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Foreword



Abi Tierney

Registrar General for England and Wales
Director General, His Majesty's Passport Office
and Director General, UK Visas and Immigration

Every aspect of my role – and my team's work – involves decisions that have people at their core. Most are straightforward cases of meeting practical everyday needs. But many revolve around the complex stories of the most desperate and vulnerable in society.

So, on the one hand there is the huge opportunity for digital transformation to drive greater efficiency and better user experience for a public whose expectations are shaped by the ease and convenience of their smartphone apps.

On the other is the need to consider the consequences and appropriateness of applying technology and using data when outcomes can have profound impact on people's lives.

We came to ACE for help with a challenge that had been set to us at the very highest level of government. The Prime Minister asked us to explore how a particular technology might be applied to a complex mission problem, with the suggestion of using a hackathon to achieve results at pace.

We simply didn't have the knowledge and experience, and so needed a partner who could deliver a hackathon to a very tight timescale that would achieve something of real value.

ACE brought the expertise to facilitate, shape and focus the hackathon, and reached out to experts from industry and academia to provide practical support. The result was tangible, actionable ideas from just a few intense days of work.

The acceleration of ideas and seeing the art of the possible was hugely exciting for teams that don't usually work in this space, and the potential solutions that came out of it more than met the original brief from No10.

Having ACE in the government toolbox offers civil servants rapid access to some of the best capabilities, tech and data know-how that industry and academia have to offer. Crucially, it does this with the right governance and assurance in place to provide the confidence to use them.

It's with this kind of approach that we can harness technology to automate mundane, repetitive manual tasks and free up those on the operational front line to focus on the demands of casework. We can bring data-driven insights to support human decision making. And in doing so we can effectively and ethically deliver better public services.



We need to double down on innovation as an essential way of doing things.

Richard Alcock
Home Office

Introduction



Richard Alcock CBE
Director Data, Information and Operations,
Homeland Security Group, Home Office

The demands placed on innovation have never been greater. It is how we discover and develop new capabilities to address evolving challenges and seize emerging opportunities. It gives us novel ways of working and it delivers better outcomes. And in that drive to do different, deliver faster and perform better, innovation brings greater efficiency and value for money.

The continued pressure on public finances makes this absolutely critical.

Transforming public services is not easy. Leveraging technologies such as artificial intelligence and data science can accelerate and automate processes, reduce duplication of effort, and better equip decision makers and the operational front line to be their most effective.

So, more than ever, we need to double down on innovation as an essential way of doing things.

It is a collaborative endeavour that relies on maximising the opportunities to engage the best knowledge, ideas, expertise and capabilities that exist across industry, academia and government and find ways to fuse these together through shared mission purpose.

ACE embodies this holistic approach, combining access to the best people and organisations with an environment in which they are free to be truly innovative and experimental.

Over the last year we have seen this model continue to yield exciting ideas and solutions to the challenges government faces from technological, social and geopolitical change.

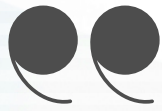
For our Home Office partners ACE has delivered exceptional work in support of law enforcement, counter terrorism, national security, protecting our borders, and more.

And we have seen ACE's reach across government continue to grow, with projects ranging from diagnostic research for cancer and Parkinson's disease for the NHS, to global data challenges for the Foreign, Commonwealth and Development Office.

The common thread through all the problems that are brought to ACE is the need, right across the public sector, to keep pace with the exponential change resulting from technologies such as AI, data and quantum computing.

Criminals and other bad actors are swift to exploit such capabilities, unconstrained by any legal or ethical considerations, which means we must be even smarter in our responses.

At the same time, we need to be just as agile in maximising the opportunities for innovation to improve the machinery of government and the delivery of public services. That way we can do more – and better – for less.



Fundamental to the success of ACE are people and the connections they make with each other.

Toby Jones
Head of ACE



People, networks and connections are what power innovation



Toby Jones
Head of ACE



Simon Christoforato
Vivace Chief Executive Officer

Real innovation cannot happen in silos or echo chambers. It happens at the edge, where new ideas and ways of thinking are forged, and through connections between ideas and ways of working.

Most importantly, innovation is about people and the connections they make with each other.

The standout achievement of ACE has been the creation of an environment to enable the alchemy that happens when people come together with shared purpose.

Since ACE launched in 2017, those people have numbered into the thousands.

Hundreds of people have been members of the ACE core team, bringing expertise from all sorts of backgrounds and organisations but working to a 'one team' collaborative ethos.

Hundreds of people have worked on commissions as part of the Vivace community, the brightest and most forward-looking talent from companies of every size, academic institutions and third sector bodies.

And hundreds more have experienced ACE as customers, whether product owners intimately involved in the delivery of a commission or public servants acting as sponsors and stakeholders.

Every one of them has played a part in what has been an enormous cross-government endeavour. They will also have taken something of their experience of ACE back to their organisations and into their own personal working lives across public services, industry and academia.

New ways of looking at problems, engaging early, taking an entrepreneurial approach to exploring the art of the possible, different ways of working, and overcoming barriers to deliver at pace.

ACE has created mechanisms to enable these things to happen with the assurance and security necessary for addressing critical and sensitive public sector challenges.

But they are ultimately just behaviours, none of which are the sole preserve of ACE or anyone else.

Then there is our extended 'network of networks'. We plug into trade bodies like TechUK and ADS, and academic organisations such as Academic RISC and CREST. We've established links within private equity and venture investment, and our partnership with Plexal opens up new nationwide and regional communities that extend our reach and complement Vivace capabilities. We work with other public sector innovation units, government departments and regulators, such as the ICO.

All of these elements are vital to what makes ACE somewhere government customers can bring the most complex and pressing challenges for innovative solutions delivered at terrific pace.

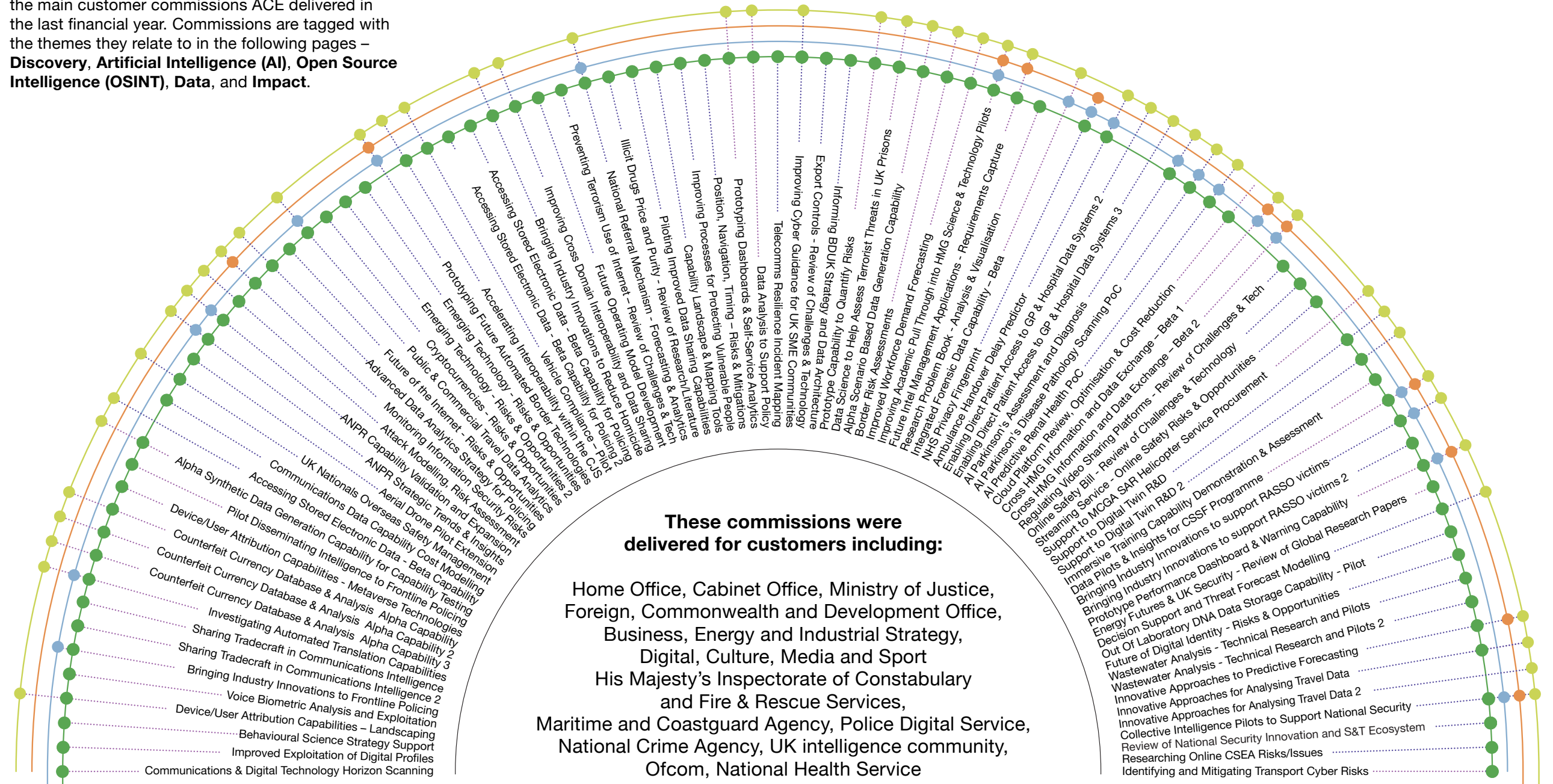
What is fundamental to making that successful, though, is setting the right conditions for the right people to work together towards a common mission.

OUR WORK

ACE has delivered a record number of commissions over the past financial year for a continually growing range of customers. The diversity of work has, once again, drawn on the breadth of capabilities of the ACE team and our Vivace community. For this year's Annual Review we look at the past year's output through several thematic lenses. While the volume and variety of ACE commissions extended beyond these themes, they represent the notable areas of focus demanded by our customers' challenges. These themes are **Discovery and Early Stage Problem Shaping, Artificial Intelligence (AI), Open Source Intelligence (OSINT), Data, and Impact**. We have grouped case studies under the most relevant heading, but in many cases these commissions will touch on more than one.

ACE Commissions FY22-23

This graphic illustrates the volume and diversity of the main customer commissions ACE delivered in the last financial year. Commissions are tagged with the themes they relate to in the following pages – **Discovery, Artificial Intelligence (AI), Open Source Intelligence (OSINT), Data, and Impact.**





Every ACE commission starts with a ‘Problem on a Page’ that clearly states the challenge a customer has brought to us. It’s our job not just to seek to solve that problem but to test and challenge it to make sure it is the right problem to solve, to understand its wider context and determine whether ACE is the most appropriate vehicle to address it.

Early stage discovery and problem shaping remain at the heart of the ACE model and helped address a wide range of customer problems across many of the last FY’s commissions. It is at this early stage of exploring and developing solutions to challenges that innovation can have enormous impact, informing and shaping the larger projects and procurements that follow.

This helps de-risk such projects in several ways – through determining the most appropriate approach before significant investment of resources, and by bringing problems to life with tangible demonstrations of the art of the possible.

Discovery is important for wider understanding of a problem and the space in which it exists, and can be a discrete piece of work in itself or part of wider commission activity.

ACE’s Futures & Insight team of analysts can reach into an extended network of specialist experts with intimate and detailed knowledge of different challenge areas gleaned from working within diverse industries. The ACE Research Network provides academic input to discovery work and we bring in non-academic subject matter experts from across the Vivace community.

Our work in this area ranges from open source and human intelligence, futures thinking and foresight, to development of proofs of concept.



CASE STUDY

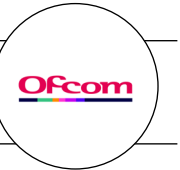


Understanding the future of the internet

The Home Office wanted to understand how future technology trends could affect the behaviour of terrorists in areas such as recruitment, radicalisation, and incitement, to help inform policy development.

ACE assessed emerging and future technologies such as deepfakes and augmented reality in discussion with academic and private sector subject matter experts. Scenarios were developed, along with probabilities and timeframes, to provide a base against which policy and strategy development could be tested.

CASE STUDY



Helping build an evidence base around online harms

Ofcom is due to gain new regulatory responsibilities later this year under the Online Safety Bill, which aims to help keep users of online services safe.

In preparation for this, ACE supported Ofcom to develop and widen its understanding across key areas, including how user-generated fraud and illegal harms are carried out, as well as how they can potentially be mitigated, to help build an evidence base.

This detailed understanding will be used to help inform future policymaking, including the implementation of a new framework to ensure online platforms have appropriate systems and processes in place to improve the safety of their users.

Read the full case study at [GOV.UK/ACE](https://gov.uk/ace)

CASE STUDY



Designing policies for the future of crypto

Future changes in the way serious organised crime (SOC) groups use cryptocurrencies could have a significant impact on the effectiveness of policies being implemented today.

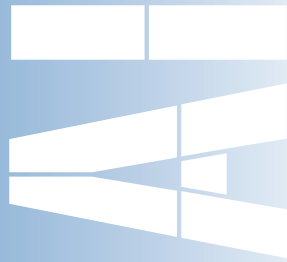
The Home Office asked ACE to help it understand potential developments, including the role of technological advances, to help inform future policies.

ACE identified a range of drivers and barriers to SOC cryptocurrency use, and some initial scenarios setting out how these might develop, which were then shared with a group of experts – mostly academics in related fields.

These were refined to the ten scenarios likely to have most impact, highlighting the technologies that would enable each as well as the potential consequences which could unfold.



**Read more
ACE case studies
on [GOV.UK/ACE](https://gov.uk/ace)**



Since ACE launched in 2017, we have applied the latest advances in artificial intelligence (AI), machine learning (ML) and natural language processing (NLP) to various challenges across a wide range of customer commissions. Over the past year this remained a consistent theme, with these technologies playing a part in more than a fifth of commissions.

These applications have spanned the breadth of ACE commission work and have included: the accelerated ingestion of information from text and images; identifying patterns and anomalies at speed in large quantities of data; accelerating workflows; automating processes and removing complexities through AI-driven technologies such as chatbots.

Key characteristics of these commissions have been the desire to support and optimise decision making for better, faster results, and to drive efficiency through reduction of routine manual tasks.

While AI and, in particular generative AI and large language models (LLMs), have long been areas of focus for our Futures & Insight team, the recent rapid development and applications of LLMs such as GPT-4 and LLaMA have seen an increase in demand for further foresight work to help inform policy and strategic planning.

ACE has also contributed to the development of ethical approaches to the use of AI and data, drawing on our extensive experience of advising our customers and involvement in various government initiatives.

CASE STUDY



Using AI to speed up future Parkinson's research

Parkinson's disease is the world's fastest growing neurological disorder with over 10million diagnoses globally.

Accurate diagnosis and grading from brain tissue after death is necessary to more fully research and understand pathological causes and develop potential new treatments. However, the speed and scale of research is being hindered by the fact that changes can only currently be assessed manually, which takes 4-6 hours per brain.

The NHS Digital approached ACE to develop a Proof of Concept (PoC) using AI to speed up diagnosis by automatically identifying areas of interest for manual follow-up.

An ACE industry supplier used a neural network to synthetically stain slides of brain tissue which highlights areas of interest, making them quickly identifiable after processing.

This work enabled development of a PoC classifier which achieved around 92% accuracy on automatically classifying Parkinson's from digitised images of brain sections and which meant moving from assessing one brain in 4-6 hours to minutes.

Read more
ACE case studies
on GOV.UK/ACE

CASE STUDY



Developing an AI tool which proactively recognises serious kidney illness

When kidneys fail, dialysis treatment is needed to manually take over cleaning the blood to keep the patient alive. Acute kidney injury (AKI) is common among those who are hospitalised and comes on very quickly, which can make it difficult to ensure an appropriate bed is ready.

ACE was asked to explore possible ways of detecting AKI before it became critical and went on to develop a proof of concept that can identify 24-48 hours in advance the 5-10 per cent of people who are at higher risk of needing an intensive care stay or kidney support.

The advance predictive model, which ingests and analyses available data to identify patterns of early deterioration, was developed in just 15 weeks. Built on a codebase used by Google's DeepMind AI model, it was modified for the available data and also had explainability built in to clarify how decisions are reached.

Read the full case study at GOV.UK/ACE

CASE STUDY



Designing a smarter, more secure UK border

The Home Office Future Border and Immigration System (FBIS) programme vision is to transform the UK border, making visible changes to security, flow and passenger experience by enabling automated entry to the UK for most passengers across all modes of transport at all ports. This will allow Border Force officers to apply their skills and professional judgment to target security and safeguarding outcomes.

The increased use of automation will allow for flow to be managed better at the border. Automated solutions will take advantage of increased intelligence and risk-based targeting to identify those travellers who require positive interventions at the border.

ACE was asked to help FBIS by identifying feasible technical solutions which can move towards contactless border crossing, creating proof of concepts (PoCs) of the most promising potential solutions for the specific scenario of vehicles presenting at the border and testing these in a simulated border scenario.

ACE worked with suppliers from its Vivace community, narrowing down submissions to assist FBIS in creating two innovative PoCs which were put through their paces during interactive demonstrations involving different vehicle types.

The FBIS programme is analysing the outcomes from the trial to determine options on how these types of technologies may be implemented.

Internet and communications technologies are creating ever-increasing sources and volumes of publicly available and open source information. This is changing the way security and law enforcement agencies, government departments and other public sector bodies approach intelligence gathering and analysis.

Open source intelligence (OSINT) and publicly available information (PAI) offer alternative sources that can augment traditional classified intelligence gathering. Data that has traditionally been the preserve of security and defence agencies, such as satellite imagery, now routinely feature in news coverage, social media and other public communications channels.

The rapid and continuing growth of PAI brings the challenges of identifying valuable information from amid the noise, ensuring its veracity and navigating ethical considerations for its use. ACE has applied OSINT to prediction and forecasting, augmenting non-open source data for intelligence gathering and analysis, and monitoring activity and sentiment across different regions and themes, such as the conflict in Ukraine.

CASE STUDY



Enabling a more collaborative approach to solving national security challenges

The UK's national security community came to ACE to explore how sustained collaboration with more diverse industry and academic partners - and increased use of open-source data - could help uncover new approaches to long-standing challenges and threats.

As a first step, the intelligence community wanted to test if a Collective Intelligence approach could increase the UK's quantum enablement capabilities through generating deeper insights, or increasing national resilience or advantage. This could be through creating new ways of working or uncovering new data flows or sources.

Suppliers were chosen to work on solutions, providing a suite of tools and research reports. One provides insights into the competitive landscape in quantum technologies, drawing on a variety of available data to proactively find trends and future signals of emerging areas, while another explored how user-centred design principles could help create a useful tool for the intelligence community.

Within six months, the teams had produced and shared prototypes with specialists across multiple government departments, with a view to incorporating their insights and models into emerging UK policy on securing international quantum advantage.

Read more
ACE case studies
on GOV.UK/ACE

CASE STUDY



Developing diverse capabilities for complex global challenges

ACE has partnered with the Conflict, Stability and Security Fund's new data analytics team, which has been set up to make better use of data across its global network which addresses threats to the UK's national security.

This wide-ranging commission delivered a programme focusing on state-of-the-art technologies such as artificial intelligence, bringing together expertise from multiple suppliers to deliver long-term capability development, proof of concepts and insights.

With a diversity of complex and novel challenges coming from across the FCDO's global network, the Vivace community was able to offer wide-ranging expertise and capabilities to meet the needs of each project, something that hadn't been possible previously under a single supplier approach.

One of these projects looked at the effects of climate change on transnational serious and organised crime groups.

A one-day hackathon quickly distilled expertise from industry and academic participants who explored three issues: critical minerals, drug production and the exploitation of people. The data used in the hack was all open source, with academics identifying additional sources.

Further work by a rainbow team of suppliers created a sophisticated model – a causal Bayesian Belief Network – to understand the relationships between climate change, critical mineral supply chains and Serious and Organised Crime.



The hackathon was excellent. We were amazed by the detail of the insights from only a single day. The work was invaluable and will feed into our decision-making on this important national security issue. Normally it would take us weeks to develop work like this.

Ben Merrick
Director Joint Funds Unit, National Security Secretariat

CASE STUDY



Flagging issues with police forces sooner

His Majesty's Inspectorate of Constabulary and Fire & Rescue Services (HMICFRS) inspects and monitors police forces. A police force is escalated to the 'engage' stage of the monitoring process when a serious problem is found, and the response is not sufficient. By this stage, service to the public may already have deteriorated. ACE was asked to develop a machine-learning algorithm to identify the right questions to ask and the corresponding quantifiable data to start to create a force

performance warning system. This would enable HMICFRS to identify forces that are deteriorating sooner so it implements early interventions and improves standards. A proof of concept (PoC) using historic data and metadata identified and proved a method for a decision support tool, while a complementary approach suggested a strong correlation between public sentiment on social media and performance.



Data has always been a significant component in the large majority of ACE commissions. ACE was established to help address the many, fast-evolving challenges facing public sector missions that are thrown up by the ubiquity of data in modern everyday life.

Knowing how to capitalise and effectively use diverse or large quantities of data, cleansing and storing data, and making it interoperable are consistent issues. With such challenges come considerations of proper handling, security, and the ethical use of data.

When these problems are overcome, bringing together different datasets opens up huge possibilities for delivering greater insights to support strategic and front-line decision making.

Artificial intelligence relies on quality data as its raw material. AI can accelerate data processing and analysis to dramatically cut manual effort and accelerate outcomes.

Effective use of data has delivered results ranging from improved front-line decision-making and diagnosis in the NHS, exploring early interventions to prevent of homicide, and the development of modelling to inform policy, decision-making and simulations of real-world systems.

CASE STUDY



Combining existing data to cut murder rates

Murders are increasing across the UK, and targets to cut them by 20% have support at the highest levels of government.

The National Police Chiefs' Council worked with the College of Policing to develop the first Homicide Prevention Strategy and Homicide Prevention Framework, published last year. As part of this, ACE was asked to explore how new and innovative approaches could help prevent homicides by making better use of existing police datasets to identify risk factors and potential intervention opportunities.

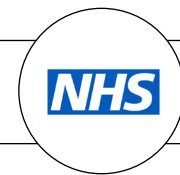
Eight potential solutions to identify risk and opportunities to prevent homicide were explored by suppliers from ACE's Vivace community, and two were chosen to be developed into full Proof of Concepts (PoCs).

One is an app which furnishes frontline officers dealing with a domestic abuse incident with relevant information about the suspect such as previous contacts or court orders, as well as past abuse of the victim. This enables a more informed risk assessment. With a knife crime incident, officers are given details of any previous interactions with the force, and any safeguarding actions taken.

The second is an artificial intelligence (AI) CCTV overlay which can identify the presence of weapons, and alert operators. This enables early detection of individuals who may have homicidal or violent intent, and ultimately improves the safety of the public and first responders as well as giving greater situational awareness during an unfolding incident.

Read more
ACE case studies
on [GOV.UK/ACE](https://gov.uk/ace)

CASE STUDY



Reducing pressure on the NHS by giving patients more control over their own care

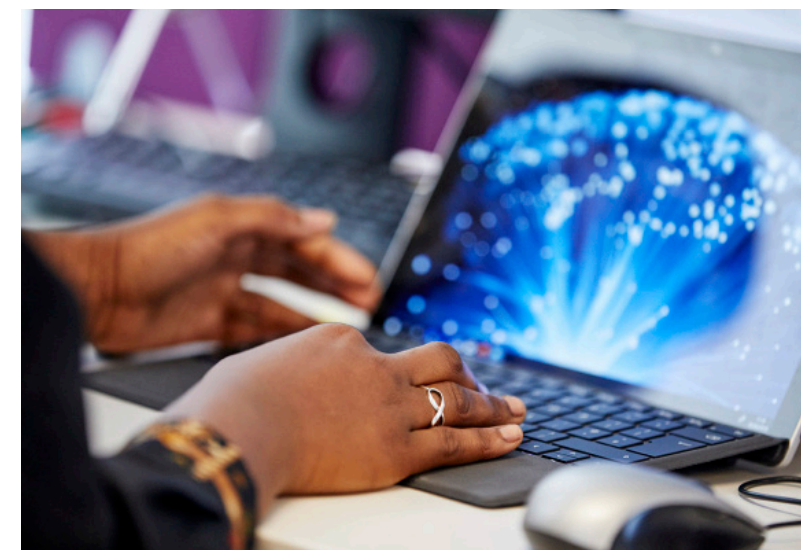
Doing more with existing data has enabled a big leap forward in providing NHS patients with more direct control over their care. Finding ways to reduce pressures on the NHS took on even greater urgency after waiting lists rose during the COVID-19 pandemic.

ACE has been a strategic partner in one of the more innovative ways to help tackle this – developing new features for hospital appointments in the NHS App, the digital ‘front door’ to the NHS.

Working with NHS England and the Department of Health and Social Care, we quickly developed a sophisticated system of APIs to gather data from multiple hospital patient admission systems and Patient Engagement Portals (PEPs), combining them into a proof-of-concept API aggregator.

This enabled new app features including the ability to see all appointments and referrals in one place, as well as book, change and cancel hospital appointments. These are designed to improve patient experience, as well as minimise the number of missed appointments. This, in turn, frees up slots for other patients, reducing waiting times and making more efficient use of clinicians' time.

An added value was the speed at which ACE was able to bring suppliers on board, including individual PEP providers.





ACE's work making a real-world impact – and headlines

The impact of ACE commissions in the last year – and from longer-term pieces of work – has become increasingly visible and a factor in numerous news headlines.

The NHS App, for which we were a strategic partner, for example, has been rolled out to millions of people across England, empowering them with greater choice and control over where they are treated, as well as helping reduce waiting times.

For the Cabinet Office, we designed, built and integrated a new platform which enables open-source and government data to be shared and combined to provide a richer intelligence picture.

The Maritime and Coastguard Agency announced a successful procurement for new search and rescue capabilities enabled by sophisticated data modelling developed by suppliers from our Vivace community.

In other areas, the impact of earlier commissions has continued to consolidate and grow. Strategically important work designing and building APHIDS, an airside security pass data-sharing system for UK airports to increase security and reduce insider threats, has resulted in this system being rolled out across more airports and also being considered to secure other methods of transport.

ACE played a significant role developing the technical platform enabling the cross-border Crime (Overseas Production Orders) legislation. For this, we worked to provide investigating officers with faster and more direct access to stored electronic data held by providers outside of the UK so they can investigate or prosecute serious crimes.

Much of this work has been covered across mainstream media, news websites and government outlets.

Our NHS work – including developing a tool which can be used to predict which patients might end up becoming bed-blockers – twice made the front page of The Times newspaper. The latter was reported as “technology...being introduced to solve the NHS bed-blocking crisis.”

An article in the Telegraph, meanwhile, detailed a “policy framework” which ACE provided the Ministry of Justice with supporting research and an evidence base for, which is ultimately designed to prevent dangerous criminals from being released.

Read more
ACE case studies
on GOV.UK/ACE

OECD highlights ACE as exemplar of public sector transformation

ACE was selected as a case study highlighting public sector transformation one of four key trends identified by the OECD Observatory of Public Sector Innovation (OPSI) and the UAE's Mohammed Bin Rashid Centre for Government Innovation (MBRCGI).

The Global Trends in Government Innovation 2023 report provided a global platform for ACE to describe its journey from experimental start-up within the Home Office to an established innovation platform delivering impact for a diverse range of public sector organisations, as an illustration of the trend ‘public administration transformation’.

The report is a product of analysis by OPSI and MBRCGI of 1,084 initiatives from 94 countries around the world.

oecd-opsi.org



HAVING ACE IN THE GOVERNMENT TOOLBOX OFFERS ACCESS TO SOME OF THE BEST CAPABILITIES INDUSTRY AND ACADEMIA CAN OFFER

Abi Tierney

Registrar General for England and Wales
Director General, His Majesty's Passport Office
and Director General, UK Visas and Immigration

Vivace – driving better engagement for our dynamic community

Start-ups and SMEs have always been a vital part of what makes Vivace so effective and valuable to ACE's customers. The demand from the public sector to access the most innovative capabilities and expertise has never been greater.

We are proud that over the last financial year we saw the proportion of small organisations in the community grow from an already impressive 75% to 80%.

Ensuring this level of SME representation remains a consistent priority for our Market engagement team.

We consulted the community to explore how we might continue to lower barriers to entry for those organisations suitable for joining Vivace, particularly for small companies and universities. As a result we have simplified our onboarding process and reduced the amount of admin necessary so that we can be more responsive to changing customer needs throughout the next phase of ACE. This will make it easier and quicker to bring the right organisations with the right capabilities into conversations about emerging customer challenges. It will also enable the community to expand and flex into new domains as necessary, building on learnings from our responses to previous moves into healthcare and wastewater-based epidemiology.

Just as important as bringing the right organisations into the community is ensuring they are properly engaged and aware of new opportunities that can often require rapid responses. Efforts to share information at an earlier stage to alert members to forthcoming commissions have been successful in allowing them to focus and prioritise those of most relevance and interest. This has resulted in a 30% increase in the rate of engagement across the community.

This approach paid dividends in a very busy fourth quarter of the financial year, which saw a record volume of commissions released for the period.



Plexal – An exciting new partnership

A really significant development for Vivace over last year has been its partnership with innovation consultancy Plexal. This relationship was forged through QinetiQ's successful bid to continue as ACE's Private Sector Partner (PSP) – via its Vivace business unit – in the competitive re-tendering of the Home Office contract.

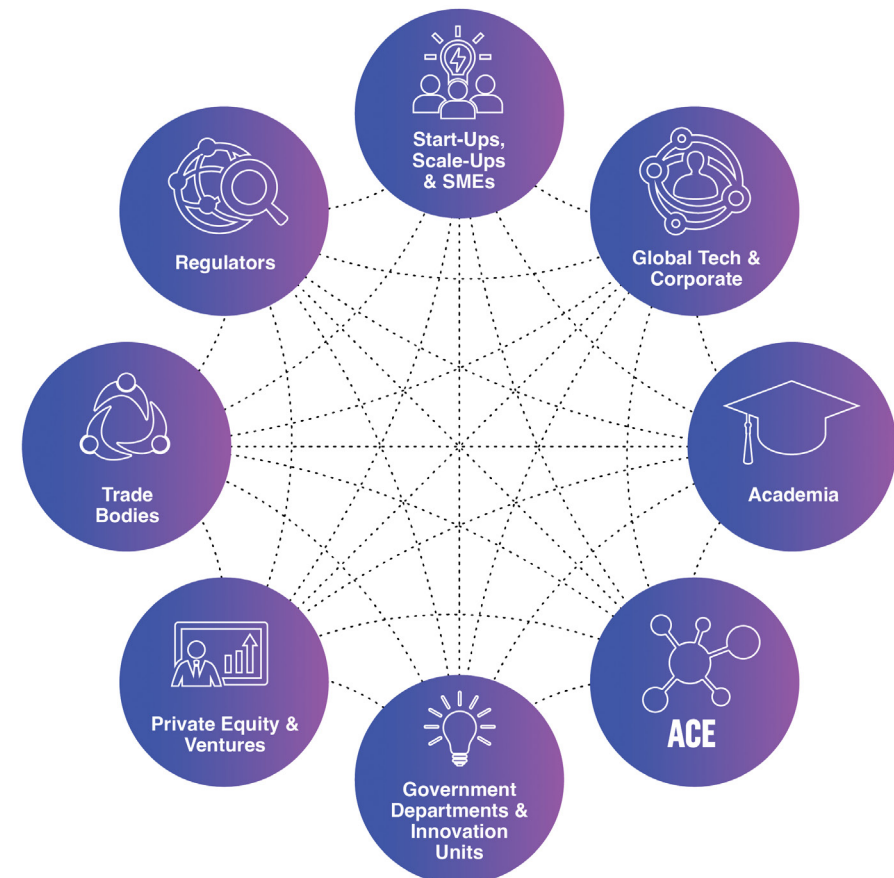
An immediate benefit has been the fulfilment of ACE's ambition to actively extend the reach of our market engagement activities to regional centres. Plexal's existing footprints in Manchester and Cheltenham have enabled ACE to hold events and bring together Vivace and Plexal communities as well as leverage each organisation's customer and stakeholder networks.

Members of Plexal's team are now embedded within ACE, sharing experience and learnings, and actively connecting each other's networks.



Key to Vivace's success is a 'network of networks' approach.

Simon Christoforato
CEO Vivace



ACE Research Network

From Net Zero, to public health, to national security, the challenges facing the government are increasingly complex. Solving such “wicked” problems requires deep domain knowledge and expertise. This makes the unique insight offered by universities and Public Sector Research Entities (PSREs) absolutely vital to ACE.

The ACE Research Network (ARN) brings this insight and expertise to bear on our customers’ biggest challenges. The ARN grew significantly across the board in FY22/23. The network grew from 156 individuals at 70 different institutions, to 237 individuals from 81 institutions. In addition, the number of institutions fully onboarded to ACE grew from 10 to 15. This enabled more academic institutions to win and deliver commissions. Consequently, bids won by academia grew from 10 to 21.



Cranfield University

A larger and more diverse academic community enables ACE to engage with new networks and communities, and to more effectively solve a wider range of customer challenges.

Over the coming financial year, ACE will take a variety of steps to grow our academic network to at least 400 individuals from at least 90 institutions. We are also aiming to improve on our previous record of 14 fully onboarded universities. These increases are significant and will enable academics to contribute to more commissions – we are aiming for at least 25 next financial year.

We are also aiming to improve the way we engage with academia. For example, we are reviewing our onboarding processes to make it easier for universities to join our supplier community and compete to deliver commissions. We are also aiming to celebrate the successes.

CASE STUDY



Taking on wider challenges

The growth of the ARN enabled ACE to more effectively solve a wider range of challenges. For example, the Home Office approached ACE aiming to better understand impactful but unexpected technologies that could influence the national security landscape over the next 5-10 years.

After eight bids from six different universities, Cranfield was selected to deliver a report on 3D-printed explosives, whilst a partnership between Swansea and Portsmouth Universities was selected to deliver a report on mathematical modelling of scenarios. By convening fora of experts across academia, industry and government, they delivered key insights and built communities of interest that generated further research on technology and national security issues.

As a result, the ARN helped the Home Office develop a better understanding of the medium to long term which would aid the development of policy and strategy domestically and across the Five Eyes.

CASE STUDY



Using academic research in fight against terrorism

Counter Terrorism Policing (CTP) is forging new links with UK universities, to drive innovation and creativity when it comes to solving operational challenges.

Last year, the CTP Science and Technology Division launched the University Innovation Concept (UIC) supported by the Home Office’s Accelerated Capability Environment (ACE).

The programme aimed to enhance existing networks and create new relationships between CTP and leading academics, to harness research that could help us protect the UK against the terrorist threat.

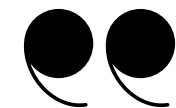
In February 2023, a showcase event at Cranfield University saw 12 universities present 14 projects addressing varied mission challenges to an audience of stakeholders from CTP, wider law enforcement, security and intelligence communities, and relevant government agencies.

Head of Innovation Sam Hepenstal said: “We are always looking for new ways to tackle operational challenges and for new ideas to help keep our communities safe.

“As we continue to see an ever-evolving terrorist threat, our own approach and response to that threat must also change. Science and technology is a vital element in that and we have some incredible teams working alongside investigators, officers and staff in this space.

“The idea behind the University Innovation Concept is that we also have world-leading partnerships with academia, who can help us shape our own work and enhance what we do even further.

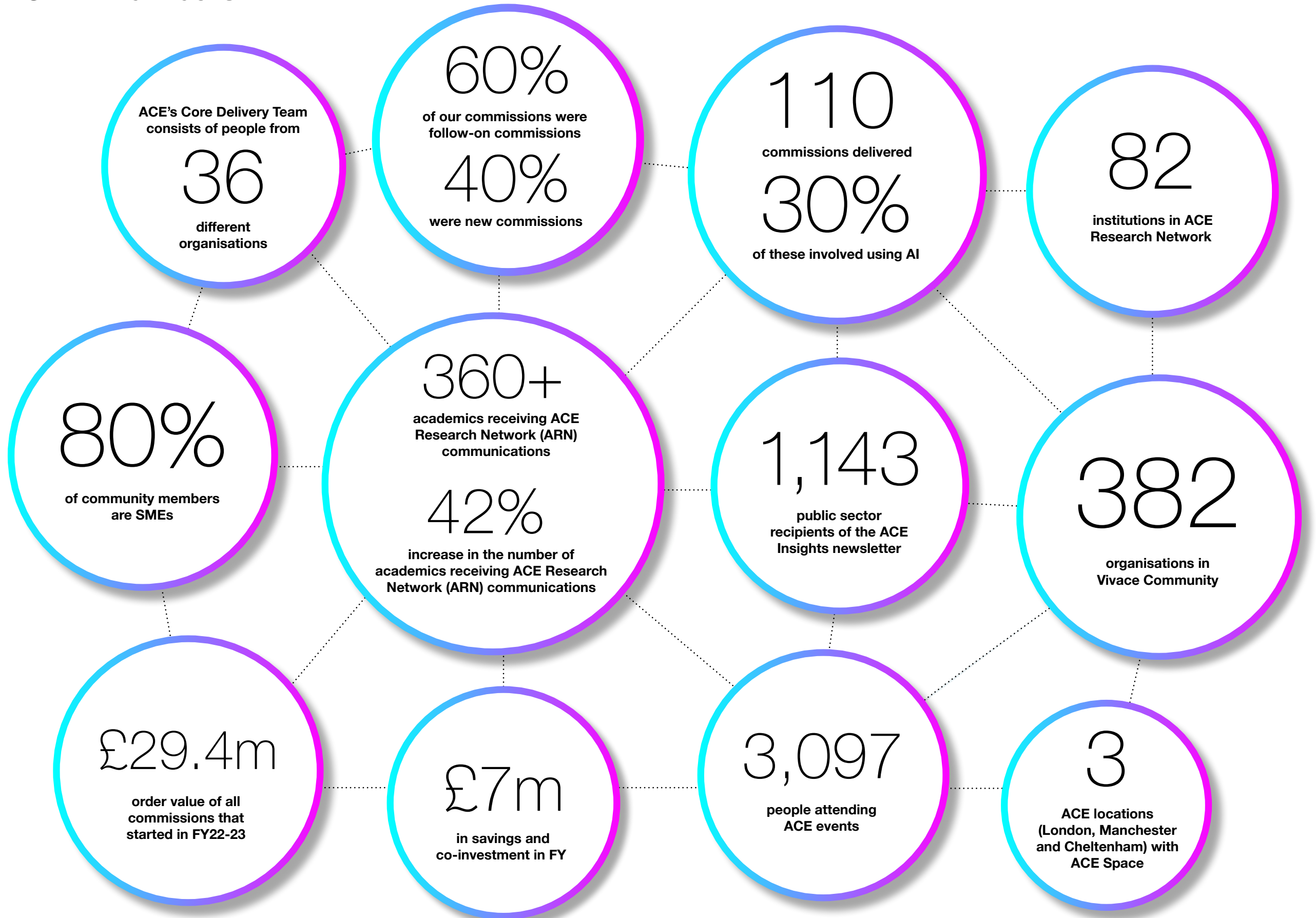
“Whether we’re exploring radicalisation, how to create synthetic data, protecting against the challenges of emerging technologies, to supporting staff mental health, it’s important that we’re doing that effectively and efficiently.”



The idea behind the University Innovation Concept is that we also have world-leading partnerships with academia, who can help us shape our own work and enhance what we do even further.

Sam Hepenstal
Head of Innovation,
Counter Terrorism Policing

ACE in Numbers



The ACE toolbox

Futures & Insight – understand tomorrow’s technologies today

ACE’s Futures & Insight (F&I) function delivers market intelligence, horizon scanning and foresight to customers across a broad range of technology topics.

Supporting customers directly as well as supplying foresight expertise to ACE commissions – especially during the discovery phase – F&I analysts conducted well over 50 pieces of research and reporting in 2022/23 on topics including: use of tech in county lines drug operations; how platforms deal with deepfakes; decentralised finance; hearables; AI in telecoms networks; haptics; premium file hosting; future of OSINT; Bluetooth low energy; the Online Safety Bill; Carrier grade network address translation; shared mobility.

F&I also continues to deliver ACE Insights, a fortnightly horizon scanning summary of interesting technical developments, especially impacting investigatory powers.

Using data effectively and ethically

Data is at the heart of so many of the challenges that ACE was set up to deal with, because better use of data has become the key to unlocking greater efficiencies and insights as well as enabling more informed decision making across law enforcement and government.

Ethical handling of this data from all sources is of course of paramount importance, so our commissions consistently and rigorously follow established regulations, governance and processes. These include creating data processing agreements and data protection impact assessments relating to the use and sharing of data and referring to these constantly throughout the life of a commission.

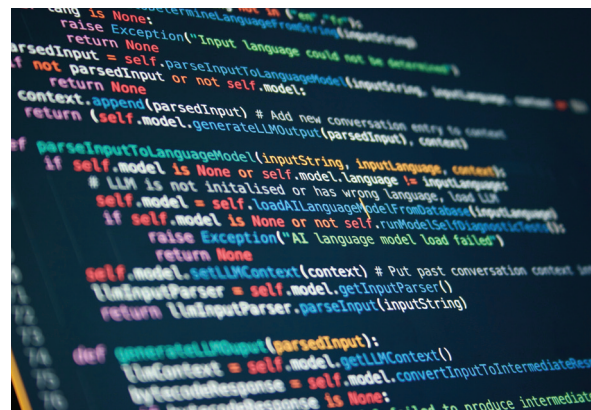
The increasing use of artificial intelligence (AI) for predictive purposes brings new ethical considerations in cases where AI is used on existing data to automate processes. Here, consideration and exploration of any potential bias in outputs and models is continuously undertaken to ensure development work remains ethically appropriate

Evolving our secure development environment PodDev

PodDev is ACE’s secure cloud development environment, providing the space for collaborating, sharing data and tools, and building technology solutions to customer mission challenges.

After five years of successful use across a wide variety of ACE commissions, we are now looking again at the practical and commercial aspects of our existing infrastructure to ensure it can meet future needs.

For example, the growth in Open Sources Intelligence (OSINT) means we need to be well equipped to handle open source data and work with it alongside other sources, including sensitive government data.




INNOVATION
ENGAGEMENT
COLLABORATION
IMPACT

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Read the ACE blog: ace.blog.gov.uk



Email: ace@homeoffice.gov.uk