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Britain's Energy Coast Business Cluster

WHERE ENERGY
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AI IN CUMBRIA:

BUILDING A NATIONAL CENTRE
OF EXCELLENCE FOR APPLIED AI

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EXECUTIVE SUMMARY

Artificial intelligence is rapidly becoming one of the defining technologies of the modern economy. Across the UK, organisations are using AI to automate routine activity, improve decision-making, strengthen productivity and support innovation. At the last official count, the UK's AI sector included over 5,800 companies generating £23.9 billion in revenue, underlining its growing economic significance.¹



“AI is no longer being treated as a specialist capability or future trend – it is becoming part of everyday operations. Cumbria is already part of this transition.”

Across businesses, schools, public services and industry, organisations are beginning to apply AI in practical ways. In some cases, this means reducing administration and improving efficiency. In others, it means using advanced analytics, automation and intelligent systems to support more complex technical and operational challenges.

Importantly, this is not a story of technology replacing people. The greatest opportunities are emerging where AI complements existing expertise, allowing individuals to focus on higher-value work that depends on judgement, experience and human interaction.

However, adoption remains uneven.

Without deliberate action, there is a risk that AI capability, investment and productivity gains become concentrated in areas with the strongest digital ecosystems and deepest pools of talent and capital. Regions that fail to define a clear role may increasingly become consumers of technologies developed elsewhere rather than active participants in shaping their application.

Cumbria has an opportunity to take a different path.

The county combines internationally significant industrial capability with established strengths in engineering, energy, advanced manufacturing and high-consequence environments. Alongside this sits a collaborative SME base, growing interest in innovation, and a quality of life that is increasingly attractive in a more flexible economy.

These characteristics create an opportunity that differs from established technology clusters.

Cumbria is unlikely to compete with London, Cambridge or Manchester as a centre for AI research. Nor should it attempt to. Its opportunity lies in becoming a national centre of excellence for applied AI – a place where technologies are tested, implemented and scaled in real-world environments.

That shift is already beginning.

Examples of AI adoption are emerging across sectors, often solving practical challenges rather than pursuing technology for its own sake. The opportunity now is to connect activity, strengthen capability and create a clearer regional proposition.

Success should not be measured simply by how much AI is adopted. It should be measured by whether AI strengthens productivity, supports better work, attracts investment and improves long-term resilience.

This paper – which is based on research and interviews with a broad range of individuals working across Cumbria's business, public, education and third sectors – explores how Cumbria can build on existing momentum and establish a distinctive position within the UK's AI economy.

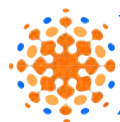
INTRODUCTION: A DEFINING OPPORTUNITY FOR CUMBRIA

Artificial intelligence has moved rapidly from concept to application. What was once viewed as an emerging or specialist technology is now becoming embedded within everyday activity across business, education and public services. AI tools are increasingly being used to manage information, automate routine processes and support more informed decision-making.

This transition is already visible in Cumbria. Organisations across the county are experimenting with AI in practical and often incremental ways. Some are embedding AI into existing processes to reduce administrative burden and improve efficiency, while others are exploring how intelligent systems can support more complex operational activity.

At a national level, adoption of AI remains uneven, with around 25% of UK businesses now using it, up from approximately 10% in 2023, but with significant variation across sectors and organisation sizes.²

Progress is often led by individual businesses, teams or sectors rather than coordinated at a regional level. That pattern is understandable. Organisations face legitimate questions around cost, governance, data security, capability and return on investment.



“Standing still is not a neutral position.”

In highly regulated and safety-critical sectors – where Cumbria has particular strengths – caution is not only understandable but necessary. Nevertheless, standing still is not a neutral position. National and international investment in AI is accelerating, and businesses and regions that fail to engage risk falling behind in productivity, competitiveness and workforce capability.

This challenge matters for Cumbria. The county already faces structural pressures including labour shortages, demographic change and infrastructure constraints. Used effectively, AI could help alleviate some of these pressures by improving productivity and enabling more effective use of existing capability.

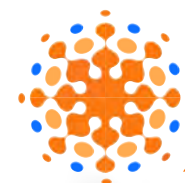
There is also a broader opportunity. Cumbria’s future role in the AI economy does not need to mirror the UK’s established technology centres. The county has a different set of strengths and therefore the potential to follow a different route to success. Its industrial heritage, engineering expertise and experience operating in complex environments create conditions that are increasingly valuable as AI moves beyond research and into application.

This matters because the next phase of AI adoption is unlikely to be defined solely by who develops the technology. It will increasingly be shaped by who can apply it effectively. That creates an opportunity for Cumbria to position itself not as a follower, but as a nationally significant location for applied AI.

The creation of Cumbria Combined Authority provides additional momentum. Regional leadership, economic development and strategic coordination create an opportunity to establish a more coherent approach to innovation and technology adoption. The objective should not be to impose change for its own sake, but to ensure AI strengthens what already exists while creating the conditions for new opportunities to emerge.

NATIONAL CONTEXT: AI AS ECONOMIC STRATEGY

Artificial intelligence is now central to the UK’s economic strategy. The UK is currently the third largest AI market globally and the largest in Europe, reflecting both the scale of investment and the maturity of its ecosystem.³ Government increasingly views AI not as a standalone sector but as enabling infrastructure capable of improving productivity, strengthening public services and supporting long-term growth.



“National policy creates the conditions. Regional leadership determines whether those conditions translate into local advantage.”

National policy reflects this shift. Recent approaches have focused on expanding digital and compute infrastructure, improving access to data, building workforce capability and accelerating adoption across public and private sectors. The ambition extends beyond creating technology companies. Wider adoption of AI could unlock up to £140 billion in additional economic output annually in the UK, highlighting the scale of potential impact.⁴ Increasingly, the emphasis is on ensuring that AI delivers practical economic value through widespread adoption.

There is also growing recognition that geography matters. Government initiatives and regional growth strategies increasingly acknowledge that the benefits of AI will not be distributed evenly without deliberate intervention. AI already accounts for a significant share of venture capital investment in the UK technology sector, reinforcing the concentration of investment, talent and innovation in established centres.⁵ Cities including London, Cambridge, Manchester and Edinburgh have developed powerful ecosystems supported by universities, private capital and established digital networks.

These clusters are important and will continue to grow. However, they do not represent the only route to participation in the AI economy. As adoption matures, demand is growing for places that can implement, test and operationalise AI technologies in real environments. This creates opportunities for regions with industrial capability and strong sector specialisms.

The national conversation is beginning to move from invention towards deployment. Questions increasingly centre on how organisations adopt AI safely, integrate it into existing workflows and convert technical capability into measurable outcomes. This shift creates space for regions that can demonstrate practical application.

For Cumbria, that distinction matters. The county’s opportunity is not to compete directly for research intensity or venture capital. It is to develop a complementary role focused on implementation, industrial application and operational excellence.

National policy creates the conditions.

Regional leadership determines whether those conditions translate into local advantage.

CUMBRIA'S POSITION: INDUSTRIAL STRENGTH MEETS APPLIED INNOVATION

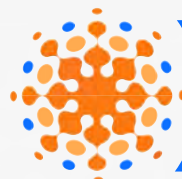
Cumbria enters this transition from a distinctive position. Unlike many emerging AI regions, the county's economy is not built primarily around digital industries. It is rooted in sectors including nuclear, defence, advanced manufacturing, engineering, agriculture and tourism.

These industries bring challenges - but they also create advantages. Cumbria has deep experience of operating in complex, regulated and high-consequence environments where reliability, accountability and technical competence matter. This reflects the county's established role in delivering against national missions - as set out in BECBC's recent white paper, [Cumbria's Four National Missions](#) - and provides a strong foundation for applying AI in real-world, high-stakes settings.

Those characteristics align closely with the next phase of AI development. As AI moves into operational environments, the ability to deploy technologies safely and effectively becomes increasingly important. This is an area where Cumbria already has capability. The county's businesses have long experience of solving practical problems, integrating technologies and working within demanding supply chains.

Examples of AI adoption are already emerging. Schools are beginning to use AI to reduce administrative workload and support teaching. Businesses are using AI to streamline operations and manage information more effectively. Engineering and technical sectors are exploring how AI can support analysis, planning and decision-making. At the cutting edge, AI and robotics are already being used to reduce the need for humans to operate in hazardous environments.

Many of these developments are incremental rather than transformational - but they demonstrate momentum. Cumbria therefore starts from a stronger position than may first appear.



“Cumbria does not need to become another technology cluster. It can become something more distinctive - a national centre of excellence for applied AI.”

There are, of course, constraints. Workforce shortages remain a challenge. Productivity sits below national averages. Digital and physical connectivity continue to limit growth in some areas. Competition for specialist talent remains intense.

Yet these constraints should not obscure the opportunity. Remote and hybrid working are changing how businesses think about location. Quality of life is becoming a stronger differentiator. Businesses increasingly value proximity to industrial challenges and opportunities to work in real-world environments.

This creates space for a different proposition. Cumbria does not need to become another technology cluster. It can become something more distinctive - a national centre of excellence for applied AI.

That means creating an environment where businesses, public services, education providers and innovators work together to test, adopt and scale technologies that solve practical problems. Importantly, this is not starting from scratch. The foundations already exist.

The challenge now is to build a clearer identity around them, connect activity across sectors and create the conditions for long-term growth.

PIONEER PARK: CREATING THE CONDITIONS FOR APPLIED AI AT SCALE

A further development strengthens Cumbria's position and provides a clear signal of intent at a national level.

Pioneer Park, located on land adjacent to Sellafield at Moorside, is being developed as a major clean energy and technology site, with explicit ambition to bring together advanced energy generation, digital infrastructure and emerging technologies.

Backed by the Nuclear Decommissioning Authority, Cumberland Council, Sellafield Ltd and the Department for Energy Security and Net Zero, the project is supported by initial public investment to develop a detailed masterplan for the site.

This work will set out how clean energy technologies - including potential new nuclear development - can be integrated with AI and data centre infrastructure to create a platform for long-term growth, innovation and job creation.

The significance of Pioneer Park is not simply its scale, but its role in shaping how technologies are applied. The ambition is to create an environment where energy generation, advanced industry and digital capability are co-located, allowing AI and data-driven systems to be embedded directly into real-world operations.

This reflects a wider shift in the AI economy where value is increasingly created through deployment and integration rather than research alone.

For Cumbria, Pioneer Park reinforces the county's emerging proposition. It builds on existing strengths in nuclear and engineering while creating the conditions for new industries, investment and innovation to develop.

Crucially, it demonstrates that applied AI is not only being adopted within individual organisations, but is being designed into the region's future infrastructure and economic strategy.



WHAT IS ALREADY HAPPENING: FROM ISOLATED USE TO REGIONAL MOMENTUM

Cumbria's opportunity is not theoretical. AI adoption is already taking place across the county, although it is often happening quietly, incrementally and within individual organisations rather than as part of a joined-up regional strategy.

That matters because it changes the nature of the challenge.

The task is not to persuade Cumbria that AI has relevance. In many places, that case is already being made through practice. The greater challenge is to connect the activity already underway, help more organisations adopt with confidence, and turn isolated examples of innovation into a clearer regional advantage.

Applied AI is already emerging across the country. Sellafield⁶ is using AI tools to support decision-making, increase automation and reduce risk, while RAI^{Co} (the Robotics and AI Collaboration) is translating robotics and AI research into deployable solutions for demanding operational settings.

Cockermouth-based Createc is demonstrating how AI developed in Cumbria is addressing complex challenges on a global scale. The company specialises in applied artificial intelligence for industrial environments, combining machine learning, computer vision, autonomous robotics and advanced sensing. Its technologies are used across sectors including nuclear, defence, transport and infrastructure.

The opportunity is also beginning to extend beyond traditional industrial sectors. Cumbria-based Forth UK has been appointed industry partner on FARMAR - Farmer-in-the-loop heritage-aware AI and Robotic Mechanisation for Agricultural Resilience - a four-year international Horizon Europe project coordinated by Durham University.

FARMAR will combine artificial intelligence, robotics, crop science and farmer expertise to translate real farming routines into intelligent robotic systems that can operate in live agricultural environments. Forth's role is to make prototypes of the technology, drawing on its experience in robotics, remote handling and safety-critical engineering.

Alongside individual organisations, collaboration is already taking shape. The Industrial Solutions Hub (iSH) is bringing together businesses, researchers and innovators through dedicated robotics and digital clusters, connecting organisations working across robotics, automation and AI. These clusters provide a practical platform for knowledge sharing, joint development and the translation of ideas into deployable solutions.

Far from a standing start, these examples show that Cumbria is already building significant momentum in high-value, applied AI.

But the application of this emerging technology is much wider than the trailblazing companies already pushing boundaries.



Across education, AI is beginning to support teaching, planning, assessment and administration. Used responsibly, it can reduce repetitive workload and create more time for direct student support, discussion and high-value teaching. This does not remove the role of teachers. It reinforces the importance of their judgement. AI may be able to organise information or assist with feedback, but it cannot replace the understanding of a learner, the management of a classroom or the development of confidence and character.

In SMEs and professional services, AI is already being used to improve productivity. Common applications include drafting routine material, managing information, summarising documents, supporting customer communication, improving internal processes and helping teams make better use of time. These are not always dramatic changes, but they matter. For small businesses operating with limited capacity, saving time on repetitive work can release people to focus on growth, relationships, service and delivery.

The county's economy contains precisely the kind of real-world settings in which AI needs to prove itself. Nuclear, defence, energy, advanced manufacturing, agriculture, logistics, tourism and public services all generate practical challenges that are well suited to applied AI. These sectors require tools that work under pressure, integrate with existing systems, support human decision making and deliver measurable benefits.

This is why Cumbria's proposition should be built around application.

The region does not need to position itself as a place that develops underlying AI models. Its opportunity is to become the place where AI is tested, adopted, governed and scaled in practical environments.

That is a credible and distinctive role.

The next step is to move from isolated adoption to shared momentum. Businesses need opportunities to learn from each other. Public services need confidence to adopt responsibly. Education providers need to align training with real workplace use. Regional leaders need to articulate a proposition that makes Cumbria visible in the national AI conversation.

If this activity remains fragmented, Cumbria risks underplaying its own strengths. If it is connected, supported and promoted, the county can build a serious claim to be a national centre of excellence for applied AI.

SKILLS, WORKFORCE AND CREATING CAPABILITY

Technology will not determine whether Cumbria succeeds with AI. People will.

The availability of AI tools is increasing rapidly. Many are low-cost, accessible and easy to trial. The greater differentiator will be whether individuals, teams and organisations know how to use them effectively, safely and productively.

This shifts the conversation beyond access and towards capability.

Education has a central role to play. Schools, colleges and training providers will need to help learners understand how AI can support study and work, while protecting the development of essential human skills. Critical thinking, communication, numeracy, judgement, creativity and problem-solving remain vital. Indeed, they may become more important as AI-generated content becomes more common.

Students need to be taught not only how to use AI, but how to question it. They need to understand where outputs may be incomplete, biased, inaccurate or inappropriate. They also need to develop the confidence to apply their own judgement rather than simply accepting what a tool produces.



SKILLS, WORKFORCE AND CREATING CAPABILITY

This is not a reason to keep AI out of education. That would be unrealistic and counterproductive. It is a reason to introduce it with structure, clarity and purpose.

The same principle applies across the workforce.

Many employees and business leaders are aware of AI but uncertain about how to apply it. The barriers are often practical rather than technical. People want to know where AI genuinely adds value, which tools are appropriate, what the risks are, and how adoption can take place without disrupting existing operations.

Government has committed to upskilling up to 10 million workers in AI by 2030, underlining the scale of the workforce transition required.⁴ It is crucial Cumbria secures its fair share of this training – but generic awareness sessions will only go so far.

The county needs practical, sector-relevant training that shows people how AI can be used in their own roles and organisations.



“It is crucial Cumbria secures its fair share of this training – but generic awareness sessions will only go so far.”

For a manufacturer, that may mean process improvement, data interpretation or quality assurance. For a school, it may mean workload reduction and learning support. For a tourism business, it may mean customer service and business planning. For a public body, it may mean information management, service design and administrative efficiency.

This approach plays to Cumbria’s strengths.

The county does not need to focus only on producing specialist AI developers. It needs to build broad applied capability across existing sectors. That means helping engineers, teachers, managers, administrators, health professionals, business owners and public servants become confident users of AI.

There is also an important issue around entry-level work.

Many junior roles have traditionally involved routine tasks that allow people to learn how organisations operate. Administration, research, drafting, analysis and coordination often provide the foundation for judgement and progression. If AI removes too much of this work without creating new pathways, organisations may weaken their future talent pipelines.

That risk is particularly relevant in sectors where expertise develops over time.

The answer is not to preserve roles exactly as they are. It is to redesign them. Entry-level workers should be supported to use AI as a learning and productivity tool, while still developing the judgement, discipline and practical experience needed for long-term progression.

Used well, AI can accelerate development. Used badly, it can hollow it out.

Digital inclusion must also remain central. If AI capability is concentrated only among large employers, confident professionals or already connected communities, the benefits will be uneven. Rural communities, smaller businesses and people with lower digital confidence must be part of the adoption agenda.

For Cumbria, inclusive capability is not a social add-on. It is an economic necessity. A county-wide centre of excellence for applied AI must be built on participation across sectors and communities, not excellence in a few isolated pockets.

RISKS, GOVERNANCE AND RESPONSIBLE ADOPTION

The case for AI in Cumbria is strong, but it should not be naïve.

AI creates real risks, and those risks need to be actively managed if the county is to build a credible position around applied use.

They revolve around:



Over-reliance

As tools become more capable, there is a temptation to accept outputs without sufficient challenge. This is dangerous in any setting, but especially in environments where decisions carry financial, operational, educational, legal or safety consequences. Human oversight must remain central. AI should support judgement, not replace accountability. Organisations need to be clear about where AI can assist, where it cannot, and who remains responsible for final decisions.



Erosion of capability

If people stop doing the work through which expertise is built, skills may weaken over time. This is closely linked to the impact on entry-level roles. The productivity gains from AI should not come at the expense of long-term workforce development.



Inequality

Regions, organisations and individuals with stronger digital capability may move faster, attracting more investment and widening existing gaps. This could happen nationally, as investment concentrates in established technology centres, and locally, if adoption is limited to larger or better-resourced organisations.



Trust

As AI becomes more embedded in decision-making, people will expect transparency. They will want to know whether AI has been used, how outputs have been checked, and what safeguards are in place. Public services and high-consequence industries will need particularly strong governance.



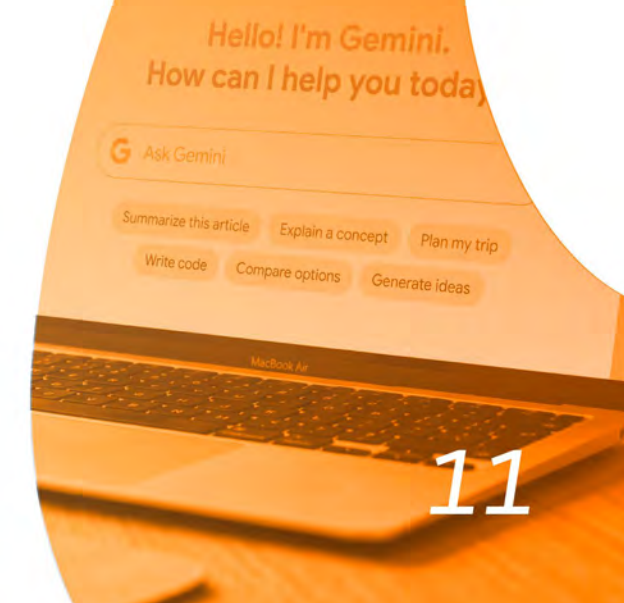
Environmental impact

AI relies on digital infrastructure, compute power and energy. For Cumbria, a county where landscape, energy and environmental stewardship are central to identity and economy, these issues should not be treated as secondary.

None of these risks justify avoiding AI. They justify adopting it properly.

In fact, responsible adoption could become part of Cumbria’s competitive advantage. A region experienced in complex, regulated and safety-critical environments is well placed to develop trusted approaches to AI implementation.

That strengthens the case for Cumbria as a centre of excellence. The county’s proposition should not be based simply on using AI quickly. It should be based on applying AI well.



POLICY CONSIDERATIONS
AND RECOMMENDATIONS

Cumbria’s opportunity will not be realised through enthusiasm alone. It requires leadership, coordination and practical action.



Cumbria needs a stronger narrative. The county should not present itself as a peripheral region trying to catch up. It should present itself as a place with the industrial depth, practical expertise and real-world conditions needed for the next phase of AI adoption.

CONCLUSION

Artificial intelligence will reshape the UK economy whether Cumbria acts or not.

The question is whether the county helps shape that change or simply responds to it.

The foundations are already in place. Organisations are adopting AI. Businesses are experimenting. Education providers are exploring new tools. Industrial sectors are beginning to consider more advanced applications. The ingredients of an applied AI economy are already visible.

The opportunity now is to connect them.

Cumbria does not need to become a conventional technology cluster. Its strength lies in something more practical and arguably more valuable: the ability to apply technology to real problems in complex environments.

That gives the county a credible opportunity to become a national centre of excellence for applied AI.

To achieve that, Cumbria will need coordination, investment, skills and confidence. It will need to support adoption across SMEs and public services. It will need to protect entry routes into work and ensure people have the capability to use AI responsibly. It will need to communicate a proposition that is clear, ambitious and grounded in reality.

This is not about chasing fashion. It is about strengthening what Cumbria already does well.

AI can support productivity, resilience, innovation and better work. It can help established industries modernise and create space for new businesses to grow. It can make the county more attractive to talent and investment.

The prize is significant.

Cumbria is already deeply entrenched in the successful ongoing delivery of four national missions of significance.

It has the capabilities, vision and drive to be meaningfully involved in the AI revolution.

The next step is to be organised – and act with purpose.

SOURCES

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