material foundry services.
Scale-ups				
Startups	 Founded: 2022 HQ: London	FRACTILE Develops novel AI inference-chip architecture. Raised \$220m in a Series B round in May 2026 at an approximately \$1bn valuation.	 Founded: 2024 HQ: London	OLIX Develops photonic AI inference hardware. Raised \$312m in a Series B round in August 2026 at a \$3.3bn valuation.

Home to important international companies

The UK also hosts significant international companies, especially in manufacturing. Dedicated, UK headquartered companies are typically smaller than their international counterparts.

81% of UK headquartered companies are either micro or small, compared to 54% of internationally headquartered UK entities.



APPLE
Cambridge

Multinational technology company with a significant semiconductor-design presence in the UK.



VISHAY INTERTECHNOLOGIES
South Wales

Global manufacturer of electronic components used across modern technology.



KLA
South Wales

One of the world's largest producers of semiconductor process-control and manufacturing equipment.



NEXPERIA
Manchester

Global semiconductor company with components used across automotive applications and a significant UK manufacturing footprint.



SEAGATE
Northern Ireland

The Derry facility is a major UK fab and manufactures lasers used in hard-disk drives.

A 10-year vision for the Digital and Technologies sector

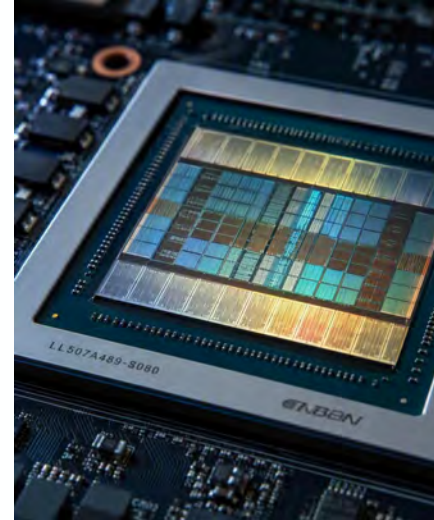


- By 2035, our vision is for the UK to be one of the top three places in the world to create, invest in and scale-up a fast-growing technology business. We will aim to secure the UK's first trillion-dollar technology business.
- Build our sovereign capability in the most strategically important technology areas, implementing a semiconductor growth programme across R&D, skills and talent, and business support.
- Targeting business investment in the sector as a key measure of success and aiming to have more investment in commercial research and development (R&D) in the sector than any other country globally (excluding USA and China) by 2035.

AI Hardware Plan

The UK AI Hardware Plan sets out how the government will secure Britain's future capability in the chips and semiconductor technologies that underpin AI — moving from strong but fragmented activity to a coherent, system-level strategy.

*A **£1.1bn+** commitment of target public investment towards an end-to-end pipeline of innovation: develop → demonstrate → deploy → scale AI hardware in the UK and internationally.*



01

Innovation

Back promising technologies and give innovators the testbeds to prove them.

02

Skills

Grow the semiconductor and AI-hardware talent the sector needs.

03

Procurement

Use public demand to pull UK hardware into real compute deployments.

04

Investment

Provide growth capital and crowd in private co-investment at scale.



Department for
Business, Innovation,
Science and Trade

Thank you!



UK Electronics
Skills Foundation

Professor John Goodenough
University of Sheffield



**University of
Sheffield**





Fishing for Chips

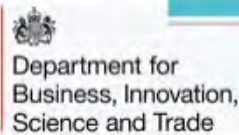
Prof. John
Goodenough.

Chair of Microelectronic Systems
University of Sheffield



Semiconductor Talent Award
Induction event, IET London –
8.ix.26

Introduction: My Journey



1984 IC



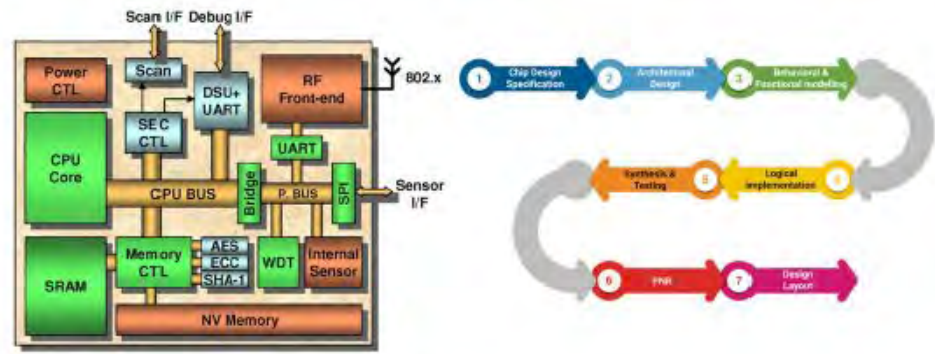
1988



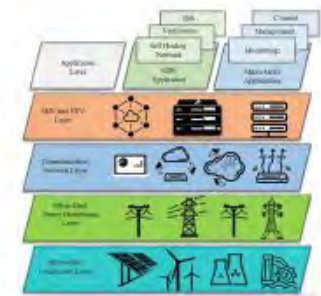
1995

2000

CVP

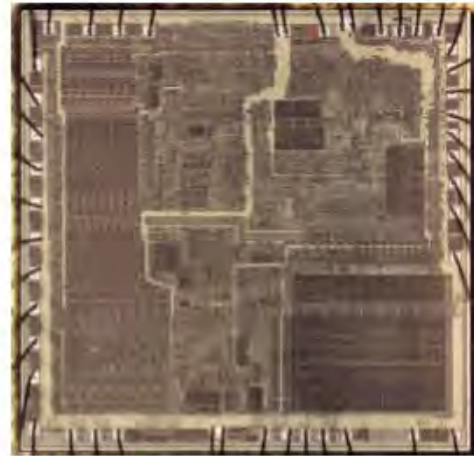


2022

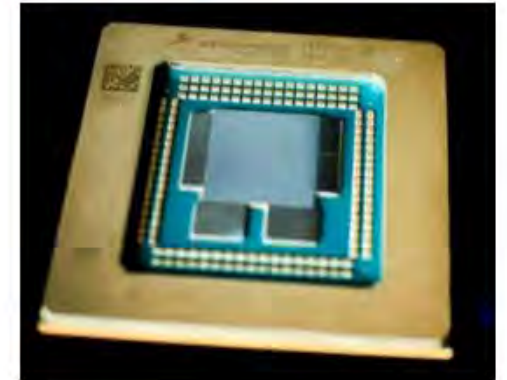


2029

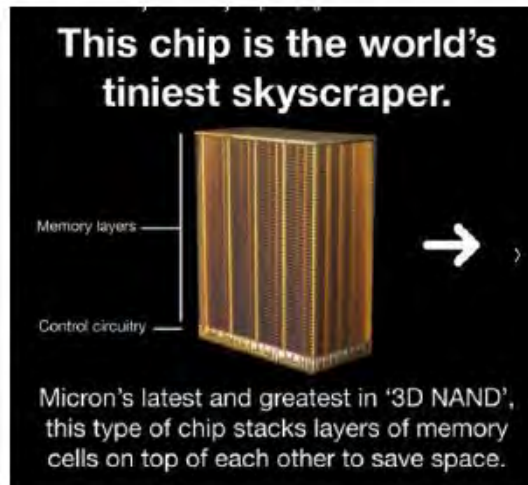
Microelectronic Systems Semiconductors Systems on Chip Chips



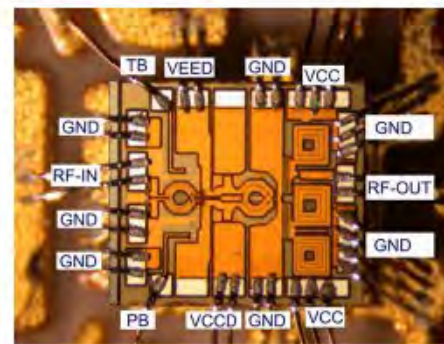
Source: Intel



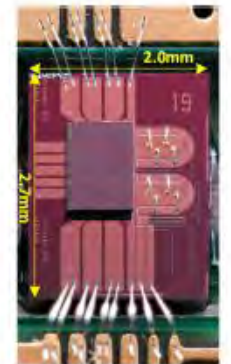
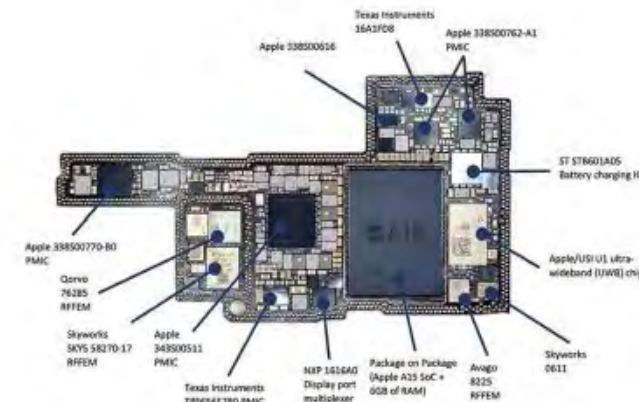
Source: nVidia



Source: Micron



Source: Anandtech



Source: Cornerstone

Why do we need more Systems Chips and SoCs – SWaPC + S

Systems User Need drives

Electronics' exponentially growing needs

\$411 bn
2030



ISO 26262
Road Vehicles - Functional Safety



CVE
CWE



Five Seismic Shifts That Will Define The Future of Semiconductors and ICT



1. Fundamental breakthroughs in analog hardware are required to generate smarter world-machine interfaces that can sense, perceive, and reason. Annual investment need: \$600M throughout this decade to pursue analog-to-information compression/reduction with a practical compression/reduction ratio of 10⁴:1 for practical use of information more analogous to the human brain.



2. The growth of memory demands will outstrip global silicon supply, presenting opportunities for radically new memory and storage solutions. Annual investment need: \$750M throughout this decade to develop emerging memories/memory fabrics with >10-100X density and energy efficiency improvement for each level of the memory hierarchy. Discover new storage systems and storage technologies with >100x storage density capability.



3. Always-available communication requires new research directions that address the imbalance of communication capacity vs. data-generation rates. Annual investment need: \$700M throughout this decade for communication enabling data movement of 100-1000 zettabyte/year at the peak rate of 1Tbps @ <0.1nJ/bit. Develop intelligent and agile networks that effectively utilize bandwidth to maximize network capacity.



4. Breakthroughs in hardware research are needed to address emerging security challenges in highly interconnected systems and AI. Annual investment need: \$600M throughout this decade for privacy and security hardware advances that keep pace with new technology threats and use cases (e.g., trustworthy AI systems, secure hardware platforms, and emerging postquantum and distributed cryptographic algorithms).



5. Ever-rising energy demand for computing vs. global energy production is creating new risk, and new computing paradigms offer opportunities to dramatically improve energy efficiency. Annual investment need: \$750M throughout this decade to discover computing paradigms/architectures with a radically new computing trajectory demonstrating >1,000,000x improvement in energy efficiency.

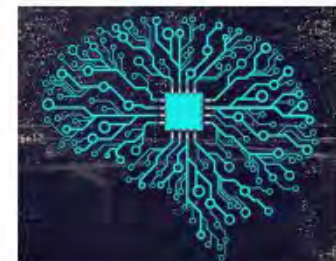


Input Layer
(size ~ 10)

Hidden
Layer 1
(size = 32)

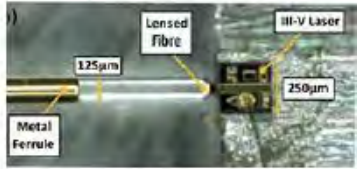
Hidden
Layer 2
(size = 32)

Output Layer
(size = 1)

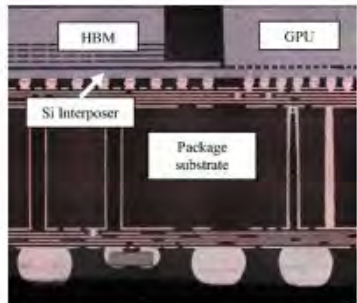


Source: SRC Decadal Plan Recommended Read!

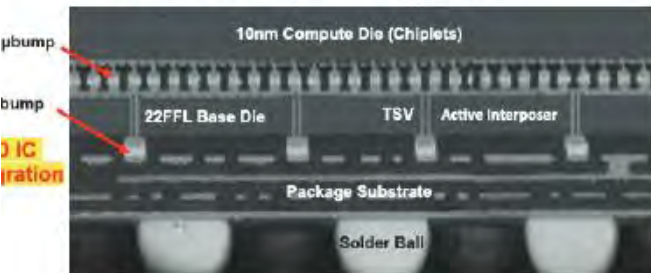
Technology Opportunity



PIC Co-packaging



HBM Co-packaging



A10	A11	A12	A13	A14	A15
 - A10 consists of: 6-core GPU (graphics processor unit) 2 dual-core CPU (central processing unit) 2 blocks of SRAMs (static random access memory), etc. 16nm process technology - Transistors = 3 billion - Chip area = 125mm²	 - A11 consists of: - More functions, e.g., 2-core Neural Engine for Face ID - Apple designed tri-core GPU 10nm process technology - Transistors = 4.3 billion - Chip area = 89mm²	 - A12 consists of: - Eight-core Neural Engine with AI capabilities - Four-core GPU (faster) - Six-core CPU (better performance) 7nm process technology - Transistors = 6.9 billion - Chip area = 83mm²	 - A13 consists of: - Eight-core Neural Engine with Machine Learning - Four-core GPU (20% faster > A12) - Six-core CPU (20% faster and 35% save energy > A12) 7nm process technology with EUV - Transistors = 8.5 billion - Chip area = 98.5mm²	 - A14 consists of: 16-core Neural Engine with Machine Learning (11 trillion/s, 10 times faster > A13) - Four-core GPU (30% faster > A13) - Six-core CPU (40% faster > A13) 5nm process technology with EUV - Transistors = 11.8 billion - Chip area = 88mm²	 - A15 consists of: 16-core Neural Engine to speed up AI tasks with Machine Learning (15.8 trillion/s) - Four-core GPU, but 5-core for iPhone Pro and 13Pro Max - Six-core CPU (faster > A14) 5nm process technology with EUV - Transistors = 15 billion - Image signal processor

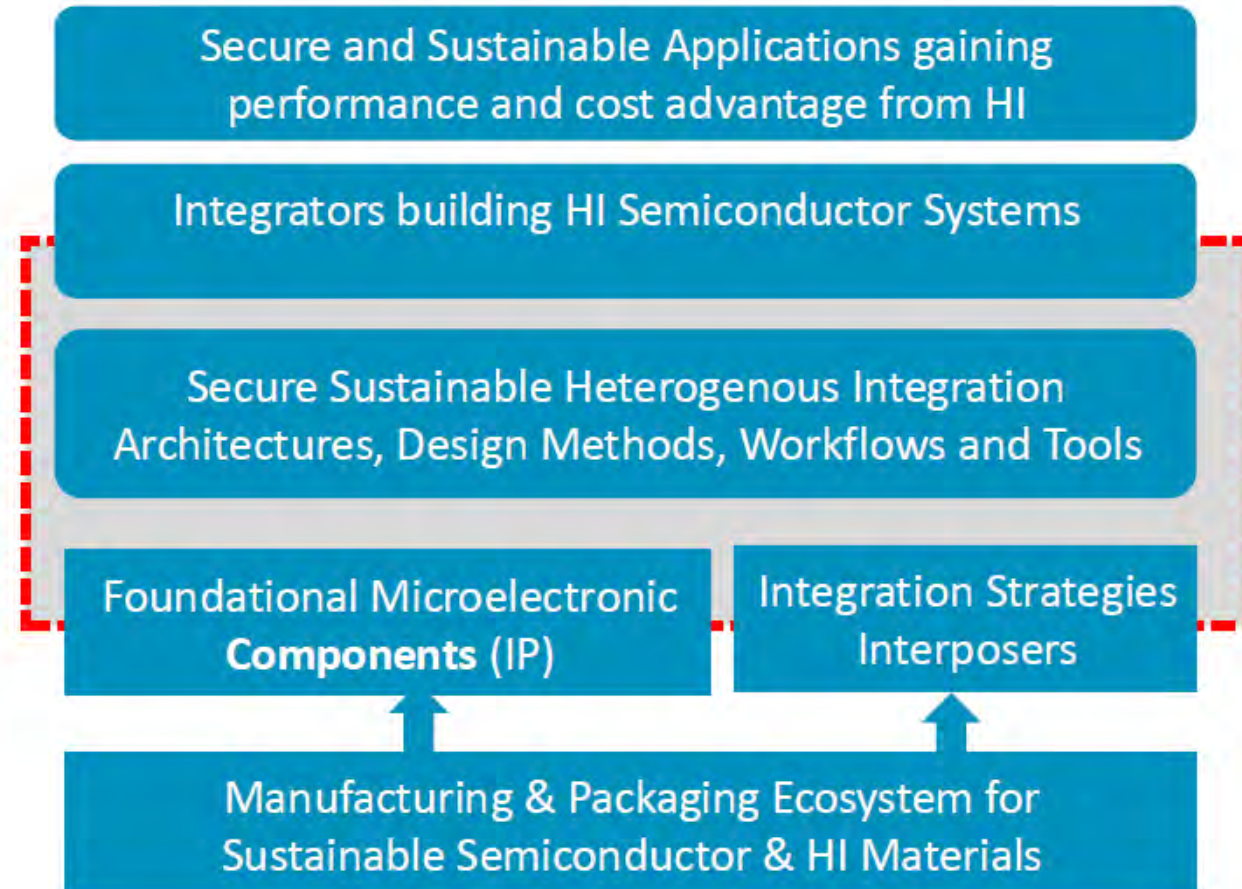


Democratize & Improved and Effective HI Design

Enable integrators to build with lower NRE & better SWaP application performance

Enable innovators to translate new technology, IP or chiplets into system more effectively

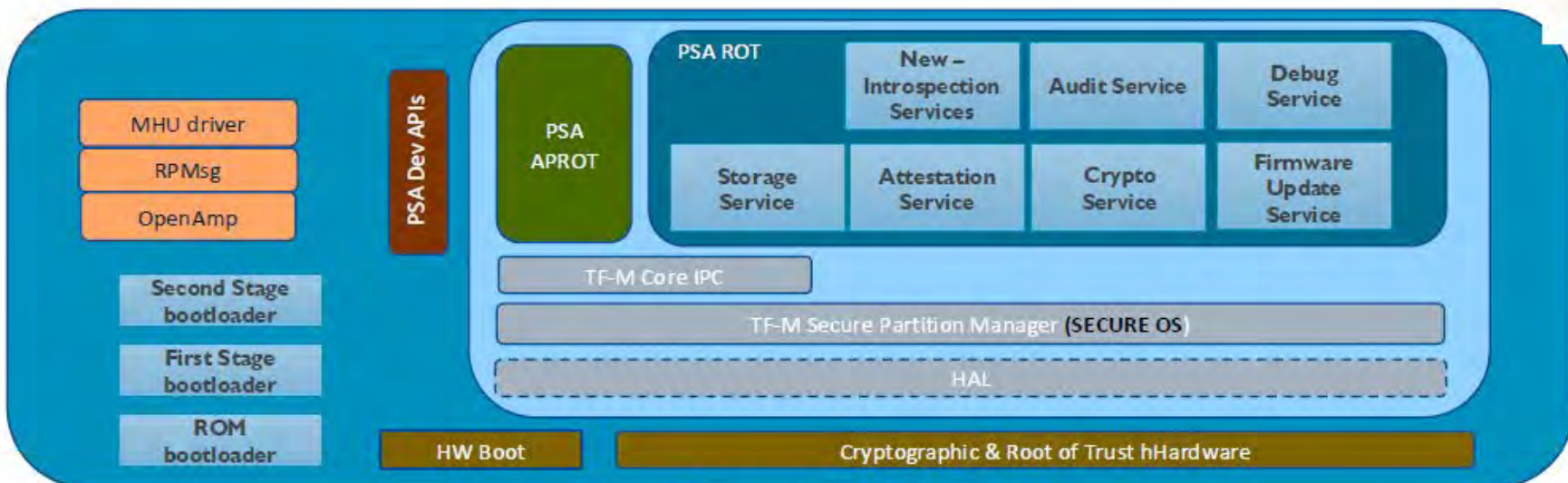
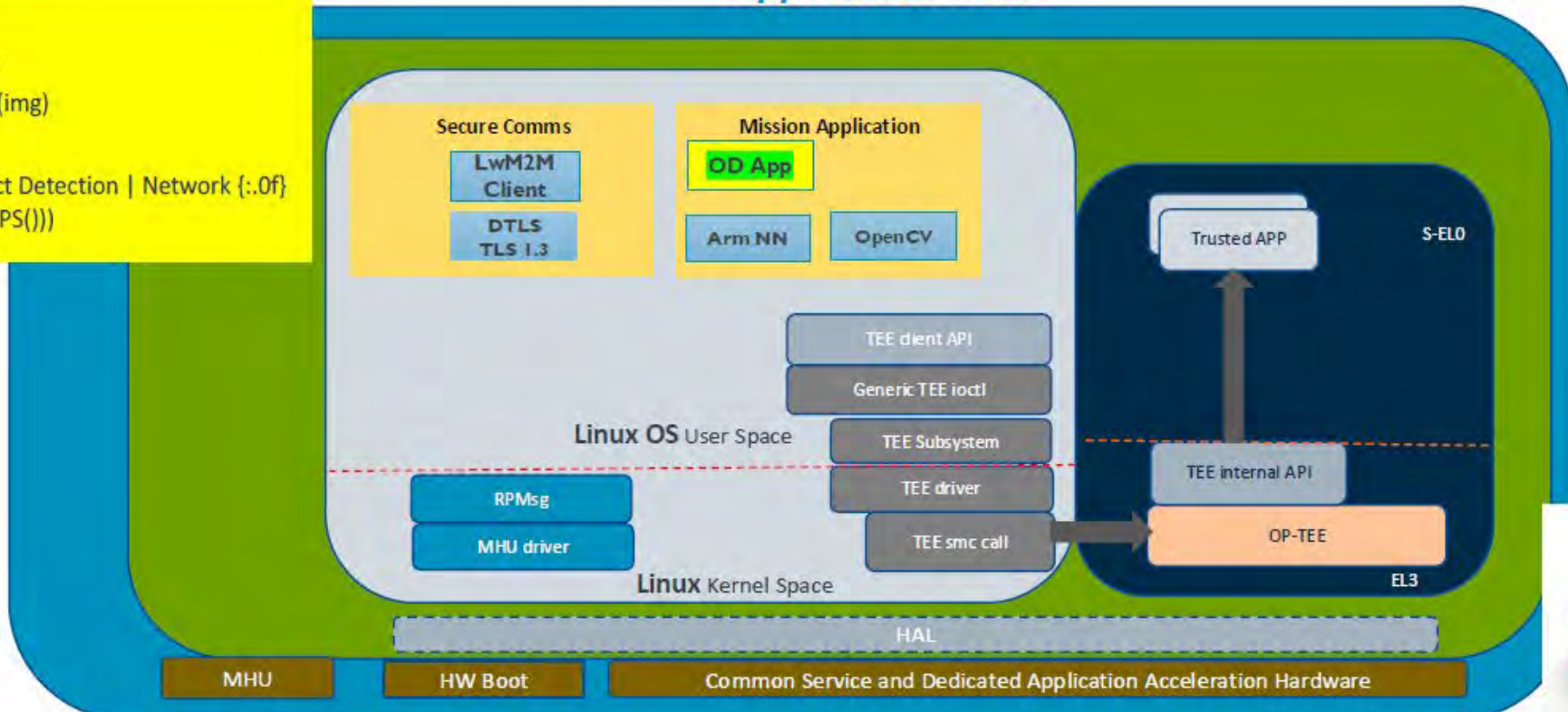
- **Architectures** and Design Methods to build and deploy novel, resilient SWaP optimized integrated semiconductor systems.
- **Exploit** the benefits of **heterogeneity** to combine **post-Moore, post von-Neuman** architecture, new materials or circuit techniques.
- Remove barriers and costs to Enable **fast, low NRE Integration** of both existing and novel Foundational IP components and integration strategies.
- **Accelerate opportunity** for new materials, foundational IP, and interposer strategies to deliver application advantage
- Focus on the common challenges for HISS for example: **system partitioning, test, thermal, power**
- **Full stack road mapping** to align Application Requirements with the TRL readiness across layers



Application Host

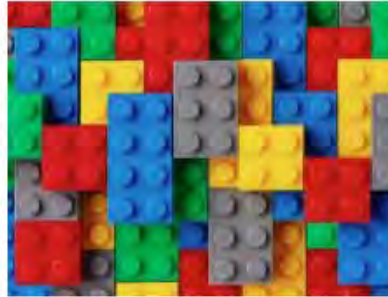
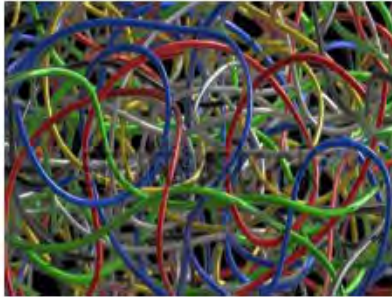
```

while display.IsStreaming():
    img = camera.Capture()
    detections = net.Detect(img)
    display.Render(img)
    display.SetStatus("Object Detection | Network {:.0f} FPS".format(net.GetNetworkFPS()))
    
```



Secure Element

Hard Yards: SoC (or PCB) - System Plumbing



INTERCONNECT
NETWORK

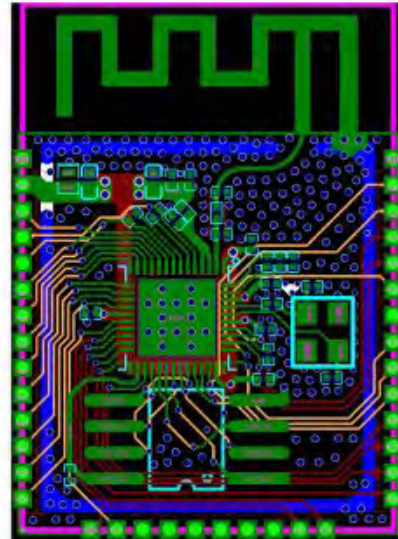
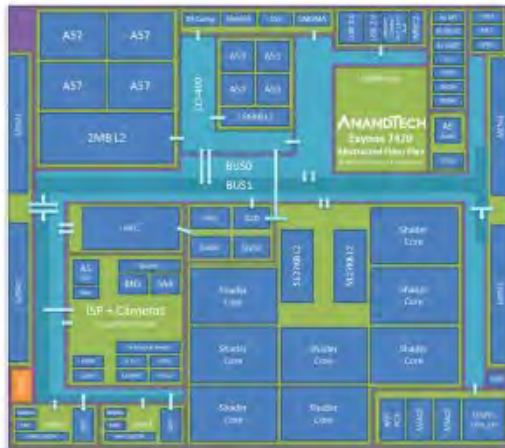
POWER

CLOCK

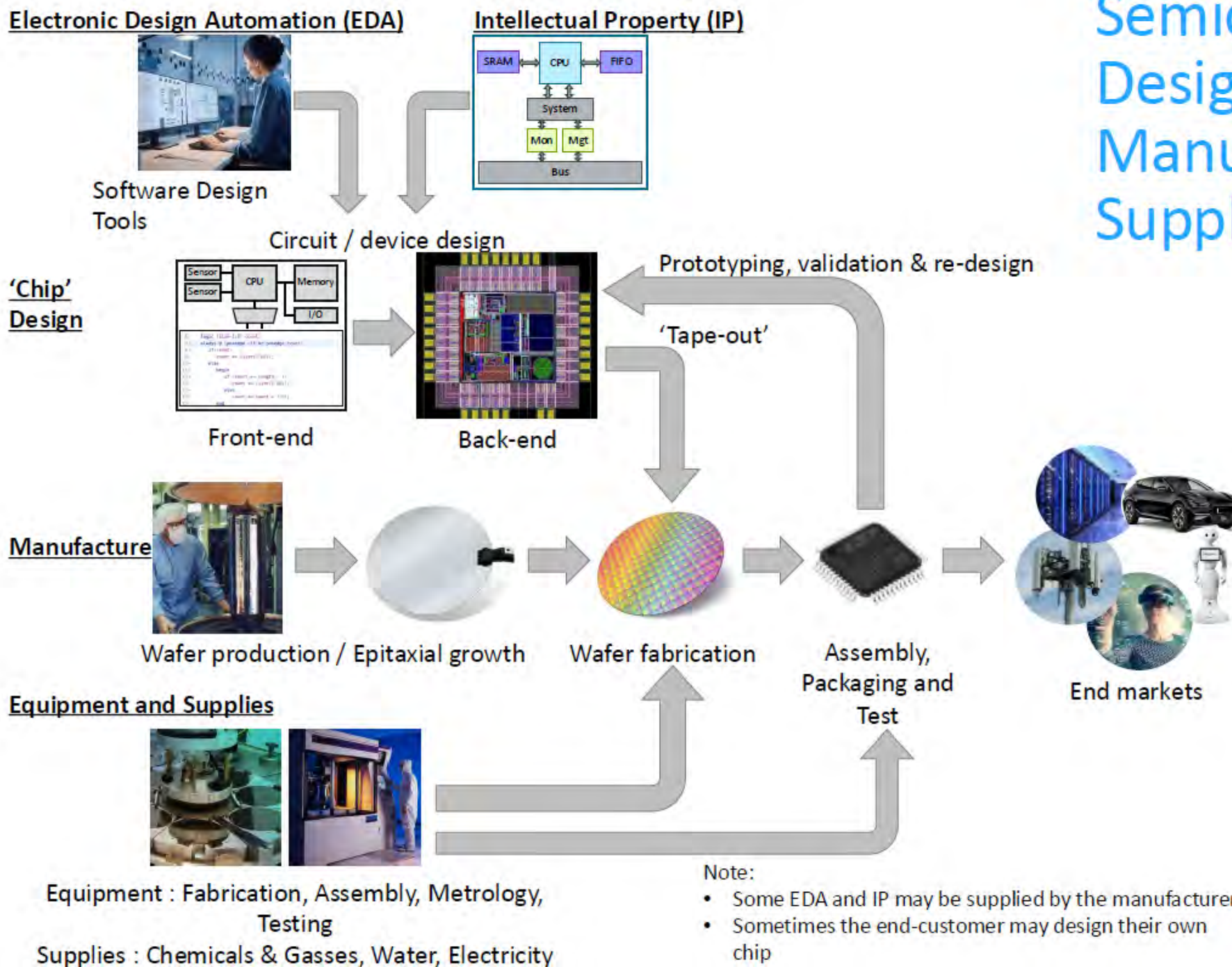
DEBUG

DFT

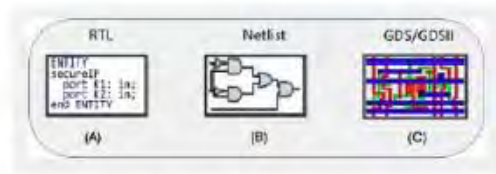
IP Block
Chip
Chiplet



Semiconductor Design & Manufacturing Supply Chain

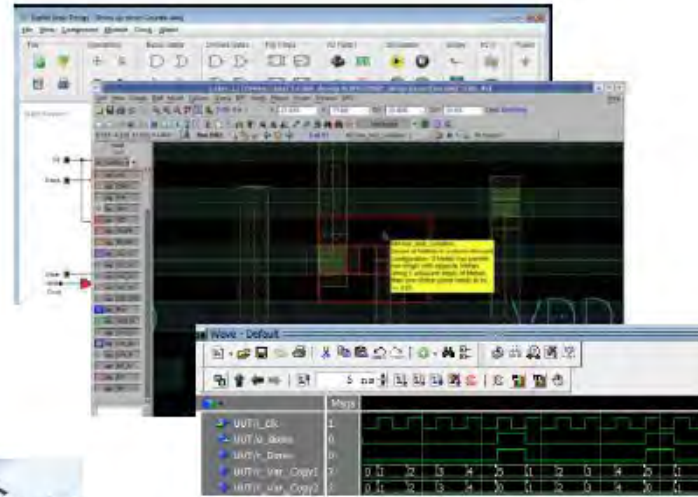


Capabilities in the Supply Chain



IP Chiplet Providers

- Economic Competitiveness
- Supply Chain Security
- National Security
- Trusted Partners
- IP Protection
- Investment



EDA Tools



PDK



Manufacturers

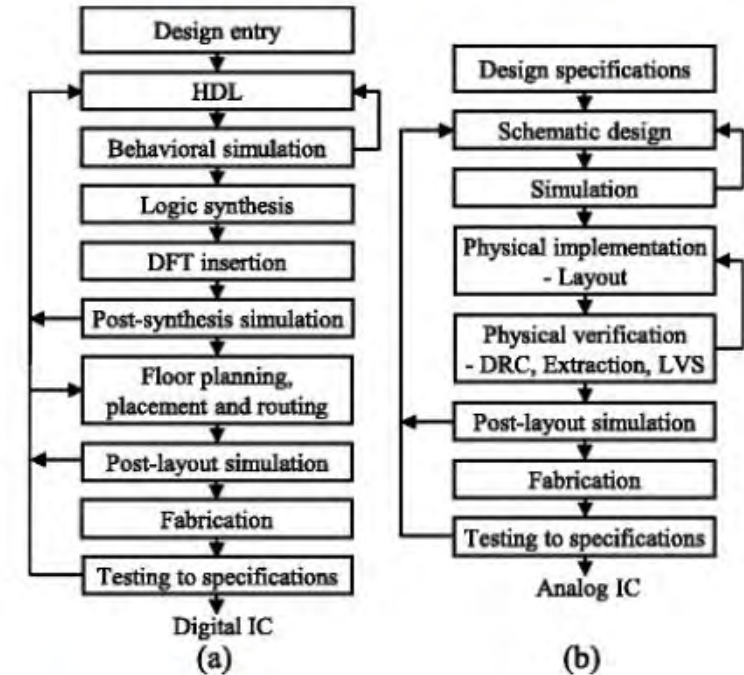


Compute



Designers

Methodologies & Design Patterns

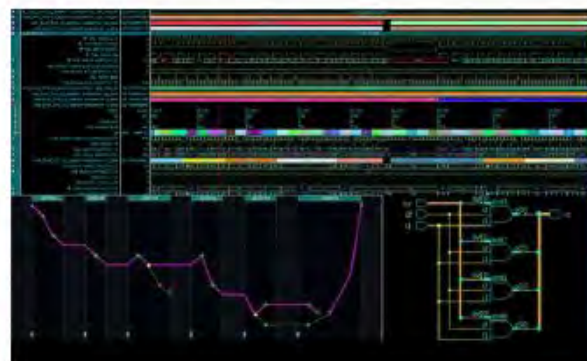


Hard Yards Is that Circuit/Device/Diagram right?

Pre 'Tape Out' verification – needs to include different lifecycle states!

Threats according to JIL (2/2)

- Physical attacks
- Overcoming sensors and filters
- Perturbation attacks
- Retrieving keys with DFA
- SPA/DPA
- Higher order DPA
- EMA attacks
- Exploitation of test features
- Attacks on RNG
- Ill-formed Java Card applications
- Software attacks
- Information gathering
- Editing commands
- Direct protocol attacks
- Man-in-the-middle attacks
- Replay attacks
- Bypass authentication or access control
- Buffer overflow or stack overflow



Coffee Mug!

R-Pi4



DStream Debugger



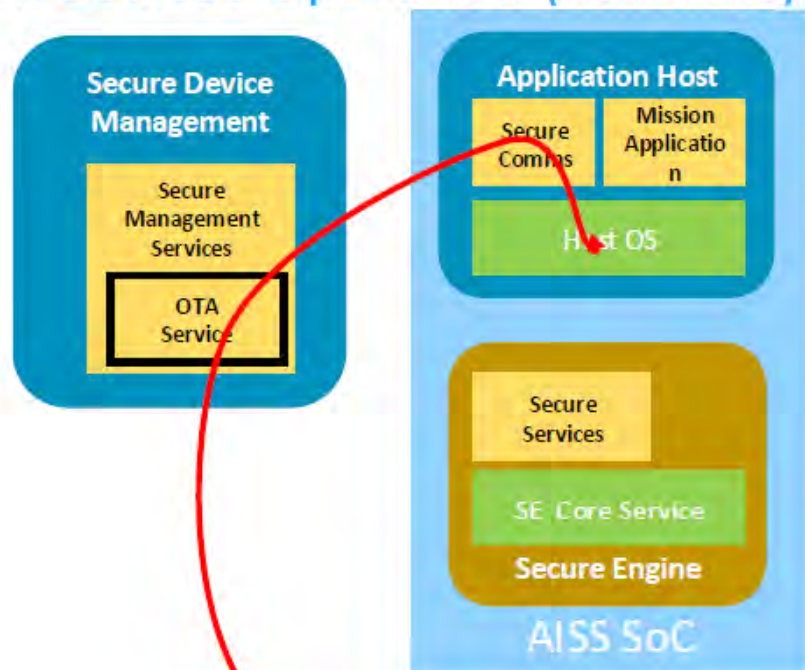
Jetson Nano

Thinking ahead: Design for (Secure) Service Lifecycle

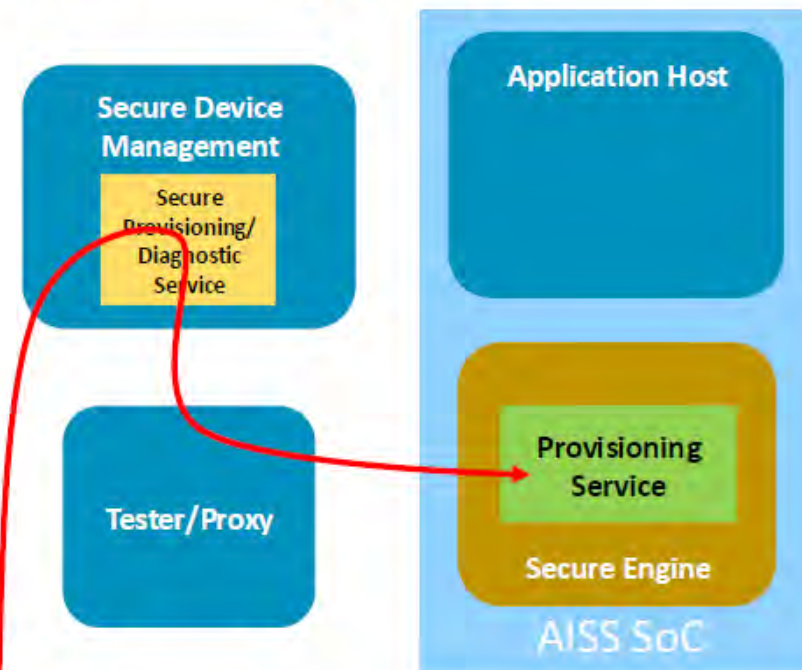
Different Software for the Secure Engine required in Different Lifecycle States

Demonstrating PPAS

Application Service Operation (Runtime)



Demonstrating Z-Trust Supply chain Provisioning & RMA



A typical timetable (First year, Semester one)

Day / Time	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5	5-6
Mon.		119	117	160		118	112	112	
Tues.	118	156	Tut.						
Wed.	160								
Thurs.	118					160			156
Fri.		117	119	119		163	163	163	

~13 h lectures / problem classes
1 h tutorial
~ 9 h labs/computing

■ Core EEE module lecture
■ Computing
■ Mathematics lecture
■ Problem class
■ Tutorial
■ Laboratory class



sheffield.ac.uk/eee

29

Learning Journey : Semesters & Summers create your narrative And let you figure out where your interests lie



Applications open two blocks early — the summer in 6 is applied for during 4 and 5.

TALK ABOUT

the thing you built for no reason

why you chose what you chose

what you delivered — and what went wrong

a body of work with your name on it that lands you the next step

OPTIONAL — FIFTH YEAR



A year in industry. Between 2 and 3 or 3 & 4

Gives you a lot to talk about! What interested you What did you find difficult

Internships are practice — and applied for a year early.

Transcript: fixed. CV: yours.

16

A semester is not flat

Plan for the shape, not the average.



Curiosity is the actual skill

Nobody marks it. It decides how much you walk away with.

A lecture is where a topic starts.

Not where it ends.

Your lecturers are researchers. Ask them

- 1 Blackboard or equivalent is a filing cabinet**
It tells you what is due. It does not teach you.
- 2 Read around it**
The reading list is a floor, not a ceiling.
- 3 Ask the question – try real practice**
Forty other people have the same one.
- 4 Ask people who have done it before**
Tutorials. Office hours. The year above.

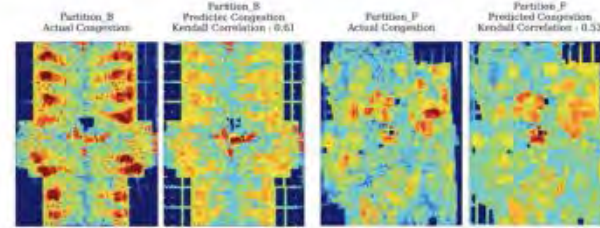
17

AI ~~will~~ has changed how we design chips.

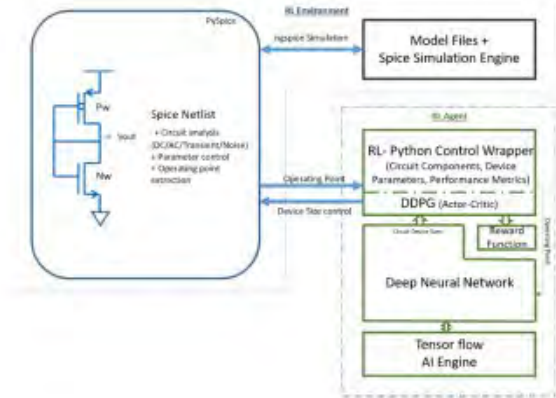
Inevitable and it really tipped last year



ROUTING CONGESTION PREDICTION WITH GNNs



R. Kirby et al., "CongestionNet: Routing Congestion Prediction Using Deep Graph Neural Networks", VLSI-Soc 2019



Build your own CoCurriculum? Open Source EDA



CHISEL

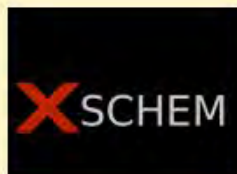


DIGITAL
& VERIFICATION

ANALOG



Open Circuit Design

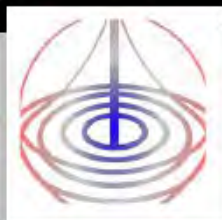
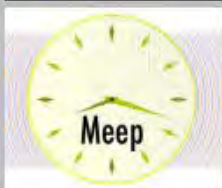


P&R LAYOUT SoC

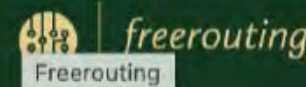
GDSFACTORY



SiEPIC
FAB OpenEBL



PHOTONIC



Freerouting



LibrePCB
Create electronics the easy way.



Horizon EDA
a free EDA package



Results from
Yosys Synthesis
Improvements

- 2.3x reduction in critical path length
- 1.6x reduction in logic cell area after synthesis
- 2.5x runtime reduction



TINY TAPEOUT



PCB

Carpe Diem: Drive your own Co-curriculum Journey

5 May 2020

Largest UK Tiny Tapeout workshop at University of Sheffield brings hands-on chip design to 120+ students

The UK Tiny Tapeout 4th17th18th May 2020 brought together industry and academia to deliver a hands-on chip design workshop to 120+ students.



INGENIUM

STUDENTS' UNION UCL

SHaRC

Student-led hardware & reconfigurable computing at Sheffield, learn, prototype, and tape out together!

Computer Hardware Manufacturing - Sheffield, England - 4,000 followers - 11 full employees



26 AUGUST 2026 • LONDON

One Day. Four Conferences. The UK Deep Tech Value Chain Under One Roof

Join 600+ leaders in chip design, semiconductor manufacturing, electronic systems, cybersecurity, AI and compute for TechWorks' flagship 30th anniversary summit, delivered in partnership with the UK Semiconductor Centre.

TechWorks
SEMICONDUCTORS TO SYSTEMS SUMMIT 2026
IN PARTNERSHIP WITH
UK Semiconductor Centre
PLATINUM SPONSOR
arm

STARTUP PARTNER
UK CHIP START

SPONSORS: AESIN, DESN, IOT, nmi, AI, Women in Tech Works



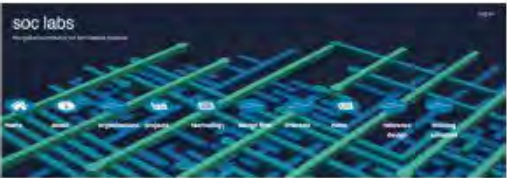
UK Electronics Skills Foundation

KEYSIGHT
cadence
arm **SYNOPSYS**
SIEMENS

AMD
XILINX

Annual Design Contests

Dates	Context and Location
June	CYPR, Seattle, WA, USA
July - & December	DRC, San Francisco, CA, USA
September-June	AWD Programmable Open Hardware Design Contest, Europe



NeuroWare
THE UK INNOVATION & KNOWLEDGE CENTRE IN NEUROMORPHIC COMPUTING HARDWARE

CSIT CENTRE FOR SECURE INFORMATION TECHNOLOGIES

CHIMES

REWIRE

CORNERSTONE



**UK Electronics
Skills Foundation**

Break



arm



bay photonics



cadence

CML Micro

DOULOS



EE Times

Electronics Weekly

EnSilica
your trusted IC partner

FF FOREFRONT RF

FRACTILE

GOAL



imec

IOE

LEONARDO

NeuroWare
THE UK INNOVATION & KNOWLEDGE CENTRE
IN NEUROMORPHIC COMPUTING HARDWARE

plessey

Pragmatic

SIEMENS



UKRI Science and Technology Facilities Council

SYNOPSYS

UK Semiconductor Centre

UKRI Innovate UK

Tips for having valuable conversations this afternoon

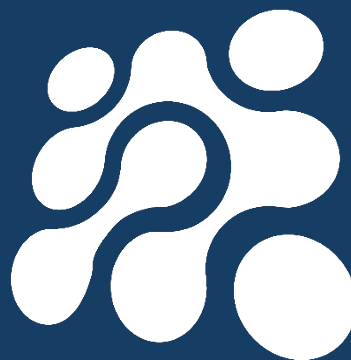
- Know that **everyone here is in a similar situation**
- Not sure where to start? Conversation starting questions:
 - What inspired you to apply for the Award?
 - What are you most excited to learn about this year?
- If you see someone looking lost, invite them to join in your conversation
- **Employers want to talk to you.** Make the most of conversations:
 - Ask about their products.
 - Ask about their work opportunities and graduate schemes





**UK Electronics
Skills Foundation**

Break



**UK Electronics
Skills Foundation**

Welcome back



UK Electronics
Skills Foundation

Matt Cossins
ARM

The ARM logo, consisting of the word "arm" in a white, lowercase, sans-serif font, centered within a dark blue rectangular background.

arm





Arm is Building the Future of AI Computing.

What does Arm actually do?



I O T



M O B I L E



P C



A U T O



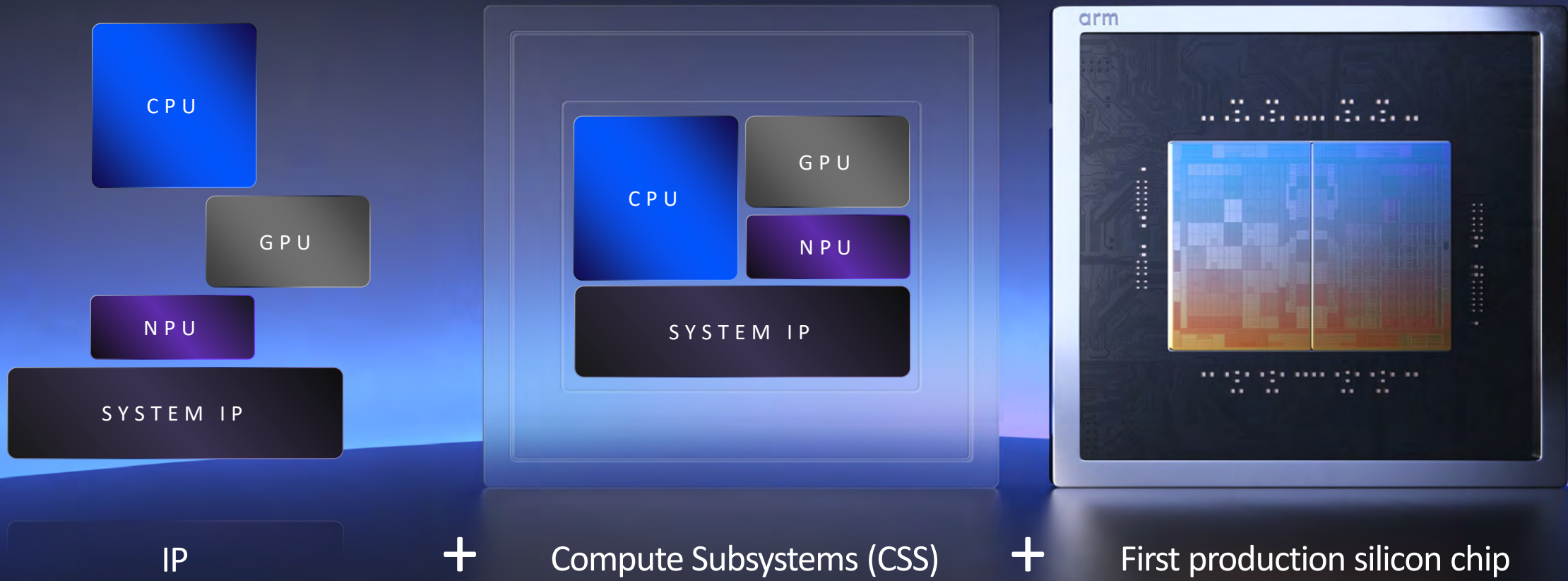
R O B O T I C S



C L O U D



ARM'S PLATFORM



100%

OF THE CONNECTED
GLOBAL POPULATION

Only the Arm platform has the scale, performance, and power efficiency to enable AI everywhere.

>350B

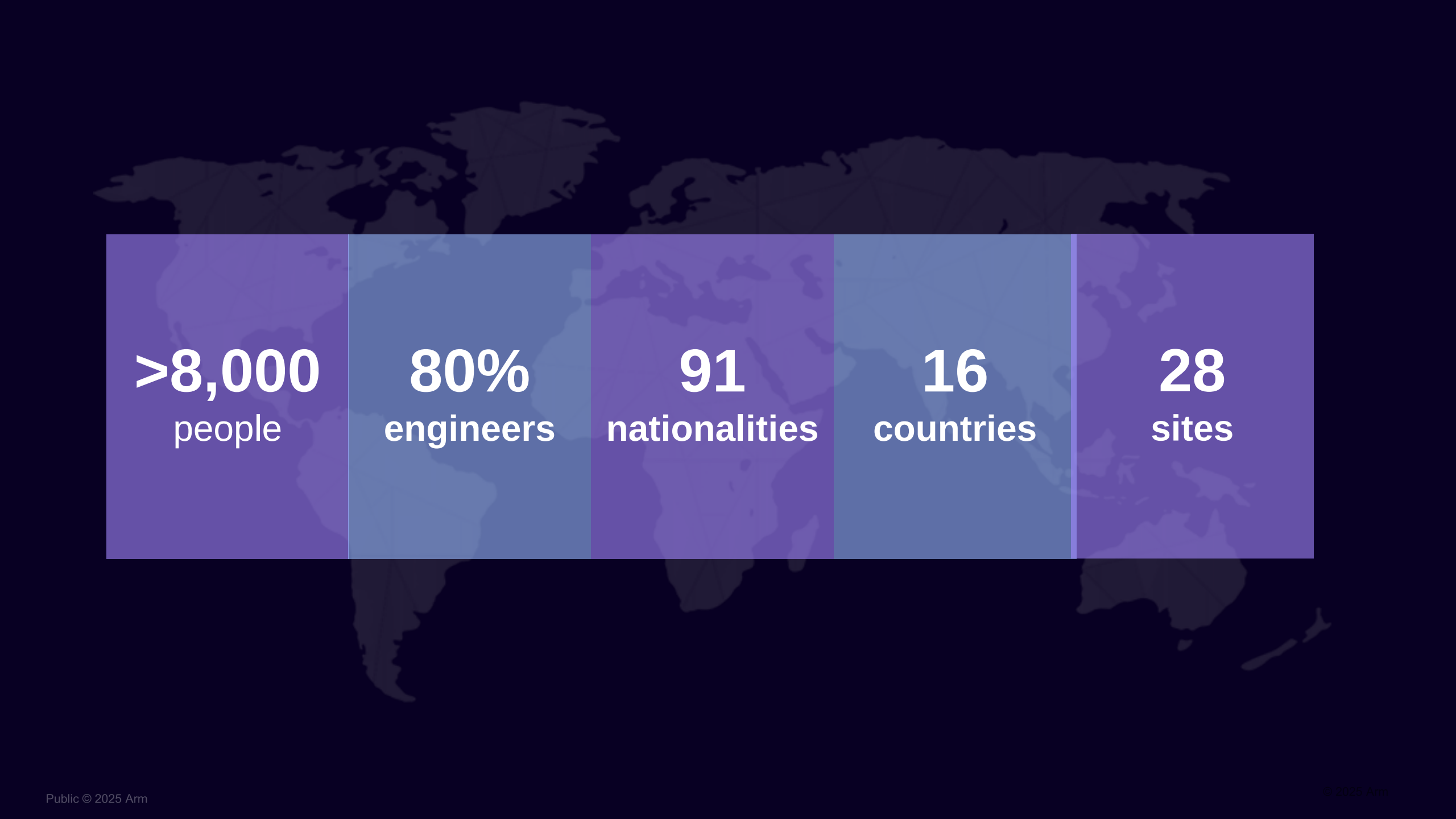
ARM-BASED CHIPS
SHIPPED TO-DATE

Arm is delivering the most power-efficient and most high-performance compute platform across multiple markets.

>22M

SOFTWARE
DEVELOPERS ON ARM

Arm has the broadest software support of any compute platform ever invented.



>8,000
people

80%
engineers

91
nationalities

16
countries

28
sites

Teaching and Learning Resources on Arm



Education Kits

Academically rigorous teaching materials including covering core subject areas in Computer Engineering & STEM.



Online Courses

Freely accessible to ensure anyone can learn with Arm.
Enables students, developers and engineers learn about state-of-the-art technologies from the Arm partner ecosystem.



Books

Textbooks suitable for classroom adoption in key computing subjects.
Reference books target graduate students, researchers, and engineers.



Developer Labs

Hands-on, Arm-based project-based labs providing practical experience across AI, embedded, cloud, and systems technologies for real-world learning.



Arm Academic Access

Provides universities with freely available tools, software, and Arm IP to enable teaching and research.



Arm Expert Insights Videos

This video series showcases the latest technologies, research, and educational initiatives from Arm through timely workshops, webinars, and interviews.



Tools

Arm-based software and hardware development tools for building, debugging, and optimizing systems across edge, cloud, and embedded platforms.

EdKits and Courses

- Free MOOCs distributed via [Coursera](#) and [EdX](#)
- EdKits shared on [Arm Education GitHub](#) (freely accessible)
- Topics include **Edge and Cloud AI, Embedded Systems, Graphics & Gaming, SoC Design, VLSI, Software Optimization**

The screenshot displays the Arm Education website. At the top, the 'arm education' logo is prominent. Below it, the text 'Advanced Quantization: A practical Course' is visible. The main section features the course title 'ArmEducationX: Optimizing Generative AI on Arm Processors: from Edge to Cloud' in large, bold letters. To the right of the title, there is a QR code. Below the title, a brief description of the course is provided, followed by a 'Show more' link. At the bottom of the course section, the start and end dates are listed: 'Starts Jan 06' and 'Ends Jul 31, 2027'. Two buttons are present: 'Advance your career' and 'Audit course'.

arm education

Advanced Quantization: A practical Course

on introduction to extreme model quantization, hardware-aware optimization, and generative AI models. You'll explore advanced techniques to reduce model size, or compact LLMs on edge devices like Android smartphones.

Part Advanced AI series. For Part 2, focusing on Mixture of Experts (MoE) models, [fixture of Experts: A Practical Course](#).

lustrary ML engineers who want practical, ready-to-adapt examples for integrating LLMs into their own applications. It is also well-suited for ML researchers interested in

arm Education UNIVERSITY OF CAMBRIDGE

ArmEducationX, University of Cambridge: AI at the Edge on Arm: Understanding and Deploying LLMs for Mobile Devices

AI at the Edge will be powered by Arm. Discover the tools and techniques you'll learn

[Show more](#)

Starts Jan 06
Ends Jul 31, 2027

[Advance your career](#) [Audit course](#)

Arm Learning Paths

Reproducible tutorials teaching developers how to build better software, faster, on Arm.



For all software developers

Tutorials cover across industries and all skill levels. If you develop software on any Arm platform, this is for you.



Learn by doing

Each Learning Path is reproducible, helping developers upskill by completing tasks. Code snippets are included to help along the way.



Written by the community

Easy to contribute, in Markdown format through GitHub. All content is reviewed by Distinguished Engineers at Arm, ensuring the highest quality.

Run batch inference using vLLM

Build and Run vLLM on Arm Servers

Introduction

Build a vLLM from Source Code

Run batch inference using vLLM

Run an OpenAI-compatible server

Next Steps

[Log an issue](#)

[Fork and edit](#)

[Discuss on Discord](#)

Use a model from Hugging Face

vLLM is designed to work seamlessly with models from the Hugging Face Hub.

The first time you run vLLM, it downloads the required model. This means that you do not have to explicitly do

If you want to use a model that requires you to request access or accept the terms, you need to log in to Huggi

```
huggingface-cli login
```

Enter your Hugging Face token. You can generate a token from [Hugging Face Hub](#) by clicking your profile or **Tokens**.

You also need to visit the Hugging Face link printed in the login output and accept the terms by clicking the **Agree** button. You will then see the request-for-access form, depending on the model.

To run batched inference without the need for a login, you can use the `Qwen/Qwen2.5-0.5B-Instruct` m

Create a batch script

To run inference with multiple prompts, you can create a simple Python script to load a model and run the pro

Use a text editor to save the Python script below in a file called `batch.py`:

```
import json
from vllm import LLM, SamplingParams

# Sample prompts.
prompts = [
    "Write a hello world program in C",
    "Write a hello world program in Java",
    "Write a hello world program in Rust",
]

# Create a sampling params object.
sampling_params = SamplingParams(temperature=0.8, top_p=0.95, max_tokens=256)

# Create an LLM.
llm = LLM(model="Qwen/Qwen2.5-0.5B-Instruct", dtype="bfloat16")

# Generate texts from the prompts. The output is a list of RequestOutput objects
# that contain the prompt, generated text, and other information.
```

Additional Links

- **Visit Arm Teaching and Learning Materials**
 - <https://github.com/arm-education>
- **Visit Arm Online Courses**
 - <https://www.edx.org/school/armeducation>
- **Visit Arm Developer**
 - <https://developer.arm.com>
- **Visit Arm Developer Labs:**
 - <https://arm-education.github.io/Arm-Developer-Labs/>
- **Visit Arm Learning Paths**
 - <https://learn.arm.com>



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Janet Collyer MBE
UK Semiconductor
Advisory Panel



Seizing the moment!

Semiconductor Talent Award

UKESF

8 September 2026

Janet Collyer



Cambridge University



Engineering Tripos Part 1b



300 engineers - 6 women, 3 from Girton College

Where I started

National
Semiconductor
1988 FAST
Advanced
Schottky

Gates

Function	Device	Inputs/ Gate	No. of Gates	Leads
NAND/NAND Buffer				
Quad 2-Input NAND	54F/74F00	2	4	14
Triple 3-Input NAND	54F/74F10	3	3	14
Dual 4-Input NAND Schmitt Trigger	54F/74F13	4	2	14
Dual 4-Input NAND	54F/74F20	4	2	14
8-Input NAND	54F/74F30	8	1	14
Quad 2-Input Positive NAND Buffer	54F/74F37	2	4	14
Quad 2-Input NAND Buffer (OC)	54F/74F38	2	4	14
Dual 4-Input Positive NAND Buffer	54F/74F40	4	2	14
Quad 2-Input Positive NAND Schmitt Trigger	54F/74F132	2	4	14
AND				
Quad 2-Input AND	54F/74F08	2	4	14
Triple 3-Input AND	54F/74F11	3	3	14
OR/NOR/Exclusive-OR				
Quad 2-Input NOR	54F/74F02	2	4	14

Gates

Function	Device	Inputs/ Gate	No. of Gates	Leads
Hex Inverter	54F/74F04	1	6	14
Hex Schmitt Trigger Inverter	54F/74F14	1	6	14

My transition from chip designer to board career

Corporate – Technical & Management



Board

- Engaging senior executives
- Financials – P&L, annual report
- Governance
- Non stop curiosity & inquisitiveness
- Who, What, Where, When, How & Why?
- Cross functional awareness
- Mentoring

Back to the future – the heyday of UK's 90s

- Major semiconductor fabs in the country
 - Intel, Texas Instruments, IBM, National Semiconductor, Plessey, Motorola, Analog Devices, Fujitsu, Atmel, GEC Marconi
- IP leaders – Arm, MIPS, Imagination, Arc, Tensilica
- Pre and post manufacturing supply chain - critical mass
- Unicorns in the making e.g. Arm, Cambridge Silicon Radio, Virata, InMos
- Large international semiconductor customer base

Where are we now?

2023 - Semiconductor Advisory Panel @10 Downing Street

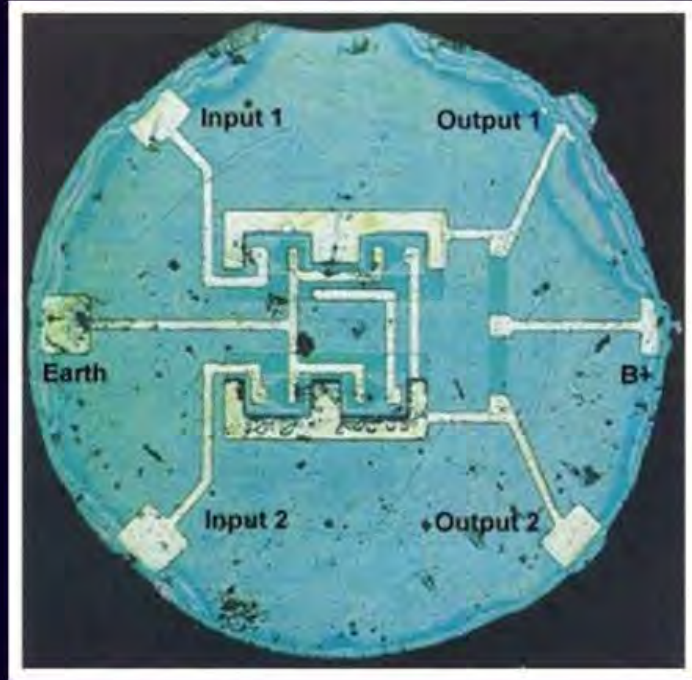


London Tech Week - June 2025



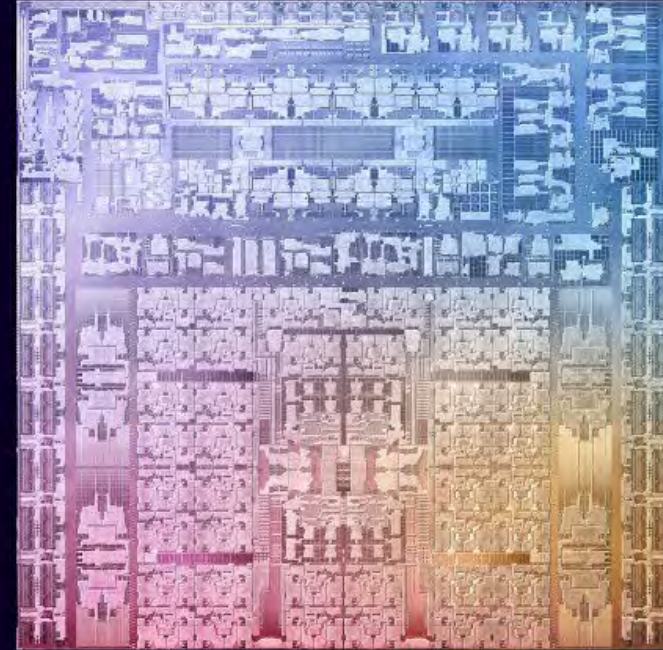
Chip design – then and now

1961



Four transistors
One engineer

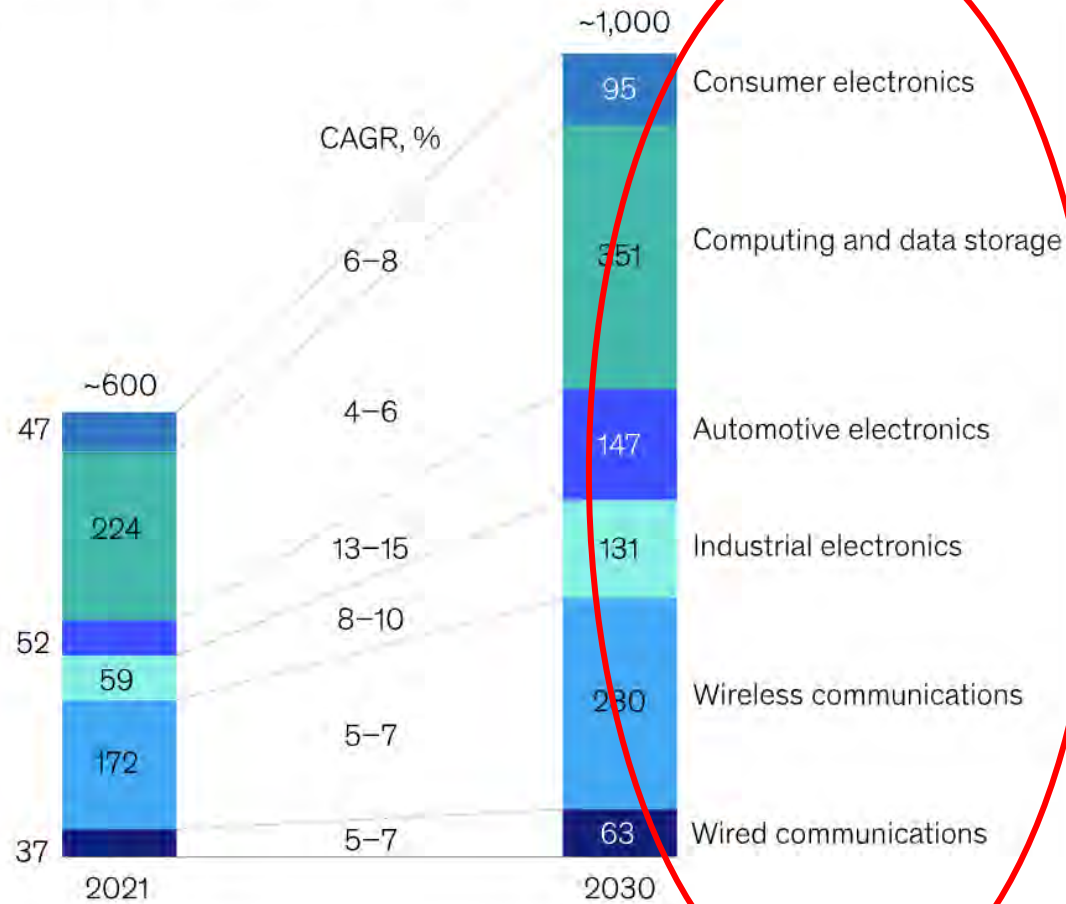
Today



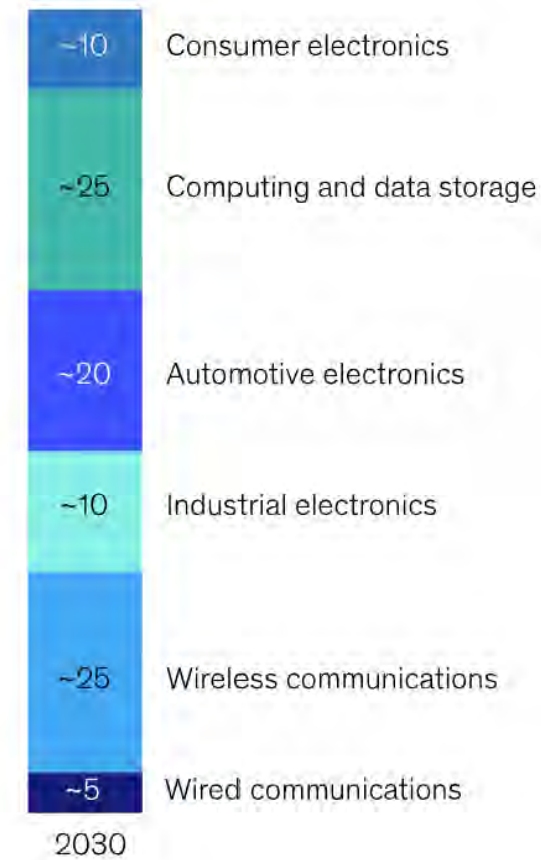
100 billion transistors
Thousands of engineers

The semiconductor market is expected reach \$1 trillion by 2030

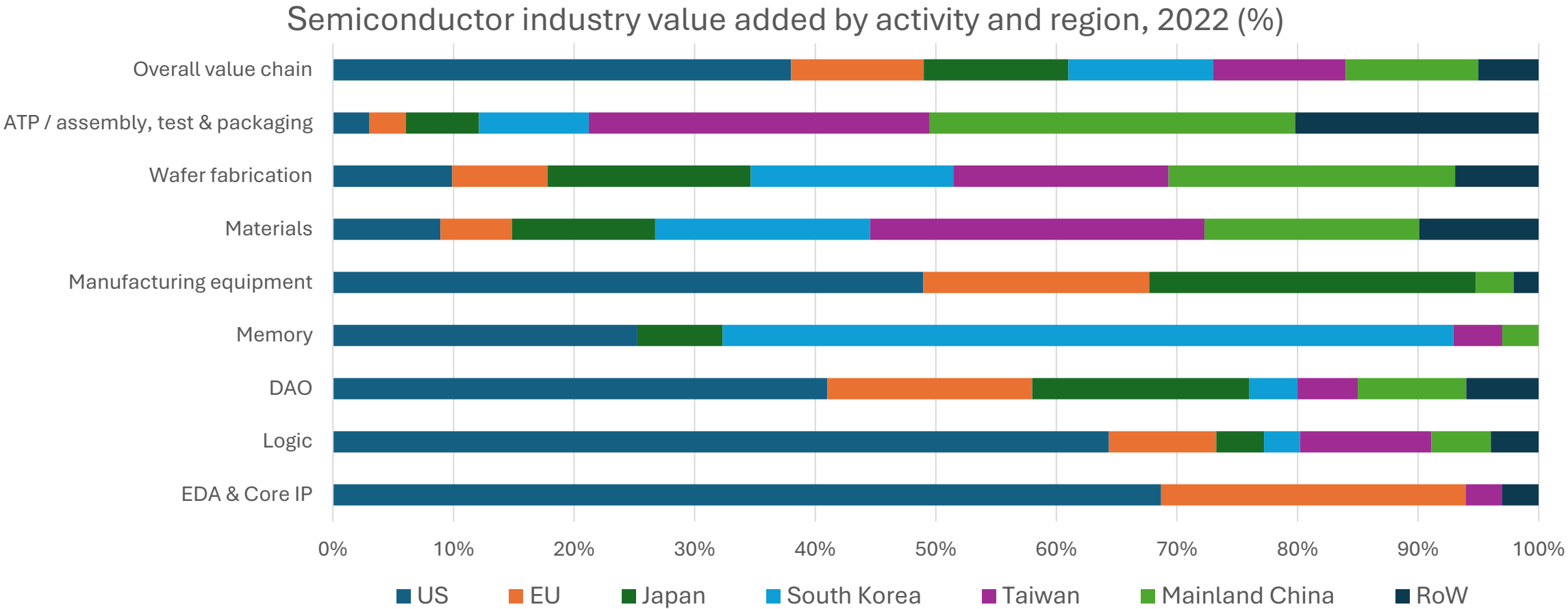
Global semiconductor market, \$ billion



Growth contribution per vertical, %



Regional specialisation across semiconductor value chain -2024



- SoNote: EDA, design, manufacturing equipment and materials are based on company revenue by headquarters location; wafer fabrication and ATP are based on installed capacity by facility location. RoW includes Israel, Singapore and rest of world.
- Source: BCG/SIA, *Emerging Resilience in the Semiconductor Supply Chain*, May 2024, Exhibit 2; BCG analysis using IPnest, Wolfe Research, Gartner and SEMI.

UK semiconductor opportunity is growing

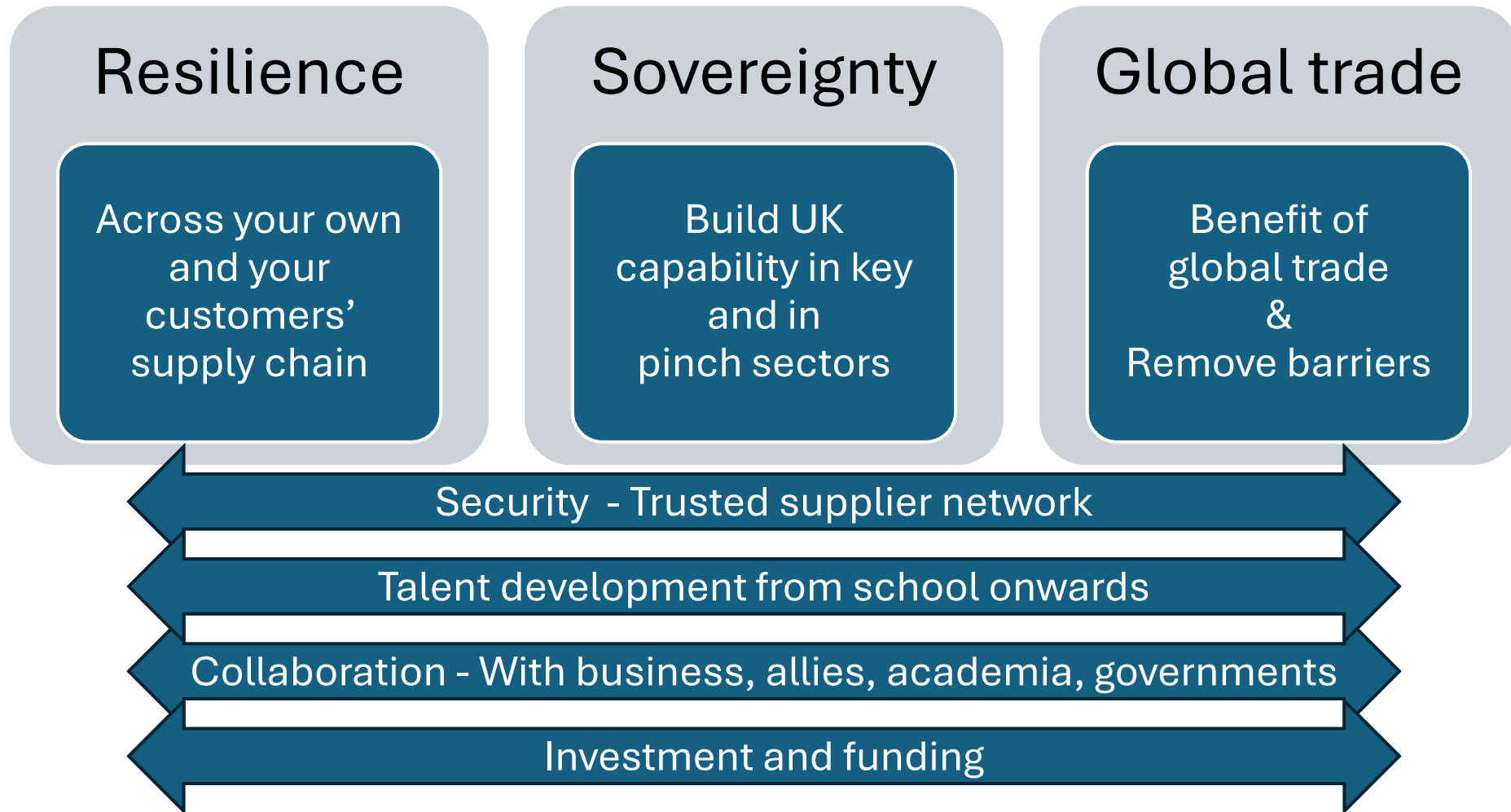
People, technology, funding and customers

- Cabinet Rt Hon Minister Narayan - AI and semiconductors
- UK Semiconductor Centre fully up and running
- ~50 private funding rounds total £1.1 billion ... in the last 3 months!
- 30+ UK companies at the Taiwan Semicon show 100,000 attendees
- UK events continuing to grow – some examples
 - Silicon catalyst
 - Women in Techworks – 200+ attendees
 - 700+ attendees Systems to Silicon conference – 100+ speakers
 - Techworks, TechUK, Global Tech Advocates, Microelectronics Show

The Challenge – Where do we need to be?

Secure resilient supply of critical goods

Be ready & (open) to trade, but never vulnerable



Core to industry growth – Grow the Talent

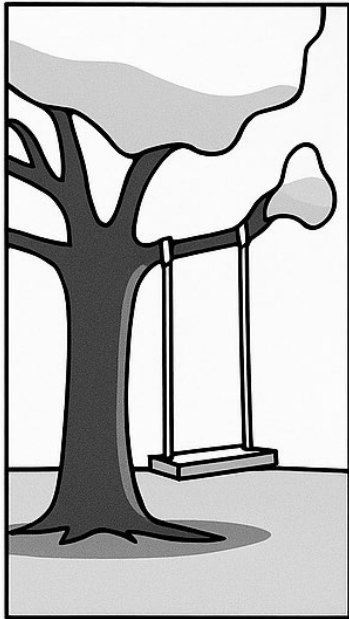
- Becoming indispensable in specific areas of strength
 - Strengths that are also pinch points unique to the UK.
 - Avoid dilution of competing everywhere
- Value capture
 - ✓ Components → systems
 - ✓ Services → products
 - ✓ Innovative methodologies → ownership
 - ✓ Sector excellence – Automotive, infrastructure, manufacturing etc

Call to Action

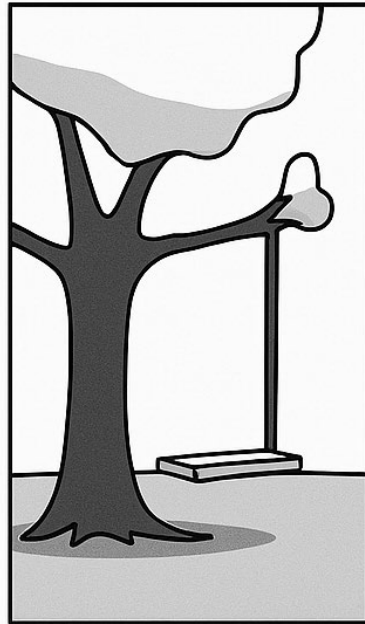
Communication matters!

Engineering is pivotal to delivering products to time that will sell...Beware

What the
customer
wanted



What
finance
could afford



What
marketing
promised



What
engineering
designed





UK Electronics
Skills Foundation

Mahdieh Ghoddusi

UK Electronics Skills Foundation



UK Electronics
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An Overview of the Semiconductor Talent Award



**UK Electronics
Skills Foundation**



Bursary

- £4,000 bursary in academic year 2026/27
- Payment through TechFirst Payment Partner, not UKESF



Learning

- Build understanding of the semiconductor industry, careers and professional skills
- Explore areas most relevant to your interests and future goals



Industry

- Meet and learn from people working across the semiconductor industry through events, mentoring, site visits and residential activities



Peers

- Part of a community of 700 Award-holders
- Learn from each other, share experiences and build your network

How you'll learn



**UK Electronics
Skills Foundation**



Online Learning

Access flexible content in your own time to build your knowledge and revisit topics as needed.



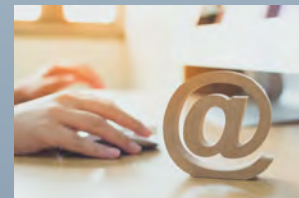
Webinars

Join live webinars and interactive expert sessions where possible to ask questions



In Person

Attend events, workshops, site visits and other face-to-face opportunities to meet people, experience different environments and build your network.



Stay Connected

Look out for our Friday emails for upcoming opportunities, as some are first come, first served while others require an application.

The UKESF Mentoring Programme



● Learn from experience

Connect with people with real industry experience

● Explore where you could go

Understand the industry, explore career options and learn from others' experience.

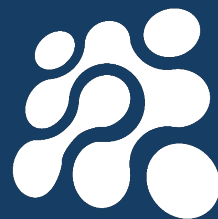
● Different ways to engage

Engage through group discussions, direct messaging and one-to-one conversations

● Starting this Autumn

Mentoring will begin later in the Autumn term, with full details shared with you beforehand.

Time with someone inside the industry, across a whole year – it is already yours, so it is worth making it count.



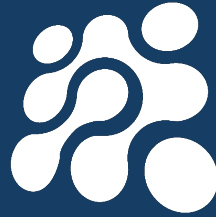
**UK Electronics
Skills Foundation**

Beyond 2026/2027

Q&A



We welcome your questions!



**UK Electronics
Skills Foundation**

Best of luck with your degree course!

Thank you



Please scan the
QR code to
complete the
Semiconductor
Talent Award
Induction
Event feedback
form.