Data Aggregation Risk and Threat Analysis

BAE SYSTEMS

We are Techmodal

A collaborative data consultancy, bringing the capability and creativity you need to unlock the strategic potential in your data.

As Defence and Government experts, we understand the unique complexity of your constraints. Adaptive, imaginative and iterative, we meet you where you are – and start with what you have.

We focus on making more of your existing tools and technology. Applying smart thinking and continuous improvement to uncover the insight in your data – and help you move past your stickiest problems. Optimising your investments, operations and outcomes. Maximising the impact of your resources towards a better future.

Our clients operate in high-stakes, highly technical and highly secure environments. The pace is fast; the demands are complex and the cost of getting decisions wrong is high. They need partners who bring clarity, precision and practical expertise — not complexity for its own sake.

Our value comes from combining deep analytical strength, applied technology expertise and hands-on consulting experience. We turn ambiguity into clarity and insight into action.

What we offer

We operate at the cutting edge of digital innovation and at the heart of organisations that keep vital infrastructure running, national security protected, and armed forces prepared. Our teams provide:

Decision advantage

We give organisations the insight to act with clarity and pace, ensuring choices made today hold up under tomorrow's pressure.

Our strength comes from being data-led, operationally aware and grounded in real-world context. We explore options, test scenarios and highlight trade-offs before action is taken, building confidence in complex and high-consequence environments.

Technology that works

We help organisations unlock the full value of their technology and existing investments. Our solutions are shaped to our clients' environments — secure, scalable and designed for reuse — delivering faster outcomes and greater value for money.

We stay user-driven, not technology-driven, ensuring what we build is usable, dependable and impactful.

Delivery impact

We work shoulder-to-shoulder with clients to turn ambition into results. Our approach is collaborative, adaptive and focused on rapid progress.

We build momentum early, provide clear answers before the conversation moves on and ensure delivery stays aligned to purpose. Whether defining strategy or supporting implementation, we bring clarity, structure and practical leadership.

Strength in secure and complex environments

All our work is delivered by security-cleared teams who understand the realities of Defence, national security and critical infrastructure.

We design and assure solutions that are resilient, secure and governed — engineered to work in environments where constraints are real and reliability matters.

Powered by BAE Systems Digital Intelligence

We combine the pace, creativity and agility of a specialist consultancy with the depth, reach and security of BAE Systems.

Clients benefit from a unique blend of niche expertise and enterprise-scale capability, with seamless access to Digital Intelligence, engineering, cyber and equipment programmes when required.

Service Overview

Vulnerability to cyber incidents is a well-known and publicised risk across UK Government activities. Hostile actors are known to specifically target governmental and associated industry Information Systems, seeking to disrupt activity, gain intelligence to influence current and future events and interrogate data to gain unfair commercial advantage.

The risk level in UK MOD is particularly high, and Techmodal has applied its unique combination of deep domain expertise and advanced data science skills to help the Defence customer quantify the impact of cyber event against logistic information systems and whether the aggregation of lower-level data could provide classified insights to a threat actor.

Our team of Defence consultants, data engineers and data scientists extracted and analysed data from multiple Logistics Information Systems to understand what insight could be gleaned by a hostile actor. We focused on the impact of applying advanced techniques to data and aggregating datasets, exposing the knowledge that a hostile actor could infer about Defence's positioning and capability.

The team worked in agile sprints and applied a range of techniques that combined technical skill with a detailed understanding of the Defence's logistic data landscape to start to piece together the messy, unstructured data into patterns and insights.

The team employed a range of innovative technical approaches, including data visualisations, graphing techniques to make sense of unfriendly data models, Parquet to prepare large data sets for analysis, graph modelling, topic modelling, time series analysis, machine learning, dimensionality reduction (using PCA), forecasting, anomaly detection, natural language processing, and geolocation. They utilised technologies such as Python, Palantir Foundry, AWS, Oracle, GitLab, and more.

The team delivered a KPI-driven dashboard in Palantir Foundry that provided live insights of sensitive information exposure. The team also applied machine learning to detect hidden patterns in the data that gave away operational posture. They demonstrated how advanced technologies could be leveraged by Threat Actors to disrupt Defences operations at key moments.

By bringing data from multiple systems together and combining it with open-source intelligence (OSINT), the team created data correlations that were immediately available to the human observer. This allowed us to support the customer in quantifying the risks of data aggregation and illustrating the operational and commercial impacts of hostile actors gaining access. This enabled recommendations for improvements in the way users interacted with the information system to mitigate risks, as well as the immediate removal of certain data from the source systems. The worked has paved the way for a continued effort to improve the threat protection delivered by future IS programmes and MOD's cyber resilience against an ever-increasing threat backdrop.

The analytical capability developed by the Techmodal team was deployed to the Defence Data Analytics Platform (DDAP), a secure, MOD-owned, cloud-based platform for carrying out data science and data analytics provided by the Digital Foundry in Defence Digital. This provides a listening function with alerts to MOD users for changes in risk profile as live data is updated.

Service Features

- Data aggregation risk assessment using advanced data science techniques
- Quantification of the operational and commercial impact of cyber breaches
- Innovative use of technology and data science techniques
- Repeatable data processing and Extract Transform & Load (ETL) pipelines
- Clear, ethical development practices and outputs that empower end users
- Coherent with the NIST Cyber Security Framework
- Deployable to the Defence Data Analytics Platform (DDAP)
- Pieces together messy, unstructured data into patterns and insights

Service Benefits

- Risk identification and development of targeted mitigation actions
- Internal process improvement
- Business continuity plan development and refinement
- Proven techniques and approaches
- History of research and experimentation in complex environments
- Strong track record of developing analytical solutions in secure environments
- Flexible infrastructure and hosting options
- Vendor agnostic and experienced in open source software

End of document

Contact: John Atkins

tenders@techmodal.com