Innovate UK

Semiconductors

Global Business Innovation Programme Switzerland

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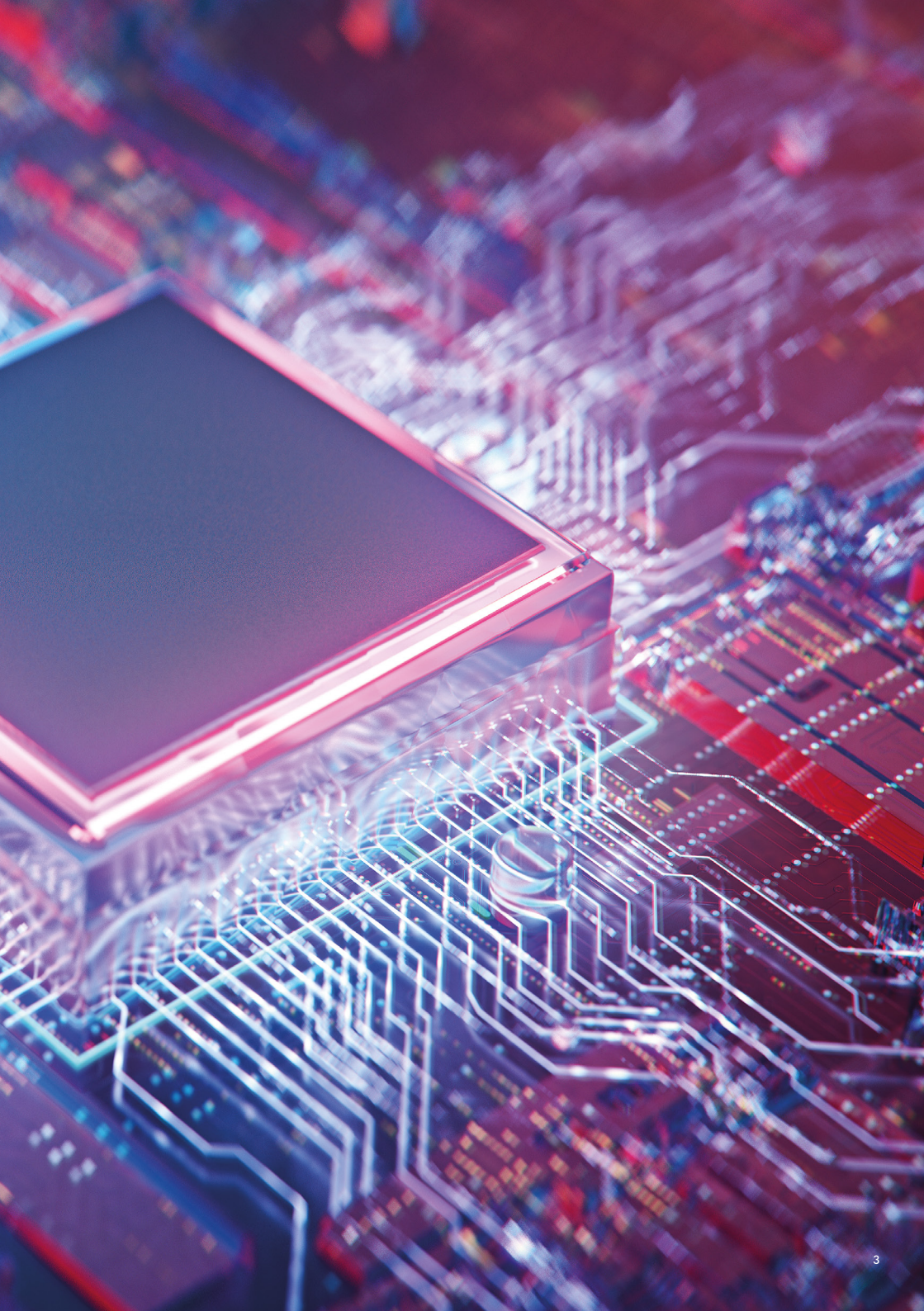

Introduction

UK Semiconductor Sector

Semiconductors are one of the UK's six frontier technologies, and play a critical role in growing the UK economy and maintaining national security.

Research and Innovation
The UK ranks 4th globally in semiconductor research, with expertise spanning advanced packaging, materials, and silicon photonics. Its universities, four of which are among the top 10 in the world, provide a strong talent pipeline from undergraduate through to PhD level. The UK ranks third in Europe and eighth worldwide for semiconductor International Patent Families, reflecting a vibrant research base that continues to create innovative, high-growth companies.

Design and IP
The UK is internationally recognised for its leadership in semiconductor design and IP, anchored by globally influential companies such as Arm and Imagination Technologies, as well as more than 110 specialist design houses and R&D clusters nationwide. The UK's position is further strengthened by the presence of leading multinationals including Apple, Intel and Infineon, helping cement its role in emerging technologies fundamental to both prosperity and security.

Compound Semiconductors
The UK is a major global player in the compound semiconductor market, benefitting from extensive physical sciences and engineering expertise. Companies such as IQE supply advanced compound semiconductor wafers and materials to customers worldwide, supported by strong fabrication capabilities and industrial partnerships.

The UK excels in compound semiconductor fabrication, and over the past decade, the Engineering and Physical Sciences Research Council (EPSRC) has awarded 498 grants worth £539 million to semiconductor research. Innovate UK has allocated £214 million in grants to SMEs and created the Compound Semiconductor Applications Catapult (CSAC) to help commercialise innovations through academia-industry partnerships.

This investment has fostered clusters throughout the UK, including the compound semiconductor cluster in South Wales.

The October 2024 green paper '*Invest 2035, The UK's Modern Industrial Strategy*', underscores semiconductors' key role in sectors like Advanced Manufacturing, Clean Energy, and Digital Technologies to achieve the UK governments ambitions and growth mission.

Swiss Strengths
Ranked #1 on the Global Innovation Index, Switzerland is a world leader in innovation. With high patent output and a private sector that funds over two-thirds of national R&D, it offers an industry-driven, collaborative environment ideal for joint technology development.

Switzerland's semiconductor industry is globally recognised for its leadership in high-value, specialised segments, particularly in sensors, power management, and analogue chips. Home to major players such as STMicroelectronics, Infineon Technologies, and u-blox, Switzerland offers a highly integrated ecosystem spanning photonics, advanced packaging, and quantum technologies.

Renowned Swiss technical universities such as ETH Zurich and EPFL play a crucial role in conducting cutting-edge semiconductor research and feed talented graduates into industry, which consists of over 100 SMEs that excel in precision engineering and produce products offering superior performance and uncompromising quality.

To foster semiconductor innovation, government programmes facilitate partnerships between universities, research institutes and the private sector, such as CSEM and SwissChips.

A key strength is Switzerland's strong international orientation: over two-thirds of firms export over 80% of their output, primarily to Europe and North America, highlighting their competitiveness, reliability and strategic importance to international supply chains.

Opportunities for Collaboration
Semiconductor supply chains are inherently global, and the UK is committed to building long-term international collaborations with countries like Switzerland to enhance supply chain resilience and drive technological advancements.

Innovate UK's Global Business Innovation Programme (GBIP) aims to strengthen relationships between the UK and countries of strategic importance in high priority sectors. This GBIP will harness complementary strengths and facilitate innovation partnerships between like-minded organisations in the UK and Switzerland.

It is aligned with long-term commitments and Memorandums of Understanding (MOUs) between innovation agencies and government organisations in the UK and Switzerland.

About us

The Global Business Innovation Programme

The Global Business Innovation Programme (GBIP) helps ambitious UK companies that are developing cutting-edge technologies in key sectors to enter global markets of strategic importance and find international collaboration partners.

Funded by Innovate UK and managed by Innovate UK Business Growth, the intensive three-stage programme:

- prepares businesses for approaching and operating in market
- includes a tailored in-country visit, which allows businesses to develop a deeper understanding of the market and facilitates introductions to key partners and contacts from government, academia and commerce
- provides ongoing post-visit specialist support to help businesses cement relationships, leverage connections made during the visit, identify partnership opportunities and access R&D funding to drive cross–border collaboration

Innovate UK

Innovate UK is the UK's innovation agency, helping UK businesses to accelerate growth through the development and commercialisation of new products, processes and services, supported by an easy-to-navigate, agile and inclusive innovation ecosystem.

www.ukri.org/about-us/innovate-uk

Innovate UK Business Growth

Funded by Innovate UK, Innovate UK Business Growth delivers bespoke support to ambitious innovative businesses to help them grow and scale. The support provided by Innovate UK Business Growth is tailored to meet the needs of businesses across all technology sectors and is designed to respond to their evolving needs as they scale and compete globally.

www.iukbg.ukri.org

ASHTRONIX

WHEN ACCURACY MATTERS

Established in 2019, Ashtronix specialise in IC design, post-silicon validation and power management IP solutions.

With deep analogue and mixed signal expertise and power management IP, the company focuses on technologies that enable high energy efficiency, reliability, and scalability in modern electronic systems.

At the design and early prototype phase, the Nile Project is Ashtronix's flagship next-generation Power Management IC (PMIC), which leverages advanced circuit architectures, enables a smaller footprint, higher reliability and optimises performance. The technology supports the shift to sustainable electrification.

In the early R&D prototyping stage, the company's post-silicon validation automation platform enables scalable test automation for multiple IC designs, reducing testing time for PMICs, from weeks to days, while improving accuracy, repeatability and scalability.

Already providing services to Renesas, one of the world's largest semiconductor companies and with strong commercial traction, Ashtronix is seeking to position itself as a partner of choice in the power electronics market.

Collaboration Opportunities

- Joint R&D on advanced power electronics
- Partnerships with research institutions such as ETH Zürich, EPFL Lausanne, and CSEM to accelerate IP development and explore next-generation architectures
- Engagement with power electronics leaders to explore technology integration and commercial applications
- Collaboration with industrial end-users to pilot and validate power management solutions in real-world applications

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Botanic Energy develops advanced solid-state thermoelectric semiconductor-based thermal systems that deliver high-precision management for conventional & next-gen applications.

The company's proprietary Peltier-based architecture enables compact, refrigerant-free cooling/heating systems that outperform traditional thermal systems in energy efficiency, size, weight and integration potential.

With no requirement for refrigerants or moving parts, the systems enable long operational lifetimes, reduce system complexity and improve environmental performance. These characteristics position Botanic Energy as a partner of choice for organisations seeking cutting-edge thermal solutions to support next-generation applications.

Working closely with leading global partners in the UK, EU, India & Thailand, Botanic Energy focuses on transforming complex thermal challenges into scalable, clean solutions. Their novel architectures can target cooling across a wide range of applications from high-density semiconductor environments where thermal stability is essential for performance, reliability and device lifetime, to vehicular thermal control and cold chain logistics.

Integrated demonstrators in refrigerated delivery vehicles, shipping containers and domestic/commercial environments have validated the company's approach across multiple sectors, establishing a strong foundation for collaboration and scale-up.

Botanic Energy has collaborated with Oxford University Engineering, received UK government funding and has a strong patent portfolio. With commercial traction, the company is poised for rapid growth.

Collaboration Opportunities

Open to collaboration with research institutions and manufacturing/technology companies with expertise in:

- Precision engineering and materials science
- Novel semiconductor materials, composites 2D/nanostructures
- Peltier fabrication & manufacturing
- Peltier supply chain
- Advanced manufacturing scale-up

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POROTECH

Porotech is a Cambridge-based deep-tech company advancing ultra-low-power, full-colour microLEDs on silicon for next-generation AR devices, optical interconnect and photonic compute.

The company's proprietary PoroGaN® material platform introduces controlled nanopores into GaN to tune its electrical, optical, mechanical, and thermal properties, unlocking brighter, more efficient emitters with robust manufacturability.

DynamicPixelTuning® is the first microLED architecture to enable each pixel to emit the full colour gamut, simplifying optics, shrinking form factor, and enabling daylight-readable, energy-efficient microdisplays.

Porotech operates an end-to-end design–manufacture–test loop, including epitaxy and device design through wafer processing, heterogeneous integration with CMOS, advanced packaging, and in-line metrology, which are supported by pilot plant and mass production lines.

With an expanding IP portfolio and partnerships across the UK, Europe, North America, and Asia, the company is providing mass production and volume integration with OEMs.

Porotech aims to deliver scalable, sustainable photonics that reduce system power and cost while enabling new human–machine interfaces in wearables, industrial, healthcare, and computing.

Collaboration Opportunities

Seeking:

- Partners in silicon photonics (Si/SiN/InP), metasurfaces, drivers/ICs and quantum control
- Access to Swiss foundries and testbeds
- Collaboration with RTOs for packaging and wafer-level metrology
- End user pilots in AR, optical communications and quantum/photonic computing
- Consortium partnership on low-power emitters and pixel architectures

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RAM Innovations is an Outsourced Assembly and Testing (OSaT) company and the UK leader in heterogeneous Embedded Die Packaging (EDP) servicing established and start up semiconductor manufacturers.

RAM Innovations EDP process embeds bare semiconductors inside the printed circuit boards rather than mounting them on the surface. This advanced packaging process improves the efficiency of the circuit, reduces energy consumption and produces heterogeneous power, RF and magnetic modules that are vastly smaller, lighter, more robust and have improved thermal and parasitic performance, making them ideal for transportation and industrial applications.

Reliability testing by the Compound Semiconductor Applications Catapult confirmed fault-free operation after 1000 thermal cycles (–40°C to +125°C). The National Physical Laboratory has validated RAM's sinter die attach and electrical attach processes.

RAM Innovations patented, cost-effective, rapid panel-level packaging technology, achieves high-volume manufacturing using standard equipment used in the PCB industry.

RAM Innovations is serving UK, European and US power customers and has strong interest, with on-going active discussions with leading semiconductor companies in the Taiwanese and Asian markets.

Collaboration Opportunities

Interested to collaborate with:

- Swiss organisations with precision die placement equipment, able to pick from wafer, waffle pack and tape to large 600mm square substrates, with 5um placement accuracy
- Companies with die for power module conversion products to use with RAM's current customer base
- Organisations seeking packaging services

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SCI Semiconductor

SCI Semiconductor is a global leader in advanced, cyber security-focused semiconductor solutions serving critical national infrastructure, industrial automation, aerospace, and the broader IoT ecosystem.

A VC-funded, fabless company, SCI Semiconductor is leveraging memory safety CHERI (Capability Hardware Enhanced RISC instruction) technology to develop high security and critical IP for applications that require exceptional reliability and cyber resilience from the silicon upward.

The company's flagship family of high-integrity microcontrollers, "ICENI" delivers secure-by-design protection, fully memory-safe computing. ICENI enables robust software isolation, scalable security, and comprehensive defence against memory-safety vulnerabilities. SCI's hardware-enforced cybersecurity uniquely provides 100% memory safety across target markets.

With a robust co-designed software and hardware platform, SCI transitions digital security from a high-cost "businesses insurance" technology to simple-to-implement solutions, reducing development costs, time to market, and lifecycle patching and remediation.

Commercially, SCI has secured over £10M in contracted revenue, two global hyperscaler lead customers in the telecom sector, and a pipeline of 30+ OEM engagements with 10 initial design wins.

The company's leadership team draws on experience at Arm, AMD, Microsoft, Rambus, Broadcom and NXP. Its advisory board includes senior figures from academia, defence and national security communities, strengthening SCI's capacity to deliver trusted, high-assurance technologies.

Collaboration Opportunities

- Research and technical partners to advance cyber resilience technologies/solutions
- Research and industrial partners to accelerate the development and validation of secure-by-design semiconductor technologies
- OEM and ODM partners to support deployment in high-value mission-critical sectors
- Cyber resilience and design security experts

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SiDeSign works

SiDesign Works is developing next-generation RF and mmWave integrated circuits for satellite communications, 5G/6G networks and drone connectivity, enabling always-connected operations in environments where terrestrial networks often fail.

Based at the Harwell Space Campus in Oxford, the company is positioned at the heart of the UK's space and communications innovation ecosystem.

At the prototype stage, SiDesign Works is developing a fully integrated single-chip beamformer IC for Q-band and mmWave applications. The solution integrates multiple functions and aims for a tenfold reduction in combined size, weight, power, and cost compared to traditional discrete solutions.

By combining advanced communication capabilities into compact, streamlined solutions, the company simplifies system design and offers energy-efficient hardware which provides robust, high-performance links in remote areas and harsh environments. This makes this technology well suited to satellite, 5G/6G, aerospace and drone logistics communication systems and opens new possibilities for mobile and autonomous platforms.

The company is in active discussions with experts from leading global aerospace and satellite terminal and payload integrators, including All.Space and Newspace Systems, and is supported by the European Space Agency, Airbus, UKRI, and the UK ChipStart programme.

Collaboration Opportunities

Seeking collaborations;

- Satellite and UAV operators seeking advanced communication capabilities
- Satellite integrators and terminal manufacturers for co-development and system integration
- Research partners in antenna design, advanced materials, and advanced signal processing
- Collaborations on advanced processors and parallel-processing architectures
- Supply chain, advanced packaging, and thermal solutions for high-performance RF systems
- Academic or industrial partners working on next-generation communication/ SATCOM technologies

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SPACE FORGE

Established in 2018, Space Forge is a global pioneer developing a commercial in-space manufacturing capability of semiconductors. This pursuit is based on 50 years of in-space semiconductor crystal growth research conducted by national space agencies.

SpaceForge is aiming to exploit the extreme temperature, microgravity and ultra-high vacuum conditions available in Low Earth Orbit (LEO) to manufacture novel semiconductors that cannot readily be grown terrestrially. The 'novel' aspect of these semiconductor materials resides within their enhanced crystal structure, resulting in lower defect density, higher purity, and larger grain size. These properties could allow electronic or quantum-based sensors, power, surveillance, and communication systems to operate at higher performance levels.

Space Forge is leveraging the technology by developing terrestrial synthetic diamond growth and processing capability for scale-up and integration of its materials into relevant supply chains. This activity is conducted at Space Forge's laboratory at the Centre for Integrative Semiconductor Materials (CISM) a £29.9M state-of-the-art semiconductor research facility at Swansea University.

This facility has ISO 5 & 6 clean rooms where Space Forge is operating its diamond growth reactors, analysis and post-processing kit.

Additionally, Space Forge has its ForgeStar1™ satellite in LEO with a prototype semiconductor growth chamber on board to conduct trials.

Collaboration Opportunities

R&D partnerships to develop:

- Chemical vapour deposition, crystal growth and plasma modelling
- Material metrology
- Applications of diamond: quantum, photonics, optics, thermal and devices

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TOUCHLAB

Touchlab is a pioneering robotics company specialising in advanced tactile sensing technology for teleoperation and robotic manipulation.

The company's patented ultra-thin e-skin (electronic skin) empowers robots with human-like touch and robotic-grade sensitivity providing force, pressure, and directional feedback in real-time.

This breakthrough technology dramatically enhances dexterity, control, and safety in robotic applications, making it a game-changer for industries such as healthcare, precision manufacturing, industrial automation, humanoid robotics, space exploration, and hazardous environment operations.

Touchlab's technology directly addresses issues with breakage, misalignment, and low yields by providing robots and handling systems with tactile intelligence, reducing scrap, improving throughput, and enabling new levels of automation.

Touchlab has a strong record of innovation, with multiple patents, funded R&D projects, and collaborations with leading industrial and academic partners. Their technology is already deployed in pilot projects across healthcare robotics, industrial handling, and soft grippers for precision automation.

A company that is scaling rapidly, Touchlab's ambition is to become the global leader in tactile-enabled robotics, with immediate applications in manufacturing sectors such as semiconductors, where handling precision and yield improvement are mission-critical.

Collaboration Opportunities

Precision engineering and high value manufacturing companies to explore fine manipulation or robotic handling applications:

- Preventing costly wafer or reticle breakage through soft and high-resolution tactile handling
- Boosting yields in advanced packaging and micro-assembly by giving robots the fine control across contact points
- Improving bonding precision and interconnect reliability via real-time tactile feedback and slip detection
- Reducing fab downtime and calibration time, increasing uptime by enabling robots to sense contact, force, and slip going beyond existing vision or force sensors available today

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Ultrawise Innovation specialises in the use of thermoplastic polymers for full product circularity, leveraging the expertise of Professor Roger Wise in welding, bonding and recycling of polymers.

With the support of the UK Government and in collaboration with Warwick University, Tribus-D and Custom Interconnect Ltd, Ultrawise Innovation has developed fully recyclable electronics products, including a 100A half bridge SiC module prototype, which achieved TRL4/5 in 2024. The prototype was electrically tested and passed extensive tests for durability, including high humidity and thermal shock.

Approximately 30% smaller than current market-leading modules, it has low parasitics, due to having very short interconnects provided by silver sintered joints, making it more energy efficient and ideal for power electronics applications, notably the transportation sector which demands lightweight and compact modules and data centres and renewables where efficiency and size are important.

The manufacturing technology can be readily customised to meet the increasing demand for more complex multi-chip modules.

Fully recyclable using solvolysis to remove the encapsulation, it supports the drive towards sustainability and allows recovery of valuable metals, including copper and silver to high levels of purity. The module offers an ideal solution to mitigate future legislative/regulatory obligations.

With interest from the aerospace and automotive sectors, Ultrawise is developing opportunities to license the technology for the manufacture of modules at medium to high volume.

Collaboration Opportunities

Seeking:

- Partners for collaborative projects, including with end users of power electronic modules (SiC, GaN & multi-chip)
- Module manufacturers seeking to improve design, manufacturability and sustainability of modules
- Collaboration with potential supply chain partners
- Market knowledge on the recycling of electronic waste in Switzerland

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Wave Photonics is a market leader in photonic integrated circuits technology, offering the most expansive Process Design Kits for a wide range of wavelengths from Ultraviolet to Infrared.

Wave Photonics' key product and service offerings include process design kits (PDKs), pre-qualified packaging templates (ADKs), PDK management platform, portfolio IPs of chiplets, transceivers and optical interconnects and design service (from custom PDKs design to whole PIC chips development).

The company has developed the world's most expansive PDK focused on quantum applications, showcasing the speed and scalability of this design platform. Wave Photonics' PDKs demonstrate lower loss and are much more tolerant to process variations compared to conventional designs.

At the core of Wave Photonics' patent pending innovation is a design platform that integrates fabrication process characterisation, modelling, photonic simulation, and inverse design to develop PDKs across various materials and wavelengths and enables applications ranging from Co-Packaged Optics (CPO) and transceivers to quantum technologies.

Collaboration Opportunities

Seeking collaborations:

- Start-ups and large industry leaders
- Semiconductor players in the areas of silicon and photonics integration (such as 3DHI, CPO)
- Fabrication foundries on various material platforms (such as LN, SN, AIO)
- Universities and commercial organisations on joint EU-funded research projects
- Co-marketing design services where PIC can unlock application innovations (such as quantum, healthcare, telecom, defence, space)

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Leading The Visit

Louise Hooker

Global Business Innovation Programme Manager

Louise has worked on the Global Business Innovation Programmes since 2018 and has successfully led and managed thirty Global Business Innovation Programmes to target countries and supported nearly 350 companies to achieve their international ambitions. Louise is a qualified barrister and solicitor and previously specialised in criminal law and dispute resolution.

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Sarah Hildersley

Global Business Innovation Programme Specialist

Sarah has extensive experience of working with UK businesses internationally. Following a career with the UK diplomatic service, including several senior-level overseas postings, Sarah continues to support ambitious UK innovators through Innovate UK's Global Business Innovation Programme.

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Sophie Misfud

Partnership Manager - Europe

Sophie is part of Innovate UK's Global Team, working within the European portfolio to support innovative UK businesses in accelerating growth and scaling internationally. She helps organisations explore global opportunities by facilitating international engagement, removing barriers to internationalisation, and positioning UK businesses at the forefront of European and global innovation landscapes. Sophie is responsible for Innovate UK's relationships with several European countries, including Switzerland.

Sophie represents Innovate UK within the Network of European Innovation Agencies (Taftie), building relationships and sharing best practice across 28 European states and five international partners. She brings a background in stakeholder management, communications and partnership development across government and the third sector.

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Jan Taylor

Innovation Lead - Semiconductors

Jan is part of Innovate UK's Semiconductors team, where he drives collaboration between industry, academia and government and contributes to strategy and policy development across domestic and global semiconductor ecosystems. He previously worked in Innovate UK's Power Electronics, Machines and Drives portfolio and joined the organisation from the Engineering and Physical Sciences Research Council's Advanced Materials team.

Following his degree in Energy Engineering, Jan worked across the nuclear, oil and gas, and renewable energy sectors. He later became Technical Director and shareholder of four SMEs. His expertise is in multiphase fluid dynamics, heat transfer, structural analysis, mechanical design and manufacturing, alongside a broad knowledge of advanced materials, with a particular interest in metamaterials.

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Philipp Schneider

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Philipp is part of the UK Science & Technology Network and based at the British Embassy in Berne. He maintains the UK government's science and innovation interests in Switzerland and facilitates bilateral collaboration in research and innovation working closely with the Swiss government and S&I actors. Philipp supports the delivery of the UK-Swiss Memorandum of Understanding on Collaboration in Research and Innovation. The UK Science & Technology Network 's priorities in Switzerland cover Emerging Technologies including Engineering Biology, Quantum, and Semiconductors as well as Energy & Climate, Life Sciences, and Space.

Previously, Philipp served as the Principal Scientist at the Competence Unit High-Performance Vision Systems at the Austrian Institute of Technology (2021-2024). He is a Visiting Professor at the University of Southampton, UK, where he was Academic Director of the µ-VIS X-Ray Imaging Centre and Full Professor of Biomedical Imaging (2013-2023).

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