

# 1 / Background

Digital Agenda is number 2 of the top ten priorities of the Europe 2020 Strategy presented by the Juncker Commission. The Plan sets objectives as well as prerequisites for the growth of the European Union (EU) by 2020. Although much of the objectives in the Single Digital Market Agenda mainly reflect e-commerce telecoms, audiovisual media, and Intelligent Communication Technologies (ICTs), digitalisation plays a key role also in transport where the exchange of information is of utmost importance to facilitate the transportation of people and goods throughout Europe and around the world.

#### **EU Digital Single Market Pillars**

Better access for customers and businesses to on-line goods and services

creating the right conditions for digital networks and services to flourish Maximising the growth potential of our European Digital Economy

Removal of crossborder barriers

High-speed, secure, trustworthy infra and content services, right regulation for innovation, investments, fair competition and level playing field

Prerequisites

Investments in ICT, research and innovation to boost industrial competitiveness

As representative of the independent Wagon Keepers in Europe, UIP promotes and supports the development of a policy framework. financial incentives and innovative business and technical solutions that will focus on satisfying the current and attracting the new customers by providing real time information, measure performances, and monitor maintenance needs for its most important asset - the rail freight wagon. The more than 200'000 wagons managed by our members represent private investments of almost 10 billion EUR and more than 50% of the rail freight tonne-km in Europe. With a yearly investment volume of 400 to 500 million EUR, Wagon Keepers are at the heart of market demand, and rely on new technologies that can improve their assets and make them more attractive to customers. As wagons are a key element of the railway transport system, the Keeper's priority is not only to reduce time spent for maintenance and operations, but also to enhance efficiency by improving processes and the exchange of information among the relevant actors of the railway system.

# 2 / (WHY) Changes in market demands towards digitalisation and automation

Digital evolution do not only rely on the private use of new technologies, but on new business services to be provided to a whole industry, where goods are identified and traced with a simple swipe, where with a touch of a pad customers want to receive the latest information on the estimated time of arrival of their product, where a shunting yard relies more and more on automated movement robotics, which will save them time, or where a workshop is using new technologies to assess the maintenance needs of the wagon.

# Customers demand efficient, reliable and on-time rail freight services

Through digitalisation and the use of ICTs, companies can facilitate the movement of goods, monitor and enhance performance, optimise transport chains and thereby increase efficiency of rail freight services.

Comprehensive information about train runs, e.g. monitoring of energy consumption, infrastructure status and operated vehicles help Keepers, RUs and Infrastructure Managers to further improve the competitive position of rail freight. This will help also to address the demand for energy efficiency and noise reduction reinforcing the position of rail freight as the most sustainable and environmentallyfriendly mode of transport.

#### Railway actors demand transport related information

RUs require up-to-date information about operated vehicles to safely plan and operate train runs. Keepers and their ECMs call for information about operating conditions of their vehicles, such as performance data or defect/damage information. Such data is used to increase vehicle availability as well as to plan and optimise maintenance activities.

# Digitalisation must reflect Single European Railway Area (SERA) priorities

The development of SERA means removing administrative and technical barriers and developing simplified and common procedures and technologies at European level. As railways play a crucial role in the transportation of people and goods, UIP believes that digitalisation should reflect the top priorities which are:

- Harmonised EU vehicle certification, authorization, and registration
- Vehicle and components identification and tracing
- On schedule EU-wide implementation of standardised data exchange (TAF TSI)
- Harmonised systems for safety and risks management

# 3 / (WHAT) Digitalisation means infrastructure, hardware, software, application and data

Because of digitalisation, people and companies have become more aware of the need for sharing of information and access to data. Furthermore, to synchronise data and avoid duplications of data entry, some digital tools and databases must be interconnected as Cloud, Big Data or via Common System Interfaces.

If we want to improve B2B and B2C business model and efficiency, then we need to be open to such interconnections, including machineto-machine data and address the fears of data confidentiality at legislative level. UIP supports the EC initiative "Free Flow of Data" that tackles issues of interoperability, ownership, usability and access of data. It even suggests establishing harmonised solutions towards digitalisation such as:

- Common goals for exchange of information
- Economies of scale: share of development and operation costs and share the benefits
- Standardised and consistent data sets and formats
- Central interface regardless of data sources
- Common governance of jointly used data exchange tools

Such approaches can expand beyond rail with the recognition and standardisation of information in different modes and types of transport.

## 4 / (HOW) Digital solutions and technologies are already entering the market

There are already existing products and solutions on the market that involve digital technologies to serve the needs of rail freight and to increase market efficiency, quality of service, reliability but also safety. Railways are already taking steps in the following areas:

- Traffic management and signalling
- Telematic Applications for Freight (TAF)
- Telematic devices and sensors for diagnostic and maintenance
- Asset tracking and tracing
- Electronic databases for Rolling Stock and Infrastructure

Furthermore, with the existence of a variety of telematic tools and sensors from different industry suppliers, it is crucial that there is a common standard for interfaces among devices and standardisation

in data exchange. For this reason, an Industry Platform for Telematics and Sensor Technology, such as the ITSS has already been put in place.

Those activities must be also considered in the framework of research and innovation as demonstrations of digital features that can promote productivity and punctuality in freight transport. Within the Shift2Rail Joint Technology Initiative Innovation Programme 5, further projects relate also to automated coupling, time tabling, and condition monitoring for predictive maintenance.

## 5 / Digital world in managing rail freight wagons

#### Maintenance

One of the Keepers and ECMs' (Entities in Charge of Maintenance) main duty is the proper technical management of their assets. The need for vehicle performance-based maintenance/inspection intervals and preventive maintenance activities is growing significantly. This is linked to the increasing vehicle utilisation as well as the use of new components such as composite brake blocks or disc brakes. Performance-based maintenance regimes enable a more effective maintenance planning and execution. On the other hand, purely time-based regimes must consider abundant reserves and inevitably lead to more and costly maintenance activities, higher vehicle downtimes and eventually increasing operating costs. Today timebased and corrective maintenance are common practices, but require a better exchange of information between railway actors.

From the four types of maintenance practices, predictive and condition-based maintenance require in addition the collection and analysis of data that help either to predict the condition of a wagon or to directly monitor its state using sensors.

### Performance-based Maintenance

Predictive maintenance: data analytics help to predict the condition of the vehicle/asset over time.

Condition-based: sensors directly monitor the vehicle/ asset during operating conditions.

#### Time-based Maintenance

Preventive (or interval-based) maintenance is carried out on a regular basis based on distance run and other operational parameters (i.e. topography).

Modular maintenance

replacing components during light maintenance and thus reducing the need for periodic maintenance of the whole vehicle at once.

#### **Telematics Applications**

UIP together with other Sector partners and the European Union Agency for Railways have long been working on the technical requirements for Telematic Application for Freight (TAF). The TAF TSI lays down the target functionalities for the provision of real time information and may contribute to enhance sector efficiency, service quality, and reliability through a more systematic but flexible approach to Electronic Data Interchanges (EDI).

In response to the explicit goal of the European Commission to include existing tools, market initiatives and solutions in the proposed framework of data exchange, and to avoid the duplication of efforts and unnecessary costs, UIP's members have already put in place a centralised Rolling Stock Database **RSRD**<sup>2</sup>.

RSRD<sup>2</sup> is the centralised and flexible platform for the exchange of freight wagon data – a neutral system for all wagon keepers, railway operating companies and national safety authorities in Europe.



The RSRD<sup>2</sup> initiative is the first encouraging effort of UIP's Keeper community to solve jointly a common technical challenge at optimum cost/performance ratios. The Keepers see their initiative for open data exchange as serving the whole market and fully support the sharing of meaningful data and tools, and putting them to service for other market participants, such as Keepers, RUs, IMs, Workshops, Fleet Managers, Forwarders and Shippers, and NSAs. Today already more than 85% of the wagons of UIP's Keepers community are available in the RSRD2.

Through such TAF compliant tool, a simple logic of granting open access to any interested actor on a justified need-to-know basis can be implemented. Such logic is sufficient to fully protect the actors' commercial interests in confidential market information. UIP believes that a stronger commitment is needed for voluntary cooperation among Keepers, RUs and Infrastructure Managers to exchange more information in common formats that are important for the proper maintenance and safe operations of rail vehicles by those partners who "need to know". Today's legal framework under the Telematic Applications for Freight (TAF TSI), Operations (OPE TSI) and the ECM Regulation falls short of saying clearly what data should be exchanged and how when it comes to safety, operating conditions and maintenance. Therefore, the freight wagon Keepers and RUs have taken a Sector driven approach to use their contractual basis, such as the GCU (General Contract of Use), to ensure that all parties involved in the maintenance process exchange relevant information.

Challenges remain in the slow evolution, due to complex authorisation discussions over data access rights, a lack of standards for data quality and formats, and a fear of loss of proprietary information related to traffic patterns. Bearing in mind such challenges, UIP recommends that as the market develops:

- a flexible decision-making structure is implemented to keep a mandatory data catalogue dynamic in nature
- there should be an obligation by the relevant actors to exchange operationally justified data
- an open dialogue should be promoted among the relevant actors (including the EUAR) on the need for operating data
- a regular review of data content is carried out for future needs of a developing industry landscape.

Digital solutions include of course asset intelligence, but a better data exchange framework could help to improve the competitive position of rail freight in short term and at low costs. It should also cover all transport modes with a common and yet relevant to each actor approach.

Digitalisation should focus first on reaching common understanding of sharing and management of all relevant data (infrastructure and vehicles). There is a clear willingness from the transport Sector, but success requires a coherent and Europe-wide approach towards the development of digitalisation in dedicated financial instruments, initiatives, frameworks, and platforms, such as the **CEF**, **EFSI**, **HORIZON 2020, S2R, PRIME, RU Dialogue**, and the **Digital Transport Logistics Forum**.

# Key facts about UIP



### **UIP Wagon Fleet Data by Type**





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