

ROKE



Data Assurance

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Service Definition

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Data Assurance – Service Definition

Benefit from effective data models, algorithms, and platforms that have been independently verified by a team of data experts, enabling you to ensure that your data is accurate, consistent, and complete. Reduce the risk associated with new or updated data sources and solutions through our proven agile approach to data-driven systems. Truly Interoperable, Extendible and Dynamic for all new builds for a data-driven future.

Roke provides assurance and validation of data models, algorithms, and platforms.

We support clients to ensure that large data sets are as they expect in terms of accuracy, formatting, missing data, and overall data quality. This gives clients the reassurance and confidence that they can use their data to make data-driven decisions. We also work with the client to build an organisational culture that is data confident.

We provide customised test data generation – enriched, anonymised, and representative – to accelerate and de-risk delivery whilst adhering to security and data compliance requirements. We provide independent test consultancy and services for large-scale data platforms and solutions, thus reducing the timescales and risk for introducing new data sources and analytics into production.

Service Offering

- Data Quality Assurance
- Synthetic Data Generation
- Algorithm Assessment
- DataOps
- Data Engineering and Analytics

Roke's expertise in data science, artificial intelligence, machine learning, and software engineering enable partners to benefit from consultancy, design, development, and support for data-driven platforms and solutions. Key components of this include the assurance of the data schema, training and test data, algorithms, machine-learned models, and pipeline

infrastructure. With expertise across the solution lifecycle, Roke can provide full solutions or consultancy for direct opportunities within an existing platform.

Roke's independence and domain expertise across the public sector provides a unique and valuable Data Assurance service.

Detailed Service Definition

Data Quality Assurance

When introducing new data sources into an organisation, or when undergoing a digital transformation activity to make better use of an organisation's data, it is extremely important to have absolute confidence in the data.

Roke provides a Data Quality Assurance service that creates an assurance framework unique to the organisation but built on standardised principles. These principles include verification that the data is as expected, standardised formatting, missing and default data checks, accuracy, and duplication. Other factors can be added and adjusted depending on the exact requirements

This provides an assurance that any new data set introduced, or any existing data set, meets the requirements of the organisation, supporting them in becoming data confident. It enables interoperability with other organisations as all can be sure that they are working to the same standards and formats. Innovation is strengthened because suppliers

understand the data standards they must work to, enabling solutions to be deployed in real-world environments much sooner by reducing the risk of data skew, bias, or incompatibility.

Roke works closely with the client to build and implement data governance structures and to embed a culture of data confidence within the organisation, ensuring people at all levels treat data as an asset.

Synthetic Data Generation

Roke has several platforms dedicated to generating a range of synthetic data representing a given scenario and can create bespoke systems to integrate with test and experimental environments. This is done through a variety of methods including statistical analysis, pattern of life generation, and dataset extension for enhanced model training. Roke also provides services in data model assurance in advance of relevant data generation. We also provide services that test synthetic data for data leakage, where real-world information is exposed through the generation process.

Algorithm Assessment

Roke has broad experience in data science, machine learning, and artificial intelligence. Assurance, testing, and understanding of a range of algorithms are required to determine the best solution for a given opportunity. Keeping algorithms up to date based on degrading performance, latest information, or changing requirements is automated and integrated to data pipelines. It is vital that models are tested and assured before deployment to production environments. Successful incorporation of AI (Artificial Intelligence) into operational environments requires complete trust and assurance of machine learned (ML) models. We provide a range of key services, from consultancy to solution development that includes algorithm assessment.

DataOps

DataOps is a set of principles taken from DevOps practices for software and applied to data-driven solutions. Core principles include the development of automation and testing to reduce risk and error in each system. Roke applies principles such as infrastructure as code for data-driven platforms to ensure repeatable and tracked development of a given system.

MLOps applies these principles specifically to machine learning including, automated testing pipelines that assess models upon retraining to how changes to training data, model structure, or training parameters affect results, as well as the storage and versioning of ML models.

Data Engineering and Analytics

Roke provides support across the full development lifecycle from requirements gathering, design, development, support, and maintenance. Services and platforms can be developed following Agile and Continuous Integration methodologies to provide frequent, incremental deliveries.

By utilising open-source technologies and working closely with client teams, Roke provides solutions that best fit the requirements and domain.

Roke has experts in architecture design, data analytics, machine learning, and visualisation. We can provide a complete solution for ingesting, storing, processing, analysing, and visualising data, or a targeted solution that can be integrated into existing platforms.

Solutions can be provided as a managed service. We work closely with clients to understand the required insights from a given opportunity, designing algorithms, transformation pipelines, and visualisations.

Roke have built solutions that include dashboards for exploring and visualising

metadata, creating generic dashboards, and developing capability for end users to create their own visualisations through easy-to-use open-source technologies.

Our experts in user experience also ensure a dynamic and appropriate workflow for users as they navigate applications and visualisations. Our data science experts provide several analytics covering a range of capabilities including computer vision, natural language processing, statistics, geo-based analysis, acoustic processing, and anomaly detection. We use a range of methods for data analysis from deep neural networks to big data processing technologies utilising frameworks such as MapReduce.

Key Services

Data Quality Assurance

- Assurance Frameworks
- Data quality assessments
- Data governance structures
- Data confident cultures

Synthetic Data Generation

- Data anonymisation
- Statistically comparable target data
- Reduced data sensitivity
- Representative data for test environments
- Data model assurance

Algorithm Assessment

- Automated pipelines for model assessment
- Statistical assurance of training data
- Hardening machine-learned models

DataOps

- DevOps principles applied to data-driven solutions
- Assurance of data-driven solutions prior to deployment
- Infrastructure-as-code
- Model Cards
- MLOps

Data Engineering and Analytics

- Gaining insights from complex data environments
- Maximising the potential of digital assets across a variety of data sources
- Data capture, transformation, and storage
- Data lifecycle management
- Metadata and data provenance management
- Data fusion
- Behavioural analytics
- Stream and batch data processing
- Artificial intelligence and machine learning
- Quantitative and qualitative evaluations



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.

Roke Manor Research Ltd
Romsey, Hampshire, SO51 0ZN, UK
T: +44 (0)1794 833000
info@roke.co.uk www.roke.co.uk

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