DECISION SUPPORT

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.

2 OUR TEAM

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.
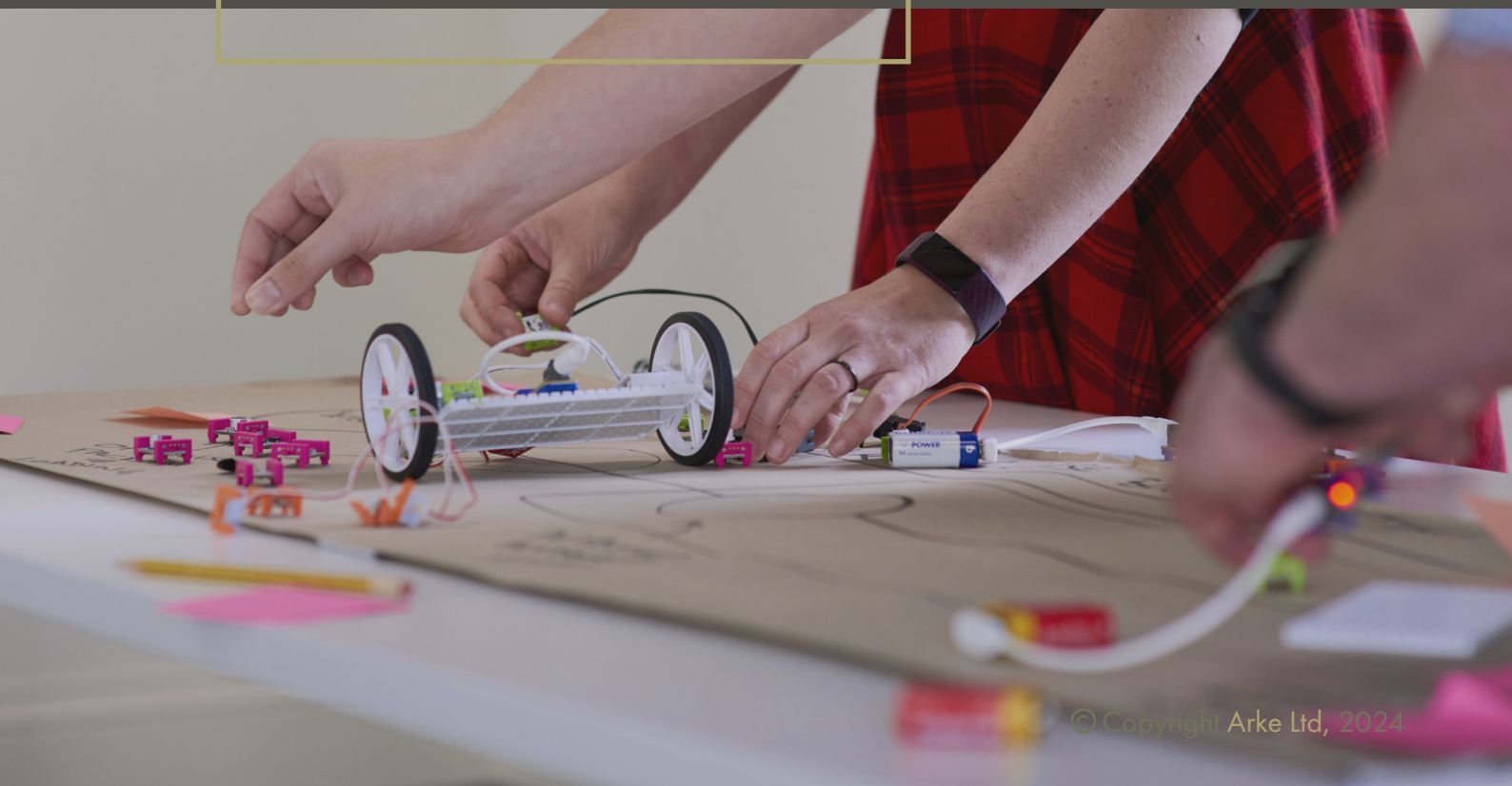
4 AN OVERVIEW OF OUR SERVICE

Arke is an experienced and specialist provider of Decision Support services to address a wide range of client challenges.

We recognise the importance to our clients of understanding the impacts of decisions prior to committing time, money and other resources. We have experienced the real value of accurate, data-led, insights that are relevant and focused on the critical challenges associated with any decision. Clarity and awareness of underlying assumptions, uncertainty and risk, with a full audit trail, enables you to have confidence in your selected course of action.

Our tailored service provides analysis that will give you robust and actionable insights that are grounded in reality. Our team of experienced analysts will select the most appropriate tools and techniques, all fully aligned with best practices, to help you deepen your understanding of the problem space and address your specific challenges.

We specialise in working within highly regulated industries and where data can be scarce. This is a decision support challenge that we address through a range of techniques that focus on understanding the level of confidence in insights gained, rather than generating results that are heavily caveated. We have provided this support across government and particularly to Defence and the Home Office.

Our service offerings include:

- **Trade-Offs and Options Assessment:** Cost-Benefit Analysis, Investment Appraisal, Multi-Criteria Decision Analysis, Visualisation, Workshop design and facilitation

- **Risk and Achievability:** Cost-Benefit Achievability Analysis, Viability and Feasibility Assessments

- **Strategy and Policy:** Operational Analysis / Research, Policy Impact Analysis, Strategic Analysis, Value Propositions, Research Exploitation

- **Systems:** Business Analytics, Supportability, Systems Thinking, Systems Modelling, System Dynamics

- **Modelling and Testing:** Wargaming and Table Top Exercises, Mathematical Modelling, Simulation, Optimisation, Model Development, Validation and Verification

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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.

Recent examples include:

Cost-Benefit Strategy for Synthetic Simulation Environment:
Our client is aware of the potential for transformational benefits in investing in underlying infrastructure, data and modelling capability for Test and Evaluation services across their business. Options to realise benefits across multiple business areas needed to be understood in terms of cost, benefit and risk. To underpin the task Arke provided strategic advice and a structure to develop analytical rigour including a path to data collection and assuring evidence requirements. We then provided a Benefits strategy and analysis through mapping and workshopping of critical use cases, to focus ongoing experimentation and highlight key trade-offs to inform our client's decision-making between alternative strategies.

Outline Business Case for Integrated System:
Arke provided specialist decision support to client teams responsible for research and development, engineering and procurement, who were considering a series of integrated system options. We assessed each option for their feasibility, viability and utility for delivering our client's defined end goals. We provided technical and analytical support by working alongside the client and embedding ourselves within their analysis community and by applying an iterative and robust approach to informing and engaging a range of key client stakeholders. Decisions within the early stages focused on high-level challenges and broad insights for technology maturity, integration and developing the enterprise-level value for money case. We were able to inform the programme of key success factors and ultimately provided a robust, assured, evidence base to support this Category A Economic case.

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OUR SERVICE IN DETAIL

Cost Benefits and Achievability Analysis

Investment decisions involve weighing up the potential costs, benefits, risks and uncertainty of different options. Our Cost Benefits and Achievability Analysis (CBAA) service expands on a Cost Benefit Analysis to give a more holistic view by identifying and incorporating the true scale of barriers to achieving your options. Our analysis provides a realistic assessment of the most practical courses of action to generate value given possible barriers to realising benefits. We use tried and tested tools and methods to generate insights and share these constructively through productive discussions about the differences and trade-offs associated with the available options.

Our methods and tools are in line with UK government guidance on investment appraisals meaning the outputs from a CBAA can feed directly into your business case if that's what's needed.

Our CBAA service allows you to lay out complex options and understand the pros and cons associated with each. We expose key assumptions, highlight areas of uncertainty and barriers to success and work with you to support clear, evidence-based decision-making.

Cost Benefit Analysis

Investment decisions involve weighing up the potential costs, benefits, risks and uncertainty of different options. These often come with specific regulatory and evidencing requirements. Our Cost Benefit Analysis (CBA) service will help you explore the best options available to you. We use tried and tested tools and methods to generate insights and share these constructively to support decision making through productive discussions about the differences and trade-offs associated with the available options.

Our methods and tools are in line with UK government guidance on investment appraisals meaning we produce outputs from our CBA that inform or can feed directly into your business case.

Our CBA enables you to lay out complex options and understand the pros and cons associated with each. We expose key assumptions, highlight areas of uncertainty and work with you to support clear, evidence-based decision-making.

Operational Analysis and Operational Research

Operational Analysis / Research (OA/OR) encompasses the use of intellectually rigorous and structured approaches to inform strategic, operational, tactical and policy decisions, to determine the best practical course of action and assess the effectiveness of different options.

To achieve this, we select the tools and techniques most appropriate for your problem, whether its people, technology, or resource centric. Our OA/OR service provides the methods needed to articulate and model realistic options and analyse the outputs of the modelling to truly support decision makers with a tailored analysis.

The benefits of OA/OR are the ability to design analysis with a situational focus that aligns to the questions that you need to answer. We explore risks, uncertainties and gain understanding the implications of trade-offs. This is all delivered with a rigorous approach and an audit trail of data, assumption and analysis methods and decisions.

Wargaming and Table Top Exercises

Wargaming and Table Top Exercises provide an opportunity to test ideas, strategies or changes and their implications. These techniques are particularly powerful where there are many moving parts and different aspects to a system including those of a competitor, adversary or organisations with conflicting objectives.

Our teams design, facilitate and support analysis of wargame events. Wargaming provides the opportunity to put people at the heart of analysis: immersing players in a scenario that allows them to try out ideas and learn from the decisions they make.

A wargame enables players and analysts to test, assess and learn about new ideas/strategies/changes. When you consider new technologies, our wargaming service allows unforeseen problems and opportunities to be identified early when they otherwise may have been missed.

Options Analysis

Our Options Analysis service aids your decision makers with identification of options, formal definition to your required fidelity, down selection and recommendations based on your requirements.

We perform an objective assessment of options, their merits and disadvantages, to determine the best fit for the decisions at hand. Our holistic approach encompasses many viewpoints including finance, technical, people and business readiness. We provide a tailored and robust assessment, bringing confidence to the decisions being made.

The benefits of our options analysis service lie in the clarity and focus that the approach brings you. We deliver detailed analysis to provide you with in-depth understanding and evidence needed to make decisions, coupled with simpler, targeted summaries to aid wider communication and engagement.

Cost Effectiveness Analysis, Combined Operational Effectiveness Investment Appraisals / COEIA

Our Combined Operational Effectiveness Investment Appraisal (COEIA) service is a method used to consider how effective a new technology, system or capability will be versus how much it will cost. It enables assessment of multiple choices and explores the relative effectiveness of each in detail.

Our service uses quantitative and qualitative measures of effectiveness and accounts for how uncertain the results are. We pair an economic appraisal of the upfront cost of options with the risks and uncertainties involved while factoring in financial conditions across the total cost of ownership and life cycle.

Our service provides your decision makers with a comprehensive, balanced and rigorous appraisal of the impact and benefit of each option vs the investment required to deliver them. This provides you with a mechanism to compare and contrast each option and make decisions based on the benefit you require and your available funding.

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Multi Criteria Analysis (MCA), Multi Criteria Decision Analysis (MCDA)

Multi-Criteria Decision Analysis involves identifying the criteria that define a good outcome and assessing a number of possible decisions against them. This provides a ranking of possible decisions based on the extent to which they will provide a positive outcome.

By understanding and comparing all available decisions in this way, you will not only be able to make decisions that deliver the best outcome, but also have a basis to justify and communicate your decisions to stakeholders. The process of defining criteria will also give you a clearer understanding of what you are trying to achieve and "what good looks like".

By using MCDA you are ensuring that your decisions are based on an objective comparison of alternatives, which will remove bias from decision making and ensure the outcome is the best way to meet your objectives.

System dynamics is a method used to understand and predict how complex systems change over time. It involves creating models that represent the relationships between different parts of a system and any associated feedback loops and delays. By simulating these models, system dynamics helps identify how changes in one part of the system can affect other parts, allowing for better decision-making and policy analysis.

System Dynamics generates insights into the behaviour of systems by simulating various scenarios and observing their outcomes. These simulations can reveal potential bottlenecks in the system, opportunities for improvement, or unintended consequences of proposed actions. The output of system dynamics modelling includes visual representations of the system's behaviour over time, along with reports summarising key findings and recommendations for action. The benefit of this output is that it provides you with a deeper understanding of complex systems and helps you make more informed decisions to achieve your goals effectively.

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Policy Impacts Analysis

Our Policy Analysis service assesses the likely impact of new or changed policies against their intended goals. Our service considers policies against the wide ranging, potentially messy and complex impacts on the real-world systems to which they relate. This includes where there is a blend of monetary and non-monetisable impacts and their relevance and viability variations across stakeholders and objectives.

We provide insights on benefits and achievability based on a high level of policy domain expertise to ensure new initiatives are impactful. Our service blends domain expertise with analysis techniques that provide you with a robust audit trail, clarity of risk and benefits and a tailored evidence base maximising all available data, assumptions and stakeholder engagement.

Benefits Analysis

Our benefits analysis service establishes the possible benefits of a course of action and evaluates the effectiveness of options to realise these benefits. The outputs of our analysis provide insights and evidence to support and inform your options down-selection and overall decision making. Our benefits analysis service provides you with the key starting point to achieve benefits realisation by understanding and articulating what benefits are possible and helping you decide which options will provide you with the greatest benefit that is realistically achievable. Our analysis focuses on your desired benefits and also identifies opportunities to realise any additional (softer) benefits. We provide qualitative and quantitative results tailored to the requirement and the available supporting data and assumptions.

Our service provides you with clarity and focus when assessing options and their benefits, gained by generating a clearer picture of what benefits are possible to be achieved and the requirements and plan of action to achieve them.

Feasibility Studies

Our Feasibility Studies service assesses proposed solutions for the likelihood of their success if implemented. We understand that new policies or challenges call for solutions to be developed and planned out. However, the practicality, time and investment required to mature different solutions can be highly uncertain. Our engineering, business analysis and technical skills provide a holistic view of potential feasibility drivers to determine how mature potential solutions really are. Our Feasibility Studies incorporate technical risk, organisational structures, behaviours and attitudes, ethical and legal constraints into assessing your solutions.

Our Feasibility Studies help your decision makers investigate and determine the practicalities involved, to help shape future programmes of work and understand overarching risks to benefits realisation. This provides you with assurance of the validity and effectiveness of your solutions, evidence for or against implementing solutions and identifies where remedial action or wider change is required to ensure your solutions will meet your requirements.

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Supportability

Supportability Analysis forms an iterative activity that can be conducted both during system development and for existing in-service systems. We analyse the intrinsic characteristics of a system and its enabling components to identify drivers, dependencies, blockers and ultimately options for both efficient and effective sustainment across the life cycle of the system.

This service allows clients to understand the steady state of their current processes and procedures. This forms the baseline that enables assessment of where our clients are now, where change is needed and the impact of any change options. We can also identify and track a system's performance and dependencies through its lifecycle. This provides evidence to support our clients and their stakeholders to make decisions on the need for change and to assess and compare unique and competing options.

Benefits to our clients include increasing the capability of their existing systems, optimising the footprint of a system and identifying system bottlenecks, which is the key indicator of an opportunity for change. By using our service our clients find and remove previously unseen waste from a system and identify, design and prioritise ways to reduce both cost and carbon drivers.

Mathematical Modelling

Our Mathematical modelling service uses mathematical tools and techniques to create a model of the real-world. We build models that help you to explore aspects of your processes or systems by representing a simplified version of the truth. We determine the scale and complexity of the model based on the problem space, available data, the assumptions being made, the nature of the questions being asked of the model and its desired outputs.

Our holistic approach looks at all factors of interest and agrees with you what is and is not to be included within the modelling. We then agree with you the outputs and analysis requirements. We then look back at the wider problem space and work with you to determine what factors outside of the modelling need to be considered alongside the analysis to ensure all important aspects of a problem are included in the task end results.

Our mathematical modelling services enables you to increase understanding of real-world behaviours without the need for expensive experimentation. Our mathematical modelling provides your decision makers with the ability to explore, test and analyse the impacts and possible outcomes of decisions before enacting them.

The benefits of this lie in the ability to uncover hidden behaviours that may not be apparent to an observer. Modelling will help you to anticipate and mitigate risks within your organisation's operations and avoid making costly, timely or hazardous mistakes.

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Data Analytics & Visualisation

Our Data Analytics and Visualisation service specialises in providing our clients with benefits from available data, both in terms of using and displaying the data to maximum effect. Our team are experts in identifying what data to capture or what sources to use, then visualising and making sense of what's there to tell a story and provide actionable insights. Whatever stage of the data lifecycle, whether the environment is data rich or data poor, we employ robust and repeatable methodologies to make the most of the data that exists.

Data provides a window into the health of a system or organisation. We use data analytics to enhance performance and value for money by providing a range of historic trend analysis, predictive models, dashboards and reports. We work with you to understand what you wish to achieve from our data analytics and how you wish to use and communicate the data and analysis results. We provide benefits to our clients by tailoring analyses to uncover hidden patterns, trends and correlations within the data, enabling data-driven decision making, targeted strategies and optimised operations. We then design the visualisation of the analyses to ensure it is understandable by you, we then provide it in a format that can be used immediately and we provide it in an additional tailored format that can be communicated to and understood by all your stakeholders

Model Development

Developing models requires a clear understanding of the requirements and stakeholder needs. We employ robust methodologies to create and maintain essential documentation of requirements capture, specification design, testing, verifying and validating that delivers assurance that the resultant model is fit for purpose.

Whether using 'harder' mathematical techniques or 'softer' methods and if it is relatively simple or highly complex, a model enables you to increase understanding of real-world behaviours without the need for expensive experimentation. Our model development service provides decision makers with the ability to explore, test and analyse impacts and possible outcomes of decisions before enacting them with assurance that outputs can be believed.

The benefits of building a bespoke model are that you can truly tailor requirements to your needs. Granularity and scope will be conscious and only added where it is required – we maintain simplicity and read across of existing models where that is sufficient to understand the problem at hand.

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Systems Modelling

Systems modelling involves creating simplified representations of complex systems, such as business processes, enterprise structure or communication systems. It involves gathering data, analysing it and then creating a model that captures the interactions and relationships within the system. Our analysis team collaborates with your stakeholders to ensure the model accurately reflects the system in question.

The outputs of systems modelling include visual representations or simulations that illustrate how different components of the system interact and influence each other. They provide insights into how changes in one part of the system might impact other parts, helping you make informed decisions and identifying areas for improvement or optimisation.

Systems modelling provides you with a roadmap for greater understanding of complex systems better that enables you to make more informed strategic decisions. It offers you a clearer picture of how different factors within your system interact and provides insights into potential outcomes of different scenarios. The benefits include improved efficiency, decision-making and the ability to anticipate and mitigate risks within your organisation's operations.

Business Analytics

Our Business Analytics service presents our clients with a structured method for understanding, analysing and enhancing diverse facets of a business. We provide guidance for strategic planning, resource allocation, risk assessment and innovation. Our approach is to develop a simplified representation of a business, encompassing crucial elements such as its value proposition, revenue streams, cost structure, client segments and distribution channels.

Our Business Analytics offering equips organisations to make well-informed decisions, enhance performance and foster sustainable growth.

Strategic Analysis

Our Strategic Analysis service ensures all factors at a strategic level that affect your proposed courses of action are identified and articulated to support your decision making process. When balancing options across a complex programme, it is crucial to understand the wider context that the business sits within; constraints and supportive levers, your internal and external dependencies and how the programme aligns to your overarching objectives.

We employ targeted methods focused on developing an understanding and consensus across all stakeholders for the strategic landscape affecting your decisions. We specialise in providing expert advice that is tailored and accessible. We use well established frameworks and tools that we use collaboratively with you to develop strategic thinking, underpinned by inquisitive and robust research that exposes critical success factors through a blend of qualitative and quantitative analysis.

Facilitation

Effective facilitation, which includes identifying and solving problems, handling conflict and guiding and encouraging an effective group dynamic, is essential for you to make the most out of your engagement activities.

Our Facilitation service enables all to have a voice by designing engagement events to support different communication styles – we underpin the design by generating clear rules of engagement including encouragement of constructive challenge. To encourage idea sharing, we have a variety of methods including story boarding, post-it notes, ideas by association, empathy mapping, observing users/interviews, use cases, prototyping, user-centred design, wargaming, anonymity tools (as examples).

Through our effective facilitation we generate insights efficiently and effectively, identify areas for innovation and improvement and support your team building.

Research Exploitation

Our Research Exploitation service plays a pivotal role in translating research findings, innovations and discoveries into tangible benefits including new technologies, products, processes, methodologies and IP. We help you determine the best way forward and what to exploit vs what not to carry forward to deliver you effective research exploitation that ensures you reap the full benefit of your research outcomes.

We provide tangible analysis and decision support to underpin your research exploitation roadmap to help you ensure opportunities for innovation, economic growth and advancement are exploited. Our approach to Research Exploitation unlocks the value of your research investments, drives innovation and creates impact for you.

The benefits of this are the confidence gained from knowing you have selected the best way forward and that your research will be exploited in the most suitable, impactful and beneficial way.

Systems Thinking

Systems thinking involves understanding and analysing complex systems. It requires looking beyond individual parts by considering how they interact and influence each other as a whole. We identify patterns, feedback loops and relationships within the system to give you insights into its functioning and potential areas for improvement. It involves techniques such as mapping out system structures, identifying key stakeholders and analysing data to develop a comprehensive understanding.

Our systems thinking service generates holistic insights into the underlying dynamics of a system, allowing you a deeper understanding of issues and opportunities. We use it to uncover the underlying causes of problems rather than just addressing symptoms, enabling more effective solutions. Our service provides enhanced efficiency, effectiveness and sustainability within the system by producing detailed analyses, visual representations of system structures and actionable recommendations.

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Optimisation

Optimisation is the ability to identify the best or most effective solution to a problem from the set of available solutions with respect to key criteria. Using a tailored approach from mathematical modelling, simulation and softer techniques, we identify the optimal solution to achieve your overarching objectives.

Deciding what to optimise for is just as important as the optimisation itself. We combine optimisation with systems thinking allowing us to find the optimal solution for the system that does not subsequently create new issues elsewhere. This provides you with a greater understanding of the implicit trade-offs involved when assessing optimisation options.

Our optimisation techniques enable you to explore and test solutions, make decisions with confidence and realise the best possible outcome, making the most of the resources available to you.

Data Science

Our Data Science service specialises in providing our clients with benefits from available data, both in terms of using and displaying the data to maximum effect. We help you identify what data to capture, what sources to use, how to visualise the data and make sense of what's there to tell a story or provide actionable insights that support your goals. Whatever stage of the data lifecycle, whether the environment is data rich or data poor, we employ robust and repeatable methodologies to make the most of the data that exists.

Your data provides a window into the health of your systems or organisation. Determining what to collect and how and where to store it, who needs access and how to govern it is all essential to enable your organisation to leverage the benefits that data has to offer.

By providing historic trend analysis, predictive models, dashboards and reports, data science can enhance performance and profitability. The benefit lies in tailoring analyses to uncover hidden patterns, trends and correlations within the data, enabling data-driven decision making, targeted strategies and optimised operations.

Value propositions

Our team specialises in the holistic methods that provide clarity of how value may be generated from any business option or change. Key to this is understanding how different stakeholders may perceive the change, whether success may depend on buy-in, new measures to unblock or incentivise new ways of working.

We generate Value Propositions for each key stakeholder based on specific types (currencies) and sources of value through the system. The case for change may need to consider balances and trade-offs between stakeholders and various forms of benefits. Value Propositions are powerful for communicating ideas, provide a method for measuring success and a clear audit trail for your decision making.

Our collaborative approach, built on specialist facilitation methods and systems thinking, provides a clear route to benefits realisation and strategy.

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Viability

There are a number of reasons why projects may not deliver the desired benefits. It is important to be risk-aware, highlight any blockers and expose key difference between options in any business decision. Our Viability service uses tried and tested methods for systematically identifying and characterising elements that may restrict successful implementation.

Our broad skills and experience across socio-technical, business and economic disciplines will provide you with a holistic assessment of Viability. This provides valuable focus in planning enabling activities in the early stages of research and development, or a clear evidence base to underpin your risk position when committing to a deliverable benefits strategy.

Workshop design

We have a wealth of experience in the design and delivery of in-person, digital and hybrid workshops. Our workshops are designed to be engaging, interactive and bring together a diverse community to create compelling outcomes and engaging outputs.

We design workshops for research synthesis and insight development, challenge framing, concept ideation and development, future worlds / scenario development, wargaming scenario testing ('Red teaming'), strategic and technology road-mapping, prioritisation / decision conferences, project retrospectives / improvement events, systems and process mapping and team building.

We work with our client to define the scope of the workshop(s) and develop an approach to supporting research, generation of materials, organising logistics, identifying attendees, designing workshop flow, facilitating and delivering the workshop and preparing all emerging content.

This provides an important and valuable way of sharing information, generating new insights, creating tangible outputs and catalysing decision making needed to drive change.

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

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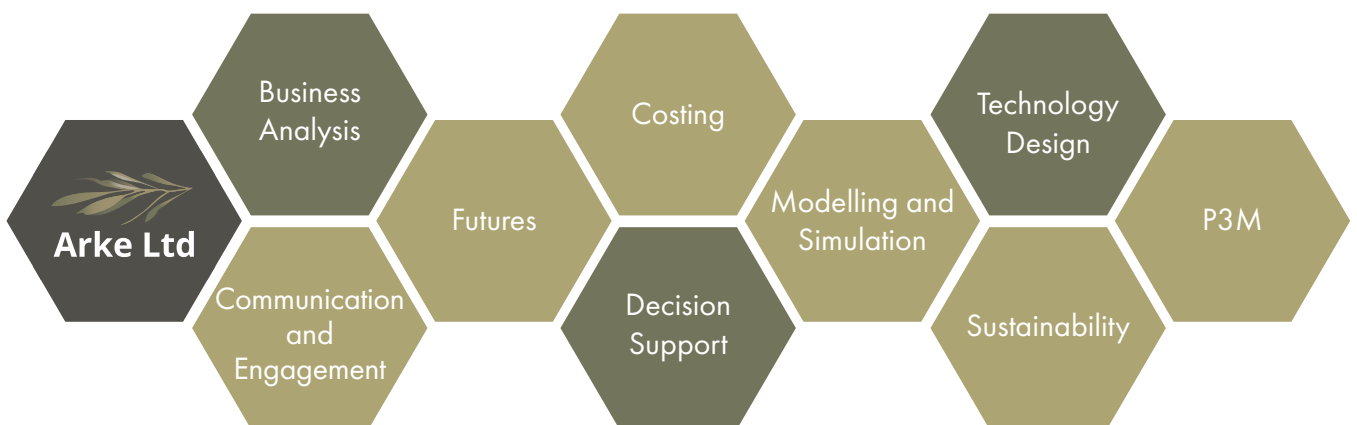And visit our website: www.arkeltd.co.uk

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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 Ltd

Business Analysis

Costing

Technology Design

Futures

Modelling and Simulation

P3M

Communication and Engagement

Decision Support

Sustainability

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.