

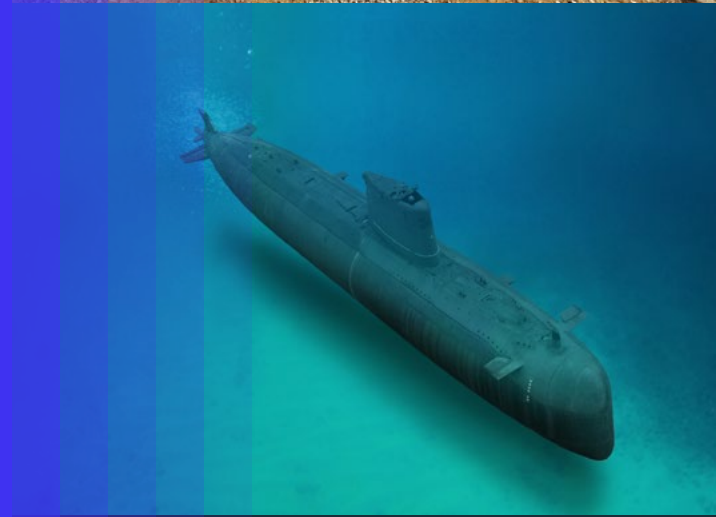


DEFENCE

Your strategic partner
for major defence
programme
success.

Bringing together the best people,
innovative data-driven solutions
and cutting-edge technology to help
you overcome complex challenges
and transform your organisation.

GET STARTED →



CONTENTS

Introduction

Defence is facing tough challenges across the globe. There is a rising need to make assets more available and manage aging infrastructure while meeting Net Zero targets; to implement and operate digital technologies, matching the fast pace of digitalisation and multidomain integration; and to achieve success in its many mission critical programmes.

With conflict in Ukraine, rising global tensions and political instability, many countries are reviewing their defence budgets to ensure their national security is protected. But governments' financial challenges, combined with supply chain issues and material prices, mean defence organisations need to do more with less. Defence procurement must strike the balance of offering value for money, while delivering effective capability to time and cost.

We can help.

Our vendor-agnostic solutions and client-focused culture provide the flexibility that supports both government and suppliers – we truly lean in to help you move the needle. Renowned for providing effective answers to the most complex problems, through a combination of engineering services, digital and technical expertise and transformative consulting our support enables you to achieve your goals, deliver change across your enterprise, and ensure mission success.



Who we are

AtkinsRéalis is one of the world's most respected design, engineering, and project management consultancies.

We're a trusted independent advisor and delivery partner to the defence sector, with a long and proud history of supporting the organisations that protect our people and national interests. We enable land, naval, air, cyber and digital operations to succeed in their missions.

Working in partnership with our clients across the globe, we bring extensive experience of supporting major programmes, coupled with cutting-edge expertise in engineering, technology, transformation and project management. We support your struggling programmes to recover, and we ensure future programme design enables and empowers your organisation's success.

Drawing on the insights and experience we've gained from working with public and private sector defence, aerospace

and security clients world-wide, we integrate our breadth of diverse services to ensure we are uniquely positioned to solve your most complex problems.

Our expert support ranges from helping companies develop innovative solutions to decarbonise flight and transform the way we travel; to harnessing the power of new and emerging technologies and exploiting data to deliver digital transformation, driving efficiency and productivity improvements; to protecting national security by developing and maintaining organisations' resilience to cyber and physical threats.

Renowned for providing effective answers to the most complex questions, our support enables you to achieve your goals, deliver change and transformation across your enterprise, maximise the value of your investment in infrastructure and equipment, and ensure mission success.



Connected across the world

- More than 31,000 colleagues worldwide
- Offices in 50 countries, with over 130 nationalities represented
- Experience in remote locations and challenging geographies
- Expertise trusted by the U.S. Department of Defense (DOD), the UK Ministry of Defence (MOD) and Canada's Department of National Defence (DND)



Our capabilities

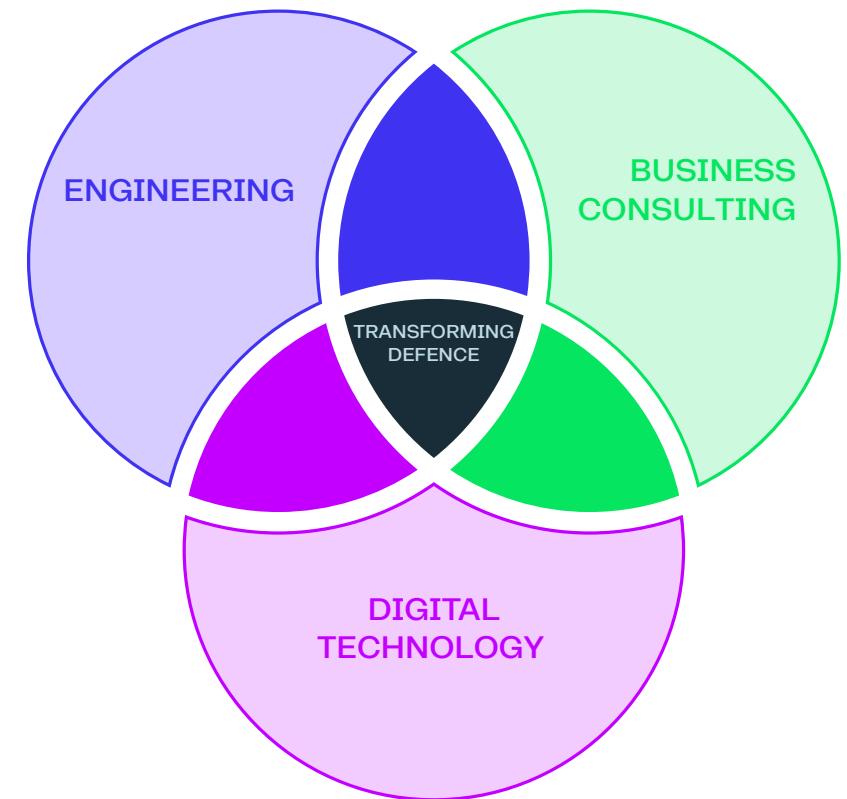


With our unique combination of best-in-class engineering capabilities, operational knowledge and business consulting expertise, we work with you to understand where you are now, where you need to be, and support you to get there.

We deliver what you need to realise the business, operational and capability benefits you desire, helping you to manage complex delivery against challenging requirements.

Our specialist sector support

- **Digital and technology:** From digital architecture, data science and software; to strategy, service integration and cyber resilience, we help digital defence organisations meet their transformational challenges.
- **Support to equipment acquisition and supportability:** Recognised as a trusted collaborative partner, we deliver acquisition, equipment and safety support and provide innovative decarbonisation and transformation solutions. Our experts help ensure your asset availability, offering support ranging from integrated logistics support (ILS) engineering, to managing the operations and maintenance of mission critical assets.
- **Submarines:** Providing SQEP resource, platform and infrastructure engineering services to the UK's submarine enterprise, our extensive capabilities in boat design and systems engineering – including designing nuclear infrastructure at scale – means we are well placed to help improve your submarine availability. We deliver on our promises.
- **Strategic deterrent:** We accelerate the mission delivery of deterrent sustainment, offering our credible expertise to infrastructure, engineering and assurance; enterprise integration and transformation; digital and physical asset management; and end-to-end decommissioning.
- **Defence industry:** We help you deal with the challenges and take advantage of the opportunities that disruptors such as Net Zero and digitalisation bring, to better deliver your major programmes. Platform- and system-agnostic, we support assets across their lifespan providing engineering services to your equipment and infrastructure programmes.



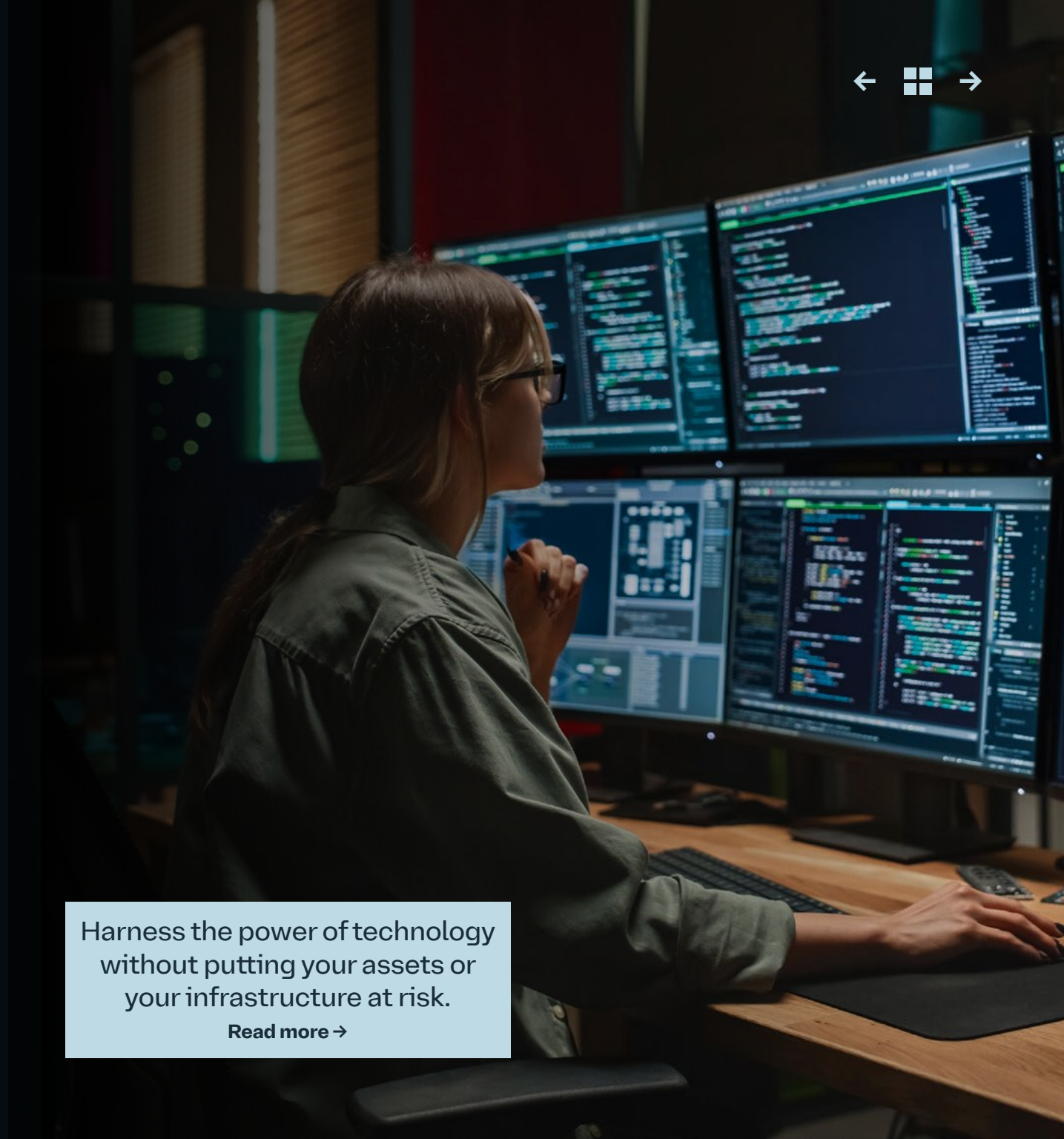
Digital solutions for digital defence

As modern defence moves beyond the conventional land, sea and air domains, with space and cyber becoming increasingly critical, defence investment needs to counter potential threats from innovations including artificial intelligence, directed energy, hypersonics and uncrewed systems.

Our experts help you to meet these novel challenges: using their in-depth technical expertise to offer cutting-edge solution development and implementation, and helping you to both manage and capitalise on your data to achieve competitive advantage.

We help you to bring innovation to life.

An example of this is where we have supported the UK Ministry of Defence's (MOD's) Cyber Resilience Programme since 2019, helping it to reduce cyber security risk, protect its critical assets and systems, and improve cyber culture and awareness across Defence. Our Cyber Awareness, Behaviour & Culture (CyAB&C) team worked across MOD's c250,000 personnel to create meaningful and lasting behavioural change, delivering novel engagement and behaviour shaping initiatives to ensure that the human elements of the organisation's security become increasingly robust.



Harness the power of technology without putting your assets or your infrastructure at risk.

[Read more →](#)

Digital technologies

Advanced digital technologies are helping Defence to meet the challenges of a complex future. Data visualisation and virtual and augmented reality are driving efficiencies and enabling faster and more informed decision-making; while digital twins and advanced modelling are managing operational performance and risk and increasing the life of assets. Our expertise assures the enablers that underpin your asset lifecycle, including digital technologies and organisational change.

Technologies such as Artificial Intelligence (AI) and Machine Learning (ML) are fast-evolving and have the potential to be key enablers to national security solutions. Machine Learning can use algorithms to help you find patterns in data and make predictions, while AI could create entirely new ways of working. Defence organisations must have an underpinning AI strategy, however, and use these technologies to support the delivery of specific business goals.

Without a clear vision of how the integration of AI will drive the achievement of organisational goals, by supporting and empowering people and transforming processes and capabilities, its potential and value may not be fully realised. We ensure you understand the opportunities – and threats – of AI so you can maximise the benefits of it to your organisation.

To deliver a robust and future-proof digital backbone the defence sector must also learn from other large-scale transformations, which have highlighted the important role that integration plays. Our technical and transformation experts give you the tools and approaches you need to understand your entire IT estate, so you can successfully embed new technologies into your existing systems. The result is seamless transition and fully integrated technologies that enable change.



Digital technologies

Artificial Intelligence (AI) – AI has the potential to change the way we work and create new business models or revenue streams, but if organisations are adopting the technology, it must be because they're trying to achieve a particular business goal. Without that focus, implementation will fail. We ensure our clients understand AI's strengths and limitations so they can maximise the benefits of it to their organisation.

Machine Learning (ML) – machine learning is a branch of AI that uses algorithms to help us find patterns in data and make predictions.

Digital Twins – digital twins are already being used in other sectors to track components throughout their lifespan, helping to pinpoint when a component needs to be upgraded or replaced. We deploy digital twins to connect the virtual and physical environments and optimise the design of assets, so they can be built efficiently and running costs can be minimised.



Digital transformation

We support defence to keep up with the current pace of technological change, ensuring your organisation can navigate complex and dynamic operating environments. By helping you to create a clear strategic vision, digital roadmap, and procurement strategy we enable you to develop your digital capabilities systematically, so your transformation programmes are delivered successfully and you achieve sustainable and lasting change.

Our experts make sure you can maximise the value of your data: whether using design and in-service data to inform decisions about maintenance and safety; drawing on data from your supply chain to improve efficiency and performance; or uncovering the high-level information that provides leaders with useful insight into your operations. We ensure new technologies and ways of working are embraced and embedded in your day-to-day operations through effective change management and engagement activities.

Data intelligence

Your data is a prized asset: we help ensure it is relevant, organised and quality controlled – empowering you to take effective and confident data-driven decision-making. Our end-to-end service enables you to develop the processes, skills, tools, and approaches needed to turn your data into an asset.

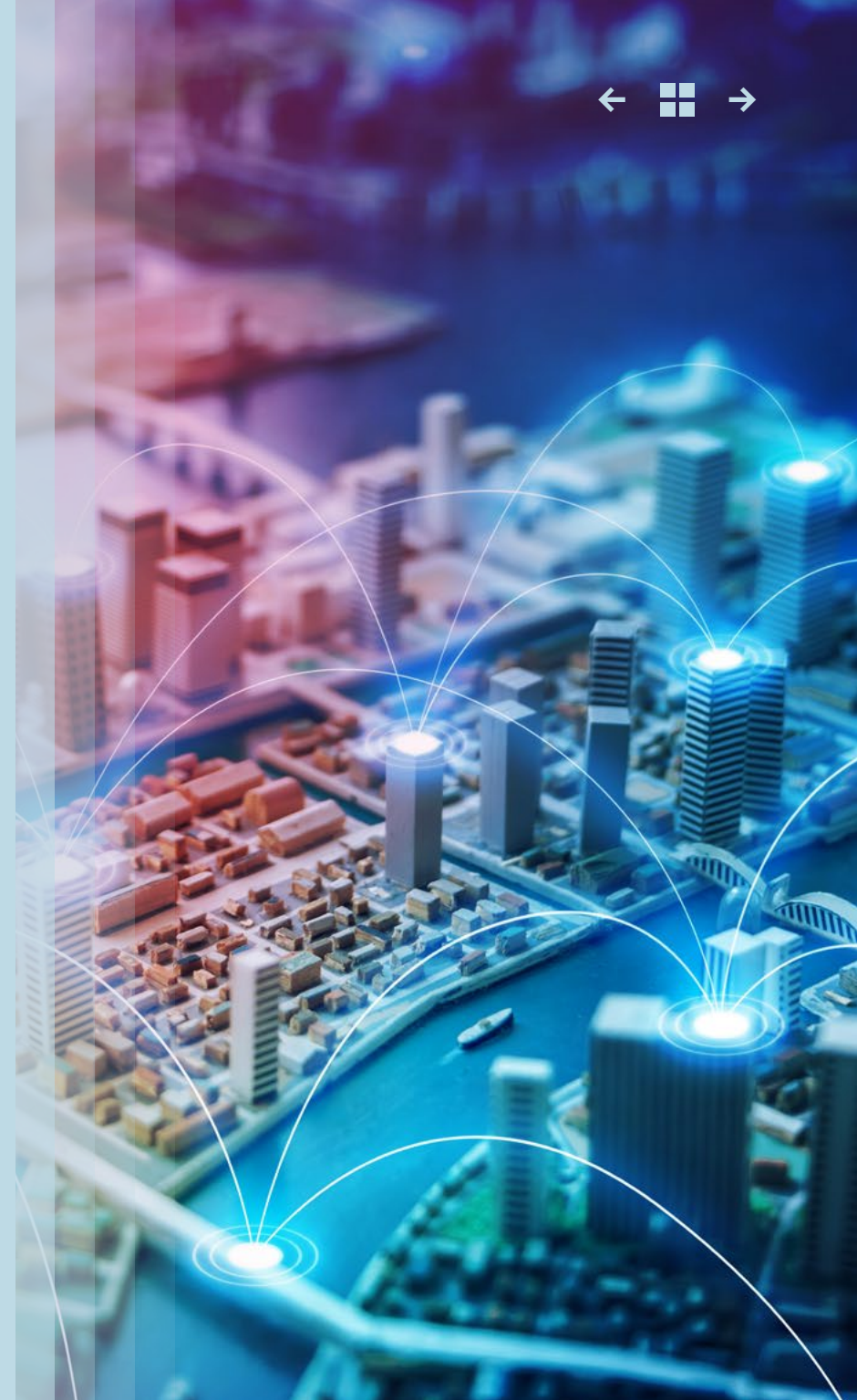
By helping you to understand your entire data ecosystem, and to put data at the heart of your business strategy, we support you to capture information that has value, and to store, analyse, and gain insight from it so you can make informed strategic and tactical decisions.

We work with you to help you capitalise on the use of your data, enabling a shift towards smart management of your assets. Tools such as our data-driven digital twins flag up predictive maintenance to save on cost and reduce your asset downtime. These digital twins can support your budget management, help spot conflicts on projects before work begins, and ensure resources are in the right place at the right time.

Increasingly, data intelligence is being used to track organisations' carbon footprints and to understand the progress they are making towards Net Zero. We'll make sure your data delivers timely, intelligent, actionable insights that enable you to baseline and reduce your emissions.

Operating model design

Covering the full lifecycle of operating model design: from discovery, through design, to implementation, our structured and flexible approach to understanding your needs ensures we can support you throughout your full transformation journey.



Engineering

We have a strong engineering heritage and commitment to delivering operational benefits to your organisation, including faster design, reduced downtime, and lower costs.

Our design and engineering teams work at the forefront of innovation, using their in-depth technical expertise and the latest materials to deliver lightweight, efficient, and high-performing structures. We focus on the safety, security, and sustainability of our solutions to ensure we're looking after our people and yours – always considering the human element in our projects, especially when we're operating in hazardous environments.

And we support defence organisations to become and remain resilient, enabling them to respond, absorb, adapt to, and recover from disruptive events.

We provide engineering services into almost all of the Category A programmes within UK defence, be they equipment or infrastructure focussed. Working extensively with defence primes and key aerospace players, our support at the genesis of programmes within the UK Ministry of Defence helps it set requirements and provides critical friend support.



Decarbonising defence

We help our clients overcome the enterprise level problem of achieving Net Zero, through helping benchmark and transform how they manage their carbon, and by enabling industry to exploit novel technologies to design, build and certify the equipment of the future which will emit less carbon throughout its lifecycle.

Achieving Net Zero and decarbonisation while ensuring successful programme delivery is a key issue facing the defence sector globally. By working in partnership with our clients, we help them achieve their greenhouse gas reduction goals, supporting this using both our specialist skills and tools including Decarbonomics™ and those within our ecosystem of small- and medium-enterprise (SME) suppliers.

We are engineering a safe, sustainable and more secure future for our planet and its people.

Decarbonomics™

Decarbonomics™ is an end-to-end service that provides whole-life support to decarbonise your built environment in a cost-effective way. The tool provides you with a complete picture of carbon presence across your entire building estate – whatever the size and scale – through accessible and easy to use interactive dashboards. A data-driven solution, Decarbonomics™ creates artificial intelligence and machine learning-enabled data digital twins to decarbonise buildings at the portfolio level.

Our ground-breaking service brings together people, data and technology across three core activities:

- **Benchmark:** capture, structure and manage your data to develop a carbon baseline
- **Roadmap:** design a cost-effective carbon reduction pathway for your organisation – evaluating interventions, scenario modelling and developing optimised decarbonisation roadmaps for cost-effective, pragmatic solutions
- **Deliver:** implementing the carbon reduction solutions – creating cost and programme optimised delivery plans for effective implementation. Tracking performance, sharing real-time views of your performance against plan.

Covering decarbonisation solutions from building retrofit to behaviour change, Decarbonomics™ measures progress and performance across the portfolio and asset lifecycle. Through empowering your decision making, we help you to achieve cost-effective decarbonisation and enterprise level reporting, building healthier and resilient portfolios and robust investment cases.



Consultancy

Working in partnership with you, our consultancy experts deliver solutions to your enterprise-level problems. Through integrating our capabilities across multiple domains and drawing in cross-sector insights we provide trustworthy information that informs your decisions, bringing Agile methods that drive out cost and time, improve collaboration, and deliver progress. We are the partner that enables your organisation to deliver its strategy, unlocking benefits in complex environments.

Our consultancy support to you includes:

- **Business case development** – informing your confident, strategic decision making through robust, evidence-based business cases.
- **Procurement and commercial** – maximising value from your procurement lifecycle, and delivering commercial solutions that achieve both cost savings and successful outcomes.
- **Operational analysis and cost modelling** – using advanced analytics methods and models to enable you to make better decisions, improving your value for money.
- **Operational improvement** – ensuring your operations and processes are optimised for efficiency, quality, and user experience, reducing OPEX and increasing effectiveness.
- **Change and engagement** – helping you to manage and embed change, and to engage and mobilise stakeholders to bring changes to life.
- **Utilising and integrating technology** – enabling you to make better use of data, digital technologies and new ways of working to reduce operational costs.
- **Manage digital transformation programmes** – ensuring transformation goals are achieved.



Project and programme management

We have a track record of delivering major programme success, maximising the benefits of public sector investment. Our flexible delivery models, exceptional products and innovative approaches enable us to de-risk your projects.

Drawing on our cross sector experience of managing some of the most complex infrastructure delivery in the world, we help you realise your ambitions to time and to budget.

Operating under quality and technical assurance processes aligned to industry standards ISO 9001 and AS 9100D, we are:

- A founder member of the PRINCE2 methodology, MSP03/07 and Management of Risk framework.
- A corporate member of the Association for Project Management (APM).
- Certified SCRUM Masters, with significant experience of managing software development projects.



Working in partnership

Within an ever-changing defence environment, and with the ever-increasing scale of the challenges defence faces, we are transforming our approach to working with customers and partners. We are embracing ever closer working with defence organisations, to ensure that we deliver successful missions, foster collaboration, and generate greater value. One key example of this, is in our engineering delivery partnership with Defence Equipment & Support (DE&S).

DE&S is part of the UK's Ministry of Defence (MOD), supplying essential equipment and services to the Royal Navy, the British Army, and the Royal Air Force. As part of the Aurora Engineering Partnership, with QinetiQ and BMT, we have been working with DE&S since 2018 as its Engineering Delivery Partner, to ensure it has the engineering capability it needs to specify, acquire, and deliver that support.

The partnership aims to help the MOD to transform the way engineering services are delivered and realise value for money for taxpayers, cutting costs while ensuring the UK's Armed Forces and Front Line commands receive the best equipment and support. With the Aurora Partnership, the MOD gets access to extensive experience in the defence sector, as well as a provider network of niche and specialist providers.

Focusing on output-based and longer-term outcomes to maximise efficiencies, operational performance and innovation, we work across a range of projects including cyber security; airworthiness, and air safety; environmental and safety; systems engineering; requirements modelling; business case development and training. Integrated with the DE&S engineering function, we have aligned and collaborative behaviours. The partners, supported by their specialist network, offer the abilities that help the MOD maintain its technical advantage and resolve the most challenging technical issues it faces in developing and delivering world-leading defence capability.

Engineering Delivery Partnership

[Read more →](#)



Sustainability

The defence sector has, historically, been a major contributor to greenhouse gases and is seeking ways to reduce its emissions, to deliver on governments' commitments to reaching carbon Net Zero by 2050. The damaging effects of climate change could not only have a potentially devastating effect on people's lives, they could also threaten global stability and international security as competition for increasingly scarce resources increases.

By working with defence to embed Net Zero as a strategy, we are helping the sector understand and address the scope of the task ahead. Decisions must be made about which assets to invest in and which to retire, how vehicles and aircraft can be operated more sustainably, and what new behaviours need to be embedded within organisations.

The potential of alternative fuel options must be explored, and the sector must carefully consider how it sources, manufactures, and uses resources, while using data to drive its decision making.

Our experts are collaborating with industry and defence to reimagine the technology, infrastructure and skills required to revolutionise the aerospace and national security sectors, for greater sustainability, mobility and continued innovation. We are creating products such as our Decarbonomics™ tool, which builds AI and machine learning enabled data digital twins to support the decarbonisation of whole building portfolios.

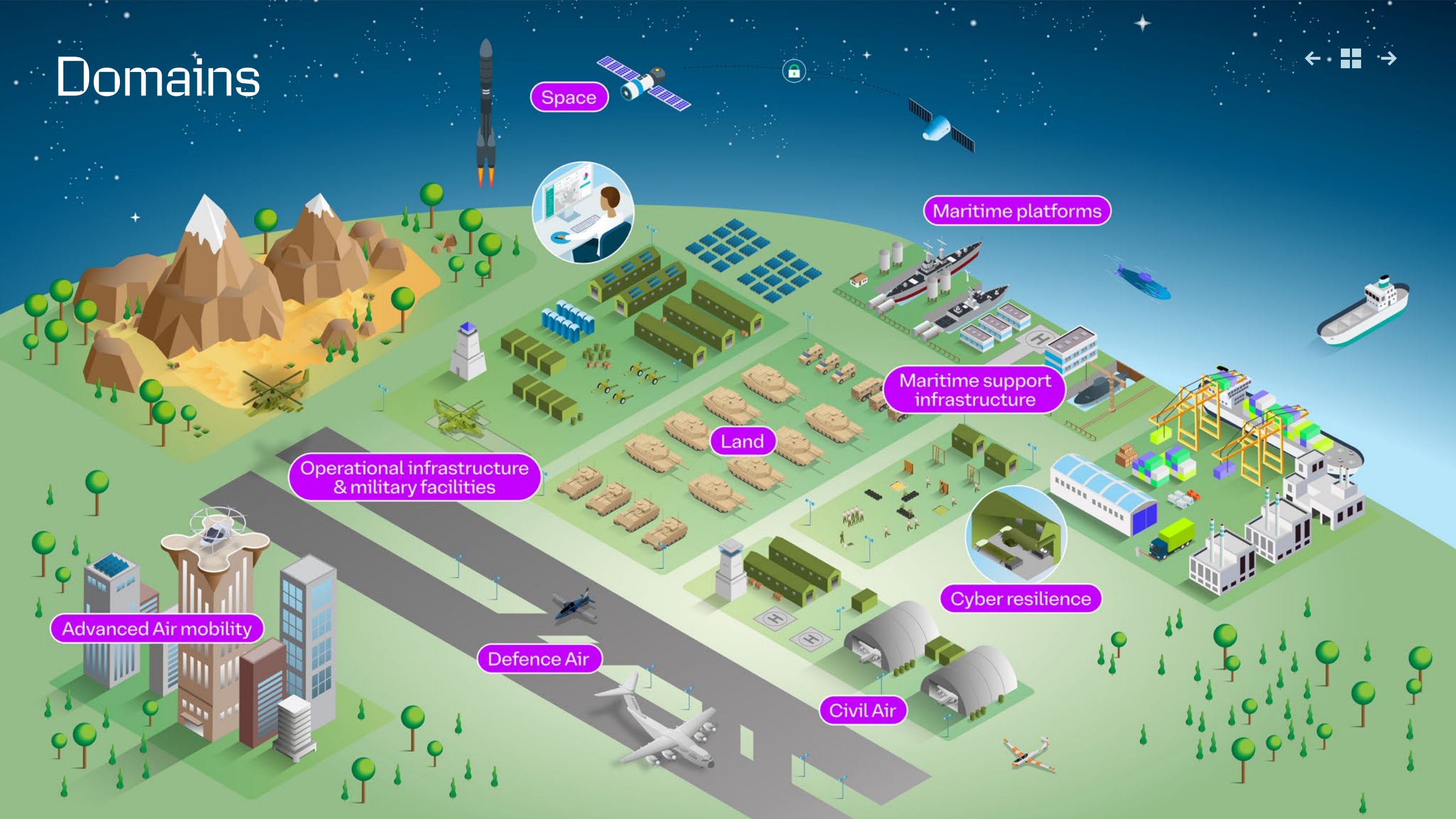
Read more about how we can decarbonise energy generation and consumption on our [Engineering Net Zero microsite](#).



Engineering
Net Zero



Domains



Defence air

With a long history of supporting the aerospace industry, both in the defence and civil air domains, we're helping develop and drive forward the future of flight. In the UK, we're leading a consortium looking at the feasibility of air taxi services, as part of the Future Flight Challenge, and our expertise across the future flight lifecycle, from vehicle to ecosystem development, is enabling technology innovation and the successful delivery of novel technology programmes.

Drawing upon our experience with both suppliers and developers, we integrate the engineering, transformation and digital technology capabilities from across our organisation with innovative business models, ensuring you achieve your project outcomes. From designing the jets for the next generation of combat pilots with AERALIS; to keeping the RAF Air Cadet Viking training glider in the sky; to supporting Electric Aviation Group (EAG) to deliver pioneering hydrogen aviation technologies, we're enabling the sustainable growth of aviation, transforming the way we travel and strengthening our military.

Future Flight Challenge

The UK Government's Future Flight Challenge aims to revolutionise the way we travel and find new, greener ways to fly. Working with a consortium of leading British aviation, technology and transport companies, AtkinsRéalis is aiming to answer the challenge and explore the future of mobility. Together, the firms will develop the technology and infrastructure to accelerate the introduction of Advanced Air Mobility (AAM) in the UK.

Awarded a £9.5 million grant by the UK Government's Future Flight Challenge, the consortium is developing the essential building blocks of a viable ecosystem that has the potential to be progressed into full commercial AAM operations. This first-of-a-kind ecosystem will accelerate the introduction of AAM in the UK by creating and testing technological developments in aircraft electrification, airspace management, operational procedures, and the systems and supporting business cases needed to introduce a new model of aerial passenger transport in the UK.



Design and certification

We deliver high-quality engineering services to your operations in safety critical environments.

Granted Design Organisation Approval (DOA) by the European Aviation Safety Agency (EASA), our experts can approve modifications to existing aircraft to confirm their airworthiness in line with the EASA's regulations and certification requirements. DOA is recognition that a design organisation complies with EASA regulations, and grants the privilege to classify repair designs as major or minor, and confirm that modifications are safe and airworthy.

We can design structures and systems using lightweight composite components, for example, wing structures and landing gear which can reduce waste and speed up production times; supporting the certification of civil and military aircraft and air-to-air refuelling systems; and the delivery of a range of military platforms and flagship projects in space.

With a deep understanding of the materials and processes involved in reducing the weight and cost of components, we have extensive experience of working with composite materials, including on Airbus' A380,

A350 and A400M aircraft; and have worked closely with the UK's National Composites Centre to further research into their use. Our work on flagship programmes includes the A350, A330 and A320; BAe 146; C-130J; and the Chinook.

Global Design Centre

Our Global Design Centre is recognised as an industry-leading centre of excellence in design and engineering. By using highly capable offshore specialists, we can reduce your project costs, as well as work across multiple time zones increasing efficiency. Teams across all our locations work to maintain compliance with our Design Organisation Approval.

With decades of experience with leading aircraft original equipment manufacturers on the design, analysis, certification, and repair of their newest aircraft, we combine our engineering capability and in-house digital technologies with industry standard tools to help you design faster, reduce downtime and lower costs. From supplemental type certificate (STC) major and minor changes; through loads' static strength and proof of structure, fatigue and damage tolerance; to impact and crashworthiness, our experts can help.



Defence air



Assuring the security of the skies is a key challenge for defence. Pressures on budgets mean organisations must do more for less, ensuring equipment and aircraft' physical and digital safety while investing in the technologies and fuels to meet the demands of Net Zero. With nearly a century of experience in supporting airborne defences, we work across the whole lifecycle, from concept studies to military airworthiness reviews.

SAFETY AND ENVIRONMENTAL

- Independent technical evaluation
- Independent airworthiness reviews
- Safety case preparation
- Hazardous materials management
- Legislation compliance
- Probabilistic safety assessment and aircraft airworthiness reviews
- Corporate functional safety management, system design and safety culture assessment
- Detailed safety hazard and risk analysis
- Air safety management training
- Independent safety and environmental assessment/auditing
- Environmental management and assessment

AIRWORTHINESS CERTIFICATION

- Military aircraft certification
- Military aircraft certification of civil derivatives
- Defence standard evaluation and comparison with alternative certification standards
- Safety case preparation

WEAPONS

- Independent safety assurance
- Independent technical evaluation
- Ordnance safety review panel submissions
- Safety case reports
- Hazard identification and assessment

TRAINING AND HUMAN FACTORS

- Training strategies and plans
- Scoping studies
- Training needs analysis (TNA)
- Training design and development
- Training validation, compliance and audit
- Human factors integration (HFI)
- HFI strategies and plans
- Human simulation modelling/error and reliability analysis
- Work-load and anthropometric analysis

INTEGRATED LOGISTICS SUPPORT

- In-service support planning and strategy
- Spares provisioning
- Obsolescence management and REACH compliance services
- Reliability centred maintenance (RCM).
- Supply chain and availability modelling
- Asset management
- FMECA and LORA studies
- Through-life cost modelling

AVAILABILITY, REPAIRABILITY AND MAINTENANCE

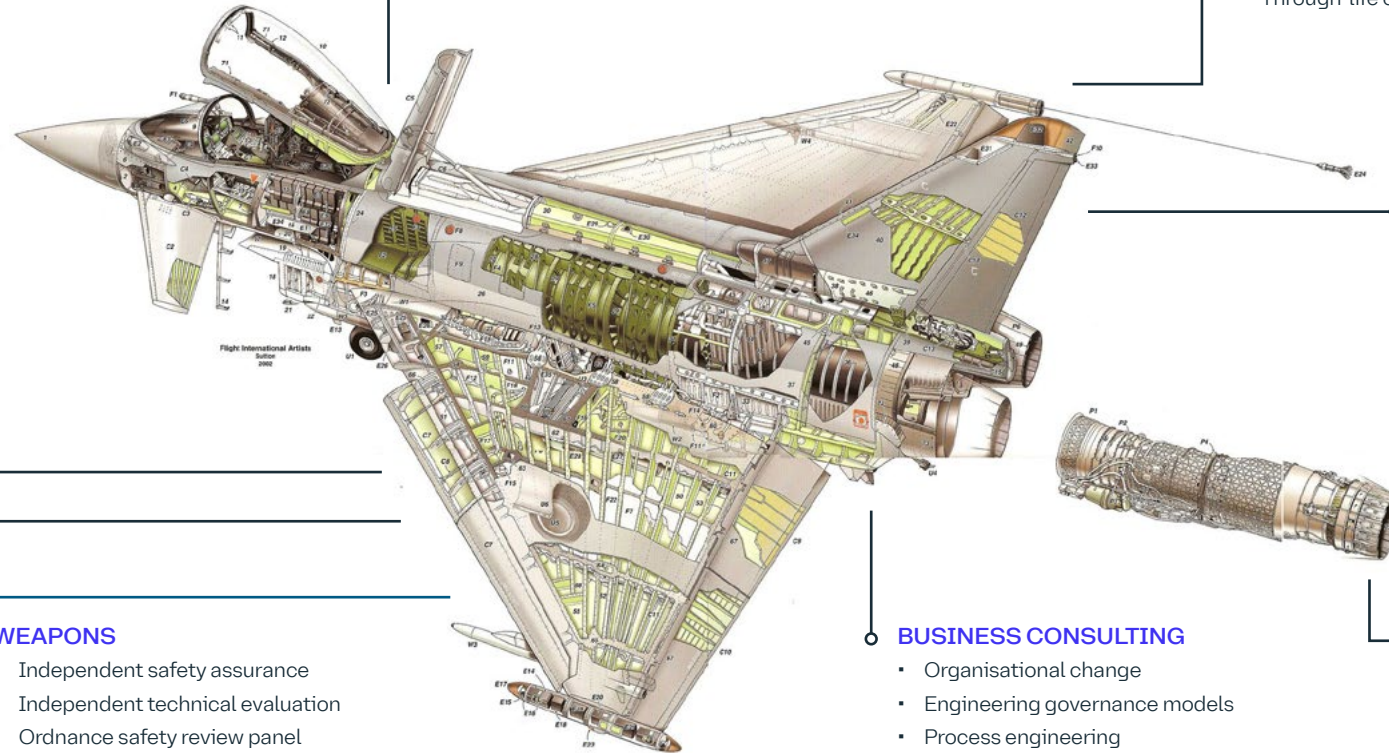
- Reliability and maintainability strategy
- Sensitivity analysis
- Maintenance and resource planning
- Cost analysis
- Fault tree analysis
- Options studies

BUSINESS CONSULTING

- Organisational change
- Engineering governance models
- Process engineering
- Engineering authority
- Skills and capability development strategies

REQUIREMENTS ENGINEERING

- Requirements engineering – URD, SRD
- Options analysis
- Requirements trades



Civil air

Operating at the forefront of aerospace innovation for more than 30 years, we've utilised rapid advances in technology to reduce aircraft manufacturing and operating costs, while extending the life of our clients' fleets.



SYSTEMS INSTALLATION DESIGN

- Concept studies
- Fuel system architecture including avionics
- Flight controls including kinematic geometry
- Door operation and latching/locking
- Air distribution and water/waste
- Flight test installation
- FMEA, SSA and FHA

FUSELAGE NOSE

- Cockpit structure design and stress
- Flight deck backwall integration

INTERIOR DESIGN & STRESS

- Concept and detail design and analysis
- Crash worthiness
- Fire worthiness
- Cabin safety

STRESS ANALYSIS

- Primary structure
- Linear and non-linear finite element analysis (Nastran)
- Crash impact, pylon and LG separation
- Modal, buckling and thermal
- Certification reports
- Rapid decompression
- Structural repair manual justification

FUSELAGE STRUCTURE DESIGN & STRESS

- Fuselage barrel including floor
- Door and surround
- Wing-fuselage intersection
- Cargo-hold integration with airframe
- Tail bumper for Vmu flight test

LANDING GEAR

- Structure and systems integration
- In-service issues
- Maintenance task improvements
- eTaxi

WING STRUCTURE DESIGN & STRESS

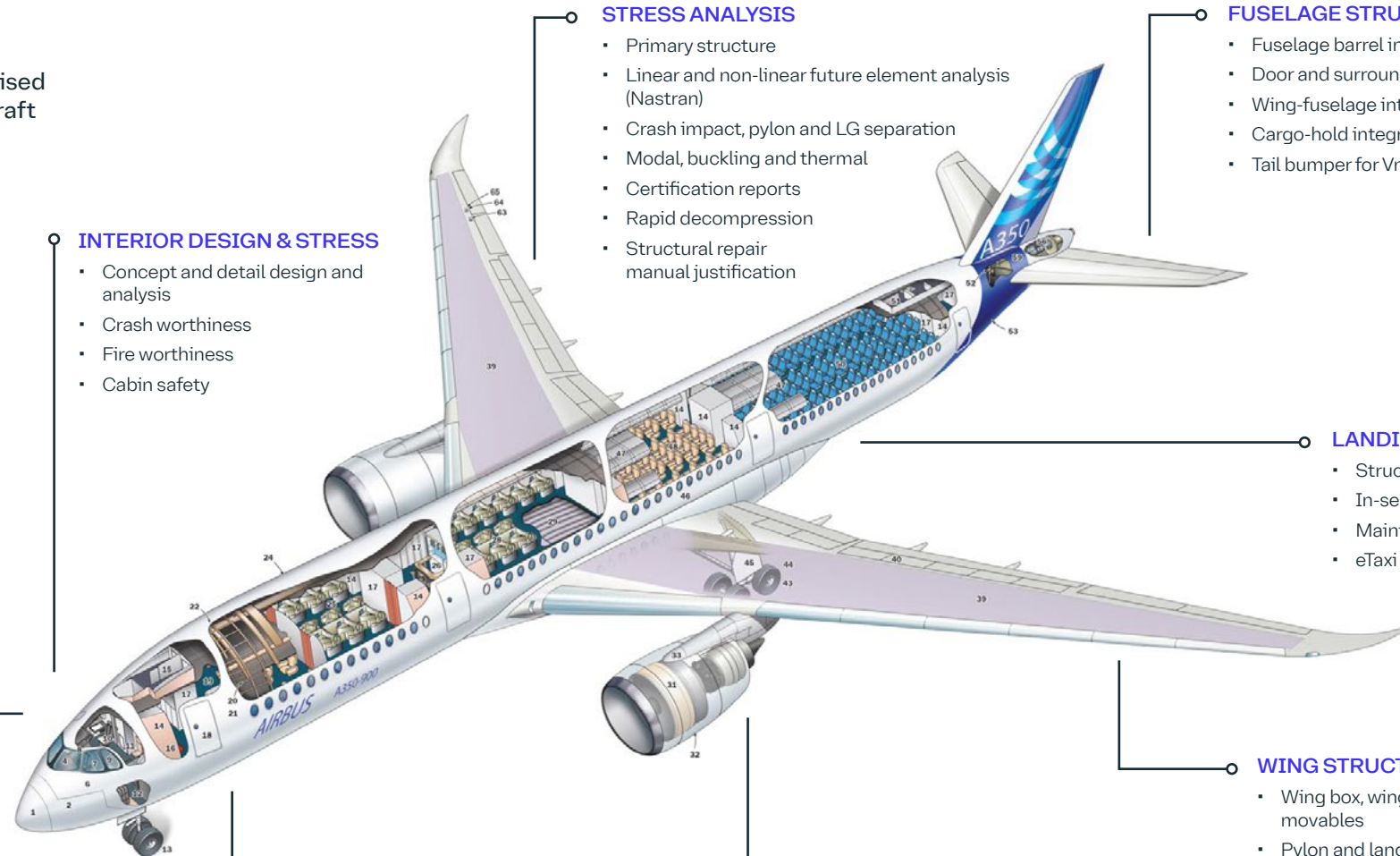
- Wing box, wingtip leading and trailing edges, movables
- Pylon and landing-gear attachment structure
- Concept and trade studies
- Structural integrity analysis and test (stress, F&DT)

CIVIL AND MILITARY POWERPLANTS

- Compression and transmission systems
- Linear friction welding intelligence lead tooling
- Fan front frame integration, composites
- Front bearing housing design and justification
- Design studies VIGV and VSV drive systems

FATIGUE & DAMAGE TOLERANCE (F&DT)

- Loads spectra
- Structure design for F&DT
- Analysis of crack initiation, crack growth and residual strength
- Structural failure investigation
- Bird and tyre impact, uncontained engine failure



Advanced Air Mobility (AAM)

The dynamics of innovation in defence have reversed over the last few decades. Historically, defence innovation led the development of new technologies, which were then flowed back into the civil sectors. Today, with the exception of specific defence applications, in most countries civil innovation leads defence. No clearer example of this is in the next generation aerospace sector, where advanced air mobility technologies such as unmanned flight, drone technologies and electric/sustainable flight are on the precipice of revolutionising how we fly. These technologies are being developed to decarbonise aviation and, once mature, will inform military equipment development, affecting how we organise, what we procure, and how we deliver our missions.

- Ecosystem design and master-planning
- Smart city strategy and implementation
- City infrastructure systems

- Decentralised energy distribution

- System vulnerability investigations
- System resilience
- Cyber security and resilience

- Wireless network design (incl. 5G)
- Secure network design

- Vertiport concept design;
- Vertiport site selection and integration

- Aircraft safety and certification
- Advanced material weight optimisation
- Flight control and complex avionic system design and certification (incl. eVTOL)
- Military unmanned air systems expertise
- Advanced electric motor development
- Vendor maturity assessment

- Commercial drone operation
- Counter unmanned air systems
- Logistics use case analysis

- Airport master planning and design
- Airport infrastructure and systems
- Airport communications
- Centralised and remote ATC infrastructure and systems
- ATC safety
- Airport future energy readiness

- MRO 4.0
- Digital asset management
- Data visualisation and analysis
- Integrated logistics support
- Business transformation
- EASA Part 21J Design Organisation Approval

- Biometric security systems

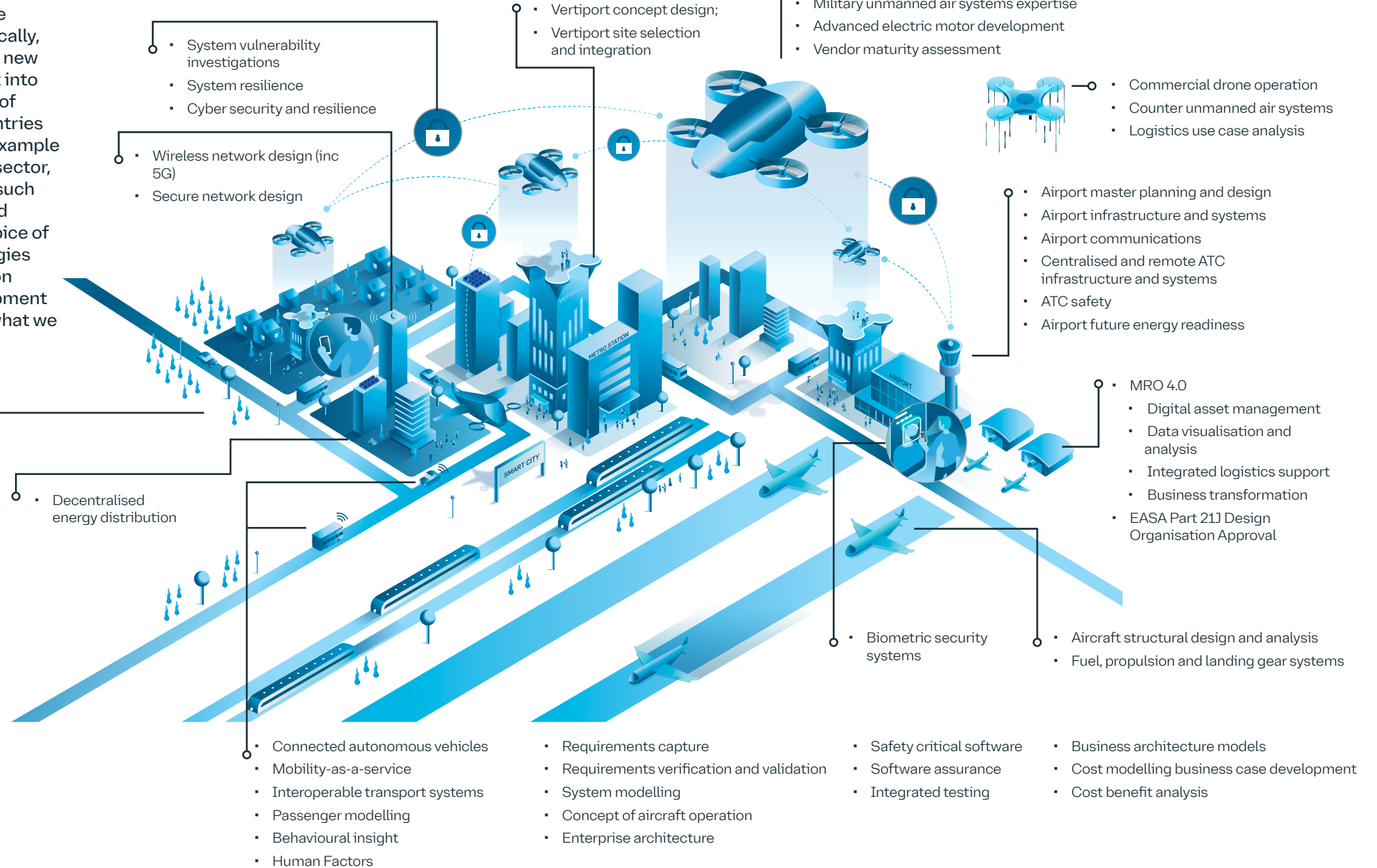
- Aircraft structural design and analysis
- Fuel, propulsion and landing gear systems

- Connected autonomous vehicles
- Mobility-as-a-service
- Interoperable transport systems
- Passenger modelling
- Behavioural insight
- Human Factors

- Requirements capture
- Requirements verification and validation
- System modelling
- Concept of aircraft operation
- Enterprise architecture

- Safety critical software
- Software assurance
- Integrated testing

- Business architecture models
- Cost modelling business case development
- Cost benefit analysis



Space defence

Space is no longer the final frontier, with substantial, disruptive innovation rapidly lowering the barriers of access to space assets, through commercial launch, new business models and high-tech payload development. It is an increasingly important element of our Critical National Infrastructure, as satellite data informs so much of what we do – from travel and communications to leisure. So, it is essential that this important evolving ecosystem is defended against those who might wish to use it to harm national and international security, and to ensure sovereign freedom of action for our essential defence operations.

Space is a critical enabler across defence, used for intelligence, surveillance and reconnaissance, navigation, communications and strategic decision-making. We bring our multidisciplinary skills and capabilities to help maximise your space opportunities and underpin space defence. Offering technical and business consulting capabilities, and an understanding of the complex interaction between design and regulation, we develop integrated solutions that empower organisations working in the space sector to achieve their goals.

From traditional engineering of spacecraft, payloads and spaceports; to secure network design and satellite commercial models; to cyber security and vulnerability investigations of space systems, we deliver expertise that enables your safe, secure and successful space programmes.



Our capabilities and services:

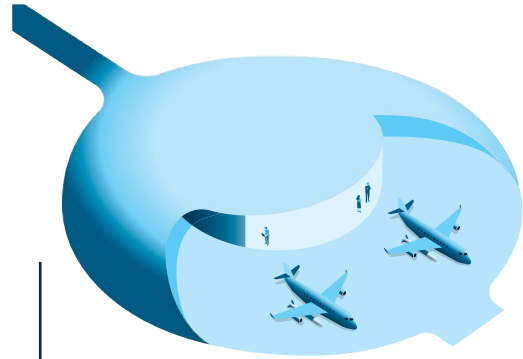
- **Design and certification** – At the cutting edge of aerospace technology for over two decades, we deliver high-quality pioneering solutions in safety critical environments, enabling the design, development and test of your launch vehicles and satellites.
- **Spaceports and infrastructure** – With extensive expertise in regulation and certification across the aerospace, transportation and infrastructure, we help you navigate complex emerging requirements.
- **Defence** – Bringing a significant history of supporting defence organisations in the requirements' definition, design, qualification and in-service support of their assets, we help you maximise the benefits of satellite data from to gain tactical advantage in this increasingly contested and congested operational domain.
- **Data analytics** – Blending our expertise in digital transformation with our heritage in traditional engineering, our digital solutions and services for complex assets bring insights that inform your decision-making.
- **Secure by Design** – Delivering cyber security and resilience expertise across the Critical National Infrastructure, government, national security and defence sectors, we help you understand your digital vulnerabilities and how they might affect your missions.



Space

The missions of tomorrow require the convergence of the aerospace, infrastructure, communication and data science disciplines. We bring these together, efficiently and securely.

Allied, collaborative working across the civil and defence sectors will help governments reach for the stars and achieve their space programme goals.



SPACEPORTS

- Airport planning and terminal design
- Architecture
- Engineering services for runways and launchpads
- Civil Engineering and construction
- Security systems
- Noise and acoustics
- Ecological survey
- Air traffic management
- Facilities management
- Master planning and terminal design
- Engineering runways and launchpads
- Biometric security

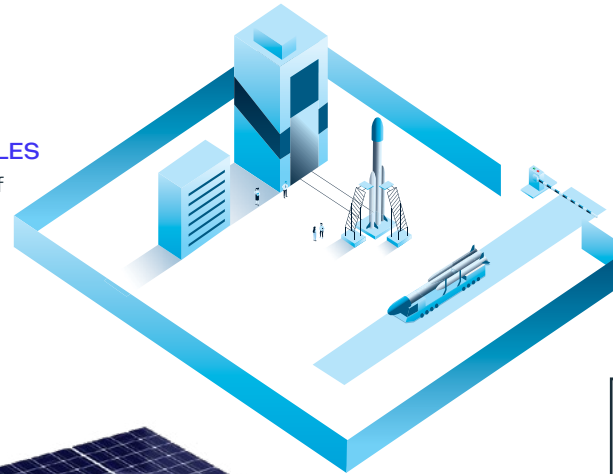
SOFTWARE

- Critical software development and verification
- Embedded SW for satellites and launchers
- Simulation SW development
- Web SW development and support for military ground systems



AIRCRAFT/LAUNCH VEHICLES

- Horizontal and vertical take-off
- Airframe engineering
- Landing gear
- Fuel systems
- Requirements verification and validation
- Safety
- Certification analysis

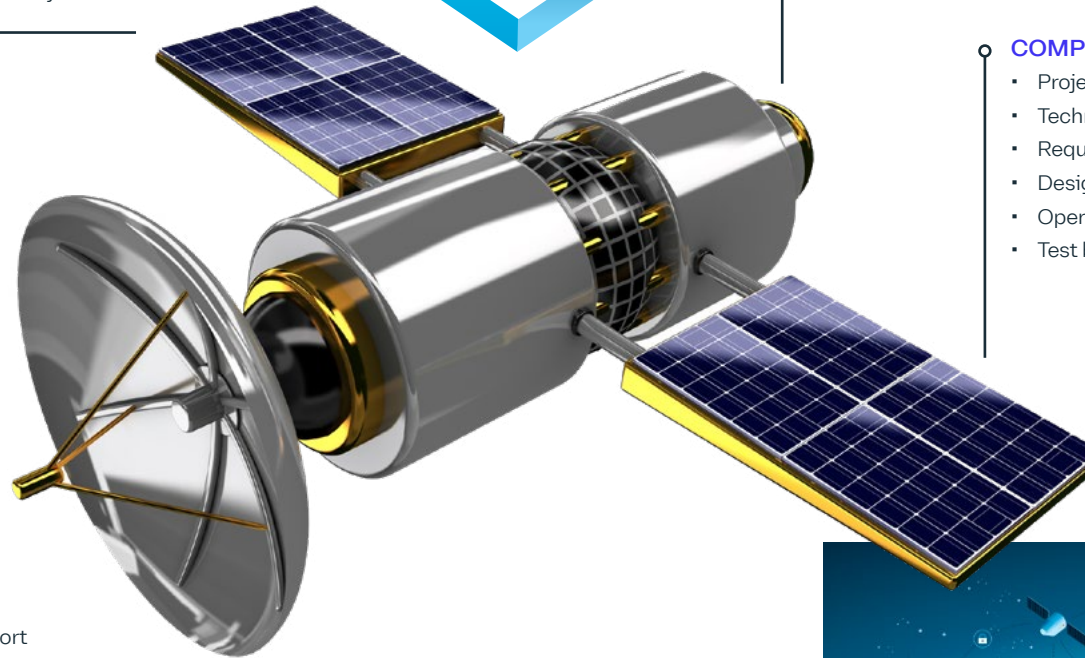


SATELLITES

- Spacecraft, instruments and equipment
- Mechanical design and analysis
- Thermal analysis
- Finite element analysis
- Advanced composite materials
- Systems and software engineering
- Test definition, support and evaluation

COMPLEX ENGINEERING

- Project management
- Technical management
- Requirements engineering
- Design optimisation
- Operations for Earth observation systems
- Test bench design and realisation



BUSINESS CONSULTING

- Satellite commercial models
- Service incentivisation
- Procurement strategy and option development



Land

Understanding the breadth and complexity of the land domain isn't easy, but at AtkinsRéalis, we have over 75 years' experience of delivering solutions to defence that maximise efficiency and optimise safety and performance.

SYSTEM

- Concept development and trade off analysis
- Concept and trade studies
- Operational analysis (e.g. MCDA)
- Defence Lines of Development (DLOD) assessment and planning
- Programme and project management
- Cost modelling
- Benefits assessment
- Bid support (including Red Team reviews)

FIREPOWER

- Medium calibre cannon and ammunition
- Self defence weapons
- Vehicle and weapon qualification

ASSET MANAGEMENT

- Integrated logistics support
- Supply modelling, LSA, level of repair analysis, codification
- Availability, reliability and maintainability
- Failure analysis (FMEA, FMECA)
- DRACAS
- Maintenance optimisation
- Reliability centred maintenance/condition based maintenance
- Fleet management
- Health and usage monitoring systems
- Facilities and infrastructure design
- Obsolescence and REACH

SYSTEMS ENGINEERING

- Enterprise architecture, SOSA
- UML, EA, MooD , MODAF, Archimate
- Use case development
- Requirements development (DOORS)
- Integrated test, evaluation and acceptance planning
- Trials management

SAFETY AND ENVIRONMENTAL MANAGEMENT

- Safety and environment management systems
- Safety and environment case development
- HAZID and risk assessment
- Environmental impact assessment and management
- COMAH
- Legislative

PEOPLE AND TRAINING

- Training needs analysis, design and development
- Training delivery and Instructor development
- HFI assessments and optimisation
- Human performance (e.g. JACK modelling)

DEPLOYABLE INFRASTRUCTURE

- Rapid assessment and planning for infrastructure design tool
- Deployable infrastructure operational analysis
- Optimised theatre infrastructure planning
- 3D/VR collaborative design environment
- Generic base architecture (DefStan 23 013) compliant design, including SCADA FM services
- Optimisation of key cost driving utilities and services (e.g. water and power)
- Asset and facilities management
- GIS/geospatial services
- Geomatic survey services

COMMUNICATIONS AND ICT

- Networked data communication with Ethernet connections and switches
- Network management systems, VOIP and Intercom installations
- Security and cyber
- Knowledge of VLAN
- Knowledge of military connectors and harness definition
- Knowledge of AES (Advance Encryption Standards)
- SCADA
- Networked communications
- Military installations and radio installations
- Knowledge of military communication protocols

MODELLING & SIMULATION

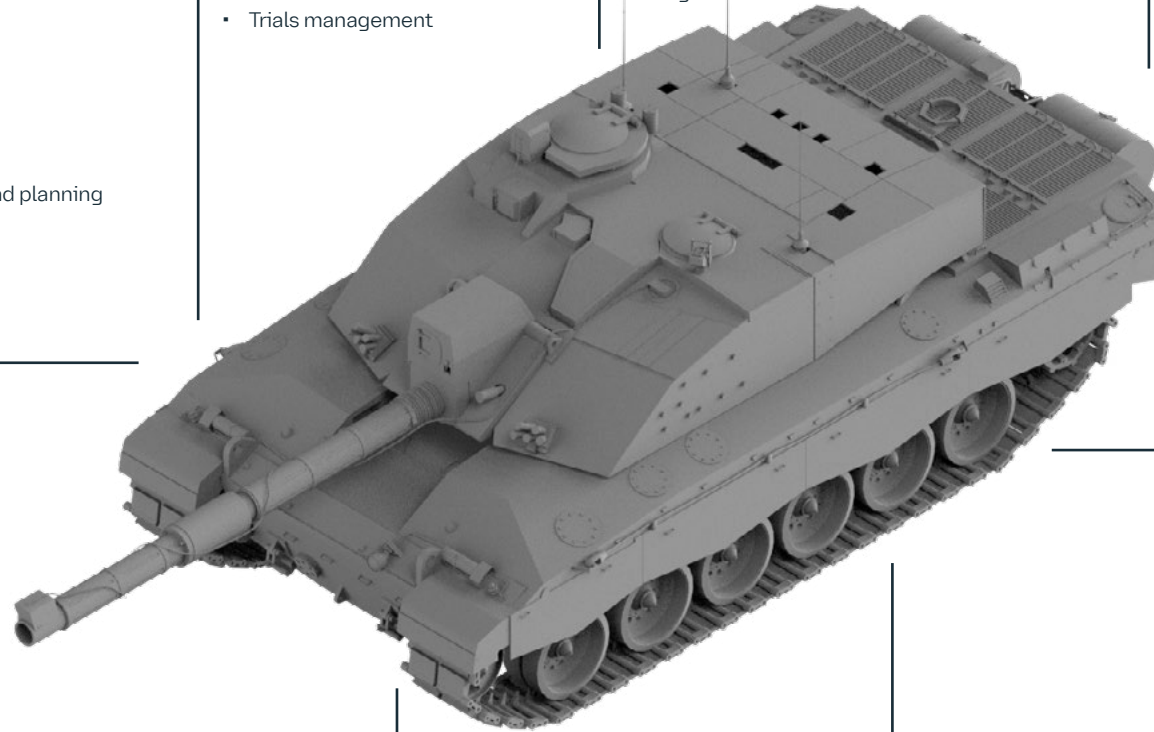
- Blast and ballistic impact simulation including 3D
- CAD and non-linear analysis
- Mechanical design and analysis
- Materials modelling
- LIDAR analysis
- Virtual Reality (VR) Tech Lab

INTEGRATED SURVIVABILITY

- Signature management
- Passive and active protection systems
- Physical protection
- CBRN analysis
- Spall liner design

SYSTEMS INTEGRATION

- Generic vehicle architecture
- EMC assessment and mitigation
- Information assurance and cyber vulnerability investigation
- Software design and assurance



Cyber resilience

In an ever-changing world where we are more reliant upon digital connections that ever, organisations need to ensure that their systems, capabilities and people are secure, safe and resilient.

We combine our transformation and deep cyber subject matter expert (SME) knowledge to help you develop true cyber resilience, supporting you to understand the threats to your organisation and to address your organisation's potential vulnerabilities by putting appropriate and proportionate protection in place that assures your operational continuity. By using a proven Systems Engineering process to establish and manage your cyber risk, we empower you to protect the safety, security, availability and integrity of your network and assets.

Our experts help you to embed the changes that ensure your organisation and systems are secure by design, underpinned by an effective cyber resilience strategy. We also ensure you have a sound understanding of how you can work with partners to minimise the threats and reduce the risks to your supply chain.

We provide:

- Cyber vulnerability investigations (CVIs)
- Cyber maturity assessments
- Risk assessment services
- Vulnerability investigations
- Behavioural analysis
- Threat analysis
- Advice on governance and policies
- Resilient system architecture designs
- Security management
- Auditing and compliance reviews

We'll help you develop cyber resilience.



Understand the threats you face



Implement proportionate protection



Recover quickly from a security breach



Cyber resilience



We help unlock your organisation's potential and protect your operations, through supporting you to be cyber resilient in an increasingly connected world.

Our services

Advice

Trusted to help organisations stay ahead of their cyber threats, we deliver strategic advice and solutions tailored to meet your specific needs. With experience in secure and mission-critical environments, we provide cyber security expertise to the Critical National Infrastructure, government and defence sectors – including as an accredited cyber supplier to government, and the largest supplier of client-side advisory in the UK Security and Intelligence sector.

Recognising the budgetary challenges facing defence, we help you to identify the most efficient and effective shape and size of cyber security configuration, allowing you to cost-effectively manage your security risk.

Planning

Bringing award-winning project management capabilities, we have experience of delivering complex cyber transformation programmes, at scale. We help you to plan for, and manage cyber-related incidents, working with you to create and practice incident response, disaster recovery and business continuity processes and procedures.

Our technical expertise helps you spot potential vulnerabilities and anomalies in your systems and data, and we help your employees to understand their role in keeping your business secure – providing training and awareness that is based on real world examples and a common business language, through our proven courses.

Protection

Combining cyber security engineering and design expertise with in-depth domain knowledge across multiple sectors, we offer insights into both the wider threat landscape and your organisation's digital vulnerabilities.

Delivering a full range of security and information assurance services our committed team supports you to assure the confidentiality, availability and integrity of your data and systems. Our risk analysis helps you understand the effects that cyber attacks will have upon your organisation, and we support you to develop and implement the pragmatic, adaptive and proportionate mechanisms needed to safeguard and protect your essential operations.

Delivery

From developing secure architecture and network requirements across your critical infrastructure, to producing operational technology security cases that support and underpin your safety management systems and safety cases, we deliver the tools you need to assure your organisational security.

We provide tailored cyber security standards, policies and processes to meet your business's specific requirements. And we work with you to ensure your business is ready for regulatory assessments and audits. Our experienced specialist practitioners help you to achieve industry-specific regulatory compliance, following standards such as ISO27000, NIST SP800, IEC62443, NIS and GDPR.

Cyber and digital systems

In an era of increasing digitalisation and cyber threat, organisations need to adopt a more agile approach to implementing the latest digital technologies. By focussing on people, processes, data and security, we help our clients to develop resilient and sustainable capabilities that provide them with a digital advantage.

We bring cross-sector experience of enabling organisations to remain cyber-resilient while capitalising on the value digital offers: including examples such as digital twins of Critical National Infrastructure, world-leading digital biometric security at Heathrow Airport, and embedding innovative technologies for one of the world's largest fully-automated commuter railway lines.

DIGITAL ADVANTAGE

- Technology leadership and business analysis
- Business systems and enterprise architecture
- Data architecture and governance
- Platform and technology solutions
- Digital infrastructure
- Data science and visualisation
- Service architecture and integration
- Systems engineering
- Communications and networks design and assurance
- Site coordinating installation design authority support
- Full lifecycle software development

DIGITAL SUSTAINABILITY

- Transformation, change and engagement
- Digital strategy and operating models
- Business case development
- Operational analysis and cost modelling
- Business change management
- Operational improvement and agility
- Benefits strategy and management
- Organisational culture development
- Programme delivery
- Digital asset management – including digital twins
- Availability, reliability and maintainability
- Safety critical software and systems assurance
- Software operational technology and industrial control systems

CYBER RESILIENCE

- Cyber security
- Awareness, behaviour and culture
- Cyber Vulnerability Investigations
- Cyber risk management
- Security operations
- Secure by Design
- Security architecture
- Data and analytics
- Strategy and road mapping
- Security assurance
- Training solutions and human factors



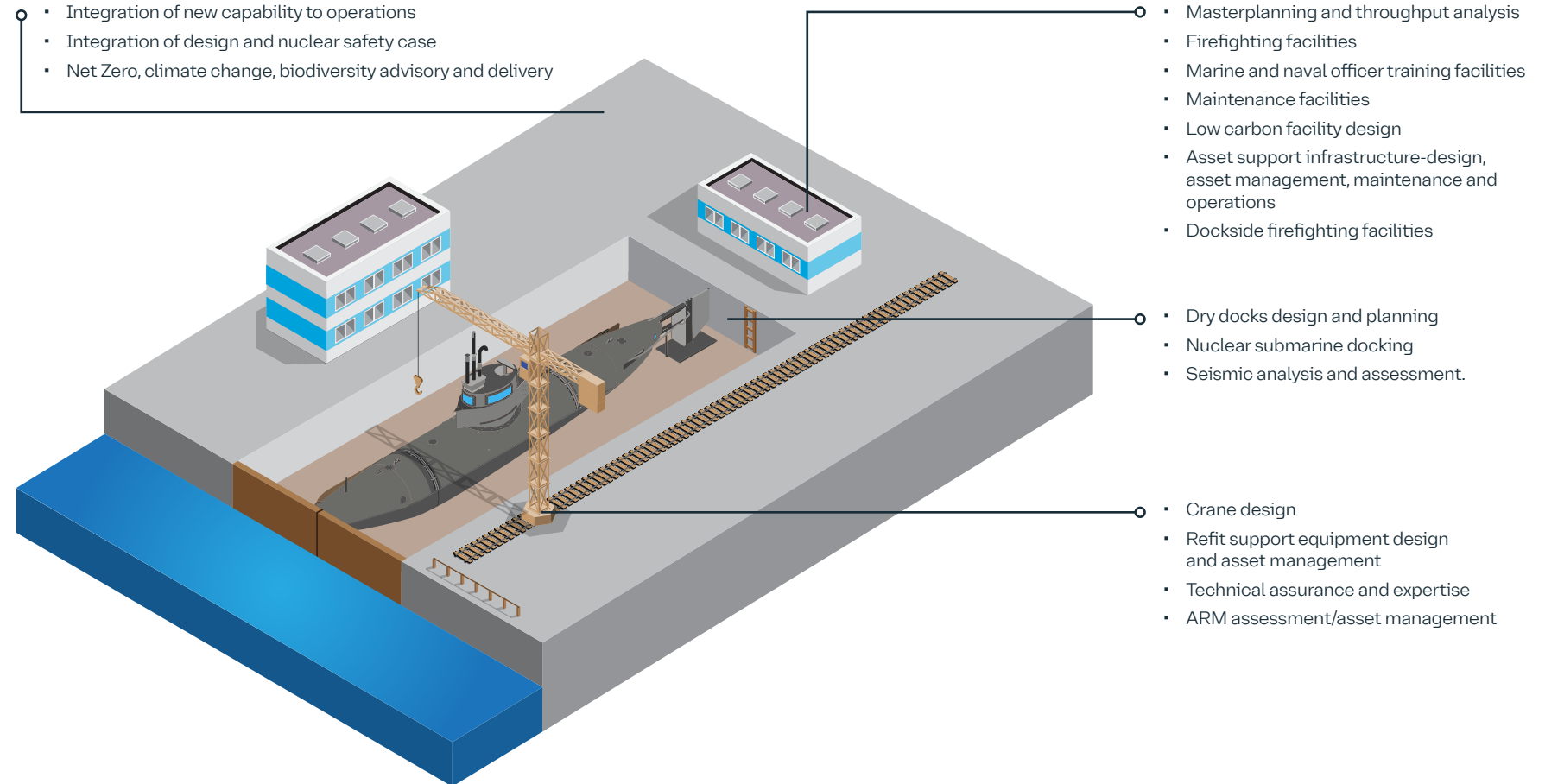
Maritime support infrastructure



From highly-specialised modifications to nuclear submarine facilities, to bathometric works and dredging dockyards, to designing entirely new dockyards, our experience encompasses the entire range of support facilities, infrastructure, security, integrated logistics support and communications. We understand first-hand the complexities of working within naval bases and build strong relationships with civilian port authorities.

Working closely with you, we deliver solutions and facilities that meet the operational and environmental requirements of the future, while improving your asset effectiveness.

Many of the naval bases that we have worked with in the UK are of historic interest and require specialist conservation, including Portsmouth, Plymouth and the Royal Britannia Naval College at Dartmouth. In Canada, we help naval and marine organisations assure high reliability and availability as they patrol one of the longest shorelines in the world – with limited resources and within a challenging environment.



Maritime platforms



As your design partner of choice, AtkinsRéalis is uniquely positioned to successfully enable your organisational transformation, while improving and assuring your programmes' performance. We work to support industry partners and the authority to deliver their maritime programmes successfully, delivering engineering work packages and transforming how asset availability is managed using digital twins and innovative asset management tools. We also operate and maintain the Canadian minor warships and auxiliary vessels' fleet, providing a wide array of engineering, programme management and naval architecture services to ensure these vessels are available to protect Canada and support the wider fleet.

STRESS ANALYSIS

- Assessments of primary circuit components on the Nuclear Steam Raising Plant (NSRP)
- Support to Scoping and Planning Reviews (SPR), Structural Technical Analysis Reviews (STAR) and Independent Technical Review (ITR) processes
- Finite element assessments (ABAQUS, ANSYS)
- Fatigue assessments of components subjected to thermal and pressure loads
- Fracture assessments using R-Code
- Shock assessment

SYSTEM DESIGN CAPABILITY

- Generation of system concept studies for future plant arrangements
- Equipment reduction/simplification of existing systems
- Resolution of design review actions with respect to system designs
- Independent technical assessment and verification of system designs
- Plant lifetime extension studies
- Review of extant safety substantiation reports
- Nuclear plant as low as reasonably practicable (ALARP) studies

MECHANICAL HANDLING

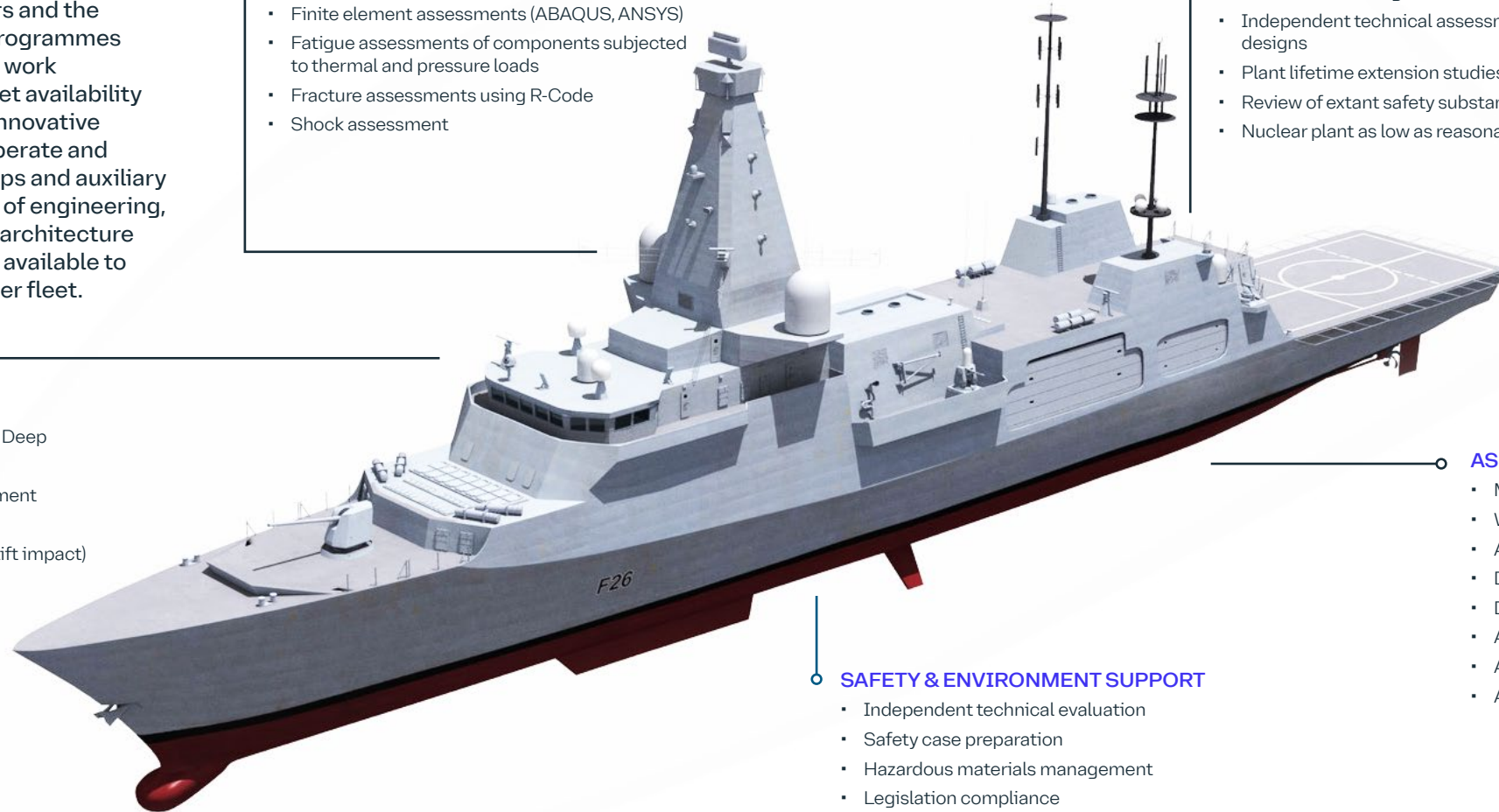
- Propulsor removal concept design for Deep
- Maintenance Period (DMP)
- Design of power module lifting equipment
- Design of hydrofoil removal systems
- Impact assessments (drop loads, forklift impact)

ASSET MANAGEMENT

- Maintenance optimisation
- Whole-life optimisation
- Asset investment optimisation
- Data exploitation
- Digital-AM systems integration
- Asset intelligence/P-as-a-S
- Asset management advisory
- AM-as-a-S (managed service)

SAFETY & ENVIRONMENT SUPPORT

- Independent technical evaluation
- Safety case preparation
- Hazardous materials management
- Legislation compliance
- Probabilistic safety assessment
- Corporate functional safety management, system design and safety culture assessment
- Detailed safety hazard and risk analysis training
- Independent safety and environmental assessment

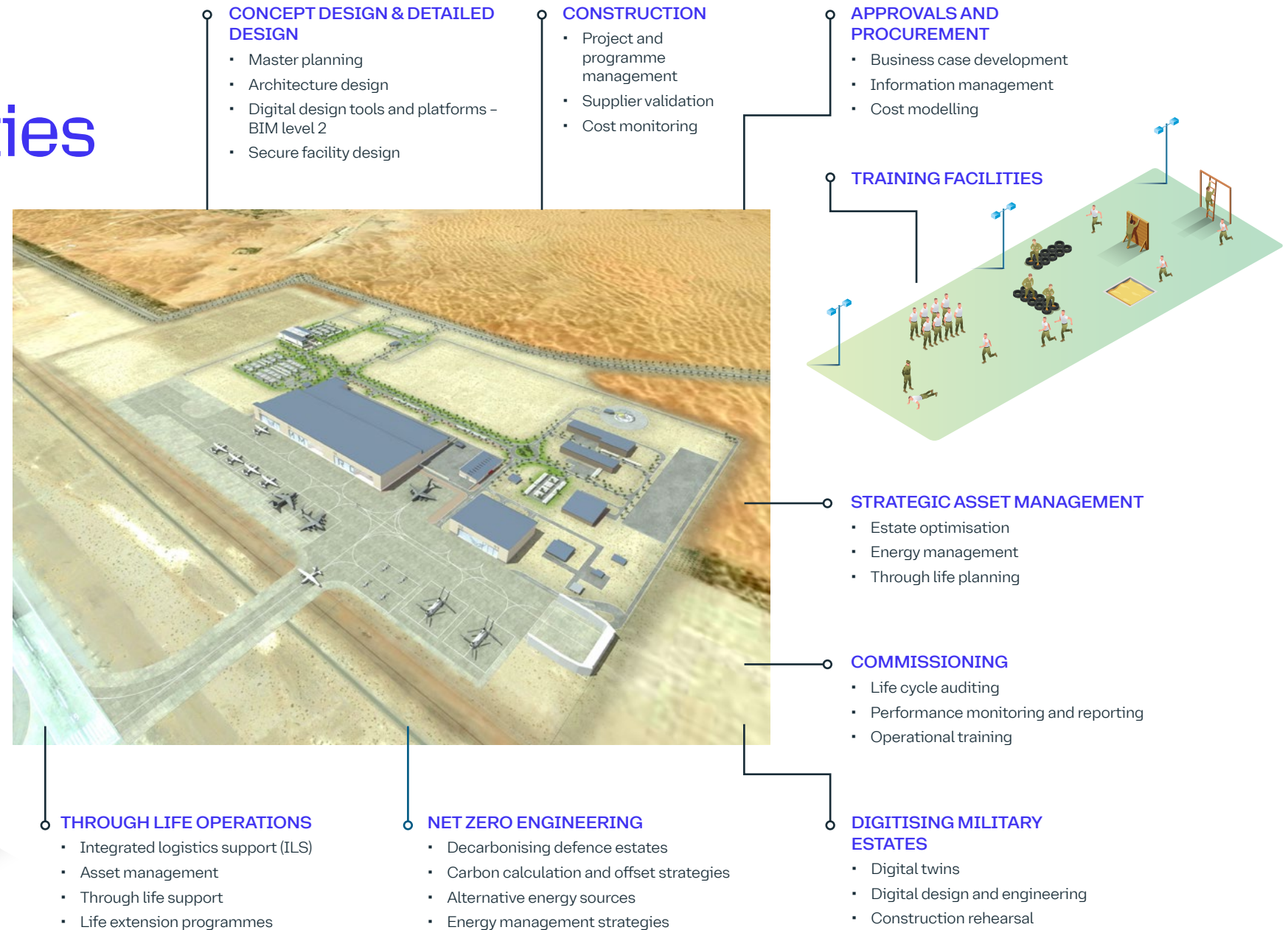
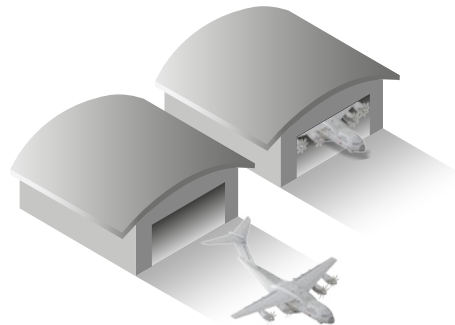


Operational infrastructure and military facilities

We deliver complex defence infrastructure programmes that provide real added value from cradle to grave. With experience across areas from residential to aviation, we bring our best practice expertise to offer you a depth of knowledge and understanding that enables the success of your large scale, complex infrastructure programmes.

Supporting the development and delivery of all types of defence infrastructure projects, we add value across all stages of your programme: from design and conception, through operational life and to decommissioning.

Our deep understanding of defence estates means we can help you to maximise the benefits gained from your assets, informing your investments around capital expenditure and supporting you to work towards a Net Zero future.



Equality, Diversity, and Inclusion

We want to ensure that everyone that works for us and partners with us feels respected and empowered.

Through employing and empowering people who have a different perspectives, new ideas, varied experiences, we can offer novel ways of thinking about problems. We're working to ensure our people, organisation, and the wider defence industry benefit from the robust equality, diversity, and inclusion policies that we've put in place and the steps we're taking to bring them to life.

In the UK, we're proud signatories of the [Women in Aviation and Aerospace Charter](#) and the [Women in Defence Charter](#), which were signed at DSEI 2019. By supporting these initiatives, we're demonstrating our commitment to putting strict targets in place to make our aviation, aerospace, and defence teams more gender-diverse and provide fair opportunities for women to succeed at the highest levels.

"Defence is driving a transformation agenda. Transformation requires innovation, and innovation depends on diversity and inclusion."

Dave Clark, Aerospace and Defence Market Director, UK



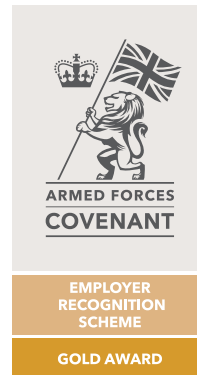
Partnering with the Armed Forces

We're helping service leavers and reservists settle into civilian life with our advocacy programme.

Our [Partnering with the Armed Forces](#) scheme in the UK is part of our wider equality, diversity, and inclusion initiatives. It helps ex-military and reserve team members make the transition to civilian life and promotes engagement with the wider Armed Forces community. Service leavers and reservists make an important contribution to our team. They have invaluable skills and experience, for example, leadership, stakeholder management, problem-solving, teamwork and specialist engineering expertise, as well as different ways of overcoming challenges.

Their input is vital to our ability to deliver large, complex infrastructure projects.

To demonstrate our commitment to the UK Armed Forces community, we've been a signatory of the Armed Forces Covenant since 2014, and we've re-validated our Gold Award under the Ministry of Defence's Employer Recognition Scheme, which we've held since 2015.



Training

Our Technical Training Academy offers a portfolio of world-leading training courses.

Designed and delivered by our experts, we offer engaging and inspirational courses that help professionals at all levels develop the knowledge, skills, and competencies they need to work in safety-critical industries.

All courses are in line with industry best practice, held in modern facilities, and can also be offered as in-company sessions. Get in touch to find out how we can develop bespoke training courses to meet your individual needs.

Our current courses include:

- Safety and Environmental Management Training
- Maritime Environmental Management Training
- Air Safety Management Training
- The Development and Certification of Complex Software Intensive Avionics Systems
- Defence CIDA training course

To learn more, please contact:

technical.training@atkinsrealis.com

AtkinsCIDATrainer@atkinsrealis.com



Further reading



Thought leadership



Transformation in Defence

Thought leadership magazine exploring some of the key issues in the Defence sector in 2019, 2021 and 2023.



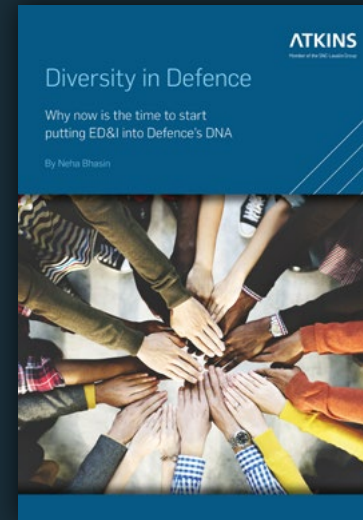
Future of Flight 2020

Magazine offers an insight into the technologies and approaches that are changing the aerospace industry.



Secure by Design 2022

Our annual magazine looking at the evolving cyber threats and how we protect our Critical National Infrastructure.



Diversity in Defence



Why aerospace must consider production in its move towards Net Zero



Fuelling the future towards sustainable aviation

All of our thought leadership articles can be read on our Flipsnack page [here](#) →

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