

Case Study

Project: Supply Chain Operations Depot Site Induction and Sign in System

Background

Network Rail's Supply Chain Operations division wanted to replace their paper-based sign-in and induction process with a new digital solution that could be trialled on seven depots, for a potential future rollout across 44 UK sites.

Deliverables

Network Rail's primary requirements were for:

- A web-based system capable of offering inductions to staff and visitors before arrival on site.
- An induction format that accurately represented the depot and its surroundings.
- Interactive features to help with user engagement and information retention.
- User friendly accessibility via a variety of devices and screen sizes.
- The inclusion of a full management system that could facilitate depot sign in and sign out processes, as well as emergency rollcall functions and induction compliance reporting.

Over a nine-month period, we worked closely with key stakeholders at Network Rail to design, trial, and implement a new web-based interactive system across the seven sites.

The project made use of the latest gaming technology, which we tailored to create an immersive user experience.

Client Testimonial

"The feedback on the project has been fantastic and this is a credit to how hard D2 has worked with excellent attention to detail, ensuring that this is a program that is accessible by all."

Stephen Shields, Network Rail Workforce Health, Safety and Environment Advisor

Client: **Network Rail**

Date commissioned: **Summer 2022**

Benefits

- The depot induction process is now an engaging experience with user interactivity at its core.
- Users can complete the induction before arriving on site, allowing them to become familiar with depot layouts and site operations at an earlier stage than was possible with the old paper-based system.
- The 3D environments provide a safe experience that familiarises users with site layouts and hazards.
- The intuitive system features a number of knowledge checks and interactive questions aimed at improving information retention.
- Managers can view visitor and staff induction activity, allow them to identify anyone that may need additional training, or support
- The digital based sign in system now allows for better visibility on depot activity and footfall.
- The system's rollcall feature allows depot manager to view exactly who is on site at the push of a button.

Why D2?

Network Rail had previously commissioned us to develop a fully interactive 3D virtual reality ballast cleaner operative training system. They had been very impressed with user friendliness and authenticity of the end product. So, when they needed help to improve their depot induction training and sign-in process, we were their clear choice.



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Challenges and Solutions

Network Rail selected seven sites around Crewe in Cheshire, and Sandiacre in Derbyshire, to trial the new solution. The concept was to create a single common system with the agility to suit different layouts and functions. Each site needed to be modelled in a fully virtual 3D world to a high level of accuracy. So, our first task comprised visiting each site to gain data relating to their footprint and function, and to collect large amounts of imagery.

Next, we collaborated with Network Rail to identify and quantify key content and topics, along with the interactive elements and knowledge checks that were to be included in the system. 17 outlined modules ranged from key routes and locations on site, PPE information, working from height guidelines, and lifesaving rules checks.

To create bespoke and relevant experiences for different users, the induction was split into two categories. A general induction for visitors contained essential basic health and safety information. An advanced induction for staff and contractors covered more specific and detailed information about certain aspects of working at depots.

With the sites identified, and content defined, we were ready to start putting the system together. Using game development technology, we built seven unique 3D environments that represented each depot to a high level of accuracy. We then built in the basic elements such as system controls, cameras, navigation, and interactivity.

We now faced the biggest challenge of the project; developing a logic system that implemented the modules and content once but applied it to all seven depots and their different environments. This was critical because creating separate bespoke modules for each site would make future system updates time consuming. A legacy solution was required.

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In response to this, our developers created a module management component within the system that held the core module information and interactive logic elements. By incorporating geographically mapped event markers, we enabled the component to correctly overlay the induction modules onto any depot environment we loaded into it.

The result was a single set of common modules that, if updated, could replicate very quickly across all depots, simultaneously. This feature also enables us to add more depots and environments to the system with very little effort.

Once the environments and modules were complete, D2 developed a full web-based management system which would host the inductions and take care of the data flow. This would allow Network Rail to report on induction completion statistics, view depot footfall and visitor statistics, and run emergency rollcalls on each depot. Using WebGL graphics rendering technology, this user interface would also be capable of running each depot induction through most modern web browsers and devices, ensuring a high level of accessibility for all users of the system.

The next steps

Currently being deployed to seven depots, the system has been well received and Network Rail is currently evaluating how to manage a rollout across all 44 of their UK depots. We have identified potential enhancements to improve flexibility for more complex sites. Other improvements will include lidar site scans to improve accuracy and accelerate location specific system development turnaround times.

Client Testimonial

"This project has been designed from the outset to improve how we manage our inductions, which will enable us to keep our workforce, contractors, and visitors safe when they visit and work at our depots."

Stephen Shields, Network Rail Workforce Health, Safety and Environment Advisor