BRAINSTORMING

Augmented Reality and Holographic Projection for Rail:

The idea behind this was to enable office-based workers to offer advice without needing to travel to the site, which can help save both time and money for the company and reduce delays for passengers.

In the next few years, this will go even further. High Speed 1 is partnering with NRHS

to introduce AR headsets that can holographically project digital assets into the real world.

These Microsoft HoloLens headsets will turn any space into a training environment

for maintenance workers so they no longer need to spend large amounts of time on tracks.

This can help improve safety, quality of training and reduce service disruptions for passengers.

Smart Ticketing Automated Fare Collection:

By implementing sensor beacons, edge computing, AI, and cloud-based technologies, operators can eliminate queue lines at ticket machines. Using sensors on station platforms or trains, the system is designed to detect a specific smartphone app as passengers enter the station or train and automatically charges correct fair. This not only streamlines the process for both passengers and operators but can also simplify back-end billing and revenue management and collect usage behavior for long-term planning.

Security Risks:

All this additional connected technology comes at a risk to security, because these devices and connections could be hacked into and used by anarchists or terrorists to control trains, spy on their passengers and more. However, if the devices and connections are built securely, for example with the

use of flat shielded twisted pair cables (available from In2tec), the risk of external interference will be minimized.

3D Laser Scanners

3D laser scanners are quickly being adopted in multiple industries and rail is no exception for 2019. The German rail system is using 3D scanners to accurately measure tracks and effectively plan routes.

This technology has the ability to collect millions of measurable data points, from dimensions to spatial relationships of objects, accurately within seconds. This dramatically reduces the time that would have been spent otherwise, eliminates the chances of inaccurate data being collected and in particular, helps with complex projects.

Smart Coaches

A few innovative improvements are the State of the Art SMART Coaches having special diagnostic systems and sensors connected to integrated computer systems for increased passenger comfort, SMART Locomotives having new features as Asset Performance Monitor (APM), Locotrol, LocoVision, RailIntegrity Monitor (RIM) etc.

Transforming Rail Carriages

Companies such as Eurotech are providing next generation CCTV systems specifically for use on the rails, to meet global demand for increased railway security. The Indian government stated in 2018 that it would be implement CCTV in all 11,000 trains (currently 50 with CCTV) and 8,500 stations (currently 395) by 2020. Meanwhile, the Canadian government has outlined a plan to put recording devices in all trains by 2030.

Thermal and Visual Imaging Equipment

Network Rail displayed their revamped survey helicopters at Rail Live 2019. Survey Helicopters feature high-tech thermal and visual equipment which allows maintenance teams to quickly cover large areas and identify the smallest of faults in assets or the surrounding environment.

Equipment like this can help to significantly cut down on the time and money spent checking rail equipment for faults and allow teams to quickly react to problems before they occur.

An android application for the passengers:

The passengers should enter their travelling details to connect with the officials in

case of emergency and the main thing is they should enter the particular station they want

to inform and they can contact emergency services like ambulance.

Internet Of Things:

One of the key trends of the rail industry in 2018 was connected mobility, to “be able to smoothly continue their digital lives while riding trains”, this usually means providing Wi- Fi, mains and USB charging points. However, this can also mean providing devices to passengers, such as In2tec’s Smart Office technology, a fully-flush secret until lit keyboard that is easily implementable into the tray tables or full tables of seating areas, and can be connected to an accompanying display or passenger’s device. The connected mobility trend is part of a bigger trend towards connected trains full of devices that track and exchange information such as the number of passengers, or perform functions such as displaying seat reservations.

Interactive Train Windows

In 2016, it was announced that German railway provider Deutsche Bahn and American research company Hyper loop Transportation Technologies (HTT) were to create the “Innovation Train”.

Although there has been some delays to the project, the trains are set to reach speeds of up to 760mph. This train’s most notable feature is the touch-screen interactive windows which would allow passengers to access information like the destination and high profile events, time and date, temperature, train speed and more.

Better Product Development in the Industry

Rail OEMs and operators can leverage IoT not only for better operations with the given infrastructure but also in the manufacturing processes of locomotives, wagons and train coaches. The actual feedback on product quality comes only later through sales and

Buyers’ complaints.

Feedback on manufacturing processes is an inherent part of product development with the Internet of Things concept. Engineers can use analytics with operations and performance data to derive valuable, actionable insights. This helps them understand the manufacturing procedures more dynamically and enhance final product’s quality sooner than in traditional methods. Continuous engineering and IoT can help to quicken the delivery of more sophisticated and connected products in the rail industry.

Digital Twin Models

London’s Cross rail, which will be known as the Elizabeth Line when it opens sometime in 2021, uses a digital twin model of the entire network. Digitally twinning all of the physical assets, from facilities and systems to environments, makes it much easier for engineers and data scientists to gain a deeper understanding of the complete network.