

# ROKE



# Data Science

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Service Definition

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## Data Science – Service Definition

Benefit from unlocking the full value of your data – turning it into actionable insight that improves operations, sharpens decision-making, and accelerates mission outcomes. Our data science and AI experts help you understand how to use your data effectively today, while preparing you for the technologies, capabilities, and demands of tomorrow. Our solutions are interoperable, extensible, and future-proof by design, enabling a truly data-driven experience.

We deliver the tools, platforms, and expertise needed to transform raw data into meaningful insight. From consultancy through to full solution build and deployment, we provide an end-to-end service that adapts to your environment and goals.

Our model gives your teams cost-effective access to specialist data scientists, engineers, and secure compute environments capable of analysing data from large and complex systems. As a vendor-neutral provider, Roke offers independent guidance and implementation focused on flexibility, performance, and total cost efficiency.

We support the effective use of data across your organisation – spanning platforms, tooling, analytics, and AI/ML techniques. With strategic oversight across multiple programmes, we help harmonise initiatives, reduce duplication, and drive coherence and interoperability.

Working collaboratively with users, we deliver data science projects that build capability, accelerate adoption, and demonstrate real opportunities to exploit emerging technologies in this rapidly evolving space.

We provide independent, vendor-neutral guidance on technology selection – spanning data platforms and schemas, data fusion and enrichment, data analytics and machine learning techniques, and data visualisation. Our focus is on selecting interoperable, scalable components that deliver flexibility, performance, and long-term value.

Roke delivers full-stack software solutions across all major cloud deployment models and supports both self-managed and fully managed services. Cloud-based environments are designed to be secure, remotely accessible, isolated by default, and pre-provisioned with the data, tools, and compute required for high-performance analytics.

Our Data Science as a Service (DSaaS) model is a logically layered, service-based

architecture that eliminates fragmentation and breaks down departmental silos. Instead of isolated, special-purpose environments, DSaaS provides a unified, interoperable ecosystem for analytics and AI.

Through DSaaS, our data scientists run advanced analytics and machine learning workflows to generate insights directly aligned to business needs. You provide the context, the questions, the KPIs, and the data; we deliver clear, actionable intelligence.

The DSaaS model enables teams to develop specific solutions while benefiting from shared toolsets, a common high-performance infrastructure, and reusable assets such as model cards, datasets, patterns, and best practice. This creates a consistent, scalable, and

continually improving approach to data science across the organisation.

## Service Offering

- Data Analysis & Uncertainty Assessment
- Systems architecture, Engineering & Service Management
- Data Architecture & Platform Implementation
- Data Ingest, Fusion & Enrichment
- Advanced Data Analytics & Visualisation

Roke supports the full data and software development lifecycle – from strategy and requirements through design, build, deployment, and ongoing support. Our teams deliver using Agile and continuous integration practices, enabling frequent, incremental releases that reduce risk and accelerate value.

Our specialists in data analytics, architecture, machine learning, and visualisation can deliver anything from targeted components to fully integrated, end-to-end solutions that ingest, store, process, analyse, and present data at scale.

All solutions can be delivered as standalone capabilities or seamlessly integrated into your existing platforms and can be provided as a fully managed service where required.

## Detailed Service Definition

### Data Analysis & Uncertainty Assessment

Roke works closely with clients to build a clear understanding of their current data landscape—what analysis exists, where it resides, and its overall quality. This assessment highlights gaps, risks, and early

quick-win opportunities that can deliver immediate value with minimal effort.

We then shape a data strategy together, addressing the key questions of why, what, and how:

- Why the organisation needs data analytics and what outcomes it aims to achieve
- What the technical and business solution should look like
- How the organisation will deliver and embed those capabilities

We translate this into a practical, prioritised roadmap that guides the organisation through its data and analytics journey. Establishing this strategic foundation is critical before initiating deeper analysis or solution development.

### Systems Architecture, Engineering & Service Management

Roke's certified cloud engineers provide expert guidance on secure, cost-effective, and high-performance cloud architectures. We have a proven track record in designing and delivering data platforms using open-source technologies, assessing options based on their strengths, limitations, and alignment to client needs.

We build solutions that integrate seamlessly with your existing architecture, whether you operate them yourself or use Roke as a managed service provider. Working collaboratively with your teams, we rapidly design, extend, and evolve services as requirements change.

Roke has deep experience across modern cloud architecture patterns, including AWS Control Tower, serverless solutions, and platforms leveraging IaaS, PaaS, and SaaS components. Our security specialists provide clear insight into the shared responsibility model, ensuring that responsibilities between the cloud provider, Roke, and the client are well-defined and

appropriately managed for secure deployments.

### Data Architecture & Platform Implementation

Roke's dedicated team of data engineers, architects, and analysts deliver bespoke, data-driven solutions tailored to complex organisational needs. We design and implement secure, scalable data architectures capable of ingesting and storing vast volumes of diverse data, fusing multiple sources, and generating actionable insights through advanced analytics and intuitive dashboards.

Our systems are built with security and resilience at their core, incorporating monitoring, auditing, access control, and cost-optimised performance.

With deep experience across a wide range of storage technologies, we select and integrate the right combination of open-source and commercial tools to deliver seamless data integration and rich, cross-domain insight.

### Data Ingest, Fusion & Enrichment

Roke designs and delivers ingestion pipelines capable of handling a broad spectrum of data formats – from unstructured content and network-level data to high-volume video streams and geospatial data. We enrich and fuse these sources with open-source intelligence to create deeper, domain-wide insight rather than isolated analytics.

By unifying diverse datasets into a single, coherent view, we enable analysts to perform rapid triage and make more informed decisions.

### Advanced Data Analytics & Visualisation

Roke works closely with clients to define the insights they need and then designs tailored algorithms, data transformation pipelines, and visual experiences that deliver them. We build intuitive dashboards for metadata exploration, flexible domain-specific visualisations, and self-service tools that enable users to create their own insights using modern, easy-to-use technologies.

Our UX specialists ensure that every analytics workflow is seamless, efficient, and aligned with how users work.

Roke's data science team supports a broad range of analytical techniques, including computer vision, natural language processing, statistical modelling, geospatial analytics, acoustic analysis, and anomaly detection. We employ modern approaches spanning deep learning, classical machine learning, and scalable data processing frameworks to turn complex data into actionable intelligence.

## Key Services

### Data Strategy

- Designing and implementing the 'Data Science as a Service (DSaaS) operating model
- Eliminating data science fragmentation across systems and teams
- Embedding a culture of data sharing, interoperability, and reuse

### Data Science Consulting Services

- Provide Data Science, Machine Learning, and domain SMEs
- Support in developing technical specifications, project documents, and procurement materials for ML initiatives
- Hands-on support throughout ML project delivery

- Development and enhancement of custom ML tools and workflows to improve end-user performance

### Data Analytics Exploitation

- Ensuring organisations focus on the right questions, KPIs, and success metrics
- Clear and concise problem framing before data collection begins
- Defining metrics, signposting milestones, and establishing measurable indicators of progress

### Data Governance

- Legal, ethical, and secure data management aligned to internal policy and regulation
- Compliance with UK GDPR, DPA 2018, IPA, and the Equality Act 2010
- Embedding best practice and Responsible AI principles to unlock ML value safely and quickly

### Data Access

- Identifying and onboarding relevant data sources into analytics platforms
- Integrating open-source data with client-owned sources (databases, APIs, flat files, etc.)
- Providing secure, permission-aware APIs for publishing and consuming data across the ecosystem

### Data Analysis

- Applying scientific and analytical techniques to understand and exploit your data
- Identifying what questions can be answered with available datasets
- Capabilities include LLMs, forecasting, predictive analytics, clustering, community detection, knowledge graphs, semantic networks, sentiment

and emotion analysis, and risk modelling

- Expertise across Python toolchains (NumPy, pandas, scikit-learn), R, and JupyterHub

### Machine Learning

- Advanced statistical modelling and supervised/unsupervised ML development
- ETL/ELT workflows and data preparation tooling
- Using leading open-source ML frameworks such as TensorFlow, PyTorch, and Keras
- Leveraging open-source data science tools including KNIME and JupyterHub

### Data Assurance

- Validating and verifying data quality, completeness, lineage, and reliability

### Data Visualisation & Dissemination

- Designing dashboards, reports, and visual summaries tailored to user needs
- Consolidating and distributing insights to improve decision-making
- Skilled in Tableau, Power BI, Qlik, R, and open-source visualisation frameworks (e.g. Plotly Dash, Kibana)

### Data Education Services

- Training services for staff – specific training to help public servants understand the services provided by the Data Science as a Service (DSaaS) and how to request and make use of these
- Data and data science awareness training services for senior staff and decision makers
- Data and data science awareness for account managers, service leads, to accurately represent what services are



## **Pioneering Technology for Global Security & Future Warfare**

At Roke, we stand at the forefront of defence and security, delivering cutting-edge intelligence and engineering solutions that protect nations, troops, borders, critical national infrastructure and businesses. We bring the credibility of a long-standing defence and security leader, the precision of a specialist, and the agility to solve complex, high-stakes challenges with purpose and impact.

Roke is at the forefront of shaping the future of digital defence, intelligence, and national security.

**We are Roke. We are Changing Worlds.**

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