

# UIC ACTIVITY REPORT 2020-2021



INTERNATIONAL UNION  
OF RAILWAYS



UIC  
ACTIVITY  
REPORT  
2020-2021



INTERNATIONAL UNION  
OF RAILWAYS

FOREWORD BY  
**KRZYSZTOF MAMIŃSKI,**  
**UIC CHAIRMAN**



During 2020 and 2021, UIC encountered several important and difficult challenges due to the crisis caused by the Covid-19 pandemic. Despite these, UIC has demonstrated its ability to conduct joint projects and effective activities and events competently and comprehensively in the areas of transport, innovation, and environmental protection.

Of all transport modes, the railway sector has best demonstrated its resilience to the crisis, ensuring full mobility for passengers and goods globally. The railways have confirmed that they can guarantee, even in exceptional circumstances, the rapid transport of passengers, as part of their public mission, and essential commodities such as food, medicine and fuel. The actions taken by UIC in 2020 in relation to the pandemic deserve special attention. UIC launched the Covid-19 Task Force to ensure the regular exchange of information between UIC members and partner organisations and to develop responses to the crisis in the transport sector. Among the conclusions drawn, the high resistance of railways and their significant role in achieving the sustainable development of the world economy should be particularly noted. I am fully convinced that the railways will play an important role in the

process of sustainable post-pandemic recovery and economic recovery. Nevertheless, the railways still need a lot of investment and development in the area of digitisation, innovation and common standardised solutions to daily operational needs. All these activities have a direct impact on the competitiveness and position of railways in the global economy.

As UIC Chair, I made a commitment to work with our members in Europe and beyond to ensure that railways play an important role in achieving specific climate and environmental goals globally. The pan-regional development of the railways is equally important to me because it is important for society as a whole and, above all, for our planet.

**“THE RAILWAY SECTOR  
HAS DEMONSTRATED ITS  
RESILIENCE TO THE CRISIS,  
ENSURING FULL MOBILITY  
FOR PASSENGERS AND  
GOODS GLOBALLY.”**

The railways, as an environmentally friendly means of transport, are a basic instrument in the fight against negative climate change.

At this point, it is also necessary to emphasise the activities carried out by UIC in 2021 in the field of sustainable transport and the success of its participation, on behalf of the global railway community, in COP26. I am convinced that the railway voice will be even more audible in future climate summits.

We also know that railways need a vision: a real vision supported by instruments for its effective and efficient implementation. The document entitled *2030 Vision - Design a Better Future* prepared by UIC is such a document, but it is also ambitious in its content. UIC calls on, and will appeal to, representatives of political, social and economic organisations to ensure that such ambitions in the field of support to the railways can be achieved on a global level.

I consider the participation of UIC in the events of the European Year of Rail or the organisation of the UIC International Symposium, which began the UIC centenary celebrations, as highly significant. Based on these events, we can see that the railways are attracting more attention and support from international partners. The conclusions of the UIC Symposium indicate that there is a need to continue to engage in the creation of a coherent railway network, railway corridors and a move away from the patchwork system.

The basic needs of the members of each UIC region in developing interregional cooperation remain a priority for me. UIC is the optimal platform for sharing ideas and best practices within the global railway community.

As UIC Chair, I would like to draw from, inter alia, the experiences of our members, but also from the experience of my work as the President and CEO of PKP – Polish State Railways for which I have been working for 41 years. I see further potential in terms of greater involvement of UIC on the international scene.

UIC has been guided by certain values and principles for many years. Nowadays, the values of Unity, Solidarity and Universality are of key importance for UIC, especially in the face of support for railways that suffer damage caused by the military actions of other countries. We must be united and in solidarity as a sector.

Railways must play a leading and key role in the development of the global transport sector. Our goal is to further promote the advantages of rail and to make it more attractive to all decision makers. We want more people to travel by train, more companies to transport their goods on the railways, and more people to consider a career in a vibrant global railway sector. We also want to show the potential of railways to compete with other modes of transport. There is a lot of work ahead of us before we can collectively reach the full potential that railways offer, and will continue to offer, to end users.

On this occasion, I would also like to thank my predecessor, Gianluigi Castelli, for his efficient and effective leadership of the organisation. I would also like to thank all of the UIC team, headed by Director General François Davenne, for their hard and effective work in the development of UIC.

This year is the 100<sup>th</sup> anniversary of our organisation. On this occasion, I wish you all peace, health, achievement of goals and further development of our joint UIC organisation.



FOREWORD BY  
**FRANÇOIS DAVENNE,**  
**UIC DIRECTOR-GENERAL**



The Covid-19 crisis we experienced in 2020 and 2021 impacted all of our members, but our sector proved itself extremely resilient and, thanks to our collective commitment, essential goods continued to be transported and vital travel between urban centres was maintained. During this challenging period, UIC made a conscious effort to ensure it was working in the fundamental interests of its members. I would like to thank each and every one of them for their loyalty and their involvement in our organisation's work.

The UIC teams were delighted to see that their projects remained of interest, and even increased in volume and quality as we entered into the UIC 2020-2022 Work programme. This demonstrates that UIC's constant readiness to listen to all of its members ensured their strong bond was maintained - as shown by the significant growth of your overall satisfaction which went from 65% to 75%.

In this activity report covering two years, I have taken care to show that the commitments made in our work programme have served to guide us.

I am very proud to tell you that we have made excellent progress in its implementation, which is organised around five strategic priorities:

- ▶ Promoting rail transport on a global scale: a common and inspiring vision for 2030 "design a better future" has been formulated and supported by all our members. Its presentation at COP27 was a huge success and we are working on a complementary work programme "manifesto" for its implementation.
- ▶ Continuing to develop UIC as a technical platform tailored to our members' needs: over €9.5 M has been spent on projects since 2019, which represents a total increase of more than 15% compared to 2019. In addition, the adoption of new remote working technologies has actually proved beneficial for interregional technical cooperation: the regional chairs now meet at least three times each year.
- ▶ Creating innovation through projects: UIC is working as part of the Europe's Rail Joint Undertaking (ER JU) European research programme.

## “THIS DECADE, WHICH WILL SEE THE 100-YEARS ANNIVERSARY OF UIC IN 2022, WILL BE CRUCIAL FOR THE FUTURE OF OUR PLANET.”

Developments key to our sector, such as FRMCS (rail 5G) and OSDM (an international and multimodal ticketing platform), ensure that our association is indispensable.

- ▶ Promoting decarbonised transport: all studies show that we have 10 years to radically reduce our transport-related emissions: a massive modal shift to rail is necessary. For this to happen, we need to change mindsets and associate rail with new words like ‘flexibility’, ‘comfort’ and ‘freedom’. UIC is working to provide concrete means of achieving this.
- ▶ Effective and transparent management for the benefit of our members: an audit of the support functions has been carried out, which will result in a greater degree of confidence and responsibility. Similarly, we have improved member relations through more frequent bilateral meetings to jointly approve UIC’s strategy.

I would like to take this opportunity to commend our Chair Gianluigi Castelli, whose very strong commitment in 2020 and 2021 has ensured the efficient organisation of our new UIC leadership,

which consists of Krzysztof Mamiński, CEO of PKP, as the new Chair and Mohamed Khlie, CEO of ONCF, as Vice-Chair. Their nomination in July 2021 was unanimously supported.

Krzysztof Mamiński’s tenure will enable the interregional vision strongly driven in 2020 and 2021 to be amplified. Poland’s unique position at the intersection of corridors from Asia and Europe will inspire innovative collaborations. For the first time in its history, UIC will have a Vice-Chair from the African region with Mohamed Khlie, Director General of Moroccan State Railways. This is a powerful symbol to show that the development of rail transport infrastructure in Africa, one of the priorities of the African Union, is also of the utmost importance to UIC.

This decade, which began in 2021 with the European Year of Rail and will also see the 100-year anniversary of UIC in 2022, will be crucial for the future of our planet. UIC, in its role as a global association of railway companies, is fully mobilised to provide concrete and effective solutions to make a massive modal shift towards rail desirable.



# STRATEGIC FOCUS AREAS

*Share, Open, Connect*



01

## Promote rail transport globally

- ✔ Strategic positioning
- ✔ The fundamentals: safety, security, environment and innovation
- ✔ Highlight and demonstrate the attractiveness of the railways
- ✔ Partnership with relevant organisations (international and national)

## Further develop UIC as the technical platform to address members' needs

- ✔ Embody and convey a system-wide vision and technical positions
- Up-to-date IRSs in line with stakeholders' needs
- ✔ Produce specifications/guidelines
- ✔ Leverage data and sharing of experience
- Technical policies that serve members' priorities
- Monitor implementation & added value of UIC products



02

## Create innovation through projects

- Become a world forum for innovative projects
- ✔ Further develop a shared innovation strategy
- ✔ Put digital technologies at the centre of the rail system
- Contribute to accelerating the innovation cycle
- ✔ Support European and global innovation programmes for the benefit of the sector



03

## Promote sustainable, carbon-free transport

- Rail as the backbone of mobility
- ✔ Convey a multimodal vision shared with public transport and supply-chain stakeholders
- Develop innovative projects for better attracting green bonds



04

## Efficient, transparent management for the benefit of our members

- ✔ Ethical and transparent governance
- ✔ Regular reporting and ongoing assessment of added value from activities
- Ongoing skills development
- Provide the Regions with a vehicle for project development



05

✔ implemented      ● partly implemented

## RESULTS OF THE IMPLEMENTATION OF STRATEGIC OBJECTIVES AT THE END OF 2021

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By the end of 2021, 80% of the objectives related to the strategic focus areas have been achieved.

### Implementation indicators:

-  action planned in the work programme and implemented
-  action not planned in the work programme and implemented
-  more development than expected
-  action not implemented

### Moreover, new priorities have arisen:

- ▶ Management of Covid-19 crisis
- ▶ Role of UIC within ERJU (Europe's Rail Joint Undertaking)
- ▶ Development of Innovation & Research projects

# UIC MEMBERS AROUND THE WORLD

2020-2021 IN FIGURES

GOVERNANCE

**22**

new UIC Members

**64**

statutory meetings and numerous  
preparatory meetings per year  
(at global and regional levels)

**9**

forums and platforms  
per year

**137**

technical groups, monitoring  
9 special groups projects



*The boundaries, names and designations used on the map do not represent an official UIC position on the legal status of any country or territory or the delimitation of its boundaries.*

March 2022



## UIC FACTS & FIGURES



**200**

members in  
95 countries



**130**

projects



**3,000**

billion  
passenger-kilometres



**10,000**

billion  
tonne-kilometres



**1**

million  
kilometres of line



**7**

million  
rail personnel



Cooperation with over

**100**

institutions



**700**

UIC leaflets - new International  
Railway Solutions (IRS)



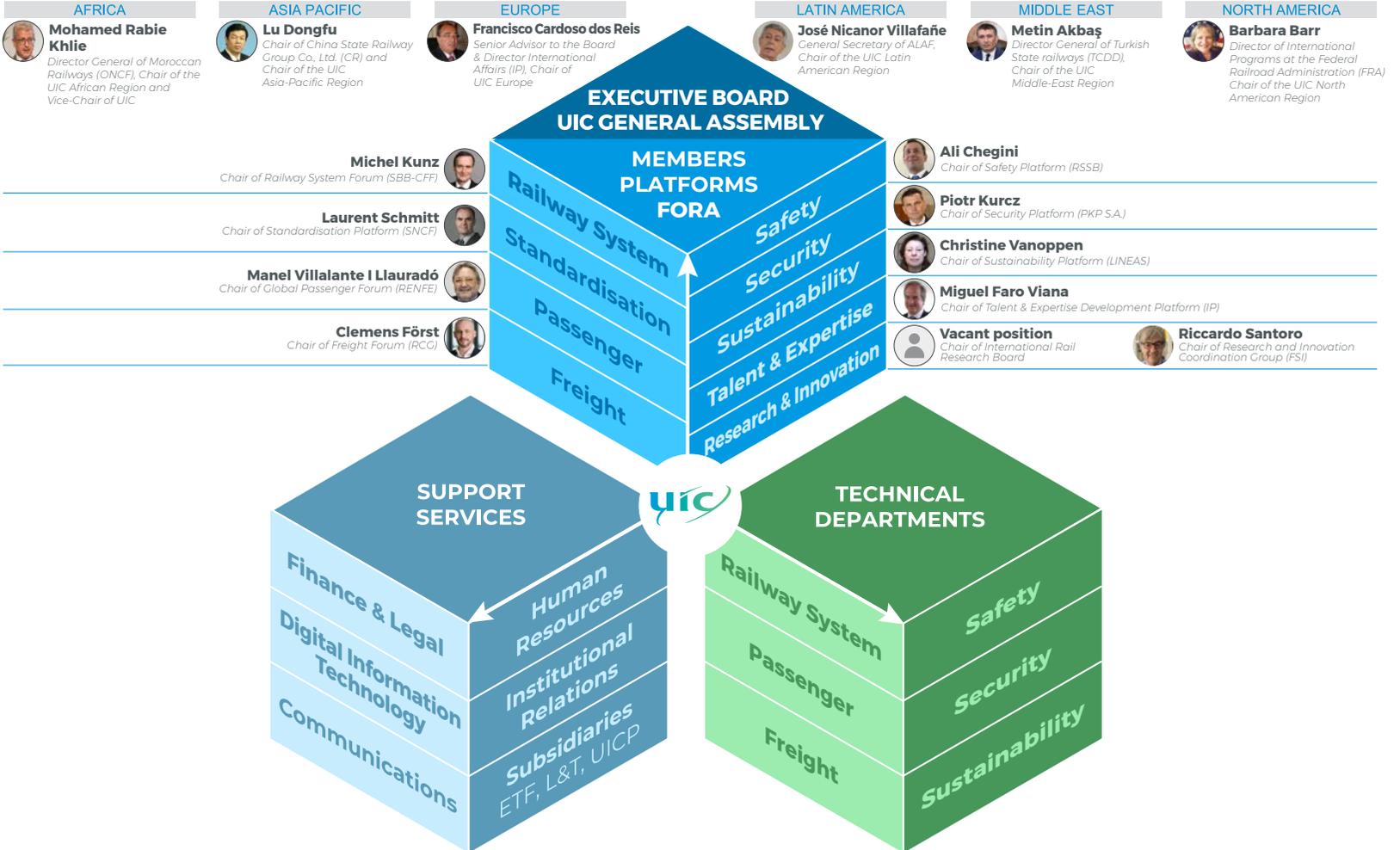
**85**

congresses,  
conferences, workshops

# UIC GOVERNANCE



**Krzysztof Mamiński**  
President and CEO of Polskie Koleje Państwowe S.A. (PKP)  
and UIC Chairman





# CONTENTS

- 4** FOREWORD BY KRZYSZTOF MAMIŃSKI, UIC CHAIRMAN
- 6** FOREWORD BY FRANÇOIS DAVENNE, UIC DIRECTOR-GENERAL
- 10** UIC MEMBERS AROUND THE WORLD
- 12** UIC FACTS & FIGURES
- 13** UIC GOVERNANCE
- 18** UIC IN TIME OF CRISIS: MAIN ACHIEVEMENTS
  - 18 The work done by the UIC Covid-19 Task Force
  - 19 Structuring documents for UIC outreach
  - 20 Webinars to disseminate and to stay in touch
  - 21 The Rail Freight Forward (RFF) initiative
  - 22 Security activities during Covid
  - 23 Launching the UIC centenary: an international symposium looking forward to the challenges ahead
- 26** PROMOTING RAIL GLOBALLY
  - 26 Meeting of the Regional Chairs
  - 26 Development of interregional projects
  - 27 Africa
  - 28 Asia-Pacific
  - 30 Europe
  - 34 Latin America
  - 35 Middle East
  - 37 North America
  - 38 Development of transcontinental corridors
  - 39 Training and Human Resources development

## **42 PROMOTING SUSTAINABLE CARBON-FREE TRANSPORT**

- 43 Modal shift: a new transport paradigm
- 44 Leverage data and sharing of experience
- 46 Develop innovative projects for better attracting green bonds

## **50 FURTHER DEVELOPMENT OF UIC AS A TECHNICAL PLATFORM**

- 50 Development of technical specifications
- 50 FRMCS and 5G for Rail
- 54 OSDM (Open Sales and Distribution Model)
- 55 DAC (Digital Automatic Coupling)
- 55 Combined Transport and General Contract of Use for Wagons (GCU)
- 57 Specifications and standardisation
- 60 Development of Acceptable Means of Compliance (AMoC)
- 61 Creation of the four Station Managers Global Group (SMGG) working groups
- 62 Safety and Operations activities
- 65 DIGital IMPacts on business processes (DIGIM II)

## **68 RESEARCH AND INNOVATION DRIVING UIC PROJECTS**

- 68 System-wide vision
- 70 Infrastructure challenges
- 71 Artificial Intelligence
- 72 Modelling / digital twins
- 73 High speed
- 74 Research and innovation driving UIC projects: Freight
- 75 Security achievements and current European research projects

## **78 EFFICIENT AND TRANSPARENT MANAGEMENT**

- 78 Contingency plan and management control
- 79 An audit in 2020 for a new organisation put in place end of 2021





UIC IN TIME OF CRISIS:  
MAIN ACHIEVEMENTS

## UIC IN TIME OF CRISIS: MAIN ACHIEVEMENTS

**At the end of 2019, UIC prepared a comprehensive three-year programme for the first time. This document, which was published at the start of the Covid-19 pandemic in March 2020, is a compendium that outlines the main priorities, opportunities and focus areas for UIC members and the sector at large.**

The period of crisis the world has been through since 2020, and the resilient way in which UIC members have coped with it, shows very encouraging signs for the future. In 2020 and 2021, UIC put in place concrete solutions for the benefit of its members, such as the Covid-19 Task Force.

UIC technical and safety expertise, the breakthrough innovative solutions, and the effort towards a global and more sustainable modal shift were listed in this document as the key factors of UIC organisational change.

### The work done by the UIC Covid-19 Task Force

✓ Following the coronavirus outbreak, UIC launched the Covid-19 Task Force on 5 March 2020, bringing together UIC member railways, experts and other relevant stakeholders to work together to find ways to respond to the pandemic that were adapted to the railway sector. As a natural forum, UIC was uniquely placed to provide a space for its members and partner organisations across the world to share information and benefit from each other's knowledge and experience.

Led by a multidisciplinary internal team, the Task Force was composed of 71 UIC member companies and 18 international organisations from all over Europe, the Middle East, Asia, Africa and the Americas. The members came together at online meetings held at frequent intervals - initially every fortnight until summer 2020, and then on a monthly basis from September onwards.

UIC members and partner organisations provided the Task Force with relevant information leading to the publication and translation into several languages of a number of guidance documents and state-of the-art-papers:

- ▶ Between March and July 2020, five guidance documents were published and made available online on the dedicated Covid-19 website. They addressed issues such as mitigation measures, rail resilience, restoring customer confidence, service resumption and economic impact analysis.
- ▶ Between July and December 2020, three state-of the-art papers were published which focused on measures put in place by railways such as wearing face masks, ventilation, social distancing, thermographic cameras and contamination rates on trains.

All presentations from the meetings were uploaded on to the UIC Extranet in the Covid-19 Task Force workspace available to members.

In addition, during 2020 the UIC Task Force collected, compiled and developed audio-visual material and articles on this subject, participated in webinars and panels hosted by leading rail industry news providers and event organisers, and launched a dedicated LinkedIn group. Short communications campaigns were published on UIC's social media channels, sharing best practice and essential information on travelling by rail during the pandemic. Finally, a short film was produced to present the challenges and work in progress and to explain the concept of "RAILsilience": the capacity of the railways to manage the pandemic and adapt their organisation.

### All deliverables can be found online:

- ▶ Dedicated Covid-19 webpage: [uic.org/covid-19](http://uic.org/covid-19)
- ▶ Film "How close collaboration across the transport family can spread best practices and keep mobility chains open: the work done by the UIC Covid-19 Task Force together with UIC members and partners": [bit.ly/2COYSbZ](https://bit.ly/2COYSbZ)
- ▶ UIC Multimedia Library: [mediacenter.uic.org/en](http://mediacenter.uic.org/en)
- ▶ LinkedIn group: [www.linkedin.com/groups/13846065](https://www.linkedin.com/groups/13846065)

## **PUBLICATION OF THE STUDY: MOBILITY POST-COVID: AN OPPORTUNITY FOR RAILWAYS**

The *Mobility post-Covid: an opportunity for railways* study was conducted in the first half of 2021 by Roland Berger on behalf of UIC in collaboration with its members. The aim of the study was to reveal predictions for mobility beyond the post-Covid recovery period up to 2035 and to provide recommendations for rail sector stakeholders worldwide.

According to predictions, although the long-term impact on transport use and the economy remains uncertain, the disruptions resulting from the pandemic have created a short window of opportunity for the rail transport sector to strengthen its competitiveness and increase its modal share, provided that new or adapted strategies are developed and implemented without delay. The report highlights the lessons to be learned from the pandemic and sets out the key objectives that should be pursued proactively by rail sector stakeholders worldwide in order to secure and enlarge rail's scope of relevance and be able to stand out in this new paradigm.

The study can be consulted via this link: [uic.org/IMG/pdf/mobility-post-covid-an-opportunity-for-railways.pdf](https://uic.org/IMG/pdf/mobility-post-covid-an-opportunity-for-railways.pdf)

## **Structuring documents for UIC outreach**

To set up and solidly establish its three-year strategy, in 2020 and 2021 UIC published a series of strategic documents, including “UIC technical solutions for the operational railway”, the UIC Activity Booklet and its 2020-2022 Work programme.

### **“UIC technical solutions for the operational railway”**

As the main technical body serving not only railway operators, but the entire community of railway stakeholders, including research centres and universities, UIC is a natural forum for bringing together all stakeholders and for developing collaborative global solutions.

“UIC technical solutions for the operational railway”, published in 2020 and ranging from architecture to financial arrangements, provides an overview of the main achievements and developments of UIC.

Depending on one's different interests, it gives a synthetic description of operational solutions suited to market needs. It is an efficient tool for summarising, in a few pages, the added value of UIC spread across different instruments and workflows:

- ▶ 700 leaflets describing the entire railway system (with progressive conversion to ± 300 International Railway Solutions)
- ▶ Technical Specifications
- ▶ Qualitative and quantitative guidelines
- ▶ 137 working groups and more than 2,000 experts drawn from member companies
- ▶ Regularly updated procedures, with a dedicated supervisory platform for standardisation



The document is available here: [uic.org/IMG/pdf/20201126\\_uic\\_technical\\_solutions.pdf](https://uic.org/IMG/pdf/20201126_uic_technical_solutions.pdf)

### **UIC Activity Booklet (version 2)**

Throughout 2020, UIC also worked to develop a global strategy and, in particular, to enable greater involvement of all the regions in the association's technical projects.

Developing multi-regional projects requires improved communication and transparency.

Hence, the Activity Booklet (version 2) published in 2021 is a first, providing full mapping of groups with one contact per group and a brief explanation of their activity. It maps UIC's 137 working groups and the experts involved in the UIC directorates, who work to develop the technical products used on a daily basis. This document aims to help members on a day-to-day basis and to contribute to anchoring UIC's position as the technical forum of reference for the railway sector. Finally, it has also been very useful during this period as a practical tool for understanding how to cope with the lack of physical meetings.

## UIC 2020-2022 Work programme

In early 2020, UIC published its first work programme, endorsed by its members at the last General Assembly in December 2019. This strategic document reflects a holistic approach inspired by the priorities of the sector. Being the technical body of the railway operating community, in this document UIC highlights its added value and how it can deliver what is needed for an innovative railway system.

The document covers the period 2020 to 2022 and aims to give a global overview of key challenges, events and deliverables in the years to come.

The document is organised around the strategic focus areas that will lead the many UIC work streams over the next three years:

- ▶ Promote rail worldwide
- ▶ The fundamentals: safety, security and training
- ▶ Develop a system vision with a digital drive
- ▶ Rail freight as the backbone of the worldwide logistic chain
- ▶ Rail as the transport mode of choice for passengers
- ▶ Promote sustainable carbon free transport
- ▶ Efficient, transparent management for the benefit of UIC members

The document is available here:

[uic.org/IMG/pdf/uic-work-programme-2020-2022.pdf](http://uic.org/IMG/pdf/uic-work-programme-2020-2022.pdf)

**This activity report will assess the commitments made in the UIC 2020-2022 Work programme.**



## Webinars to disseminate and to stay in touch

✓ In order to keep in touch with its members and stakeholders, UIC rapidly set up a programme of webinars from March 2020 on a variety of themes linked to the strategic axes of the UIC 2020-2022 Work programme. More than 100 webinars were organised by UIC in two years, all topics combined.

These webinars allowed for the continued exchange of good practices and innovative solutions, particularly at a time when mutual support and resilience were key elements of the cooperative work promoted by UIC.

Highlights of these webinars, which were held every week, include:

- ▶ Regular webinars of the Covid-19 Task Force (around 20 webinars organised over two years)
- ▶ Webinar on the presentation of technical solutions for operational railway, held in February 2021, which brought together 300 people
- ▶ Webinar on “Autonomous technologies in rail - anticipating expectations”, held in June 2021 and organised as part of IRRB, which brought together almost 400 participants
- ▶ “Railway innovation in new transport solutions - competition and cooperation” webinar
- ▶ “UIC Digital Modelling initiatives for the operational railway” webinar, which focused on the RailSystemModel (RSM) 1.2 release update and the OntoRail project, held in June 2021

Without forgetting the final conferences of European projects organised online, such as SAFER-LC, held in April 2020.

### The Rail Freight Forward (RFF) initiative

 As part of actions taken to highlight and demonstrate the attractiveness of the railways, UIC, in its capacity as PMO, continued in 2020 and 2021 to steer the Rail Freight Forward coalition in line with the agreed work plan. RFF is the platform for the European rail freight sector in which priorities are defined to address common challenges with the aim of strengthening rail freight as the backbone of a sustainable end-to-end logistics chain that can run seamlessly across borders and offer superior products to the market.

As RFF PMO, UIC welcomed three new members (Medway, Hungrail, LTG Cargo) in 2021, thus broadening the geographical scope of the RFF coalition.

UIC and RFF share the same objectives. The RFF coalition is the most important vehicle for promotion of rail freight activities in Europe. Following the first “Noah’s train” campaign, the sector has continued to invest in communicating its strategic vision. But RFF goes beyond communication, driving innovation via its five key technologies, the aim being to bring these to a new level of maturity through a number of projects.

Following up on the European Commission’s Green Deal objective of transforming Europe into the first climate-neutral continent by 2050, the Rail Freight Forward coalition has issued the Green Paper – Rail Freight strategy to boost modal shift. The paper offers a thorough explanation of innovative key technologies which, if deployed sector-wide, will boost modal shift and enable seamless digitalised rail freight operations across Europe and beyond. In 2021, the coalition continued to lay the cornerstones for successful technology deployment as outlined in the UIC 2020-2022 Work Programme. The most tangible progress has been made with the Digital Platform (DP), with the project team developing a target scenario proposing digital solutions with a focus on core operational rail processes as a first step. The first objective is to enable data exchange for/with smaller companies with no or little IT capability and support the implementation of TAF TSI functions.

This approach forms part of a CEF application for funding, coordinated by UIC, named “DP-RAIL”.

Capacity for rail freight is a scarce commodity. A pragmatic way of unlocking capacity with relatively low financial investment was outlined in the RFF position paper, “Joint Vision for the Sector on Digital Capacity Management”. This paved the way for engaging with infrastructure managers on the need to implement digital capacity management throughout Europe. The RFF team, sponsored by Rail Logistics Europe and with the support of Forum Train Europe (FTE), implemented a regular high-level exchange process with RNE to ensure that infrastructure customer needs and DCM are encapsulated in the Timetable Redesign (TTR) project.

Actions led by RFF are also about quick wins. For example, to address the issue of cross-border language and communication between drivers and signallers, the Xborder Language project and S2R-funded Translate4Rail project team developed an initial concept which led to a prototype tool being tested on the border between Austria and Italy.

The next steps for further development of this concept are now being examined. Described in the UIC 2020-2022 Work Programme, the Translate4Rail project is an innovative project for the benefit of the sector and is a very visible example of UIC’s work on cross-border issues.

Other aspects of this work towards seamless interoperability include the activities performed under the Xborder Section project, which provides a toolbox and recommendations from the RU’s perspective for analysis of cross-border sections at European level in order to perform a gap analysis on (1) economic criticality and (2) adherence to the principles described in the cross-border section handbook.

The next steps will focus on engagement with infrastructure managers and other stakeholders.

Achievements have been made in the braking and train composition field, with RFF overseeing the UBS Expert Call and CEF PSA UBS (Connecting Europe Facility - Project Support Action - Unified Braking Scheme) projects. Both projects aim to harmonise braking procedures. A highlight in 2021, IRS 40421 was officially referenced as ERA's Acceptable Means of Compliance (AMoC) tests and checks. In addition, the new template for the International Brake Sheet has been agreed and will be included in the new IRS 40472, to be published soon.

The European Year of Rail was fruitful from a marketing and communications perspective, with the coalition producing and publishing the second Europe-wide "Future of Mobility" campaign. The campaign consists of a main film, "This is Us", as well as dedicated videos for each RFF technology game changer, offering a deep dive on how their implementation will contribute to the sector's productivity and to the EU Green Deal targets.



Transition to clean mobility: modal shift strategy  
UIC Symposium - November 2021

### Security activities during Covid

✓ When the UIC Covid-19 Task Force was launched, the UIC Security Division, which had obviously not foreseen this in the UIC 2020-2022 Work programme, played a key role by providing members with a trusted, shared space to help one another respond to the global crisis, and producing several guidance documents. In 2021, the UIC Security team remained active and, thanks to feedback from members, was able to assess how the pandemic impacted security issues.

Throughout the pandemic, criminals have taken advantage of all the new cyber access points due to working from home as well as the increased digitalisation of the rail sector, making cybercrime the main threat. The overall feeling of "Covid Fatigue" has led to an increase in aggression towards staff, which is expected to decrease when sanitary measures such as mask requirements are no longer necessary. Indeed, the UIC Security Platform SIA (Sabotage, Intrusion and Attacks) working group held a meeting on the issue of "attacks against employees and staff, their development over the pandemic and possible counter measures" towards the end of the year, in November 2021.

Due to continuing Covid-19 travel restrictions, and the unprecedented nature of the pandemic, the 2020 and 2021 annual security events (UIC Security Week (June) and UIC Global Security Congress events (towards the end of each year)) were organised as a series of online events addressing topics such as: "The impact of Covid-19 on security", "Adapting behaviour to new cyber threats", "International cooperation in rail security" and "Organisation of security during major events".

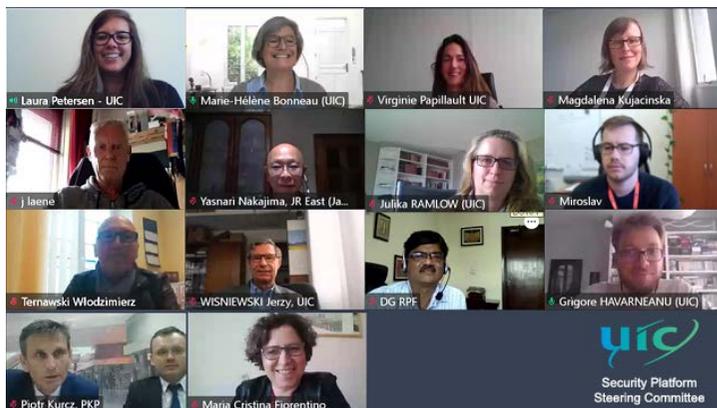
One main accomplishment of the UIC Security Division was the publication in October 2021 of the guidance document "Organization of security during major events," which was developed within the UIC Security Platform Human & Organisational Factors (HOF) working group. This aims to provide recommendations and best practices for railways when planning and managing security for events which attract a significant number of people.

Over the period as a whole, the various partnerships with the relevant international institutions dealing with railway security, such as the International Association of Public Transport (UITP), the United Nations Economic Commission for Europe (UN ECE), the European Commission (EC) and the International Working Group on Land Transport Security (IWGLTS), were continued through several online conferences organised by these partners. In this respect, the objectives set in the UIC 2020-2022 Work programme have been fully achieved.

The UIC Security Platform tool “Network of Quick Responders” allows members to ask one another about arising security issues and receive rapid feedback (generally within a month). It was activated 14 times in 2020 and 2021 and addressed topics such as the use of various camera types (body cameras, on-board cameras), measures to increase subjective and objective security, unattended items, etc.

Furthermore, throughout the whole period, the UIC Rail Security Hub (a secure, user-friendly and interactive platform providing information and solutions on railway security issues) has been comprehensively updated with the work resulting from the different activities of the security platform: 90 security solutions are now available in the hub at railsecurityhub.org. Again, the objectives set in the UIC 2020-2022 Work programme have been achieved.

From a governance point of view, it is important to stress that in summer 2020, the UIC Security Platform saw a change in governance. PKP S.A. (Poland) was nominated as Chair of the platform, replacing Via Rail Canada, and IR-RPF (Indian Railways Protection Force) was nominated as the new Vice-Chair. In light of this change, a new version of the brochure “Railway Security at UIC” was released in September 2020, available from [uic.org/IMG/pdf/uic-security-platform.pdf](http://uic.org/IMG/pdf/uic-security-platform.pdf).



Security Platform online meeting – June 2020

### Launching the UIC centenary: an international symposium looking forward to the challenges ahead

4. During this period, however, it was possible to look to the future – and the future challenges facing the railways.

As part of the European Year of Rail, as well as the launch of its centenary to be celebrated in 2022, UIC organised an International Symposium at end of 2021. UIC wanted to start this centenary by giving its members and partners the opportunity to discuss the crucial issue of “*The Future of the Railway: Making Modal Shift Desirable*”.

The symposium, never before done in this hybrid format, provided an opportunity to show policymakers the transformational projects that will have a major impact on efficiency in the short term and will serve as drivers for modal shift to rail and public transport to achieve the objectives of the Sustainable Development Goals and the Green Deal in Europe: transform cities and connect communities; contribute to win the race to zero carbon and install the renewables revolution; innovate radically for physical and digital connectivity with other modes for a door-to-door service; and revolutionise the customer experience for changing mobility behaviours. The two-day high-level conference brought together around 1,250 participants from 59 countries, including 60 high-level speakers, who discussed the transition to clean mobility through a modal shift to rail.

During these two days, UIC members gave testimonies of their current projects and their ambitions and challenges for 2030. The last round table brought together the UIC Regional Chairs. Each of them had the opportunity to express their views on the Vision 2030 (Inkd.in/eCb5DhzS) and a convergence of views was observed among them.

Following this symposium, UIC as a technical platform will publish a Manifesto in 2022 to bring together the existing and future solutions that need to be implemented.





PROMOTING  
RAIL TRANSPORT  
GLOBALLY

## PROMOTING RAIL GLOBALLY

**UIC is confronted with the challenge of helping the sector succeed in its struggle against climate change.**

**This would mean a massive modal shift to railway. The network of UIC regions is an exceptional tool for implementing the global railway standards that are needed to cope with this challenge.**

**Quite recently, since the end of 2020, the Chairs of the six UIC regions have started to meet on a regular basis to ensure that they are acting on these common goals. These meetings have not only allowed for a convergence of views on how to envisage the future of mobility, but they have also laid a solid foundation for the further development of interregional projects.**

### Meeting of the Regional Chairs

As the year 2020 was particularly challenging for all the world's railways, UIC has accelerated the setting up of an additional mechanism to enable and promote dialogue between its members. This was also in response to the need for the Chairs of the six UIC regions to exchange views on a regular basis on the various strategic axes of UIC.

Thus, the first meeting of the Regional Chairs was organised at the instigation of UIC Chair, Gianluigi Castelli, in September 2020. The second meeting took place in December 2020, followed by a third in March 2021 and a fourth in December 2021. These meetings are an opportunity to inform each other about current strategic issues, but also to give each other concrete means to advance the creation of interregional projects.

The Regional Chairs noted at their December 2021 meeting that they share the same vision, articulated around the 2030 Vision. They all welcomed the excellent Symposium held at the end of November, which highlighted this convergence. The meeting also highlighted the importance of innovation and the notion of UIC as a technical platform. They agreed that everything must be done to ensure that customers' expectations are heard by producing the products and services expected by the market.

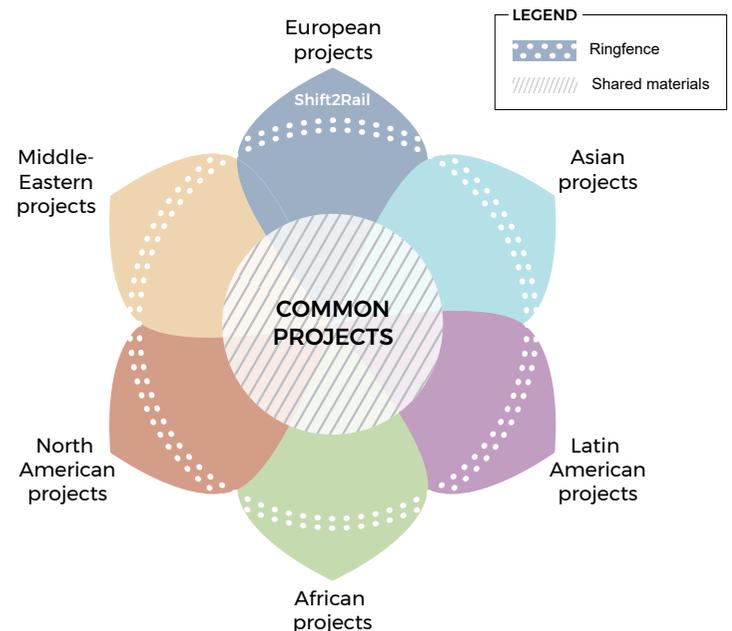
UIC's ability to communicate, act as a catalyst and exchange innovative ideas between members was recalled. This is a major asset that should enable the railways to continue to be integrated into the mobility chain by increasing the level of service.

Thus, the increase in the frequency of regional projects, as described below, is a logical step. In this respect, particular attention will be paid to the development of concrete projects, such as 5G, training and the sharing of experience.

### Development of interregional projects

While the concept of UIC regions has existed for some fifteen years and with it the concept of regional projects, the concept of interregional projects is much more recent.

After a few years of existence, each of the UIC regions has seen the need to go beyond its own boundaries and to benefit from large-scale projects that could be carried out jointly with other regions.



Thus, a phenomenon can be observed: interregional projects will be the result of an increasing share of regional projects.

This interregional dimension implies working on larger projects with more funding – and more public funding, which is already commonplace in Europe and could be replicated in other regions.

For example, 2021 saw the introduction of the notion of ring fences, which make it possible for members to obtain results at a lower cost and which are directly applicable. It is recommended that the members join forces to obtain them.

This dimension was not foreseen in the UIC 2020-2022 Work programme but has been developed by continuing to listen carefully to the needs of UIC members.

## Africa

African activities are managed within the African regional assembly. The region is chaired by Mohamed Rabie Khlie from ONCF (Morocco), and the UIC representative office is located in Rabat. UIC's mission in this region is to bring its support to develop and strengthen the African Railway Transportation System.

The African continent, in full development stage, is specifically characterised by the need to support inter-African trade, taking into account landlocked countries.

UIC activities in Africa are characterised by the need to expand training as part of a transformative approach to the development and strengthening of the African Railway Transport System. New digital tools offer the potential for leapfrogging and present new opportunities. UIC Africa members are united under a common commitment and call for action to bolster the development of African railways and support sustainable mobility in line with the UN Sustainable Development Goals (SDG).

In addition, UIC's partnership with NEPAD – the development agency of the African Union – provides new prospects for the African railways of the future. The partnership between UIC, AU (African Union) and AUDA-NEPAD should enable new structuring developments for African railways in the future, making the railway mode a major lever for inclusive and sustainable growth. Furthermore, UIC Africa has extended partnerships with various international and regional organisations. GTS-S.A. (Les Grands Trains du Sénégal) and SENTER in Senegal have joined the region since 2021 and NZR in Zimbabwe, KNR (Kenya National railways) and Niger have expressed an interest in joining.

Despite the pandemic, UIC organised several events during this period, which were mostly held online. The events were related to training, as well as webinars on safety, standardisation, sustainability and digital. One webinar was also dedicated to the launch of the UIC sustainability pledge: "African railway green deal for sustainable mobility". Furthermore, in 2021 UIC Africa launched "African Railway Thursdays", which are bimonthly webinars on the projects and main issues of interest for UIC Africa. The subjects highlighted so far have included digital, standardisation, the impact of Covid-19, sustainability and safety. A joint webinar organised by the African and Middle East regions dealt with "Railway Trainings – Best Practices".

In terms of UIC added values, the elaboration of the prospective study on the strategy of railway development in Africa to align with the aspirations of the Agenda 2063 Roadmap towards the development and implementation of the African railway network can also be mentioned, together with the development of professionalism in the railway sector by the promotion of joint training on safety, security, rolling stock and track maintenance, and project management. In this field, four training sessions were organised in 2021, as set out in the UIC 2020-2022 Work programme.

✓ As a continuation of the railway climate commitment declared by UIC in 2019 and by means of the sustainability pledge “African railway green deal for sustainable mobility” launched at the UN FCCC (United Nations Framework Convention on Climate Change) Africa Climate Week, the heads of the UIC African region member networks called for sustainable mobility, via the best-equipped transport modes such as rail, to be made one of the priorities.

2021 was also marked by the launch of the study “2063: Prospective study on the strategy for railway development in Africa” which aims to align with the aspirations of Agenda 2063, making the railway mode a major lever for inclusive and sustainable growth.

In the coming years, UIC Africa will deploy the results of the prospective study 2063. The region will also open new opportunities for training, reinforce its relationship with the African Union and AUDA-NEPAD, and expand partnerships with other international and regional organisations.

Finally, the African region was especially involved in the UIC International Symposium, which was in effect the launchpad for the UIC’s centenary year in 2022. In addition to the joint vision expressed by the Regional Chairs, the panel discussions involving representatives from the Institute for Transportation and Development Policy (ITDP), Moroccan Railways (ONCF), the African Union Development Agency (AUDA-NEPAD), the Intergovernmental Organisation for International Carriage by Rail (OTIF), Tunisian Railways (SNCFT), Egyptian Railways (ENR) and Ethio-Djibouti Railway (EDR) set out a high-level perspective of the African railways.



7<sup>th</sup> African Railway Thursdays webinar

## Asia-Pacific

Activities in the Asia-Pacific region are managed within the Asian-Pacific Regional Assembly. The region has been chaired by Lu Dongfu from CR (China) and vice-chaired by Nurlan Sauranbayev from KTZ (Kazakhstan) since 2021.

Activities in the region are spearheaded by project leaders chosen from among members of the Assembly, including research institutes, universities and expertise development centres. International organisations (intergovernmental and financial institutions) have been involved in the definition and monitoring of the work programme, with the aim of having a complete overview and full synchronisation of the priorities in the region.

The main issues are to provide the region with a vehicle for project development. In this respect, the Asia-Pacific Project Management Team (PMT) was launched in 2021. Among other key achievements in 2020 and 2021, a particular focus was made on digitalisation and the organisation of the UIC Conference on Digital, held in 2021.

In addition, other key subjects are close monitoring of standards use, working with AMoC (Acceptable Means of Compliance) and standardisation actors at the Standardisation workshop held in 2021.

The participation of Asia-Pacific members in UIC working groups is very important with, for example, the promotion of UIC projects through focuses on Australia and ASEAN members, the SDG, including gender equality and diversity, with the United Nations Centre for Regional Development (UN CRD), the United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP), the United Nations Human Settlements Programme (UN-Habitat), and the Asian Development Bank (ADB).

All the actions in 2020 and 2021 referred to the Vision 2050, which was officially validated by UIC Asia-Pacific members in 2016 and was launched as a framework for all common and strategic projects and activities in the region.

The aim of Vision 2050 is to align UIC's priorities with those of its members in one of the biggest and most diverse regions in the world. An updated version is expected in 2022.

The strategic areas of activity in the Asia-Pacific region are cooperation and partnership, data quality improvement, incubation for railway investment, best practice sharing and technology transfer, technical advice, and peer review and skills improvement. These areas are harnessed to achieve cost reduction and efficiency improvement, harmonisation and standardisation, regional integration, research and innovation, quality and customers, environmental sustainability, urban development, safety, security, expertise development, and training.

Paradoxically, the solutions employed since 2020 to overcome Covid-19 restrictions, provided an opportunity to reach members who could not be seen before or who could not travel, especially in the Asian-Pacific Regional Assembly which has mastered video conferencing tools for many years already. The Covid-19 pandemic forced everyone to embrace it, which resulted in new opportunities to meet and work remotely.

It should be noted that this was an adaptation to the habits of members of the region, marked by 10 different time zones.

Many conferences were adapted as web conferences during the 2020 and 2021 period and will continue as such in 2022.

In terms of partnerships, particular mention should be made of the Asia-Pacific Memorandum of Understanding (MoU) signed in 2020 and 2021 with UN-Habitat, the MoU signed with Almaty University of Power Engineering and Telecommunications, Kazakhstan (AUET), Centre Technique des Industries Mécaniques (CETIM), and the renewal of the MoU with the Organization for Cooperation of Railways (OSJD).

✘ Training was postponed in 2022 due to the Covid-19 pandemic.

In terms of research and innovation, the Asian-Pacific region presented research projects at the International Railway Research Board (IRRB).

Among the workshops organised by the region, the successful workshop on the INTERTRAN project held in 2021 must be mentioned. This project, mentioned in the UIC 2020-2022 Work programme as one of the completions to be expected in 2020, aims to develop multimodal transport in the Asia-Pacific region and increase the competitiveness of rail transport, specifically thanks to information technology.

✔ In terms of publications, 10 technical guidelines and studies were published in 2020 and 2021 on Standards for High Speed (as planned in the UIC 2020-2022 Work programme), Railway Development Policy in Asia-Pacific, Digitalisation of High Speed, Predictive Maintenance, e-Ticketing, Operational Needs, Operation Control Centres, Modelling of adverse conditions of electrification, Risk Management on international corridors, and Non-destructive control of rails with transversal cracks.

Finally, the UIC Asia-Pacific region was especially involved in the UIC International Symposium. The panel discussion on Asian Focus with representatives of China State Railway Group Co., Ltd, the United Nations Centre for Regional Development (UN CRD), the International Federation of Freight Forwarders (FIATA), and World Customs Organisation (WCO), together with the round table involving the Chairs of all UIC regions, set out a high-level perspective of the shape of future mobility.



32<sup>nd</sup> UIC Asia-Pacific Regional Assembly – October 2021

## Europe

In line with the 'Sustainable and Smart Mobility Strategy' issued by the European Commission in December 2020 and the Green Deal objectives, the Railway Operating Community (ROC) in Europe is seizing opportunities and undertaking efforts to deploy concrete solutions for making the railways the backbone of future sustainable mobility.

The Railway Operating Community in Europe draws together train operators, infrastructure managers and service providers and pools resources and knowledge in order to develop solutions for future mobility needs and current operational issues. UIC Europe gathers together 118 member companies from 39 countries and amounts to some 350,000 kilometres of rail network. These member companies meet twice a year within the context of the European Regional Assembly to set the general objectives for regional development and to establish guidelines for the technical work programme.

In 2020 and 2021, the Regional Assembly was chaired by Francisco Cardoso dos Reis (IP, Portugal), supported by three Vice-Chairs, Maris Kleinbergs (LDZ, Latvia), Andreas Matthä (ÖBB, Austria) and Gorm Frimannslund (Bane NOR, Norway). In line with the regional Terms of Reference endorsed by the Regional Assembly in December 2019, a new college was elected in December 2021 with a mandate for 2022 and 2023. Francisco Cardoso dos Reis (IP, Portugal) was unanimously elected for an unprecedented third term as Chair and was joined by Martin Frobisher (Network Rail, UK) elected as Vice-Chair.

✓ In line with the UIC 2020-2022 Work programme, the objectives of the European region are to promote a competitive, safe, sustainable and attractive railway transport system serving the more than 500 million citizens across Europe.

✓ 2020 was mainly marked by the outbreak of the Covid-19 pandemic that resulted in a significant and potentially long-lasting impact on the economy as a whole and on transport and railways in particular. Throughout the year, UIC Europe closely monitored the operational impact on the railways (especially through the UIC's Covid-19 Task Force and the media).

During the year, the European Management Committee (EMC) reflected on how the sector would emerge from the lockdown and what the so-called "new normal" might be. They delivered a number of priorities designed to adapt to this new situation in a 'New Normal' White Paper. These formed the backbone of the response from the railways and provided much needed guidance for the way forward.

✓ The region pursued its efforts in 2021 by actively taking part in the European Year of Rail, the Connecting Europe Express and several locally organised events promoting the use of trains as the principal means of land transport. The region also continued its reflection on developing the future shape of mobility post-pandemic.

Among the achievements during this period, mention should be made of the creation of the European Standards Management Group (2020), the high-level exchange meetings with member companies on a range of topics, and the preparation of the UIC's contribution to the European Year of Rail (2021). Brainstorming on the 'New Normal' was also organised with UIC members in June 2020, together with some brainstorming sessions on 'Developing the future shape of mobility' in September and October 2021.



High-level exchange meeting between UIC and SNCF

Finally, the European region was involved, like all the UIC regions, in the UIC International Symposium organised at end of November and beginning of December. In addition to the joint vision expressed by the Regional Chairs, the round table discussions involving representatives from the European Parliament, the European Commission, the European Union Agency for Railways (ERA) and Shift2Rail set out a high-level perspective of the shape of future mobility in Europe.



## **FOCUS ON SPECIFICATIONS AND STANDARDISATION TO ACHIEVE A HARMONISED APPROACH**

This is a core activity for UIC: the delivery of standardised solutions for the ROC through the evolution of the family of documents, former leaflets, reports, guidelines, specifications and the emerging suite of International Railways Solutions (IRS).

The concept of a specific group for supporting standardisation work at a European level was further developed in 2020 and led to the creation of the European Standardisation Management Group (ESMG). The ESGM is a joint group with CER and EIM with the purpose of preparing, considering and coordinating ROC contributions to all European bodies related to standardisation issues.

Since November 2020, ESGM has managed ROC inputs. UIC coordinates and acts as the Secretariat for the ESGM. Laurent Schmitt, Chair of the Standardisation Platform, Vice-Chair of the Joint Programming Committee Rail (JPCR) and Coordinator of the Standardisation Programme at Shift2Rail (S2R) has been appointed Chair of the ESGM.

In addition to the interfaces with the Rail Standardisation Coordination Platform for Europe (RASCOP), JPCR (SFR) and the European Union Agency for Railways's TWG STA (creation of AMoCs), and contact with the Group of Representative Bodies (GRB) and S2R, the principal work of ESGM is cooperation with CEN-CENELEC and the European Telecommunications Standards Institute (ETSI), supporting the work related to the creation of European Standards (EN).

✔ Overall, it can be said that during 2020 and 2021, UIC has effectively worked as a technical back-office, working with all these institutions and associations, as it had planned in its UIC 2020-2022 Work programme.

## AFRICAN FOCUS - UIC SYMPOSIUM (NOVEMBER - DECEMBER 2021)



## ASIAN FOCUS - UIC SYMPOSIUM (NOVEMBER - DECEMBER 2021)



## EUROPEAN FOCUS - UIC SYMPOSIUM (NOVEMBER - DECEMBER 2021)



LATIN AMERICAN FOCUS - UIC SYMPOSIUM (NOVEMBER - DECEMBER 2021)



MIDDLE EAST FOCUS - UIC SYMPOSIUM (NOVEMBER - DECEMBER 2021)



NORTH AMERICAN FOCUS - UIC SYMPOSIUM (NOVEMBER - DECEMBER 2021)



## Latin America

The Latin American region has a limited railway service, especially for passengers, as freight traffic is mainly national with few international connections in operation.

✓ The members of the Latin America Regional Assembly (LARA) envisage boosting urban, regional and intercity rail by investing in more network connections, enhancing the passenger rail experience, and revising tender processes to prioritise passenger transport. Nevertheless, the pandemic has strongly impacted all the projects to develop railway services and connections in the region.

The UIC leadership of the region evolved during this period. Since 2021, the President of the Latin America Railway Association (ALAF), Jose Villafañe, has been the new Chair and the President of ANP Trilhos, while Joubert Flores has become the Vice-Chair of LARA region.

Railways in Latin America should serve as an enabler for the development of sustainable transport across the continent. UIC is committed to supporting railways and stakeholders in providing a framework that guarantees interoperability.

Interoperability is one of the main priorities of the region, which promotes standardised gauges and signalling systems and aims to develop mixed-use rail corridors across the continent. As an example, the Atlantic-Pacific corridor project would stretch over 3,800 km from Brazil to Peru through Bolivia. However, financing is still a major obstacle to the regeneration of rail sector activity in Latin America.

UIC is raising awareness of the benefits of rail in Latin American countries, and the region as a whole, and establishing cooperation between railway companies in the region. It provides expertise on business models and interoperability frameworks in many areas, including signalling, rolling stock and infrastructure maintenance, safety, security and the environment.

In cooperation with ALAF (Latin America Association of Railways), UIC organised three online webinars in 2020 and 2021 to support the railway community of the region in facing the challenges posed by Covid-19.

These included the web conferences on “Covid-19: Latin American Rail Networks Impacts and Adaptations”, held in June and July 2020, and the web conference on “Challenges for Rail Integration in Latin America”, jointly organised by UIC and ALAF in July 2021.

These online webinars had 200 participants, representing almost all the countries in the Latin American region.

UIC Latin America has also participated in some major events in the region in 2020 and 2021, such as the international seminar on the comprehensive development of the Latin American rail system held on 25 and 26 November 2021.

The seminar was held as part of the 57<sup>th</sup> annual assembly of the Latin America Association of Railways (ALAF), an institution established in 1963 and recognised as a non-governmental organisation by the United Nations.



Web-conference on Covid-19 Latin American Rail Networks Impacts & Adaptations - June 2020

UIC also participated in the “Covid-19: an opportunity to transform the transport system” webinar organised in June 2021 by the JST “*Seguridad en el Transporte*”, Ministry of Transport of Argentina.

During this period, UIC not only organised the above-mentioned webinars with translation into Spanish, but all Covid-19 reports were also translated into Spanish and Portuguese in order to ensure updated information was accessible on the issue for the railway community of the Latin American region. In addition, the members and stakeholders of the region actively participated in the work carried out by the UIC Covid-19 Task Force.

Finally, UIC Latin America also made a valuable contribution to the UIC International Symposium organised at the end of 2021. The round table involving the Chairs of all UIC regions, including José Nicador Villafaña for LARA, produced a convergent vision of what the future of mobility should be.



## Middle East

Activities in the Middle East region are managed within the Regional Assembly for Middle East (RAME). The region is chaired by Turkish State Railways (TCDD) and is vice-chaired by the railways of the Islamic Republic of Iran (RAI) and the Railway of Saudi Arabia (SAR). It meets twice a year.

The main objectives for the Middle East region are to build up possible common policy for the short- and mid-term development of rail transport within the region, to exchange know-how between members and UIC forums and platforms, and to connect with Asia and Europe based on a formulated action plan. Aims include:

- ▶ The development of international railway infrastructure (one of the most important challenges) by eliminating missing links and introducing modern and standardised technology.
- ▶ The development of international freight corridors, empowered by new technological solutions (including digital and block chain) to offer interconnections with the regions of Asia and Europe.
- ▶ The development of professionalism in the railway sector by promoting joint training, especially on standardisation, interoperability, operation, maintenance, freight corridors solutions, safety, security and sustainability, and the impact of climate conditions on railways.

RAME members intend to reinforce their cooperation with regional and international rail organisations and consequently contribute to the development of common knowledge and the application of uniform rules.

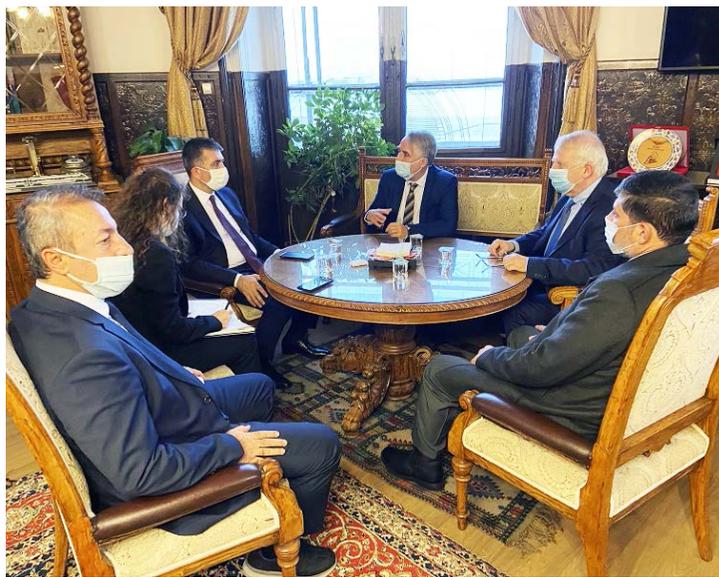
Several new members joined the RAME region at the end of 2021 and other companies have expressed their interest in joining the region in 2022.

The Terms of Reference for the region were approved by the UIC General Assembly and form the basis for actions in the region, in particular the creation of the MEMC (Middle East Management Committee), which provides guidelines for work in the region.

RAME activities are defined and ratified in an action plan. Activities relating to safety, security, infrastructure maintenance, high-speed rail, sustainability, interoperability and freight are developed during technical seminars and workshops, with technical support provided by UIC.

2020 and 2021 were very special years, largely due to the Covid-19 pandemic, which resulted in the digitalisation of all meetings. Several events were organised, concerning safety, freight corridors, rail system and research. Since 2020, meetings or webinars have also been organised to exchange experiences between regions, particularly with the UIC African region.

✓<sub>4</sub> Following the Covid-19 pandemic, UIC set up the Covid-19 Task Force, and RAME members were very active in their support of this activity. This pandemic period has changed the way people communicate, introducing new methods (online meetings), which has resulted in higher member participation and more contributions.



28<sup>th</sup> UIC Regional Assembly for the Middle East – November 2021

UIC enables the exchange of members within their region, and since 2021, the exchange of experience of members between regions with the integration of the meetings of the Regional Chairs.

The African and RAME regions organised common workshops on different topics, such as the UIC “Railway training – best practices” webinar, the first joint webinar organised between the UIC Middle East and UIC African regions, the “Health and Safety challenges faced by railways since Covid-19” webinar, the 8<sup>th</sup> edition of the training cycle on track maintenance, and the African Railway Green Deal for Sustainable Mobility, moderated by UIC Africa.

✓<sub>4</sub> Over the coming years, the needs of members in the region, in the short, medium and long term, will be determined. To do this, a prospective study will be carried out for the region up to 2050.

Furthermore, the Regional Assembly decided to organise workshops every two months, known as the UIC “Middle East Railway Tuesdays”, and also training on a regular basis.

✓ Among the webinars organised in 2020 and planned in the UIC 2020-2022 Work programme, mention should be made of the first webinar on “Railway safety and level crossings” and the webinar on “Corridors: a tool to boost international freight”.

Finally, just like the other regions, the Middle East region actively participated in the UIC International Symposium held at the end of 2021. The panel discussion on the Middle East Focus with representatives of Turkish Railways (TCDD), Iranian Railways (RAI), Saudi Railways (SAR), the Economic and Social Commission for Asia and the Pacific (UN ESCAP), Bureau International des Containers (BIC), Hupac Intermodal SA, CAF Group Executive Committee Member, and Iran University of Science and Technology, together with the round table involving the Chairs of all UIC regions, highlighted the common views between all regions regarding the future of mobility.

## North America

Between mid-2020 and the end of 2021, the governance of the UIC North American region was consolidated, with Barbara Klein Barr taking office as NARA Chair on 31 March 2021, for a two-year term. On 6 December 2021, at the North America Regional Assembly, Jeff Moller, Association of American Railroads (AAR), was elected Vice-Chair of the region.

The North American region (NARA) shares several key priorities, including the response to Covid-19 challenges, rail safety and use of new technologies, rail regulatory harmonisation where possible, and the promotion of freight and passenger rail usage (freight rail in North America is performed extremely well by the private entities that own the network, including heavy haul freight). Additional priorities include a shared interest in rail to reduce carbon footprint and assist in climate change efforts and ensuring strong freight rail traffic continues throughout North America, including across the border (which has continued through the pandemic).

Among the challenges of the region, we can mention that US, Canada and Mexico each have their own different, regulatory regime. While the US and Canada are similar in rail regulations, Mexico only has a few “norms” (the name for regulations in their country) and they are working to introduce additional norms, but it is a time-consuming process.

Positive Train Control (PTC) is mandated in the US. Canada and Mexico are working to understand the US implementation and to understand what might work in their own country’s rail regime (NB all trains coming into the US must comply with US regulations, including PTC).

There is no passenger traffic between the US and Mexico and the border has been closed between the US and Canada for passenger rail for some time due to the pandemic. Despite efforts towards development, there is no traditional high-speed rail network yet in the North American region. There are higher performing rail areas in the US and efforts in California towards high-speed rail, but it has been a challenge due to the cost of infrastructure.

The region is focused primarily on rail safety and ease of operation across North America.

✔ As mentioned in the UIC 2020-2022 Work programme, particular attention was paid to the role of stations and the need to develop a multimodal approach. In that respect, the role of stations was one of the key issues in 2020.

That year, VIA Rail Canada took part in the UIC Steering Committee of the Station Managers Global Group (SMGG) as the representative of North America. Amtrak also expressed its motivation to take the lead as chair on two working groups. This is now the case, with Amtrak chairing the Facility Management and Operations working group. Amtrak is also Member of the Station and Urban Design working group.

In the same year, as intermodality became an increasing focus, particular attention was paid to cooperation with other American associations: US HSR (US High-Speed Rail Association) and APTA (American Public Transport Association).

✔ In 2020, NARA members also actively participated in the work carried out by the UIC Covid-19 Task Force. NARA members exchanged good practices and participated in the collection of information, in particular via questionnaires with an economic dimension.



UIC meeting on challenges facing North American railways

In 2021, the focus was placed on sustainability, one of the key themes in the action plan for the region.

A webinar for the North American rail community was organised in September 2021 to share its vision of the sustainable future of railways. It provided an opportunity to discuss ambitious strategies to transform the railways in the region as part of a sustainable mobility system.

Among the key messages, the next ten years will be pivotal. The railways will play a key role in mitigating climate change as the backbone of a decarbonised and sustainable mobility system. There is a need to develop a systemic solution that mobilises innovation and brings about a shift in behaviour. UIC's goals with regard to sustainability were recalled:

- ▶ Set the vision: a railway that supports a green recovery as the backbone of sustainable mobility; connectivity that contributes to healthy and sustainable lifestyles and economies on every continent - one that is emission-free, a community hub accessible for all, and is both biodiverse and a good neighbour
- ▶ Provide the tools (Eco Passenger EcoTransIT, RSI)
- ▶ Convene the community

✔ Finally, in 2021, NARA members contributed to the draft White Paper on the New Normal on the resumption of business post pandemic - recommendations for the railway sector.

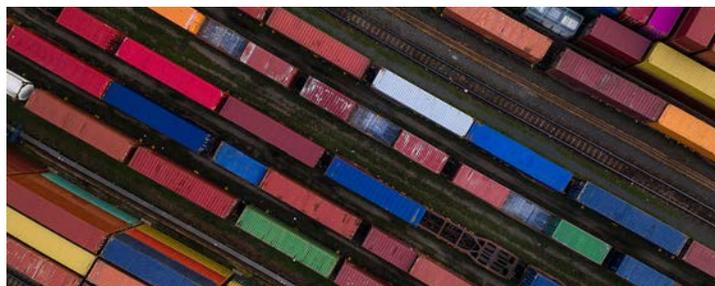
At the end of 2021, they also participated in the International Symposium organised by UIC as part of the launch of its centenary. UIC wanted to start this centenary by giving its members and partners the opportunity to discuss the crucial issue "*The Future of the Railway: Making Modal Shift Desirable*". On the second day, American members shared their ambitions and projects through two panels: one dedicated to the future of American rail freight, and a second on the vision to grow rail services across America. Finally, the Chair Barbara Barr participated in a final round table bringing together all the UIC Regional Chairs. Each of them had the opportunity to express their views on the Vision 2030 and a convergence of views was observed among them.

## Development of transcontinental corridors

As the pandemic continued, the need to find a way to continue the exchange of knowledge and best practices in relation to global corridor development was clear. Two dedicated webinars featuring a mix of presentations and interactive stakeholder discussions were therefore organised.

One of these was aimed primarily at the rail community and focused on the results of a study conducted in cooperation with consultants Roland Berger. The study focused on the middle and southern corridors and aimed to provide transparency on the current status of development of these routes, including the identification of bottlenecks and the need for action. The webinar was attended by 280 participants from over 100 organisations, demonstrating the sector's interest in developing the middle and southern Eurasian corridors. The second webinar, organised in partnership with FIATA, focused on the logistics chain and featured discussions with and testimonials from other modes and the entire logistics sector. The webinar aimed to assess opportunities and challenges for rail in a multimodal context and with two key levers: digitalisation and the corridor concept. 170 participants registered for this seminar, and the speakers presented solutions developed across Asia, Europe and Africa.

✔ In line with the Freight 2021 Work Programme, UIC's actions also resulted in close collaboration with UNECE and BSEC, among others, on corridor operationalisation. Workshops and brainstorming sessions on track access were organised in cooperation with Traceca. The outputs from these actions form part of the 2022 action plan..



## Training and Human Resources development

Railway companies are facing Human Resources challenges relating to staff competencies and skills, prompting them to rethink their learning and development strategies, such as attraction and retention of talent, intergenerational management, disruptive new technologies, impact on competences (upskilling and reskilling), and the need for new learning and development schemes, accelerated by Covid-19. There is a need for innovation and for new partnerships.

UIC establishes regular professional dialogue, sets up cooperative ventures between training and workforce development practitioners, so as to improve workforce development across the sector, interacts with rail industry academia, and builds rail training into the framework of partnerships and within the regions.

✔ Covid-19 and digital formats opened up new opportunities with the increased participation of stakeholders from across the globe. It also boosted the dynamics of the regional training centre networks and created the conditions for the increased use and acceptance of digital formats in education and training.

A new multiregional activity was rolled out as part of a series of attractiveness measures targeting young talent from universities, railway undertakings and start-ups, and challenged with the topic of the resilience of railways in the face of pandemics. UIC worked with universities and training institutions to organise attractiveness measures such as the TrainRail hackathon. The multiregional TrainRail hackathon project was explored in the UIC 2020-2022 Work programme, and was held both in person and online. It was supported by most UIC regions in 2021.

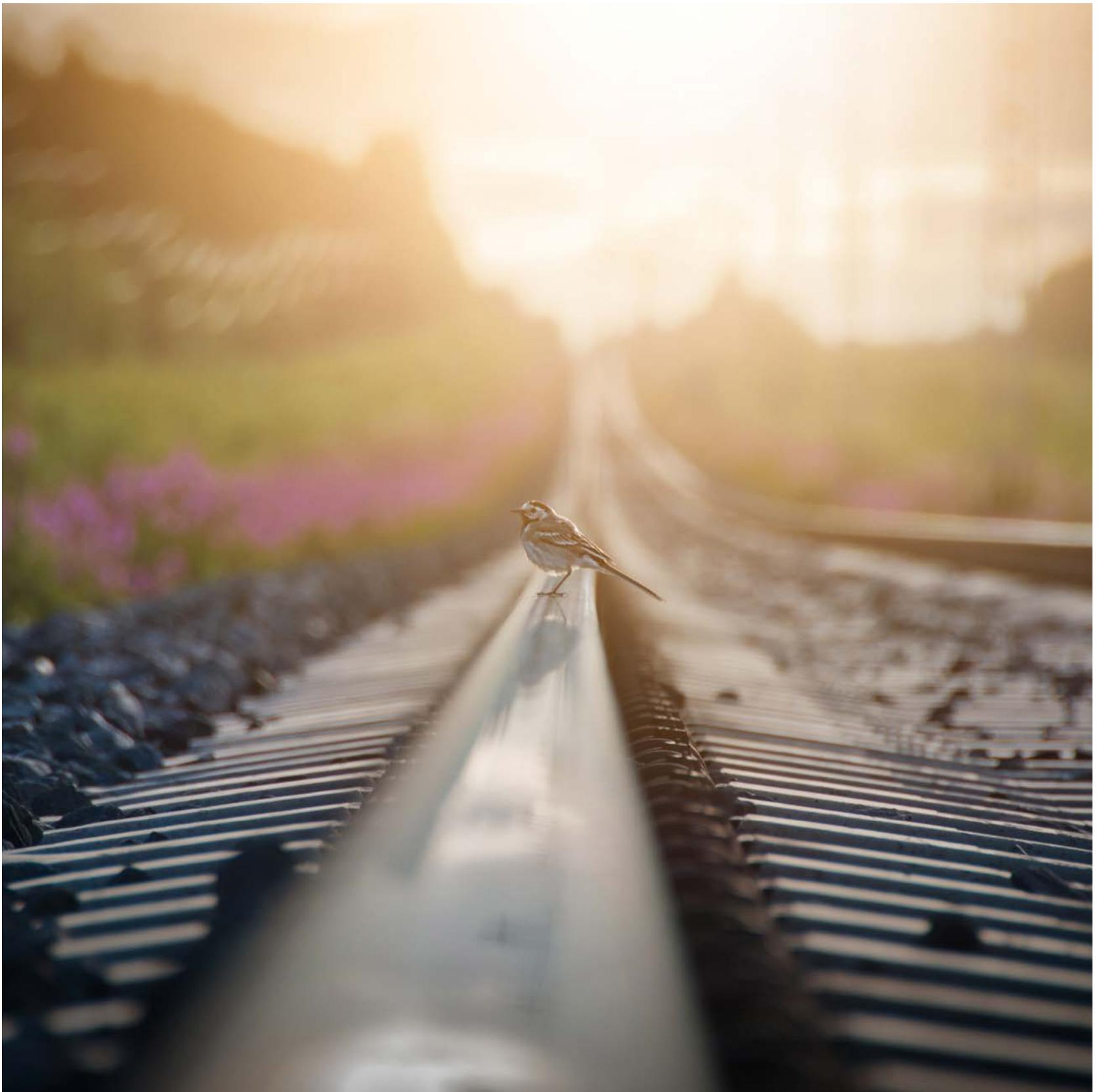
UIC also signed a partnership with the United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP) to develop digital freight training.

In June 2021, a webinar was organised for the Talent and Expertise Development Platform, which gathered together participants from a variety of backgrounds in the Sustainable

Development Goals (SDGs) and professional / Human Resources. The purpose of the workshop was to present and discuss the first series of SDG instruments to facilitate the integration of the SDGs into professional rail practices.

In the next UIC work programme, this question of training will be a major point, as UIC believes that it is necessary to develop a coherent offer to meet the challenges described in the Vision 2030 “*Design a better future*”.





PROMOTING  
SUSTAINABLE  
CARBON-FREE  
TRANSPORT

## PROMOTING SUSTAINABLE CARBON-FREE TRANSPORT

In August 2021, UIC paid particular attention to the publication of a report by the UN's Intergovernmental Panel on Climate Change (IPCC) which called for people to wake up to the reality we are now living in and to take urgent and stringent action in the fight against climate change with a historic investment in public transport.

Furthermore, during the same summer of 2021, UIC welcomed at European level the EU's "Fit for 55" plan: *Delivering the EU's 2030 climate targets on the path toward climate neutrality.*

In its position, UIC has called for an accelerated move to price in the externalities of all transport modes, encouraging the modal shift necessary to mitigate climate change and targeted in the EU Sustainable and Smart Mobility Strategy.



This is an opportunity to make the following points clear: *UIC has fully mobilised to provide concrete and effective solutions to make a massive modal shift towards rail desirable. The "Fit for 55" package and ETS revision will support this shift with a move towards levelling the tax burden for all transport modes. We all know that climate change is ongoing. UIC actions will mitigate its effects, but we will have to live with uncertainty, confronted with non-linear phenomena that will have consequences for transport infrastructure and life as we know it. In this difficult period, we must shift to low-emission transport modes. Railways are part of the solution - while representing around 10% of the market, they contribute less than 3% of global emissions.*

*Furthermore, society is benefitting from the improved efficiency and inclusiveness offered by the railways, as well as reduced road fatalities, injuries and local air pollution. The priority for our sector is to choose to finance transformational projects for railways at regional and global level. Transformational projects are those that will have a major impact on efficiency in the short term, such as digitalisation, seamless interconnection with other modes and capacity increases on existing infrastructure. These projects will serve as a driver of modal shift to rail and public transport in order to achieve the objectives of the United Nations Sustainable Development Goals and the Green Deal in Europe.*

✓ Furthermore, the Covid-19 pandemic brought a new perspective and increased interest in sustainability. Many governments and companies now see an opportunity to accelerate efforts towards a sustainable future, ensuring that it is a just and green recovery. This shift has brought new momentum to the sustainability work of UIC. The following sets out how the UIC Work programme has been delivered over 2020 and 2021 over the three objectives set.

### Modal shift: a new transport paradigm

In 2020, UIC renewed the Terms of Reference and simplified the name of the Energy, Environment and Sustainability (EES) Platform, now simply the Sustainability Platform.

A new Global Rail Sustainability Task Force was added to the Platform. Formed in early 2021, this new leadership group set about developing a refreshed, coherent and compelling narrative for railways as the backbone of a sustainable future.

The task force, chaired by Patrice Couchard, Director of stations at Belgian National Railways, includes representation from members in Africa, the Middle East, America, Asia-Pacific and Europe, providing a truly global viewpoint and consensus. The task force includes technical advisors from key global partners and academic institutions, including the International Union of Public Transport (UITP), ALSTOM, the Community of European Railway and Infrastructure Companies (CER), and London School of Economics (LSE).

In 2021, the task force co-created a new Vision 2030 “*Design a Better future*”, launched at the beginning of COP26 en route to Glasgow on board the “Rail to the COP”. This vision describes how rail, and mobility as a whole, can and will innovate and transform during this decade for more sustainable transport, cities and lifestyles.

The UIC Railway Climate Declaration has continued to build momentum. With the addition of Network Rail and SNCF in 2021, there are now 36 UIC members who have joined the collective declaration by pledging to decarbonise their rail operations by 2050 and contribute to the United Nations Sustainable Development Goals.

### Working with the United Nations

UIC, as a founding member of the United Nations (UNFCCC) ‘Marrakech Partnership’, contributed to the climate action pathway for transport and has updated and increased the rail content and ambition in both 2020 and 2021.

In 2021, the UIC delegation, including member speakers, took part in 10 side and fringe events at COP26 in Glasgow as well as attending the first ever transport ministers gathering at the Conference of Parties (COP). Participation in other UN events included: the United Nations Department of Economic and Social Affairs (UN DESA) Global Sustainable Transport Conference, held in 2021 in Beijing; host of a UNFCCC Africa Climate week side event; and speaking at the UN Group of Experts on Assessment of Climate Change Impacts and Adaptation for Inland Transport and the UN-Habitat Urban in October 2021. The collaboration with the United Nations Centre for Regional Development (UN CRD) continued in the Asia-Pacific region, reviewing and supporting the new Aichi Declaration 2030 at the Regional EST Forum in 2020 and 2021, as well as co-hosting a rail focus post-event highlighting the important role of rail in the region’s development and climate action.



Fringe event, Viva Rail (Battery) Train – UIC with NS and ProRail



UITP and UIC co-hosted a global high-level public transport discussion on board the Porterbrook Hydroflex (Hydrogen) train at Glasgow Central station

### **UIC Board member of SLoCaT Partnership**

UIC Director General, François Davenne, continues to act on the board of SLoCaT (the partnership on Sustainable, Low Carbon Transport). UIC contributed railway content for the SLoCaT Transport and Climate Change Global Status Report (TCC GSR). This report is a resource for policy-makers to increase transport ambition on climate change.

### **SuM4All – World Bank initiative Sustainable Mobility for All**

UIC is an active partner of SuM4All, a multi-stakeholder partnership that speaks with one voice and acts collectively to help transform the transport sector. UIC ensured that railways are an important part of the initiative to make mobility equitable, efficient, safe and clean. UIC contributed rail content to the writing of the “Digital toolkit for energy and mobility” and also the “Sustainable Electric Mobility: Building Blocks and Policy Recommendations”.

### **Leverage data and sharing of experience**

In 2020, the UIC Sustainability Platform re-focused efforts on five key sectors based upon the priorities of members: energy and carbon, air quality, noise and vibration, sustainable land use, and the newly created circular economy.

### **Energy efficiency and CO<sub>2</sub> emissions**

✓ The new online format has allowed the Energy and CO<sub>2</sub> Sector to deliver more workshops than planned in the UIC 2021-2022 Work programme, holding four workshops in 2021 dedicated to decarbonising work trains, trackside energy storage, hydrogen, and battery powered trains. The group shared experiences and solutions relating to energy efficiency, decarbonisation solutions and renewable energy.

IRS 90940, Ed. 1, proposing the SFERA protocol as a single messaging protocol for data exchange with Driver Advisory Systems (DAS), was published in 2020 and promoted via a launch webinar inviting stakeholders to join the SFERA User Group, which helps users understand how to implement and provide feedback.

The SFERA working group continued to make minor and major improvements throughout 2021 for the publication of the 2<sup>nd</sup> edition.

IRS 90930, Ed. 1, proposes harmonised traction energy settlement and data exchange processes for the European market. The working group also focused on maintenance (updated appendices and major updates for a 2<sup>nd</sup> edition published in 2021).

In 2020 and 2021, the Environmental Strategy Reporting System (ESRS) report was published providing an update on the impact of the pandemic on data and showing the continued improvement of energy efficiency and emissions in rail.

The EcoTransIT World (ETW) tool received accreditation from the Smart Freight Centre and the Global Logistics Emissions Council (GLEC). The tool's interface was enhanced, and the initiative adopted new governance rules and welcomed new members.

The cooperation between UIC and the International Energy Agency (IEA) enables data provided by UIC members to be included in the IEA Mobility Model (MoMo), improving the quality of statistics on energy consumption and carbon emissions from railways. UIC worked with IEA to produce the new annual online report, published at [www.iea.org/reports/rail](http://www.iea.org/reports/rail), as part of their tracking progress to net zero by 2050.

### **Air quality**

The Clean Air Trains project reviews recent developments concerning the measurement and reporting of diesel emissions, determines how these should be implemented in the rail sector, and updates the methodology supporting the UIC Environment Strategy Reporting System (ESRS).

In 2020, the UIC Air Quality Sector was relaunched with new experts from members in Europe and Asia-Pacific, as well as universities. The group met frequently to exchange research findings and best practice on particulate pollution as well as from diesel emissions.

### **Noise and vibration**

The sector shared experiences and technical solutions related to noise and vibration management in railways, successfully expanding the Europe-focused discussions with the objective of a wider global reach. In collaboration with the Railway System Department, a two-day UIC Railway Noise Days event reached more than 270 participants. The event launched the latest publication from the sector: "Railway noise in Europe – state of the art report".

In 2021, the sector launched its new project LOWNOISEPAD in collaboration with 12 European infrastructure managers, selecting operational test sites for the technical research. Furthermore, members of the sector have already identified the priority issues that require global understanding for urgent action from 2022: the management of noise from parked and stationary trains, and nuisance and health effect of railway noise.

The sector also completed a comprehensive questionnaire for noise and vibration issues on railways to enhance the exchange of knowledge between members. Currently, UIC, together with its members, is working on the publication of technical reports on the selected priority issues and the preparation of the UIC Railway Noise Days, which will be held from 28 February to 1 March 2023.

### **Sustainable land use**

The sector group is working to help the railway community to achieve ambitious biodiversity targets, and to scale up and extend effective land management practice through knowledge sharing. In 2020, the sector released its latest publication, "Future vegetation control of European railways – state of the art report" and the UIC strategy on the future of vegetation control as deliverables of the Transition Strategy on Vegetation Management (TRISTRAM) project. It also published IRS 70723 in collaboration with the Track Expert Group within the Rail System.

UIC participated in the IENE 2020 (Infrastructure and Ecology Network Europe) conference to announce the Ecological Effects of Railways on Wildlife (rEvERsE) project at international level to key contributors to Green Infrastructure development. Currently, sector members are working on the publication of “*European railways: strategy and actions for biodiversity*” and case studies for the project website.

In terms of promoting the activities of the sector and working in collaboration with other stakeholders, UIC signed a Memorandum of Understanding with WWF Central-Eastern Europe in 2020 for three years. The main purpose of the MoU is to establish mutual dialogue and information exchange to promote environmentally conscious rail transport in Central and Eastern Europe. UIC is also a key consortium member representing railways in the EU-funded BISON project, where all modes of transport work together, ensuring rail is integral to this multi-modal project due to complete in 2022.

### **Circular economy**

2020 and 2021 saw the completion of the REUSE project. Based on a shortlist of key critical materials (rail, ballast and sleepers) and through survey, interviews and an online interactive workshop, the project identified state-of-the-art best practice and the top opportunities to implement circularity principles in rail. The REUSE report was published in 2021 and guides members wishing to create or develop resource efficiency strategies in their operations. Launched in May 2021, the Sustainability Platform added a new Circular Economy sector. The sector has planned a series of best practice workshops as part of the Zero Waste Railways project in 2022 and 2023.

### **Sustainable mobility**

In 2020 and 2021, the Door-to-Door project finished collecting lessons learnt and best practice throughout the railways and public transport sector.

At the webinar in December 2020: ‘The opportunities for railways in digital platforms’, members and MaaS providers shared an overview of their solutions, experiences and challenges in the field of Mobility as a Service. In October 2021, the final report was launched: ‘Digital door-to-door solutions: 10 guiding principles for railways’, including case studies of the application of digital tools in railways around the world. The ten principles guide railway organisations to the successful implementation of MaaS tools to enhance customer experience.

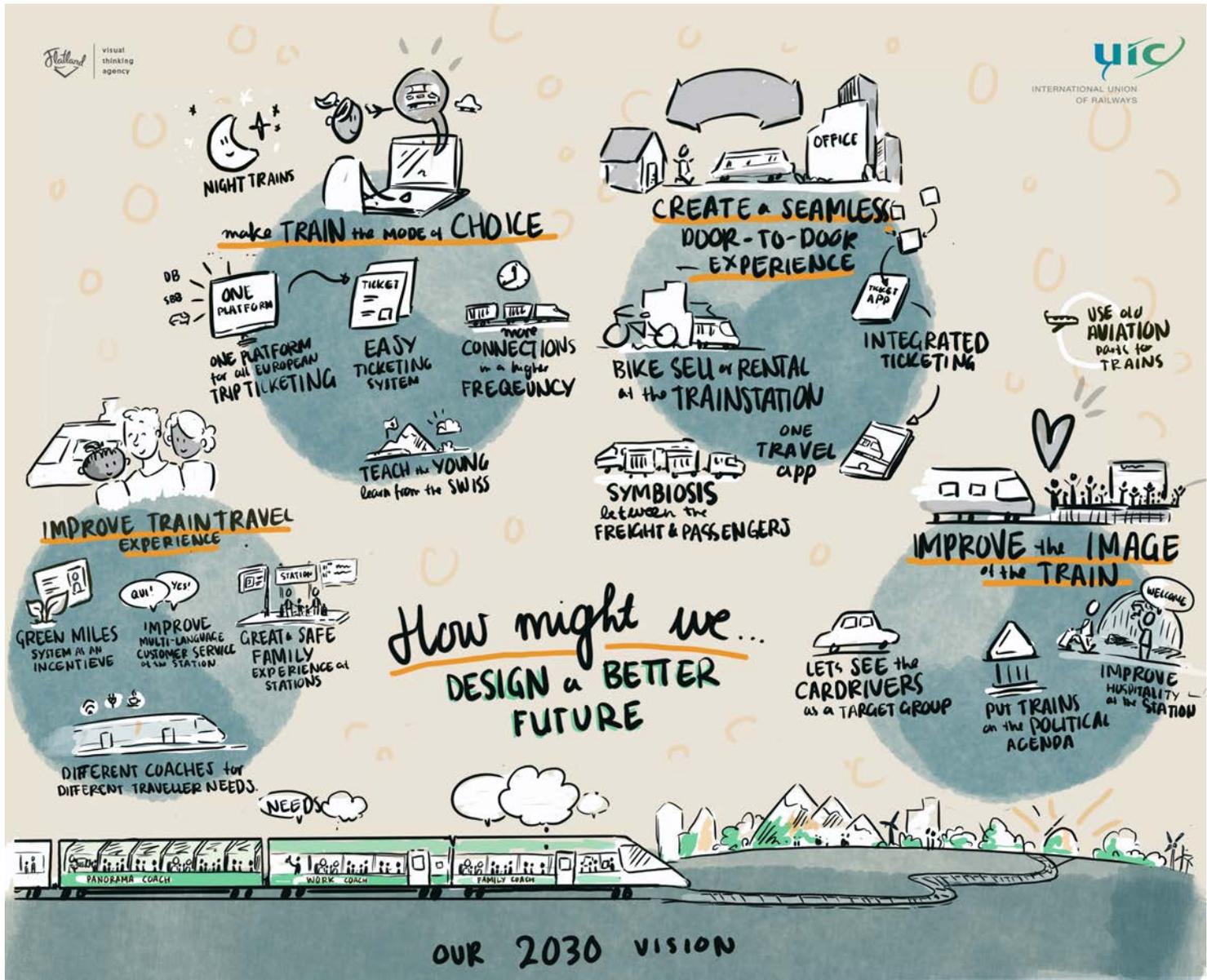
### **Sustainable procurement**

As part of the European Railways Purchasing Conference (ERPC) special group, the Sustainable Procurement working group re-launched with renewed Terms of Reference and a new Chair, Ferdinand Zinsmeister from ÖBB-Infrastructure AG. Meeting regularly, the group exchanges on best practices, including a joint workshop with the Circular Economy sector identifying new projects for 2022.

### **Develop innovative projects for better attracting green bonds**

The Rail Sustainability Index, previously named ‘SDG Rail index’, has made important progress on the unique rating system and reporting tool. The project working group, chaired by Paolo Mazzeo of Ferrovie dello Stato (FS), completed the materiality assessment selecting seven Sustainable Development Goals and a set of qualitative and quantitative Key Performance Indicators, as well as developing weighting and scoring methodologies.

 External consultation was carried out with key stakeholders including with the Global Reporting Initiative, the United Nations Department of Economic and Social Affairs (UN DESA) and the World Bank. The new methodology and online tool were developed and tested with members. The tool will be launched in 2022, providing its first index scores to members in the autumn.





FURTHER  
DEVELOPMENT OF  
UIC AS TECHNICAL  
PLATFORM

## FURTHER DEVELOPMENT OF UIC AS A TECHNICAL PLATFORM

✓ The UIC 2020-2022 Work programme highlighted the need to coordinate the work between UIC members towards a system-wide vision. At that time, it was particularly stressed that the development of the necessary common work, using digital tools as a catalyst, was a process UIC needed to improve, via the following practical steps:

- ▶ Increase the efficiency of UIC infrastructure and rolling stock management;
- ▶ Provide the tools for enhancing mobility-associated services towards fully interoperable and intermodal networks ready to operate under MaaS (Mobility as a Service) principles;
- ▶ Encourage greater involvement by experts from all the UIC regions in achieving better transparency and a more open project inception and management process.

### Development of technical specifications

UIC, as the technical platform for the sector, plays a leading role in writing and defining key specifications in several areas. One of its objectives is to put digital technologies at the centre of the railway system. To this end, UIC plays a leading role in the development of the FRMCS initiative for the sector. From a commercial point of view, UIC is also taking the lead role in the definition of OSDM, the new standard for ticketing. On the freight side, UIC is also heavily involved in the Digital Automatic Coupling Programme, which is a milestone in making rail freight in Europe more competitive.

### FRMCS and 5G for Rail

Life cycles in the telecoms industry are by nature much shorter than those in the rail industry, with huge strides having been made over the last 50 years, including transparent interconnection between all the world's fixed networks, the advent of mobile phones, fibre-optic terabit transfer capacities, the emergence of powerful data networks which

have now become vital to businesses of all types, and even the advent of the internet. Regarding mobile phones, we have quickly progressed from 2G networks to 3G, 4G and now 5G networks, the latter of which is starting to be rolled out in various parts of the world.

The flip-side of such impressive technological progress is, of course, that technologies become obsolete rapidly. 2G, which is the basis for GSM-R, is no exception. As such, it is clear to all that GSM-R networks will start to be life-expired by 2030, making their maintenance ever more costly and complex. UNITEL, the supplier organisation that specialises in GSM-R, has committed to continue supporting railway networks until 2035.

Aware of this inevitable reality, the UIC groups in charge of GSM-R worked hand-in-hand with railway operators and suppliers and decided to begin looking into GSM-R's replacement as early as 2011. They then launched these activities as a UIC project in 2014. This laid down the broad outlines of a structured programme for the replacement, the generic name of which is Future Railway Mobile Communication System (FRMCS). The acronym may seem a tongue-twister, but it is now familiar to many, and its goal is clear: to usher in 5G for rail networks.

However, though the original rationale behind the programme was the regrettable, yet inevitable obsolescence of GSM-R, the UIC groups immediately realised that a next-generation telecommunications network for the railways would in fact serve as the starting point for the modernisation of rolling stock and the digitalisation cycle of the entire sector – not before time, given the head start many other industries already had.

One simple example is automated train operation and, in future, fully self-driving trains, which cannot exist without a high-performance, secure telecommunications network.

Equally, sophisticated train monitoring systems will not be possible without a high-quality mobile network – not to mention remote operation/information applications or the inevitable use of video support, which will be a necessary part of modern rolling stock.

It is therefore with this twin ambition – the need to replace an obsolete technology (despite its entirely satisfactory performance) on the one hand, and the goal of creating the enablers of digital railway operations on the other – that the FRMCS programme was defined.

It will admittedly be no small order to replace an entirely satisfactory system with a global footprint whilst also seeking to supply the crucial core elements which are needed to ensure the on-board railway applications of the future: the necessary radio spectrum, appropriate specification and standardisation plans to ensure a longer shelf-life than for GSM-R, a new architecture, new needs, new applications, new equipment, etc.

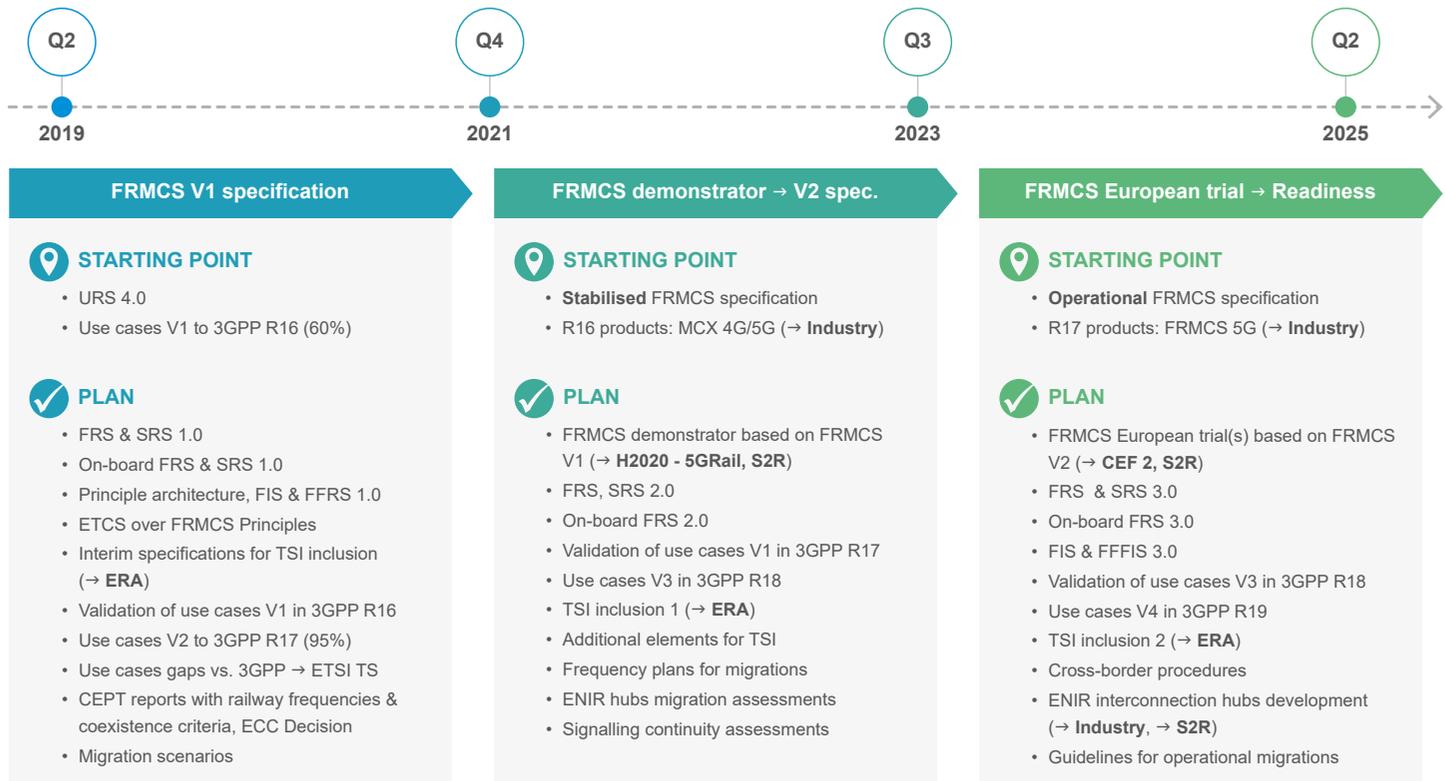
UIC has rapidly managed to assemble a roll-call of global railway talent in this field and bring onboard the key supply industry players to see this highly ambitious programme through.

The spectacularly successful collaboration with the European Telecommunications Standards Institute (ETSI), via the specialist TC-RT (Technical Committee – Railway Telecommunications) was also renewed, to support by defining building blocks, radio conditions and filling some 3GPP gaps.

Closely correlated with this way of working was a three-point strategy plan, which was developed for all FRMCS work with the goal of seeing the first roll-outs in Europe starting in Q3-4 2025:



### Strategic plan for FRMCS introduction



✓ In this sense, UIC has met the commitments outlined in its 2020-2022 Work programme. UIC committed itself to drive the FRMCS initiative for the sector, including the definition, specification and standardisation of both infrastructure and new on-board equipment (TOBA, Telecom On-Board Architecture), and assessments on migration scenarios.

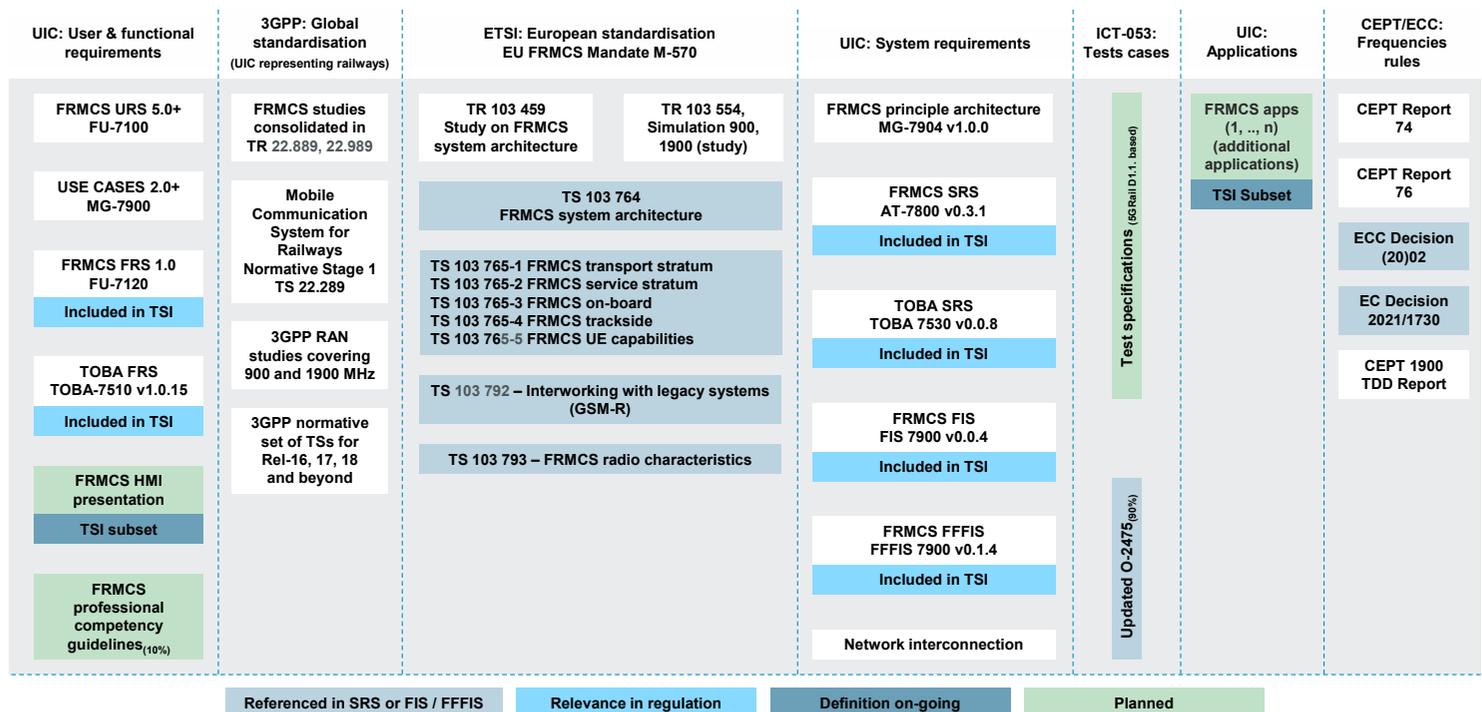
The FRMCS use cases have been submitted to 3GPP to be included in 5G standards, including through the Mission Critical

work frame; additional frequencies have been obtained for FRMCS, formalised through ECC Decision (20)02, and the first FRMCS set of specifications has been started with the purpose of ensuring a FRMCS introduction legal anchor in the 2022 European Directives and the Technical Standards for Interoperability of Control Command and Signalling (CCS TSI).

The FRMCS full specification is extremely complex; the global specification plan is given below.



## Specification plan – Global map & stakeholders for specifications & standardisation items (V1) (Q1 2022)



## The “5G Rail” project: FRMCS goes live for the first time

4. Another vital part of the FRMCS programme is of course the industrialisation phase, since the FRMCS ecosystem relies on new telecommunications equipment, including the specifications and standardised telecoms building blocks defined by the UIC working groups, the 3<sup>rd</sup> Generation Partnership Project (3GPP) and the European Telecommunications Standards Institute (ETSI), in particular a new on-board telecommunications system known as the TOBA Box.

To embark upon this phase, UIC took advantage of a call for candidates issued by DG Connect (European Commission Directorate-General for Digital Technology) as part of the ICT (Information and Communication Technology) workstream within the overarching Horizon 2020 programme to form a consortium called 5G Rail, which brings together railway operators (DB, SNCF, SBB, ÖBB and IP) and telecoms industry players (Nokia, Kontron, Alstom, Thales, Siemens, CAF, Teleste and UNIFE, as the representative body for the European railway supply industry as a whole). DG Connect selected the consortium’s candidacy in October 2020.

The consortium is working on prototyping the entire FRMCS ecosystem, starting with simulation and even field test phases in France and Germany. This work is completely aligned with the second pillar of the FRMCS strategic plan defined by UIC, namely the “FRMCS demonstrator” which will enable the following:

- ▶ Development and fine-tuning of the first TOBA Box prototypes;
- ▶ Development and fine-tuning of the first FRMCS-compliant 5G network equipment;
- ▶ Interfacing of various solutions from the future FRMCS ecosystem: ETCS based on the ETCS-FRMCS interoperability specifications and thus on the prototypes for future FRMCS-compatible signalling equipment, ATO (Automatic Train Operation) simulator, TCMS (Train Control and

Monitoring Systems) on-board communication systems and on-board video applications;

- ▶ Lab simulations to check the correct operation of all induced mechanisms and perform initial quality of service measurements;
- ▶ Real-world tests on lines in France and Germany using trains fitted with the various prototypes;
- ▶ Feedback from operational experience on all FRMCS version 1 specifications in order to amend or supplement it, if necessary, before arriving at “FRMCS 1<sup>st</sup> Edition”, a finalised specification for the first deployable version of FRMCS.

A “5G Rail Advisory Board” has been set up in order to involve as many rail sector stakeholders as possible. The first members to join the committee were Network Rail, RFI, ADIF, Infrabel, Trafikverket, SZ, Rail Baltica, Shift2Rail, ERA, UNISIG, and ETSI TC-RT, with many others set to request membership soon.

The “5G Rail” project began in November 2020 and will conclude in April 2023, for a total investment cost of €14 million, 70% of which is funded by the Horizon 2020 programme. In this project, UIC is acting as leader of the industrial consortium and as a source of technical authority.



Online seminar on the features and advantages of FRMCS – July 2021



**UIC OSDM page:**

[uic.org/passenger/passenger-services-group/#OSDM](https://uic.org/passenger/passenger-services-group/#OSDM)

**GitHub:** [unioninternationalcheminsdefer.github.io/OSDM](https://unioninternationalcheminsdefer.github.io/OSDM)

**OSDM factsheet:** [uic.org/IMG/pdf/uic-passenger-open-sales-and-distribution-model.pdf](https://uic.org/IMG/pdf/uic-passenger-open-sales-and-distribution-model.pdf)

**Video (short version):**

[www.youtube.com/watch?v=fv5xCVWlzes](https://www.youtube.com/watch?v=fv5xCVWlzes)

**Video (long version):** [youtu.be/TVxQdq8nMAI](https://youtu.be/TVxQdq8nMAI)

## **DAC (Digital Automatic Coupling)**

Digital Automatic Coupling (DAC) is the unique opportunity to revolutionise rail freight systems in Europe. It is the enabler for the digital transformation to fully automated railway operations with competitive efficiency. It is the interoperable component that will unlock more capacity and use of new technologies and innovations, enabling a shift to rail which will in turn facilitate climate protection and economic growth.

These objectives rely on the effective achievement of new emerging telematics solutions for condition/health monitoring, new performance monitoring and load supervision processes (e.g. smart inspection processes, etc.), requiring some supporting training and equipment, and new harmonised training/skills for locomotive drivers in order to facilitate not only cross-border operations.

UIC is an active part of the European DAC Delivery Programme (EDDP) (WP1, WP2 and WP3), and consequently, as part of Europe's Rail Joint Undertaking (ERJU), is offering a project plan to support the harmonisation of operation principles related to the use case election decision from EDDP. This harmonisation is a key step to ensure that the corresponding detailed specifications process can be initiated from July 2022 as a target, to facilitate the preparation of industrial standards.

 This work, which is not necessarily described in the UIC 2020-2022 Work programme, nevertheless took on considerable importance as 2020 and 2021 progressed. Through its participation in this programme, UIC is pleased to be able to contribute to making rail freight the backbone of the logistics chain in a real and concrete way.

## **Combined Transport and General Contract of Use for Wagons (GCU)**

The Special Group on Combined Transport (GTC) continued to be the representative organisation for rail operating companies active in rail/road combined transport.

The occurrence of a major incident beyond the control of rail operators has shown that there is an obvious need for proper caretaking of their interests and for profound technical knowledge on this type of operation.

The special group continues to represent members via direct or indirect participation in projects (e.g. Aeroflex) and sector initiatives. The group publishes a comprehensive report on combined transport in Europe every other year.

 Through its Chair, the group was able to provide a more balanced assessment of the Great Belt Bridge account. As part of the Great Belt Bridge Joint Network Secretariat (JNS), a priority as per the UIC 2020-2022 Work Programme was to provide continued expert support to the JNS procedure. Without the GTC's expertise and close monitoring by the Chair, a tremendous burden would have been placed on rail operators when it was proven that other technical reasons were at the root of the matter.

The special group addressed standardisation issues in relation to UIC Leaflets 290 and 293 on an ongoing basis and studied the migration of UIC Leaflet 493 to an IRS. It also supported the activities of the Rail System Forum SET 03 working group.

At project level, significant effort went into finalising the CACTUS project, which provided a comprehensive overview of legislation applicable to combined transport activities.

A second project, published in Q1 2021, was the biennial Activity Report on Combined Transport in Europe. Both projects were conducted in close collaboration with the International Union for Road-Rail Combined Transport (UIRR).

## **ATTI – SPEEDING UP WAGON HANDOVER**

The Agreement on freight Trains Transfer Inspections (ATTI) is a UIC special group created in 2014. ATTI sets rules for the transfer of freight trains between participating RUs, some of which are UIC members and some of which are not. A central element of ATTI is the Quality Management System.

ATTI's main goal is to accelerate international freight traffic between ATTI railway undertakings. It is a trusted handover procedure, which has not only been endorsed by ERA, but has also been referenced in the AMoC on checks and tests before departure, published by the Agency in December 2021.

✓ ATTI membership keeps increasing (from 44 members in 2014, as detailed in the UIC 2020-2022 Work programme, to more than 160 at the present).

In order to provide a better understanding of ATTI content and its fundamentals, in November 2021 a webinar called ATTI Morning was offered to ATTI railway undertakings, providing concrete examples showing how the system works with regard to the database, the number of wagons and the planning data.

## **Wagon Users Study Group**

Wagon Users Study Group (WU SG) handles issues pertaining to the exchange of wagons in international traffic, in particular the use of wagons. Most of these matters are dealt with contractually via the General Contract of Use for wagons (GCU), the provisions of which apply to wagon keepers and the signatory RUs which operate the wagons.

✓ The GCU Joint Committee comprises members delegated by the three founder associations (UIC, UIP and ERFA), who strive collectively to update the GCU. In 2020, the WU SG treated 32 amendment proposals to the GCU and prepared the new publication of the GCU on 1 January 2021. Most of the amendment proposals submitted for Appendices 9,10 and 11 of the GCU were approved in 2020 and entered into force on 1 January 2021. This achievement was all the more impressive given that Covid-19 lockdowns made personal meetings impossible.

Despite the challenging working conditions, in particular for GCU issues which by their nature require international working and coordination, the Chairs of the Appendices 9 & 11 and Appendix 10 working groups successfully worked on proposals and achieved consensus on them. Experts studied further action for non-approved amendments, for example on the handling of wagons whose overhaul deadline had passed; the proposal was still very much on the agenda and was tabled again in 2021 with the necessary preparatory work done upstream for it to be adopted.

The word “digital” was very often at the heart of debates on data exchanges in the framework of the GCU (implementation and use of GCU Broker, connection of the wagon performance message between RailData and the GCU Broker, etc.). There was also discussion of the assessment of the impacts (interoperability and traffic safety) of noise protection laws in Germany, Switzerland, the Netherlands and Austria on the daily operation of trains towards or through these countries.

The placing in service of new technologies, such as Digital Automatic Coupler (DAC), derailment detectors, new multipurpose, modular flat wagons, and new intermodal tank wagon types, was closely monitored for their implementation in freight documents. The references to UIC leaflets in the GCU and Loading Guidelines were updated and the conversion of UIC Leaflet 471-2 into an IRS was started.

Concerning loading guidelines, priority was given to the publication of amended Volumes 1 and 2 of the UIC Loading Guidelines in three languages in April 2020.



## Specifications and standardisation

✓ As foreseen in the UIC 2020-2022 Work programme, UIC may be called upon to produce different types of reference documents for the sector. These include specifications and guidelines. At the end of 2019, these two categories were already included in the preparation of the UIC 2020-2022 Work programme.

The UIC 2020-2022 Work programme states that UIC will promote a digitally driven architecture for the railway system, based on modules whose interfaces will be standardised. Such an architecture will be put in place in the common interest of the Railway Operating Community and manufacturers, and will use a four-layer model inspired by the OSI (Open System Interconnexion) concept:

- ▶ Each module should be specified by its own features, according to the needs of the ROC;
- ▶ Each module could be manufactured without any overregulation, provided that the specifications requested by the ROC are strictly respected by the manufacturers.

The document also recalls that it is in the interest of the ROC to adopt common specifications for these modules. UIC is the appropriate forum for writing and publishing them, in close collaboration with the sector.

✓ After 2020 and 2021, it can be said that UIC has developed this dimension well, to the benefit of the sector itself.

Functionality and operations are essential within complex railway systems. These aspects are fundamental in achieving the objective of a system that is fit for purpose from an operational perspective. They must be defined by their users: railway undertakings and infrastructure managers.

Functionality and operations are considered at the initial stage of standardisation and are the key input for definition in the first stage of standardisation of the work to be conducted by standardisation bodies or organisations.

This approach guarantees that railway undertakings and infrastructure managers obtain the most appropriate products corresponding to their needs in terms of cost and service levels from the market. Both users and manufacturers need to be involved in the first stage of standardisation, and potentially in part of the second stage, in order to achieve a clear and fully defined framework enabling industry to develop technical solutions to be brought onto the railway market.

Next, users must define the operational conditions for their railway systems and, in cooperation with manufacturers, define adequate conformity testing specifications and maintenance schemes.

This generic approach, known in many industries as the V-cycle, ensures that the best possible results can be achieved in railway operations in terms of safety, punctuality and reliability.

## RESEARCH AND INNOVATION – SHIFT2RAIL AND ITS SUCCESSOR: EUROPE'S RAIL JOINT UNDERTAKING (ERJU)

The European region supported more active involvement in innovation and a new strategic approach to our collective participation in the successor to the Shift2Rail JU: the Europe's Rail Joint Undertaking.

Scheduled to start in 2021, this component of the Horizon Europe programme will last until 2027, enabling the Railway Operating Community (ROC) to deliver its business objectives and the evolution of the future European railway system. The region anticipates that ERJU will be a key opportunity for delivering the aspirations of the sector in meeting end-user travel expectations.

Notably, the new JU comprises both a research programme, the 'Innovation Pillar' and a more strategic 'System Pillar', which will define the railway system of the future for Europe. UIC will continue to support its members by contributing to both pillars, initially to the construction of the System Pillar. UIC began preparations for collaborative responses to the imminent open calls for research proposals and a request for tender for technical expertise.

In 2021, UIC has committed to this V-cycle approach by:

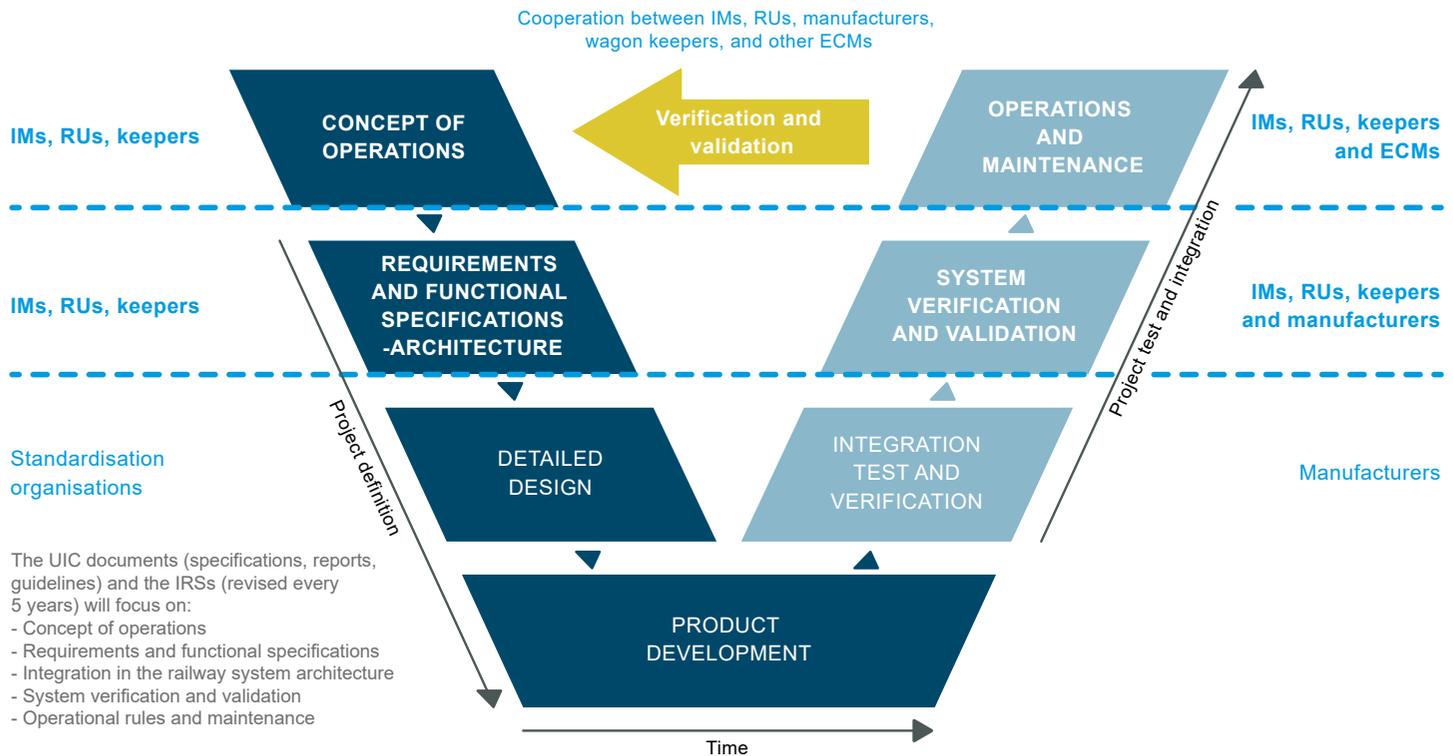
- ▶ fostering cooperation between its members to define user requirements and functional specifications;
- ▶ establishing links with standardisation organisations (e.g. CEN-CENELEC, ETSI, IEC and ISO) to evaluate the technical impact of such requirements on current specifications in order to define the corresponding standards, ensuring interoperability between existing and future technical building blocks;
- ▶ taking account of the convergence of operational rules between railway undertakings and infrastructure managers; and

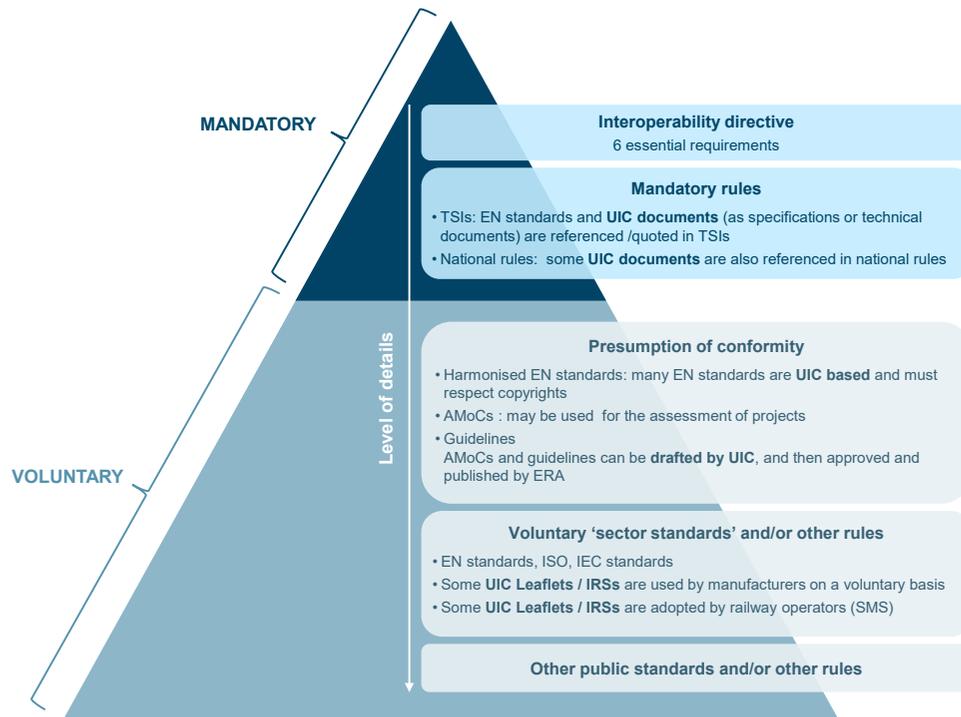
- ▶ publishing test conditions and maintenance frameworks on behalf of railway undertakings and infrastructure managers.

By applying UIC's requirements and specifications, standardisation organisations are safe in the knowledge that their products respond to the needs of the railways. Thus, it is essential that compatibility frameworks and gap analyses are in place between these organisations and UIC.

Where appropriate, the same approach may be extended to documents produced by other sector stakeholders, such as OSJD, ERA or OTIF, for example.

## SPECIFICATIONS AND STANDARDISATION





### AN EXAMPLE OF A RELATIONSHIP WITH AGENCIES: UIC AND THE EUROPEAN UNION AGENCY FOR RAILWAYS (ERA) SIGNED A COORDINATION FRAMEWORK ON 29 NOVEMBER 2021

The European Union Agency for Railways was established in 2004 to contribute to the further development and effective functioning of a Single European Railway Area without frontiers by guaranteeing a high level of railway safety and interoperability while improving the competitive position of the railway sector. UIC aims to enhance international cooperation between its members, particularly in the field of technical harmonisation. A coordination framework between ERA and UIC is therefore of benefit to the railway sector and UIC members.

Based on a common understanding of the links between the technical documents drafted or published by ERA and UIC's specifications, this coordination framework between ERA and UIC will serve as an umbrella for topics of common interest: annexes to Technical Specifications

for Interoperability (TSI) such as GSM-R, FRMCS (Future Railway Mobile Communication System), safety and operations, human and organisational factors, etc. Krzysztof Mamiński, UIC Chair and CEO of PKP (Polish State Railways), emphasised the mutually beneficial nature of this kind of agreement, which will strengthen the relationship between the two organisations for technical coordination. François Davenne, UIC Director General, stressed in particular that the 4<sup>th</sup> Railway Package has come in force with a new set of responsibilities for ERA. Therefore, technical coordination with UIC is all the more important to ensure that each stakeholder can take ownership and responsibility for paving the way toward optimal development of the railways' efficiency, accuracy and eco-mobility.

Josef Doppelbauer, ERA Executive Director, added: *“Cooperation, both at European and at global level, is essential for the railway sector to be able to provide an attractive proposition for customers of rail. Our collaboration with the International Union of Railways is an important step in this respect.”*

## Development of Acceptable Means of Compliance (AMoC)

Operational guidelines and solutions and AMoCs from the European Union Agency for Railways (ERA) can accelerate the market uptake of innovative solutions in the European Union. UIC is experienced in drafting and issuing harmonised operational guidelines and solutions adapted to innovative solutions.

✓ When it comes to partnerships with relevant organisations, as set out in the UIC 2020-2022 Work programme, ERA and UIC signed on 29 November 2021 a coordination framework (see text box), allowing closer cooperation and coordination. It will be possible for UIC to “propose AMoCs or guidelines drafted by UIC to ERA” and to “align whenever possible the publication dates of all the documents, from ERA and from UIC, which have links to each other”.

In addition, UIC is keen to disseminate these guidelines, solutions and ERA AMoCs beyond the European Union, increasing their impact.

Concerning UIC’s relationship with National Safety Authorities (NSAs) for AMoCs, discussions are ongoing between ERA and UIC to continue considering UIC literature as AMoC, in the context of recent Joint Network Secretariat (JNS) activities and Technical Specifications for Interoperability Operations and Traffic Management (TSI OPE) working groups, beyond the TSI OPE framework (see Joint Network Secretariat Great Belt Bridge – JNS GBB).

The standardisation of IRSs will evolve to allow a maximum of three years to revise a UIC document considered as AMoC, and priority will be given to migrate the relevant leaflets into IRSs. The agreement with Établissement Public de Sécurité Ferroviaire (EPSF), IRS 40453, will have to be updated accordingly during 2022 (UIC has signed a Memorandum of Understanding with EPSF on AMoCs).

## UIC INVOLVEMENT IN ERA – JNS PROCESSES

✓ On 2 February 2022, a Joint Network Secretariat (JNS) Task Force concluded an Urgent Procedure on “Extreme effects of thermal overload in special cases of freight operation”. This urgent procedure was triggered on 2 November 2021 by a notification from the NSA Italy, which introduced some speed restrictions with severe consequences for rail traffic in Italy. As a result, in less than three months, the NSA Italy replaced its restrictions with the risk control measures provided by the urgent procedure, relaxing the speed restrictions, thanks to the coordinated work of ERA, NSAs, UIP, UIRR and Association française des détenteurs de wagons (AFWP). This procedure was not foreseen in the UIC 2020-2022 Work programme.

Concerning the use of Composite Brake Blocks (CBB) under Nordic winter conditions in the context of the “JNS Broken Wheels”, and the alerts expressed by the NSA Sweden, UIC is currently issuing operational mitigation measures, adapted to each type of CBB, in cooperation with ERA and NSA Sweden.

✓ In the context of the “JNS Great Belt Bridge”, mentioned in the UIC 2020-2022 Work programme, UIC led the Cluster II activities, related to crosswind safety of vehicles and lines. The main conclusion was for ERA to assess the conditions for the delivery of an AMoC relating to crosswind safety, in order to provide the railway sector with a European/International methodology for assessing and evaluating risks, in line with the objectives of Safety and Interoperability Directives. It is proposed that a future revision of the related UIC-SAFIRST technical report on crosswinds will also allow an update of EN 14067-6, to consider the issue of crosswinds on semi-trailers wagons.



All other NSAs have focused on the ERA TSI OPE working groups, along with UIC, with the result that several UIC documents are now considered as AMoC, including Volumes 1 and 2 of the UIC Loading Guidelines, IRS 40453, IRS 40471-3, the Agreement on freight Train Transfer Inspection (ATTI), which refers to the GCU, UIC Leaflet 541-3, UIC Leaflet 421, and IRS 40472 - International brake sheet and wagon list).

### Creation of the four Station Managers Global Group (SMGG) working groups

In 2020, the UIC Station Managers Global Group (SMGG) - UIC Rail Station Sector - and its members launched the process of reorganisation. By reshaping the sector, UIC was able to respond to its members' needs by establishing a plenary meeting comprising numerous station directors and high-level experts, a steering committee and four working groups: Station & Urban Design, Facility Management & Operation, Retail & Commercial Affairs, and Small Stations.

Following a meeting of the Global Passenger Forum held in February 2021, Fabrice Morenon, Director General of the subsidiary tasked with international development at SNCF Gares & Connexions - Hubs & Connexion, was appointed the new sector Chair for a two-year period, replacing Carlos Ventura, who was Director of Spanish stations during his

SMGG mandate. In his new role as Chair, Fabrice Morenon will endeavour to increase the influence and reach of this activity at international level. In parallel, Paul Van Doninck, Strategist at Swedish state-owned company Jernhusen, was appointed Vice-Chair of the sector.

In addition, the UIC Passenger Department and UIC Fundamental Values created "Inclusive Station", a network of experts handling social, economic, security and societal issues and dealing directly with those involved in the urban fabric, including the railways, whose geographical area is defined by the influence area of railway stations. The network is used to exchange data, information and questions during web calls or on the UIC Extranet discussion platform.

In June 2021, the members of the SMGG plenary session approved by a majority a set of decisions to establish a budgetary and functional model to ensure that the Station Managers Global Group (SMGG) - Stations Sector remained sustainable over the years. Over a series of meetings in 2021, members approved the business model criteria, the methods for monitoring and controlling the budget, the structure of the budget template, and the financing of the fixed part of the SMGG Sector activity.

The UIC SMGG held 24 meetings throughout 2021, bringing together 25 companies and 104 experts. The key activities and actions carried out by the group included a number of surveys, thematic videos and as well as launching the following four initiatives:

- ▶ November 2020: Sustainable station workshop (May 2021)
- ▶ October 2020: Data in retail context (June 2021)
- ▶ November 2020: Small stations playbook (planned for 2023)
- ▶ June 2020: Rail station hub (website - to be launched end 2022)



SMGG members attending a meeting held in February 2020 at UIC

## Safety and Operations activities

✓ Some task forces and activities of the UIC Safety team have been implemented as described below but were not previously in the UIC 2020-2022 Work programme.

### Climate change

The Task Force on Extreme Weather was created and worked through 2020 and 2021 to feed and to further articulate the RERA-Rain (RESilient RAILways facing Climate Change) project, which will start in 2022 and tackle the risks related to flooding. This task force will continue to work on “operational considerations”, in parallel with the work related to “assets”.

### UIC involvement in Safety Strategic actions

In the context of the development of Common Safety Methods on the Assessment of Safety Level and Performance of railway operators at national and EU level (CSM ASLP), the UIC Safety Unit has completed two key activities. The first is the Task Force on Safety Barrier Concept: its activities have developed a “common understanding” of a safety barrier, and a white paper is being endorsed by the UIC Safety Platform. This will trigger the continuation of the work in 2022 on the settlement of a task force dedicated to the construction of a “Library of Safety Barriers” and complements the work carried out on the development of CSM ASLP.

UIC participated in the International Railway Safety Council (IRSC) in 2021 which provided the opportunity to present the UIC strategy for developing “safety as a service” for operational excellence and global safety. 2022 will be the opportunity, in association with ERA, to deliver real and concrete outputs, for rail Human Organisational Factors and the European Rail Safety Climate Survey (ERA-SCS). This event will be held in Paris in 2024, taking advantage of Paris’ role hosting the Olympics.

## LEVEL CROSSINGS

The European Level Crossing Forum (ELCF) promotes safety at level crossings. One of the most valuable outcomes of this group is “ILCAD – the International Level Crossing Awareness Day”. This unique road/rail worldwide campaign, spearheaded by UIC since 2009, draws railway industry representatives, road authorities, academics and more from around the world. It aims to raise public awareness of the dangers associated with road/rail interfaces (level crossings).

Because of the Covid-19 outbreak, the ILCAD Launch Conference 2020 due to take place at the National Railway Museum in York, as mentioned in the UIC 2020-2022 Work programme, could not be held in person. It was organised online for the first time, with 150 attendees from 40 countries and speakers from the road and the rail sectors in Europe, USA, New Zealand and Africa who shared information on their activities on road or rail safety. The 2020 worldwide campaign took place in a lighter format.

The International Road Transport Union (IRU) and UIC, two worldwide road and rail associations, plus Operation Lifesaver Estonia (OLE) joined forces to raise awareness of level crossing safety amongst transport professionals. The three flyers (for taxi, bus and truck drivers) are available in 22 languages here: [ilcad.org/ilcad/article/safety-tips](https://ilcad.org/ilcad/article/safety-tips).

The 13<sup>th</sup> edition of ILCAD was held on 10 June 2021 with almost 50 countries across all continents carrying out small and large activities. New countries were welcomed into the ILCAD club: Germany, Denmark and Western Balkan countries.

The launch conference was again held online in three languages and gathered around 400 participants from around the globe. You can read the conference summary in English at <https://bit.ly/3gE4aLb>.

✓ As planned in the UIC 2020-2022 Work programme, the first UIC Middle East webinar on “Railway safety and level crossings” was successfully held remotely on 30 November 2020.

### **OPT IN projects that started in 2021**

New methods for safety demonstrations and risk analysis processes, aimed at the internationalisation of certifications and approvals of innovative systems, were set up through an integrated safety approach.

Thanks to 5G, new opportunities and use cases for the performance of operations were brought about by the digitalisation of railway systems.

### **Human & Organisational Factors**

In 2020, the UIC and ERA Safety Units laid the framework for the development of a rail Human & Organisational Factors (HOF) Digital Platform which was created in 2021 to work together to promote the integration of HOF in the railway sector through two main objectives:

- ▶ To jointly raise awareness of the importance of integrating Human Organisational Factors into rail safety.
- ▶ To provide the sector with the tools, knowledge and practicable examples to help implement this integration in a consistent and systematic way.

In 2021, this tool was jointly presented by UIC and ERA during the International Railway Safety Council (IRSC). It is intended to officially announce the public launch of the platform at IRSC 2022 in Seville.

This interactive rail HOF platform will offer UIC members the opportunity to learn and exchange knowledge, experience and best practices from both rail and other industries.

✓ During 2021, work was carried out on several activities, such as European projects, task forces and toolboxes. These activities were not anticipated in the UIC 2020-2022 Work programme.

A UIC Task Force Safety Climate Survey (TF-SCS), in coordination with ERA, was decided in 2021. It was launched in February and will be held throughout 2022. The objective of this TF-SCS is to support the exchange of good practices and the sharing of experience between members and to provide methods and recommendations on action plans and how to manage the results of the ERA survey.



At the end of 2021, the Twinning II “Enhancing the cooperation between railway stakeholders for improving safety culture” European project was granted to a consortium coordinated by UIC and composed of railway undertakings, infrastructure managers, National Safety Authorities and National Investigation Bodies. The aim of this project is to organise a peer review between several railway stakeholders and to propose a future UIC IRS for peer reviews. This project will start concretely in 2022 for 18 months.

✔ Following on from the study on the incorporation of Human Organisational Factors in automation, mentioned in the UIC 2020-2022 Work programme, the UIC Safety team is participating in the “Human Capital” Project from 2021, planned until February 2024.

The objective of this project is to propose an in-depth analysis of Human Resources aspects, providing a bottom-up mapping of the impacts of the new architecture developed in LinX4Rail on job profiles, skills and strategies, and the actions that railway companies will have to implement to cope with these changes.

UIC’s role is to provide expertise in safety, operations, Human Organisational Factors and Human Resources through the production of appropriate recommendations in the Human Capital reports. This strategic project will lead UIC to be part of the future Europe’s Rail (successor of Shift2Rail) programme.

The UIC Safety team is participating in the WeTransform European project from April 2021, planned until the end of 2023. The objective of this project is to create a policy agenda to prepare the transition to automation and the related transformation of the workforce in the transport sector. UIC’s role is to take the lead in several cross-cutting thematic end-user working groups, to provide input on the following tasks:

- ▶ co-creation of knowledge in living hub;
- ▶ shaping the future transformation of the workforce in transport automation;
- ▶ formulation of the agenda;
- ▶ cooperation with other projects and initiatives.

The creation of a toolbox of new technologies to manage risk at work was decided in May 2021 within the framework of the UIC Occupational Health and Safety Group (OHSG). Since then, OHSG members have shared existing and future new technologies within their companies. In addition, a brainstorming session will take place in March 2022 to start the concrete definition of the toolbox structure.

## UIC SAFETY DATABASE

✔ Four infrastructure managers joined the UIC Safety Database in 2020: FTiA (Finland), UZ (Ukraine), SAR (Saudi Arabia) and SETRAG (Gabon). They were followed in 2021 by FGC and EUSKOTREN (Spain), LTG (Lithuania) and NRIC (Bulgaria). The database has been extended to three new members worldwide per year, as mentioned in the UIC 2020-2022 Work programme.

UIC also began to include accidents occurring in Canada, using data issued by public authorities.

The UIC Safety Unit represents the community of railways in Sub-groups C and D of the Safety Level and Safety Performance of railway operators at national and EU level (CSM-ASLP) Group of Analysts. Sub-group C is in charge of Safety Level (SL) and Safety Performance (SP) assessment. Sub-group D focuses on the future Information Sharing System (ISS).

## **DIGital Impacts on business processes (DIGIM II)**

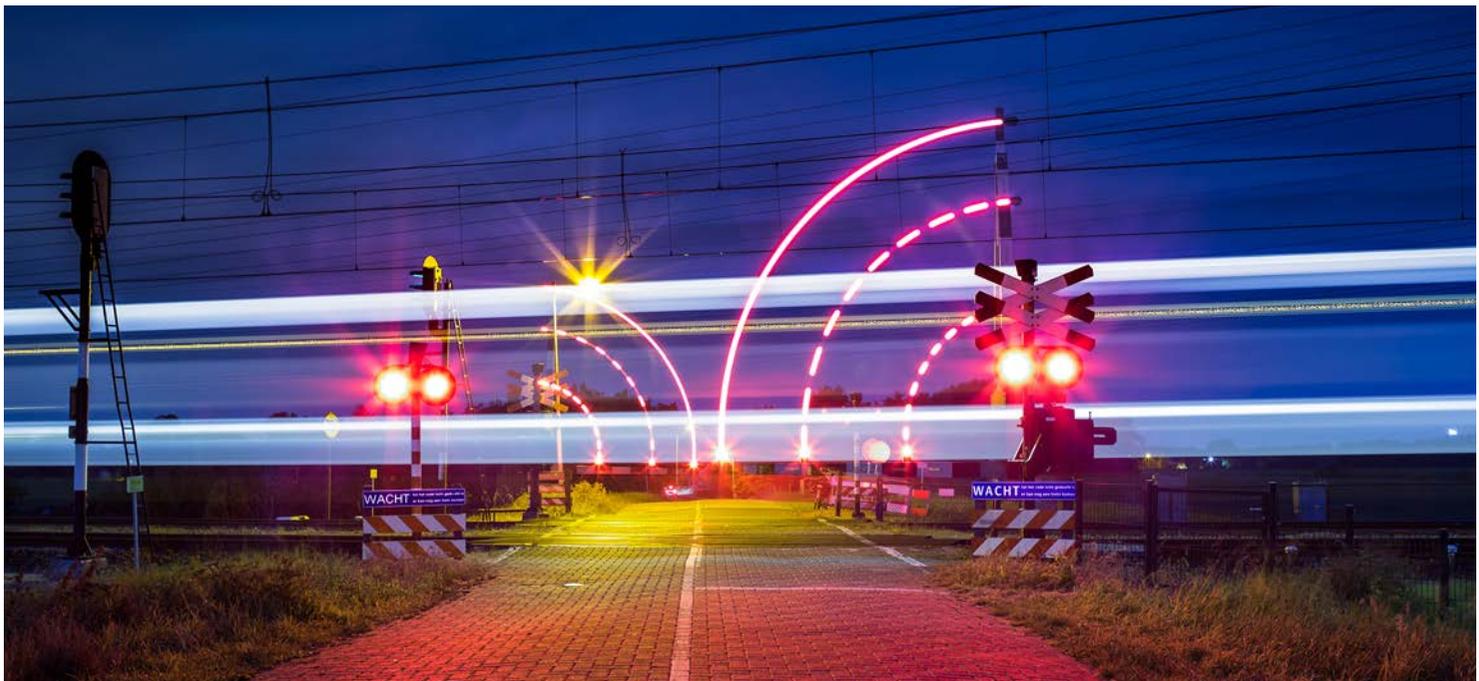
UIC continues its work on level crossings in the framework of DIGIM II. The aim of the DIGital IMPacts on business processes (DIGIM II) project is to improve safety and efficiency at level crossings. With this Proof of Concept (POC), level crossings will be connected to cars to alert and warn them of a level crossing's status. If no action or insufficient action is taken by the driver, the car will take control of the system, slow down and stop safely before the barrier.

There are two project phases. In partnership with Dassault Systèmes, the first phase demonstrated how the 3DEXPERIENCE platform could be used to develop and simulate an example of conceptual architecture at a connected level crossing. The aim of this first phase was to show that several simulation technologies could be connected together within the same digital platform to define, study and simulate a complex system that connects a level crossing to a car.

The added value provided by UIC is a global solution for members, valid for the entire rail industry, to improve safety at level crossings in collaboration with automobile associations and to ensure coordination with other existing projects (SAFER LC, FRA project, etc.).

✓ The first phase achieved its goals, as the proof of concept was successfully designed and tested as planned in the UIC 2020-2022 Work Programme.

The specifications and simulation of the POC were delivered to the project members, with the results presented to UIC members at the General Assembly in 2021. The outcomes of the project were disseminated on several occasions, including in the Revue Générale des chemins de fer in July 2020 and in the Global Railway Review in April 2021, and the results will be presented at the World Congress on Railway Research (WCRR) in 2022.





RESEARCH AND  
INNOVATION DRIVING  
UIC PROJECTS

## RESEARCH AND INNOVATION DRIVING UIC PROJECTS

As mentioned in the UIC 2020-2022 Work programme, UIC is the appropriate forum for carrying out research activities with its members, promoting the research activities of its members, supporting European and global innovation programmes, and accelerating dissemination. While most of its counterparts' associations, for example CER and UNIFE, are Europe-wide, UIC offers the unique opportunity to carry out research activities and benchmarking on a worldwide scale, based on its regional structure and its global vision for railway development, thus creating unique added value.

### System-wide vision

✓ As stated in the UIC 2020-2022 Work programme, from its creation in 1922, UIC has played a leading role in the search for the harmonisation of technical solutions and operation principles in the railway industry, in order to enhance interoperability and interchangeability between railway networks, and to share best practices.

In the UIC 2020-2022 Work programme, emphasis was put on the need to improve the coordination of work between UIC members towards a system-wide vision, and on the development of the necessary common work, using digital tools as a catalyst. In this respect, the following practical steps were identified:

- ▶ Increase the efficiency of UIC infrastructure and rolling stock management (construction, production, maintenance and operation);
- ▶ Provide the tools for enhancing mobility-associated services towards fully interoperable and intermodal networks ready to operate under MaaS (Mobility as a Service) principles;
- ▶ Encourage greater involvement by experts from all UIC regions to achieve better transparency and a more open project inception and management process.



From an organisational point of view, the UIC Railway System Forum (RSF) was able to give itself the means to achieve its ambitions in 2020 and 2021:

- ▶ by clarifying the functioning of its Steering Committee, the body by which all strategic decisions are prepared. This was made possible through the adoption of new Terms of Reference by the UIC General Assembly in December 2020, allowing the nomination of Chief Technical Officers within the Steering Committee;
- ▶ by creating two new sectors: Operations and Railway Digital Modelling, to bring the total number of UIC RSF sectors to eight: CCS and Telecom, Asset Management, Infrastructure subsystem, Interfaces and interaction between infrastructure subsystem and rolling stock, Rolling stock, and Energy; and
- ▶ thanks to its 38 working groups, working every day on all these subjects and bringing together dozens of experts recognised in their field.



Autonomous Technologies in Rail – Anticipating Expectations webinar – June 2021

With the publication of the Vision 2030 “*Design a better future*” at the end of 2021, the UIC Railway System Forum (RSF) has been able to translate these essential milestones into a systemic vision that can be summed up in three concepts: capacity, quality of service and continuous improvement of railway services, and innovation. These three concepts have been transformed into concrete actions in the multi-annual work programmes of the eight sectors. In further concrete action, RSF has been working on the following items: FRMCS, traffic control centres and crisis management, automation (DAC, ATO, Artificial Intelligence, robotics, automatic inspections, 5G use cases), new safety demonstrations, predictive maintenance, the reduction of railway noise, green energy, hydrogen and batteries, lighter trains, resilience of railway infrastructures and rolling stock to climate change, railway digital modelling, the integration of maintenance in the railway system architecture, predictive maintenance,

Acceptable Means of Compliance (AMoCs), operational rules adapted to market uptake of innovative solutions, and the dissemination of innovative solutions.

At European level, this consolidation was also made possible by UIC’s application for the System Pillar of the Europe’s Rail JU (the successor of Shift2Rail innovation programme).

4 This presence in the System Pillar, which is important for UIC members, has been prepared since September 2020, thanks to the remit given to UIC by the UIC European Management Committee.

In addition, on the basis of the V-cycle, the eight multi-annual sector work programmes will ensure the migration of UIC leaflets into International Railway Solutions. They will start the revision of IRSs on a five-year cycle, where necessary, and also ensure the publication of other UIC documents, such as specifications, reports and guidelines.

Last but not least, the “Vision of Rail in 2030” highlights the need for innovation, but also the creation of millions of new skilled jobs, and the necessary redeployment of people from the aviation and automotive sectors to the railway sector. Training will be a key success factor to consider.

In other words, UIC encourages, through its “Vision of Rail in 2030”, its Rail System Forum multi-annual work programmes and its involvement in Europe’s Rail System Pillar, the allocation of funds to invest in improvements of capacity and quality of service, innovation and the continuous improvement of railway services, in order to drastically increase the number of trains worldwide and the number of passengers and amount of freight carried.

## Infrastructure challenges

### Infrastructure Subsystem Sector

 Guided by the UIC 2020-2022 Work programme, the Infrastructure Subsystem Sector (ISS) is one of the technical platforms to address member needs. ISS, as the physical layer of the rail system, ensures safe and reliable operation.

The main objective is to coordinate work between UIC members to increase the knowledge of the railway network using innovative technologies and data-driven decisions. Another objective is to encourage members to share best practices and to lead infrastructure managers towards technical solutions that serve their priorities.

UIC ISS works under the umbrella of two high-level groups of experts: the Track Expert Group (TEG) and the Panel of Structural Experts (PoSE). These groups have completed two ambitious projects:

- ▶ DESMAN, related to the decision-making process for selecting the most suitable track type from various potential solutions (ballasted track or slab-track) for a given new line. The group has published the new IRS 70727: Track superstructure decision-making systems.
- ▶ MIILA, harmonised methodology to assess the infrastructure life cycle. The publication of the final report concludes the outstanding work of this group to guide infrastructure managers towards a predictive maintenance algorithm.

During 2021, ISS published the following International Railway Solutions (IRS) as a result of its commitment to update IRSs with stakeholder needs:

- ▶ IRS 70779-9: Safety in railway tunnels: a compendium of possible measures to increase safety in railway tunnels, reflecting the best practices of European railways.
- ▶ IRS 70724: Track equipment for 25 tons (250 kN) axle loads on ballasted track: setting up recommendations for track components and sub-grade to be used on the main lines of rail networks.

- ▶ IRS 70705: Infrastructure for tilting trains: pooling knowledge regarding the track design parameters for the operation of tilting trains on conventional lines.

PoSE and TEG received three 2021 UIC in Excellence Standardisation Awards for publishing the following IRSs:

- ▶ IRS 70719: Earthworks and track bed layers for railway lines – Design and construction principles. Proficiently developed
- ▶ IRS 70778-3: Recommendations for the inspection, assessment and maintenance of masonry arch bridges. Business oriented
- ▶ IRS 70723: Technical aspects of vegetation control and tree risk management. Proficiently developed

Other publications in 2020 consolidated the railway bridges studies, harmonised with the agreement of our members:

- ▶ IRS 70778-2: Carrying capacity and fatigue risks of existing metallic railway bridges.
- ▶ Guides for the execution and control of repairs for masonry arch bridges: “Cleaning manual” and “Maintenance and replacement of existing masonry”.

Over 2020 and 2021, ISS continued to provide a link for members to debate and communicate, with 15 ongoing projects, including STABLETRACK, DEMOSLEEPER, DRONE4RAIL and AT-WOOD. ISS participated in webinars, debates and symposiums worldwide, disseminating UIC objectives and explaining the projects and activities of the sector.

Since 2021, ISS has been coordinating an internal UIC task force to catalyse our members’ priorities concerning railway adaptation to climate change. In this regard, ISS has already launched its first worldwide project, RERA-Rain (REsilient RAilways facing Heavy Rains) focused on the impact of flooding on infrastructure.

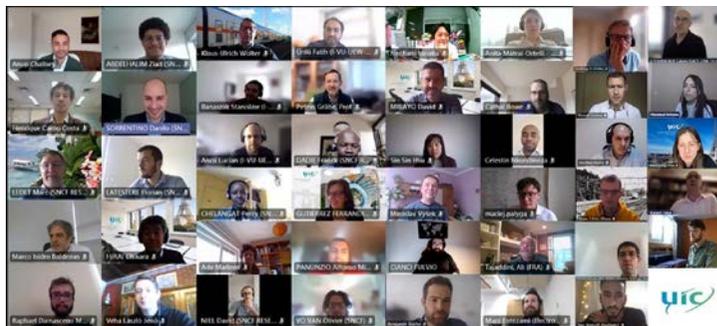
## Interfaces and interaction between infrastructure subsystem and rolling stock Sector

✓ Leveraging data and sharing experiences, as stated in the UIC 2020-2022 Work programme, has guided the activities of the Interfaces and interaction between infrastructure subsystem and rolling stock (TTI) Sector. This sector provides a system-based approach between the infrastructure and vehicles.

In the field of acoustics, the White Paper was published in 2020. Its first project, AERONOISE, analyses the systems that characterise high-speed train aerodynamic noise. Its first findings were shared with the railway community during the UIC Railway Noise Days webinar.

Concerning aerodynamics, two ongoing projects have created a community of experts debating crossing of trains: the CROSST project and Sidewind Assessment for Infrastructure and Rolling Stock, thanks to the SAFIRST Project. The group published two Technical Reports in 2021: “Assessment of wind exposure along railway lines” and “Assessment of crosswind risk on locomotives and passenger rolling stock”. The reports will merge their findings in a new essential International Railway Solutions on the process to prove crosswind safety.

Aligned with the UIC objective of improving predictive maintenance, the HARMOTRACK project has created a worldwide community of more than 100 companies and research institutions proposing new ways to improve the performance of the rail system using dynamic measurements for track monitoring.



Third plenary meeting of the HARMOTRACK project - April 2021

In 2021, the UIC Railway Dynamics group also launched a new project, G-CODE, to harmonise the different codification methodologies for gauges of infrastructure managers and railway undertakings. Finally, the group published the first edition of IRS 50505-1: “Railway transport stock – Rolling stock construction gauge” in collaboration with the Organization for Cooperation of Railways (OSJD). As a result of this international collaboration, the document was awarded by the UIC Standardisation Platform as one of the best new International Railway Solutions in the “Standardisation Interfaces” category.

## Artificial Intelligence

✓ While predictive maintenance was indeed part of the UIC 2020-2022 Work programme, UIC went further in 2020 and 2021, setting up the Artificial Intelligence on Predictive Maintenance project.

This project, decided in 2020, actually started in early 2022.

In addition to breakdown maintenance and preventive maintenance, thanks to advanced statistical methods such as Machine Learning, it is now possible to set up predictive maintenance, which can “*dynamically define whether a machine is okay or needs to be maintained*”.

Thus, “*predictive maintenance predicts future breakdowns by giving you a probability, whereas condition-based maintenance prevents additional breakdown cost by telling you something is wrong now*”.

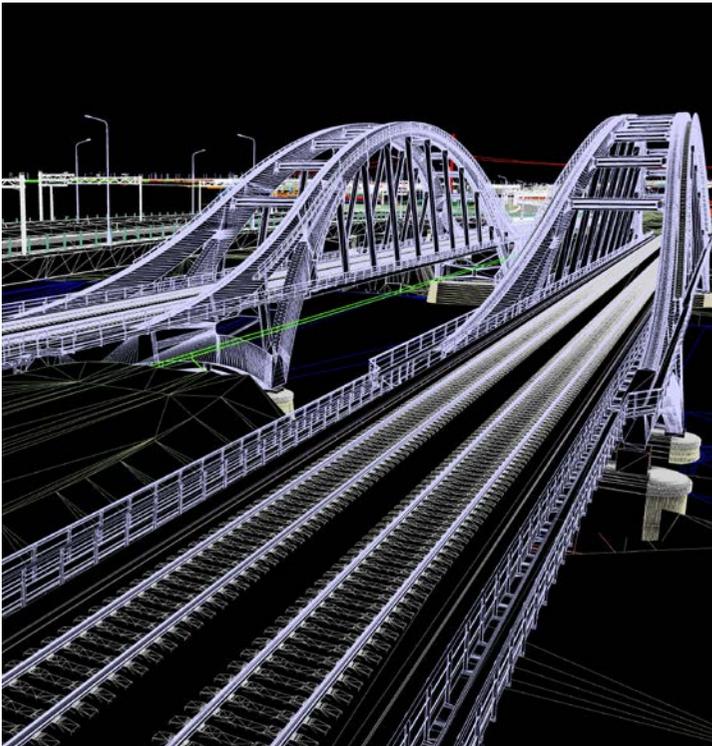
This is why, subject to considerable adaptation of maintenance activity planning, predictive maintenance can improve availability, reliability, punctuality and safety, while supporting a cost leadership strategy.

In addition, it can improve return of experience, paving the way for future innovations in the field of maintenance. It should be noted that predictive maintenance requires far more data, due to its statistical methods. It is in this context that UIC is making concrete preparations for the complete digitalisation of the railway system.

## Modelling / digital twins

The aim of the Digital Modelling initiative is to participate and contribute to the building of a tooling ecosystem to support the digitalisation of railway operation. UIC Digital Modelling activities are centred around two main projects, RailSystemModel and OntoRail, and active participation in several research and innovation projects, in particular the Shift2Rail / Europe's Rail Joint Undertaking (ERJU) project as part of the European Union Horizon 2020 programme.

RailSystemModel is a generalist digital model of the railway system that cooperates with railway domain specialist initiatives like Eulynx for signalling or IFC Rail for Building Information Modelling (BIM) and provides a structural backbone to foster digital continuity across domains of the railways system (track, signalling, energy, telecom, operations, etc.) and across system dimensions (functional, spatial, topology, geometry, etc.).



The OntoRail knowledge engine is a project leveraging the expressive power of ontologies to consolidate and enrich railway systems modelling knowledge into an encyclopaedia, and to facilitate convergence and federation between models that would otherwise coexist as silos.

Both projects, RailSystemModel and OntoRail, are essential enablers of the work undertaken by the LinX4Rail project of the Europe's Rail Joint Undertaking. LinX4Rail aims to produce a comprehensive set of tools encompassing functional railway architecture and a conceptual data model to be packaged as a Digital Twin Toolbox. LinX4Rail tools and methods are in turn foreseen to be underlying enablers of the ERJU upcoming programme organised around an Innovation Pillar and a System Pillar.

Over the 2020-2022 period, UIC delivered major milestones for its two leading projects:

- ▶ RailSystemModel 1.2, a major update and successor to RailTopoModel 1.1 (IRS 30100), bringing increased usability and new modelling packages, in particular *Specification, Observation, Prediction* paving the way for several railway use cases, such as asset management or simulations.
- ▶ The first version of OntoRail with the ability to provide a unified ontology-level view over key digital models of the railway system and associated tools to support convergence between these models as part of the LinX4Rail program.

The progress of the work was notably embodied by an online webinar on Digital Modelling for the operational railway held in June 2021 and subsequent presentations at several conferences and industry events.

✔ While putting digital technologies at the centre of the railway system is a clearly stated objective of the UIC 2020-2022 Work programme, by facilitating the emergence of railway digital modelling (“digital twins”), this dimension has clearly taken on more importance than expected in 2021.

## High speed

UIC members' high-speed rail activities are coordinated by the Intercity and High-Speed Committee (ICHSC), which contributes to the development of high-speed rail systems around the world through benchmarking, standardisation, recommendations, training, operational studies and reports, and promotes the business through its flagship UIC World Congress on High-Speed Rail event, "UIC HIGHSPEED", organised every two years.

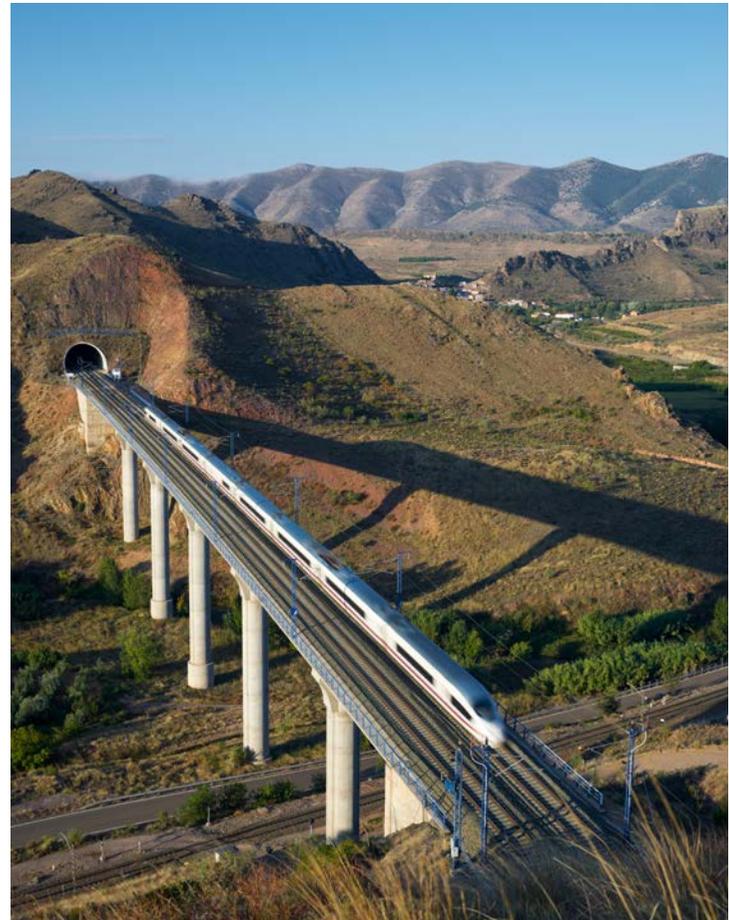
The ICHSC brings together several UIC railway members who are either active in long-distance or high-speed rail domains in their day-to-day operations or have identified it as a development objective. It is primarily a forum in which each member can share their experience and benefit from the experience of others in working groups and workshops.

The Committee offers a wealth of expertise available in several ways: by means of the high-speed database and maps, and by issuing reference documents and numerous publications. This includes the UIC High-Speed Rail Atlas, a unique document that gives an overview of all high-speed lines around the world, supplied and reviewed by members.

Within the context of the UIC Alliance of Universities, a global academic network established in 2015 under the aegis of UIC for the development of high-speed rail, the first International Workshop on High-Speed Rail Socioeconomic Impacts was held successfully online on 14 and 15 September 2021. The five-session programme over one-and-a-half days gave participants the opportunity to explore and discuss recent research on the analysis and quantification of the effects, both on the economy and on society, of investments in high-speed rail systems.

During the last plenary session of the UIC Intercity and High-Speed Committee held on 23 June 2021, ICHSC members decided to create a Night Train working group within the ICHSC.

The main goals of this group are to build a partnership bringing together night train players, to implement standards for coaches and sales systems, to strengthen the economic situation of night trains, and to specify path fees/track access charges for night trains. The group will work closely with other working groups of the Passenger Department: the working group in charge of defining the Special Conditions of International Carriage (SCIC) for Night Trains within the Passenger Services group, the Railway System Department and other UIC platforms.



## Research and innovation driving UIC projects: Freight

Innovation, and thereby research, is at the heart of the business of rail freight operators, as it is one of the major levers to ensure competitiveness and modal shift, and thus their contribution to making goods transport in Europe greener.

The foundations of the innovation strategy were already laid in the Vision Paper “30 by 2030”. This was then materialised in the elaboration of key technological game changers. Digital Automatic Coupling is one of the biggest technological step changes in European rail freight operation, as it will be needed to switch around 400,000 freight wagons and locomotives to digitally capable couplings by 2030.

With an even shorter timeline, the sector has defined the way forward to bring the existing digital platforms under one

overarching architecture able to ensure effective communication between operators and, even more importantly, with their customers.

On the same timeline, major steps forward are being made through the better collaboration of infrastructure and operators in joint initiatives regarding the development of Digital Capacity management.

Efforts on Automatic Train operations and the deployment of ERTMS are continuing.

When it comes to this technological development, UIC plays a double role as both enabler and provider of technical expertise. Where appropriate, UIC is an active partner and member of specific projects, as for the Translate4Rail project.

## COVID-19 RESILIENCE

The Covid-19 pandemic, although an unfortunate period, gave rise to a shift from road to rail. Due to a sharp drop in demand for passenger traffic and the postponement of infrastructure works, international freight train punctuality increased from around 60% up to 80-90%. This shows that there is no systematic issue with rail freight and that when freight has access to good quantity and quality of capacity, it can provide an attractive product to end users.

The reductions, waivers and deferrals of track access charges (TAC) introduced in Regulation (EU) 2020/1429 of the European Parliament and of the Council have armed the sector to battle the financial issues.

However, the sector deserves a lasting solution to ensure competitive and environmentally friendly rail transport, as every kilometre of track is currently a subject to TAC, in comparison to road where the equivalent pricing scheme is placed on only a fraction of the infrastructure.



## Security achievements and current European research projects

### Security-related research projects

In 2020 and 2021, security-related research activities were very intense with four EU-funded research projects.

- ▶ The PROACTIVE EU H2020 project on increasing practitioner effectiveness in managing large and diverse groups of people in a Chemical, Biological, Radiological, Nuclear, and high yield Explosives (CBRNe) environment (coordinated by the UIC Security division) began in May 2019 and was extended in 2021 until August 2023. The main achievements in 2020 and 2021 were the preliminary recommendations from three systematic literature reviews and one study with practitioners, including railway stakeholders, as well as the constitution of an extended network of 87 practitioners from 21 countries (15% rail security experts) to foster cooperation between railway stakeholders and specialised CBRNe first responders.
- ▶ In spring 2020, the UIC Security division, as coordinator of the EU H2020 project SAFER-LC (Safer Level Crossings), organised a very successful final conference, which was one of UIC's first major events to be moved entirely online because of the pandemic. It gathered more than 180 participants from around 35 countries all over the world and was hailed as a success by all present for the results achieved by the project, including the SAFER-LC Toolbox available at [toolbox.safer-lc.eu](http://toolbox.safer-lc.eu).
- ▶ In October 2020, the EU Internal Security Fund Police SHERPA project (SHared and coherent European Railway Protection Approach) which aims to improve the overall security level at railway stations and in trains in terms of protection against terrorism across Europe (coordinated by the UIC Security division with the involvement of DB, FS, PKP, SNCB and SNCB), presented its final results. One of the main achievements was the update of the Rail Security Hub with 38 solutions focusing on railways solutions to protect stations and trains against terrorism. The SHERPA project results are available at [sherpa-rail-project.eu](http://sherpa-rail-project.eu).

- ▶ At the same time, the two-year EU-funded H2020 project SAFETY4RAILS, which aims to increase railway infrastructure resilience against combined cyber-physical threats started.

In 2021, the EU-funded H2020 projects PROACTIVE and SAFETY4RAILS continued to meet their goals. A multitude of activities have taken place throughout the year, mostly online: surveys, interviews, focus-groups and workshops. Many UIC members contributed to the PROACTIVE study on common approaches of CBRNe Practitioners and the SAFETY4RAILS survey on requirements for multimodal transport systems, including crisis management and crisis communication.

A special thanks to the Security Platform SIA working group for organising a meeting focusing on combined cyber-physical threats in May. Crisis communication was a central topic of 2021 for both projects, marked by several joint activities (e.g. PROACTIVE and NO-FEAR webinar and the COVINFORM and PROACTIVE White Paper on inclusive communication). All results can be found on the respective project websites: [proactive-h2020.eu](http://proactive-h2020.eu) and [safety4rails.eu](http://safety4rails.eu).



# EMINS DE FE



EFFICIENT AND  
TRANSPARENT  
MANAGEMENT

## EFFICIENT AND TRANSPARENT MANAGEMENT

### Contingency plan and management control

 In 2020, UIC took internal measures to fight against the economic impact of Covid-19.

UIC set up a contingency plan following the Covid-19 crisis and made all possible efforts to remain operational following the lockdown imposed by the French government in mid-March 2020. Thanks to the main lines of action of the UIC 2020-2022 Work programme, UIC anticipated fostering the use of video-conferencing. It was therefore possible to avoid interrupting its different workflows. The work of the various forums and platforms remained mostly unchanged.

At the various platform forums, UIC was able to appreciate the extent to which all its members continue to support UIC's project activity. However, it was quite clear that not all the projects initially envisaged would be able to be carried out on time in 2020. UIC Headquarters therefore carried out a thorough analysis in order to evaluate which projects could be delayed or even cancelled. In addition, savings measures both on expert contracts and, of course, on hospitality, travel and operational expenses, were also closely examined.

UIC, at the instigation of the Director General François Davenne, and with the approval of UIC Chair Gianluigi Castelli, developed and decided upon a contingency plan that guaranteed financial stability during the crisis, as well as an orderly recovery. The measures taken were developed by UIC management with the involvement of the staff, who have showed their dedication in accepting stringent measures regarding the organisation of work.

François Davenne monitored the evolution of the situation closely and adapted the measures. Every two months, UIC issued a "UIC Covid-19 Economic Report" based on monitoring of the main financial indicators.

### The support of UIC members

More importantly, UIC needed the support and commitment of its members in continuing their involvement in the association's projects and activities. This was the only way for UIC to continue demonstrating the added value of international cooperation in delivering efficient operational solutions for the railways. As an example, the Covid-19 Task Force, which comprised most of the world's railway companies under UIC coordination, was implemented in just a few days and demonstrates the great value of collective efforts.

Based on the valuable input of its members, a first guidance document on measures was published by UIC only a few weeks after the start of the pandemic. A second document pertaining to the actions taken by the task force members was published next, as well as a guidance document concerning the recovery phase ("RAILsilence: How the rail sector is fighting Covid-19"). This is a further demonstration of the key role of UIC in sharing the practices of its members and proposing recommendations in order to have consistent solutions around the world. All these documents and actions have the common aim of preventing customer distrust. This shows the importance of the measures taken to prevent the spread of contamination.

### **An audit in 2020 for a new organisation put in place end of 2021**

In order to make UIC even more efficient, an audit of the support functions was carried out in the last quarter of 2020 by an external consultancy firm. The UIC Executive Board approved the guidelines of this audit in July 2021.

The objective of the audit was to establish a situational analysis of the organisation in terms of its operational functioning, resources and procedures and to provide recommendations for a plan of action with solutions to optimise the organisation.

One of the main recommendations formulated by the auditor was to develop higher maturity in project management functioning mode. A particular focus was the need to reorganise the finance services.

Each entity was provided with a roadmap of what to do and by when, specifically regarding the allocation of staff.

A number of key success factors for the necessary transformation were identified and the transformation roadmap for the relevant support functions were presented, with cross-functional steering and support for the transformation (including Directors' Committee support) as a key success factor.

This audit represents an additional effort towards transparency, cost efficiency and frugality. In other words, this internal audit was a step towards further improvement.

This need for improvement was reflected over the course of 2021 by the implementation of the recommended measures.



[www.uic.org](http://www.uic.org)



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