3rd Africa Railway Digital Congress
28-30 May 2024

Yaounde, Cameroon

DIGITAL: A CHALLENGE TO BOOST THE RAILWAY VALUE CHAIN

Organised by CAMRAIL and UIC

CONCEPT NOTE

CONTEXT

Digital is a revolution, a challenge to boost the rail value chain.

Digital can increase safety, reliability, profitability and the customer experience.

Why did we decide to hold this Congress in Africa?

- Because UIC is convinced that there is a real opportunity to develop rail in Africa,

- Because rail must become (or become again) the backbone of land-based mobility, for both passengers and freight. This is an obvious necessity if we are to adapt to climate change.

Digitization will offer African economies an important means of making considerable progress, both in industry and in services. New technologies will provide innovative solutions for the development of the rail industry, which combines both industry and services.

To mark its centenary, UIC has renewed its strategy, focusing on its added value. (See Annex I for UIC Added Value. Digital is one of them.)

The African Union (AU) has adopted "Agenda 2063"[1] for rail development in Africa. The project for an integrated high-speed rail network in Africa is a flagship project of Agenda 2063, which aims to integrate Africa physically and economically.

After the 1st African Digital Railway Summit in Cape Town, "Africa: the future digital continent" in 2019, the UIC organized the 2nd African Digital Railway Congress, "Accelerating digital transformation in Africa: what challenges for rail?", in Tunis in 2022.

The 1st Summit aimed to develop Africa as the Continent of the digital railway future, bring together for the 1st time railway companies, politicians, industry representatives, economists and components of the digital ecosystem; identify the main projects to be launched; support the coordination of activities developed within the framework of vision 2040; and finally, encourage the design and development of a genuine African digital strategy.

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[1] *Flagship Projects of Agenda 2063 | African Union (au.int)*

The 2nd Congress in Tunis aimed to build on the momentum generated by the Cape Town Summit, develop the future of digital rail in Africa, bring together players in the rail sector, rail experts, industrialists, politicians, economists, academics and the digital ecosystem, identify major projects to be launched, and prepare a joint Declaration aimed at defining the way forward for the Continent. Over one hundred participants attended the Congress.

The high point was the "**Tunis Declaration on Digitization in the Railway Sector**" (see Declaration in Annex II), which reiterated the need to jointly promote the following measures**:**

- ❖ Digitized technical operations
- ❖ Digital infrastructure
- ❖ Digitized freight and passenger transport
- ❖ Digital ticketing
- ❖ Digitized human resources
- ❖ Support migration to the future mobile rail communications system
- ❖ Boost digitization for maintenance, capacity management and path management (Digital Capacity Management - DCM).
- ❖ Create and share a data space for resilient, sustainable mobility

3RD AFRICAN CONGRESS ON DIGITAL RAILWAYS

Following on from the 2 previous Summits and Congresses, the third African Digital Railway Congress will be held within the **framework of Agenda 2063**. It will aim to **publicize and promote the key actions of Agenda 2063**. It will show how the digitization of rail can facilitate the implementation of Agenda 2063 by accelerating the first steps. Africa's socio-economic context should also enable digitization to develop exceptionally rapidly. Indeed, some digital applications are more advanced in Africa than in Europe or North America (banking systems, etc.).

As such, this congress will: (i) **define** the future of digital rail for the Continent; (ii) **bring together** rail sector stakeholders, politicians, industry representatives, rail experts, economists, universities, and digital ecosystems; (iii) **identify** major projects to be launched; (iv) **support** the coordination of activities aligned with the aspirations of the African Union Commission's (AUC) Agenda 2063 for the rail sector; (v) **encourage** the design and development of a truly African digital rail strategy; (vi) **define** the level of maturity of digital rail.

PROGRAMME

26 May 2024: Arrival for the technical visit in DOUALA

27 May 2024 morning: Technical visit in DOUALA (reserved to UIC members. 20 places available only)

27 May 2024 afternoon: Train DOUALA - YAOUNDE

27 May 2024: Arrival for the Congress in **YAOUNDE**

27 May 2024 - 19h30: Official cocktail at the Hilton Hotel in YAOUNDE

28 May 2024: Official opening, exhibition inauguration, plenary session and gala dinner

29 May 2024: Parallel sessions, Workshops/roundtables and closing ceremony

30 May 2024 morning: Touristic visits

30 May 2024 afternoon: End of the Congress

Please click HERE to register to the Congress.

EXPECTED RESULTS

The main outcomes of the Congress will be :

o   The identification of major projects to be launched;
o   The establishment of profitable synergies between the African rail, industrial and digital ecosystems;
o   The UIC and the AUC are ready to capitalize to make it a regular meeting point for the African rail sector. One of the outcomes of this congress should be the pre-announcement of the fourth congress already planned;
o   The congress will provide an opportunity to pursue the study of railroad revitalization in Africa, in line with the aspirations of the AUC's Agenda 2063.

SPONSORSHIPS

Sponsorship packages available upon request.

PARTICIPANTS

150 participants are expected, including:

- African Union Commission
- UIC
- Experts to define the state of maturity
- Experts from Regional Economic Communities
- African Development Bank
- Islamic Development Bank
- World Bank / Transport Section in Yaounde
- French Development Agency / Business France
- European Bank, EIM
- International Telecom Union
- African telecom operators: Orange, MTN, CamTel, Nexttel
- European Union
- ERA - European Union Railways Agency
- United Nations Economic Commission for Africa
- African Ministers of Transport and Technology
- African railway companies
- Industry representatives
- African economists
- African rail experts
- Digital ecosystems (African start-ups and universities)
- Invited media

VENUE & DATE

27 MAY 2024, DOUALA, CAMEROON (Technical visit)

28-30 MAY 2024, YAOUNDE CAMEROON (Congress)

Event Venue: Hilton Hotel, Bd du 20 mai, Yaounde, Cameroon

Arrival for the technical visit: Douala International Airport

Arrival for the Congress: Yaoundé-Nsimalen International Airport

LANGAGUES
EN, FR

CONTACT

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Dedicated web page:
3rd African Rail Digital Congress - Digital: a challenge to boost the railway value chain | UIC - International union of railways | Events

Annex I

UIC Added Values

With **214 members in 95 countries**, **International Union of Railways (UIC)** has **137 working groups** with **more than 2,000 experts developing technical products and expertise on a wide range of subjects**.

Technical support

UIC has developed over 100 years a **technical expertise on the main technical railway topics**.

Safety and Interoperability

o UIC and the European Union Agency for Railways (ERA) signed a cooperation agreement in 2021. This agreement consolidates the role of UIC as a technical body in Europe. It clearly allows UIC to provide technical reports, specifications and guidelines that can be approved by ERA as Accepted Means of Compliance with European regulations.

Safety

o UIC's **Safety Platform** is an advisory body open to all UIC members, able to put in place recommendations and actions to help control, mitigate or eradicate safety risks and eliminate their underlying causes and effects. The UIC **Safety Database**, which has been collecting data covering more than 20,000 significant accidents since 2001 in 27 UIC members in Europe, Asia and the Middle East is a key tool for these recommendations and actions.

o UIC has created and leads the annual **International Level Crossing Awareness Day** (ILCAD). It brings together rail industry representatives, road authorities, academics, and other stakeholders from around the world. ILCAD aims to raise awareness of the dangers associated with level crossings. Over 40 countries participate in the event each year, and the annual campaign is launched at an international conference hosted by a partner country.

o UIC participates in a network of railway officials and experts from railway companies in the regions of North Africa and Middle East. This network was established by the EuroMed Rail Safety and Interoperability Project "**EUMedRail**", coordinated by ERA. UIC priority actions included dissemination and training activities, adoption of shared principles and implementation of comparable approaches to safety management, regulation, and supervision, through the application of common safety methods.

Telecommunications

o The introduction of the European Railway Traffic Management System (ERTMS) strategy in Europe paved the way for **GSM-R**, a major success story both in Europe and around the world. **Designed and specified by UIC**, GSM-R now covers around 150,000 km of track in Europe and 210,000 km throughout the world. UIC is working on an ongoing basis to ensure that GSM-R specifications are maintained. At the same time, UIC ensures the management of the hubs for GSM-R interconnection between the different European networks in order to ensure smooth and transparent border crossings with regards to telecommunications for international trains.

o However, GSM-R is approaching obsolescence. Consequently**, UIC is developing** the successor to GSM-R, **the 5G Future Railway Mobile Communication System** (FRMCS). UIC has already obtained specific frequencies for FRMCS in Europe. UIC is drafting the FRMCS specifications and preparing the necessary work for a European FRMCS prototype by 2025.

Freight

o **UIC manages the General Contract of Use for Wagons** (GCU). It is a single, multilateral contract between wagon operators and owners, specifying the parties' mutual rights and obligations in order to facilitate cross-border activities. Since its inception, the GCU has grown to an impressive network of more than 600 signatories across 20 countries, with more than 600,000 wagons currently declared in the GCU wagon database.

o UIC has developed **Loading Guidelines**, gathering a set of valid national and international regulations for the safe loading of goods in rail transport.

o UIC actively works within OTIF RID (Regulation concerning the International Carriage of **Dangerous Goods** by Rail).

Freight and Combined Transport

o As road-rail intermodal loading units (semi-trailers, swap bodies and roller units) are optimized for road transport, their upper sections often exceed the height and gauges of railway lines when conveyed on wagons. In order to facilitate and streamline the transport authorisations of these units, **UIC has been developing and administrating the "Conditions for coding intermodal loading units, combined transport lines and wagons"[2] for over 40 years**. Thus, UIC is today the technical body that simplifies train operations over long distances and on the various networks in Europe by limiting the use of exceptional transport and by taking into account constraints due to different gauges used on various networks.

Passengers

o UIC has established a **Station** managers Global Group, which assists UIC members in adopting the best possible approaches to the coherent functioning of infrastructures (roads, buildings, bicycles and pedestrian ways) and the daily activities of station managers.

o UIC has designed, owns and manages **MERITS** (Multiple East-West Railways Integrated Timetable Storage). This B2B solution is a centralised database containing passenger train timetables from most European countries. It facilitates the provision of train timetables by railway companies to their passengers (national and cross-border trains). It also facilitates the construction of new **train timetables**.

o UIC has defined **OSDM**[3], a standard enabling the sale of both **online and offline tickets in the same interface for passengers**. This interface includes fares, multimodal trip search (including bus and local transport ticketing), booking and graphical seat reservation. OSDM is **prepared for multimodality extension (MaaS)**.

o UIC has developed a Software as a Service solution called **ETCD** (E-Ticket Control Database)[4], enabling the exchange of **control information on railway tickets** between ticket issuers and passenger carriers.

Security

o UIC Security Platform develops and disseminates **worldwide analysis and recommendations for the protection of persons, information, goods, rolling stock and infrastructure from all forms of threat**, ranging from everyday delinquency to terrorist attacks, in order to improve service quality and transport efficiency. In addition to these guidelines, UIC's Security team has developed the Rail Security Hub, a free online platform that provides UIC members with a comprehensive catalogue of solutions to railway security issues (more than 50 security solutions are already available).

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[2] *UIC IRS 50596-6: Conditions for coding intermodal loading units in combined transport, combined transport lines and wagons*

[3] *UIC IRS 90918-10: Open Sales and Distribution Model OSDM*

[4] *UIC IRS 90918-4*

Cybersecurity
UIC has developed two initiatives:
- o A European new railway platform[5], in order to share analysis and experience in relation to railway cybersecurity and to facilitate coordination between existing cybersecurity activities;
- o A global cybersecurity solutions platform, in order to identify practical solutions to cybersecurity threats in railway-critical networks.

Labelling
UIC issues **labels for rolling stock components** (braking equipment and associated test equipment, thermal engines). These labels give railway companies the guarantee that their suppliers comply with UIC specifications.

Energy
- o UIC has launched its **Energy Saving** Task Force, that aims at identifying ways to reduce energy consumption in the railways.
- o UIC is working on **alternatives to diesel engines**: alternative fuels, ways to retrofit existing diesel locomotive fleets at lower cost.

Dissemination
- o UIC has the capacity to disseminate railway best practices through more than 85 events per year (seminars, webinars) and publications (documents, websites).

Sustainability
- o The UIC Sustainability Platform, provides focus and leadership for the Environmental and Social sustainability agenda in the global railway community. Members promote and keep railways as the greenest form of collective and mass mobility through collaborative knowledge and advocacy. Working groups address a range of topics from Air Quality, Circular Economy, Energy and CO_2 emissions, Noise and Vibration, Sustainable Land Use, in addition to other cross cutting issues such as sustainable procurement and gender equality practices.

Regulatory framework
- o UIC collaborates with experts who have worked on the implementation of railway regulatory frameworks at international or European levels (e.g. the European 3rd and 4th European railway packages6). In practice, specific discussion papers and working groups aiming at proposing solutions have been implemented. In addition, training sessions have been developed.

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[5] *ER-ISAC (European Railways – Information Sharing and analysis Centre)*

[6] *https://transport.ec.europa.eu/transport-modes/rail/railway-packages_en*

SOCIETE NATIONALE DES CHEMINS DE FER TUNISIENS

INTERNATIONAL UNION
OF RAILWAYS

Annex II

Tunis Declaration on Digitalisation in the Railway Sector

Introduction and context

The challenges related to mobility and climate call for massive investments in both infrastructure and rolling stock, which require a significant effort on behalf of the railway manufacturers in their tariffication policies.

All these investments will have to be supported by the digital revolution underway.

Digitalisation will provide an important avenue for African economies to leapfrog not only financial development but also development across other sectors of the economy. The new technologies will provide innovative solutions to railway infrastructure development and opportunities in railways.

In order to boost the railway sector in Africa, the African Union Commission (AUC) has undertaken several initiatives. Recently, the African Ministers responsible for transport have adopted the Vision 2063 for railway development in Africa. The African Integrated High Speed Railway Network (AIHSRN) project is developed as a flagship project of the AUC Agenda 2063. It basically aims at facilitating the achievement of the AUC Vision of integrating Africa physically and economically.

The 2nd African Rail Digital Congress is held within the framework of the Agenda 2063 of the AUC and will provide an opportunity to follow actions and roadmap allowing to relaunch the activities of the African Union of Railways (AUR) as decided during the meeting organised by AUC.

The development of Africa transport system involves digitalisation of existing transport systems as well as the new developments. Therefore, the need and demand for intelligent mobility in Africa for both Freight and Passengers has never been greater. Rail will obviously be the backbone of that mobility chain. Almost all modern modes of transportation depend on digital solutions. Global growth of Africa also depends on the capacity to design and to set up this mobility. Digital is the leverage to do it.

A conference focused on the aspects and importance of the Digital Transformation of Railways is a must.

African socio-economical context should allow an outstanding and rapid development of digitalisation which has never been observed anywhere in the world. As a matter of fact, some digital applications are more advanced in Africa than in Europe and North America with Africa going directly to digitalisation of banking and other systems. Some applications were invented within the African Continent and are now making their way to the Western hemisphere. This shows that incredible leaps forward do happen.

Considering the above contextual elements, the participants of the African Rail Digital Congress held in Tunis October 2022,

- Pointing out that innovation is the result of one century of successful railway history in Africa.

- Emphasizing the importance of the digital revolution as a game changer currently underway in the railway sector, fostering modal shift, subsequently mitigating the effects of global warming and climate change.

- Recognizing today's contribution of the railway sector to African transport development policy and its important role in reaching African vision 2063 goals.

- Aiming at using the full potential of digitalisation to better serve the needs of all railway customers, notably the increase in freight and passenger capacity without needing additional tracks or locomotives, trough digital Control Command Systems facilitating safe and interoperable rail operations in Africa.

- Believing that smart digital ticketing and information solutions will facilitate access to the African railway system for customers and will increase the attractiveness of rail as transport mode.

- Emphasizing that digitalisation has the potential to revolutionize current technical operational procedures through new innovative digital processes,

- Believing that joint efforts of African railway companies, railway suppliers, the African Union institutions and member states to accelerate digitalisation and automation in the railway sector will result in a more attractive, sustainable and resource efficient railway system.

- Stating that further increasing digital efforts internationally to plan and coordinate work on railway infrastructure construction sites will fully unleash the capacity for African rail transport, enabling a traffic shift from automotives to railways especially in megacities.

Therefore, the signatories will jointly promote the following measures:

1.   Digital technical operations

The signatories are aware that the African railway system is currently not living up to its potential as all actors in this system are facing substantial challenges. They will further collaborate to fully exploit the opportunities for the railway sector provided by digitalisation and automation.

2.   Digital infrastructure

The signatories are convinced that rail infrastructure is the backbone of all rail services. Rail infrastructure must enable seamless cross-border rail service exploitation throughout Africa. The signatories are therefore committed to create an excellent rail infrastructure and therefore to:

o   invest in the rail network and modern technical solutions as top priority,
o   develop high level specifications in line with African environment and constraints,
o   realize capacity gains by significantly increasing the potential for additional rail freight volumes and passenger trains by 2040,
o   cooperate with all stakeholders within the sector to both minimize average border transit times and increase the average cross border speed for freight trains and therefore develop interoperability within the African continent,
o   increase the competitiveness of rail freight by taking necessary steps to reduce transportation time and to develop the infrastructure for traffic management,
o   propose cost-efficient solutions that would enable regional lines to continue to act as important feeder and connecting lines,
o   take profit of the construction, renewal or maintenance of the tracks all over the continent to facilitate the deployment of optical fiber in Africa.

3.   Digital freight and passenger transport

The signatories point out that closer cooperation between rail companies within their technical associations (UIC, African Union of Railways, etc.), with AUC bodies and with standardisation organizations are preconditions for developing digital usages in freight and passenger transport.

Therefore, the signatories are committed to:

o Work towards the creation of a future harmonized African railway architecture,
o strengthen their cooperation in order to accelerate the implementation of interoperability as a significant factor of development, in particular through the deployment of innovative and harmonized technical solutions within the African continent,
o Remedy interoperability impediments through the simplification of applied national rules, including technical and national safety rules, to ensure smooth cross-border transport in the African rail sector.

4. Digital ticketing

The signatories commit to further improve the passenger experience when planning and booking rail tickets. Passengers will have a seamless user experience when searching, selecting, buying and using rail services, including first and last mile transport, through:

o access to simple, reliable and comprehensive online / real time information regarding timetables and prices for (rail) transport services, both domestic (urban, regional, long- distance) and international, through the implementation of harmonized sector-driven technical solutions,
o adaptation to the African context of digitalised services to support passengers in case of delays and disruptions (such as the CIT Agreement for Journey Continuation), assistance on how to best continue to their destination, and guidance on passenger rights,
o ensuring a seamless user experience for international passenger rail travel which constitutes a fundamental step towards the modal shift needed to achieve the sustainability goals. To this end, sector-driven solutions should be developed to simplify international ticketing and distribution, harmonizing timetable information exchange and allowing a full ticket digitalization, with the possible adaptation of existing UIC tools such as MERITS and specifications such as OSDM.

5. Digital-based Human Resources

Digitalisation has already been changing current human resource strategies and will profoundly redefine future railway job profiles. The signing companies commit to taking an active role in shaping the future of employment in the sector by:

o supporting the emergence of startups working on useful application cases for the railway notably related to standards,
o addressing this development and actively supporting employees throughout their career in acquiring new digital skills and competences and to ensure their employability, including the skills that will be required in the future,
o - ensuring that employees are actively involved in any changes in their work environment,
o inviting the social partners to cooperate in this field.

6. Supporting the migration towards the future railway mobile communication system

The specifications for the successor of the GSM-R radio communication system are currently under development, the so-called "Future Railway Mobile Communication System" (FRMCS). The introduction of FRMCS will also require a coordinated deployment of 5G infrastructure along rail corridors. The signatories therefore call upon the African Institutions for political and financial support for this essential technological evolution.

7. Boosting digitalisation for maintenance, capacity, and train path management (Digital Capacity Management – DCM)

African rail infrastructure managers will only be able to contribute effectively to achieving the targets if existing infrastructure capacities are managed efficiently. This requires the use of state-of-the-art digitalisation technology in all areas of maintenance, capacity, and path management. Therefore, the signatories ask the African Union and other African decision makers to take all necessary steps to boost digitalisation in these areas.

8. Creating and sharing a Data Space for resilient and sustainable Mobility

The data economy is an essential driver for innovation, allowing transport operators to offer efficient and attractive options that meet passengers' and freight transport needs. In order to ensure a positive and sustainable impact on the transport sector, the signatories encourage the African Union Commission to foster an open and fruitful discussion on the creation of a resilient and sustainable Mobility Data Space based on reciprocity, interoperability and data sovereignty.

While being committed to contribute to the above actions, the signatories of this Declaration stress that political and financial support will be needed to achieve the identified goals.