



Product Build | AI | QA

# Defence Organisation

Data &amp; Analytics, GIS, Defence

A major defence organisation sought to reform how they generate useful analytics for gauging and reacting to public opinion to NATO operations in specific geographic areas. Their previous approach was to research and generate reports manually, which was resource-intensive, delay-prone, and at risk of accuracy issues.

Partnering with MongoDB, gravity9 scoped, developed, and delivered a replacement cloud-based system over a three-week period. The delivered system can collate data from multiple sources, allowing easy,

customisable generation of data-rich reports based on up-to-date information plotted against any number of data points, including GIS.

Built around React.js, Node.js, MongoDB, and Microsoft Azure, this system has reduced resource overheads and enabled rapid delivery of relevant and accurate information to decision-makers within the organisation. Resource and actual costs have also been reduced as a result.



social impact of NATO operations and activities across areas of North-eastern Europe. As MongoDB's recommended bespoke software implementation partner, they introduced gravity9 to the client to deliver the project.

The client wanted to understand if, and how, NATO activities in specific geographic areas influenced public opinion (about NATO), though at the project's commencement, they were unsure about the optimal approach. Access to relevant and current information would enable intelligent decision-making around the client's response, thus promoting positive public sentiment and minimising negativity. This has proven vital in effectively dealing with major crises or changes from a PR perspective.

Prior to this project, their established method was for a team of analysts to manually collect data from various public and government sources and followed by its processing. This approach often struggled to handle the large volume of information and could only deliver static reports, often outdated by the

time they were ready - the information was ideally needed within minutes, not days. With the rapid growth in data sizes and the ongoing importance of having relevant and readily available analysis on hand, this situation was unsuitable and unsustainable.

As a result of further analysis requirements, there were additional time constraints with respect to the project's delivery window, making it imperative that gravity9 complete requirement gathering, development, testing, and delivery quickly and effectively - within a three-week timespan.

## Utilised Technology Stack

**Cloud:** Microsoft Azure

**Database:** MongoDB

**Backend:** Node.js

**Frontend:** React.js

## Review of Challenges

A major defence organisation approached MongoDB, seeking a better and more efficient way to visualise the

**We rapidly delivered a modernised, bespoke analytical solution.**

## Our Solution

The initial requirement gathering highlighted the importance of geographic data in the delivery of the project and identified the range of public and government data points that would need to be collected, processed, and presented in dynamic, detailed, and up-to-date reports.

The gravity9 solution was to design, develop, and deliver a cloud-based system that could collect and aggregate information from multiple data points, allowing customisable interrogation and presentation within a single view, aided by an accessible but detailed user interface.

This system also makes the data viewable in Tableau, the client's preferred business intelligence tool, allowing a dynamic view of custom data sets and interactive reporting, which was not possible in the client's previous static reports.

The resulting combination of accuracy, speed, functionality, and customisation would prove a significant upgrade in the value of the data and how it is presented for practical use.

Whereas the previous system suffered with a costly race against time to gather, parse, and present data quickly enough to retain its analytical value, information can now be collected and presented for use in real time, with the scope to change queries and display fresh results on the fly and without errors or the human drain and churn that a team operating manually would experience.

## Our Approach

Development began with efficient, yet thorough requirement-gathering discussions with the client to understand the scope of the project, its users (both direct and those consuming the data) and the frequency of data updates. Further exploration defined the qualities of the data that the project would need to use.

In terms of the delivered project, it is best to describe the system and the data separately.

The system was rapidly developed using Node.js and Azure Functions for the backend, React.js for the frontend, and MongoDB as the database (incorporating both Views and Materialised Views, thus catering to both real-time accuracy and

performance requirements).

To fully reap the benefits of cloud-based deployment, Microsoft Azure, and MongoDB Atlas (MongoDB's fully managed cloud database) were also used.

The data the system works with were obtained from several distinct sources: Government websites, Excel files, manual inputs in the form of survey data, TV and press articles, commodity and currency prices, and social media sources like Facebook, Twitter, and Instagram (which were sourced based on tags and location so as not to have to cover the entirety of each platform).

Common attributes between data sources were identified to facilitate rich querying. These included geographic data, which were key to the value of the reports being generated. APIs were used in several data cases to enable constant (and manual) data extraction from relevant sources.

Geographic data were also used to generate data plotting on maps of relevant districts and regions of the area of interest, allowing for the visualisation and manipulation of a host of data points on a geographic basis, also known as GIS (Geographic Information System).

Quality assurance took place throughout the entire development lifecycle, ensuring a fully functional and reliable product capable of correctly understanding and manipulating multiple data formats and sources.



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**“The project was developed, tested, and successfully delivered within a three-week period, yielding tangible results immediately”**

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A customisable,  
responsive solution  
that provides the  
data we need, when  
we need it

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### **Subsequent Outcomes**

The initial client feedback was excellent. The project was developed, tested, and successfully delivered within a three-week period, yielding tangible results immediately. Nevertheless, there is potential for future development to further enhance the system; gravity9 recommended harnessing AI and leveraging Azure cognitive services to analyse and assess the sentiment of social content. The data would be saved to the MongoDB database for further analysis or parsing through Tableau.

Thanks to the software's efficiency, an immediate financial saving was appreciated as human resources could be repurposed elsewhere. A further cost benefit was the transition to a cloud-based system, which proved less costly to operate than the previous manual solution.

In place of an analytics team challenged with collecting up-to-date data and providing relevant reports in a usable timeframe, gravity9 provided an agile cloud-based system that could automatically scour and present analytical data from multiple points in real time, accept new data inputs from local and online sources, and then display the data in diverse formats, including plotting data points on country maps via GIS.

Consequently, the reports are accurate, rich, bespoke, and dynamic. Users can quickly modify existing queries and generate new ones to suit incoming requests and changing conditions.

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