



UIC ACTIVITY REPORT 2018



INTERNATIONAL UNION
OF RAILWAYS



INTERNATIONAL UNION
OF RAILWAYS

UIC
ACTIVITY
REPORT
2018



INTERNATIONAL UNION
OF RAILWAYS



FOREWORD BY GIANLUIGI CASTELLI, UIC CHAIRMAN	09
FOREWORD BY JEAN-PIERRE LOUBINOX, UIC DIRECTOR-GENERAL AND FRANÇOIS DAVENNE, DEPUTY DIRECTOR-GENERAL	11
UIC MEMBERS AROUND THE WORLD / 2018 FIGURES	12
UIC, THE WORLDWIDE RAILWAY ORGANISATION	14
STANDARDISATION	20
DIGITALISATION	21
UIC FACTS AND FIGURES	22
 UIC AREAS OF ACTIVITY	
PASSENGER	26
FREIGHT	32
RAIL SYSTEM	38
RESEARCH	44
SAFETY	48
SECURITY	52
SUSTAINABLE DEVELOPMENT	58
EXPERTISE DEVELOPMENT & TRAINING	64
 UIC'S REGIONAL ACTIVITIES	
AFRICA	70
ASIA-PACIFIC	72
EUROPE	74
LATIN AMERICA	76
MIDDLE EAST	78
NORTH AMERICA	80
 UIC SUPPORT ACTIVITIES	
COMMUNICATIONS	84
FINANCE	85
INSTITUTIONAL RELATIONS	86
HUMAN RESOURCES	87
IT	88

FOREWORD BY
GIANLUIGI CASTELLI
UIC CHAIRMAN



2018 was an important year for UIC and its members, demonstrating the association's capacity to lead projects and to organise successful activities and events in the mobility and environmental sectors. Worthy of particular mention are the first Global System Conference on Signalling and Telecoms, held in Milan, the tenth World Congress on High-Speed Rail in Ankara, the sixth UIC Global Rail Freight Conference in Genoa and the UIC Regional Assemblies for Africa, Asia-Pacific, Europe and North America.

**“UIC HAS DEVELOPED
A PLAN TO UPDATE
AND MIGRATE ALL
EXISTING UIC LEAFLETS
TO IRS, ENSURING A
COMPREHENSIVE SUITE
OF DOCUMENTATION...”**

Despite numerous challenges, the past decade has been a successful one for UIC. The organisation is currently undergoing a period of transition, with changes to the management team, and is managing the process carefully in order to ensure that it is as smooth and seamless as possible.

UIC faces new challenges in 2019. Digitalisation will provide us with new technical, organisational and business capabilities to enable a comprehensive human and industrial transformation. Our goal must be to promote and accelerate this transformation. Due account must be taken of innovation in the standardisation process and, in particular, in the production of International Railway Solutions (IRS). UIC has developed a plan to update and migrate all existing UIC leaflets to IRSs, ensuring a comprehensive suite of documentation to support the design, construction, operation and maintenance of services provided by the railway operating community to the end user. ...

“GOVERNMENTS, THE PRIVATE SECTOR,
CIVIL SOCIETY AND CITIZENS MUST WORK
TOGETHER TO ACHIEVE THE SUSTAINABLE
DEVELOPMENT GOALS...”

•••

Railways represent the backbone of the international freight corridors extending from east to west throughout the Asia-Pacific and North and South America regions and across the African continent. This network brings together a range of different activities and stakeholders, from private companies and intergovernmental institutions to multimodal players and funding institutions. In this context, UIC must continue its commitment to pursuing international interoperability and developing tailored solutions.

The 17 Sustainable Development Goals (SDGs) came into effect in January 2016 and are guiding the United Nations 2030 Agenda for Sustainable Development.

Governments, the private sector, civil society and citizens must work together to achieve the Sustainable Development Goals to ensure that we leave behind a better planet for future generations. UIC will continue to play an important advocacy role in this regard, highlighting the potential of the railways as a clean and sustainable cornerstone of future passenger and freight transport systems.



FOREWORD BY
JEAN-PIERRE LOUBINOX
UIC DIRECTOR-GENERAL
AND
FRANÇOIS DAVENNE
DEPUTY DIRECTOR-GENERAL

A period of transition is traditionally a time to take stock and identify and develop future opportunities. At UIC, a programme for modernisation of standards is now well underway. Along with many other aspects, this activity has been supported by the association throughout its history and is now the subject of a renewed focus.

A homogenous rail network is taking shape at European level, and the same trend can be seen in the area spanning Asia, the Middle East and Europe. Africa, for its part, is putting in place a framework plan, and major railway projects are underway in Latin and North America. Our International Railway Solutions for operation, maintenance and services are essential to ensure that the railway sector forms the backbone of the sustainable mobility desired by all.

In this new edition of the 2018 activity report, the various UIC departments present an overview of their activities, work and projects. These activities have their origins in UIC's strategic plans, which have been updated for each of the association's regions. These plans, validated at regional and general assemblies, are implemented on the basis of proposals from UIC's forums and platforms.

UIC members' involvement entails both overseeing such bodies and ensuring expert in around one hundred working groups. These

efforts enable implementation of the projects and standards that are so vital to the railway sector.

UIC's activities, presented in this report, are performed in accordance with our three sets of guiding principles:

- ▶ philosophical principles: open, share and connect;
- ▶ operating principles: productivity, professionalism and promotion;
- ▶ activity-based principles: strategic thinking, technical expertise and cultural dimensions.

Thus, UIC's activities promote the railways and the vital role that they play throughout the entire world, in an interoperable and intermodal context, as the cornerstone of a chain of sustainable, integrated, connected and global mobility.

This activity report, together with other UIC publications, will help our members to understand and evaluate the interplay between our strategic plans and their practical implementation, supported by working budgets and associated projects both at regional and global level. During this period of transition, the aim of the report is to provide clarity in relation to our work as a whole and to serve as a basis for the future development of all UIC activities for the benefit of the international railway community.

UIC MEMBERS AROUND THE WORLD

2018 IN FIGURES

GOVERNANCE

11

new UIC members

10

statutory meetings
and numerous preparatory
meetings

15

forum and platform
meetings held as scheduled

100+

technical groups, monitoring
nine special groups

Numerous projects and

7

global conferences

STANDARDISATION

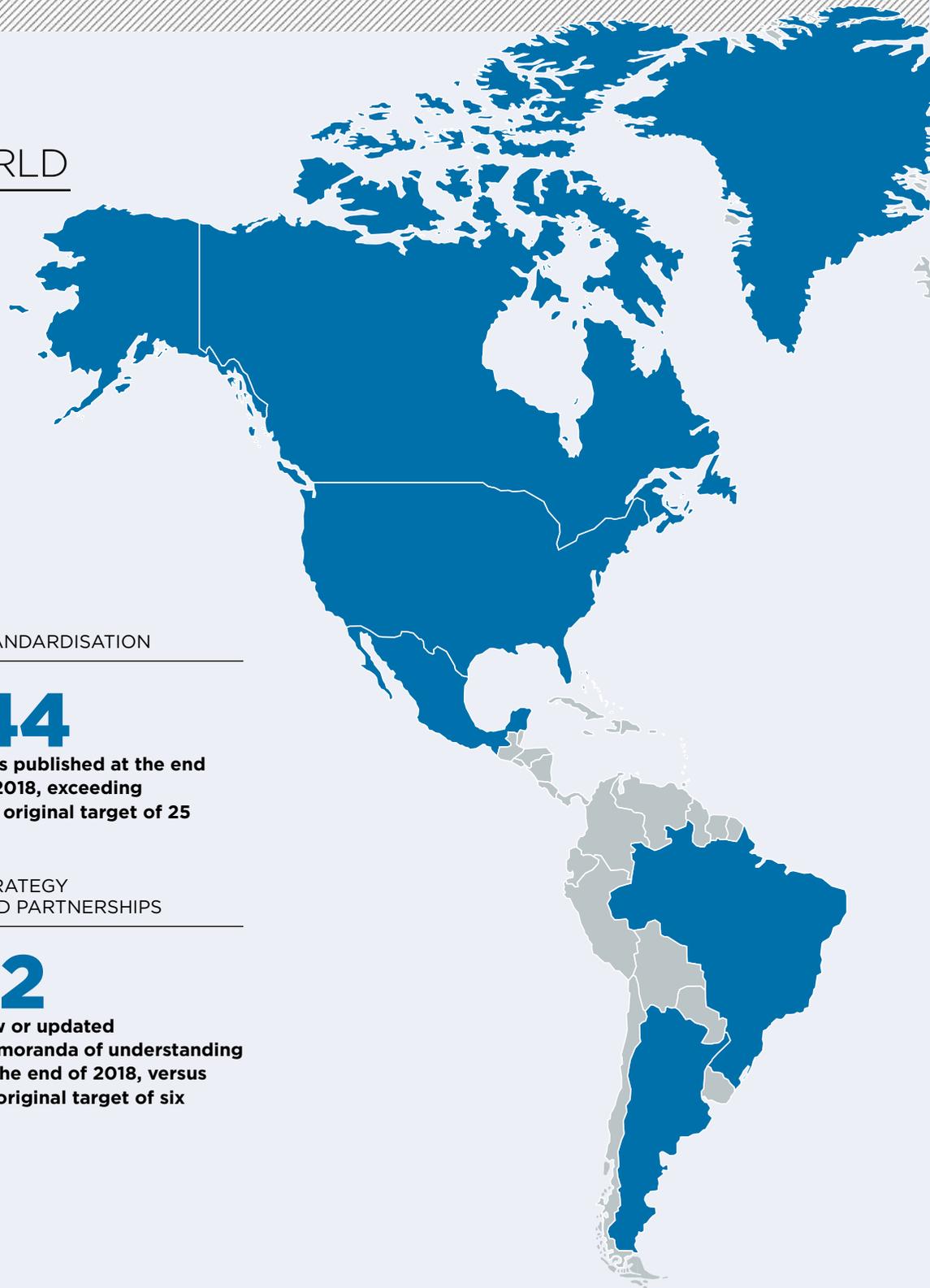
44

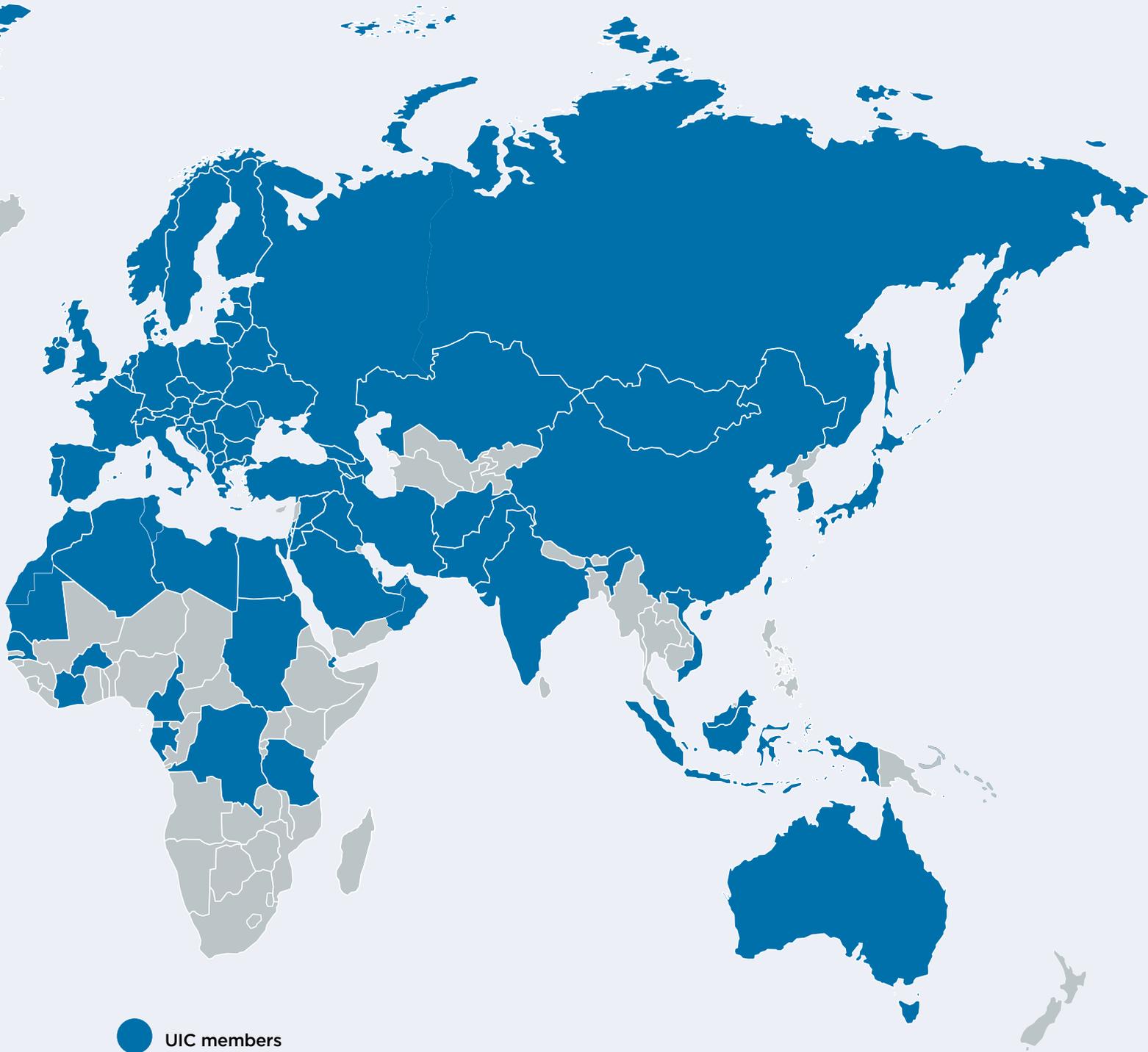
IRs published at the end
of 2018, exceeding
the original target of 25

STRATEGY AND PARTNERSHIPS

12

new or updated
memoranda of understanding
at the end of 2018, versus
an original target of six





 UIC members

UIC, THE WORLDWIDE RAILWAY ORGANISATION

UIC'S VISION AND MISSION

A vision for an innovative sector

UIC is the worldwide organisation tasked with promoting rail transport and developing the railway system to support the strategies of its members: rail operators, infrastructure managers, railway service providers and other industry stakeholders.

UIC has been an SSO (standards setting organisation) since its creation in 1922, and technical harmonisation of the railway system remains one of its core objectives. Its members — the operators of the world's railways — have, over the years, developed the "UIC code" comprising UIC leaflets, which define common rules to ensure safety and efficiency in the design, construction, operation and

UIC'S MISSION IS TO:

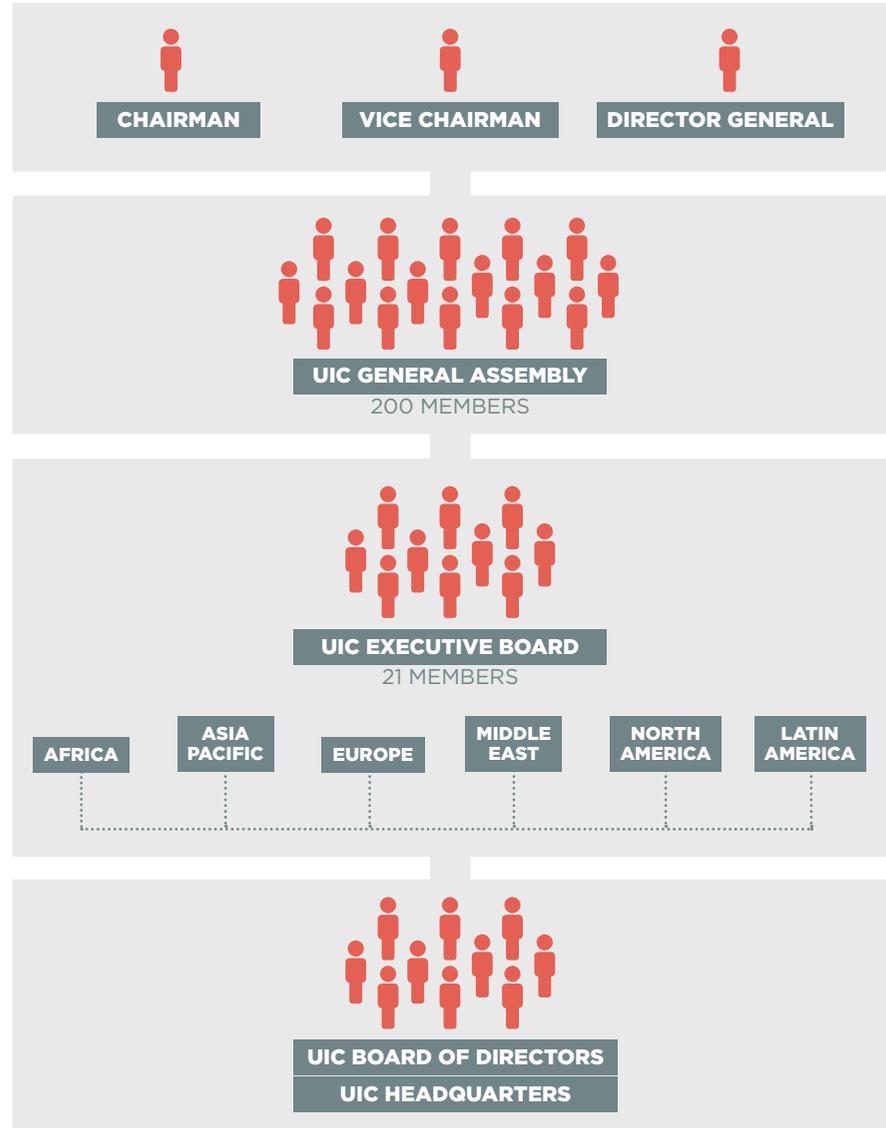
- ▶ promote rail transport globally with the objective of responding effectively to current and future challenges relating to mobility and sustainable development;
- ▶ develop and facilitate all forms of international cooperation among members and promote sharing of best practice;
- ▶ promote interoperability and develop and publish solutions to railway system-related issues (IRs);
- ▶ support members in their efforts to develop new business and areas of activity;
- ▶ propose new ways to improve the technical and environmental performance of rail transport, increase competitiveness and reduce costs.

UIC management team.



maintenance of the railway system. Many of these rules are also applied outside the railway operating community. They are the outcome of work conducted independently by railway operators in order to harmonise the railways in a feasible and efficient manner. IRSs are progressively replacing UIC leaflets and are being adapted to incorporate regional variations. Nevertheless, the objective underlying the documentation remains unchanged: it helps railway companies in their aim of serving society and the economy. Representing a rich and diverse membership across the globe, UIC relies on its collective knowledge and technical expertise to develop and enhance the reputation of the railway sector so that it is associated with flexibility, simplicity, freedom and comfort. These concepts go hand in hand with our members' fundamental values, such as safety, security and solidarity. This Activity Report highlights the extent to which the joint efforts of the sector are bearing fruit and contributing to the development of rail transport. With the support of its many partners throughout the world, UIC also serves as a platform for its members to showcase rail transport as the transport mode of the future: a future that will be characterised by low-carbon transport and in which sensible use of multimodality will enable reduction of pollution and congestion and free up public space in our cities.

GOVERNANCE



INTERNATIONAL COOPERATION AT UIC

Strategic cooperation

UIC coordinates the strategic objectives and action plans for its six railway regions. The General Assembly comprises the CEOs of all UIC members, and the Executive Board is composed of 21 members representing each of the UIC regions.

Technical cooperation

UIC's railway projects are coordinated by its forums and platforms, bringing together leaders in each area of expertise. UIC is first and foremost a repository of railway expertise and a forum for sharing experience and developing solutions in order to increase railway competitiveness. It is at UIC that current and future operating specifications and solutions are first developed. UIC's coordinated projects and collaborative approach boost railway efficiency and attractiveness the world over. UIC also facilitates the development of international rail link for the benefit of all railway users.

Support services

UIC projects are supported through its communications, finance, HR, legal and institutional functions for the benefit of all stakeholders. To complement this structure, UIC special groups are established by the General Assembly at the express request of members to deal with technical issues not specifically addressed by UIC's working bodies (forums and platforms). In many cases, the special groups involve the active participation of third parties — non-UIC members — whose cooperation is essential. From a legal standpoint, the special groups are UIC working groups; their results are audited and consolidated annually within the overall UIC budget.

Strategic axes

Two complementary themes are taken as a basis in this report to highlight UIC's ability to break through technical

barriers: the IRS development process and digital technologies. Readers will note inserts throughout the report, serving as reminders of the importance of developments in these areas for the sector.

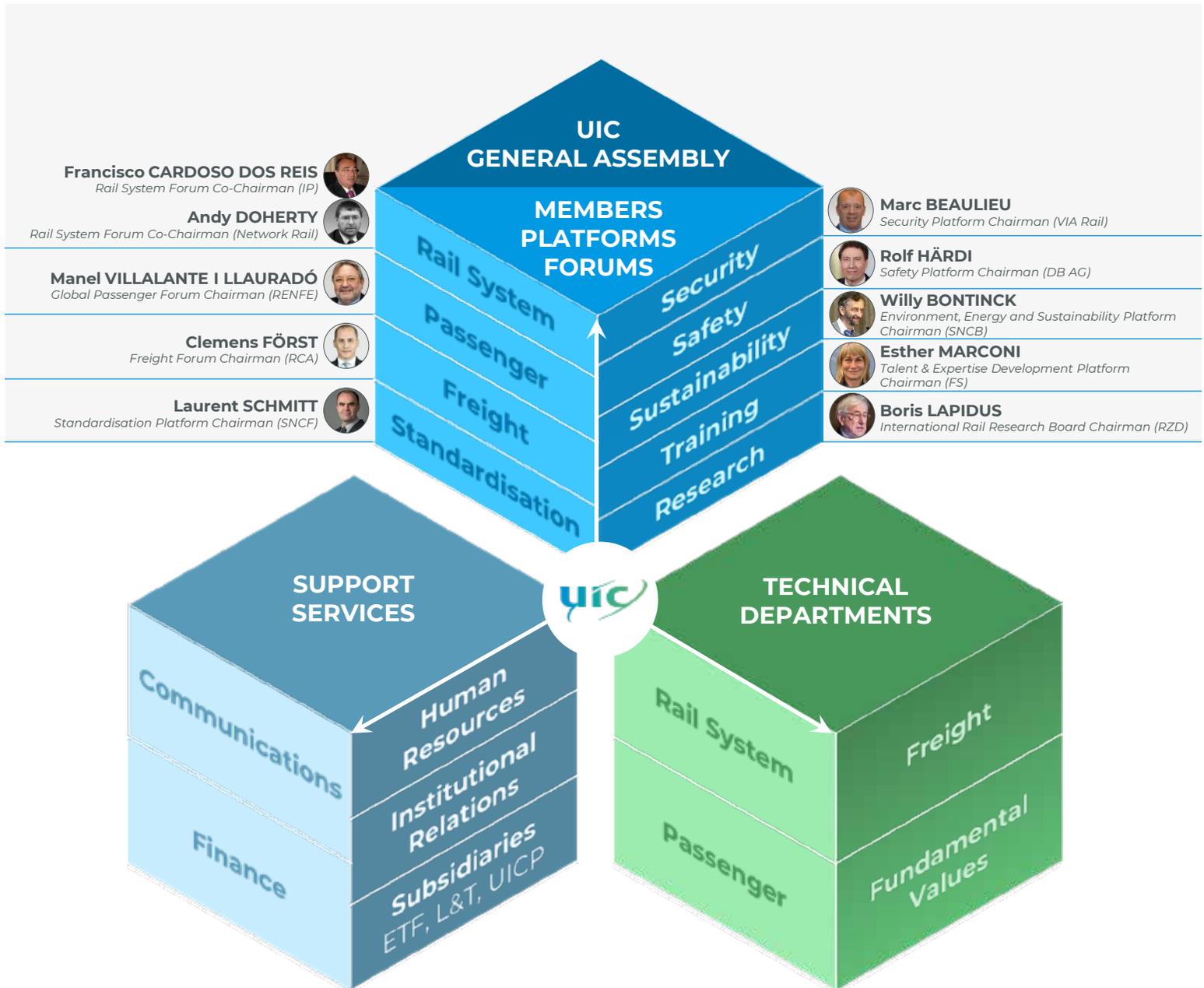
Values

UIC's philosophy consists of embodying the values of unity, solidarity and universality so as to serve as a platform for sharing information, best practice, experience, ideas and technical solutions. UIC seeks to encourage interoperability by fostering links between members and experts and recognising the needs of the customer. The Digital Platform was created in 2015 to pave the way for future developments, while the Fundamental Values department works on cross-functional issues affecting the sector as a whole and which serve as a basis for future rail transport growth.

European projects

In 2018, UIC remained committed to supporting the European Commission in its efforts to further research for improved mobility in Europe. UIC contributed to numerous projects funded by the European Commission through the involvement of its expert teams. Now widely recognised for its competence in project management, UIC is invited by many partners to join consortia within the framework of bids and calls for tenders issued by the European Commission.

Some 20 European projects are currently underway, and numerous other project applications are being prepared or are undergoing the evaluation process. In addition, UIC is continuing its efforts to develop the professional skills of its teams dedicated to projects funded by the European Commission. Two experts have already been certified as PRINCE2 practitioners and further team members will undergo the PRINCE2 certification process in the coming years.



UIC EXECUTIVE BOARD AND GENERAL ASSEMBLY (PARIS, DECEMBER 2018)





STANDARDISATION

Standardisation has been a core element of UIC's activity ever since the first UIC Leaflet was published in 1928. A significant programme of work is currently underway with the aim of modernising this important set of assets and contributing further to the standardisation of topics relating to the design, construction, operation and maintenance of the services provided by railways to their customers.

STANDARDISATION PLATFORM

The Standardisation Unit (SU) was established to support the Standardisation Platform, chaired by Laurent Schmitt (SNCF), and began its activities in January 2018. The SU coordinates and supports the development and delivery of UIC's standardisation assets. This includes organising a large-scale review of UIC leaflets and prioritising their migration to International Railway Solutions (IRS).

The experts and personnel involved in these efforts are committed to:

- ▶ anticipating the possible impact of new technologies, policies, business and market developments on the railways (research activities, digital agenda, AI, automation, next-generation equipment, etc.);



- ▶ working proactively towards a more agile and efficient programme of IRS production involving all of the relevant stakeholders;

- ▶ providing a support framework to act as a catalyst for improvement (guidelines, educational resources, open source solutions, etc.).

PROGRAMME OF WORK

The migration strategy, which maps out the schedule of work that will see all of the relevant leaflets migrated to IRSs by the end of 2022, is the key to this ambitious programme.

A single point of contact (SPoC) has been nominated within each UIC team to act as an interface between the relevant working body and the SU so as to ensure an efficient migration process.

The short-term objective is to publish 100 IRSs by the end of 2020. 95 IRSs have been published thus far since the start of the programme: 44 in 2018, with a further 51 due for publication in 2019.

PARTNERSHIPS WITH EXTERNAL BODIES

UIC has established formal relationships with a number of international and European standardisation bodies - ISO, IEC and CEN-CENELEC - and holds regular formal liaison meetings with each of these bodies with the objective of ensuring consistency across the network and to avoid unnecessary duplication of work.

An updated technical cooperation agreement (TCA) with CEN-CENELEC was ratified in November 2018 at a signing ceremony in Brussels. The updated TCA is an amalgamation and recast of earlier agreements between UIC and CEN-CENELEC concluded in 2005 and 2008, respectively.

UIC is a member of the European Telecommunications Standards Institute (ETSI).

In addition, UIC has signed specific technical agreements with the European Union Agency for Railways (ERA) on the technical specifications for interoperability (TSI) for TAP (telematic applications for passenger services), GSM-R and FRMCS. UIC and ERA are developing a formal procedure for management of cross references between UIC documents and the TSIs so as to prevent duplication or overlap.

DIGITALISATION

UIC's Digital Platform is embodied by the Digital Executive Committee, which currently consists of eight members (Russia, China, Portugal, Canada, Morocco, Italy, Sweden and France). Reporting to the Director-General, the IT department is a cross-functional support service for UIC members.

It also liaises with and gives support to UIC's forums, platforms and project groups, in order to facilitate the digital transformation of the sector.

The Committee defines and implements UIC's digital philosophy:

► **Share:** organisation of workshops and conferences 6 December 2018:

<https://m.youtube.com/watch?v=b4PX4TnOEI8>

► **Open:** UIC implements Proofs of Concept (PoC):

https://uic.org/com/IMG/pdf/uic_poc_2019.pdf

► **Connect:** UIC Digital Platform ensures the connection between the rail sector and the worldwide digital eco-system. The main goal is to ensure, support and develop all potential synergies between startups, universities and the railways to take advantage of this innovation capacity for new projects.

UIC's activities in the digital domain are cross-functional and relate to issues pertaining to the Rail System, Passenger and Freight departments. These activities are also performed at regional level within UIC.

Since the creation of the Platform in late 2015, the "UIC Digital Progress Paper", a position

paper published at regular intervals, has considered the various issues relating to digitalisation and its impact on the railways, as well as the activities proposed and coordinated by UIC in this domain.

Activities 2018:

- First Participation in CES: active participation in CES and CES Government;
- Global Rail Freight Conference: design and presentation of Blockchain POC in full cooperation with the Freight Department;
- Digital Tour in China: opportunity for a small group of RAIL Executives to discover the Chinese digital eco-system and to meet major Chinese actors such as HUAWEI, TENCENT, ALIBABA... This followed the "UIC Digital Tours" (Silicon Valley, 2017, China 2018), enabling UIC members to meet and interact with key global digital players and business incubators;
- "Intelligent Rail" workshop in cooperation with Chinese Railway and CARS;
- 4th Digital Conference and awards in December 2018;
- Launch and development of DIGIM 1 programme with the participation of six Members and in full cooperation with VIA Rail. Design of 2 Proofs of Concepts (PoC);
- Clear Station: provide digital solutions for visually-impaired travellers to move autonomously and safely in railway stations;
- Digital level-crossings: optimisation of security at level-crossings thanks to digital developments.
- Two editions of the Progress Paper.

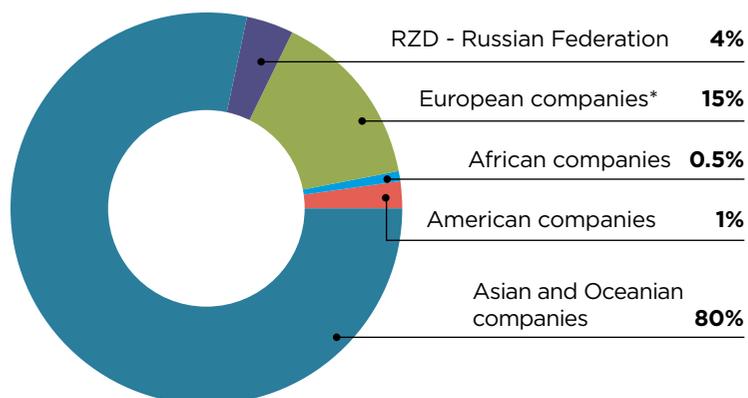
UIC FACTS AND FIGURES

PASSENGER TRANSPORT

PASSENGER-KILOMETRES (MILLIONS)

2017

RZD - Russian Federation	122,920
European companies*	424,201
African companies	11,844
American companies	12,195
Asian and Oceanian companies	2,212,625
All companies	2,783,784

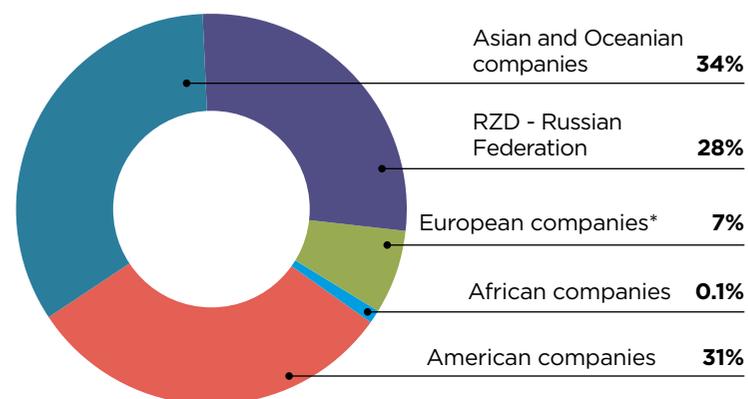


FREIGHT TRANSPORT

TONNE-KILOMETRES (MILLIONS)

2017

RZD - Russian Federation	2,491,876
European companies*	587,495
African companies	11,297
American companies	2,832,419
Asian and Oceanian companies	3,068,788
All companies	8,991,875

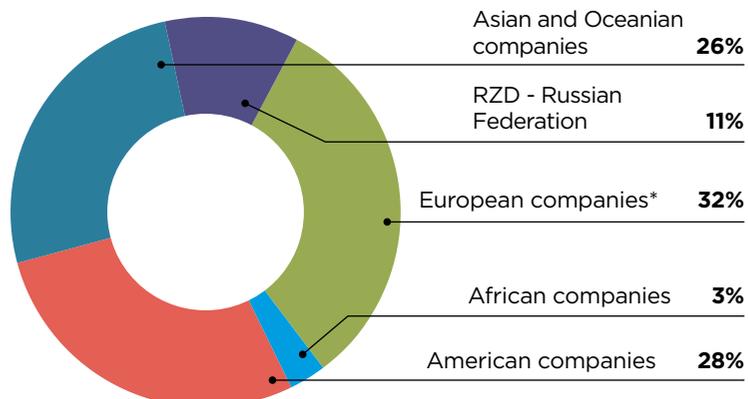


LINE LENGTH

LINE LENGTH (KILOMETRES)

2017

RZD - Russian Federation	85,545
European companies*	260,08
African companies	24,374
American companies	225,533
Asian and Oceanian companies	205,820
All companies	801,357

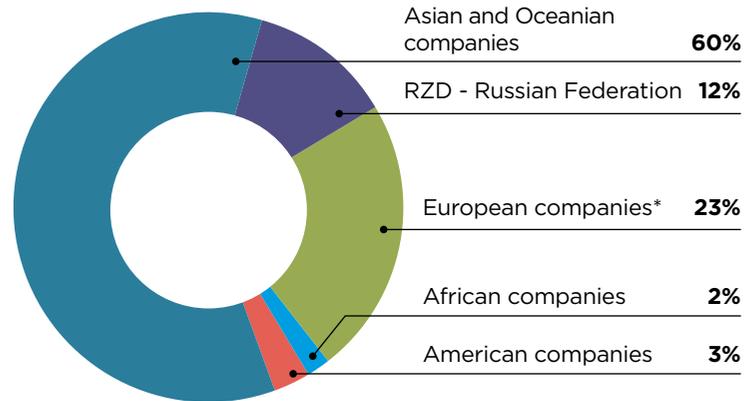


* including Turkey

EMPLOYEE NUMBERS

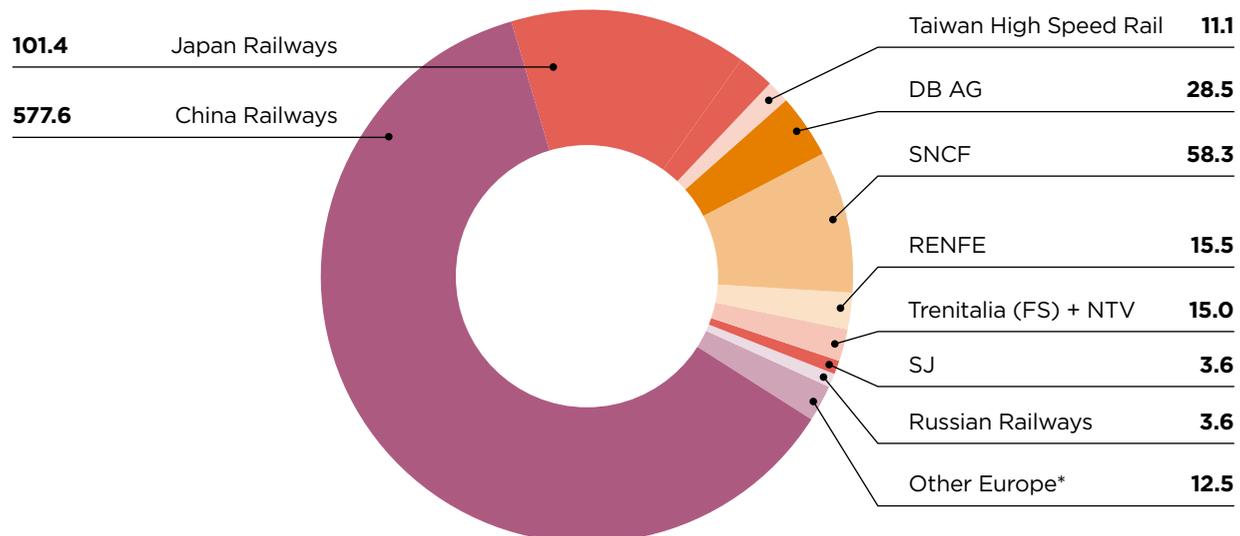
STAFF (FULL TIME EQUIVALENT - FTE)

	2017
RZD - Russian Federation	725,294
European companies*	1,378,449
African companies	105,931
American companies	215,625
Asian and Oceanian companies	3,588,500
All companies	6,013,800



HIGH-SPEED TRAFFIC

HIGH-SPEED TRAFFIC PASSENGER-KILOMETRES (BILLIONS)





UIC AREAS OF ACTIVITY

26/ PASSENGER

32/ FREIGHT

38/ RAIL SYSTEM

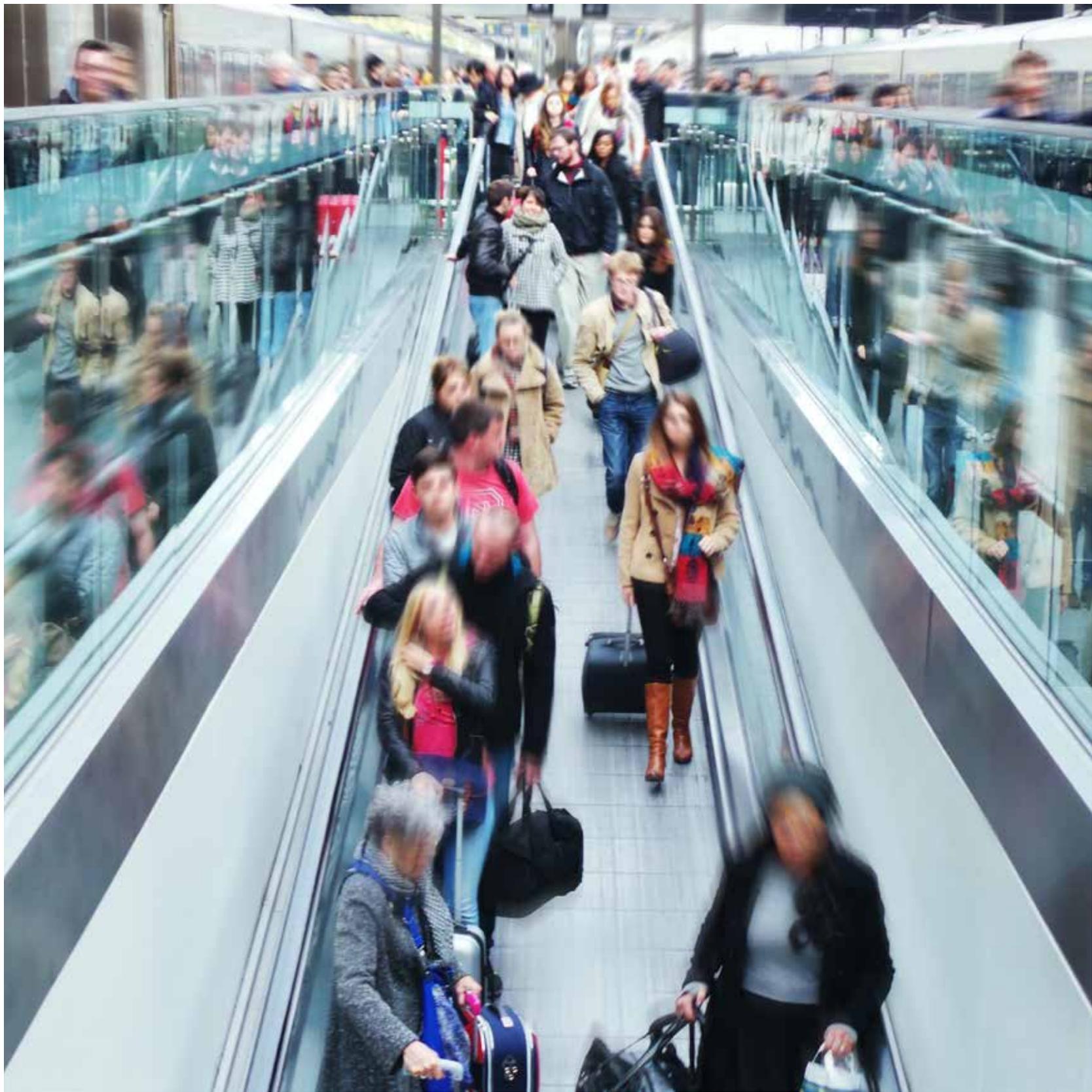
44/ RESEARCH

48/ SAFETY

52/ SECURITY

58/ SUSTAINABLE DEVELOPMENT

64/ EXPERTISE DEVELOPMENT & TRAINING



PASSENGER

PASSENGER

Passenger railway accounts for 50% of rail activity, 8% of global passenger transport and less than 2% of greenhouse gas emissions from passenger transport, and is believed to be the backbone of future mobility.

In parallel with promotion of competition in the rail sector, new technologies and new patterns of mobility and customer are beginning to emerge. By investing in innovation and research with the aim of offering personalised, barrier-free travel, railway undertakings are shifting the service paradigm towards a customer-centric approach.

In this context, the UIC Passenger department acts as a catalyst for transformation of the railway business. It supports railway undertakings in all aspects of passenger transport by providing technical solutions (IRSS) and facilitating knowledge exchange and networking platforms.

UIC's passenger activity is inspired by the involvement of its members in the Global Passenger Forum, led by Manel Villalante I Llauradó (Renfe). The forum is subdivided into six dedicated groups:

- ▶ Passenger Services Group;
- ▶ Intercity & High-Speed Committee;
- ▶ Commuter & Regional Train Services;
- ▶ Station Managers Global Group;
- ▶ Tourism Opportunities for Railways;
- ▶ RIC/A Agreements Special Group on the exchange and use of passenger cars and

self-propelled units in international rail traffic. The UIC Passenger forum also participates in cross-sectoral work and joint activities with many other UIC forums and regions.

KEY ACTIVITIES

International rail ticket distribution

One of the traditional activities of European railways, international ticket distribution allows customers to benefit from a “one-stop shop” service when purchasing tickets for international journeys. UIC provides standardised interfaces for distribution systems to enable ticket distribution by third parties.

The Passenger Services Group (PSG) aims to enable European distribution of railway tickets for UIC members in a cost-effective manner. It takes into account technological development and European regulations to provide common standards for all processes involved in railway distribution (timetables, fares, agreements on IT standards, etc.). In addition, the UIC Passenger Services Group is committed to providing services for persons with reduced mobility (PRM). This is becoming increasingly important in ageing societies and is a focus of particular attention both in European legislation and by railway undertakings. In a modern context, barrier-free travel is a key element of seamless mobility. Where technical conditions do not yet allow barrier-free access to all trains, appropriate assistance must be provided to bridge the gap.

ACHIEVEMENTS

- ▶ **Commercialisation of the MERITS timetable database MERITS (Multiple East-West Railways Integrated Timetable Storage) is a single database containing the timetable data of 32 railway companies. The data is integrated and reproduced on a monthly basis. MERITS allows each railway company to have rapid access to all the data it needs to produce timetables.**
- ▶ **Development of e-ticketing standards.**
- ▶ **Launch of the Alliance of Universities for High-Speed Rail.**
- ▶ **17 UIC members are now using the booking assistance tool for passengers with reduced mobility (PRM ABT) to ensure that support is provided for PRM when booking international rail journeys in Europe.**

High-speed rail

High-speed rail is undergoing rapid development worldwide. More than a purely technical subject, it encompasses a complex reality involving different technical aspects.

The Intercity & High-Speed Committee within the UIC Passenger department coordinates UIC members' high-speed rail activities. It contributes to the development of high-speed rail systems around the world through standardisation, training, operational studies and reports, and promotes the business through its flagship World High-Speed Congress event. The Committee also works closely with international research bodies under the Alliance of Universities for High-Speed Rail, promoting research and innovation and attracting young talent to the field.

Commuter and regional rail

Commuter and regional rail, comprising more than 80% of total railway passengers, serves as a backbone for local public transport. The Commuter and Regional Train Services (CRTS) working group is a platform for exchange between UIC members.

It works to develop and disseminate practical solutions and examines the interface between legal requirements and practical management issues. It shows members existing forms of financing between public authorities, private investors, client bodies and railway undertakings.

✕ KEY WORDS

HIGH-SPEED, DISTRIBUTION, TICKETING, STATIONS, INTERMODALITY, MOBILITY AS A SERVICE, PASSENGER EXPERIENCE, RAIL TOURISM, ACCESSIBILITY, COMMUTER

Stations

As points of convergence and connection, railway stations meet passengers' and citizens' expectations. So UIC's objective is to provide expertise to members, offering solutions tailored to specific locations and taking into account intermodality, commercial and social considerations, all within the context of sustainable development. The Station Managers Global Group (SMGG) aims to advise on best practice for train stations, focusing on a broad range of issues such as governance, funding, digitalisation, intermodality, urban stations and regional development, etc. The group mostly aims to rethink stations of the future through the Long-Term Development for Railway Stations (LTDRS) framework. UIC organises UIC nextstation, conference on railway stations is held every two years as a platform for exchange of best practice.

Tourist trains

Tourist trains are attractive products with much to offer to the implementation of key concepts such as sustainable development, diversification and management of tourist flows. Tourist train projects are typically implemented in isolation, so there are opportunities to be developed in terms of networking and identifying synergies. UIC's TopRail (Tourism opportunities for Railways) project raises awareness of the potential offered by this market and contributes to the development of new and existing rail tourism products and services.

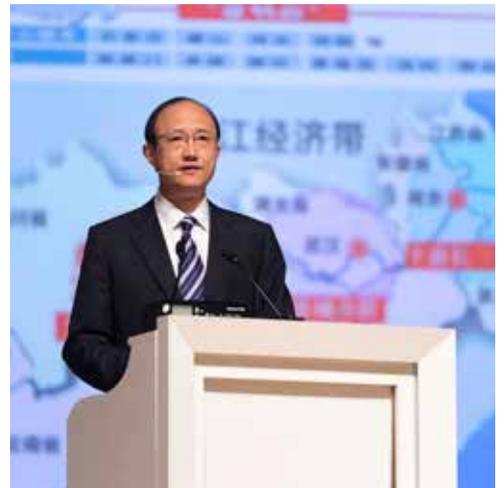
KEY EVENTS

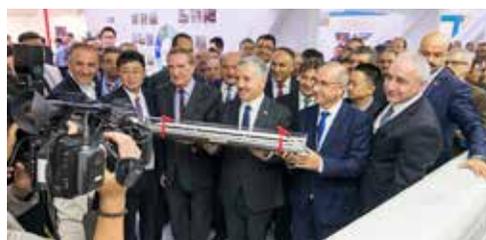
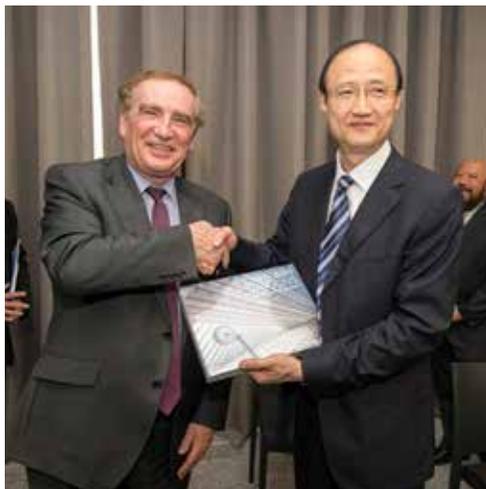
- ▶ **High-Speed Congress in Ankara, May 2018.**
- ▶ **Training on high-speed systems in Paris (Level I) and Madrid (Level II).**
- ▶ **First TopRail forum held in Barcelona in April 2018.**
- ▶ **Training on commuter and regional train services in Warsaw, May 2018.**
- ▶ **High-Level Passenger meeting, March 2018.**
- ▶ **Conference on passenger claims, September 2018.**

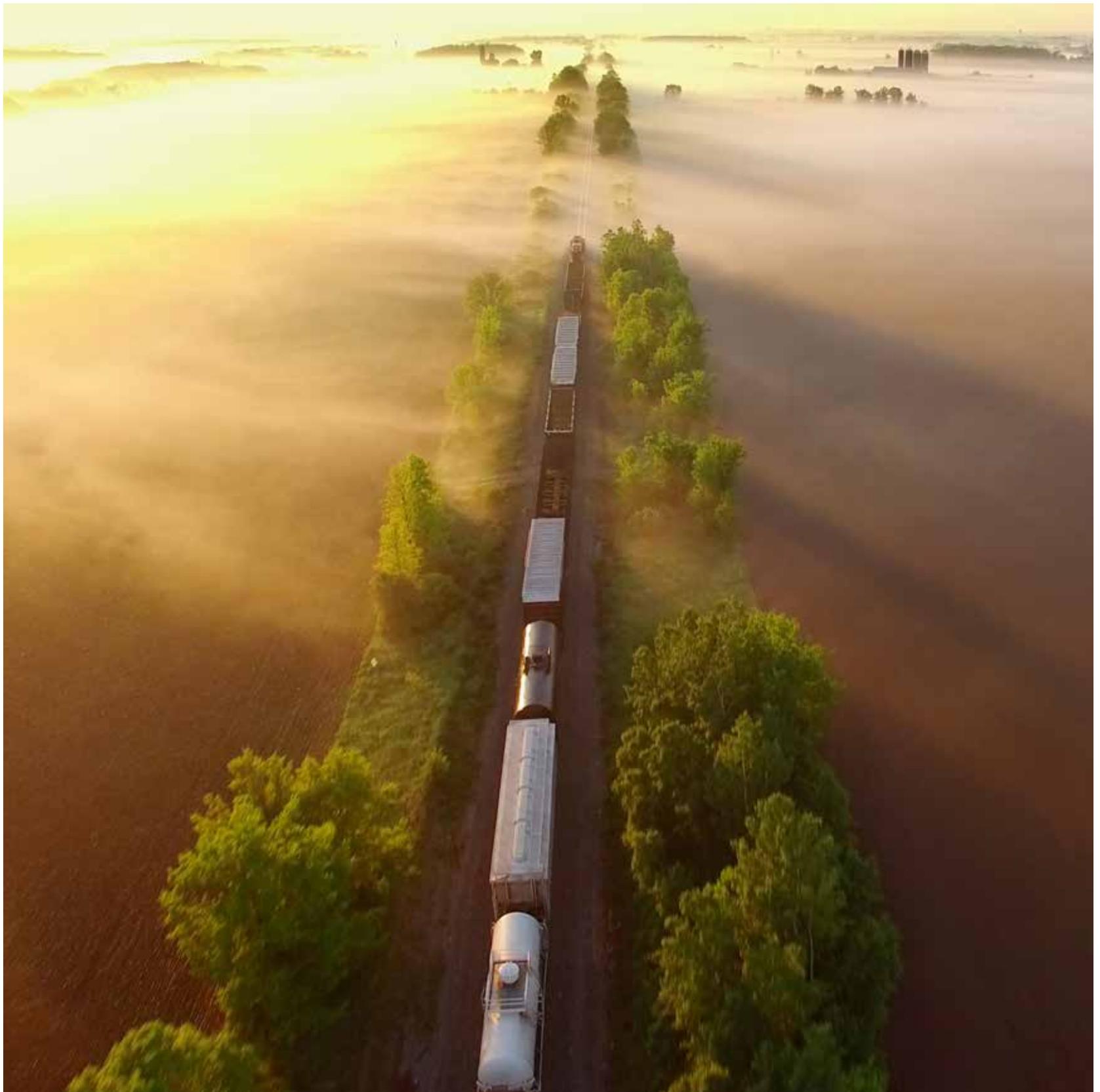
PUBLICATIONS

- ▶ **IRS 10181: User information in railway stations.**
- ▶ **IRS 60673: Implementation of a high-speed railway, design phase.**
- ▶ **IRS 60661: Railway application - high speed - dynamic integration tests and trial operation before revenue operation review.**
- ▶ **Study: High-speed operations in difficult natural conditions (high temperature).**
- ▶ **Study: Infrastructure scenarios for better passenger services (high-speed).**
- ▶ **Study: Real travel times in long distance transportation - rail and air (high-speed).**
- ▶ **High-speed rail brochure.**
- ▶ **UIC passenger activities brochure.**

10TH UIC WORLD CONGRESS ON HIGH-SPEED RAIL IN ANKARA







FREIGHT

FREIGHT

One of the UIC Freight department's primary objectives is to increase members' revenue by improving the competitiveness of international products and services. A further objective is to reduce costs by harmonising international business, operational and information processes. UIC also contributes to the development of freight corridors and reinforcement of customers' confidence in rail transport. These objectives are achieved by strengthening UIC's position as a key facilitator and a neutral platform for multilateral cooperation between UIC members, by facilitating knowledge transfer among members and from other industries through benchmarking, workshops and conferences, and by establishing permanent links with strategic partners in the supply chain (intermodal operators, freight forwarders, etc.).

UIC Freight activities and projects are steered through two main bodies, the Steering Committee and the Freight Forum. The Freight Forum is chaired by Clemens Först (Rail Cargo Austria). The working bodies and projects address the following priorities identified by members:

- ▶ improving interoperability;
- ▶ continuing to ensure the highest levels of safety and security;



- ▶ integrating innovation and digitalisation as a means of improving productivity;
- ▶ capitalising on the corridor concept as a unique vector for implementation.

Freight transport accounts for 6% of European GDP, with over 19 billion tonnes of goods transported every year. While the sector's overall contribution to the economy is positive, it has a substantial impact on the environment. 75% of all freight transport is currently performed by road, with an estimated annual emission of 275 million tonnes of CO₂. This represents 30% of total transport emissions for all freight and passenger transport.

Freight transport is expected to grow 30% by 2030. This growth will add around one million trucks to European

roads over the next decade. Looking beyond Europe, the tremendous growth potential offered by landbridges is evident. Rail has a crucial role to play in building a more sustainable freight sector.

KEY ACTIVITIES

Increasing modal share

The rail freight sector is a structural element of world trade. Russia currently holds 60% of total modal share, with China and the USA accounting for 50% and 55%, respectively. The European context is more difficult, with market share stagnating at approximately 18%. Thus, in 2018, the European "Rail Freight Forward" initiative was launched. UIC's Freight department also contributed to

the development of a white paper, “30 by 2030”, outlining the sector’s vision to drive modal shift towards rail for the benefit of society. This vision was endorsed by all participants at the High Level Freight Meeting (HLFM), an annual meeting of European freight sector CEOs organised in cooperation with CER, in May 2018 and led to the development and implementation of a targeted communications campaign around the “Noah’s Train” initiative, along with the development of a work programme to support the objectives set out in the white paper.

Interoperability: drive-through philosophy

The Freight department’s “Xborder” project was launched to develop a “quick win” solution for harmonisation of driver language and operational issues in cross-border traffic. The first phase of the project involved an analysis of the handover process for freight trains at three specific border points. This gave rise to a clear set of recommendations and concrete proposals for improving operational processes in cross-border areas, focusing mainly on cross-border operations and issues relating to driver language and train characteristics.

A list of 99 predefined messages in English, Italian, French, German and Dutch are now being tested on pilot trains. The project is being implemented in collaboration with Rail-NetEurope (RNE) to ensure that the initiatives led by RUs and IMs are compatible and complement each another.

Safety and security

The Agreement on Freight Train Transfer Inspections (ATTI) is a UIC special group with members from both UIC and non-UIC railway

undertakings. It has developed a set of rules to simplify the transfer of wagons between parties whilst ensuring the highest possible level of safety. Since June 2014, the initial group of 44 participants has grown to 107 members, and a quality monitoring system has been put in place. The first pilot database of quality indicators for ATTI members began on 1 January 2018. The items monitored include: wagon technical conditions as per Appendix 9 of the GCU, train formation and adherence to schedule (from 2019), dangerous goods (from 2019).

Loading rules

UIC’s Loading Guidelines are a set of national and international regulations for loading goods in railway transport. They describe binding rules and stipulations wagon use, capacity utilisation and load dimensions.

The guidelines constitute an extremely valuable intangible asset, shared between all the stakeholders involved. The experts involved in the dedicated UIC study group work to ensure that the guidelines are up-to-date and compliant with evolving legislation. They are available online from the ETF shop.

Digitalisation

A new vision for the rail freight industry needs to be developed if it is to be competitive in the 21st century. The road sector is continuously pushing the limits of technology, and the rail freight sector needs to adopt a similar approach. The “30 by 2030” white paper for rail freight outlines one of the three key levers for achieving modal shift.

The railway sector needs to become more customer-focused and competitive and must

ACHIEVEMENTS

- ▶ **The freight experts in the Combined Transport group collaborated extensively with the UIC Rail System Forum SET 3 group to update all of the leaflets on combined transport and migrate them to IRSs. The documents concerned are IRS 50592, IRS 50596-5, IRS 50596-6 and IRS 50596-7.**

KEY EVENTS

- ▶ **Global Rail Freight Conference (GRFC) held in Genoa, Italy, June 2018.**
- ▶ **“Innovation Labs”: workshops held in parallel with the GRFC to demonstrate the potential of blockchain technology in the context of Eurasian corridor development.**
- ▶ **In its capacity as board member of the International Heavy Haul Association (IHHA), UIC has also been heavily involved in preparations for the 2019 IHHA conference 2019 in Narvik, Norway in partnership with Bane NOR and Trafikverket.**

PUBLICATIONS

- ▶ **2018 Report on Combined Transport, available for download from the UIC website.**

continue to develop multimodal services. Certain processes and solutions need to be implemented on a collaborative basis to increase consistency, efficiency and transparency by means of enhanced data exchange.

By exchanging information in this way, the sector can expect to achieve the following:

- ▶ significant cost reduction by reducing manual data acquisition efforts and by using standard data formats;
- ▶ greater customer satisfaction due to improved information quality;
- ▶ optimised dispatching and more effective provision of information to customers due to simplified data capture processes;
- ▶ improved quality of operations due to reduction of data errors and alignment of systems.

UIC's "Digital roadmap for rail freight" strategy was launched in 2018 with a series of workshops attended by European freight sector CIOs. The roadmap will be reviewed by freight sector CEOs at their annual meeting in Paris in May 2019. Discussions on the roadmap have also highlighted the added value offered by existing freight sector tools such as Raildata. UIC's Raildata special group provides IT applications and related services in the field of rail freight transport.

Freight corridors

The need to harmonise rail freight corridor access has become urgent for railway undertakings under pressure to implement productivity enhancements. At the request of its RU members, UIC coordinates the harmonisation process through the ECCO (Efficient Cross Corridor Organisation) project. ECCO provides technical input on some of the priority issues contained in the sector statement (SS), which represents the commitment made by the sector to boost international rail freight in the context of 11 priorities. The main priorities addressed in 2018 were:

- ▶ SS Priority 5: Improving harmonisation of border processes;
 - ▶ SS Priority 9: Monitoring the quality of freight services by implementing shared KPIs;
 - ▶ SS Priority 11: Contingency management
- UIC's work on freight corridors is not confined to Europe. In 2017, a study was commissioned from Roland Berger to assess the viability of the Eurasian rail freight routes, including the southern routes, and interconnection of these corridors with the European RFCs. The study identified a number of drivers and actions for the various stakeholders in the transport chain, which serve as a basis for the Freight department's plans in relation to this topic.

In 2018, activities were focused mainly on:

- ▶ strengthening links and improving synergies with the work carried out in the UIC regions (Asia-Pacific and Middle East), thus offering freight expertise to the regions. In this context, the UIC Freight department played an active role at the Middle East Assembly in Ankara, which focused on transcontinental corridor development. The Freight department also contributed to the Asian Assembly workshop in Bangkok on digitalisation of freight transport;
- ▶ developing and strengthening partnerships, in particular with CCTT, CIT, the Region of Zhengzhou and other associations.

Dangerous goods

The transport of dangerous goods (TDG) is subject to specific regulatory measures. This area is managed by UIC in close consultation with its members and in cooperation with other stakeholders. The rules and regulations for transport of dangerous goods are updated on an ongoing basis in order to take account of experience and new types of goods arriving on the market. Harmonisation of rules across various modes of transport is becoming increasingly important in the context of growth in both international trade and multimodal and intermodal transport.

✕ KEY WORDS

PARTNERSHIPS, CORRIDORS, RAIL BACKBONE OF MOBILITY, MENTAL SHIFT, MODAL SHIFT, 30 BY 2030, RAIL FREIGHT FORWARD, NOAH'S TRAIN, XBORDER, DIGITALISATION, INTEROPERABILITY

6TH UIC GLOBAL RAIL FREIGHT CONFERENCE - GENOA 2018





RAIL SYSTEM

RAIL SYSTEM

Today's customers want a mobility system that is available, affordable, reliable and safe. It is important for the sector to have the tools it needs at its disposal in order to deliver this system. With this in mind, the UIC Rail System Forum, co-chaired by Francisco Cardoso Dos Reis (Infraestruturas de Portugal) and Andy Doherty (Network Rail), provides the required technical expertise and works to respond to the challenges facing the railways at global level, positioning rail as the backbone of the mobility chain and Mobility as a Service (MaaS) as an area of future growth.

The Rail System Forum works on a wide range of topics, including:

- ▶ digital evolution;
- ▶ new telecommunications and signalling systems;
- ▶ upgrading of infrastructure (track and structures);
- ▶ efficient and sustainable energy solutions;
- ▶ customer-focused and cost-effective rolling stock;
- ▶ asset management and interaction between shared subsystems;
- ▶ safe and smart operations.

The main challenges for the UIC Rail System Forum are as follows:

- ▶ achieving synergies between asset

management and operational activities and the various railway system sectors: rolling stock, telecoms and signalling, train-track interaction, track and structures, energy management;

- ▶ defining operational and technical requirements in collaboration with railway undertakings (business success, reliability, availability, safety and maintainability);
- ▶ disseminating results from experience and promoting good practice;
- ▶ integrating UIC and EU research project results in technical and operational standards;
- ▶ cooperating with standardisation bodies and railway manufacturers in the various domains of railway standardisation;
- ▶ collaborating with European railway associations by supporting cross-functional input into the European Union Agency for Railways work programme and its impact on safety and interoperability;
- ▶ issuing certifications of conformity with UIC leaflets and IRSs for specific components, such as wheels, brake components and diesel engines. 7 certificates were awarded in 2018.

The results of research projects are directly transposed into technical documents (International Railway Solutions, guidelines, white papers, etc. and are implemented in specific test programmes and approval processes, offering efficient operational solutions for UIC members.

The Rail System Forum contributes to a number of European legal frameworks within the context of the EIRENE project in collaboration with standardisation bodies such as CEN-CENELEC, ISO and IEC. The UIC Rail System Forum published 30 International Railway Solutions in 2018.

The Rail System Forum also contributes actively to a number of major European and Shift2Rail-funded projects (SAFER LC, Long Train, CYRAIL, SIA Galileo, etc.).

KEY ACTIVITIES

The Rail System Forum relies on its members to improve the railway system. The forum is divided into six sectors dedicated to improving railway competitiveness and interconnection with other modes of transport. The sectors are as follows:

- ▶ Train-Track Interaction;
- ▶ Track and Structures;
- ▶ Rolling Stock;
- ▶ Energy Management;
- ▶ Asset Management and Operations;
- ▶ Telecoms, Signalling and Digital Applications.

With more than 150 experts involved in its activities, and covering 78 ongoing projects, the Rail System Forum has defined seven areas of strategic focus as expressed by its members, as well as the CTOs and CEOs consulted.

- 1.** Safety and security must be addressed together. Cybersecurity solutions must be taken into account from project inception through to system integration and safety demonstration.
- 2.** The rail system must move towards the digital era by creating an advanced modelling language and promoting future railway telecoms systems. UIC is developing specific, small-scale feasibility studies, PoCs and prototypes in this regard.
- 3.** Asset and operations management should evolve towards prescriptive maintenance via the Strategic Asset Management Plan (SAMP), Computerised Maintenance Management System/Software (CMMS) and Enterprise Asset Management (EAM). This process will rely on life cycle benchmarking for IMs on a large scale and over a period of more than 20 years.
- 4.** Capacity should be increased through automation of operational processes and train control to optimise traffic management and reduce energy consumption.
- 5.** Smart infrastructure: commitment to sustainability, resilience and maintainability of infrastructure in order to reduce the need for track possession.
- 6.** Evolution of rolling stock to improve sustainability, robustness, resilience, interoperability and maintainability.
- 7.** Improvement of environmental performance in order to reduce carbon impact and energy consumption.

ACHIEVEMENTS

- ▶ **Numerous successful projects conducted by the Energy Management sector conducted in relation to substations, overhead contact lines, contact top rail and electromagnetic interference between traction electrifications systems, etc.**
- ▶ **European Standard Freight Wagon Axle for 25t (ESFA 25) project. The output from this project is the development and TSI certification of a new harmonised and low maintenance 25t wagon axle. A new IRS 50201 will be published, and will set out the requirements for this new type of axle.**
- ▶ **Cybersecurity: an initial guideline was published this year, and UIC has maintained a dedicated group tasked with assessing the best way to address this very broad topic for the overall benefit of the railway community. The conclusion from this assessment is that a practical and telecoms-oriented approach is needed, and UIC will continue to work in this direction in 2019.**
- ▶ **RailTopoModel: UIC has developed a modelling language to describe the various elements of the railway system in a unique and precise way. The modelling language is based on UML class diagrams. RTM is currently being developed further to include real-time usage and functional and geographic descriptions.**
- ▶ **ST4RT (Semantic Transformations for Rail Transportation) project: part of Shift Rail IP4, the purpose of the ST4RT project is to perform research on semantic, ontology-based automation of transformation between heterogeneous data formats, and to apply said research to a complex after-sales process use case using a real-time demonstration scenario.**
- ▶ **GOF4R (Governance of the IF for Rail and Intermodal Mobility) project: the objective of this project is to define a sustainable governance structure for the interoperability framework (IF) with a view to creating the right conditions for introduction of seamless mobility services and to foster the development of multimodal travel services.**
- ▶ **NeTIRail-INFRA: a European project to develop and demonstrate technologies and best practice, tailored to the needs of the various categories of rail system. A web application was developed in 2017-2018 by UIC and its partner ADS Electronics, offering comprehensive mapping of the EU network based on OpenStreetMap and complemented by user-defined cost or reliability functions. This application is being developed further by UIC in order to deliver a “computing atlas” for the railway network.**

REPAIR WORKS IN TUNNELS

A report, commissioned by the UIC Panel of Structural Experts Group (PoSE), provides up-to-date expertise on repair works performed in operational tunnels. The report is based on a survey of current practices amongst a number of European railway infrastructure managers. The objective is to identify the most

frequently employed methods of repair, the conditions in which they are carried out, and the appropriate safety measures associated with such works.

The tunnel assets of most of the European networks are old, with the majority constructed more than a century ago. Tunnel structures inevitably degrade with time, and repair works must be carried

out in a reliable and safe manner in order to ensure serviceability. The survey shows that infrastructure managers in different countries have developed specific repair techniques based on the characteristics of local tunnel assets. These specific methods and the conditions required to carry out the various repair works are presented in the report.

FRMCS - FUTURE RAILWAY MOBILE COMMUNICATION SYSTEM

In 1997, UIC began defining, specifying and standardising GSM-R, the telecommunications component of ERTMS. Today, GSM-R is a major success and goes far beyond the development of ERTMS, with more than 130,000 km of tracks covered in Europe and 210,000 km around the world.

When the railway telecoms industry officially announced that GSM-R equipment was expected to become obsolete by 2030, UIC began a series of initial studies with the objective of defining a system to replace GSM-R. These studies concluded that a new, dedicated telecoms system was necessary for the railway industry. It became increasingly obvious that this new system, known as the Future Radio Mobile Communication System (FRMCS), would not only have

to replace GSM-R, but also would serve as the telecoms layer for many future services and applications relating to train digitalisation and modernisation, such as automated and autonomous trains (ATO), use of connected objects (IoT) in vehicles, smart maintenance, train control monitoring systems, etc.

A tailored programme was therefore put in place by UIC in order to define and develop specifications for FRMCS and standardise it in 3GPP, the worldwide standardisation entity for mobile communications. User requirements specifications have already been published, together with a precise list of more than 75 fully defined use cases currently being used as input to the 3GPP standardisation work for railways. In addition, a considerable amount of work is being done to obtain relevant frequencies for the railways.

This programme was recently completed with the creation of a new global project, "FRMCS Migration Scenarios", focusing on operational conditions for smooth migration from GSM-R to FRMCS, particularly in Europe. The first key part of this global project is the Telecoms On-Board Architecture (TOBA) initiative. UIC will work with the railways to define and develop specifications for new, common telecoms element to be implemented in the driver's cabin within the framework of this initiative.

The key objective of the FRMCS programme is to deliver functional requirements specifications (FRS) and system requirements specifications (SRS) by the end of 2021 for inclusion in the next ERA TSI. Deployment of FRMCS in Europe may begin as early as 2025, following successful conclusion of a number of pilot phases.

✕ KEY WORDS

FRMCS, GSM-R, RTM, PROOF OF CONCEPT, BRAKING, ARTIFICIAL INTELLIGENCE, RAIL SYSTEM, OPERATIONS, SAFETY, SECURITY, ASSET MANAGEMENT, TRACK, INFRASTRUCTURE, INTERACTION, DISRUPTIVE TECHNOLOGIES, ROLLING STOCK

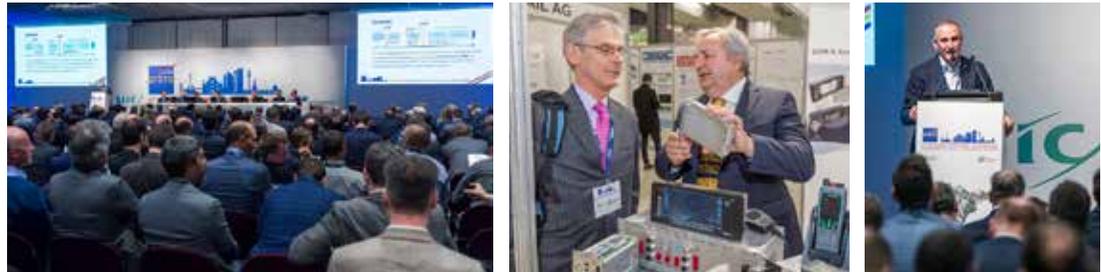
KEY EVENTS

- ▶ First UIC global conference on “Signalling - the evolution of ERTMS” held in March 2018, Milan.
- ▶ First UIC workshop on masonry arch bridges held in June 2018 in Madrid.

PUBLICATIONS

- ▶ 30 IRSs published in 2018.
- ▶ Report: “Outsourcing Infrastructure Work: Issues from an Asset Management Perspective”.
- ▶ Report: “Repair Works in Tunnels”, October 2018.
- ▶ Report: “Aerodynamics”, October 2018.
- ▶ Guidelines for Cyber-Security in Railways, June 2018.
- ▶ FRMCS User Requirements Specification, January 2018.
- ▶ GSM-R EIRENE specifications.

1ST UIC GLOBAL CONFERENCE ON SIGNALLING - MILAN 2018





RESEARCH

RESEARCH

Together with standardisation and promotion of railways, research is part of the core business of UIC and, indeed, was the reason for the creation of the organisation in 1922. UIC is committed to supporting the efforts of its members to address today's operational questions and issues and to build better railways while also considering future needs.

Research at UIC ranges from gathering information and documenting best practice to developing new knowledge and demonstrating the feasibility of results. It is conducted via internal UIC projects or external projects such as those funded by the European Commission's Framework Programme for Research, which is also open to non-EU based UIC members. Examples include the FP7 (2007-2013), Horizon Europe (2014-2020) and the future Horizon Europe (2021-2027). Under the umbrella of Horizon 2020, most EU-funded rail research is managed by the Shift2Rail Joint Undertaking, with UIC participating as a direct project partner or by supporting UIC members in that role.

At global level, UIC is very active in contributing to the organisation of the WCRR (World Congress on Rail Research) every two years, gathering the global rail research and innovation community around a theme to debate and exchange

on the latest developments in the sector and beyond. The next event, with "Rail research to enhance customer experience" as its guiding theme, will take place from October 28 to November 1 2019 at the Tokyo International Forum in Japan.

In addition, the IRRB (International Rail Research Board) and UIC organise innovation awards every two years to promote the railway sector and encourage creativity among researchers and engineers in the sector in addressing challenges to help the railways to become the backbone of the future transport system. The 2018 awards were held in December 2018 in Paris, recognising researchers from around the world for their innovative ideas and contributions to railway research and innovation.

At European level, UIC has taken on the role of vice-chair of the European Rail Research Advisory Council (ERRAC), and will provide secretariat services for the next three years to support, in particular, the development and implementation of ERRAC's new Rail 2050 Vision. ERRAC is currently defining the research and innovation priorities for the next decade (to 2030) in pursuit of this vision.

The UIC research portal plays a crucial role in facilitating this process. This global portal collects and retains information

from many global sources. Its primary purpose is to build on information shared by our members and their research institutes from high-quality research providers and to link up with other rail research databases globally.

The IRRB is the UIC working body concerned with research, and serves the association's membership worldwide. It is currently chaired by Boris Lapidus of VNIIZhT/RZD, who works closely with an international team of three vice-chairmen and with IRRB members. The IRRB is tasked with effectively meeting the needs of the railways with regard to research. It keeps abreast of innovations and of the results of research activities conducted in the international community to support the improvement of railway transport in order to obtain a competitive advantage. It also supports and contributes to the development of the scientific community by helping to identify relevant and popular research topics and customers or consumers of research.

The RICG (Research and Innovation Coordination Group), chaired by Bo Olsson of Trafikverket and with Jürgen Maier (BLS) and Karin Biffiger (SBB) as vice-chairs, is UIC's second working body focusing on research, supporting predominantly European UIC members. It is tasked with coordinating research

efforts and preparing common positions on European research and innovation strategy and priorities for EU funding, and advocates the vision of the railway operating community in ERRAC to the European Commission. The RICG also helps to facilitate member participation in EU-funded research projects, either through UIC services or directly.

Investment in research, development and innovation (RDI) is a critical element for the development and further integration of the railways in the multimodal transport chain. Securing such investment is no easy task in light of the recessions that have characterised the world economy since 2008. Perhaps contrary to expectations, the economic crisis has given rise to a strong and sustained push toward more research and innovation as a key element of new economic policies and a critical instrument in generating sustainable growth and employment while mitigating climate change. If the railway sector is to continue growing to become the backbone of the world's transport system, continued support and adequate provision of resources for research and innovation are essential.

✕ KEY WORDS

RESEARCH, HORIZON EUROPE, SHIFT2RAIL, WCRR, WORLD CONGRESS ON RAIL RESEARCH, ERRAC, EUROPEAN RAIL RESEARCH ADVISORY COUNCIL, RICG, RESEARCH AND INNOVATION COORDINATION GROUP, INNOVATION AWARDS, GVRD, GLOBAL VISION FOR RAILWAY DEVELOPMENT, IRRB, INTERNATIONAL RAILWAY RESEARCH BOARD

ACHIEVEMENTS

- ▶ **The process to update the Global Vision for Railway Development began, with the document due to be published in 2019.**
- ▶ **Presentation of the 2018 UIC innovation Awards in Paris.**
- ▶ **Continuous development of the UIC research portal, as well as numerous partner databases: SPARK, WORC, ACRI, HERMES, etc.**
- ▶ **RICG delivered its "12 Capabilities", which set out the potential offered by technology for the railways of the future. Developed for a European context in order to provide focus for alignment of research programmes and delivery of the Rail Technical Strategy Europe (RTSE), they are also expected to have global relevance. In late 2018, efforts commenced to further define the Capabilities in greater detail – the areas of development (AoD). The AoD are building blocks at programme level and are not limited solely to technical developments. They will pave the way towards making the Capabilities a reality. The objective is to leverage the AoD in 2019 to contribute further to ERRAC documents and to influence both the upcoming Horizon Europe FP and Shift2Rail 2 in continuation of the partnership model fully supported by RICG.**
- ▶ **RICG contributed to the development of the Rail Technical Strategy Europe in December 2018.**
- ▶ **UIC was a major contributor to ERRAC's work in its formal groups, steering committees and plenary meetings, including providing the secretariat, and in the three main subgroups on strategy development, coordination, and communications. UIC provided significant input on behalf of the ROC for the development of ERRAC's Rail 2050 Vision, reflecting the 12 Capabilities and the RTSE.**
- ▶ **UIC participated in 32 projects under Framework Programme 7, 15 projects in Horizon 2020 and one under the Internal Security Fund - Police programme.**

PUBLICATIONS

- ▶ **UIC Project Book.**
- ▶ **EU-funded Projects Book - information on projects in which the European railway operating community is involved.**
- ▶ **Rail 2050 Vision, December 2018 (ERRAC).**



SAFETY

SAFETY

When considering the concept of safety, it is important to distinguish between two key aspects. The first of these concerns technical safety and relates closely to the concept of technical reliability. The second concerns safety management. This two-pronged approach is at the core of UIC's safety activities.

Applying this approach, safety is brought about as a result of organisational activities. These socio-technical activities can be categorised as follows:

- ▶ technical: rolling stock, infrastructure, etc.
- ▶ organisational: (toolkits, regulations, procedures, schedules, etc.
- ▶ operations staff, subcontractors, management, etc.

Railway system safety is dependent not only on these internal elements, but also on all interfaces with society.

System safety is maintained by the reliability, effectiveness and resilience of the system.

However, safety management alone is not enough to keep a network safe. There are other aspects that can have a negative impact on safety and must be given due consideration. These include changing environmental conditions (flooding, silting, land subsidence, population displacement, etc.) and evolving

security threats (attacks, sabotage, etc.). With this in mind, the Safety unit works closely with UIC's Security and Sustainability units.

Safety is becoming increasingly complex and requires a systematic approach. It is an important part of a railway undertaking's corporate social responsibility activities.

RUs must transport people and property while, at the same time, ensuring that their transport services do not have a negative overall impact on stakeholders and on the natural environment.

Safety activities at UIC are structured as follows:

The UIC Safety Platform, currently chaired by Rolf Härdi (Deutsche Bahn AG), is an advisory body open to all UIC members with the core objective of putting in place recommendations and actions to help manage safety risk by eliminating or controlling the causes of accidents and incidents, reducing their frequency and controlling the severity of safety events by implementing protective measures.

The UIC Safety Platform Steering Group is a restricted group composed of Safety Directors (or equivalent) from member companies of UIC and the Safety Platform.

UIC's Safety Unit and Safety Platform

are active in exchanging knowledge and expertise and seeking out innovative management solutions in order to respond as effectively as possible to stakeholders' needs and to the expectations of transport companies' direct and indirect customers.

The platform's activities include work on regulatory issues, performance indicators, social and human aspects, risk management in the workplace, management tools and monitoring of interfaces with road transport.

Safety Platform working groups:

- ▶ System Safety Management Group (SSMG);
- ▶ Human Factors Working Group (HFWG);
- ▶ Occupational Health and Safety Group (OHSG);
- ▶ Safety Performance/Safety Database Group (SPG);
- ▶ International Rail Safety Network (IRSN);
- ▶ European Level Crossing Forum (ELCF).

The UIC Safety unit is also involved in activities within all of the UIC regions, organised in close coordination with the UIC Safety Platform:

- ▶ Global level crossing activities;
- ▶ Safety database;
- ▶ Human factors and safety.

Finally, the Safety unit works closely with the International Union of Railways Medical Services special group (UIMC).

KEY CHALLENGES

The utmost attention is paid to managing interfaces and the associated risks. Issues such as level crossings and trespassing on tracks remain top priority. Exchanging experience and sharing best practice, views and studies with a view to reducing these risks constitutes a major challenge.

A second challenge facing the Safety unit is to become a service provider for the COR (common occurrence reporting) database to be developed by the European Union Agency for Railways. UIC's Safety unit is keen to make use of its extensive safety database, which it has maintained since 2006, and to offer its expertise via the Safety Data Link project.

A third challenge is to offer a Safety Platform with global reach, enabling discussions and exchange between members in different parts of the world.

The experience gained from implementation of the 4th Railway Package should be shared and discussed with members outside of Europe. Similarly, European members should be able to benefit from the best practice and success stories of non-European members.

UIC takes a cross-functional approach to safety so that its activities are enriched by means of collaboration with other departments.

ACHIEVEMENTS

- ▶ **Workshop on level crossings, Paris, February 2018.**
- ▶ **Seminar on rolling stock refurbishment: “Organising refurbishment and/or modernisation with human factors in mind”, Algiers, February 2018.**
- ▶ **Seminar on “Safety and security - risk and challenges - cooperation and shared efforts”, Djibouti, March 2018.**
- ▶ **Railway safety and risk management training seminar, Rabat, Morocco, May 2018.**
- ▶ **ILCAD launch conference on 7 June 2018 in Zagreb. The 2018 campaign targeted young level crossing users and attracted participants from more than 40 countries.**
- ▶ **Presentation of the work on safety culture carried out by the Human Factors Working Group at the IRSC (International Railway Safety Council), Dublin, October 2018.**
- ▶ **“Safety and just culture: integration of human and organisational factors in railway safety” - presentation of report on positive safety culture, Madrid, October 2018.**
- ▶ **“Track maintenance” seminar on risk management, Rabat, Morocco, November 2018.**
- ▶ **Participation in an emergency simulation exercise, Libreville, Gabon, December 2018 and January 2019.**
- ▶ **Publication of the UIC Safety Report 2018.**

✕ KEY WORDS

SAFETY MANAGEMENT, TECHNIQUES, HUMAN, ORGANISATIONAL AND HUMAN FACTORS



↑ Overg
↑ Buses
← Stanst
← Tickets
↑ Travel
← Lift way
↑ Way ou

By p
Last property by platf

SECURITY

SECURITY

Ever conscious of the potential impact of security measures on the attractiveness of rail transport, UIC works with its members to develop responses to key security issues as part of its services to support passengers, freight and rail system activities.

Alongside national, European and international public authorities, the railway sector has a specific and complementary role to play in the security field. The challenge is to ensure greater cohesiveness in an environment involving an increasing number of stakeholders in the context of market liberalisation and evolving business practices.

The UIC Security Platform serves its members in this context by:

- ▶ raising awareness in the railway sector of the increasingly important issue of security;
- ▶ developing networks of experts;
- ▶ sharing experience among UIC members to identify suitable solutions and adapt them to each specific situation;
- ▶ ensuring consistency between different security policies to further the development of international traffic;
- ▶ developing recommendations in relation to technologies, human factors and organisation;
- ▶ developing solutions from across the rail sector vis-à-vis and in partnership

with European and other international institutions;

- ▶ running research projects in areas of interest to UIC security experts, or representing the rail sector in research projects.

The UIC Security Platform is currently chaired by Marc Beaulieu, VIA Rail, and vice-chaired by Piotr Kurcz, PKP S.A.

The platform's activities and priorities are defined at its annual congress, and its steering committee meets every quarter and involves the UIC regions, various UIC departments, and professional and political partners, such as UITP, RAILPOL, CER, EIM, etc. The platform has three permanent working groups (Technology, Human Factors, Strategy) and has created two ad hoc working groups at UIC's request in order to focus specifically on sabotage, intrusion and attacks and on border crossings in international rail corridors, respectively.





ACHIEVEMENTS

- ▶ The “Rail Security Hub”, a new communications tool for members, was designed and developed in 2018 and will be soon available at RailSecurity-Hub.org. It will allow rail security experts to find, access and share solutions and information on railway security issues via a secure, user-friendly, comprehensive and interactive platform.
- ▶ A “network of quick responders” was launched in March 2017 and, to date, has addressed 15 questions on various security issues submitted by members.

KEY EVENTS

- ▶ 14th UIC World Security Congress held in Bled, Slovenia on the theme of crisis management and resilience.
- ▶ Fourth UIC Security Week, 18–21 June 2018, Paris. The event focused on chemical, biological radiological, nuclear, and explosive (CBRNE) threats, cybersecurity, staff and public awareness and business continuity management.
- ▶ International Conference on Railway Safety and Security, Djibouti, March 2018.

RESEARCH PROJECTS FUNDED BY THE EUROPEAN COMMISSION



BODEGA project on proactive enhancement of human performance in border control (led by VTT), June 2015 to October 2018.
Website: <http://bodega-project.eu>



CYRAIL project on cybersecurity in the railway sector (led by EVOLEO Technologies), October 2016 to September 2018.
Website: <http://cyrail.eu>



SAFER-LC project on safety and security at level crossings (led by UIC Security division), May 2017 to April 2020.
Website: <http://www.safer-lc.eu>



SHERPA project on a shared and coherent European railway protection approach (led by UIC Security division), November 2018 to October 2020.
Website: <https://sherpa-rail-project.eu>

PARTNERSHIPS

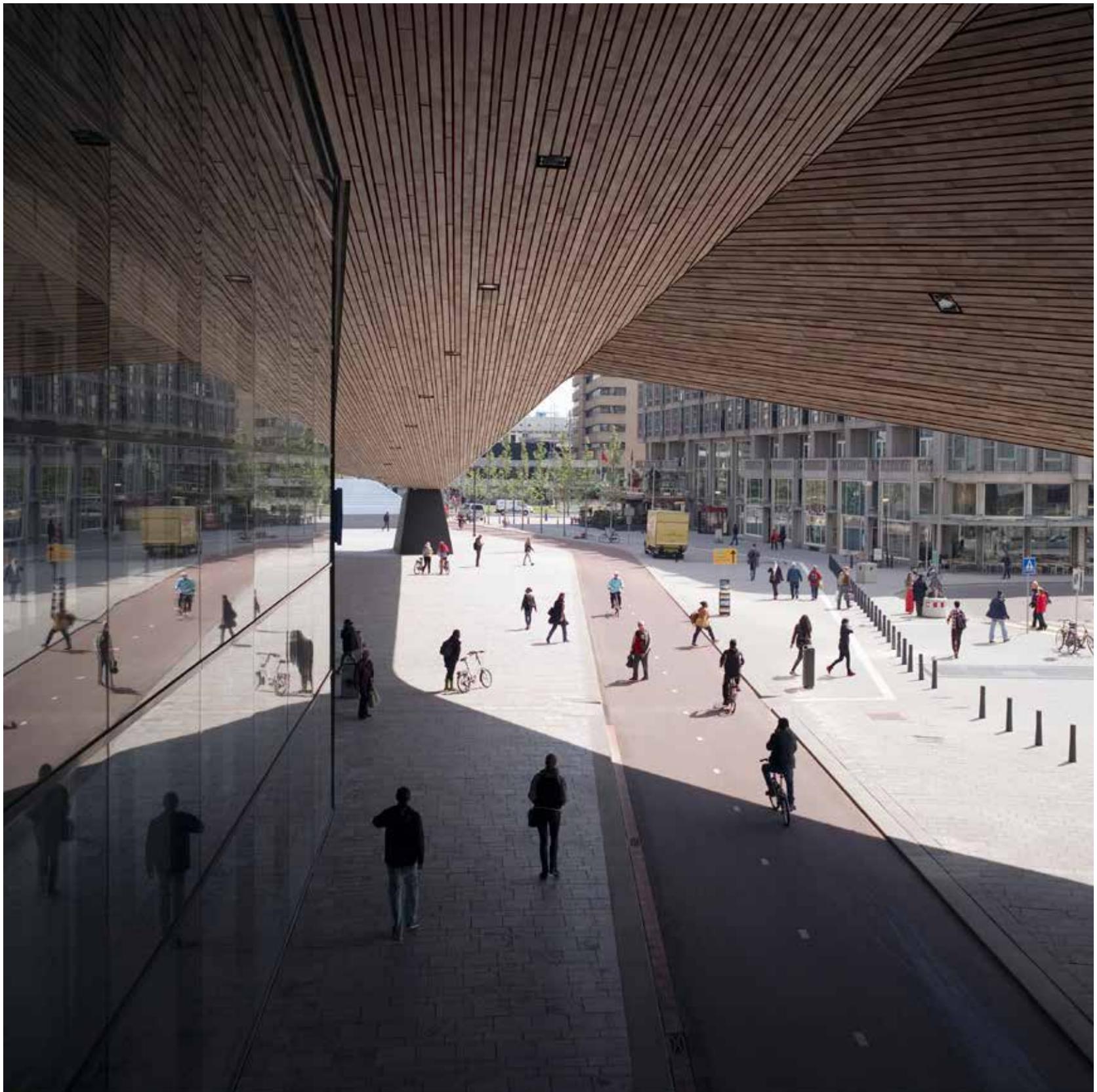
- ▶ **DGMOVE**
The UIC Security division is an official stakeholder in the Land Transport Expert Group Meeting (LANDSEC) and at the Rail Security Platform (RAILSEC), created in 2018.
- ▶ **DGHOME**
The UIC Security division is coordinating the EU Sherpa project, funded by DGHome.
- ▶ **UITP**
Within the framework of the memorandum of understanding signed by UIC and UITP in April 2018, the UIC Security division has established a joint programme of cooperation with the UITP Security Commission.
- ▶ **ITF and UNECE**
A dedicated session on rail security was co-organised by UIC's Security division, together with ITF and UNECE, during the annual International Transport Forum in Leipzig.

✕ KEY WORDS

TERRORISM, CBRNE, CYBERSECURITY, DAILY CRIME, CRITICAL INFRASTRUCTURE, BORDER SECURITY, CRISIS MANAGEMENT, SECURITY POLICY, SECURITY TECHNOLOGY, SECURITY TRAINING, SECURITY AWARENESS, FEELING OF SECURITY, COOPERATION WITH AUTHORITIES

14TH UIC WORLD SECURITY CONGRESS - SLOVENIA 2018





SUSTAINABLE DEVELOPMENT

SUSTAINABLE DEVELOPMENT

Sustainable development is considered one of the main global challenges facing the world today and is an important aspect of transport development. UIC and its members work continuously to demonstrate how rail can be part of the solution to the challenge of sustainable development.

Awareness of rail transport's role as a key driver of sustainable development with the potential to mitigate the effects of climate change has increased significantly in recent years among civil society, citizens and decision makers. The rail sector must face the consequences of climate change not only in the short and medium term, but also in the longer term. It will have to adapt to environmental change and must anticipate risks in order to limit a heavy financial burden.

Climate change is not the only issue facing the railway sector. Consequently, UIC also works on other key issues, such as depletion of resources (water, metals, etc.) and polluting emissions, with a view to identifying ways to mitigate such issues. It seeks out alternatives to unsustainable land use and is involved in many other activities enabling the railways to be in line with the United Nations Sustainable Development Goals (SDGs).

The UIC Sustainability unit has developed cooperative links with the various stakeholders dealing with these issues worldwide. These collective efforts must be reinforced and must become more widespread, for example by

improving data sharing to better assess rail performance and communicate the benefits it can offer as a sustainable transport mode.

The unit's activities are governed by the UIC Energy, Environment and Sustainability Platform, an open meeting for members which takes place twice a year and is currently chaired by Willy Bontinck (SNCB). The unit also works with a core group to provide strategic direction as well as a number of working groups and is involved in several key projects.

KEY ACTIVITIES:

- ▶ representing the railway sector internationally and advocating its sustainability at international events such as the UN Conference of Parties and preparatory meetings or Sum4all conferences in order to raise the profile of the railways on the international stage;
- ▶ reinforcing cooperation with other UIC departments such as the Freight, Passenger and Rail System departments;
- ▶ contributing to internal reports on core topics of relevance to the Sustainability unit and UIC as a whole, as well as external reports for international groups and organisations in order to represent the interests of the global railway community;
- ▶ responding quickly to rapid changes to the environment and being proactive in proposing new projects to fight climate change, as well as other environmental issues (resource depletion, loss of biodiversity, increasing inequality, pollution, over-production and consumption, etc.);

ACHIEVEMENTS

- ▶ **Partnership agreement with the International Organisation for Public Transport (UITP) and the United Nations Framework Convention on Climate Change (UNFCCC) within the framework of COP 24.**
- ▶ **Active participation in the COP 24 United Nations Climate Change Conference and Marrakesh Partnership Global Climate Agenda.**
- ▶ **Membership of the World Bank SuM4All Consortium and contribution to the consortium's roadmap of actions through the "Green Mobility" working group.**
- ▶ **Completion of the first phase of the "Door-to-door solutions" project to identify opportunities for first and last mile solutions.**

- ▶ developing corporate social responsibility (CSR) activities relating to both technical and environmental topics and other issues;
- ▶ strengthening member participation and involvement;
- ▶ improving the environmental database and assessments for railways;
- ▶ assisting members with IRS development.

Energy and CO₂ Emissions Expert Network

The UIC Energy Expert Network provides strategy, guidance and leadership for the activities of UIC and the rail sector in general with regard to projects and issues relating to energy efficiency and renewable energy in the railway sector. It consults and advises on energy efficiency-related UIC projects led by other platforms and working groups and provides expert positions on current issues at the request of UIC (e.g. pending legislation, media inquiries, etc.). The UIC Energy Expert Network deals with all aspects of energy efficiency and CO₂ emissions.

Projects in 2018 included:

- ▶ publication of “The future of rail” in partnership with the International Energy Agency (IEA);
- ▶ SFERA (IRS 90940) project on standardisation of driving advisory systems;

- ▶ development of UIC Leaflet 930/IRS 90930;
- ▶ organisation of two workshops on best practice in energy efficiency;
- ▶ contribution to the “Sustainable Mobility 4 All” (SuM4All) World Bank report;
- ▶ contribution to the SLoCaT “Global status report – transport and climate change 2018”;
- ▶ contribution to the “Optimisation of energy usage aspects of rail innovation” (OPEUS) European project;
- ▶ maintenance and improvement of the “Eco Passenger” online eco-tool.

Noise and Vibration Expert Network

The UIC Noise Network promotes effective management of railway noise and vibration in the context of sustainable development. The group constitutes a centre of excellence; it supports transfer of knowledge, coordinates events and activities, leads research projects and facilitates communication with key stakeholders. It works in close cooperation with other railway organisations, the EU Commission and national authorities. The network organises successful noise and vibration workshops every other year.

The UIC Noise Network is concerned with all aspects of railway noise, e.g. rolling noise, stationary noise, and

noise from shunting yards. It provides a technical lead on transport noise and vibration policy in particular.

Projects in 2018 included:

- ▶ technical consultation to support the noise and vibration management efforts of project participants and organisation of a workshop held in March 2019;
- ▶ preparation of a video explaining the objectives and outcomes of the Noise and Vibration Network, launched at a workshop held in March 2019: <https://youtu.be/sCjCaMrDapc>

Sustainable Land Use Expert Network

The Sustainable Land Use Network provides strategy, guidance and leadership for UIC members with respect to environmental issues such as biodiversity, vegetation management, soil pollution, etc.

Activities in 2018 included:

- ▶ publication of the “Guidelines, state of the art and integrated assessment of weed control and management of railways” report, the final deliverable of the “Herbie” project;
- ▶ proposal of a new opt-in project called “Transition strategy on vegetation management” (TRISTRAM) to study the global strategy for transition from conventional herbicides to alternative methods of vegetation control.

This project is the successor to the Herbie project and began in January 2019.

Sustainable Mobility Expert Network

The UIC Sustainable Mobility Expert Network provides strategy, guidance and leadership for UIC members on sustainable development in the railway sector. This expert network is particularly focused on door-to-door solutions and works closely with other UIC departments, such as the Passenger department, to provide the best possible insights for members.

Emissions Expert Network

The UIC Emissions Expert Network is responsible for sharing best practice, reporting and identifying upcoming issues and future requirements. It works on a variety of topics, including:

- ▶ impact of diesel and other local emissions;
- ▶ air quality requirements;
- ▶ impact of brake materials on human health and the environment.

The network began work on its “Clean Air Trains” project in 2018. The project will help to develop a methodology for microparticle and nitrogen oxide estimations.

In addition to the work of the expert networks, UIC’s Sustainable Development unit was involved in a number of other initiatives in 2018.

These included:

- ▶ proposal of the “Re-Use” opt-in project, which aims to build a body of knowledge for members on sustainable use of resources and the circular economy;
- ▶ eco-scoring for the railway sector, highlighting the need for greater promotion of the positive impact of the rail sector in order to attract “green” funding;
- ▶ the RailAdapt initiative, aimed at keeping UIC members informed and prepared in support of national adaptation plans, UN agreements (e.g. COP 21 and the Sustainable Development Goals), and at encouraging the EU to reduce risks and costs whilst improving railways’ resilience in the face of climate change;
- ▶ cooperation with the United Nations: UIC has fostered ties of cooperation with UN entities such as UNFCCC, UNEP, UNDESA and HLG, and the various groups have demonstrated their ability to work together on topics that merit greater understanding at international level.

✕ KEY WORDS

SUSTAINABLE DEVELOPMENT, ENVIRONMENT, CO₂ EMISSIONS, ECO-SCORING, INTERMODALITY, SUSTAINABLE MOBILITY, NOISE, SUSTAINABLE LAND USE





KEY EVENTS

- ▶ **COP 24 – Katowice, December 2018**
UIC contributed to COP 24 events along with other key stakeholders from the transport sector, and took part in the SLoCaT Transport Day as well as a Facebook Live session. Within the framework of UIC's partnership with UITP and UNFCCC, UIC also co-organised a parallel event on 7 December.
- ▶ **Launch of the Eco-Scoring Network; workshop held in November 2018.**
- ▶ **Participation as a speaker at the Future of Transport World Conference in Cologne, June 2018.**

PUBLICATIONS

- ▶ **The Future of Rail, Opportunities for Energy and the Environment, International Energy Agency in collaboration with UIC:**
<https://webstore.iea.org/the-future-of-rail>



EXPERTISE
DEVELOPMENT
& TRAINING

EXPERTISE DEVELOPMENT & TRAINING

Railway companies are facing challenges relating to personnel competencies and skills, prompting them to rethink their learning and development strategies. A flexible, well trained, motivated workforce is key for a competitive and innovative sector.

The core missions of the UIC Talent & Expertise Development Platform, currently chaired by Esther Marconi (Ferrovie dello Stato), are to:

- ▶ promote excellence in training through an exchange and best practice model;
- ▶ identify new challenges and solutions for learning and development and training technologies;
- ▶ participate in talent attraction and retention initiatives;
- ▶ share knowledge and resources.

The aim of the platform is to put in place a new, continuously evolving learning environment that is flexible, self-paced, collaborative — benefitting from the collective intelligence of the community — and recognised, providing credentials (open badges) to enrich participants' professional profiles.

An open meeting for members takes place twice a year to determine the activities of the platform, and is held at a different training facility on each occasion. The platform consists of a core group to provide strategic direction, as well as various working groups dealing with topical issues.

The platform organises numerous dedicated events, workshops and training sessions. A conference focusing on talent attraction was recently held in Latvia, and a course on design thinking as a tool for innovation has been proposed to the network in Berlin. A number of online modules have already been designed and are now available on the Talent website:

- ▶ RAM (Railway Asset Management), designed in cooperation with Sapienza University and Oxand;
- ▶ ERTMS, developed in collaboration with members of the EU Network of Rail Training Centres.

KEY ACTIVITIES:

- ▶ organising events and training sessions;
- ▶ participating in major industry and research events and encouraging participants and institutions to join the Railway Talent project;
- ▶ seeking out new partnerships;
- ▶ updating and enhancing the Talent digital platform;
- ▶ extending activities to involve a broader spectrum of stakeholders.

KEY PROJECTS

Talent

The Talent project is concerned with the need of the rail sector to more effectively attract and retain the best talent in the labour market.

With regard to the numerous HR challenges facing the railway industry (demographic

challenge and skills shortage, corporate knowledge, attractiveness, gender diversity, etc.), UIC believes that it has an important role to play at international level by initiating active dialogue and garnering support across the rail sector to attract talented personnel seeking to develop a career in the railways.

At the core of the project is the development of a powerful international network of high-profile railway talent aiming to prepare a new generation of talent working on domestic and international challenges, leveraging a deep understanding of business approaches, language and intercultural skills.

The Talent digital platform has been revamped in order to create a solid and sustainable foundation for international cooperation and sharing among railway talent. The purpose of the platform is to:

- ▶ guide and connect within and beyond the railway industry;
- ▶ help railway personnel and companies to learn, impart knowledge and develop;
- ▶ promote innovation and careers in the railway sector.

Visit the new portal at www.railtalent.org

Rail UniNet/TrainRail

RailUni Net is currently being adapted with a view to implementing a more powerful coope-

orative tool for stakeholders worldwide with an interest in rail education and training. The new entity – UIC TrainRail – will be a cooperative network of training organisations and industry partners working together, managed by an elected board and under the authority of the Talent and Expertise Development Platform and unit. UIC TrainRail will be open to both UIC members and non-members and will have a transparent membership structure comprising both organisations and individual experts. It will implement and monitor activities in a number of core areas of railway training and will promote activities in specific areas of interest to members, such as high-speed rail, technical training, etc.

VERA project

The key objective of the Virtual European Rail Academy (VERA) study, initiated in 2018, is to identify potential areas of cooperation in order to respond to major future challenges facing the railway sector in the field of human resources.

At operational level, the study will support UIC and CER in their ongoing efforts to intensify pooling of knowledge and resources. The study aims to identify specific areas of cooperation and initiatives that may serve a basis for a Virtual European Rail Academy.

ACHIEVEMENTS

- ▶ **A successful international conference addressing the topic of “How to attract new staff in a situation of growing competition and opening-up of markets” was held in partnership with Latvian Railways at Riga Technical University in October 2018.**
- ▶ **Hundreds of railway employees, students at rail universities and other stakeholders completed UIC training sessions either at UIC HQ, at regional level or online (RAM and ERTMS training modules).**

⊗ KEY WORDS

WORKFORCE DEVELOPMENT, COMPETENCIES, ACADEMIA, TRANSMISSION, TALENT





UIC'S REGIONAL ACTIVITIES

70/ AFRICA

72/ ASIA-PACIFIC

74/ EUROPE

76/ LATIN AMERICA

78/ MIDDLE EAST

80/ NORTH AMERICA

AFRICA

UIC's activities in Africa are characterised, in particular, by the need to support inter-African trade, with due consideration of landlocked countries. New digital tools offer the potential for leapfrogging and present new opportunities for Africa. In addition, UIC's partnership with NEPAD – the development agency of the African Union - offers new prospects for the African railways in the future.

The UIC Africa region is chaired by Mohamed Khlie (ONCF), and the UIC representative office is located in Casablanca.

KEY ACTIVITIES

The UIC Africa region aims to:

- ▶ develop professionalism in the railway sector in Africa by promoting joint training, particularly on safety and security;
- ▶ define and design standards and technical specifications for African railway networks to ensure real connectivity and interoperability;
- ▶ develop the sectorial policy and integrated continental master plan for infrastructure in Africa and update the 2040 vision to take account of digital issues;
- ▶ support implementation of an African digital backbone by deploying fibre optic cable on the rail network;
- ▶ design and operate an African digital platform to provide facilities for all African rail stakeholders to share and exchange on digital rail initiatives;
- ▶ support ongoing digital transformation with a view to scalable implementation.

✕ KEY WORDS

UIC, AFRICA, RAIL, DIGITALISATION, VISION 2040, TRAINING, SCALABILITY





ACHIEVEMENTS

Key events:

- ▶ seminar on “Rehabilitation of old rolling stock: a reliable economic solution for modernisation and optimisation of the fleet”, Algiers, March 2018;
- ▶ conference on “Railway safety and security - risks and challenges - cooperation and shared efforts”, Djibouti, March 2018;
- ▶ seminar on employability of young people in the rail trades, Togo;
- ▶ participation in the 11th African Infrastructure Forum, Marrakech, November 2018.

2 training sessions held in May and in November:

- ▶ 45 participants;
- ▶ 10 countries;
- ▶ 4 weeks of theory-based courses, conferences, technical visits and case studies.

Rail promotion activities:

- ▶ revitalisation of the African Union of Railways;
- ▶ African HST Study;
- ▶ Trans-Maghreb study.

ASIA-PACIFIC

The UIC Asia-Pacific region operates at both regional and sub-regional levels, taking account of the diverse range of challenges in the region as a whole and representing UIC's position at international organisations and intergovernmental agencies, national authorities and governments.

Vision 2050 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.

Based on UIC's core competencies of neutrality, representation and technical competence, 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 of cooperation are harnessed to achieve the high-priority objectives for the region: 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.

The Asia-Pacific Region is chaired by Lu Dongfu of from Chinese Railways (CR) and vice-chaired by Sauat Mynbayev of KTZ (Kazakhstan).

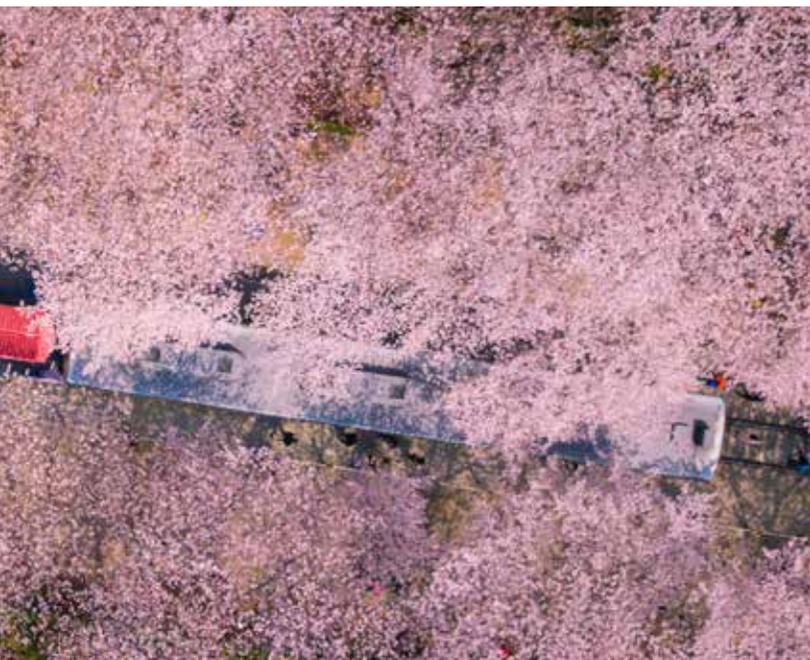
The Asia-Pacific Management Committee comprises seven members who are part of the UIC Executive Board and provide guidelines and direction on the work priorities defined and implemented by the Asia-Pacific Regional Assembly (43 members, 30% of UIC total representation). Its daily work is coordinated by the UIC Asia-Pacific Coordination Group and its three regional representatives, supported by an officer representing the Chairman.

The annual programme of studies, conferences and training sessions is validated by the members through the opt-in process and aligns with the long-term strategic vision for 2050, the Chairman's strategy



guidelines and the medium-term (three-year) action plan. This programme is funded by the special fund for common strategic actions on the one hand, and by individual contributions for multilateral collaboration on the other.

Activities in the region are spearheaded by project leaders chosen from among members of the Assembly, including research institutes, universities or expertise development centres. International organisations (intergovernmental and financial institutions) have been involved in the definition and monitoring of the work programme since 2017, with the aim of having a complete overview and full synchronisation of the priorities in the region.



ACHIEVEMENTS

Key events:

- ▶ 5th UIC Asia-Pacific workshop on control command, signalling and telecommunications, Sydney, May 2018;
- ▶ 25th UIC Asia-Pacific Regional Assembly, Seoul, June 2018;
- ▶ UIC APRA freight corridors workshop on interoperability and standards, Bangkok, November 2018;
- ▶ UIC APRA workshop on the INTERTRAN 2018 project: “Measures for the effective development of multimodal transport in the Asia-Pacific Region aimed at increasing competitiveness”, Vladivostok, October 2018.

Training:

- ▶ “Best human resources and training practices for railways”, Russia, March 2018;
- ▶ 10th Asia-Pacific Network of Rail Training Centres meeting, Chengdu, April 2018;
- ▶ UIC/International Rail Training Centre for UIC Asia training session, Seoul, June 2018.

PUBLICATIONS

- ▶ Technology of freight traffic organization according to the energy-optimized schedule, June 2018.
- ▶ Report on cost evaluation of rail projects.
- ▶ Report on modern technical rail maintenance.
- ▶ Report on methods of assessment of signalling systems for cybersecurity.
- ▶ Report on diagnostic systems for railway infrastructure installed on locomotives.
- ▶ Exploratory study of new rail-type transportation systems and their impact on sustainable development, railway technology and standards.
- ▶ Report on integration of reservation systems.
- ▶ Comparison and analysis of national technical regulations with TSI, considering interoperability in the Asia-Pacific region.
- ▶ Carbon footprint guidelines for railway infrastructure.

✕ KEY WORDS

ASIA-PACIFIC, APRA, IRATCA, APNRTC, MTRM, DSRIBL, MASS-CS, INTERES, NEWTRANSYS, INTERTRAN



EUROPE

Mobility has emerged over the last decade as one of the key issues for the future of Europe. European citizens aspire to ever more seamless, comfortable and integrated mobility. Rail remains a critical part of the European transport system. European railway operators have an unprecedented opportunity to achieve the sustainability required for the 21st century and respond to expected growth in integrated mobility demand, both in passenger and freight transport.

The European railway operating community (ROC) brings together operators, infrastructure managers and service providers and pool resources and knowledge in order to develop solutions for future mobility needs of tomorrow and current operational issues.

The UIC Regional Assembly Europe (RAE) gathers together all 120 European UIC members and meets twice a year to set the general

objectives for regional development and to establish guidelines for the technical work programme.

The Assembly is chaired by Francisco Cardoso dos Reis (IP, Portugal), supported by three vice-chairs, Edvins Berzinš of LDZ (Latvia), Crister Fritson of SJ (Sweden) and Per Eringa of ProRail (The Netherlands).

The work of the region is supported by UIC personnel based not only at UIC headquarters in Paris but also in Brussels.

KEY ACTIVITIES

A strong and comprehensive vision for tomorrow's railways

Addressing the sustainability and mobility solutions required in order to become the backbone of the European transport system, in 2018, UIC Europe set out to update its technical vision, "Challenge 2050" (2012), and its technical strategy, the "Railway Technical Strategy Europe" (2013). Written prior to the rise of digitalisation, there was a need to align



ACHIEVEMENTS

- ▶ **A consistent and up-to-date strategy for Europe.**
- ▶ **Significant progress in key projects (FRMCS, etc.).**
- ▶ **Continued commitment to harmonising the European railway system.**

these documents with current expectations in terms of future technologies and mobility patterns. The “Railway Technical Strategy Europe 2019”, drafted in 2018 and published in January 2019, is the outcome of these efforts and delivers a comprehensive set of objectives.

The European Rail Research Advisory Council (ERRAC) published its “Rail Vision 2050” in 2018. This document, based on contributions from across the railway sector, including the RTSE, sets out the future research required by the sector in order to meet end users’ expectations and outlines how new technologies may be used to achieve these capabilities. The railways need continued support and investment so that they may embrace technological opportunities and simplified regulation in order to improve the cost competitiveness of the European railway sector.

Research and innovation: the building blocks of the future European railway system

Established in June 2014, the Shift2Rail Joint Undertaking (S2R JU) is the structure put in place by the EU as the main artery for railways to undertake research and innovation, with a total budget of approximately €1 billion euro. UIC provided extensive support to a visionary group of railways in developing the framework for the EUROCC consortium.

This group has been very active in Shift2Rail Innovation Programmes 2 and 3, both of which play key roles in terms of the future

evolution of system infrastructure. UIC Europe also has its sights firmly set on the future and is involved in preparatory work for the future Horizon 2020 programme. Much of this work is being done by the Research and Innovation Coordination Group (RICG), a subgroup of the Regional Assembly Europe.

Focus on standardisation to facilitate deployment of research and innovation output

In Europe, in the context of interoperability and the convergence of operating principles to maximise business opportunities for the ROC, standardisation offers a wealth of opportunity, and UIC has an important contribution to make to the success of the Single European Railway Area (SERA).

The Rail Standardisation Strategy Europe (RSSE) describes the current standardisation landscape in Europe in support of the ROC’s objective of providing itself with the means necessary to enable the RTSE. This has the objective of guaranteeing the interoperability, integrity and efficiency of the railway system as a whole, both in terms of technical infrastructure and as a market-driven, self-sustained business environment, whilst complying with stringent safety and passenger rights regulations. The standardisation process outlined in the RSSE promotes business-focused innovation on the part of the railways and other sectors, as well as the supply industry and stakeholders engaged in research and innovation.

✕ KEY WORDS

EUROPE, COOPERATION, COLLABORATION, UNITY, VISION, BUSINESS FOCUS, EFFICIENCY, DEVELOPMENT, HARMONISATION, DESIGN, CONSTRUCTION, OPERATION



LATIN AMERICA

60% of the Latin American countries have railways, railway infrastructure or the potential to be included in future railway corridors. The total route length of all 18 railway networks in the Latin American region is estimated at 88,000 km.

The Latin American railway network is quite heterogeneous, and the majority of the countries have less than 7,000 km of railway network, presenting a network density varying from zero to 790 per million inhabitants. Approximately 70% the network is in Argentina (31,902 km) and Brazil (29,012 km), and Chile has the third-largest network (6,742 km). In many countries, only part of the network is in operation or operable.

Passenger rail traffic in Latin America is limited mainly to commuter and urban rail services. Freight rail traffic — while more developed than passenger activity — are still dedicated to the transport of raw export products such as iron ore and agricultural commodities.

On the other hand, Latin American population growth is slightly above the world average. 610 million people live in Latin America, of which 80% live in urban areas, translating into an increasing demand for mobility and presenting an opportunity for the development of rail projects as a sustainable and affordable means of urban and intercity transport.

Members of the UIC Latin America region participate to the annual UIC Latin America Regional Assembly (LARA) to set the objectives for the development of rail sector in the region and to gain an overview of progress against the defined strategic vision.

UIC LARA activity is chaired by Guilherme Quintella of Estação da Luz Participações (Brazil). The UIC Latin America region has three members:

- ▶ EDLP: Estação da Luz Participações Ltda (Brazil);
- ▶ ANTT: Agência Nacional de Transportes Terrestres (Brazil);
- ▶ ADIFSE: Administración de Infraestructuras Ferroviarias Sociedad del Estado (Argentina).

In addition to regional UIC LARA events, members also organise a number of local events, such as conferences, workshops, etc., which are attended by UIC.

KEY ACTIVITIES

Railways in Latin America should serve as an enabler for the development of sustainable transport across the continent. In this context, standardisation needs to be implemented in advance to avoid a situation whereby the numerous projects that are currently in development are ultimately not interoperable. UIC is committed to supporting railways and stakeholders in providing a framework that guarantees interoperability.

Railway systems in Latin America are diverse and have been developed in accordance with the different needs of individual countries or regions. Some countries have several unconnected networks with different gauges and standards. These railways were generally built in the 19th century to support the export of raw material and agriculture products. Many of them have been neglected for decades due to lack of funding.

Diesel traction is predominant, especially in freight transport, due to low levels of electrification. Latin America has one of the lowest network densities in the world, indicating the potential for network expansion.

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. For example, the Atlantic-Pacific corridor would stretch over 3,800 km from Brazil to Peru through Bolivia. These aims have been made possible by a surge in infrastructure and rolling stock renovation activity. However, financing is still a major obstacle to regeneration of rail sector activity in Latin America.

Passenger rail activity is limited in the region. LARA members are boasting the urban, regional and intercity rail by investing in more network connections, enhancing the passenger rail experience and revising the tender processes to prioritise passenger transport.

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 environment.

ACHIEVEMENTS

- ▶ **Monograph on the railway networks in Latin America, developed with the assistance of Euskotren.**
- ▶ **Drafting of a memorandum of understanding (MoU) with the Latin American Railway Association (ALAF) and meetings with the main railway stakeholders in the region.**
- ▶ **Definition of UIC LARA activities in the short term.**

✕ KEY WORDS

BUSINESS MODELS, PASSENGER TRANSPORT, FREIGHT CORRIDORS, OPERATION AND MAINTENANCE, STAFF TRAINING, INTEROPERABILITY, MIXED TRAFFIC

MIDDLE EAST

The UIC Regional Assembly for the Middle East (RAME) was UIC's first Regional Assembly, established in 2008.

The Regional Assembly comprises representatives of all UIC members in the Middle East region. It is chaired by Turkish State Railways (TCDD) and is vice-chaired by the railways of the Islamic Republic of Iran (RAI), Saudi Arabia (SRO), and Jordan (ARC). It meets twice a year. The UIC Middle East regional office is located in Tehran, at the headquarters of Iranian Railways.

KEY ACTIVITIES

RAME activities are defined and ratified in annual action plans and can range from technical and operational issues to commercial and business-oriented activities. Activities relating to safety, security, infrastructure maintenance, high-speed rail, etc. are developed at technical seminars and workshops, with technical support provided by UIC.

The Middle East regional office is tasked with consolidating the UIC RAME community, promoting cooperation among its members, and identifying new areas of international cooperation. It also encourages and supports its members in order to promote involvement in UIC's technical forums and platforms.

The Middle East "Vision 2025" document, drafted in collaboration with RAME members, is the first UIC publication on future strategies for the railways in the Middle East, and constitutes a framework for further work in the region. The overarching objective is to promote a competitive and seamless rail transport system in the Middle East to benefit the welfare of the population and to promote economic growth and sustainable development.

✕ KEY WORDS

MIDDLE EAST, FREIGHT CORRIDORS, HIGH-SPEED RAIL, TRAINING, INFORMATION

ACHIEVEMENTS

- **Updating of the Middle East regional office website: <https://www.rameuic.com/>**

Key events:

- **The tenth UIC World Congress on High-Speed Rail, organised by UIC and TCDD, was held in Ankara from 8 to 11 May 2018, and brought together 1,000 participants from 30 countries. 25 parallel sessions were held and 115 presentations were given during the three-day event.**

Publications:

- **Report on border crossing practices in railway transport in Middle Eastern countries;**
- **Report on the main international rail corridors passing through the Middle East, connecting Asia to Europe;**
- **UIC-RAME strategic document 2018-2020 (update).**





NORTH AMERICA

America's national intercity passenger rail system is composed of 310 weekday trains and 500 stations and covers 46 states and three Canadian provinces, as well as Washington, D.C. Amtrak is the nation's only high-speed intercity passenger rail provider, operating at speeds up to 150 mph (241 km/h). On average, 600 daily thruway schedules with guaranteed connections via buses, vans, ferries and other modes extend Amtrak service to more than 400 communities not served directly by Amtrak trains in 38 states and Canada.

As America's economy grows, the need to move more freight will increase too. According to some estimates, total U.S freight shipments will increase 41% by 2040. America's freight railways are almost entirely privately owned and operated: unlike trucks and barges, freight railways operate overwhelmingly on infrastructure that they own, build, maintain, and pay for themselves. Close to 600 freight railways operate in the United States. Together, freight railways operating in the United States form an integrated system spanning almost 225,000 kilometres and earning close to \$74 billion in annual revenue.

With seven members, the UIC North America region comprises railway stakeholders in the U.S. and Canada, as well as Mexico's Regulatory Agency for Rail Transport (ARTF), which became part of UIC North America in 2018. Although the North American region is geographically limited in terms of its potential, it is foreseeable that further members — including other stakeholders in the mobility chain, such as public transport

operators — could join the UIC America family and expand its membership in the future.

In addition to its members, UIC maintains close links with numerous stakeholders involved in transport and mobility issues in North America, such as the US High Speed Rail Association (US HSR), the American Public Transportation Association (APTA), the World Bank and the Transportation Research Board (TRB).

The North America region is currently chaired by VIA Rail Canada with the active support of the Federal Railroad Administration (FRA), which is also heavily involved in the work of the region. In 2018, the FRA hosted the third Regional Assembly at its headquarters in Washington D.C., as well as a digital seminar exploring the possibilities offered by digital transformation for the railways.

KEY ACTIVITIES

The UIC North America region works with its members and partners on a series of priorities, such as:

- ▶ developing synergies between members and a shared vision on topics of common interest;
- ▶ sharing views and best practices for continuous improvement of railway safety;
- ▶ revitalisation of passenger rail;
- ▶ increasing freight activity and implementing infrastructure improvements;
- ▶ evolving the relationship between freight owners and passenger operators towards maximisation of benefits by means of right-of-way optimisation;
- ▶ designing railway stations of the future;
- ▶ digitalisation.





ACHIEVEMENTS

- ▶ Organisation of the third UIC North America Regional Assembly in Washington, D.C. at FRA headquarters. The Assembly included a digital session, welcoming key players such as Amazon and Spunk to discuss recent developments in terms of artificial intelligence, facial recognition and big data. Proofs of concept on digital level crossings and tools for sight impaired and disabled passengers were also presented.
- ▶ Publication of the first edition of the UIC strategic document, “The Railway Vision for North America”. The document outlines the benefits of rail as a smart choice for the future: safe, efficient and reliable.
- ▶ UIC took part in a training session “Destination 2025 – station of the future” organised by VIA Rail Canada in September 2018.
- ▶ Signature in December 2018 of a memorandum of understanding between UIC and the American Public Transportation Association (APTA) on cooperation with APTA within the UIC High-Speed & Intercity Committee.

✕ KEY WORDS

COOPERATION, INTERFACE
MANAGEMENT, SAFETY,
DIGITAL, STANDARDS,
INVESTMENTS, TRAINING,
STATIONS



UIC SUPPORT ACTIVITIES

84/ COMMUNICATIONS

85/ FINANCE

86/ INSTITUTIONAL RELATIONS

87/ HUMAN RESOURCES

88/ IT

COMMUNICATIONS

UIC's communications activities have a direct connection with the association's principal objectives of highlighting the benefits of rail transport globally and supporting members in their efforts to make rail transport more efficient and attractive for customers and sustainable for society.

UIC communication objectives are threefold:

► **Influencing:** aiming to consolidate UIC's position and accessing broader fields of expression where possible.

These goals reflect UIC's remit of representing the railway sector and the association's potential for influence in key strategic areas. UIC is committed to improving its visibility and enhancing its reputation, as well as increasing recognition of its role by international institutions, key finance organisations and all stakeholders involved in mobility at the very highest level;

► **Information:** imparting information to target groups.

These objectives relate to the provision of information and promotion of UIC know-how (internal communication), as well as reinforcing the association's position as an unparalleled platform for international technical expertise, particularly with regard to other stakeholders and bodies involved in the transport sector and the integrated mobility chain (external communication);

► **Relationships:** aiming to unify, develop, encourage cooperation and good relationships.

These objectives relate to the unifying role of the professional association and the activities undertaken in this vein, not only for the benefit of UIC members, but also with regard to third parties and future potential members (promotion and public relations activities).

UIC continuously develops and improves its communications tools in order to inform members and partners rapidly and efficiently of the results and output from international cooperation activities. Members are thus more actively involved in the activities of the international association, regularly receiving brief news bulletins or more detailed information on the work and projects led or monitored by UIC.

UIC's communications system encompasses a wide range of activities and tools leveraging the UIC website and specialist sites, the weekly "UIC e-News" bulletin, documents with strategic or technical content (reports, flyers, etc.), press releases, presence at high-profile events, etc.

The UIC Communications team also develops and supports a large number of actions on behalf of working bodies and technical departments at UIC headquarters, or for specific events such as UIC world congresses and conferences.

ACHIEVEMENTS

- **Coordination of 80 events.**
- **Coordination of around 30 publications.**
- **50 editions of UIC eNews (weekly newsletter).**
- **50 UIC press releases.**
- **Development of audiovisual expertise.**

✕ KEY WORDS

ACTIVE LISTENING, CROSS-FERTILISATION, TRANSVERSALITY, ADDED VALUE, MESSAGES, AUDIENCES

FINANCE

UIC implemented its quality management system, managed by the Finance department, in 2015. The Quality Management System (QMS) was certified by AFNOR in 2017. In 2018, UIC's activities in this area focused on retaining its certification and continuing to improve processes.

UIC reports internally on project management to its members, enabling them to monitor their investments, and to the European Commission for projects funded by the European Union. UIC's Finance department also ensures conformity of its accounts and finances for its auditors and for the French tax authorities.

The department monitors 170 projects, six regional budgets, eight special groups and 27 externally funded projects, with a total portfolio of approximately €6 million.

The UIC Finance department manages the interface with UIC members as follows:

- ▶ the UIC Finance Committee is composed of five working groups responsible for updating UIC leaflets/IRs to take account of regulatory or market changes;
- ▶ taking into account the importance of relations with the OSJD (the organisation for cooperation between railways), joint UIC/OSJD finance meetings are organised

twice a year to share experience and information;

- ▶ the Budget and Audit Committee validates UIC's accounts;
- ▶ legal group: the main objectives of the group are to provide members with legal analysis and advice and propose solutions on major legal issues for the sector (new MERITS business model, analysis of best practices relating to liberalisation of the market for passenger services, impact of GDPR, compliance policies, etc.).

KEY ACTIVITIES:

- ▶ improving productivity, efficiency and quality;
- ▶ maintaining the QMS and ensuring on-going process improvement;
- ▶ running the Project Management Office (PMO);
- ▶ recovery of fees and project contributions;
- ▶ administration of three subsidiaries with profitability targets and eight special groups;
- ▶ ensuring compliance with legal framework and specific contractual constraints;
- ▶ liaising with tax authorities, legal auditors and the Budget and Audit Committee;
- ▶ liaising with EU auditors on EU projects;
- ▶ ensuring consistency of UIC functioning with statutes and internal regulations.

ACHIEVEMENTS

▶ **QMS (Quality Management System) : 2018 was UIC's first year of operation within the context of Quali'OP certification. The key objective in relation to the QMS was to spread knowledge of and apply UIC's quality commitments in all its working and decision-making bodies. A number of thematic workshops were organised in order to raise awareness among UIC staff, and regular feedback was provided to member representatives at statutory meetings. The AFNOR audit confirming Quali'OP certification took place in early December. The 2018 AFNOR audit report and results from the annual satisfaction survey are available to members on the UIC Extranet.**

▶ **PMO: the PMO was set up at UIC in 2018, in line with members' recommendations. The PMO has implemented a number of actions targeting efficiency in operational implementation of the opt-in process in order to:**

- improve the quality of the projects proposed to our members;
- optimise added value for our members.

▶ **Member reporting: reporting tools have been upgraded to improve reporting to the members on deliverables and financial status of current projects.**

▶ **Publications**
Three UIC leaflets (301, 304 and 311) were updated and converted into IRs in 2018.

✕ KEY WORDS

QUALITY MANAGEMENT SYSTEM, PROCESS, CONTINUOUS IMPROVEMENT, CERTIFICATION, DEPLOYMENT, SUPPORT, PROCEDURE, TRANSVERSAL, MANAGEMENT, CONFORMITY

INSTITUTIONAL RELATIONS

UIC's Institutional Relations department oversees the memoranda of understanding and develops and maintains UIC's activities in close collaboration with almost 100 leading international organisations: regional and international standardisation bodies, local authorities, governmental and intergovernmental organisations, financing institutions and international banks, civil society associations, railway industry stakeholders and contractors and other transport sector players.

UIC's various partnerships help to position it as the key railway stakeholder on the international stage. UIC was designated by the United Nations as a non-governmental organisation in 1950 and was awarded special consultative status in 2015.

KEY ACTIVITIES

The Institutional Relations department manages UIC's general membership, including new member applications, prepares the statutory meetings and oversees the Data, Statistics and Economic unit. The unit provides cross-functional expertise and knowledge for core and opt-in projects managed by UIC's forums, platforms and other departments or through calls for tenders.

✕ KEY WORDS

RAILSTATISTICS, RAILISA, RAILSYNOPSIS, RAILWAYSTATISTICS

The Railway Statistics Group is composed of UIC member representatives responsible for statistics. The group is committed to active participation and international cooperation in relation to the provision and exchange of statistical information. Cooperation with the OSJD, Eurostat and the International Transport Forum is key to establishing consistent and complete datasets.

The Statistics Steering Committee comprises a number of members of the Railway Statistics Group, as well as its chairman, and is supported by UIC's Head of Statistics. It prepares and develops the activities to be carried out on the basis of the Group's proposals or at its own initiative.

Based on these proposals, the Statistics Group may decide to create ad hoc working groups with a view to studying and resolving specific statistics-related problems. These groups are convened for a limited period of time, and their activities are defined by the Committee. The Statistics Group is chaired by Roman Sterba of SŽDC.

ACHIEVEMENTS

► RAILISA online application (progressive delivery since 2017)

RAILISA (RAIL Information System and Analysis) is an online query tool which allows the user to visualise and download data provided by railway companies worldwide.

There are currently 45 variables available for more than 100 railway companies: length of lines and tracks on the infrastructure network, passenger and freight traffic (e.g. passenger-kilometres and tonne-kilometres), train movements, rolling stock, staff numbers, financial results, etc.). Some of these variables have been documented since 1995, and the database is updated on a regular basis: <http://uic-stats.uic.org/>

Publications:

- International Railway Statistics and Synopsis 2017;
- Global Footprint Study.

Key events:

- UIC Statistics plenary meeting.

HUMAN RESOURCES

UIC has 137 employees - 68 women and 69 men - representing 24 different nationalities: 66% French, 23.4% other European, 6.4% African and Middle Eastern, 2.8% Asian. Its staff includes 29 secondees from UIC member companies in ten different countries. The composition of the UIC workforce is a clear illustration of its multicultural ethos.

KEY ACTIVITIES

Recruitment and turnover management

Seven secondees joined UIC in 2018, four of whom were hired to replace departing employees. Three new roles were created within the context of new projects.

17 UIC employees left the organisation in 2018 due to retirement, completion of contract and resignation, and 20 new employees were hired. 11 of these were hired on fixed-term contracts for new projects or as temporary replacements for employees on sick leave or maternity leave.

Onboarding of new employees

The HR department formalised its procedures for onboarding seconded employees in 2018, establishing a key point of contact within the HR team for managing all topics relating to preparation of contracts, secondment and day-to-day issues. In addition, internal HR procedures for recruitment, employment and new employee onboarding were further formalised in 2018 with the arrival of a new Payroll and Employee Administration Specialist.

✕ KEY WORDS

MULTICULTURAL, RECRUITMENT,
SOCIAL, TRAINING, TALENT

Talent and career management

69 employees took part in a total of 65 individual or group training courses in 2018. 14 employees took part in numerous training courses, with a total of 107 sessions completed (1.6 training sessions on average per participating employee). In addition, nine employees participated in group training courses on workplace interviews for directors and line managers.

ACHIEVEMENTS

- ▶ With regard to social relations, 2018 saw the negotiation and signature of three collective agreements and amendment of one existing agreement.
- ▶ A forum on occupational health and safety was held at the end of November, attended by 58 employees and secondees.





IT

UIC IT is a transverse support function that aims at providing a high-quality service to its users, whether internal (UIC Staff) or external (Members).

A few figures to illustrate the scope of this service:

- ▶ some 30 servers;
- ▶ 95 web environments, among them 19 applications;
- ▶ 150 PCs and laptops;
- ▶ 128 MySQL databases;
- ▶ 3 Oracle databases;
- ▶ over 100 websites;
- ▶ UIC.org: 120,000 visits per month;
- ▶ extranet with some 5000 users.

A cloud-oriented strategy has been decided and implemented since 2016.

A disaster recovery plan has been set up with a replication of selected applications and data in the cloud via AWS.

The development of SaaS has been decided and implemented with the same strategic focus.

Examples: NOTILUS, IODA...

This strategy allows UIC to align its policy with the high-level quality requested by its Members in terms of reliability, availability and security.



INTERNATIONAL UNION
OF RAILWAYS

INTERNATIONAL UNION OF RAILWAYS

16, rue Jean Rey

F - 75015 PARIS (France)

Tel.: + 33 (0) 1 44 49 20 20

Fax: + 33 (0) 1 44 49 20 29

E-mail: info@uic.org

Website: www.uic.org

Published by:

UIC Communications Department

Director of Publication: Marie Plaud-Lombard

Editors: Siobhan Golden, Cécile Gendrot, Helen Slaney, Clémence Forget

UIC Visuals: Coralie Filippini

In close cooperation with all UIC Departments, working bodies and UIC Members.

Lay-Out: Marc Desmoulin - La Belle Equipe

Photographs: Getty - Adobe - J. Jem - DR

Reproduction of the content is only authorised with specific mention
of the source (UIC).

ISBN: 978-2-7461-2893-4

Copyright Deposit: June 2019 UIC Paris

www.uic.org



#UICrail



www.uic.org



INTERNATIONAL UNION
OF RAILWAYS

