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Close your eyes and step into the future. It is the early 2030s, and rail freight's renaissance is in full swing. The management of freight traffic has been revolutionised; in Europe, an average of 30% of annual freight tonnage is moved by rail for the trunk haul. The increase of overall European freight volume by about another 30% compared to a decade earlier represented a huge challenge, but it was one the rail freight sector was able to meet successfully. In fact, not only is rail fully integrated in smooth and interconnected supply chains, but it has become the uncontested backbone of logistics flows all across the continent.

Highly digitalised freight trains are running a lot more frequently and on time over a digitally enabled interoperable pan-European network. Wagonload traffic has rebounded and train length has increased, with customers, freight forwarders and operators all able to track the whereabouts and condition of their shipments at any given time. The interconnected rail freight ecosystem has become robust enough that the risk of a delay is very small, barring interruptions from *force majeure*, which has resulted in highly reliable collection and delivery times, and vastly improved customer satisfaction ratings.

Meanwhile, the conditions for rail workers have also been transformed. Operational staff no longer have to engage in physically demanding and dangerous activities requiring 'boots on

the ballast', such as conducting manual brake tests or coupling and uncoupling wagons. Instead, their roles have evolved with a greater digital dimension, offering huge savings in time and effort.

How did we get there?

Perhaps some people reading this already believe the only way this rail freight utopia will be achieved is through magic. But in reality, such a transition needs to be the fruit of a radical transformation, preceded by a shift in mentality across the whole sector.

Introducing innovation, approaching rail 'as a system' and abolishing old silos and animosities within the industry were key to turning rail freight into an incredibly powerful player in the European transport mix. The need to overhaul and invigorate often inefficient operating practices became clear in everyone's mind, and that realisation was the beginning of a new era.

It triggered major investment in rail-borne logistics assets, including private sidings, transshipment facilities and intermodal terminals. And it also spurred investment in improving freight access to urban areas and ports; like neurons linked up in a brain, the rail network integrated all the nodes of the global supply chain, making rail the backbone of transport and an easy choice for shippers.

The digitalisation process covered the full gamut of freight operations, from marshalling yards to smart freight trains to data exchange platforms. Data from the entire value chain is captured and shared transparently, making it easy for customers to book shipments, and track and trace freight flows in real time. Rail operations have been streamlined and simplified.

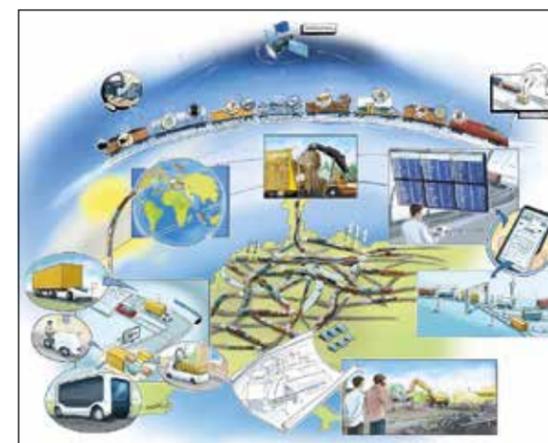
Act now to align the stars

UIP President Dr Heiko Fischer takes us on a journey to the 2030s, when the goals for the development of European rail freight have been met, and sets out the change in mentality required across the sector to make this a reality.

Digitalisation of the full rail value chain is at the heart of the transformation which the freight sector needs to undertake over the next decade.

The Europe-wide roll-out of the Digital Automatic Coupler kick-started a transformation from the era of the 'metal box on wheels' into an 'intelligent freight wagon', whose data-sharing eliminates barriers and enhances interoperability. Vehicle maintenance is simpler to manage because of predictive decision-making and real-time condition data transfer.

Indeed, looking back to the 2020s, it became clear that the freight train needed to undergo a transformation similar to that of the mobile phone entering the smartphone era in the early 2000s. The scope of digital



technology to bring tangible benefits to the freight sector has been almost limitless — from autonomous train operation to shipment condition management and the elimination of cross-border administrative delays. Freight trains now routinely have both energy and data connectivity onboard to support automatic brake testing and the charging of batteries for refrigerated semi-trailers, while train operations are supported by ETCS to provide interoperability across the continent, removing costly legacy equipment from locomotives.

Digitalisation has also addressed the issue of staff shortages by overturning the outdated image of railway work. Now, a rail freight career is seen as forward-looking, with an emphasis on deploying cutting-edge technology while offering a wider sense of purpose and contribution to society.

However, none of this would have been possible without political backing across Europe, recognising that all transport modes had to be placed on an equal footing in terms of their internal and external costs. That paved the way

Bringing it all together. All of the individual innovations and operating reforms envisaged over the next decade must be integrated seamlessly across the rail and logistics sectors to facilitate modal shift.

Sustainable last mile links (below left) and highly automated operations, including automated coupling and real-time condition monitoring (right), are key to the rail freight operating model of the 2030s.

for new forms of co-operation, putting intermodality at the heart of the business. The first and last mile of every freight flow is now a combined effort between rail and other modes, all of which have embraced sustainable power sources. Battery and hydrogen vans and trucks are commonplace, as are e-cargo bikes, autonomous road shuttles and electric boats.

Invest now to gain in the future

As the old saying goes, 'always look into the future when deciding how to use time in the present'. In short, the bet that policymakers and industry made in the early 2020s to spend big on rail-based logistics paid off, with the benefits far outweighing the costs.

Yet back in the present, we must recognise that a future like this cannot happen without bold and decisive action. Above all, a fast closing of ranks within the sector as well as with the relevant policymakers is the only way forward. It is clear that we need to align the stars so that the rail freight sector can build a new and vastly enhanced role for itself.

By enhancing quality, speed and operational efficiency, rail freight can become the powerhouse of the logistics sector, achieving the predicted 30% increase in overall freight volumes by 2030 and simultaneously almost doubling its modal share (p60).

However, the nature of freight transport itself is changing, moving away from heavy and bulky commodities towards higher value, lighter consignments. This will prove to be quite a challenge for a rail sector that is not exactly known for pro-active thinking and being quick to implement change. Rail freight's future offer to a growing customer base needs to evolve urgently if we are to meet this trend head on.

Remember rail is green

From a socio-economic perspective, rail freight causes far less harm to society, because it provides a safe, resource-efficient, space-saving and sustainable mode of transport. It does not hurt to remind ourselves time and again that rail's environmental credentials are impressive: the average freight train uses a sixth or seventh as much energy per tonne-km as road haulage while emitting a ninth of the CO₂.

As we all know, the clock is ticking when it comes to limiting global warming; we must take action to reduce emissions and transform our lifestyles to be more sustainable and respectful towards our environment, in our use of resources. Road haulage still dominates land freight transport today, with a whopping 75% market share across Europe overall, whereas rail lags behind on just 18%.

This disparity jolted the EU to set targets in its Smart & Sustainable Mobility Strategy for rail freight to carry 50% more traffic by 2030 and 100% more by 2050. Because every avoided tonne of emitted carbon is a contribution towards mitigating the catastrophic impact of the climate emergency on the planet and on humanity.

Speed is of the essence: we need to lay the right tracks now or else we are looking at a completely different scenario by the start of the next decade: one million more trucks on European roads, imposing a tremendous external cost to people and the environment, not just from air pollution but also from noise, increased land take, traffic accidents and severe congestion.

Like most of us in the railway industry, I have no desire to end up living in such a bleak world. Yet if we want to avoid such an outcome, we must all let go of the past and design the future together. 🌱

