WM 5G

WORCESTERSHIRE 5G testbed

5G Case Study

Improving construction site safety with PLINX

Synopsis

PLINX is a technology business producing safety products for the construction sector. Based at Malvern Hill Science Park, PLINX has been working with the Worcestershire 5G testbed (W5G) to explore the benefits of 5G for their services.

The PLINX safety system, currently powered by its own Proprietary wireless technology, logs on-site hazards such as proximity to machines and worker locations through a purpose-built platform. This data is used to prove compliance with health and safety guidelines and identify high-risk hazards. The product is being used by HS2 Ltd in the delivery of the high speed rail line.

Workers have a tag attached to their hardhat that alerts them if they are near a hazard. Sensors are placed around the site and attached to machinery or around the perimeter of an exclusion zone, meaning the PLINX system alerts workers when they are approaching a potentially hazardous environment.

Through sensors mounted on cones, cranes or diggers, for example, the tag monitors workers proximity to the equipment and understands if their behaviour is considered hazardous. If it is, the worker is notified and an event is logged in the platform.

The system has been used during the Covid-19 pandemic to encourage staff to maintain social distancing. The collected data through the system is analysed to improve worker safety and reduce the potential of an outbreak.

Problem

The PLINX system is designed so that all processing and analysis of hazardous scenarios is done at “edge” on the wearers device. This reduces the frequency in which the tags need to communicate with the network. As a result, the tags are smaller and lighter, making it easy for the user to wear.

Processing at edge means there are limitations to the complexity of scenarios that can be understood, as there is not a large pool of data readily available at edge.

Whilst a PLINX TeamTag (wearable) can quickly and reliably understand its relationship to other tags nearby and report this to the platform in real-time, the PLINX tag does not have the ability to consider other activity occurring elsewhere in the system which could be making the wearers activity more hazardous.

Solution

The high bandwidths and ultra-fast speeds inherent in 5G will enable the PLINX safety system to share data in real-time to identify worker movements on site.

It will also automatically adjust hazard zones based on factors such as poor visibility, meaning users of the system can make instant decisions about whether to restrict working environments, staff presence on site, and number of machines.

The next step for the PLINX team is to ensure the system measures risk based on a continuously improving dataset. Understanding how external factors influence safety on site and the ability to react to those factors in a timely manner will dramatically improve the safety of operatives on site.

Benefit

Through the 5G private network, communication between the network elements will take place in real-time. The system will also be able to consider the working environments as whole, rather than individual zones.

The ability to respond immediately to changing circumstances will significantly increase the safety of operations on complex development sites. This will both increase efficiencies and provide valuable data to better plan future site layouts.

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We would not be able to properly develop and test the next generation of PLINX safety product without access to the 5G testbed at Malvern Hill Science Park.

5G is allowing us to create products that solve more complex problems for our clients, offering a greater insight into health and safety issues and therefore providing a greater industry impact. 5G will, if used correctly, represent a step-change in safety technology.

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Tommy Williams, PLINX

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The W5G testbed has been established to foster the innovative use of 5G that will offer, real, tangible benefits for manufacturers.

The project that PLINX is delivering is a great example of this, with the potential to create safer and more effective working environments.

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Ste Ashton, Worcestershire 5G

Takeaways

Sustain

PLINX will continue to utilise the private 5G network provided by the W5G testbed to prove the concept and undertake a series of controlled trials.

Learnings

Through exploration of 5G using the W5G testbed and availability of the private network at Malvern Hill Science Park, PLINX will continue to learn the capabilities of their technology on a 5G private network, going beyond what was thought the product could previously deliver.

Contacts

West Midlands 5G Manufacturing Team
E: enquiries@wm5g.org.uk

More info

www.wm5g.org.uk

WM5G.org.uk

enquiries@wm5g.org.uk