

European Startup Manifesto on Rail



Raising the voices of Europe's
rail tech startups !

35 recommendations to boost
European rail innovation

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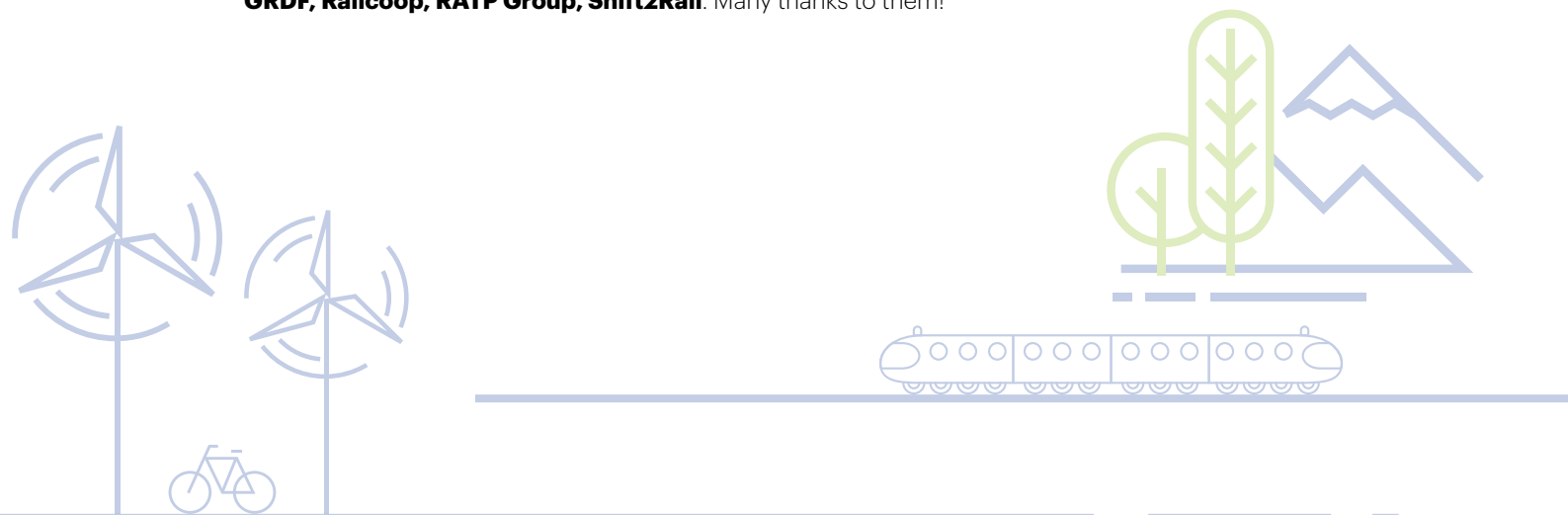
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The Manifesto in a nutshell

- The European Startup Manifesto on Rail has been created in the European Year of Rail with the objective of **raising the voices of rail entrepreneurs** and creating a bridge between rail startups, European rail organisations and EU decision makers.
- The project actively engaged with over **70 startups and rail stakeholders**¹ across Europe who contributed to the development of recommendations that are both inclusive and representative of the current rail startup ecosystem in Europe.
- The methodology behind this manifesto relies on principles and adapted methods from Design Thinking - a problem solving framework with a human-centered approach. An emphasis was set on **capturing a multi-stakeholder perspective** through qualitative interviews and open surveys.
- As a result, this document presents **35 actionable recommendations** divided in **9 categories** aiming at solving the most pressing challenges of rail entrepreneurs.
- This Manifesto is an initiative of the European Startup Prize for mobility in collaboration with its **co-founders BCG and Via ID, and The Morph Company as their methodology partner**. Together, they designed the program and engaged with rail startups and sector stakeholders across Europe.
- Several European organisations supported the initiative in order to create a new voice and community on rail: **AllRail, EU Travel Tech, GRDF, Railcoop, RATP Group, Shift2Rail**. Many thanks to them!

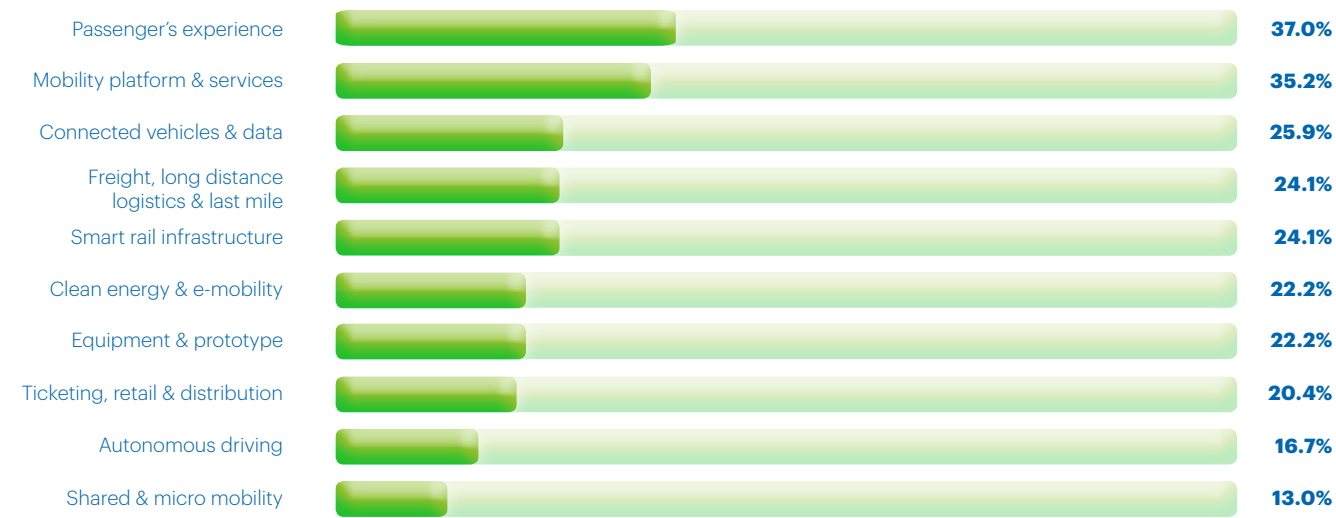


¹ Specifically, 55 eligible startups and 15 rails organisations actively contributed to this Manifesto.

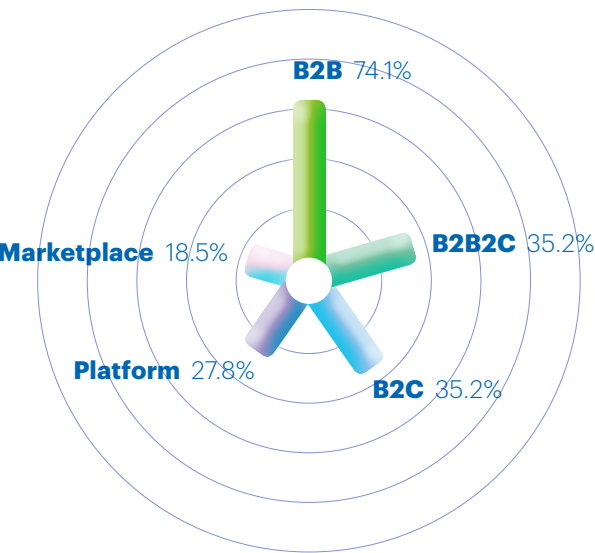


The Manifesto in Numbers²

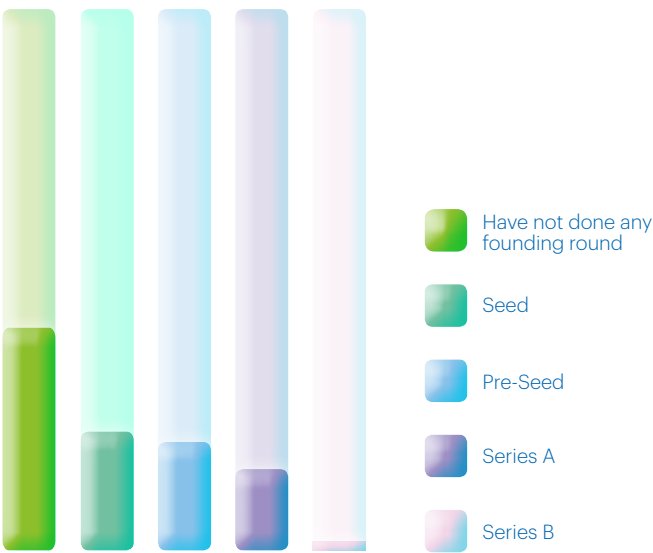
Contributing rail startups by category



Contributing rail startups by business model



Contributing rail startups by amount of funding



Did you know ?

Two main clusters of startups contributed to this Manifesto:

93% were startups with services or products across the whole value chain and **7% were new operators** that provide novel services such as new lines, night trains, etc. ²

² Based on the European Startup Prize's survey 2021 on rail sector (out of 55 eligible startups).



EUROPEAN RAIL STARTUP MANIFESTO

**“Let’s design
a green future
together”**

Rail Innovation enables us to achieve a sustainable mobility grid

With the Green Deal, the European Commission has established the goal of achieving climate neutrality by 2050 to ensure a good and sustainable future for generations to come. Key pillars of the corresponding action plan are the promotion of efficient use of resources and, for mobility and transportation, the introduction of greener, more affordable and healthier modes of private and public transportation³. However, critical voices emphasise that the EU urgently needs to translate those words into action in order to have a chance at all to make the much needed change happen and achieve its climate goals on time.

In the European Union (EU), the transport sector accounts for 25% of greenhouse gas emissions. The biggest share of this stems from road transportation (71,8 %), aviation (13,2 %) and maritime transportation (14,1 %), while only 0,4 % originates in the rail sector⁴. From an economic point of view, the rail sector is capable of creating up to € 49 BN additional EU GDP, 140 000 additional future-proof jobs, additional export worth of € 20 BN and up to € 9 BN indirect leverage on industry R&I, to name just a few opportunities⁵. These numbers underline that the rail sector has not only the potential to play a substantial role in achieving the Green Deal goals, but also to support the EU’s post-pandemic economic recovery plan NextGenerationEU⁶. However, at the moment, several challenges hinder the rail sector, and especially rail innovation, to rise up to its full potential.

What are the main challenges that stop rail innovation in Europe from rising to its full potential ?

Over the past three months, we collected the voices of 70 rail startups and rail organisations to identify the most pressing challenges that currently hinder rail innovation. Tackled in the right way, these challenges can be transformed into valuable opportunities to boost rail innovation and, thus, green transport in the EU:

- 50%** **Data sharing & open data:**
an opportunity to improve the passengers’ experience, modal shift, energy saving, and fleet optimisation
- 43%** **Collaboration between startups and stakeholders across the value chain:**
an essential requirement to gain market shares from other sectors and design together the future of rail
- 41%** **Infrastructure availability and access to rolling stock:**
meeting increasing transport demand
- 37%** **Harmonization of European rail standards:**
a prerequisite to reach a European single market
- 32%** **Re-designing current EU funding & support schemes:**
an opportunity to make them more accessible, flexible and suitable for startups
- 26%** **Subsidies, incentives and market shares:**
enabling fair competition within the rail sector and between rail and other sectors to ensure a level playing field
- 19%** **Multi-modal through tickets, payment systems and infrastructure:**
the foundation to enable modal shift
- 16%** **New energy mix:**
including electrification, hydrogen, biogas and climate-friendly opportunities

Together, startups, policy makers and companies can overcome these challenges and co-create a green future

Multi-stakeholder collaboration and user-centricity show the path forward to a green future. To rise to its full potential, rail innovation needs startups, policy makers and already existing mobility organisations to join forces and co-create attractive mobility solutions - from ticketing and multi-modality to freight and vehicles.

³ More info on European Green Deal here.

⁴ Statistics pocketbook about Mobility and Transport accessible here.

⁵ Shift2Rail document on Moving European Railway forward.

⁶ European Commission Recovery Plan for Europe.





TICKETING & DISTRIBUTION

Currently, various players are attempting to introduce multimodal digital ticket platforms which enable seamless multimodal door-to-door mobility. However, they currently face several hurdles: First, local and regional public operators only allow such ticketing systems to sell the most expensive tickets, or they entirely prevent selling. Second, state-owned rail incumbents usually only agree to selling to such platforms with very low or zero commission. Third, accessing proprietary API of operator's sales channels is usually costly or not possible at all.

On the other hand, this poses a substantial challenge for platform companies which foster multimodal mobility and ultimately hinders a better user experience for booking and travel planning. To achieve higher ticket sales at a macroeconomic level, simplification and openness are needed. Besides granting access to ticketing data - as proposed in the first section - granting the right to distribute is also needed. It is necessary to create synergies between platform companies and all rail operators in order to increase the overall selling volume and generate more opportunities for modal shift.

On the other hand, in the rail freight sector, current booking systems for tickets and loads are computerised, but their complexity hampers the customers' access to them, making it much easier for freight customers to book a truck. Attracting innovation in this field might induce the necessary simplification of booking systems and, thus, increase the attractiveness of rail-based goods transportation.

Recommendations

5 Foster multimodal, optimized ticketing and payment systems

Support the development of optimised payment systems for users of multimode transport that guarantee the best fare available, directly invoiced to the subscriber in order to increase the number of users.¹¹

6 Encourage selling of all ticket types by verified third parties

Encourage member states to require all public transport operators (rail, metro, tram and bus) to allow verified third parties to sell their tickets and pass inventory based on fair commission levels, including discounted tickets. Set guidelines for usage and pricing.

7 Foster simplification of booking systems for freight transport

Encourage innovation to simplify and improve access to booking systems for tickets and loads in freight transport.

STANDARDS, REGULATIONS AND PRODUCT CERTIFICATION

Rail is a heavily regulated market, with many steps between a working proof of concept (POC) and an industrial solution that can be rolled out to an entire fleet. Certifications in the railway sector are very difficult and costly. This results in many companies preferring to invest in road infrastructure which is less costly, and for which regulations are clearer.

When it comes to certification of new, innovative technologies by national certification bodies, the application of the present legislation sometimes is not clear and interpretations can be misleading, resulting in an additional burden for startups.

Finally, the rail market is still incredibly segmented and regulated. Infrastructure managers across Europe have different standards across countries, for example for network signalisation, network electrification, and data sharing formats. Therefore, trains must comply with different specifications for each country, resulting in significant additional costs, especially for new entrants. Furthermore, current standards for data-sharing are very complex and still not fully developed. Tackling these interoperability issues is important to enable innovation spillovers, and better access for new entrants. Data-sharing standards are especially a requisite to achieve multimodal, cross border ticketing and payment systems.

¹¹ Switzerland shows very advanced practices in this field.



Recommendations

8 Simplify and homogenize European standards for infrastructure and operation

Intensify and speed up the simplification, homogenisation and development of European standards, e.g. standards for data-sharing, signalisation, network electrification, API standards and specifications of infrastructure managers across Europe. Set well-defined interoperability requirements and oversee the subsequent enforcement of the common standards at EU level.

9 Standardised approval and certification procedures

Standardise approvals and certification procedures for rolling stock across Europe so that they comply with the desired standards and regulations for operation.

10 Standards for freight transport

Enforce the standardisation of dimensions and weight of transport containers in the rail sector in order to increase efficiency while transporting different goods over different routes, transfer stations and terminals.¹²

11 API standards

standards] Define standards for the development of common Application Protocol Interfaces (APIs) that allows the interaction of the different systems used by each player.¹³

12 Data completeness

Clearly define and enforce "data completeness" as well as a standard and readable data-sharing format to avoid data sharing over hard-to-read PDFs and spreadsheets, and such alike.

13 Re-design regulation for new technologies in collaboration with startups

Integrate input from innovative startups in areas where regulation is currently non-existent (e.g. autonomous driving) and incentivize collaboration on regulations.

14 Simplify procedures for creating new standards

Reduce high costs of standardising new solutions by simplifying the procedures of creating new standards.

COLLABORATION OF STARTUPS WITH ESTABLISHED RAIL COMPANIES

Often, startups and large national rail companies assess innovation risks differently and have different expectations concerning the speed of processes, decision making and legal design. However, due to the character and nature of railway infrastructure, partnerships and collaboration between startups, rail operators, network and infrastructure managers are necessary, especially when it comes to testing new technologies, performing pilots and avoiding interoperability issues.

A healthy ecosystem needs both fair competition and collaboration. While new entrant rail operators providing novel services such as new lines and night trains advocate for intramodal fair competition, startups offering other types of services and products across the value chain call for also simplifying collaboration for piloting and deployment of new technologies.

96,2 % of the startups who participated in the public consultation expressed their interest in collaborating with the partners of this European Rail Startup Manifesto. The momentum and unique opportunity for synergies created by the diversity of stakeholders behind this project - European startups, new entrants, incumbent operators and network managers creating a joint Manifesto for the first time - should be honored with concrete action and support.

¹² As in the maritime sector, for example, where 42-foot containers are standardised worldwide.

¹³ The Finnish Act on Transport Services from 2018 is a good example of good practice to open up APIs.

Recommendations



NEW ENERGY MIX & ENERGY TRANSITION

When planning funding for clean energy, electrification of networks, hydrogen solutions and biogas are some of the paths that need to be embraced for an emission-free future of the railway industry. Nonetheless these technologies are still not applicable everywhere: Clean sources for electricity and hydrogen is a premise that needs to be accomplished at full scale. Regarding electrification, in some cases the infrastructure needed is still too expensive to create or to maintain in specific lines. This may be the case, for example, for new lines in low-density rural areas. In the case of hydrogen, it is still unclear when the technology will enable a cost-effective fuel that is ready to scale. This may take decades. Thus, other technologies, such as alternative fuels which can radically improve the emissions

Recommendations

33 Hydrogen as an alternative fuel to fossil fuels

Accelerate the implementation of low carbon hydrogen refueling stations and the development of hydrogen e-propulsion, especially for heavy-haul, long-distance freight locomotives. ¹⁷

34 Biogas as an alternative fuel

Foster the use of biogas as an alternative fuel as a means to significantly improve the emission level while transitioning to a new, emission-free energy mix in public transport and freight.

35 Expansion of electrification

Speed-up electrification of secondary lines.

¹⁷ Canada is an example of a country increasingly funding the development of this technology. More information can be found on Canada hydrogen strategy from December 2020.



**Thank you for being part
of this incredible journey!**



to endorse the Manifesto!

Join our community on rail at:
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