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Innovate UK WK Science & Innovation Network

GLOBAL EXPERT MISSION Germany – Artificial Intelligence

Mission Brochure

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ABOUT | GLOBAL EXPERT MISSIONS

As innovation is increasingly a global endeavour and the ambition of UK businesses to become truly international enterprises is at its highest, Innovate UK has launched its Global Expert Missions. Delivered by KTN, the Expert Missions will help further Innovate UK's global strategy by providing the evidence base for where it should invest and by providing the opportunities for UK businesses to build partnerships and collaborations with key economies.

Built around UK business, policy and research representation, an Expert Mission aims to achieve the following objectives:

1. Informing UK businesses and Government

The findings and opinions of experts on the topic of the GEM are made available to UK businesses and government after the overseas visit. These inform UK businesses about potential opportunities for innovation in the country and UK government on how it can help UK businesses made the most of those opportunities.

- 2. Building International Collaborations The expert insights will help inform how Innovate UK can best help UK businesses find and exploit the opportunities for innovation partnerships. The GEM creates connections with key organisations and people that will deepen and widen the collaboration with the partner country to the benefit of UK business
- 3. Sharing UK Capabilities

During the overseas visit, the delegation of experts will use the opportunity to promote and share the UK's innovation strengths.

INNOVATE UK

Innovate UK is the business arm of UK Research and Innovation, the organisation that brings together research and innovation funding. Innovate UK helps businesses to identify the commercial potential in new technologies and turn them into the new products and services that will generate economic growth and increase productivity. With a strong business focus, we drive growth by working with companies to de-risk, enable and support innovation.



GERMANY AI GLOBAL EXPERT MISSION

The USA, China and Europe are broadly perceived to be the main leaders in the AI landscape across research and innovation. The UK is currently ranked third in the world in the first global AI index¹ and acknowledged to have a world-leading AI ecosystem that is home to a third of Europe's total AI companies, twice as many as any other European country.²

However, German levels of investment (£3.1bn public investment, to be matched by private sector) are significantly higher than the UK (£1bn sector deal). Germany is also a driving force behind EU-wide AI initiatives.

Despite the UK's vibrant AI start-up ecosystem, generally adoption of AI technologies by firms is slow. As of 2017, the adoption of big data, smart robotics, deep learning and AI tools by UK firms lagged behind that of European firms.³

As the impact of AI will not be concentrated to any one sector or limited to firms that develop and produce AI, it is important to note the adoption of AI varies considerably across sectors. In part, this is due to a sector's general willingness to invest in R&D and adopt innovation. Adoption is non-trivial particularly where regulation, certification and security are concerned, and critically depends on either a high level of risk appetite or a convincing case for return on investment. When an organisation has yet to go through digital transformation, the cost of adopting AI is high.

UKRI has been undertaking a review of its support for AI and will be publishing an AI Strategy later this year. As part of the review, Innovate UK conducted a series of business engagement workshops identifying challenges to AI innovation and adoption. A number of cross sector themes were identified:

- Deploying AI to improve productivity and performance in critical business functions such as HR, sales etc - Business of all sizes and across sectors are not reaping the benefits of adopting AI within their internal businesses processes. In addition to productivity, competitiveness and optimisations, companies are shifting focus to resilience as businesses face supply chain, human resource and customer connectivity problems in ways unimagined a few months ago.
- Improving productivity of data engineering process significant time and expense on data engineering and getting data into a form that can be used for AI (up to 80% cost of an AI project is spent on obtaining, cleaning and organising data, for example into sets for training and testing algorithms.) The data engineering process also directly impacts businesses' ability to calculate and demonstrate return on investment (ROI) – exploring a company's data is an essential step in quantifying the impact of AI.

³ Artificial Intelligence in the United Kingdom: Prospects and Challenges



¹<u>https://www.tortoisemedia.com/intelligence/ai/</u>

² <u>https://www.mmcventures.com/wp-content/uploads/2019/02/The-State-of-AI-2019-Divergence.pdf</u>

- Improving access to quality data AI systems need access to good quality data, both as test data and as real-world data. There are practical and cultural barriers to accessing public and private data. Data sets need to be designed with AI in mind and data set curation viewed as a standard business practice.
- Innovate responsibly Working with AI ultimately means also engaging with AI ethics, to mitigate risks but also for possible competitive advantage as trustworthy businesses will be those that can demonstrate they have taken action to develop responsibly and communicate clearly. Businesses need to understand how to translate ethical principles into organisation practice and to be able to do so cost effectively.

The above themes align closely with a recent announcement from the German government to coincide with the start of its presidency of the EU council.⁴

EXPERT MISSION OBJECTIVES

Broadly, the Global Expert Mission should identify if a future AI Global Business Innovation Programme would be appropriate and what the specific focus should be as well as any areas that would benefit from bilateral collaboration or funding calls.

Specifically, the mission seeks to:

- Develop an understanding of the maturity of German R&D in the field of AI. UK AI experts will seek to compare technology maturity levels and adoption rates with that of the UK in order to create a "heat map" of activity between the two countries
- Compare challenges facing German industry for AI innovation and adoption with the challenges facing UK industry, and identify best practice in both countries in order to highlight economic or learning opportunities for UK businesses
- Identify any possible joint R&D priorities for the UK and Germany in AI

⁴ <u>https://sciencebusiness.net/news/germans-kick-their-eu-presidency-big-plans-research-and-education</u>



UK SECTOR REPRESENTATIVES



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The Floow is a high growth company specialised in solutions for road mobility data capture and its cutting edge analysis. On a mission to '**make mobility safer and smarter for everyone**', The Floow specialise in large-scale mobility data processing for the global motor insurance sector providing actionable insight on risk, fraud and incidents from mobility and wider contextual data. The Floow gather billions of miles of telemetry using a wide range of devices for brands such as Direct Line Group, Aviva (leading motor insurers in UK), Fidelidade (Portugal n.1), AIG (Ireland), Liberty SA (South Africa), Plymouth Rock, AAA (US), Munich:RE (Globally) and many more. The Floow are recognised for leading analytic approaches to mobility data providing a unique view of risk to support the management and handling of mobility linked financial products. As well as its core insurance business The Floow work in wider emerging sectors related to road safety, traffic management, MaaS, automotive, driverless vehicles, vehicle emissions, transport and traffic management.

Sam Chapman

Dr Sam Chapman (The Floow, Co-founder and Chief Innovation Officer) is an experienced researcher and entrepreneur. Sam's background is academic having studied novel large-scale data techniques before leaving research and forming a range of data led companies. Most recently he has helped to grow The Floow from the founding 2 to about 114 people using innovation-led products and unique data insights. Sam's work at The Floow has, since the start, expanded and diversified product lines claiming several world and market firsts. He has been recognised for bringing new capabilities to tackle problems using mobility data. Sam, as well as running innovation activities in The Floow is also deeply involved in his local region where he represents the digital sector within the Sheffield City Region and sits on the council of the chamber of commerce. Sam also is an active member of various expert groups such as those within the parliamentary advisory council on transport safety and the parliamentary office of science and technology.

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Glamorous Al



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Glamorous Al's platform is applicable to > 60% of challenging targets currently intractable by other ML approaches. Deep know-how spanning over a decade of experience in Al combined with industrial insights have lead to early validation of the extraordinary power of our platform. In days we identified an entirely novel insilico inhibitors in two challenging disease areas, cancer and Alzheimer's. While this is very preliminary, the projects are now progressed towards validation in biochemical assays and could potentially become one of the first orally available cures for these debilitating disease.

The GAI's platform is not specific to any therapeutic area. Our early results for such challenging targets suggest that GAI really may massively disrupt the entire science (or perhaps, more accurately, the black art) of drug discovery.

We are currently working with partners to drug undruggable targets and deliver value to our partners and medicines to patients with unmet need.

Noor Shaker

Noor is a serial biotech entrepreneur with a track record achievements in AI having held an Assistant Professorship from Aalborg University. Noor has published >50 papers cited >2000 times and is an inventor on a handful of patents. She is passionate about science and on a mission to cure cancer with the power of data and AI. Her work at GlamorousAI pushes the boundaries to what is possible with AI to cure challenging diseases. She is MIT innovator under 35, in BBC 100 women for 2019 and one of UK's Rising Star for 2020.



Digital Catapult



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Digital Catapult is the UK's leading advanced digital technology innovation Centre, driving early adoption of technologies to make UK businesses more competitive and productive and grow the country's economy. We connect large established companies, startup and scaleup businesses and researchers to discover new ways to solve big challenges in the manufacturing and creative industries. Through this collaboration businesses are supported to develop the right technologies to solve problems, increase productivity and open up new markets faster.

Digital Catapult provides physical and digital facilities for experimentation and testing that would otherwise not be accessible for smaller companies. As well as breaking down barriers to technology adoption for startups and scaleups, our work de-risks innovation for large enterprises and uncovers new commercial applications in immersive, future networks, and artificial intelligence technologies.

Al is a core technology of focus for Digital Catapult. The organization provides much needed access to compute power for small innovative businesses to train their algorithms on large data sets, access to expertise and experimentation space for companies to learn about different computation resources and supporting technologies by experiencing them. Digital Catapult collaborate with large businesses to speed up the adoption of Al through open innovation and acceleration programmes, and work with policymakers and academics to ensure the UK takes the lead in transparent and ethical Al applications to drive industry adoption and growing the UK's machine learning ecosystem.

Digital Catapult is looking to forge international collaboration, and has just launched the UK Germany Global Challenge in partnership with Deutschland - Land der Ideen, Siemens and CHEP Europe to drive international collaboration for industrial innovation and sustainability.

J.C. Quillet

JC Quillet is a Lead Technologist in AI and Machine Learning at Digital Catapult. JC focuses on driving wider adoption of AI, developing solutions and supporting businesses across industries in the UK.

He was previously leading a ML team in a startup building computer vision applications for video analysis. JC has experience in entrepreneurship and participated in Singularity University's Global Solution Program in Silicon Valley and co-founded a startup in healthcare.

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Prior to transitioning to AI, his background and experience was in mechanical engineering, and he directed international engineering projects and operations in the energy sector. JC holds a Master of Science in Mechanical Engineering from INSA Lyon in France.

UK Government Office for Artificial Intelligence



larla Kilbane-Dawe

Deputy Head at UK Government Office for Artificial Intelligence

w: <u>www.gov.uk/government/organisations/office-for-artificial-intelligence</u>

The Office for Artificial Intelligence is responsible for overseeing implementation of the UK's AI Strategy.

Its mission is to drive responsible and innovative uptake of AI technologies for the benefit of everyone in the UK. The Office for AI does this by engaging organisations, fostering growth and delivering recommendations around data, skills and public and private sector adoption. This includes:

- Society: making sure AI works for people ethics, governance, future of work
- Demand and uptake: supporting adoption across sectors, including via 'Missions'
- Foundations: ensuring the best environments for building and deploying AI skills, data, investment, leadership.

larla Kilbane-Dawe

larla Kilbane-Dawe is the Deputy Head of the UK Government Office for AI, with responsibility for International AI Policy, the AI Council and Engagement. Previously in the private sector, UK civil service and head of the European Space Agency's AI lab in Frascati, his goal is to accelerate development of the UK's AI research and industry ecosystem to ensure UK preeminence in AI and our international collaborations, with a focus on responsible AI and its application to major societal and industrial challenges.

Rose Woolhouse

Policy Adviser



MISSION ORGANISERS

INNOVATE UK

Innovate UK is the business arm of UK Research and Innovation, the organisation that brings together research and innovation funding. Innovate UK helps businesses to identify the commercial potential in new technologies and turn them into the new products and services that will generate economic growth and increase productivity. With a strong business focus, we drive growth by working with companies to de-risk, enable and support innovation.

To do this, we work to:

- Determine which science and technology developments will drive future economic growth
- Meet UK innovators with great ideas in the fields we're focused on
- Fund the strongest opportunities
- Connect innovators with the right partners they need to succeed
- Provide access to state-of-the-art facilities and expertise to commercialise new ideas through our Catapult programme
- Help our innovators launch, build and grow successful businesses

Since 2007, we have committed over £1.8 billion to innovation, matched by a similar amount in partner and business funding. We have helped more than 7,600 organisations with projects estimated to add more than £11.5 billion to the UK economy and create 55,000 extra new jobs.

We support UK business-led innovation to explore global opportunities through a range of connecting and funding programmes, including the Newton Fund and European Funding Programmes including Horizon 2020, Eurostars and Eureka. We have supported UK organisations access over 75 international markets.





Sara El-Hanfy Innovation Lead – Machine Learning & Data

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Sara El-Hanfy is Innovation Lead for Machine Learning & Data at Innovate UK, a part of UK Research & Innovation. Sara works to identify, support and accelerate high growth-potential innovation in the UK, based on cutting-edge AI and data research and technology.

Sara studied at the University of Wales, Swansea where she obtained an undergraduate degree in Computer Science. Sara has more than 15 years' commercial digital experience, working for NGOs and in the private sector. For the last seven years, she has focused on machine intelligence. Prior to joining Innovate UK, she worked as an AI Consultant advising global organisations on AI development strategies and implementation.

KTN

KTN exists to connect innovators with new partners and new opportunities beyond their existing thinking – accelerating ambitious ideas into real-world solutions.

The world we live in faces ever-changing societal, environmental and economic challenges, which are felt regionally, nationally and also globally. At KTN our mission is to connect ideas, people and communities to respond to these challenges and drive positive change through innovation.

Our diverse connections span business, government, funders, research and the third sector.



Phil Williams Head of Complex Systems

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Phil is Head of <u>Complex Systems</u> at KTN and leads a team of sector experts, technologist and scientists supporting the <u>Space</u>, <u>Geospatial</u>, <u>Security & Defence</u> industries, the enabling domains of <u>Robotics</u>, <u>Autonomous Systems & Artificial Intelligence</u>, and the underpinning scientific discipline of <u>Industrial Mathematics</u>. The breadth and depth of the team's knowledge and experience enables Complex Systems to apply a "Systems Thinking" approach to both institutional and sectoral challenges.

Previously, Phil led KTN's programmes in: Smart DC; Energy Harvesting; Energy Efficient Computing; Robotics, Autonomous Systems & Artificial Intelligence which led to the development of the UK's Landscape Map for Robotics & Autonomous Systems and the UK's Robotics & Autonomous Systems Strategy, RAS 2020.

Phil has over 15 years of R&D and project management experience having worked in the Space, Telecoms, Automotive & Public Sectors and holds Master's degrees in Satellite Engineering and Intelligent Systems.



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Sandeep is the Knowledge Transfer Manager for International & Development. She is responsible for the delivery and management of the KTN's international programmes, facilitating research and innovation collaborations with key economies around the world.

Previously Sandeep worked as a Senior International Policy Manager at UK Research and Innovation (UKRI) leading on international strategy, transnational partnerships, European policy and UKRI's participation in the Global Research Council. Sandeep also worked at the Medical Research Council in a variety of roles from managing their infections and immunity portfolio, to managing their global health programmes. Sandeep completed her PhD at the University of Birmingham in the field of Biochemistry, developing a novel detection system utilising engineered bacteriophages.





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Assentian Limited is a cyber security and blockchain lab based in the UK, USA, Ireland and Spain (wholly owned subsidiary of Grupo Banco Santander). Personnel at Assentian have a strong background over 15 years of developing and delivering solutions to the financial services sector using emerging technologies like Machine Learning, Blockchain and the Internet of Things. They also have a deep understanding and considerable success of taking new innovative products and services to market. They also advise their clients on the requirements of regulation, standards and directives andhow they impact business processes and solutions. They have experience of working with a number of public authorities throughout Europe and the Far East, the world's leading financial institutions, fintech's and global technology companies.

Dr Ilesh Dattani has a first degree in Mathematics and a Phd in Artificial Intelligence (UCL) and a Masters in Financial Mathematics (Yale). He is an investor in a number of technology start-ups in the UK and the US. He has founded two successful start-ups based in Europe and North America operating in the Financial Services Sector and he has over 15 years of experience in that sector. Prior to that he worked within the aerospace and wider safety critical real time systems in Europe and North America and also was the lead in the creation of an AI Lab at Air Canada in Ottawa in the late 1990's. He is a Certified Information Security Auditor and is on the International Standards Committee on Information Security and Governance and the British Standards Committee on Big Data. He has recently joined the board of AICULUS, a start-up based in Singapore and Australia working with Machine Learning to predict when data is being compromised when it is moved between systems.

UK SCIENCE AND INNOVATION NETWORK- BRITISH CONSULATE GENERAL MUNICH

To promote international collaboration in science and innovation, the Department for Business, Energy and Industrial Strategy and the Foreign, Commonwealth and Development Office (FCDO) jointly fund the <u>UK Science and Innovation Network (SIN)</u>, over 110 officers in over 40 countries.

The SIN Germany team is based at the British Embassy in Berlin and the British Consulate General in Munich. The team works to support UK science and innovation policy objectives through exchange with German counterparts and reporting on the German science and innovation landscape. It supports collaboration between the German and UK research communities, with a particular emphasis on new technologies and technology translation. Promoting UK science excellence and policies across Germany is also a key objective, e.g. through events such as the annual Queen's Lecture at Technical University Berlin. For an overview of the German science and innovation landscape and UK cooperation with Germany, read the UK Science and Innovation Network Country Snapshot here.



Priorities

SIN Germany works across a wide range of topics, agreeing priorities for the year and running small projects (eg roundtable and panel discussions, thematic debates and workshops, high level visits) to bring together UK and German researchers within areas of mutual interest. Together with our colleagues in Austria and Switzerland we form the SIN DACH region with the overall aim on joining forces to stimulate collaboration in the entire region.

Our work focuses around seven priorities: UK-German future S&I partnership, COVID-19 crisis response, COP26/climate & clean growth (incl. future sustainable cities, clean energy, green recovery), aging society (incl. global health and life sciences), digital/AI (incl. high value manufacturing), future of mobility (incl. space), research culture.

Beyond the thematic areas SIN DACH promotes latest developments impacting Science and Innovation such as the UK Industrial Strategy, UK's R&D roadmap, the creation of UK Research and Innovation (UKRI) as well as aspects of the future UK-EU relationship.



Daniela Reimer Science and Innovation Network Officer

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Daniela Reimer is Deputy Head of Science and Innovation Germany at the UK Science and Innovation Network, based in the British Consulate General in Munich. She is responsible for the priority topics AI/Data and Clean Growth/Energy and leads for SIN Europe on Research Infrastructures.

Prior to joining SIN, she worked as a Technology Manager in the Office for Research and Innovation at the Technical University of Munich and was responsible for patent and innovation management, negotiation of intellectual property regulations for R&D agreements and public funded research collaborations and supported clusters of the German Excellence Strategy. Daniela studied at the University of Saarland, Saarbrücken (Germany) where she obtained degrees in Bioinformatics and Biotechnology. During her scientific career she completed her PhD in Biology at the Goethe University Frankfurt (Germany) in the field of the identification of natural products from soil bacteria, which was followed by a postdoctoral position at the Scripps Institution of Oceanography in San Diego, California.



DEPARTMENT FOR INTERNATIONAL TRADE (DIT) – BRITISH CONSULATE GENERAL MUNICH

DIT has overall responsibility for promoting UK trade across the world and attracting foreign investment to the UK economy. We are a specialised government body with responsibility for negotiating international trade policy, supporting business, as well as delivering an outward-looking trade diplomacy strategy. DIT is represented at diplomatic missions across the world, with colleagues in Germany based at the British Embassy in Berlin and the Consulates-General in Düsseldorf and Munich.



Frank Ambos Senior Trade Adviser

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As part of the DIT technology team Frank identifies and addresses emerging technology themes where the UK can shape a globally competitive regulatory environment and projecting the UK as Germany's tech partner. He identifies UK tech and cyber supply side opportunities and matches them with German demand with a focus on export and Overseas Direct Investment. Focus areas are on high growth tech themes in the Industrial Strategy and strategically identified COVID-resilient areas such as AI, IoT, and supply chain resilience.

