

**UK INDIA**  
BUSINESS COUNCIL

# **UK-India technology futures**

Tech partnerships  
underpin our shared  
prosperity



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# Technology innovation is powering the UK India corridor at present



I spend a lot of my time hearing how our clients are embracing technology. And in many cases, they are also the architects of technology transformation. It's happening in many sectors: using AI to improve aircraft engine maintenance, repair and overhaul; sharing and analysing data across defence platforms; deploying advanced materials in lunar missions; driving forward energy transition with digital transformation.

The traffic is two-way. UK firms are deploying Indian technologies to bring new insights into their businesses. Indian firms are integrating UK solutions into their supply chains and scaling them, often aided by academia from both countries.

The sweet spot is when companies in both countries collaborate and co-create new solutions. This is the foundation on which the UK-India economic relationship of the future will be built.

Home to one-third of Europe's unicorns and second only to the USA in its tally of Nobel Laureates, the UK has a thriving research and development landscape<sup>1</sup>. This makes it the perfect partner for India.

India is developing new technologies which have applications domestically and internationally. India is establishing itself as a world-leader in R&D, pushing boundaries in application development, automation, SaaS, digital payments infrastructure, AI, and semi-conductors. A huge and talented workforce means this can be done at scale.

But it doesn't happen in isolation. It requires partnerships between government, business, and academia.

The Government of India has a laser-like focus on enabling innovation and using technology to improve the delivery of government services. Digital India offers an inspiring benchmark for other countries. In the UK, an expert panel is creating a 10-year vision for a 'digital centre' to improve public services. The panel seeks to drive innovation, transform services, improve lives, and unlock the full potential of digital and data.

In July this year, London and New Delhi signed the UK India Technology Security Initiative. This is a framework for collaboration in quantum, AI, semiconductors, biotechnology, advanced materials, telecoms, and critical minerals. Government, academia, and business will work together.

UK universities and Indian businesses are already engaged in a range of collaborations. This year, UK India Business Council has collated, for the first time, a record of those partnerships. It will grow in future years.

This "UK-India technology futures" report and our second annual conference in New Delhi in November 2024 showcase some of the exciting technology partnerships between the two countries. They are the key to shared prosperity.

— Richard McCallum, Group CEO, UKIBC



### With gratitude

Thank you to our sponsors Connected Cities Catapult, ETOS Services, Trilegal, Rolls Royce & Vodafone – read more below about their fantastic work.

# Viksit Bharat @ 2047

## UK & India as partners of choice



**R**anked 39th in the 2024 Global Innovation Index, India is rapidly becoming an R&D hub. It has the world's third largest start-up ecosystem and is home to one in 10 unicorns worldwide<sup>2</sup>. The Unified Payments Interface (UPI) has eased financial transactions across the nation. Digital connectivity is powering 'last mile' healthcare services. As the country progresses towards Viksit Bharat - or Developed India – by 2047, innovation and technology will be key to sustaining economic growth and achieving the Sustainable Development Goals.

Technology underpins the UK-India partnership.

Both governments are strengthening technological partnerships. The goal is to tackle global challenges related to healthcare access, clean energy, food security, and education. This goal received a boost with the signing of the Technology Security Initiative (TSI)<sup>3</sup> in July 2024. TSI aims to improve collaboration on critical and emerging technologies.

Achieving these goals needs collaboration between governments, industry, universities, and research organisations. British companies, innovators, and academia are well-versed in traditional and emerging technologies. They are closely involved in India's tech journey, positively impacting public services. The presence of Indian tech firms across the UK further highlights this partnership.

Delivering high-quality healthcare across rural and remote areas of India is a priority. Having qualified healthcare professionals and medical technology in each part of the country is the key. Elsevier, which has been in India since 1996, plays a major role in training thousands of Accredited Social Health Activists (ASHA) workers to use Elsevier's expert-led AI solutions to help patients in rural areas by allowing access to quality diagnosis and treatment.

When the UK and India work together, they are also partners for global good. Collaboration between British scientists and Indian manufacturers developed two essential malaria

vaccines. RTS,S/AS01 (GSK and Bharat Biotech) and R21 (University of Oxford and the Serum Institute of India). These vaccines were supplied to Ghana, Kenya, and Malawi where two million children have been vaccinated since 2019. In January 2024, Cameroon became the first country to give the vaccines to children on a regular basis.

India is now a leading hub for Global Capability Centres (GCCs). The country hosts more than 1,700<sup>4</sup> GCCs. Where once cost was the major driver, India is now seen as a source of scale and skills. UK firms across sectors such as financial services, aerospace, manufacturing, and retail are housing their technology hubs in India.

GCCs offer Indian talent the opportunity to work on global projects and serve clients worldwide. This growth fuels India's own innovation ecosystem. In Hyderabad, Lloyds Technology Centre is shaping next-gen data engineering, cloud solutions, consumer experiences, and customer journeys for the Lloyds Banking Group (LBG).

**“The commitment to support the growth in the Indian market is stronger than ever. We are enjoying the collaboration between the engineering units of the UK and Indian teams. The technology centre out of India has begun supporting the transformation journey. Value creation in the form of rich talent, a strong ecosystem of partners, research institutes and startups, customer empathy-driven engineering culture, and leadership excellence have been the front-running reasons for our success. The talent abundance, vision from the group, and collaborative model across the UK and India entities have brought tremendous results to LBG customers.”**

The UK is a technology leader, ranked fifth in the Global Innovation Index. It is world leading for big data analytics and AI. London is a global centre for FinTech start-ups. In June 2022, the UK became the third country (after the USA and China) to have its tech sector valued at more than US\$1 trillion<sup>5</sup>. Its culture of innovation comes in large part from its universities.

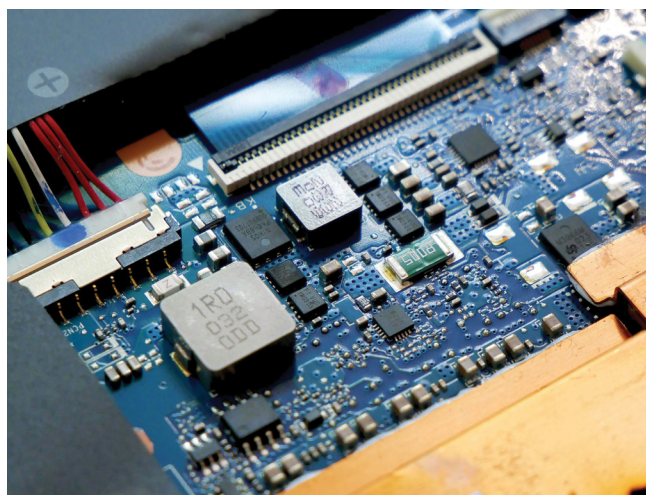


**There's scope for UK-India partnerships to solve global problems now and in the future. Emerging solutions include:**

- Biotechnology focused on genomics and precision medicine
- R&D for advanced materials, including novel alloys, powders, and nanotechnology
- Partnerships on industrial sustainability and technologies for extreme environments
- Frameworks for responsible AI
- Supply chain resilience and collaboration in critical mineral value chains
- Semiconductor partnerships focused on R&D in chip design and compound semiconductors.

**The following sections highlight four areas where bilateral cooperation has been strong:**

- Technology for financial inclusion and access
- Energy security through effective energy transition
- Defence and security technologies
- Academia-led research and innovation.



# Vodafone Idea: Promoting financial literacy



**V**i Foundation – the CSR arm of Vodafone Idea, India's leading telecommunications company, is at the forefront of addressing critical societal challenges.

Jaadu Ginni Ka (JGK), Vi Foundation's flagship programme launched in 2017, leverages technology to bridge the prevalent financial gap and promote financial inclusion, particularly in rural areas and among women. The programme integrates digital tools such as mobile applications, interactive learning platforms, and mobile vans equipped with audiovisual technology to deliver financial literacy across 22 states. It employs a combination of innovative digital solutions and community-based approaches to provide financial literacy training to the underserved regions of India. One of the key elements of this programme is the use of mobile vans, equipped with audio-visual tools and internet facilities, travelling throughout the nation, offering interactive workshops and training sessions in local languages.

In addition to these mobile units, JGK also offers a user-friendly mobile application called 'SamVaad'. The application provides access to financial literacy content free-of-cost in 10 prominent Indian languages. The app includes interactive games, quizzes, and practical tools such as budget calculators, all designed to make financial learning both accessible and engaging. This blend of mobile technology and localised content has proven to be a highly

effective strategy for spreading financial literacy across diverse communities.

17 million people, half of them women, have benefitted from JGK since its launch. It has built a cadre of 200,000 master trainers who in turn impart training to community people. The programme has been instrumental in driving the adoption of digital financial tools, with 78% of participants now using mobile banking, e-wallets, and online payment platforms. This surge in digital finance adoption has also led to a 55% increase in average savings among participants. Beyond the tangible financial benefits, JGK's impact is deeply personal for many of its participants. The programme has helped individuals gain confidence in managing their finances, become more involved in household financial decisions, and even start their own businesses. Through the programme, beneficiaries have opened bank accounts, applied for government schemes, and embraced digital payments, further integrating into the formal financial system.

The JGK programme's success highlights the immense potential of technology in driving financial inclusion in India. Through such an offering, the Vodafone Idea Foundation is empowering individuals to take control of their financial decisions. In a rapidly evolving digital landscape, programmes like Jaadu Ginni Ka are not just keeping pace - they are setting the standard for how technology can be harnessed to create a more inclusive, financially literate society.

# Inclusion-led innovation in financial services

In 2023, more than 40% of payments in India were digital. Around 300 million citizens and 50 million merchants used UPI<sup>6</sup>. This trend has encouraged Indian firms to develop low-cost, high-functionality FinTech products.

The UK is a global financial centre and a FinTech hub. Its sectoral expertise and regulatory environment have made it a top destination for FinTech investments in Europe, with US\$2.0 billion recorded in the first half of 2024<sup>7</sup>. That's more than all other European countries combined. The UK's expertise in FinTech appears across multiple areas, including RegTech, InsureTech, WealthTech, PayTech, and CyberTech.

Leading UK firms, including traditional banks and FinTech companies, are expanding globally. They are bringing in 'best-in-class' technical know-how, and integrating FinTech with other sectors, such as consumer retail and healthcare. Firms are also providing solutions in SME lending, cross-border payments, and distributed ledger technologies.

Our financial sectors are already interconnected. More than 250,000 Indian employees work in the UK financial services sector, according to a 2023 report of the India-UK Financial Partnership<sup>8</sup>.

**“HSBC is at the forefront of technology innovation within Financial Services, leveraging the Digital Public Infrastructure and ever-expanding India Tech stack to innovate at scale and pace. The Bank is following a Digital-first approach to serve the growing needs of its customers, as they become wealthier and more global. For our global customers – we leverage our globality to provide best-in-class, almost fee-free solution for cross-border money transfer (Global Money), and a capability to make education payments directly to 600+ universities via our Mobile App.”**





**QR code based systems allowing instant payments have become ubiquitous across India.**

British banks are among the leading investors in India. They are deploying tech-led solutions across segments, such as wealth management, investor solutions, and digital banking. HSBC became the first international bank to partner with Protean, an Indian company that builds digital public infrastructure and eGovernance solutions. Together, they developed 'Open Network for Digital Commerce (ONDC) in a Box', a platform using HSBC's state-of-the-art digital payments stack to provide businesses with seamless API-enabled payments.

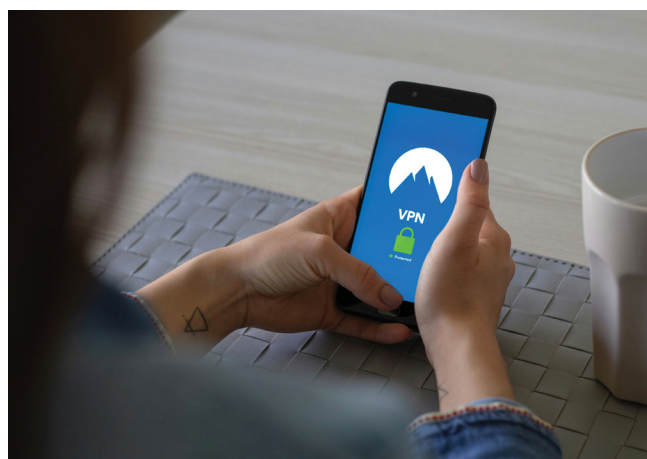
As per Indian government data, India has around 63 million MSMEs. Emerging FinTech solutions allow them to access credit. During India's G20 presidency, priority was given to financing for MSMEs through digital platforms and partnerships. Leading British FinTech firms specialising in SME finance have entered India in recent years. They are onboarding large numbers of Indian SMEs onto their platforms and connecting them with lenders.

UK firms are at the forefront of SME lending and financial solutions. Working together, the UK and India can enhance payments, lending, and financing for small and medium-sized businesses. Sharing regulatory best practices can attract more UK FinTech companies to the Indian market.

A growing FinTech sector needs enhanced cybersecurity measures. The global FinTech ecosystem has more than 200 large financial institutions. The network of small and new enterprises, 2,000 of which are in India alone, is expanding<sup>9</sup>. The 2023 LexisNexis True Cost of Fraud – Asia Pacific study said 54% of companies reported an increase in fraud in India in the previous 12 months.

Cybersecurity is a hot topic in every boardroom. Facing headwinds from data breaches and fraud, FinTech firms – whether domestic or international – need to evolve their fraud mitigation strategies. UK firms have solutions. LexisNexis® Risk Solutions, part of the RELX Group, is helping clients in India defend against fraud and cyberthreats. It uses cutting-edge solutions, such as behavioural biometrics technology and AI. In 2023, RELX launched its first data centre in India to help companies with compliance.

Common standards and alliances are essential for securing and growing the financial services ecosystem. India and the UK must partner on developing and adopting effective frameworks for cybersecurity and data protection. This approach can be implemented at both the regulatory and institutional levels.



# Trilegal insights: India's approach to technology in the financial services' sector



India's digital public infrastructure (DPI) initiatives have witnessed tremendous success in the finance sector in the last decade. DPI was a major topic of discussion for both the private sector and governments during India's G20 presidency. India's approach to DPI is a strategic balance between government oversight and private sector innovation. It ensures inclusivity, security, and privacy for the booming FinTech industry. India's DPI initiatives, including the India Stack (illustrated below), highlight its commitment to creating universally accessible digital services.

The largest success stories to come out of India's futuristic approach to DPIs include the Unified Payments Interface (UPI) and the Data Empowerment and Protection Architecture (DEPA) framework.

## (i) UPI

UPI is operated by a non-profit entity – the National Payments Corporation of India (NPCI) over a cash-less layer. It is a fast payment system that enables individuals to carry out peer-to-peer payments without having to exchange bank information. Bharat Interface for Money application by NPCI spurred the entry of several private players.

GooglePay, PhonePe, and Paytm are among them. They have transformed the Indian digital payment market into one of the most vibrant, competitive, and successful payment ecosystems in the world.

UPI is API-led. It allows firms to build applications using the UPI protocol. The architecture is jurisdiction and currency agnostic, making it easier for other governments to adopt the framework. Bhutan, France, Mauritius, Nepal, Singapore, Sri Lanka, and the UAE now accept UPI payments. The Indian government is working with payments solutions provider PayXpert to have UPI accepted in the UK.

India and Singapore's collaboration allows an Indian UPI user to send money to someone using Singapore's PayNow. The system relies on the Singapore user's mobile number or virtual payment address. There is potential here for an accelerated partnership between the UK's FinTech journey and India. Entities exploring cross-border UPI transactions will need to consider legal frameworks. Under Indian laws, non-banking entities proposing to enable cross-border remittances need to obtain permission from the RBI.



Presence-less layer  
Aadhaar initiative



Paper-less layer  
Aadhaar centric services



Consent layer  
DEPA



Cash-less layer  
UPI

## India's DPI Initiatives India Stack



In these situations, it is important to ensure that the proposed transaction flows comply with local laws. Regulated entities typically pass down compliances imposed upon them contractually to non-banking entities. These include Know Your Customer (KYC) processes under RBI guidelines and anti-money laundering laws. Regulated entities must ensure that their outsourced technology providers implement cybersecurity measures and risk management plans. This can also be contractually imposed on non-banking entities providing outsourcing services.

The RBI localisation mandate requires payment system providers to store certain payments data only in India. Recognising the growth of cross-border transactions, RBI allows storage of a copy of the domestic component overseas. For businesses operating across the UK-India, this reduces friction, delays, and the need for storage infrastructure in India.

#### **(ii) Data Empowerment and Protection Architecture (DEPA)**

The DEPA framework is a technological architecture made openly available by the government. It shares data between bodies. The FinTech industry has seen positive outcomes of implementing the Account Aggregator (AA) framework under DEPA. AAs act as consent managers for financial services,

providing an interface for sharing and consuming financial data based on user consent.

The RBI introduced a framework for registering and operating AAs in India for sharing financial data between Non-Banking Financial Companies (NBFCs) in 2016. The financial regulator adopted data sharing frameworks such as DEPA, long before India made use of a comprehensive data protection scheme. It helped resolve complex issues in data protection, including user consent and autonomy over personal data. India's new data protection law, the Digital Personal Data Protection Act, 2023 (DPDPA), also introduced a consent manager construct. It is built on, or borrows from, the DEPA framework.

Several technology service providers in the market could benefit from the consent manager framework. They offer solutions that enable interoperability.

**Conclusion:** India's innovative approach to DPI in the financial sector presents opportunities for both current and potential FinTech players to participate. Engagement in DPI will benefit not just India. Global adoption is likely to mirror India's systems, giving participants an advantage in expanding their services internationally.

# Technology-enabled energy transition for net-zero

India announced its ambitious energy transition targets at COP-26 in 2021. It aims to<sup>10</sup>:

- Reach net-zero emissions by 2070
- Meet half its electricity requirements from renewable energy sources by 2030
- Reduce one billion tonnes of projected emissions by 2030
- Minimise carbon intensity by 45% over 2005 levels by 2030.

This is a significant development in global work against climate change. However, it requires scaling up emerging technologies such as hydrogen, battery storage, electric vehicles, and decarbonising core industrial sectors including steel, cement, and fertilisers.

The UK is a leader in green technology and innovation. It was the first country to put a net-zero commitment into law and has mobilised a concerted effort from businesses, academia, financial institutions, government, and society to achieve this. It is also committed to a 68% reduction in emissions by 2030, as part of its Nationally Determined Contribution towards the Paris Agreement<sup>11</sup>. Interim carbon budgets which cap emissions within different carbon budgetary periods have been set. This has driven major transformation. Both British businesses and academia have been at the forefront of an early move to energy-efficient pathways and technologies.



The UK is playing a role in India's growing clean energy system. It is providing solutions in energy and clean mobility and enhancing talent and technology ecosystems. International oil & gas companies are among the most well-diversified energy companies in India. They have a presence across the value chain - in upstream, integrated gas, downstream, renewable energy, R&D, and digitalisation. John Crane, a Smiths Group company, helps industries reduce their methane emissions. Ongoing reporting and management solutions are helping minimise negative environmental impacts and save revenue.

Partnerships between MNCs provide the opportunity to co-develop technologies at a sectoral level. These can be deployed at scale across the industry. Rolls-Royce and Tata Consultancy Services are collaborating to research hydrogen fuel system technology to establish hydrogen as a viable, zero-carbon fuel. The Indian energy conglomerate, Essar, operator of the UK's 2nd largest refinery at Stanlow, has announced plans to invest US\$3 billion to create the world's greenest oil refinery and catalyse the Industrial North West's hydrogen economy.

Building energy efficiency and decarbonisation into operations requires in-depth design, planning, and advisory expertise. In India, British firm Arup is at the forefront of innovation in renewable energy. It has a strong emphasis on green hydrogen, crucial for decarbonising hard-to-abate sectors such as steel, refineries, ports, and transportation. Arup has provided advisory services for 30 GW of renewable energy assets across both the public and private sectors.

### Greener grids ahead

Arup is poised to harness its global experience from over 150 hydrogen projects, positioning itself as a vital partner in shaping India's hydrogen economy. Its cutting-edge solutions encompass a range of advisory and engineering services, including transactional advisory, pre-feasibility and feasibility studies for projects on green hydrogen and its derivatives, onshore and offshore wind, solar energy, and energy storage. Arup is also committed to sustainable infrastructure development in transport, railways, and water and energy conservation. It aims to leverage its strengths in decarbonising hard-to-abate sectors through Carbon Capture, Utilisation, and Storage (CCUS) and smart energy solutions.

## VoltUp your ride

EM Impact Capital, a UK-based specialist impact investor, has invested in VoltUp, India's leading Battery-as-a-Service Company. Based in Pune, VoltUp offers a green solution for electric 2- and 3- wheeler users. It enables swapping of batteries at designated stations and offers access to electric 2-wheelers equipped with swappable batteries. The transition for users is simple, requiring no changes to daily routines while providing a more efficient alternative to traditional charging methods. The company aims to reduce user downtime, boost convenience and increase the income potential for business users. India has the highest EV sales growth rate in the world of any major economy, and VoltUp has established its presence in 12 cities. It has built a reliable and smart network to support this momentum.

The investment is a perfect fit for EM Impact Capital, which invests in private mid-market companies with proven business models. These businesses support the energy transition in emerging Asia.

Areas of collaboration are vast and include carbon capture, offshore wind, hydrogen, battery storage, and EV charging infrastructure. Government-to-government platforms which bring together businesses, innovators, and other key stakeholders will ensure that the UK-India partnership remains relevant in solving global challenges. This could be achieved through technical expertise and providing market access support to British businesses. The goal is to build strong partnerships with Indian industry, ultimately supporting India in its ambition.

British banks and funds have invested billions into India's sustainability agenda over the years. Sustainable finance has been a key area on the 2030 Roadmap. After it was signed, the UK announced a US\$1.2 billion package of public and private investment in green projects and renewable energy in India. These investments support India's target of generating 450 GW of renewable energy by 2030<sup>12</sup>.

More financing is needed for India to reach its energy transformation goal. The UK is well placed to serve as a hub for green finance. The UK-India Infrastructure Financing Bridge, signed in September 2024, is expected to mobilise international private sector investment into Indian sustainable infrastructure.

British International Investment (BII), a leading development finance institution and impact investor, has been a committed partner to India since 1987. It has been investing to create jobs, remove market constraints in energy and infrastructure, and improve access to essential goods and services. Key investments include: [Fasal](#) - helping farmers with water usage; [Battery Smart and Euler](#) - support for dairy farmers to decrease greenhouse gas emissions; and [Akshayakalpa Organic](#) - increased adoption of electric vehicles.

**“Our 2022-2026 strategy is focused around making investments that support productive, sustainable, and inclusive economies. For India, this means we are increasingly targeting investments in climate finance and those with the potential to be more inclusive by benefiting underserved communities, including women. Under our current strategy, at least 30% of total new BII commitments will be made in climate finance. In India, this means helping the country to achieve its plans to meet 50% of its electricity requirements from renewable energy sources by 2030 and reach net zero by 2070.”**

The Ministry of Finance and Reserve Bank of India could amend the Priority Sector Lending guidelines to include EVs and EV- supporting infrastructure besides renewable energy. This would channel more funding from the UK and other international partners to sustainability activities. This approach would create essential incentives and regulatory support for adopting new green technologies. It would also help SMEs eager to contribute to transition efforts but facing financial constraints.



## From the West Midlands to India



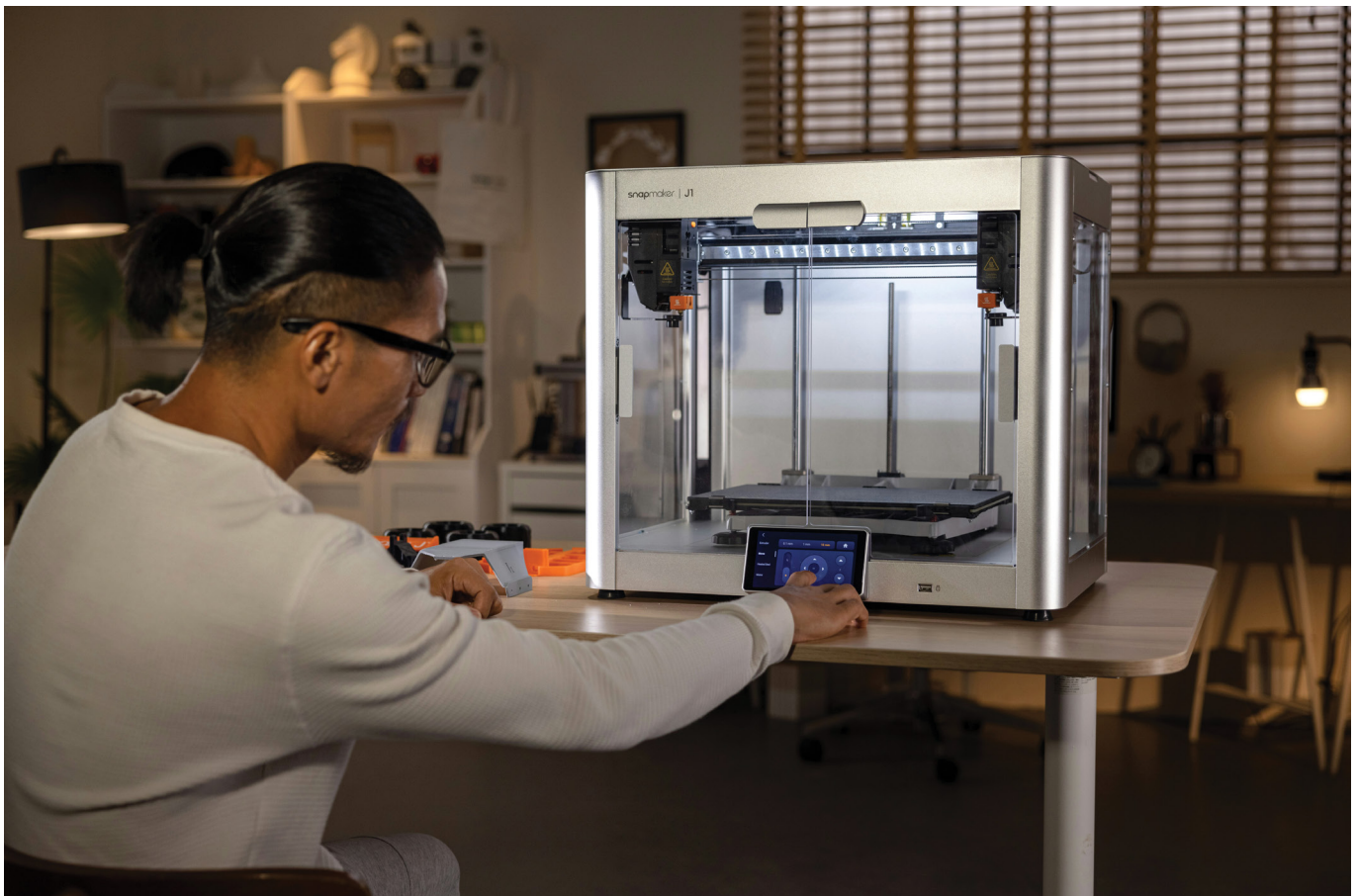
**T**he DIATOMIC India Accelerator, led by Connected Places Catapult in partnership with the West Midlands Growth Company and the Greater Birmingham Chambers of Commerce, is a six-month programme focused on supporting clean technology companies from the West Midlands region of England as they enter the Indian market. The West Midlands has a rich industrial heritage and a Plan for Growth that highlights clean technologies as a priority area. Through this programme, seven organisations are working to expand their impact internationally, with support for tackling three of India's major market challenges: energy sustainability, mobility, and sustainable urban areas.

The programme includes two market visits, one in Delhi and another in Pune, set for November 2024 and February 2025. These trips give the selected companies a chance to meet with stakeholders, establish business relationships, and

explore opportunities for collaboration. This includes joint ventures, commercial agreements, and technology trials. Each organisation will be represented by a senior team member, and up to £80,000 in funding is available to support market trials. Organisations will also receive targeted business support to help them succeed in this new market.

**The below gives an overview of the seven selected organisations and their objectives:**

1. ChangeMaker 3D specialises in 3D-printed infrastructure for construction. It is working to adapt their "Printrastructure" technology to support the Indian water sector. It aims to design 3D-printed water chambers for the Indian market that are scalable and locally producible. It is also in discussions with SPML Infra to explore how its technology can aid in constructing water tanks across India.





2. DOCK-Y creates safety systems for two-wheeler vehicles, using software-defined features and smart safety systems. It plans to adapt its Advanced Rider Assist System (ARAS) for India's unique urban transport needs, especially as the country looks to improve road safety and cut emissions. By connecting with Indian OEMs and suppliers, DOCK-Y hopes to establish partnerships that will allow them to pilot its technology in India.
3. EVIE Autonomous delivers AI-based autonomous technology for off-highway transportation and smart city applications. Its focus for India includes finding local partners for production and assembly and identifying potential customers among India's OEMs. Their objective is to build a network to help them bring its solutions to the Indian market.
4. Faraday Battery offers lithium-ion battery storage as an alternative to diesel generators. Its products are aimed at critical infrastructure, including telecom towers and hospitals, and its visit objectives include building distributor partnerships, developing connections with key stakeholders, and strengthening its foothold in India's renewable energy market.
5. Global Nano Network (GNN) manufactures HyperFoil®, a solution that addresses battery performance and lifecycle issues. It's aiming to collaborate with local battery component producers and manufacturers to expand its operations in India, aligning with the growing local demand for energy storage solutions.
6. Hy-Met develops technology for rapid, non-contact battery inspection to help manufacturers reduce wastage and increase efficiency. It is targeting India's emerging battery production sector, looking for R&D partnerships and stakeholders who can support Hy-Met in piloting its technology with Indian battery manufacturers.
7. KEW TECHNOLOGY creates gasification systems that convert waste materials into energy. It aims to connect with Indian stakeholders across industrial sectors to understand better market demands, regulatory requirements, and funding opportunities in India, positioning themselves as a key player in sustainable energy development.

India's rapidly growing economy and focus on sustainable development make it a promising market for these organisations. The country's commitment to clean energy, urban mobility, and advanced manufacturing aligns well with the expertise of the participating innovators. The DIATOMIC India Accelerator will provide each organisation with insights into this dynamic market, allow them to build relationships, and pursue projects that support India's economic and environmental goals. This collaboration aims to expand business reach and foster partnerships that could bring sustainable change on a large scale.

The DIATOMIC programme is part of the wider West Midlands Innovation Accelerator, which is delivered in partnership with the Department for Science, Innovation and Technology, Innovate UK, and the West Midlands Combined Authority.

# Advanced manufacturing and defence technologies

India is the fourth largest defence spender in the world. Its defence ecosystem is a confluence between the Government of India and the defence manufacturing industry. India's Ministry of Defence has set a target of US\$26 billion in aerospace and defence manufacturing by 2025, which includes US\$5 billion in exports<sup>13</sup>. The Indian Government is incentivising 'Atmanirbhar (Self-Reliant) Bharat', and domestic industry has been producing advanced manufacturing platforms and equipment that are being supplied across the world.

The private sector's involvement in defence R&D is gradually expanding, driven by government policy initiatives. Given the buoyant Indian defence market, there are significant opportunities for UK-Indian collaborations centred on advanced technologies. Indian companies are eager to partner with UK firms to bring much-needed technology into India's defence market.

At Def-Expo 2022, BAE Systems signed an agreement with PTC Industries in Lucknow, Uttar Pradesh to co-develop and manufacture titanium castings for the 155mm M777 Ultra-Lightweight Howitzer (ULH). Co-production at this level ensures that PTC Industries' parts can be used interchangeably in the global supply chain of M777 ULHs, which are in service with several countries globally, including India.

In the last two years, PTC Industries co-developed the castings for key structures of the M777 ULH and has been awarded a production order of more than US\$2 million that will support the long-term global spares demand. BAE Systems and PTC Industries are now taking the next steps in co-production for future programs in a strategic partnership. This is a commitment to 'Make-in-India-for-the-World' and is another step in the realisation of Atmanirbhar Bharat.

Elsewhere Pearson Engineering UK is partnering with Bharat Earth Movers Ltd. to supply more than 1,500 track width mine ploughs to the Indian Army. Bharat Dynamics Limited is working with Thales UK to produce the next generation of Very Short-Range Air Defence System missiles and with MBDA UK to manufacture Advanced Short Range Air-to-Air missiles in India.

The 2015 Defence and International Security Partnership (DISP) between the UK and India, followed by a 2019 MoU on Defence Technology Cooperation, set the stage for deeper defence ties. The 2021 Comprehensive Strategic Partnership further highlighted defence as a key area, paving the way for advanced collaboration.

In 2022, the UK added India to the Open General Export License (OGEL), easing the export of niche technologies.



January 2024 saw India's Defence Minister visit the UK, leading to a Letter of Arrangement (LoA) between India's DRDO and the UK's DSTL, promoting tech collaboration. UK and India now collaborate in technology exchange, maritime security, and joint military exercises. UK firms benefit from India's cost-effective manufacturing, while India gains from the UK's defence expertise. British technology is already embedded in Indian platforms, like the HAL-Tejas.

The UKIBC aerospace & defence group, representing 22 UK firms with \$60 billion in global revenue, is eager to expand partnerships with India. However, more can be done by embracing co-creation, co-development, and manufacturing in India. India has around 194 defence tech startups building innovative solutions to empower and support the country's defence efforts. There is untapped potential to connect them to the UK's defence industry.

We therefore recommend that the UK and Indian Governments establish an accelerator programme for high-growth UK firms to enter India to increase technology collaboration and joint ventures. For e.g., Indian startup, 114 AI Innovation was a recent beneficiary of a joint U.K.-U.S. pitch initiative Spacewise that will fund and fast track innovation in the space domain.

As part of this, we recommend that the UK and Indian Government establish a UK-India un-manned aerial vehicle (UAV) programme (or challenge/competition) to diversify the UK's UAV supply chain and bring in Indian suppliers rather than rely on traditional supplier countries.

We also recommend that the UK sponsor more chairs at Indian think tanks to deepen its understanding of India's

defence ecosystem and foster a stronger sense within the Indian defence ecosystem of how the UK can support India's defence ambitions.

In the UK, export control regulations do not always align with our trading goals. Where possible, the UK should ensure its export licensing rules enable the government's ambitions for a robust defence manufacturing and technology partnership with India.

Together, both governments should explore ways to support Indian firms to integrate into UK supply chains, potentially leveraging UK channel partners.

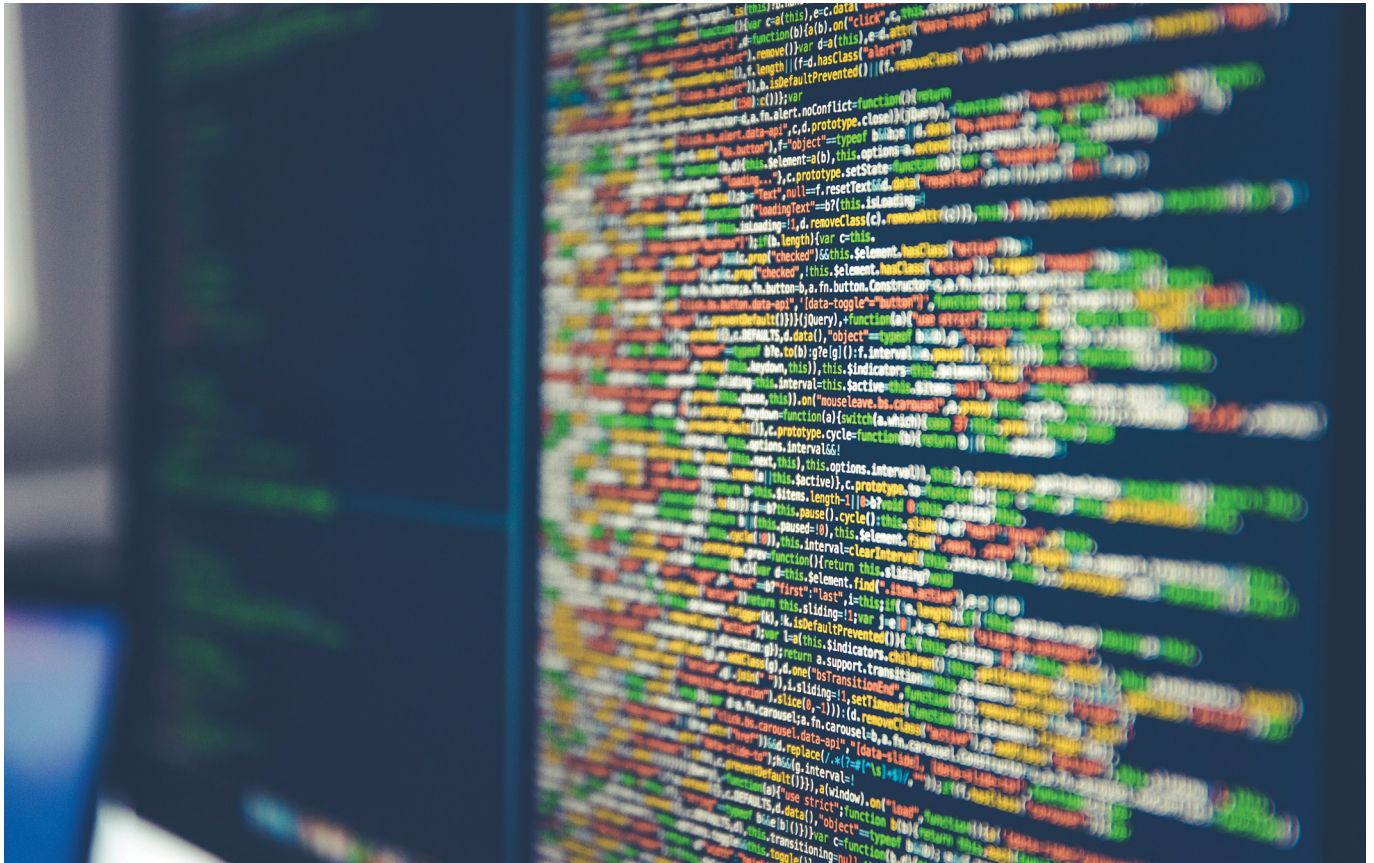
In India, adjustments to the Defence Acquisition Procedure (DAP) 2020 could substantially increase Foreign Direct Investment (FDI) and job creation. This would also enhance indigenous capability by bringing foreign technology into domestic programmes, boost the Strategic Partnership Model, and help India close the capability gap with China faster.

For example, a more graded approach towards indigenous content levels as well as addressing FDI inconsistencies between procurement programmes would help ensure a level playing field for foreign and Indian firms, encouraging more foreign companies to manufacture in India for global markets, as they do in other sectors. It is feasible that foreign companies, under the right FDI conditions, will make in India but not necessarily for India. The UK and India should explore ways for the UK and India to jointly provide defence equipment, made in India, to third markets in the region.



## Our sponsor

# Maximising the value of hybrid IT investments



### About us

ETOS provides a comprehensive set of services designed to meet the evolving needs of our clients. We are dedicated to empower businesses through innovative IT solutions and services that drive automation and enhance productivity.

### Why choose us?

Our team of experienced professionals combine industry expertise with market leading technology to deliver tailored solutions that drive efficiency and reduce costs. We bring top-notch expertise on the market leading ITAM and ITSM solution helping customers maximise the value of their investments.

### Impact:

#### 75+ happy global clients

In a climate where every IT investment must demonstrate value, ETOS is committed to helping clients optimise costs without sacrificing quality.

### 300+ trained global resources

With ETOS, clients gain greater financial transparency and control, allowing them to allocate resources more effectively toward innovation and growth.

### 10+ strategic global partnership

Together, these strengths allow ETOS Services to be more than a service provider; we become a strategic ally, enabling clients to drive business value, reduce risks, and navigate their digital transformation with ease.

**“Our strategic vision is to empower our customers to achieve unparalleled success and foster a sustainable future by optimising the value and potential of their IT investments.”**

In today's rapidly evolving digital landscape, IT leaders face mounting challenges to optimise resources, secure assets, and drive sustainable innovation. From adopting cloud solutions to implementing IT Service Management (ITSM) and IT Asset Management (ITAM), the complexity of modern IT infrastructure requires a balanced approach that aligns with business objectives.

ETOS Services, a leader in IT services and consulting, empowers enterprises with the tools and strategies needed to not only keep pace but lead the way in the digital age.

#### **Streamlining ITAM and cloud for enhanced efficiency**

With an ever-increasing volume of IT assets, ITAM remains a crucial foundation for effective digital management. The ability to track, analyse, and optimise assets allows businesses to minimise waste and maximise ROI. Additionally, as cloud adoption soars organisations must address cloud sprawl to ensure efficiency without sacrificing agility.

#### **Key strategies:**

**Asset lifecycle management:** Implementing lifecycle management techniques to track usage and plan for obsolescence.

**Cloud cost optimisation:** Adopting FinOps practices to monitor and manage cloud expenditures, aligning cloud resources with business needs.

#### **CEO speaks:**

**“IT asset management paired with strategic cloud management is the backbone of sustainable digital transformation. By leveraging data from diverse tools, we address key priorities like technical debt, security risks, license compliance, cloud management.”**

#### **Enhancing service delivery with ITSM**

A robust ITSM strategy enables organisations to streamline service delivery, improving the overall user experience while reducing costs and minimising downtime. By embedding intelligent automation and self-service capabilities, companies can respond proactively to service demands.

#### **Key focus areas:**

**Automation in service management:** Leveraging AI and automation to enhance service desk operations, providing faster, more accurate responses.

**Self-service portals:** Empowering employees and stakeholders to resolve issues independently, reducing the burden on IT teams.

#### **Insight:**

**“Our goal at ETOS is to enable IT teams to be more than just problem-solvers. Through efficient ITSM practices, we turn challenges into opportunities, creating a service culture that adds tangible value to business outcomes.”**

#### **Securing the future with robust cybersecurity solutions**

The increased reliance on cloud services and remote work models has amplified the importance of a strong security framework. For IT heads, maintaining cybersecurity across a distributed environment is paramount to protecting sensitive data and maintaining trust.

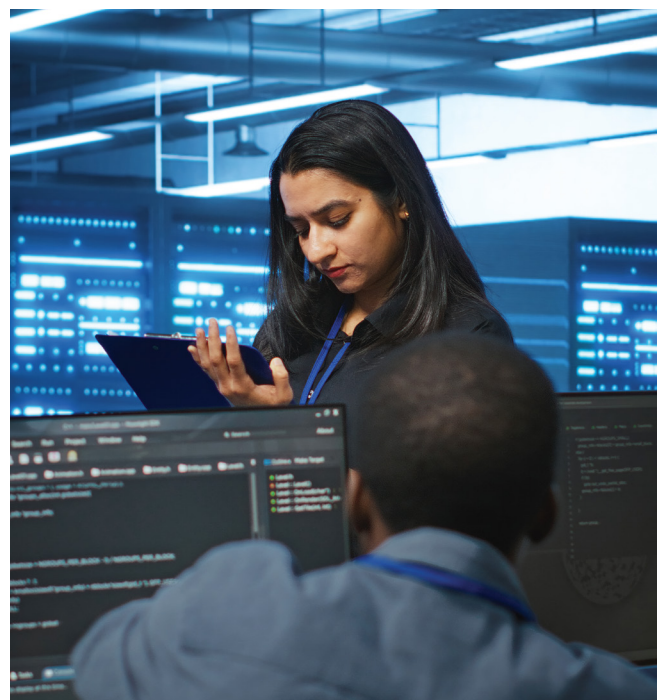
#### **Key components of strong security strategy:**

**Proactive threat intelligence:** Utilising realtime threat data to identify vulnerabilities before they are exploited.

**Continuous compliance monitoring:** Implementing security controls that adapt to evolving regulatory requirements.

#### **Leadership quote:**

**“Security is not a destination but an ongoing journey. At ETOS, we empower organisations to be proactive, ensuring resilience against an ever-evolving threat landscape.”**



# Harnessing global expertise: Delivering insights to Rolls-Royce through Microsoft



**A**t Rolls-Royce, managing multiple systems of record presents significant challenges in accessing and consolidating data for advanced analytics.

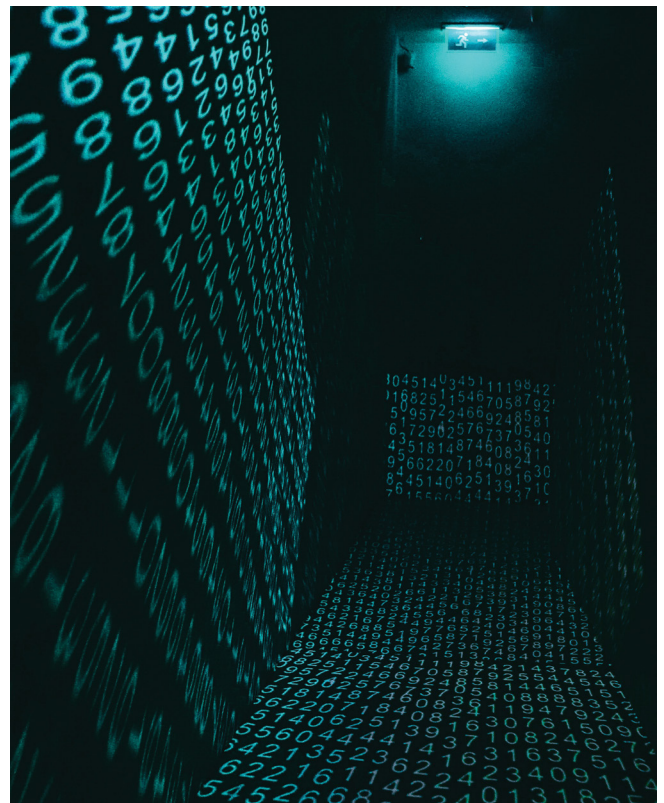
To address this issue, its Global Business Services division has adopted Microsoft Fabric. It is a comprehensive analytics platform that helps users at all levels, from business analysts to professional developers, derive valuable information.

The implementation of Microsoft Fabric is spearheaded by a dedicated team located in both the UK and India. The data engineering team in India plays a crucial role in this initiative. It focuses on the ingestion of data into the platform, ensuring the delivery of clean and meaningful data products.

The team stationed in the UK oversees the delivery of all data products, collaborating closely with its internal customers. It understands their needs and provides tailored insights. This partnership between the UK and India teams fosters an innovative and efficient environment.

A team from both locations collaborates to produce business-focused reports that boost efficiency and quality across Rolls-Royce. With a UK team close to customers and a skilled, cost-effective team in India, it is speeding up value delivery.

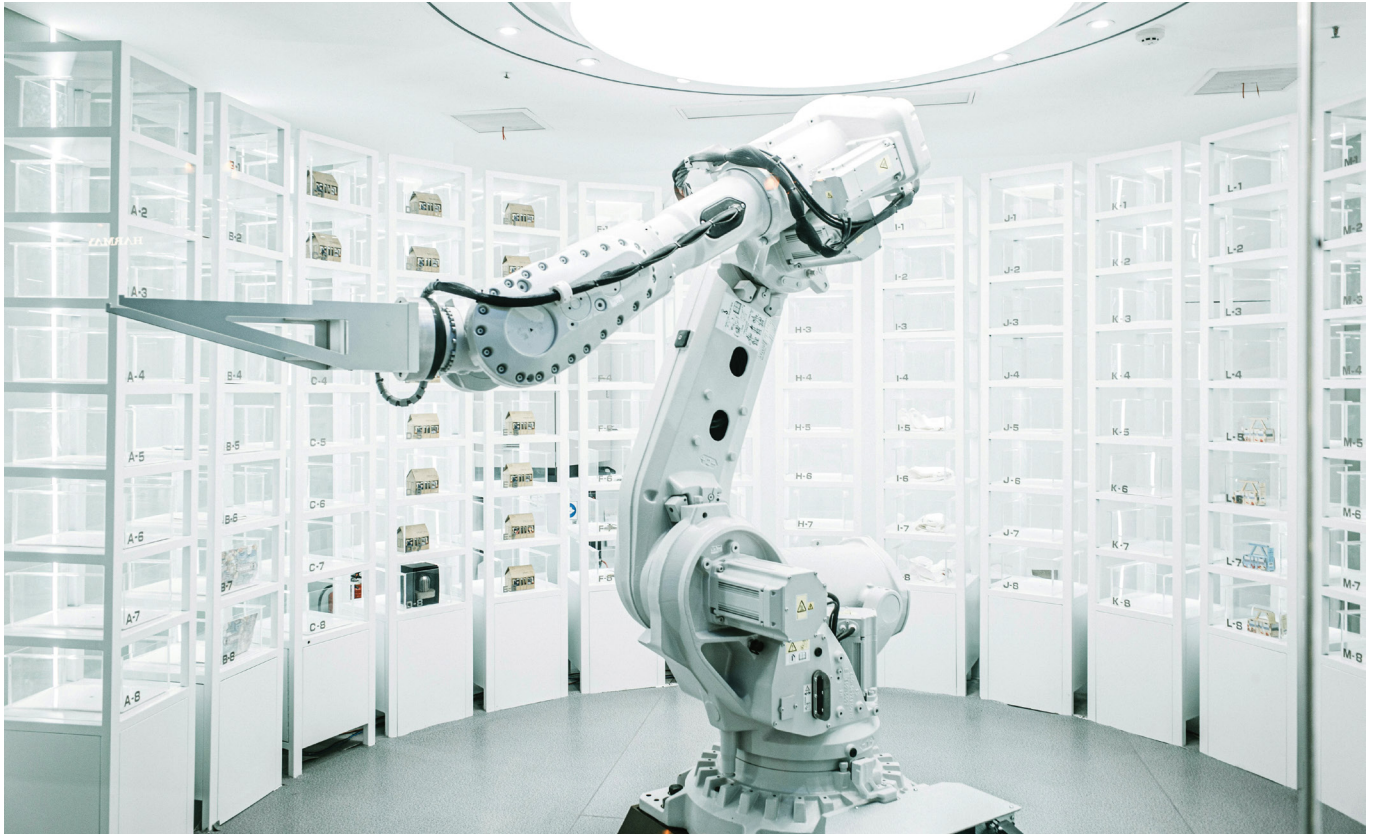
Rolls-Royce navigates the complexities of data analytics, using the strengths of both teams.



**“In the rapidly evolving global landscape, embracing cutting-edge digital technologies through a purpose-led approach is no longer optional but essential. This strategic adoption enables businesses to enhance their efficiency, foster innovation, and build resilience. By integrating advanced technologies with a clear sense of purpose, organisations not only drive operational excellence but also ensure sustainable growth and competitive advantage in the face of continuous change and disruption.”**

— Hariharan Ganesan, VP – Data, Analytics & Reporting, Rolls Royce Plc

# Collaborations in research and innovation



India and the UK share world-class expertise in science and technology, bold business leadership, and ambitious cities seeking to drive towards net-zero. Both countries can serve as a force for global good across areas of shared priority. These include clean energy, food security, and healthcare. In 2023, the UK and India signed an agreement to collaborate in research and innovation, drive economic growth, create skilled jobs, and improve lives globally.

India's Minister for Science and Technology, Dr. Jitendra Singh, noted that the UK-India Science & Technology collaboration has been growing rapidly. The joint-research programme has risen to a value of almost £400 million. These partnerships involve 16 government and other agencies which have supported over 200 research institutions and 100 industry partners<sup>14</sup>.

UK universities have long been hubs of technological discovery. The UK has recently established quantum technology hubs that aim to transform sectors like security, healthcare, and energy. Many universities are also actively engaging in India, including through joint R&D and co-creation of new technology.

The Oxford University-AstraZeneca-Serum Institute of India partnership on a COVID-19 vaccine is the most well-known

example. But several other examples of UK universities' partnerships with Indian industries and academia exist.

India is among the world's most climate-sensitive nations. It also must balance economic progress for the masses, which is equally as important.

The SUNRISE project, led by Swansea University, is a ground-breaking collaboration initiative involving 18 academic partners across five countries. Key UK institutions include Imperial College London, Oxford, and Cambridge. Indian partners include IISER Pune, IISc Bangalore, several IITs, and the Tata Group. An important achievement was the construction of a full energy-positive building in Khuded, Maharashtra. This building has provided reliable, clean energy to a community of approximately 500 people. It also enhanced agricultural practices and aided local craftsmanship, such as the production of Diwali lamps that are sold globally. The team at IISc Bangalore utilised SUNRISE resources to produce a microgrid demonstrator. This provided clean energy access to a medical centre and school, impacting 25,000 people annually.

Energy efficiency and decarbonisation have been central to Durham University's collaboration with Amrita Vishwa Vidyapeetham in India. Launched in November 2021,

the UK-India Foundation Industries Sustainable Thermal Energy Management Collaboration aims to revolutionise energy-intensive foundation industries, such as metals, cement, paper, glass, ceramics, and bulk chemicals. It plans to achieve this by capturing and reusing low-grade waste heat, an underutilised energy source. Durham University is exploring a more strategic partnership with Amrita in research and education for a long-term collaboration. Key considerations for the project's future include economic viability, policy engagement, regulatory incentives, and business development progress.

Food security is among India's top priorities. It is home to a quarter of all the world's undernourished people. Sustainable, climate-resilient agriculture is essential in safeguarding food supplies for current and future generations.

The TIGR<sup>2</sup>ESS project was launched in February 2017 in India and is funded by the UK's GCRF. It involved the University of Cambridge, the John Innes Centre, University of East Anglia, Rothamsted Research, the National Institute of Agricultural Botany, University of Essex, and the University of Hull. The Indian partners were ICRISAT, IIT Mumbai, IIT Ropar, Punjab Agricultural University, Punjab University, National Institute for Plant Genome Research, M.S. Swaminathan Research Foundation, Kalinga Institute of Social Sciences, and PRADAN. These partners strengthened alliances across crop science, hydrology, social science, and policy to promote an exchange of knowledge, flowing both ways. TIGR<sup>2</sup>ESS was active in six Indian states: Punjab, Maharashtra, Telangana, Tamil Nadu, Odisha, and Jharkhand.



Despite challenges like funding complexities and the COVID-19 pandemic, TIGR<sup>2</sup>ESS introduced innovative agricultural technologies, supported female entrepreneurship, and developed educational resources.

The UK and India are deepening collaboration on emerging and critical technologies. In January 2023, Apollo Tyres and the University of Glasgow launched a PhD partnership. The aim is to solve real-world manufacturing challenges using AI and machine learning (ML). They are optimising Tyre Building Machine processes, reducing Cured Tyre Scrap (which accounts for 10% of all extruded materials), reducing CO<sub>2</sub> emissions, and developing digital twins for enhanced productivity. The development of digital twins and ML algorithms is set to revolutionise process optimisation and predictive maintenance. It would mark a significant leap towards sustainable industrial practices. This partnership has also led to the establishment of a digital innovation hub in London.

These examples show that the UK and Indian academic institutions are achieving success. With the recently announced UK-India TSI, there is tremendous potential for partnerships across future telecoms, advanced materials, quantum technology, and AI. A structured schedule will bring together industry, start-ups, and universities across the TSI's seven thematic areas. We believe that an industry-led secretariat will help operationalise and maximise the full benefits envisioned.

We recommend increasing funding for UK-India R&D, exploring ways to apply joint R&D in the developing world, and enhancing regulatory dialogue for smoother project implementation.

# The UK-India future charter

India's path to becoming the world's third largest economy and to achieving Viksit Bharat @ 2047 relies on how it harnesses technology and innovation. The examples in this report show that the UK is a natural partner in this. We have put forward a set of recommendations for deeper UK-India cooperation across areas such as financial inclusion, energy transition, advanced technologies, and R&D to propel this journey. These are:

### Financial services:

- Co-develop platforms that can support payments, lending and financing for small and medium-sized companies
- Share regulatory best practices to encourage UK FinTech companies to enter the Indian market
- Both governments must partner to develop and adopt effective frameworks in areas such as cybersecurity and data protection. Such a harmonised approach could apply both at the regulatory and the institutional level.

### Energy transition:

- Boost market access for British businesses through sustained government platforms that spark partnerships with Indian industry
- Expand India's priority sector lending to include EVs and EV-supporting infrastructure, alongside renewable energy.

### Defence & emerging technologies:

- Establish an accelerator programme for high-growth UK firms to enter India
- Together, both governments should explore ways to support Indian firms to integrate into UK supply chains, potentially leveraging UK channel partners
- Refine the Defence Acquisition Procedure 2020 to ease foreign technology participation in domestic programmes and meet India's armed forces' capability needs
- The UK Government should review export licencing rules, so they support the UK's ambitions for a strong defence manufacturing, technology creation, trade and investment partnership with India.

### Emerging technologies:

- Build a structured schedule that brings together industry, start-ups, and universities across the TSI's seven thematic areas, reporting to an industry-led secretariat at an overarching level.

### Force for global good:

- Identify ways to transfer UK-India R&D and its application to deliver in developing countries.

### Research & innovation:

- Both sides work together to grow funding for UK-India R&D projects
- Improve dialogue/harmonisation between regulators on both sides for smoother project implementation.

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## Who are we?

The UK India Business Council is a strategic advisory and policy advocacy organisation with a mission to support businesses with the insights, networks, policy advocacy, and services needed to succeed in the UK and India.

## Get in touch

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