Innovating Safety and Productivity in Rail

Rail Tech Group
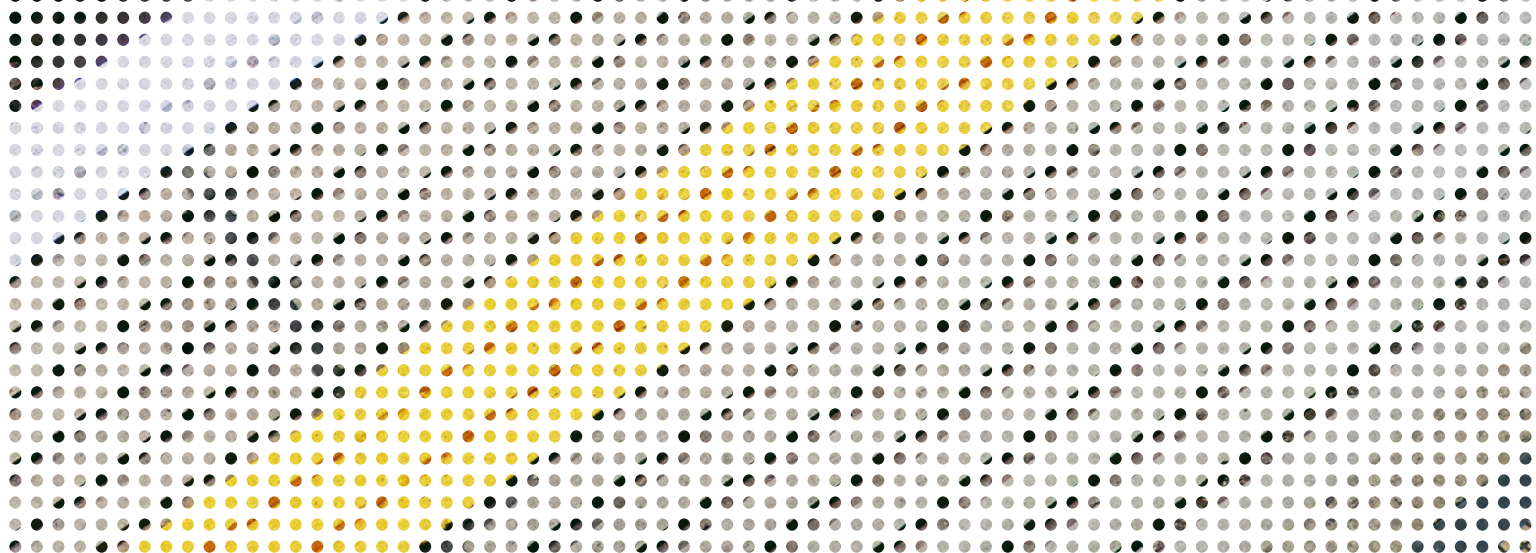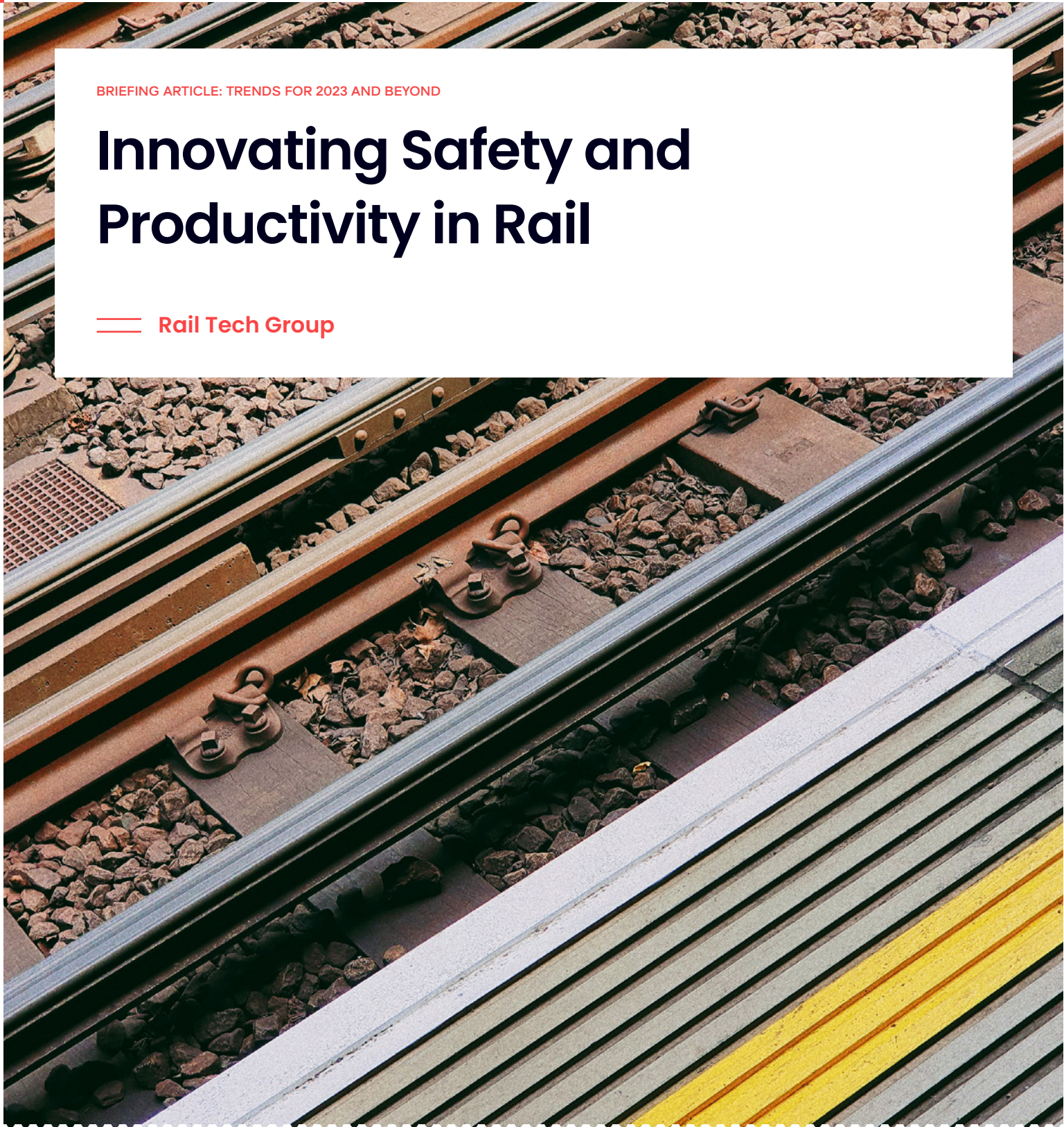
In July 2023, the Rail Tech Group held their first in-person knowledge share focusing on safety and productivity.

The session was an in-depth and open discussion between senior members from across the rail sector, including HS2, Network Rail, and Siemens, chaired by 4D Consultant James Bowles.

This first briefing article in the 3-part series explores topics covered during the session around safety and productivity gains within the rail industry and how innovations are helping to support these efforts.

Overview

According to rail industry professionals, innovation has become integral to achieving safety and productivity objectives on projects. New technology is reshaping conventional approaches on and off site, and is poised to usher in a future of enhanced safety and efficiency. However, there is a need for a positive cultural shift towards innovation to realise the savings innovation can bring.

Only by investing in innovative solutions, and fostering a culture of safety, can the rail sector drive further progress and success in the years to come.

In this 3 part series we'll be covering:

Part 1 The cultural shift needed towards innovative safety technology

Part 2 Leveraging innovation for safer site practices

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Part 3 Increasing productivity without sacrificing safety

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The cultural shift needed towards innovative safety technology

> The new Rail Tech Group has been formed to help make rail projects safer and more efficient. We'll look at the latest tools, technologies, solutions, and, importantly, how to use them best together. Many of these methods are out there but must be used to their full potential. We'll help spread the word, share insights, and create a guide on best practices.

James Bowles   Founder of Freeform

When putting boots on ballast, the unanimous philosophy of 'safety above all' goes without saying. Infrastructure projects need to take a proactive approach towards health and safety because being reactive is likely too late.

Today the industry is calling for the cultural shift needed to embrace innovation to make working practices safer both on and off-site.

Impacting on-site culture from the office:

Across organisations, management must prioritise safety as a core value in every project. Upholding safety involves open communication, trust, and empowering teams to take the time to assess risk and safety concerns thoroughly. Though half a decade ago, productivity and safety may have been viewed as a tradeoff, with new advancements in technology, this is no longer the case.

How can teams

prioritise on-site safety

during planning?

Conversations between senior rail stakeholders at the Rail Innovation Group knowledge share suggested introducing health and safety mitigation earlier and as a critical priority when planning on-site operations.

Team safety is often worked around the plans already in place. Rail professionals are suggesting flipping this on its head. Can we move safety considerations into an earlier planning stage, making plans fit better to health and safety rather than vice versa? For instance, if designers were to take into account a pedestrian route used by hundreds of workers traveling from point A to point B on a daily basis, it could result in a substantial enhancement of safety measures and cost savings. By bringing these considerations into the picture earlier, off-site teams could significantly impact workers' lives on-site.

By investing more time and budget during the earlier stages of a project, teams can more proactively protect their staff and projects.

Shifting cultures on site:
Normalising wearable sensors

On the other half of the same coin is shifting cultures on site. Although there are strict regulations around health and safety, assessments and precautions can sometimes be seen as more of a burden. Long health and safety talks, regular training, zoning, and more can feel restrictive to on-site workers. Meanwhile, the supervision of workers on-site is expensive and time-consuming. Today in the industry, there is an indication of marrying technology to support personnel monitoring to help improve site safety. However, this will only work if there is a simultaneous cultural shift.

As a relatively new but potentially life-saving technology, wearable sensors can alert the wearer of hazards and the user of entry to unauthorised zones. Implementing this technology among construction workers may sound like an easy solution to site monitoring from the office, but it has faced much resistance on the ground. Considerable hesitancy around wearable sensors stems from the legacy site culture around safety — safety being a burden — and a misunderstanding of the privacy and usage of sensor data.

Whilst site culture significantly varies, depending on factors such as the works manager, culture significantly affects how sensors are received. Teams with a more positive attitude towards health and safety and its importance are more open to using such technology than others.

However, merely allowing time to pass and culture to shift organically towards this understanding will not suffice. Senior management teams in rail propose three essential routes to alleviating inertia amongst teams:

A more positive attitude

towards health and safety are more open to using wearable sensors technology than others.

| 1 | Making sensor usage a part of on-site project requirements from day one, and only employing workers happy to comply with these rules. |

| 2 | Establishing an understanding and transparency about collecting data usage so that it can protect and not penalise teams. |

| 3 | Safeguarding the anonymity of individuals and utilising the data primarily for safety purposes. Emphasising team data over individual worker activities can encourage a positive approach and prevent the anxiety of being singled out. |

Our learning

Shifting towards positive health and safety cultures must come on-site and from the office. Only by positively moving the site culture will construction project managers be able to increase the likelihood of successful adoption and use of wearable sensors for improved site safety.

Who is the Rail Tech Group?

Within the rail industry and infrastructure industry, teams and projects have significant learnings however, transferring these into shared learnings can be a challenge. Together, the Rail Tech Group is attempting to break down these competitive barriers, learn from one another and find enhanced methods to deliver rail projects safely and flexibly.

To join the Rail Tech Group discussion, get in touch here. We're open to everyone working in the rail sector, free to join; and welcome clients, contractors, innovators, engineers, site teams, and anyone wanting to improve safety and productivity of our projects. This group is currently not funded, and has no leading organisation, we're just doing this to learn, share, and improve.
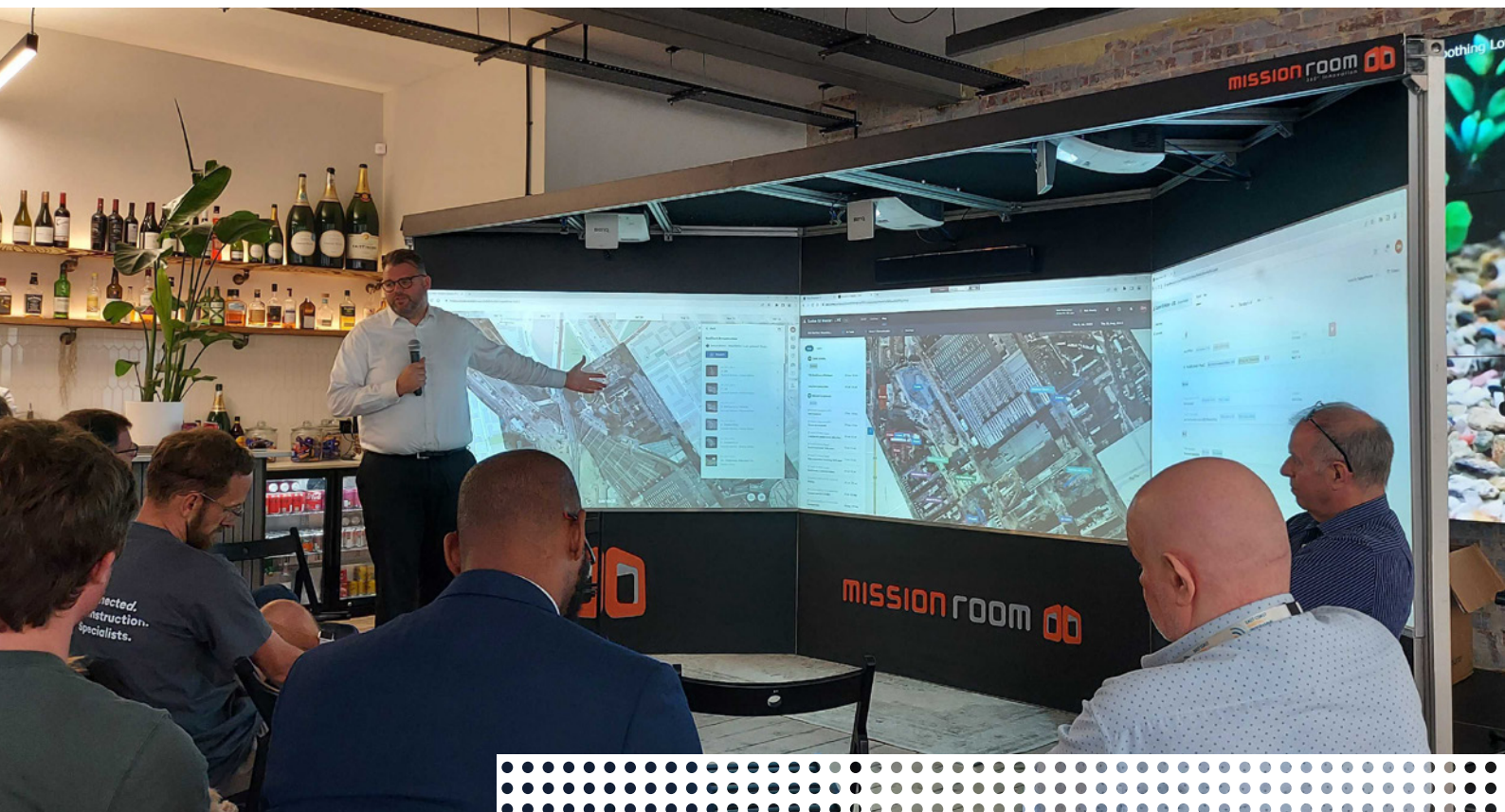
Above Senior rail leaders at Sensat HQ sharing insights at the first Rail Tech Group meeting.

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