Making Roads Safer with National Highways

Overview

Client Since
2022

Established
2015

Employees
5000

Industry
Public Sector

Version 1 developed a new Azure cloud native solution for National Highways (NH) that increased reporting speed by 150%, incident closure efficiency by 82%, and incident creation by 50%, helping to save time and lives on England's roads.

This Azure-based solution has transformed NH's legacy incident and communications Visual Basic application (NILO) by using Microsoft Azure PaaS, App Service, Azure SQL server, .NET and DevOps.

By June 2023, the new app had already been used to log over 5,000 incidents by NH Incident Liaison Officers (NILOs), who monitor and respond to incidents 24/7, 365 days a year across 4,500+ miles of main roads and motorways."

Our solutions are part of NH's wider sustainable digital transformation programme, which is helping customers receive close to real-time journey information, enabling them to react to hazards in advance – reducing accidents and saving lives.

Situation

NH is a UK Government-owned organisation with more than 5,000 employees managing England's strategic road network (SRN) that consists of 4,500 miles of motorways and major A roads. The SRN is vital, carrying 254 billion vehicle miles annually and is essential to the growth, wellbeing, and balance of the UK economy.

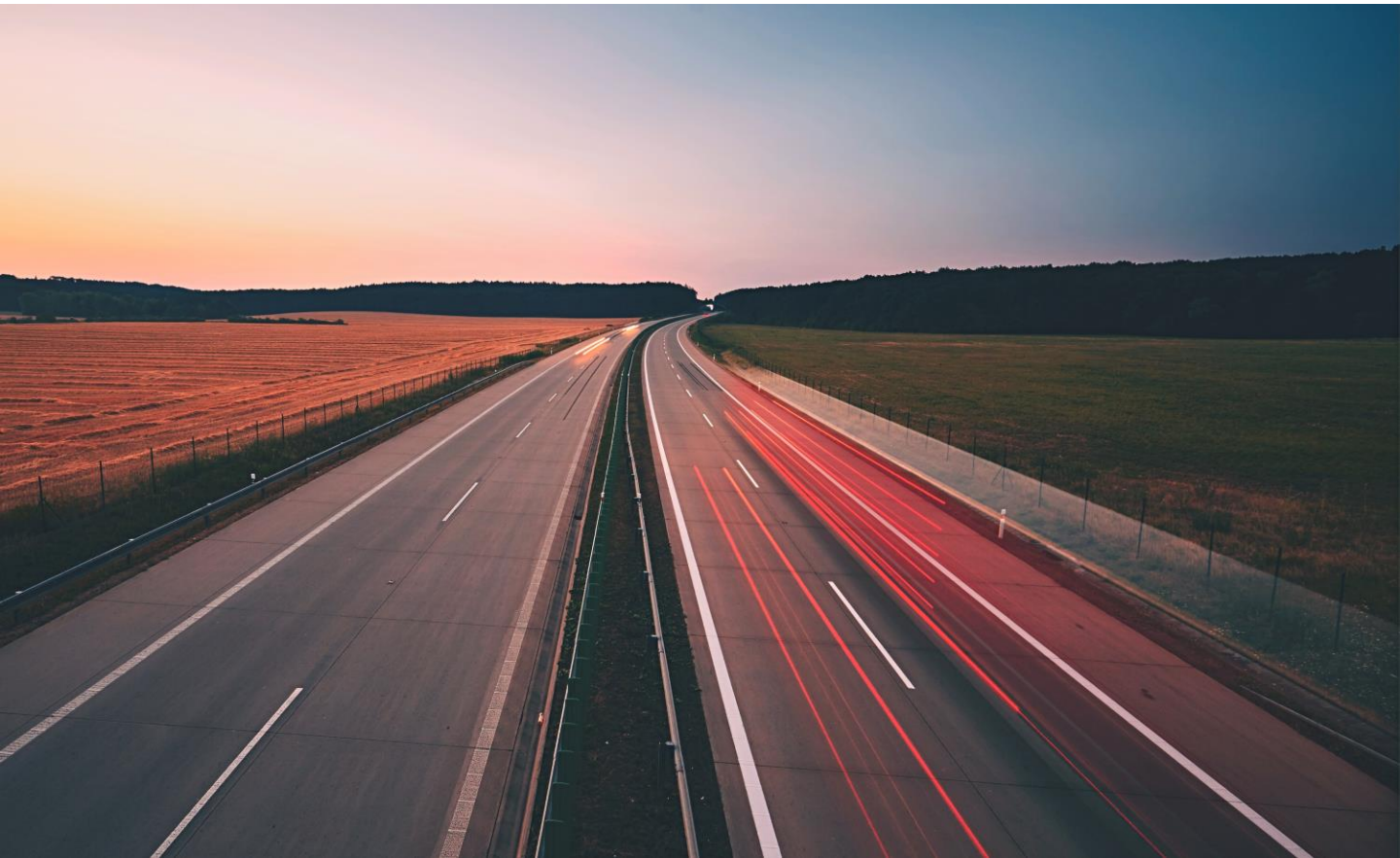
The SRN is monitored by control room-based staff called National Incident Liaison Officers (NILOs) who are based in Birmingham's National Traffic Operations Centre. NILOs play a core role in keeping the country's roads safe. They facilitate the key information flows between on-scene Traffic Officers, Service Providers, Regional Operations Centres, and the National Highways Press Office. The team directly supports the effective management of these incidents, including the dissemination of real-time media updates that include diversion information, incident impact, and journalistic colour that explains what we are doing to get customers moving again.

Fast, accurate reporting and communications are therefore crucial to help keep England's roads free flowing, road users safe, and to support the economy.

NH launched their ambitious Digital Roads 2025 strategy to revolutionise how the SRN is designed, built, operated, and used. The strategy also provides a common approach to realise shared ambitions with the UK Government. NILOs were using an inefficient mission- critical system, so replacing the legacy-based VB system was one of a number of Digital Roads priorities for NH.

The Challenge

NH's legacy, Visual Basic 6 client application was frustrating to use and slowed down their vital work, requiring free-text entry of all content, and toggling between tabs, with no dropdowns, input guidance, and limited or no data validation, and no dedicated underlying NILO database content storage. Reports were stored in a shared Infosys database, with views via Infosys tables, and a monthly report distributed across stakeholders. There was no SSL encrypted connectivity in place, and limited application support (mainstream Visual Basic support ended in 2017) and costly extended support which was due to end in 2023. NH wanted an innovative approach for creating, reporting, and closing incidents. With every minute crucial in a serious incident, NH wanted a more dynamic and intuitive application to support a modernised process.



Solution

Version 1 delivered a fully operational NILO road incident reporting and management solution that went live in April 2022, which was on time, within budget and with excellent outcomes despite a challenging 3-month timeline. We were able to reduce delivery timelines and go live by 7 weeks by utilising a .NET and DevOps based development accelerator that uses pre-built components and solution elements. These accelerators are part of the Version 1 Foundations Accelerators that have been developed by our Cloud Centre of Excellence team.

Using an agile delivery and MVP approach to understand and prioritise business needs, our solution incorporates:

- Replacement of the legacy VB6 system with Azure PaaS, cloud-native solution using App Services, ASP .NET Core MVC Web Application (C#, .Net Core 6.0), and Azure SQL, to offer serverless functionality with automated back-ups and zero patching.
- Repeatable, flexible, and predictable Azure infrastructure configuration and management using Terraform (Infrastructure as Code).
- Increased security with built-in monitoring from Microsoft Defender, and use of Microsoft Identity Platform (AuthN/ AuthR) and authorization cookies.
- Easier future updates and refinements using full Azure DevOps/YAML pipelines and Visual Studio 2022 IDE.
- Dedicated NILO database and more intuitive data entry mechanisms by using pre-populated content, dropdown options, with additional data validation.
- Retention of the legacy database for reporting.

Real Differences, Delivered

Improved security: Using Microsoft Identity Platform with additional built-in protection in the app itself, protecting this vital national infrastructure

Improved outcomes for road users and NH stakeholders: The new app has broken the cumbersome barriers to fast logging, reporting, and sharing of incidents with 150% faster reporting - saving between 5 mins, 15secs and 10mins, 10 secs per incident. This facilitates faster dissemination of information about incidents and their impact to the travel media and road users. The result is that customers have the information they need to make informed choices leading to safer, more reliable journey's, and improved journey times.

User efficiency: NILOs have a cleaner, dramatically easier-to-use interface and process, with pre-populated fields, dropdown options and data validation. Incident logging is 50% faster and updates and closure are 82% faster (233 manhours of manual effort reduced to 97 hours). NILO's push service has an improved design, and automatic spell check helps create right first-time reports and eliminates manhours needed to correct manually in later updates, meaning more efficient use of NILO's time

Technical efficiencies: Our Application Modernisation Accelerator leveraged Azure PaaS services to enable greater resilience and cost control for National Highways, meaning savings for the taxpayer. It also reduced time to market by 7 weeks, and eliminated the need for the temporary, high support costs for technical support eliminating technical debt.

The app is serverless with zero patching required and automated back-ups to increase resilience. Repeatable Azure infrastructure configuration through Terraform (Infrastructure as Code) makes it easier to continuously refine the app as needed, as does the use of full Azure DevOps/Yaml pipelines and Visual Studio 2022 IDE.

Advancement of NH's Digital Roads 2025 strategy: Our cloud-native solution moved NH away from their legacy on-premise application, proving the value of our delivery capabilities and Microsoft technology platforms to Digital Roads 2025. The public endorsement provided by NH also proves to our Microsoft wider customer base that Version 1 is a partner of choice for future Application Modernisation projects.

Reduction of Carbon Footprint: Helped reduce NH on-premise third party data centre server footprint, optimising its server usage and overall carbon footprint through the migration, consolidation and optimisation of legacy Microsoft SQL Server workloads in Microsoft Azure (e.g. use of Microsoft SQL Azure, Microsoft Azure SQL Server Managed Instance and upgraded version of the Microsoft .NET Framework).

> "National Highways' NILO reporting is now a faster, more comprehensive service than ever before ensuring road users have a better experience, less stressful journeys and improved journey times when travelling."
>
> ***Tim Priest, National Operations Team Leader***

To find out how Version 1 can support your Digital Transformation, Contact us:
www.version1.com

VERSION 1