

TECHNOLOGY DESIGN



Arke Ltd



Thank you
for your interest in
Arke – how can
we help **you**?

We simplify complexity to enable better strategic decisions.

Arke is a small independent SME consultancy based in Wiltshire. We provide our clients with independent and objective Research, Strategic Analysis & Decision Support services. Whether it's with strategic, complex, novel technology options or tough organisational challenges, we help you to make the right decisions.

Our mission is to make a difference – to our clients, our community and each other. We pride ourselves on delivering outstanding analysis expertise for our clients. We instil our values of being collaborative, innovative and agile in all our projects. This underpins our approach of working in partnership with our clients to fully understand all challenges and to determine how we can provide high quality, pragmatic, tailored, sustainable solutions.

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ABOUT US

We understand the benefit of experience, creativity and new ways of thinking.

Our highly professional team consists of people at all stages of careers from graduates through to recognised industry experts. This ensures we create teams that provide our clients with the right blend of knowledge and experience, innovation and challenging thinking.

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OUR TEAM



OUR SERVICES

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We made our reputation providing cost engineering and evidence-based decision support across Defence. As we have grown, we have expanded to support our clients across the public and private sectors with our **Cost, Decision Support, P3M, Business Analysis, Modelling and Simulation, Technology Design, Sustainability, Futures and Stakeholder Communications** services.

We work for UK and overseas public and private sector organisations. We have considerable experience of working with all tiers of Government departments and agencies, enabling our clients to get the best from novel and disruptive technology, maximising the value of research and better understanding barriers to change.

We have assessed options for satellite communications capability and technology. We have provided cost and benefits analysis delivering digital business and capability change in open systems architectures, communications systems and technologies. We have provided planning and analysis services for the development of novel technology concepts such as adoption of networked architectures, Edge processing and AI.

Our demonstrable track record of delivering responsive and innovative cloud and digital projects across our service catalogue has ensured we are a trusted supplier that offers high value for money for our clients.



If you need help to understand your challenges, assess your options and provide you with all the evidence you need to make the right decisions, please get in touch.

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AN OVERVIEW OF OUR SERVICE

Arke is an experienced provider of technology design and support services across a wide range of client challenges.

We understand how technology fits into a wider system of people and processes and what a future view looks like, as well as supporting the design of technology concepts and systems directly. This will ensure that your adoption process keeps up with technology advantage, supporting exploitation at the pace of relevance.

To do this, we take an enterprise level, systems approach to technology to identify what really matters to you, and then use our skills and expertise to identify how to achieve this. We do not sell technology solutions, and therefore you can be confident that we are entirely independent and impartial.



Our technology design and support service spans the capability development lifecycle, and includes:

- Research, prototyping and experimentation
- Development of use cases, user stories and user journeys
- Requirements and gap analysis
- Concept and option generation and definition
- Option assessment and selection
- Qualitative and quantitative analysis to support conceiving, design and development
- Research exploitation planning
- Traditional and agile project management and P3M services

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We work with you to understand your goals and design and deliver a uniquely tailored solution that provides you with the outputs and benefits you need to achieve them.

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This broad portfolio of services means that we can be flexible in what we do, ensuring that we always keep your needs and requirements in mind while delivering any size or scope of projects as a short or long term partner.

Recent examples include:

Virtual and Mixed Reality Experimentation and Exploitation: Arke led an industry team in the design, delivery and evaluation of a series of large-scale Virtual and Mixed Reality enabled training experiments and trials. These evaluated a series of next generation identified technologies (multi-directional treadmills, room-scale VR, EW, DSA, and rapid terrain generation). We defined requirements and measurable experiment objectives and sub-hypotheses, which then drove a pragmatic data collection strategy across the trials series.

Our role enabled rapid implementation of results in a fast-paced environment, in a project where scope and assumptions were continually being tested and adjusted.

Human Agent Collectives (HACs) – Gen-After-Next Human-AI Teams: Arke is part of an industry team delivering research that is exploring and defining how AI can be exploited in complex, information and data-driven systems. Our research is in complex, critical and time-pressured decision making, requiring completely new operating concepts to be developed.

We have taken on multiple roles including the development of a framework for 'Good Data' in the context of AI, as well as assessing the maturity, benefits and other properties of technical architectures delivering context-dependent HAC functions.

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OUR SERVICE IN DETAIL

AI, Artificial Intelligence, AI Ethics, AI Trust

Arke's Artificial Intelligence services provide a sociotechnical perspective on the implementation of emerging technology within a wide range of systems and capabilities. We are at the cutting edge of Defence research for AI via our involvement in multiple research programmes. We do not implement AI solutions, and therefore are well-placed to deliver our core analysis and assessment services in an impartial and independent way. We assist clients with understanding and defining:

- How AI can be used within your organisation for maximum benefit
- Concepts and designs that use AI to deliver particular capabilities
- AI verification, test, experimentation and prototyping
- Integration into existing and future workflows
- Sociotechnical perspectives on AI
- Issues such as AI ethics, trust, verification, transparency, explainability and that must be considered when implementing AI
- Integration into existing processes and developing new AI-specific workflows and tools
- Exploitation planning

Our existing frameworks for decision-making about AI capability include:

- Data definition and properties within an AI-based system, and data lifecycles
- Holistic information management
- Trustworthiness and user perspectives

Our services enable you to identify where and how AI technology is of benefit to your enterprise or project, so that the value of your investment is maximised. We often find that key enablers and blockers to this value are not in the technology itself, but in the processes and systems that are needed to support it, so our approach complements technical design services by making sure that your AI projects deliver the benefits that you expect.





Architectures, Open Systems, Systems Integration, Networks, Communications, Cloud Processing, Cloud Technology, Cyber, Security

Arke offers a complete range of services related to architectures, including guidance on and assessment of capabilities related to:

- Open Systems
- Architectural Standards
- Systems Integration
- Networks
- Communications
- Cloud Processing and Technology
- Edge Computing
- Information Architectures
- Cyber Security

Complex systems and the architectures that deliver them are frequently difficult to specify, design, deliver and manage.

They require a holistic, enterprise level perspective to enable organisations to meet many different sets of requirements, that frequently compete or require trade-offs to be made in the system scope and performance.

We can help you to navigate this complexity.

Within this area, we offer:

- Concept and option formulation and assessment to support down-selection
- Learning from experience related to enterprise level challenges such as commercial and organisational strategies
- Generation of cost, benefit and effectiveness metrics and data
- Performance analysis of systems embedded into organisations
- Human science analysis of how users will interact with systems, including concepts such as Human-Machine Teaming and Human Agent Collectives
- Exploitation planning

Our services enable you to make better technical decisions about these critical enabling systems and understand how changes to the technical infrastructure on which your capability is built will affect how you work with it day-to-day. This offers you opportunities to transform delivery, as well as threats that must be managed on a through-life basis.

OUR SERVICE

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Experimentation, Trials and Prototyping

When introducing new technology, a key step towards a successful implementation is often the development of prototypes and their use in experimentation. When done well, this can be an excellent way to gather evidence about the likely performance of the system and its components and provide data that increases confidence in the approach taken.

Good experimentation requires good experiment design, and that is where Arke comes in – we are experts in defining a programme of activities that provide the useful and actionable outputs that you require. We also plan larger trials and demonstrations, which can assess technology in the context of a wider system.

We do not develop software ourselves, so we are well-placed to work with technology providers and system integrators to provide a completely independent and impartial view, and to help you to understand what they are really offering.

Our services in this area include:

- Generation of a programme of experimentation based on the key risks and uncertainties that exist for your planned capabilities
- Definition of metrics and measures that provide the hard evidence that you need
- Management of experiment and trials, including the provision of the trials system by other suppliers and running experiments and collecting data
- MODREC, ethics, and / or other approvals, if needed
- Data collection
- Analysis of the results to synthesise raw data collecting into meaningful outputs

With our help, you can achieve a trials and experimentation programme that delivers all of your evidence needs and enables you to be confident that your chosen concepts will deliver the benefits that you expect.

Autonomy, Robotics

Arke's services in autonomy and robotics include a wide range of analysis capabilities that will help you to decide where, when and how these rapidly-developing technologies can benefit your project or organisations. We are experts in providing:

- Concept and option development
- Assessment of different technical options
- Consultancy on the maturity and benefit of different technologies
- Road-mapping and horizon scanning
- Simulation and modelling of chosen solutions
- Value for money assessments
- Exploitation planning

We can help you to make decisions about all types of technology and its use within your organisation. We provide an enterprise level perspective and take into account human factors, organisational barriers and enablers, and other non-technical factors to understand how a solution will perform in your unique environment. We also offer specific exploitation planning services to ensure that new capabilities can be exploited by your organisation.

Human Sciences

Arke's in-house human sciences expertise provides a holistic perspective of the vital human element of any technology design project, and includes the following areas:

- Human factors
- HMI (Human Machine Interface) expertise
- UX (User Experience) and UI (User Interface)
- Human-machine teaming (HMT)
- Human-Autonomy Teaming (HAT)
- Human Agent Collective (HAC)
- Human and UX focussed exploitation planning

We offer human science services to support any technology-focussed project that help you to understand the interface between human users, agents and actors and the technical and organisational systems and contexts within which they work. We work with you to integrate subject matter expertise into the human perspective for a given system. This benefits our clients by ensuring that requirements and other analysis is driven by user need and experience.

Systems Engineering

Arke offers a systems engineering and systems thinking perspective across all of our work. We provide holistic, enterprise level systems engineering services, typically supporting clients at early stages of their projects. We work alongside technical teams delivering research, development, pre-concept and concept stage work and offer:

- Concept development
- Integration support of multiple technology systems and of systems with the wider environment
- Options formulation
- Option assessment
- Analysis for decision support
- Experimentation design and conduct
- Technical leadership

We believe that a systems approach is critical for the delivery of large or complex programmes, and this is built into what we do at every stage and for every project size. We specialise in understanding how to integrate technology with the wider environment including people, processes, infrastructure and organisations.

This holistic service ensures all critical factors of a project have been considered and assessed, providing you with confidence and the key information you need to design, plan, manage and complete your projects.

OUR SERVICE

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Digital Thread

At Arke, we support every aspect of your digital thread implementation. Our holistic, system-based approach means that we can weave together services that address your technical, organisational, enterprise level and human requirements to deliver the outcomes that you need to take full advantage of digital thread approaches. We can provide services to assist you in:

- Understanding and defining your data requirements
- Linking data and information to operations
- Developing digital thread concepts
- Understanding organisational priorities
- Making best use of data and information
- Road-mapping your organisational journey
- Using benefits-driven approaches
- Achieving a focus on outcomes
- Exploitation planning

We are experts in understanding and working with complex systems and systems-of-systems. Working with us to deliver a digital transformation means that you will be able to quickly navigate complexity and identify, define and realise the required transformation that is core to obtaining value-for-money in meeting your unique requirements.

Digital Transformation

At Arke, we support every aspect of your digital transformation. Our holistic, system-based approach means that we weave together services that address your technical, organisational, enterprise level and human requirements to deliver the outcomes that you need. We provide services to assist you in:

- Defining requirements
- Developing digital transformation concepts
- Understanding organisational priorities
- Making best use of technology
- Road-mapping your organisational journey
- Using benefits-driven approaches
- Achieving a focus on outcomes
- Exploitation planning

We are experts in understanding and working with complex systems and systems-of-systems. Working with us to deliver a digital transformation means that you will be able to quickly navigate complexity and realise the transformation rooted in obtaining value-for-money given your unique requirements.

Exploitation Planning

Arke provides a structured approach to exploitation planning, across Research and Development. We use a framework approach to capture best practice, emerging thinking and learning from experience to generate insights and recommendations. Our approach enables exploitation evidence to be generated alongside research, ensuring faster and lower risk adoption into service.

This provides you with outputs such as:

- Organisational challenges and solutions, supporting change management
- Evidence gaps and plans to fill them in advance of need e.g. through better trials planning
- Incremental value for money advice supporting tailoring of the exploitation plans
- Innovative approaches to procurement planning.

This results in capability in the hands of your end user faster, a greater ability to tailor your end solution to deliver maximum impact and benefit and identification of opportunities for you to deliver performance enhancements and cost savings.

To find out more about
how we can help you
please contact:

Jess Green, Director: jgreen@arkeltd.co.uk
And visit our website: www.arkeltd.co.uk

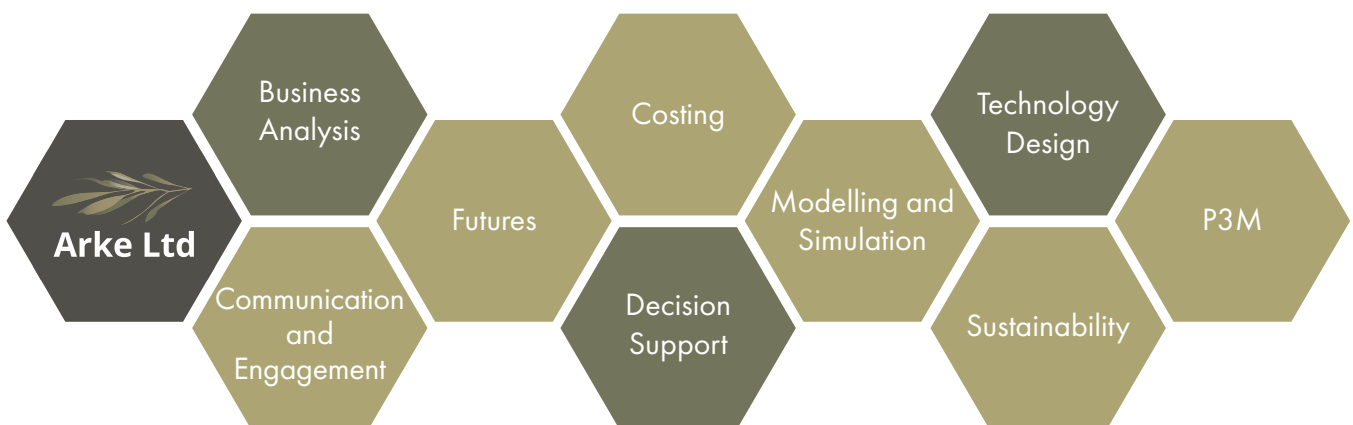
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Company Accreditations

We are ISO9001 and ISO14001 compliant. We hold Cyber Essentials + and hold a Silver Award in the Armed Forces Covenant Employer Recognition Scheme.

Social Value

We are committed to the creation of social value through all aspects of our operations. As members of the Arke family, all staff are invited to engage and be part in the creation of social value as an integral part of their working life. We aim to create positive value for our clients and our community in all we do.



Arke offers a range of services to help you make the right decisions
Details of all our services can be found by simply using the G-Cloud search facility.

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