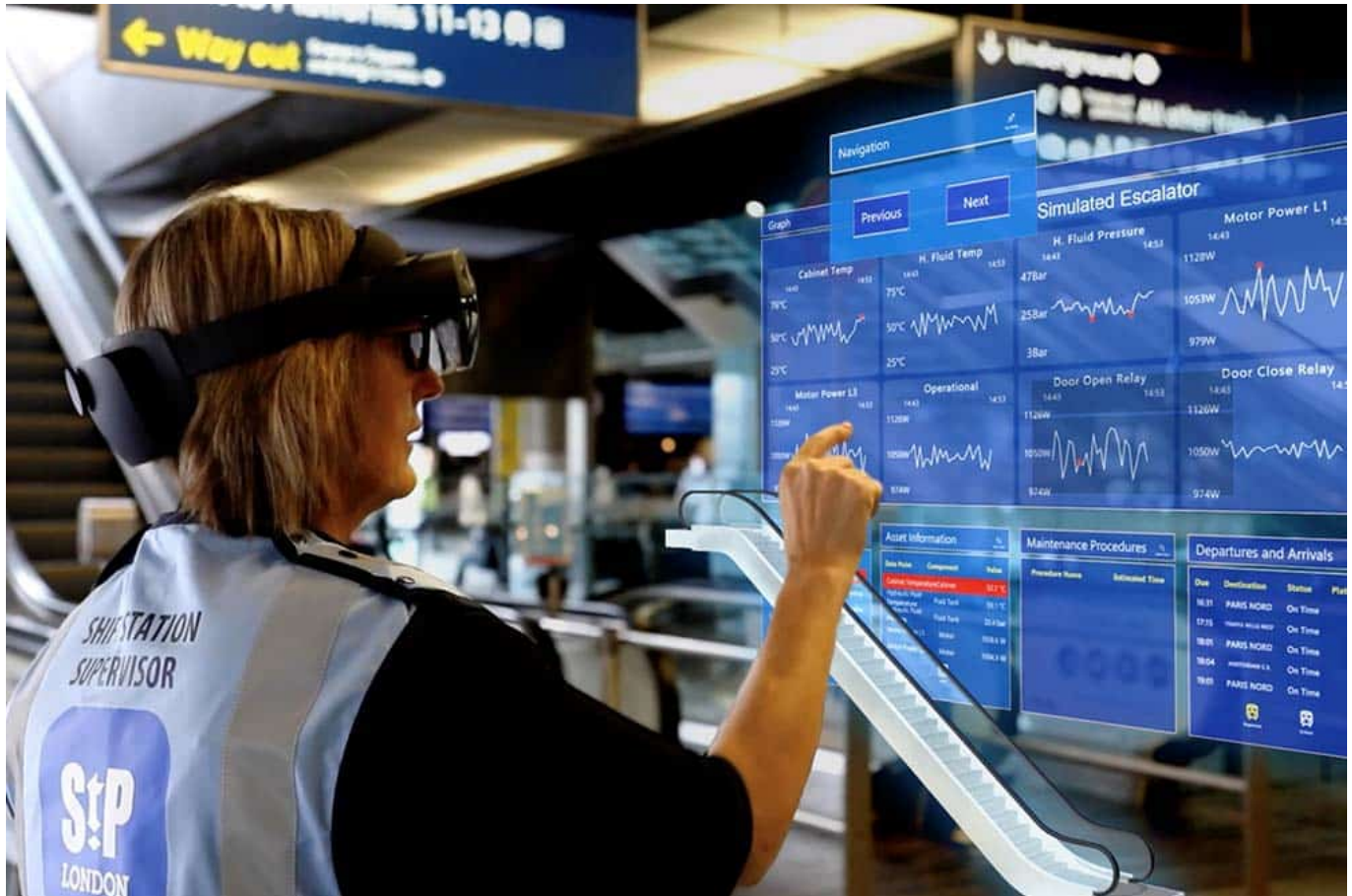


PAULEY leads UK-first 'augmented reality digital twin' railway project with HS1

April 21, 2022



Immersive technology software consultancy **PAULEY** has played a vital role in **HS1 Ltd's** completion of the UK's first 5G-enabled 'augmented reality digital twin' trial on the UK railways.

The project has showcased how the technology can be used to reduce emissions, cut train delays and make the experience of passengers using the iconic St. Pancras International station even more hassle free.

HS1 Ltd, which owns and operates the UK's only high-speed railway, developed a digital representation of the high-speed network including rail track, lifts, elevators and other parts of the line and stations during the nine-month project funded by Innovate UK.

PAULEY, specialists in next generation training, asset management and digital twinning for major projects and critical national infrastructure operators and owners, developed the Cloud based Remote Condition Monitoring Augmented Reality Digital Twin and was Lead Project Partner.

Rail personnel used 'Hololens 2' headsets to examine in close detail every facet of the railway, gaining a

real-time understanding of how all elements were operating at any given time. This remote condition monitoring system enabled them to predict more effectively what maintenance work was needed on HS1's physical infrastructure, including at St. Pancras International.



Training taking place by using the digital-twin. Image supplied by PAULEY.

The trial showed how the technology can be used to reduce emissions and to improve customers' experience on the line and in stations. By being able to monitor the track remotely, HS1 saw a reduction in the number of in-person track inspections, which in turn increased safety and reduced the resources needed for inspections and helped cut emissions on the railway.

The monitoring of track also showcased the potential to improve journeys as potential maintenance or repairs work can be spotted well before they impact services. This highlighted how the digital twin system could be used to potentially reduce the number of delays trains face due to faulty or failing assets in the future.

Phil Pauley, Director of Pauley Group (Est 1975) and founder of **PAULEY** (Interactive), a multi-award-winning spatial computing software company, said: "As a leading IoT integrator, PAULEY is an expert in digitising a whole system approach to full lifecycle management for infrastructure and commercial assets using 5G, private networking and extended reality.

"At the heart of today's competitiveness is the fusion between physical and digital to proactively manage

the performance of assets in real-time to increase operation efficiency and drive down whole life carbon cost. Innovate UK describes the HS1 5G Integrated Railway Augmented Reality Digital Twin as a flagship project and I would like to thank all our partners, HS1, NRHS, AMRC and Athonet for making this innovation such a shining success.”

Dyan Crowther, CEO of HS1 Ltd, said: “Innovation is at the heart of what we do at HS1. We are proud to have carried out this successful trial of technology, which has the potential to improve people’s experiences of the railways and drive productivity within the system. This trial demonstrates whereas a business HS1 can become more sustainable and drive better outcomes for all of our stakeholders.”

Through the monitoring of lifts and elevators in the station, the trial showed how a digital twin system can help spot problems with pieces of infrastructure more effectively and without routine inspections. This allows maintenance and repairs to be carried out more efficiently, reducing the chances of assets being taken out of operation simultaneously, and in turn improving the passenger experience – especially for those with accessibility needs for whom the use of lifts is imperative for easy access to all parts of the station.

The trial also improved efficiency and safety of staff training as employees were able to examine parts of the system digitally rather than on site, allowing them to address faults in a more controlled environment.

HS1 Ltd will now investigate ways of rolling this whole system approach out further, building on the environmental, safety and customer benefits of the trial.

For more information, please visit: www.pauley.co.uk or call Phil Pauley on: 07799035737.