3Squared

Technology as a Transforming Force for Freight

James Fox, Commercial Director and Co-Founder, 3Squared

The pandemic has radically changed the way we live and as we near the two-year anniversary of the first UK lockdown, it is a natural time to take stock and reflect on how life has changed, and the role that the rail industry will play now and in the future.

In no greater way can these significant changes be seen than in the way we currently use the UK rail network in 2022. With more of us working remotely or using a hybrid working model, the network is adapting to changes in the way that we live, work and travel on a near daily basis.

So where does that leave the role of the UK network? With a reduction in passenger numbers, how can operators seize the opportunities presented by the pandemic and adapt to the way we live, work and travel today?

A Future Fit for Freight

The need for fast-moving consumer goods (FMCG) to be delivered efficiently and quickly has never been more essential elsewhere across the country to achieve a better work-life balance. However, when countered with the need for greener, sustainable means of receiving our goods, there can only be one answer – freight.

Freight transport is undoubtedly the greenest and most environmentally friendly means of transporting goods across the country. According to the Rail Delivery Group's **"Levelling Up Britain"** report, each tonne of freight transported by rail produces over three quarters (76%) less carbon emissions compared to road, and rail freight cuts Britain's carbon footprint by preventing 7 million HGV journeys per year. It is a rapidly evolving market, with the value of a rail freight path now estimated to cost £1.5 million each year.

Creating New Technologies to Support the Growth of Freight

Whilst it is positive to see the increased opportunities for the freight market, there are complexities around how paths can be opened to accommodate this growth and how to effectively balance the needs of both freight and passenger operators.

Here at 3Squared, we passionately believe that technology has the power to solve the key

challenges and complex issues that the industry faces. With that in mind and to prepare for the future growth of freight, we have developed **PathPlanner** a tool which aims to resolve these problems and more.

PathPlanner aims to assist freight and passenger train operators to better manage their very short-term planning (VSTP). As it stands, VSTP currently operates under control conditions – i.e., additional trains that are needed are entered manually into operational systems by control staff.

PathPlanner has been designed with freight operators in mind, as it finds grey space in the timetable to add previously validated schedules at short notice, therefore maximising freight movement, productivity, and asset optimisation, whilst improving fuel efficiencies and reducing idling. From a passenger operations point of view, the system can help manage VSTP during periods of disruption, cancelling and adding schedules seamlessly, in turn increasing productivity and asset optimisation.

One key benefit of the PathPlanner tool is that it evolves alongside the needs of its users. To achieve this, we are focused on

a series of several enhancements to the system this year, including:

- searching and merging paths
- eliminating manual requests and path creation
- timings and schedules passed to control for stock and crew allocation, and integration with allocation systems
- passing the path into TRUST
- automatically generating conflict-free paths, which are validated at junctions and platforms
- creation of contingency plans
- machine learning for path optimisation

Embracing New Opportunities

Freight will no doubt continue to play a significant role in the UK transportation industry, reinforced by its green credentials and the increasing need to get goods off the road and transported across the UK in a more sustainable way. The opportunities for freight operators are endless; however, to navigate the challenges that may emerge, adopting technologies and solutions that support these opportunities will be critical. We look forward to supporting the industry to deliver a future railway that supports the way in which we live today.

About 3Squared

3Squared is an award-winning Sheffield-based rail technology and software development consultancy, founded in 2002. Specialising in the development of mobile and web apps for major clients across the construction, rail and manufacturing sectors, 3Squared operates both in the UK and on an international level, delivering innovative and ground-breaking technological solutions that aim to propel the rail industry forward.

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