Aerospace and Defence Engineering Services

ATKINS

Member of the SNC-Lavalin Group

Applying advanced engineering and technology with business consulting.

GET STARTED

Enabling Today, Shaping Tomorrow

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Company Overview

FIND OUT MORE

Engineering Design and Certification

FIND OUT MORE

Maintenance Repair and Overhaul

FIND OUT MORE

Future Flight

FIND OUT MORE

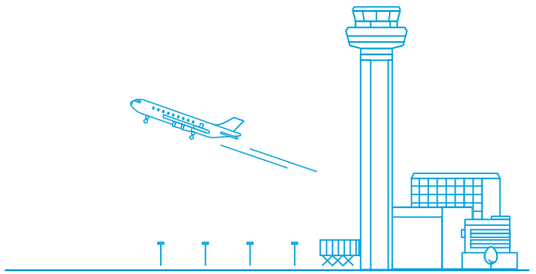
Company Overview

Who we are

Global Operations

Atkins, a member of the SNC Lavalin Group, is one of the world's most respected design, engineering, defence and project management consultancies, which has been integrated into our Engineering Design and Project Management Sector. Today we are recognised for our sustainable project execution and tangible contributions to improving people's lives around the world.

We deliver engineering and technically integrated designs, together with project and cost management services, to a wide range of clients in the public, regulated and private sectors. Our areas of operation include water, environment, transportation, aerospace, defence and infrastructure design.



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Europe

12,000 employees

Asia pacific

4,500 employees

Americas

16,000 employees

Middle East & Africa

17,500 employees

Company Operations Scope and Size

SNC Lavalin currently has 50,000+ employees spread across 50 countries.

Company Overview

Who we are

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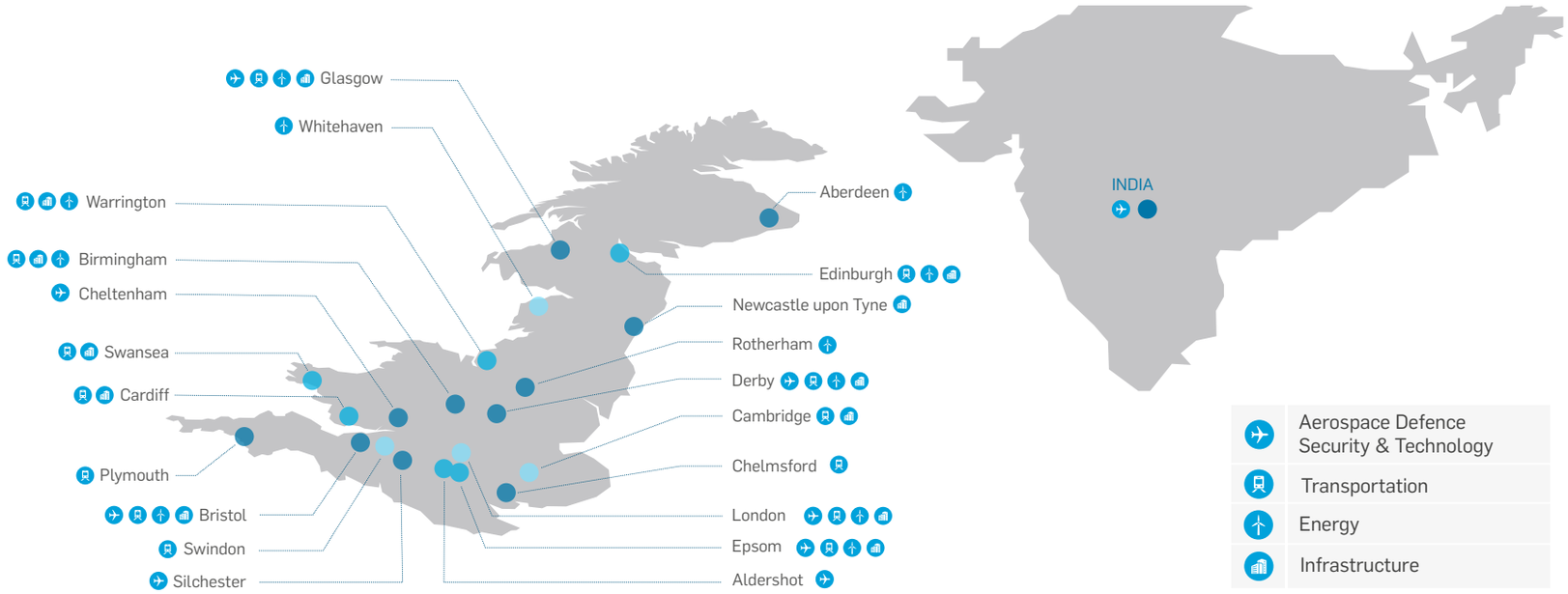

United Kingdom

SNC Lavalin employs over 9,000 staff across more than 40 locations in the UK and our Atkins business is the UK's largest engineering consultancy. Our UK clients include major private companies and large public-sector bodies. We provide engineering services across transportation, infrastructure, aerospace, defence and energy industries. We have a full capability in the UK encompassing all the core skills required to deliver complex, multi-disciplinary engineering projects. Working collaboratively with our clients is key to our success and being close to our clients means we can respond to requirements quickly and efficiently.

Delivery and Quality Performance

We operate under a Quality and Technical Assurance processes aligned to ISO 9001 and AS 9100D and have extensive project and programme management experience:

- Founder member of PRINCE2, MSP03/07 and Management of Risk (MoR)
- Member of the APM board and corporate member of APM
- Certified SCRUM Masters managing software development projects

Atkins projects are planned & managed according to industry best practice with delivery and performance in accordance with the Atkins project Business Management System (BMS). All resulting in controlled projects with a focus on quality, cost and on-time delivery.

Fully-Integrated Off-Shore Support

Our offshore office, established in 1995, is fully integrated with our day-to-day client delivery and held to the same high-quality standards and systems as our European teams, with our own Design Organisation Approval (DOA). Offering clients the opportunity to achieve lower costs, and longer working hours –seamlessly.

Company Overview

Aerospace & Defence Engineering Services

Applying advanced engineering and technology with business consulting – across three market segments, for major clients, across multiple domains and platforms.

We have a proud history of supporting world leaders in the aerospace sector. We've been operating at the forefront of innovation for more than three decades, combining our in-depth engineering, industry knowledge and business consulting expertise to deliver modification, repair and business transformation solutions enabling you to increase your speed to market, maximise product availability and generate value through increased efficiency.

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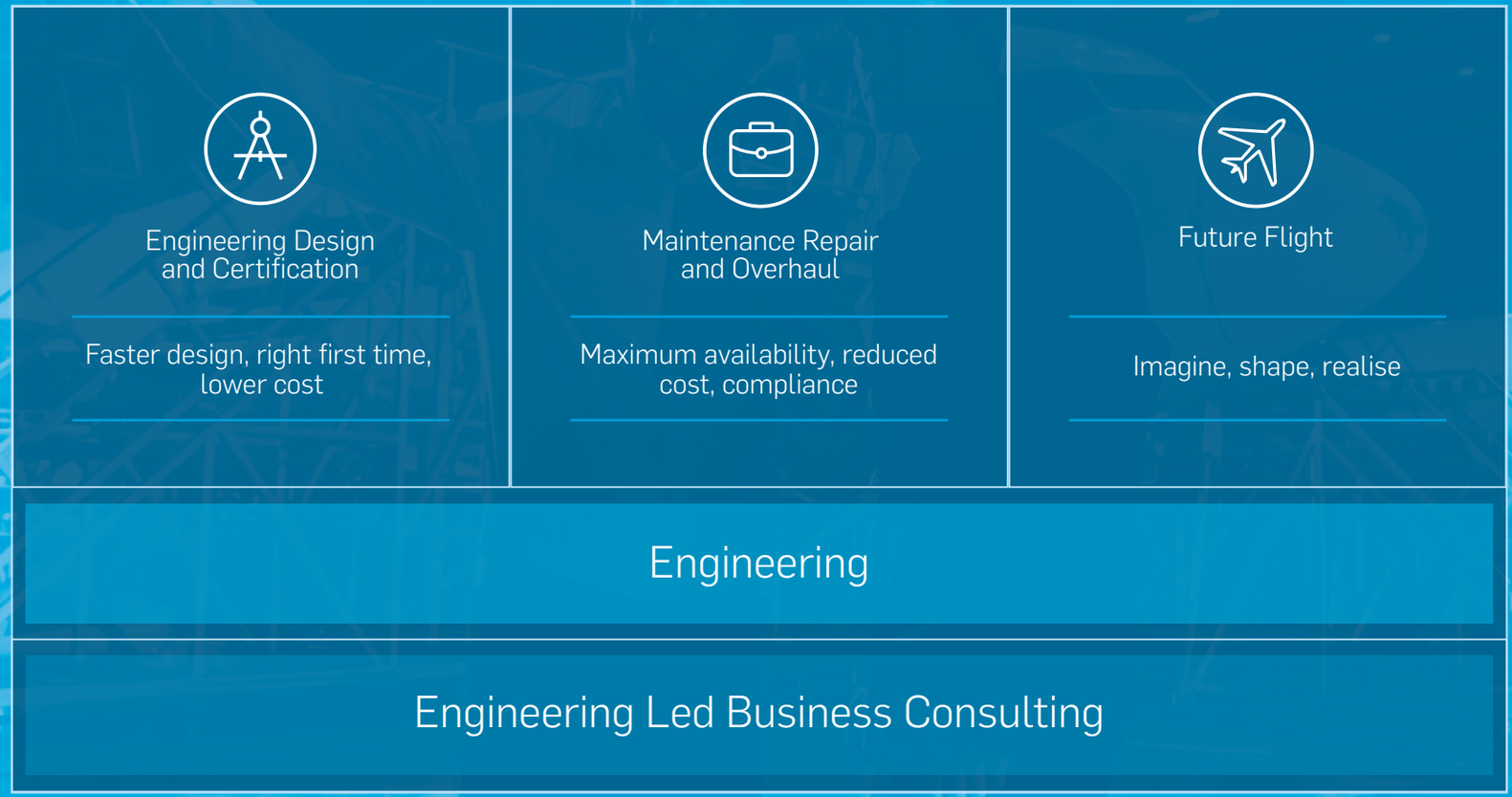

Engineering Design & Certification

Your End-to-end Delivery Partner

As your delivery partner we will share the risk & complex challenges in achieving success, by collaborating more closely, offering fixed price services, utilising our integrated offshore centre and delivering right first time.

CAPABILITIES

Systems Engineering	Mechanical Engineering	Software and Digital Engineering	Safety Engineering and Asset Management	Service Oriented Business Architecture	Digital Operating Model	Data Analytics and Visualisation
Intelligent Automation and Decisioning	Data and Cyber Security	Supply Chain Optimisation	Operational Excellence	Transformation Change	Portfolio Programme, Project Management	Digital Programme Management Office

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Engineering Design & Certification

Capabilities Across Industry Domains and Platforms

Broad capability with a multi-disciplinary approach, click to see our engineering capability for each area...

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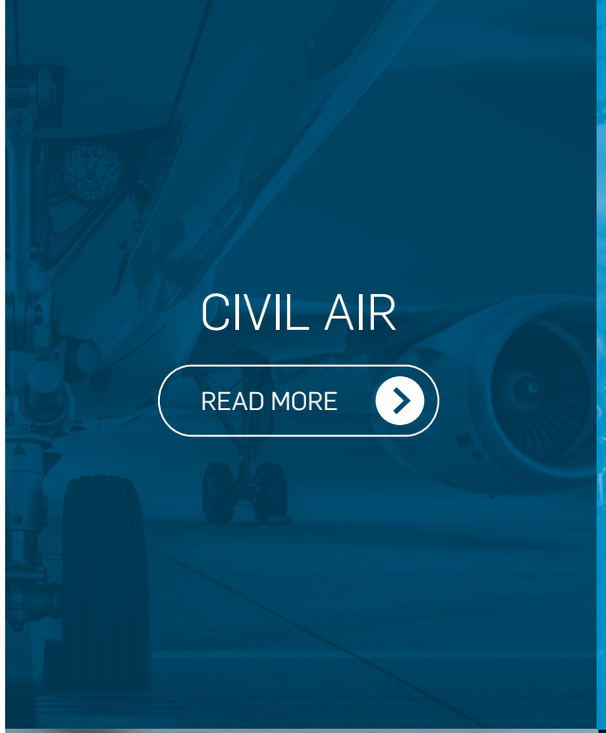
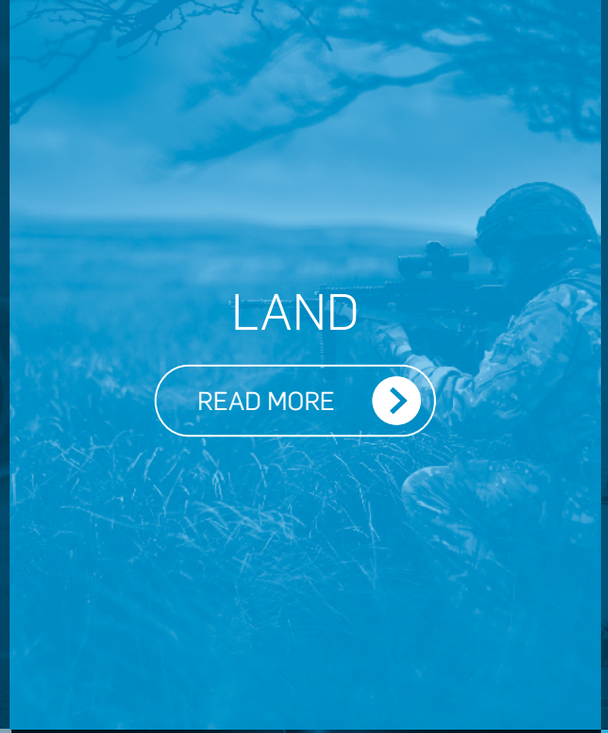
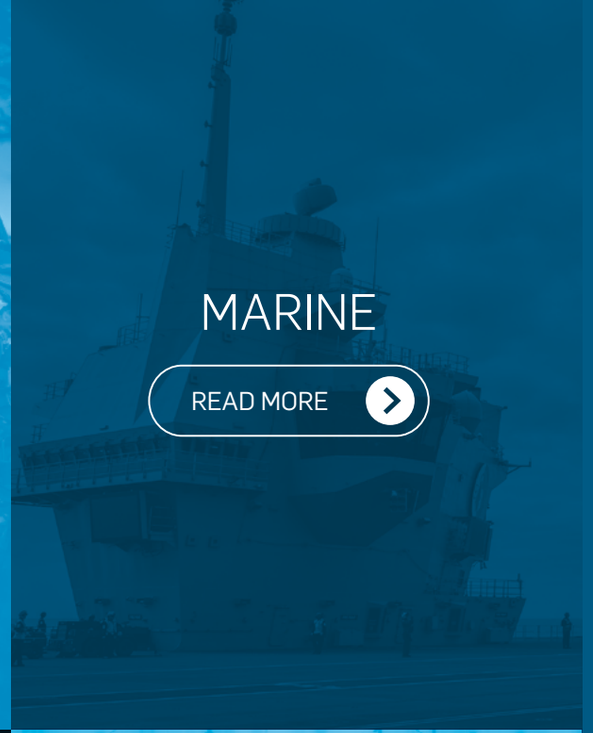
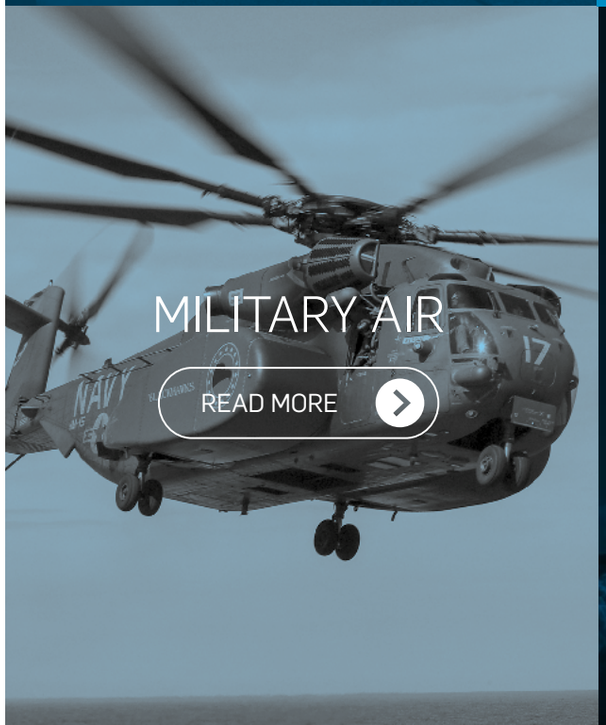
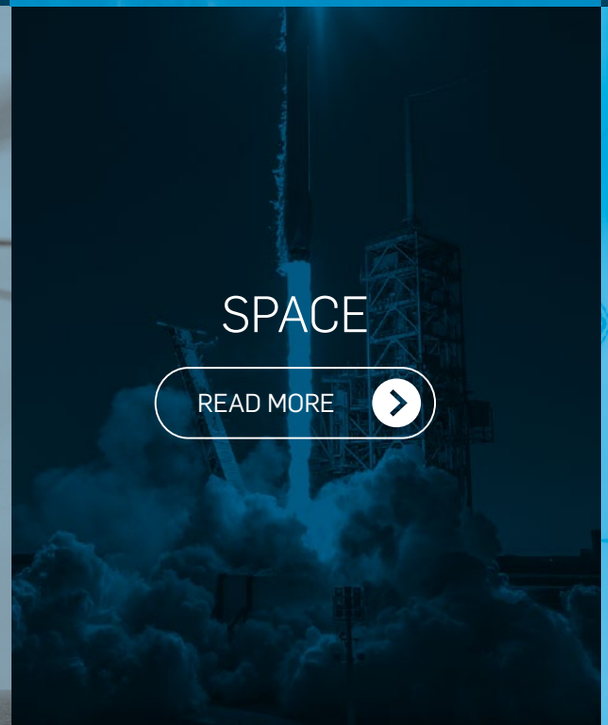
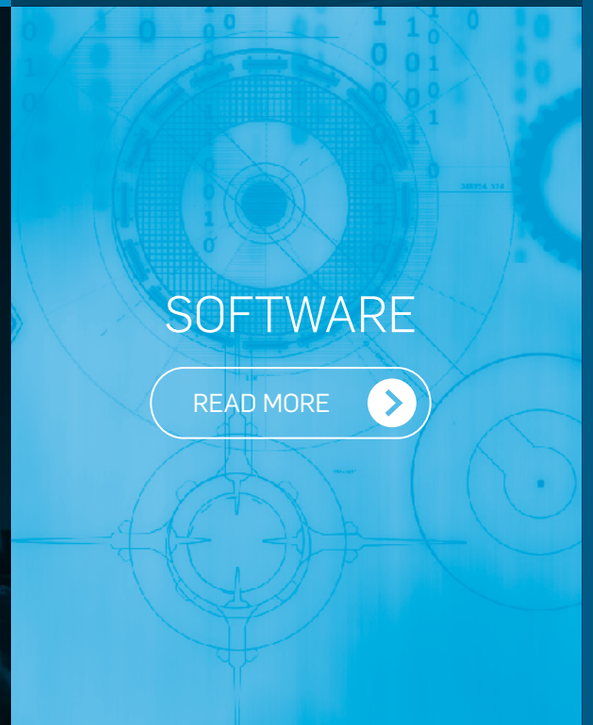












Engineering Design & Certification

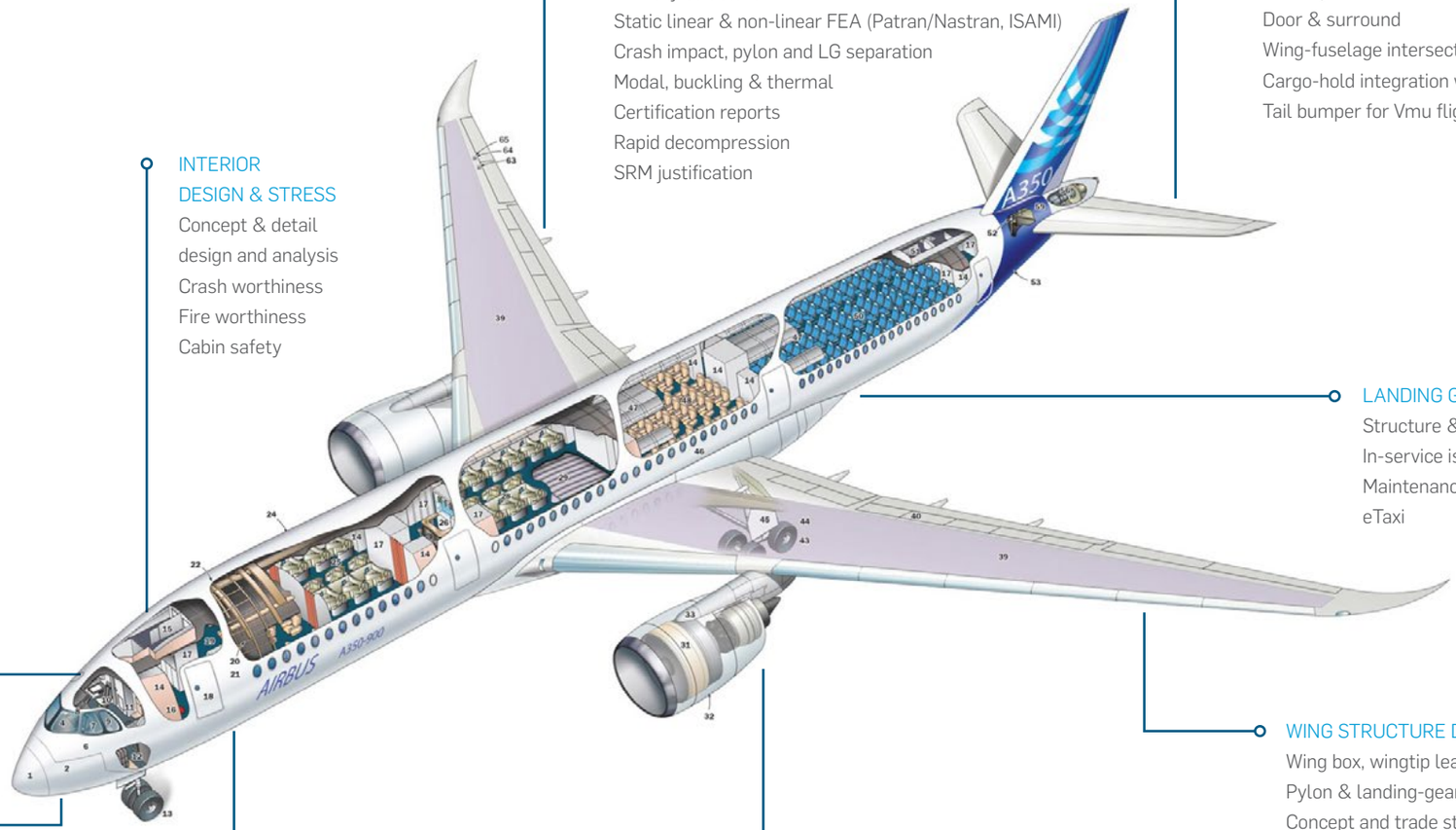
Civil Air

STRESS ANALYSIS
Primary structure
Static linear & non-linear FEA (Patran/Nastran, ISAMI)
Crash impact, pylon and LG separation
Modal, buckling & thermal
Certification reports
Rapid decompression
SRM justification

FUSELAGE STRUCTURE DESIGN & STRESS
Fuselage barrel incl. floor
Door & surround
Wing-fuselage intersection
Cargo-hold integration with airframe
Tail bumper for Vmu flight test

INTERIOR DESIGN & STRESS
Concept & detail design and analysis
Crash worthiness
Fire worthiness
Cabin safety

SYSTEMS INSTALLATION DESIGN
Concept studies
Fuel system architecture incl. avionics
Flight controls incl. kinematic geometry
Door operation & latching/locking
Air distribution & water/waste
Flight test installation
FMEA, SSA & FHA



LANDING GEAR
Structure & systems integration
In-service issues
Maintenance task improvements
eTaxi

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

FUSELAGE NOSE
Cockpit structure design & stress
Flight deck backwall integration

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 & tyre impact, uncontained engine failure

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

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Engineering Design & Certification

Land

SYSTEM

- Concept Development and Trade Off Analysis
- Concept and trade studies
- Operational analysis (eg 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

SYSTEMS ENGINEERING

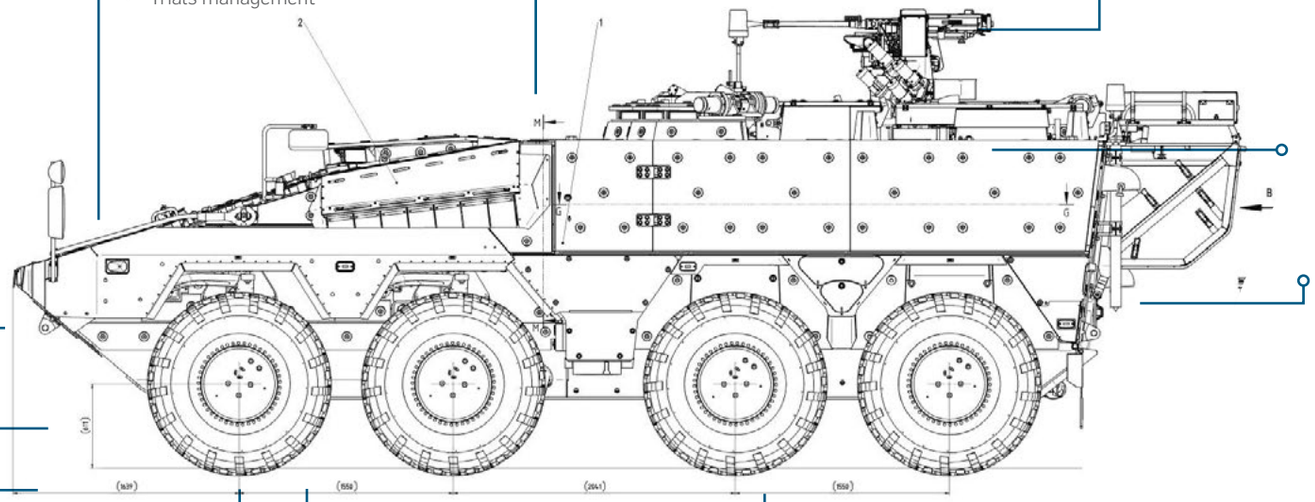
- Enterprise architecture, SOSA
- UML, EA, MooD , MODAF, Archimate
- Use Case development
- Requirements development (DOORS)
- Integrated Test, Evaluation and Acceptance Planning
- Trials management

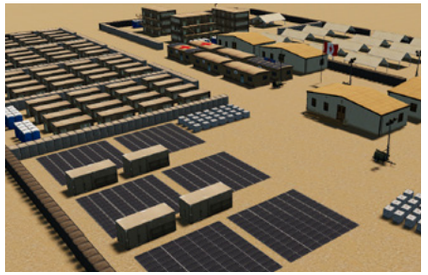
SAFETY AND ENVIRONMENTAL MANAGEMENT

- Safety & 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 (eg JACK modelling)





SYSTEMS INTEGRATION

- Generic Vehicle Architecture
- EMC assessment and mitigation
- Information assurance and
- cyber vulnerability investigation
- Software design and assurance

MODELLING & SIMULATION

- Blast and ballistic impact simulation including 3D
- CAD and Non-linear Analysis
- Mechanical design and analysis
- Materials modelling
- LIDAR analysis
- Virtual reality Tech Lab

INTEGRATED SURVIVABILITY

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

ASSET MANAGEMENT

- Integrated Logistics Support
- Supply modelling, LSA, Level of Repair Analysis, codification
- Availability, reliability and maintainability
- Failure analysis (FMEA, FMECA)
- DRACAS
- Maintenance optimization
- Reliability centredMaintenance/Condition Based Maintenance
- Fleet management
- Health and Usage Monitoring Systems
- Facilities and Infrastructure design
- Obsolescence and REACh

COMMUNICATIONS AND ICT

- Networked data communication with Ethernet
- connections and switches
- Network Management Systems, VOIP and Intercom
- installations
- 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

DEPLOYABLE INFRASTRUCTURE - RAPID

- Rapid Assessment & 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

Engineering Design & Certification

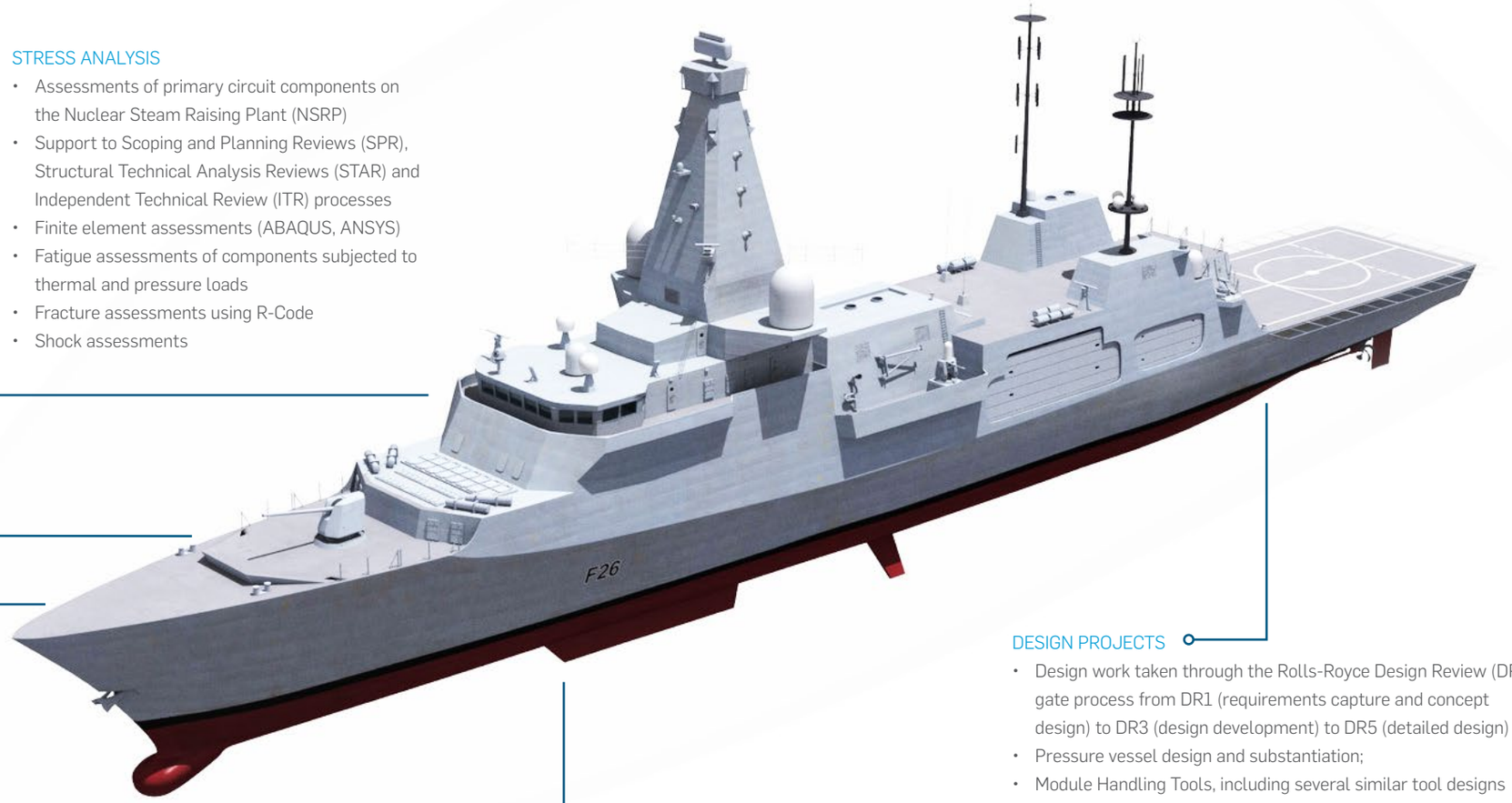
Marine

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 assessments

MANUFACTURING SUPPORT

- New product introduction
- Supplier management and procurement support
- Facility design and layout
- Lean and Six Sigma
- Technology readiness



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)

DESIGN PROJECTS

- Design work taken through the Rolls-Royce Design Review (DR) gate process from DR1 (requirements capture and concept design) to DR3 (design development) to DR5 (detailed design)
- Pressure vessel design and substantiation;
- Module Handling Tools, including several similar tool designs and a transportation solution for the tooling;
- Development of rigs for module re-orientation, measurement and storage;
- Support legs for the transport frame. Design development of four independently operated legs that can be attached/ unattached from the transport frame to lift and lower the equipment being transported.

Engineering Design & Certification

Military Air

SAFETY AND ENVIRONMENTAL

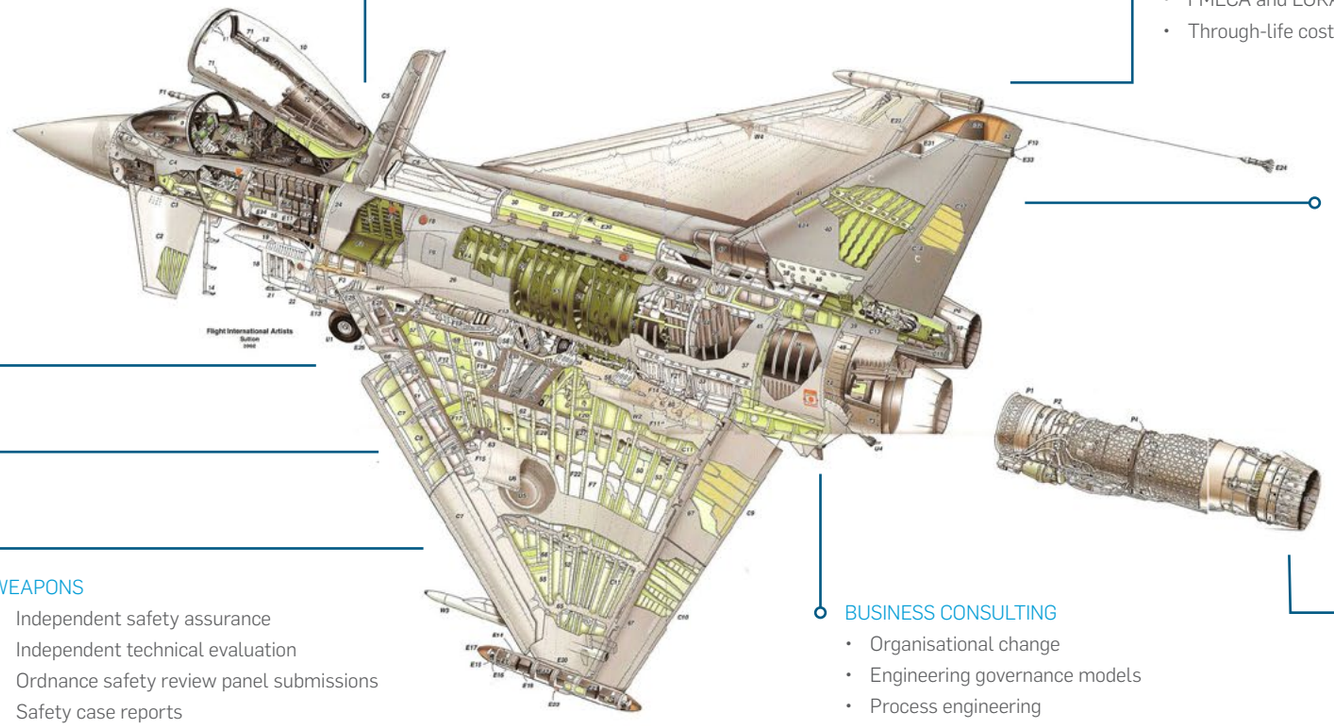
- Independent technical evaluation
- Independent airworthiness reviews
- Safety case preparation
- Hazardous materials management
- Legislation compliance
- Probabilistic safety assessment and aircraft airworthiness reviews
- Corporate functional safety management, system design & safety culture assessment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

INTEGRATED LOGISTICS SUPPORT

- In-service support planning & 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

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

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

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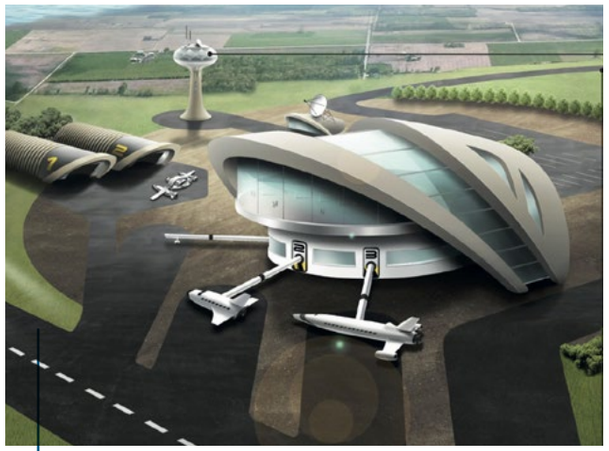
Engineering Design & Certification

Space

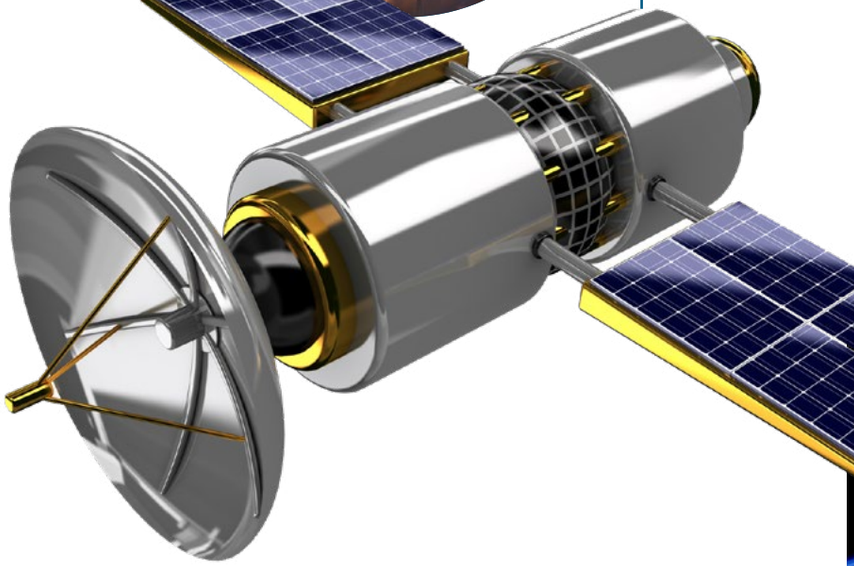


SPACEPORTS

- 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

AIRCRAFT / LAUNCH VEHICLES

- Horizonal and Vertical take-off
- Airframe engineering
- Landing Gear
- Fuel systems
- Requirements Verification & Validation
- Safety
- Certification analysis

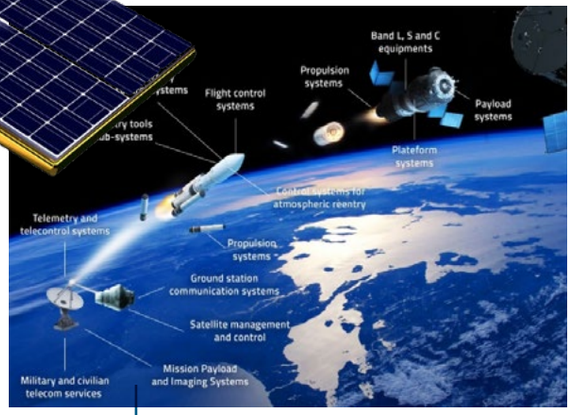


SATELLITES

- 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 optimization
- Operations for Earth observation systems
- Test bench design and realization



SOFTWARE

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

BUSINESS CONSULTING

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

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Engineering Design & Certification

Software

FULL LIFECYCLE, QUALITY-CONTROLLED, SOFTWARE DEVELOPMENT

- Feasibility, requirements, design, code, test, integrate

DIGITAL ASSET MANAGEMENT

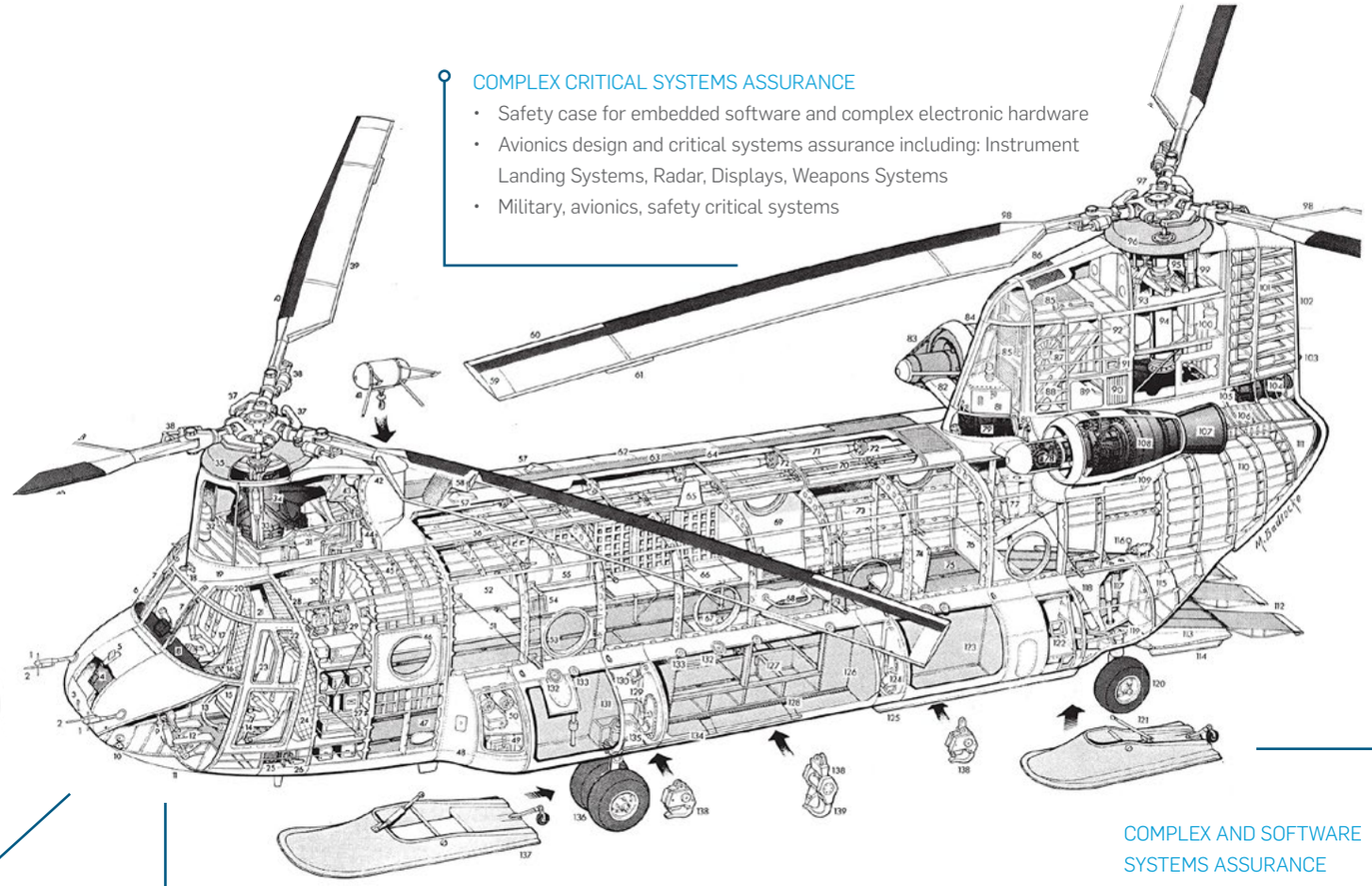
- ISO 55000
- Asset investment planning & performance management
- Enterprise asset management
- Flo – digital damage assessment
- Aircraft Information Model (AIM) – 'digital twin'

GROUND BASED INDUSTRIAL CONTROL SYSTEM DESIGN AND DEVELOPMENT

- Design of Electrical, Control & Instrumentation (EC&I)
- Telemetry and Supervisory Control and Data Acquisition (SCADA) including Programmable Logic Controller (PLC) design and implementation

COMPLEX CRITICAL SYSTEMS ASSURANCE

- Safety case for embedded software and complex electronic hardware
- Avionics design and critical systems assurance including: Instrument Landing Systems, Radar, Displays, Weapons Systems
- Military, avionics, safety critical systems



CYBER SECURITY

- Cyber advisory
- Risk assessment & management
- Audit & review
- Cyber vulnerability investigations
- Skills and road-mapping
- Security culture assessment & transformation
- Airlines Cyber Safe-Check

COMMUNICATIONS AND NETWORKS DESIGN AND ASSURANCE

- VHF/UHF telemetry
- Analogue & digital (TETRA & DMR) PMR systems
- Mobile 2G, 3G & LTE
- Point-to-point digital microwave radio
- Voice and data
- Telecoms master-planning, data centres, fibre optics, copper cabling
- Architecture design
- Standards development

COMPLEX AND SOFTWARE SYSTEMS ASSURANCE

- Software verification, validation and assurance
- Certification compliance (CS 25, CS 27, CS 29)
- RTCA DO-178C compliance (all levels)
- Object Oriented Technology
- Model Driven Design
- Tool Qualification
- Formal methods,
- Independent Safety Audit and certification
- RTCA DO-254 compliance (all levels)
- RTCA DO-200A/B compliance (all levels)
- Embedded systems, FPGA, systems safety case
- Nuclear, military, avionics design

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Maintenance Repair and Overhaul

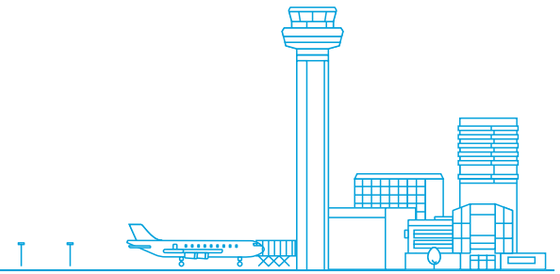
Aftermarket Engineering Services

Driven by technology advances and customer demands, the aerospace aftermarket / Maintenance Repair Overhaul (MRO) sector is seeing an unprecedented level of technological and business disruption.

The aerospace market remains in a period of strong profits driven by increasing travel demands and low fuel costs however to remain competitive the aftermarket sector must adapt in order to manage and capitalise on the major categories of disruption: digitalization, increased a/c complexity driven by customer demand and the need to remain competitive.

Atkins has a proud history of supporting world leaders in the aerospace sector.

We've been operating at the forefront of innovation for more than three decades, combining our in-depth engineering, industry knowledge and business consulting expertise to deliver innovative engineering design modification, repair and business transformation solutions enabling you to increase your speed to market, maximise the time your aircraft spend in the sky and generate value though increased efficiencies.



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Engineering Design, Repair & Modifications

Innovative design modification and repair solutions leveraging our engineering capability with both industry standard tools and our own inhouse digital developments and capabilities.

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MRO 4.0 Business Transformation

Digital Operational Excellence

Digitisation of processes, assets and documentation. Digital connectivity and toolsets throughout the whole operation, data analytics to shift from react to respond.

Digital Workforce

Exploiting technology to drive productivity, scheduling of work, automating processes, connecting people, assets and data.

Digital Security

Controlled and secure across the e2e digital thread, in an increasingly connected, digital supply chain. Risk management, security by design, security assurance and compliance.

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Aftermarket Engineering Services

Maintenance Repair and Overhaul

Design Organisation Approval (DOA)

Our DOA allows our clients to benefit from our decades of aerospace engineering experience and expertise, during which we have supported some of the leading aircraft original equipment manufacturers (OEMs) in design, analysis, certification and repair development for their newest aircraft.

Employing our Design Organisation will allow you to identify solutions that leverage our proven innovation and flexible approach to designing modifications and repairs that meet your needs – fast.

By combining our engineering capability with both industry standard tools and our own in-house digital developments and capabilities, we will deliver solutions faster, reduce fleet downtime and lower costs.

	LOADS	STATIC STRENGTH & PROOF OF STRUCTURE	F&DT	MATERIALS & MANUFACTURING	AEROELASTICITY	CRASHWORTHINESS	RAPID RECOMPRESSION	IMPACT
FUSELAGE	●	●	●	●	●	●	●	●
WINGS	●	●	●	●	●	●	●	●
EMPENNAGE	●	●	●	●	●	●	●	●
CONTROL SURFACES /MOVEABLES	●	●	●	●	●	●	N/A	●
LANDING GEARS	●	●	●	●	N/A	●	N/A	●
SUPPORT FOR EXTERNAL EQUIPMENT	●	●	●	●	●	●	N/A	●

Our Design Organisation can support aircraft operations by creating solutions relating to:

- Supplemental Type Certificate (STC) Major and Minor Changes
- Major and Minor Repairs
- Metallic and Composite
- Primary and Secondary structures

To products:

- Large Aeroplanes (CS25)
- Small Aeroplanes (CS23)
- Very Light Aeroplanes (CS-VLA)
- UAVs (Unmanned Aerial Vehicles)

Maintenance Repair and Overhaul

MRO 4.0

Wherever you are on your tranformation journey, Atkins is a trusted partner in helping you realise your MRO vision.

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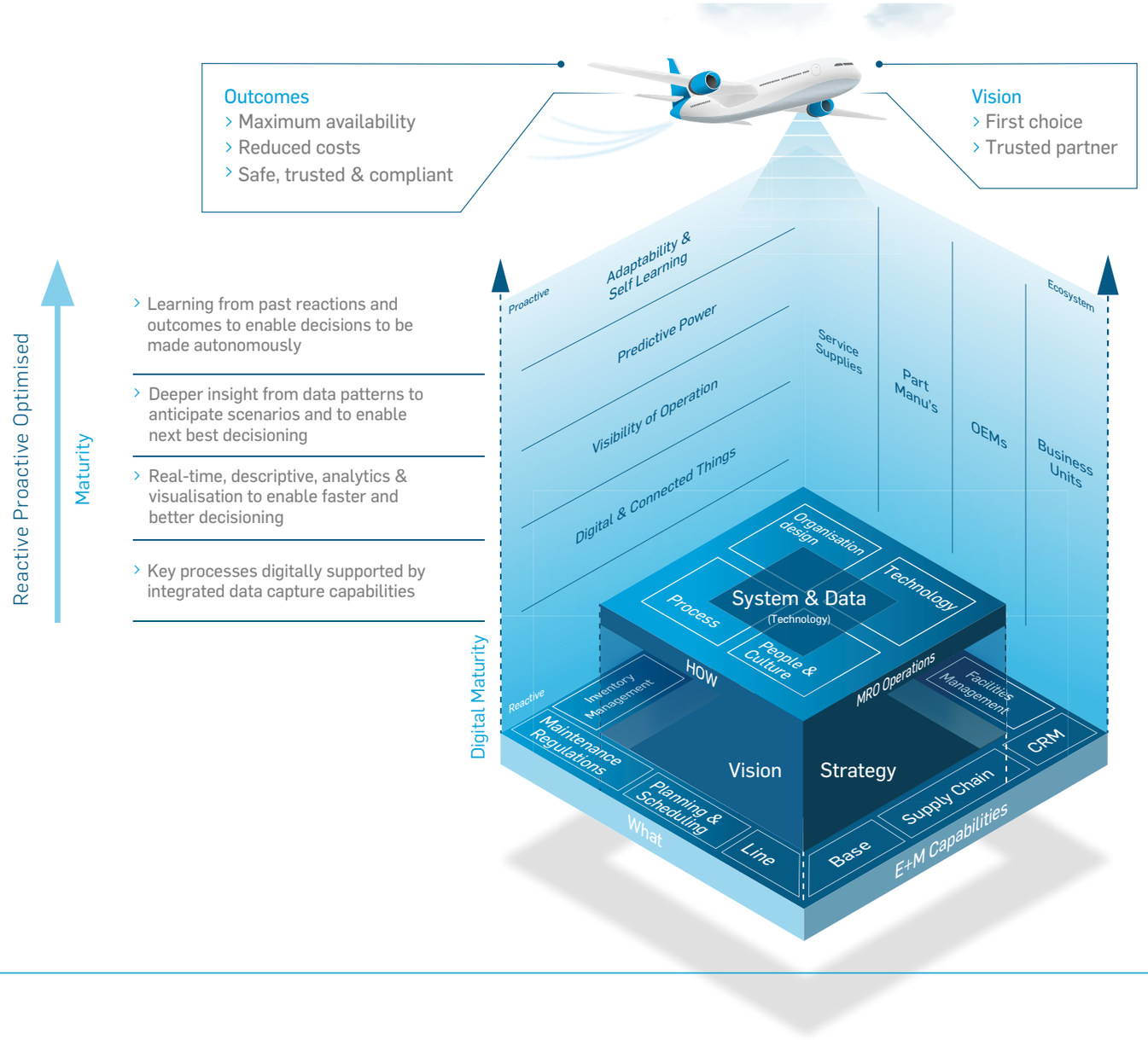
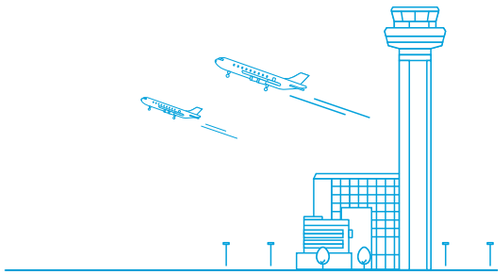
Our vision of MRO 4.0, an agile, connected and scalable operation adaptable to the opportunities of today and tomorrow.



MRO Business Transformation

Atkins is the right choice as your transformation partner. We bring unmatched global expertise at the vanguard of Aerospace Engineering together with proven and trusted business transformation delivery capability and experience.

Our vision at Atkins is to establish long term and trusted partnerships with our clients. Helping them with their most stretching business objective resulting in a new business capability that is 'world class' and at the leading edge of Aerospace Engineering and Maintenance (E&M) organisations.



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MRO BUSINESS TRANSFORMATION

E2e Business Solutions. Organisation, Process, People, Technology Change

CAPABILITIES

- Digital Operating Model — FIND OUT MORE
- Service Oriented Business Architecture — FIND OUT MORE
- Intelligent Automation and Decisioning — FIND OUT MORE
- Operational Excellence — FIND OUT MORE
- Leading Transformation Change — FIND OUT MORE
- Data Analysis and Visualisation — FIND OUT MORE
- Supply Chain Optimisation — FIND OUT MORE
- Engineering Asset Management — FIND OUT MORE
- Digital PMO and Programme Delivery — FIND OUT MORE
- Our Approach to Cyber Resilience in Aerospace — FIND OUT MORE

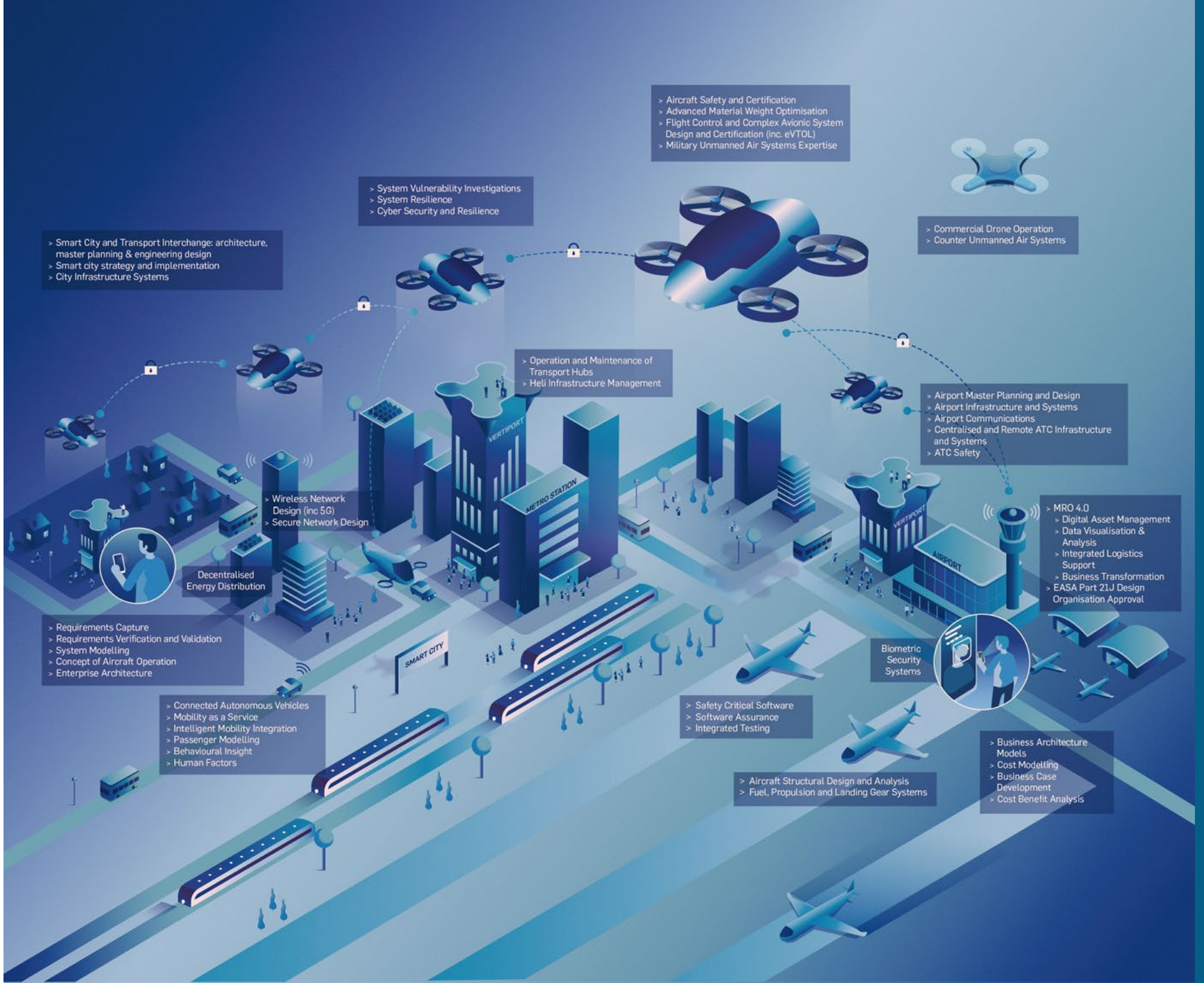
Future Flight

The complex interdependencies of Urban Air Mobility (UAM) mean that a blend of expertise, in everything from aerospace vehicles to infrastructure, is needed to convert the vision into reality.

Why us?

Atkins has the depth and breadth of engineering capabilities across all of the key sectors that are critical to Urban Air Mobility. Combining this with its business consulting capabilities creates a powerful offering to our clients. From vehicle manufacturers, infrastructure and service providers to entire cities, we are able to advise and support clients in considering the wider UAM system, successfully delivering an integrated solution.

Enabling Today, Shaping Tomorrow



Get In Touch

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James leads Atkins' Business Development activities for the Industry Market focussing on the Defence Air, Marine and Land customers. He has a broad experience in systems design and integration with proven project management experience covering Automotive, Aerospace and Naval programmes. James has helped large OEM's deliver complex systems integration programmes both in the UK and internationally.

EMAIL

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Julian leads Atkin's A&D industry business and has extensive international experience helping OEM and tier-1 aerospace and defence companies with their most challenging business transformation agendas. Previously a senior VP in top-tier consultancy with accountability for A&D and Business Transformation service lines, he is a trusted Board level advisor and practitioner on complex operating models, operational excellence and delivery of change.

EMAIL