



## Conclusions of the Florence Executive Seminar

# ERA and the Digitalisation of Railways: Creating a lean and efficient regulatory framework for customer-friendly digital railways

On May 3rd 2016 the Florence School of Regulation has organized an executive seminar in collaboration with the European Railway Agency (ERA) bringing together different railway stakeholders and experts to discuss the digitalisation of railways and the evolving role of ERA. This document consists of two parts.

- A comment by Matthias Finger, Director of the Transport Area of the Florence School of Regulation, on the Digital Transformation of Railways and the Role of Regulation
- A summary of the most important arguments raised during the workshop

## The Digital Transformation of Railways and the Role of Regulation

### *A comment by Matthias Finger*

The digital transformation is rapidly unfolding since the late 1990s, affecting all network industries in general and all transport sectors in particular. Not astonishingly, railways have now become part of this transformation as well. But, is the railway sector ready for that? Not really, and many voices call for speeding up the process of railway digitalization. Digitalization will increase the competition among the transport modes, and rail does not seem to be the mode that will be advantaged by such increased competition. Also, and as it seems now, the gap between the different degrees of digitalization in the different transport modes is likely to grow.

Everybody agrees that digitalization can and will affect the development of the Single European Railway Area as foreseen by the European Commission since 2012 ([Directive 2012/34/EU](#) of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area). Especially from the technological perspective, digitalization is already understood as an enabling feature that will optimise the use of both

infrastructures and rolling stock. Digitalization is not a goal per se but rather a means to improve operations, most importantly by way of automation. Regulation of the technical aspects of railway digitalization will be part of the regulatory process that is already on the way for harmonization and standardization towards a fully interoperable single European railway area.

However, digitalization is not only an “evolution” of the technical features of the railway system; rather it is a “revolution”, especially when we look at the services that can and will be offered thanks to digital innovations:

- Generally speaking, digitalization allows for the (digital) duplication of any physical value chain, i.e., from production (supply) to distribution (consumption). Such duplication is simultaneously also a globalization in that this digitally duplicated value chain is now globally (and electronically) accessible.
- Consequently, the customer interface evolves from being physical (of course the products are still physically delivered) to becoming electronic. In other words, the customer is now, before all, a digital customer,

even though he or she consumes a physical product.

- This, thirdly, changes the nature of the business: whereas the traditional physical business comes under pressure because it can be controlled and ever more optimized by the ones who control the electronic (global) value chain, new business models can now emerge at the interface of the owner of the electronic value chain and the (digital) customer.

How should we look at the regulation of railways digitalization? First and foremost, it has to be borne in mind that customers should be the focus of such regulation. Railways should be at the service of the customers who want to be in full control of their choices, including whether or not to use the railway or a different transport mode. How can customers be empowered? By providing them with the data they need: if data are not harmonized and made available, both passengers and freight customers will not take advantage of the full possibilities of the railways.

## ERA and the digitalisation of railways. Creating a lean and efficient regulatory framework for customer-friendly digital railways.

### *A summary of contributions*

The workshop brought together different viewpoints to discuss the digitalisation of the railway sector and the evolving role of the ERA. The discussions were structured around three thematic panels:

- Telematic applications for freight and passengers
- Removing barriers for a digital Single European Railway Area
- Automated Train Operations (ATO)

Starting off the most relevant current issues of the railway sector were outlined: the cost of production per person/t kilometre is twice as high as in alternative modes of transport and the customer dissatisfaction is overall higher than the customer satisfaction. Digitalisation should, above all, be seen as an opportunity to correct that. The achievement of a truly “data enabled railways” should be part of a wider strategic agenda for the railway system developed in line with the [political priorities of the European Commission](#). There are fundamental issues to address:

- The sector needs a change in mindset towards more agility;
- Whereas in railway there is a tendency to look to the past, digital innovations need to be “future proof”. New innovation has to be integrated in the network;
- Data interoperability is a keyword but ownership and access to data need to be clarified;
- Data integrity is the other data related challenge;

So, if we take the public economy point of view, we can justify regulatory intervention to open data. But is it really desirable? And if it is decided that we should have some sort of enforced open data for public economy purposes, who is responsible? The EU? National authorities? And, above all, is it really feasible?

It is often argued that, in a European free market economy, regulation is needed when market forces are unable to satisfy the needs of the customers. Yet this does not seem to be the case here. Digital innovation in the railway sector is possible thanks to the access to data of incumbent operators and infrastructure managers. Nevertheless, the provision of such data will only work if it is done in cooperation with the entire railway sector. Still, all involved parties have a strong incentive to work together as new regulation for mandatory rules on data sharing would be a suboptimal scenario.

- Data need to be correct and liability for incorrect data needs to be clarified;
- Digitalization is a buzzword that may create inflated expectations.

### Telematic applications for freight and passengers

The panel on telematics applications underlined the importance of ticket distribution as the final part of the value chain: improving the ticket sales by digital means can help the railway business by increasing the utilization of seat capacity - and there is an unused potential for this. To achieve this increased competition in train ticket selling is needed. The sector is expanding, but especially new entrants need “technical interoperability” in the field of data and higher exposure. The problem currently is that incumbent operators, make use their higher visibility and fact that they are well known to the public and not allow competitors in ticket retailing to be successful.

Public transport operators need to offer their customers qualified, complete, understandable, useful, free of barriers, consistent, reliable **information** and the possibility to buy a **full-journey ticket** based on the preferences of the customer in order not to lose market share vis-à-vis private transport.

Given these passenger needs that are not fully satisfied currently the argument was raised that **today there are data, but there is no information**. This is due to the lack of processing and exchanging of available data between the relevant players especially infrastructure managers and new entrants.

From the customer perspective this is about offering travellers access to timetables, real time information, delay data, train composition, services and occupation and wayfinding in the connecting places.

It was also mentioned that in the aviation sector **the market has created applications** that offer the customer different data related to the journey they want. This is possible without any legal obligation on sharing data.

Reflecting on the issues that passengers currently face a vision was outlined in which, by the year 2025, passengers across the EU can benefit from multi-modal ticket information, booking, and information on alternative modes. This should be possible for all available trains including urban public transport systems. Applications should furthermore allow access to information during the trip and an easy handling of possible complaints.

## **Removing barriers for a digital Single European Railway Area**

The digital Single European Railway Area is not a reality yet, but digitalization has already improved the railways. To foster this development more competition is needed. It was pointed out that more competition can be a win-win for operators and passengers, as operators improve their market share vis-à-vis other transport modes and passengers benefit from lower fares and better service. Italy is currently the only country with open access competition in high-speed rail. Here those routes served by competitive high-speed rail have significantly increased the railway modal share and also the number of travels in absolute terms.

Digitalization is not a goal in itself but a technological leverage for the improvement of the overall mobility system (both for passengers and for stakeholders). Railways has always had a slow pace of change and it should now change the approach “from evolution to revolution” in order to reap its benefits. Digitalization is progressing faster in other modes of transport. Bearing in mind not to compromise on safety and the social dialogue the speed of change should increase.

The Italian Register of Infrastructure (RINF), which was introduced on the basis of Art. 15 of Directive 2008/57/EC, is a best practice for the digitalization of railways. The registry is a digitalised database containing the European railway system data classified in structural trackside subsystems (Infrastructure, Energy, trackside Control-Command and Signalling). As it is updated at least every three months under the responsibility of the Italian National Safety Authority, the Register is of high value both in technical and commercial terms.

## **Automated Train Operations**

Automation is becoming a challenge for the railway sector especially because it develops at a much higher pace in the automotive sector. Once the road sector will be able

to offer automated shipments the competitive advantage of road freight will become even bigger than it already is.

Therefore, the railway system needs to prepare in order to be able to take advantage of ATO. Especially the legal framework has to be ready, when manufacturers and RU request to operate with ATO. There should also be an improvement of the rail-road connection and an extension of the rail infrastructure. ATO should be prepared in a way that it will be interoperable and for this know-how and research in the National Safety Authorities should increase.

According to the experience presented, full ATO can lead to great performance of the urban public transport, in terms of passengers' satisfaction, service availability, costs reduction and also safety.

The presentations univocally pointed out the importance of ERTMS as the European standard in order to move ATO ahead. Every new system should be developed in a way that is completely compatible.

## **The role of regulation**

In the concluding panel the question of regulation of digitalization was addressed: is it desirable to regulate digitalization? If yes, what exactly should be regulated and who should be responsible for it? And is it overall feasible to implement such regulation? Looking at the complexity of the railway system it is important to regulate at the right level, bearing in mind that regulation is necessary when it is enabling business and market to work better than today. Regulation “for the sake of regulation” will end up being counterproductive and even damaging the sector. The discussion also showed that regulation on automatization and infrastructure digitalization are considered appropriate while at the service level a lot of doubt remains.

## **FSR TRANSPORT**

The Florence School of Regulation (FSR) is a project within the European University Institute (EUI) focusing on regulatory topics. It works closely with the European Commission, and is a growing point of reference for regulatory theory and practice.

The FSR-Transport Area's main activities are the policy events, which address policy and regulatory topics in different transport sectors (Rail, Air, Urban, Maritime, Intermodal transport and Postal and delivery services). They bring relevant stakeholders together to analyse and reflect upon the latest developments and important regulatory issues in the European transport sector.

## **CONTACTS**

### ***Florence School of Regulation – Transport Area***

Robert Schuman Centre for Advanced Studies  
European University Institute  
Convento di San Domenico  
Via delle Fontanelle 19  
50014 San Domenico di Fiesole - Italy  
Tel: +39 055 4685 795  
Email: [FSR.Transport@eui.eu](mailto:FSR.Transport@eui.eu)  
<http://fsr.eui.eu/transport>