

2 November 2017

ICT and digital solutions for transport and logistics

KEY MESSAGES



- 1** Digital technologies and ICT tools make transport in all modes (i.e. by road, rail, air, inland waterways or sea) more interoperable, smarter and can provide more predictability to increase efficiency and decrease costs.
- 2** There is great potential for the digitalisation of transport and logistics and for applying innovative digital solutions. Data and data sharing offer great opportunities to make mobility smarter.
- 3** European transport and logistics networks need to be further developed and integrated using digital technologies and ICT tools for the benefit of operators, users and customers. This will make Europe's transport networks more efficient and competitive also vis-à-vis the rest of the world.

WHAT DOES BUSINESSEUROPE AIM FOR?



- **Removing remaining barriers to the further digital transformation** of transport and logistics in all modes of transport, such as the lack of interoperability of national systems, a lack of investment, the lack of critical mass to support big transformations and the underuse of data.
- More interoperable national systems, in terms of multimodality, data sharing but also for the acceptance of **e-transport documents** from another country. The implementation of digital technologies and ICT applications will reduce costs and increase efficiency, also contributing to a better environment.
- Smart policies to **trigger private investment** in new technologies and adequate public funding to support the digital transformation in transport and logistics.

KEY FACTS AND FIGURES

Each year in Europe around 33 million paper sheets are needed for 16.5 million transport and logistics vehicles.

Innovative ICT and digital solutions are fundamental for enhancing safety in public transport networks.

Intelligent transport systems can contribute to the decrease of CO² emissions.



With this position paper, BusinessEurope sets out its views for the future of transport in Europe in the context of the digitalisation of transport modes and logistics. It provides business' views on how to achieve more efficient, smart and cost-effective transport and logistics in Europe.

*The position paper aims to feed into the Conclusions of the European Commission's Digital Transport and Logistics Forum at the end of 2017. It also aims to contribute to the discussions at the **Digital Transport Days in Tallinn on 8 – 10 November 2017**, which are jointly organised by the European Commission (DG MOVE) and the Estonian Presidency of the Council of the European Union, with the objective to explore the potential and to address challenges of digitalisation of transport and mobility both for passengers and freight.*

INTRODUCTION

Improving efficiency of logistics and supply chains is the daily business for many companies and directly impacts the competitiveness of operators and its users and providers. It is estimated that transport and logistics (i.e. storage) account for approximately 10-15% of the cost of a finished product. In the next years, the demand for transport is expected to increase steadily, also in relation to the booming of e-commerce. Simultaneously, in many parts of Europe we see that investments in new and existing infrastructure are lacking. Moreover, national policies in a number of Member States are fragmenting the single market, which is putting additional pressure on Europe's transport networks.

In order to meet the expected increased demand, it is essential that we make our transport systems smarter and logistics more efficient. At least, theoretically Europe already has the right tools and solutions to achieve these targets. Already now all transport modes are undergoing crucial digital transformations that will impact our competitiveness for years and decades to come. By 2020, it is expected that up to 50 billion devices will be connected to the internet. Next to phones and tablets, it is crucial that also cars, buses, coaches, bridges, ports, trucks, traffic lights and other parts of our infrastructure networks will be connected.

Further digitalisation and integration of our national transport networks will also be fundamental for the success and survival of many European transport and logistics companies. BusinessEurope fully supports the Commission in putting digital communication and technology at the heart of its policy objectives. For key players in the transportation and logistics industry, insights into utilisation, traffic flow, and safety can be used to drive operational efficiency and service delivery excellence. Internet of Things (IoT) solutions should help to connect assets and operations to outcomes that raise users' satisfaction. Processes and people should maximise capacity, improve infrastructure efficiencies, and meet increasing governmental regulatory and safety requirements, all in ways not previously possible.



Subsequently, this offers great new opportunities and possibilities to optimise capacity, for example for the management of ships and containers in ports or in terms of parking places for your car. Considering the prospective added value of smart infrastructure, where cars, buses, coaches, trains or containers are connected with the infrastructure itself, will offer great opportunities for improving traffic management, increasing efficiency and avoiding congestion.

IoT and machine-to-machine (M2M) communication are gaining new traction in many areas of transportation to optimise efficiency, improve safety, and bring down costs. While these concepts are not new to the transportation and logistics industry, their use is accelerating with mobile and cloud innovation, as well as with advances in Big Data and predictive analytics based on in-memory computing. Such in-memory analytical systems are crucial for the support of these processes. They are also becoming more affordable and practical as the size, durability, and price of chips shrink. Countries moving ahead utilising these technologies can gain first-mover advantage.

THE GREAT POTENTIAL OF DIGITALISATION

The current discussion about the digitalisation of transport and logistics should be all about how to grasp the potential and use Big Data to make our systems smarter and more efficient.

The connectivity among assets, people, infrastructure, public spaces, and processes opens tremendous opportunities to generate new services, lower costs, and higher capital efficiency. This digital transformation is partly possible due to the Third-party Platform (cloud, mobile, analytics, social) and innovation accelerator technology (cognitive analytics, advanced security, 3D Printing, and IoT). In particular, IoT will enable the tracking and optimisation of assets, products, processes, suppliers, and services, all of which will result in improved delivery of future services.

Already, there are [good examples](#) of how digital is transforming all modes of transport (i.e. by road, rail, air, inland waterways or sea) and EU and national policies that support this transformation:

- A foundation for creating a cleaner, safer, and more efficient transport system across the EU was created by the Directive 2010/40/EU on the deployment of Intelligent Transport Systems (ITS) encouraging **innovative transport technologies** by identifying key priority areas. These include EU-wide multimodal travel information services for journeys involving different transport modes, real-time traffic information services, providing road safety related traffic information, information services for safe and secure parking places for trucks and commercial vehicles, as well as an interoperable EU-wide e-Call service.
- The **All Ways Travelling project**, funded by the Commission (DG MOVE) provided the basis to establish a framework for a European door-to-door (D2D) multimodal transport digital system that streamlines shopping, booking, ticketing and payment processes. The project is a unique example of digital innovation applied to transport and travel sectors. All Ways Travelling is a key contributor to the 8th goal mentioned by the Commission in its 2011 Transport White Paper, namely to establish the



framework for a European multimodal transport information, management and payment system.

- Developments on **telematic applications for rail travel** are also a good example, a subsystem which provides passengers information before and during the journey, innovative payment systems as well as better connections with other modes of transport. For rail freight, this ensures real-time monitoring of wagons, invoicing systems on the go and data collection of these and past travels to compose patterns. The main objective is to create estimated times of arrival, on the basis of both real time estimates and prognoses based on patterns.
- Another example will be the rise of **Intelligent Traffic and Transportation Operational Centre solutions (TOC)**, where countries, regions or cities will have possibilities to manage all kinds of multimodal traffic or transportation. With the rise of self-driving cars, drones, intelligence vehicles and smart transportation units, such a common operational cockpit will be needed. This will be even more important from the perspective of public safety and security. Countries are already defining their future roadmap transportation development roadmaps (ITS Strategies), where such solutions are core building blocks.
- Though business supports the main target of the Directive 2010/65/EU on reporting formalities for ships, the Directive itself needs to be improved. In its current shape, it does not deliver on simplified and harmonised administrative procedures for maritime transport. More specifically, BusinessEurope would welcome developments in **e-maritime** where notifications, declarations, certifications and service orders are now stored in electronic and not paper format anymore. The practice is that old legislation does still empower authorities to ask for documents in paper format from barge shippers. Considering that maritime is mainly a global sector, the EU should follow the developments in the International Maritime Organisation (IMO). The focus of the EU should be to swiftly implement agreed IMO agreements on digital certificates. Therefore, we welcome the Council priorities on the EU's maritime policy up to 2020 which were concluded on 8 June 2017.
- With the introduction of the **e-tachograph**, professional drivers' activities, such as rest, driving hours and speed are collected by a compulsory electronic recorder. Moreover, it provides reliable information to the inspectors responsible for enforcing EU policy through road and company checks. As data is recorded automatically in digital form and not in paper form anymore, the introduction of the e-tachograph has lowered administrative costs for freight companies. On barges however, regulation still stipulates to enter labour times in paper format.
- The Spanish road passenger transport industry is another good example of innovation and commitment with digitalisation and new technologies. Undertakings providing long-distance intercity coach transport services have implemented several **connectivity systems** in their vehicles that ensure passengers' comfort and entertainment, as well as the safety of their transport operations along the entire journey. From on-board entertainment with Wi-Fi and live TV to safety systems via acoustic alerts or signalisation, together with the management of the



trip thanks to security keys, assistance to driving or vehicles' predictive maintenance that allow a vehicle's monitoring or to measure the drivers' performance. Spain is also a good example in terms of the development and commercialisation of multimodal combined tickets that enable seamless passenger mobility chains with transfers. The coach companies play an essential role to connect with other transport modes.

- A good initiative has been the “**Blue-Belt**” aiming for a Single Transport Area for Shipping, where the idea is to ease customs formalities for ships staying within European waters through digital transfer of information. For short sea shipping, it is important to continue to simplify and remove administrative barriers also in terms of duplicated cross-border controls and the lack of harmonised documents. A “Blue-Belt” in the seas around Europe would simplify the formalities for ships travelling between EU ports. It would reduce costs, administrative burdens and delay in ports. The “Blue-Belt” would also increase the attractiveness for customers (e.g. shipping companies) as well as reduce the environmental impact of European maritime transport.
- The **proposal for a Directive on the registration of persons sailing on board passenger ships** (Procedure 2016/0171/COD) aims to digitise passenger registration and ensure that services have immediate access to information on the people on board. This could help in the event of an accident, search and rescue. It is therefore positive that on 14 June 2017 the Council agreed with the European Parliament on new requirements, making sure that data will be immediately available to the relevant authority in electronic format. This is a significant step to make a crucial contribution on digitalisation of passenger registration possible.
- BusinessEurope welcomed the launch of a European Strategy on **Cooperative Intelligent Transport Systems** (C-ITS) on 30 November 2016, laying down the foundation for cooperative, connected and automated mobility. This would establish an appropriate framework at EU level to provide legal certainty for public and private investors, for the availability of EU funding for projects and for the continuation of the C-ITS Platform process. After its successful implementation, the initiative could also trigger numerous positive effects such as more efficient transport of goods and passengers, improved energy efficiency and road safety as well as further development of the digital economy (see more below).
- We appreciate that on 19 May 2017 the Commission launched its **Impact Assessment on electronic transport documents for freight carriage** addressing the lack of recognition/acceptance of e-documents as well as multiple non-interoperable standards for e-documents solutions. BusinessEurope welcomes that the Commission's considerations feed into the deliberations of the DTLF and stakeholders' views. Still, clarifications on policy directions and implications need to be assessed by the upcoming public consultation which is expected to be launched in the last quarter of 2017 (more on e-documents below).
- **Data acquisition and analysis** are not new to the transportation industry. Logistics operators have long enabled the automatic tendering of loads (orders), have tracked packages in real time, managed fleet telematics data, tracked operators for



signs of fatigue, and used external data sources to predict the weather and traffic. This is a clear direction towards a unified digital model, or a digital twin of logistics networks. This is something where Europe will have to look after. The hub will bring together all the disparate data sources from individual initiatives to create a video recorder - type capability - rewind to see what happened, play to see what is happening, and fast forward to see what might happen. Building this digital twin will allow transportation companies to move from optimising single processes to optimising on a system-wide basis. Once a digital twin is built, data gaps should be revealed. Investment in new data acquisition and a more modern IoT platform and edge processing will follow. This scenario will help transportation and logistics operators to strike a balance between providing reliable delivery and the cost of doing so.

- European countries should also look into the great future potential of the logistics sector where **integrating 3D printing capabilities** are concerned, so that larger parts of the shipments are digital rather than physical. There is a recent survey revealing that the ability to integrate shipment-related data into their business systems is one of the top considerations for selecting transportation services. This key decision factor opens the door for freight providers to offer more advanced supply management services. Freight companies expect that by 2019, 20-30% of their business will be related to these new services.

KEY BARRIERS FOR DIGITISED TRANSPORT AND LOGISTICS

Although the benefits of digitalisation of transport and logistics are greatly visible, they are not fully grasped at the moment and developments in certain areas are lagging behind for a number of reasons:

1. There is a **lack of interoperability of systems** (between countries but also different modes) caused by different standards and diverse interpretation and application of European legislation. For example, various existing and upcoming road charging schemes make it hard for transportation companies to be active in all Member States and to comply and keep track of the different systems in place. This simply leads to extra costs and inefficiencies. To enhance the interoperability of systems across the EU and to reduce additional obstacles for road transportation businesses, there is a need for establishing a single European framework for national road charging schemes, under certain conditions¹.
2. **Differences between electronic documents per mode and per country** make full cross-border acceptance not a reality yet. A great obstacle for companies transferring goods across the EU are the too many different documents needed to pass borders either by road, rail, air, inland waterways or sea. Therefore, harmonisation is necessary to ensure that companies can use the same documents for all modes (e.g. in multimodal transport) and countries. This would significantly reduce the administrative burdens which operators still experience when crossing borders. But since the different modes do follow different pathways and have in

¹ More info: BusinessEurope's [position paper](#), entitled "Road transport in the single market - identifying challenges and the way forward" of 6 December 2016



most cases not reached standardisation within its own mode yet, the best way forward is to aim for standardisation in the different modes as the first step.

3. **Smart use of data and re-use of data is still underdeveloped.** A good example is the aviation sector in which data is used for both safety and security. Nevertheless, the use of smart data needs to be further developed in all transport modes. For instance, a self-driving car requires data gathered through sensors to be smart so that data can be immediately analysed by the vehicle's processors. A crucial element is that the ownership and availability of data is taken care of: questions like who owns the data and who is entitled to access to data should be dealt with.
4. **Asset effectiveness in transportation is a big challenge.** Transportation companies are more pro-active in applying predictive analytics to better anticipate and remediate failures. The vision for all vehicles is to essentially notify TOC (Transportation Operational Centres) of a potential failure ahead of time. This allows the maintenance team to collect the right parts, tools, and work instructions to make the fix faster. These kinds of predictive capabilities will keep vehicles in service longer, avoid idle equipment due to service issues, and reduce maintenance costs.
5. Moreover, there is **lack of investment and critical mass** to make innovative solutions the new standard. BusinessEurope believes that investments in infrastructure are fundamental to build up digital European transport and logistics networks for the future and thus to be competitive on global stage. On the one hand, this requires investments in new transport construction, such as roads, rail, waterways, maritime port, airports and improving and maintaining the existing infrastructure. On the other hand, it requires investments in digital infrastructure and services. For instance, good data exchange is not evident in parts of Europe. Another point is that governments have no clear digital 'point of entry' where business can easily connect for public requirements and services. This also underlines improving and modernising existing infrastructure.

DIGITISING TRANSPORT AND LOGISTICS: PRIORITY AREAS

Electronic transport documents

E-documents in road transport

There are a number of real life examples where the use of e-CMR (Convention relative au contrat de transport international de Marchandises par Route), referring to rules for transporting goods internationally covered by the UN Convention for the carriage of goods, reduces costs and increases efficiency for the operators as well as makes enforcement more efficient for authorities. E-documents can significantly reduce administrative burdens and reduce costs. Moreover, by working with a one-point entry, the margin of error reduces and the quality goes up. It does not only reduce the amount of work caused by having to give in the same information, the smooth availability of the data does stimulate better processes. Studies have shown that in the Netherlands the transition from CMR to e-CMR would result in a reduction of administration costs up to



€180 million per year for Dutch logistics companies. Taking into account the potential in the whole EU, e-CMR would cut a huge amount of administrative costs for European logistics operators. Moreover, the electronic app of the e-CMR (e.g. TransFollow) is multilingual and eases international trade of goods. Electronic documents, such as the e-CMR, can be easily processed and archived. CMR consignment notes (paper forms) are only then processed when they are handed in by the driver of a Heavy Duty Vehicle (HDV), whereas e-CMR notes could be processed in real time. Additionally, a better traceability of the logistics chain is possible due to e-CMR which can also help to monitor application of EU legislation, for example in the case of cabotage operations. The belonging data should be in full control of the business that generates it.

An additional important advantage of a digitised logistics chain is that it needs less paper and thus contributes to the environment, e.g. e-CMR consignment notes reduce printing costs. Each year in Europe around 33 million paper sheets are needed for 16.5 million transport and logistics vehicles. This amount of paper could be saved if each Member State would accept the e-CMR consignment note, thus contributing positively to the environment. Additionally, between departments within a freight company, consignment notes are mostly sent in paper form (CMR) rather than in electronic form (e-CMR) which increases costs of logistics. During the test phase between France and Spain being two of the first countries which ratified the e-CMR protocol from 2011, it could already be experienced that the timely recording of data means that agencies immediately receive information on the transported goods, so any required further actions, such as initiating legal processes, invoicing or accident response procedures, happen faster and cheaper.

Businesses would greatly benefit from a more standardised and wider use of electronic transport documents. However, different standards, a lack of implementation of EU rules and diverse national regulation impose barriers to its development. The fact that in Europe only 10 EU Member States and Switzerland have adopted the e-CMR protocol to allow for the use of electronic transport documents when transporting goods by road, demonstrates the resulting loss of the benefits for cross-border activities. As a consequence of this legal uncertainty, many logistics road freighters refuse to use electronic transportation documents. In fact, e-documents would only be useable if the e-CMR protocol would come into force. At this point, it can only be used in situations where both countries of origin and destination have signed.

→ In the above context, BusinessEurope urges all Member States to accept the e-CMR protocol as soon as possible. The Commission has to play a key role in pushing for swift implementation of agreed rules.

Additionally, there are no rules at national level or by CMR on Proof of Delivery (PoD). As the PoD can be issued as a receipt, it is also legally possible to have it on digital format. However, uncertainties exist taking its value in court proceedings into account, meaning that written signatures and paper proof are favoured more. The main challenge is to ensure regular recordings and prevent manipulation by a file protection system. At the same time, the legal uncertainty might have resulted in the fact that there are currently no appropriate IT solutions available to address this.



E-documents in rail freight

The electronic consignment note for rail freight (e-CIM), laying down ‘Uniform Rules concerning the Contract of International Carriage of Goods by Rail’ has the potential to provide easy access to data. Other advantages are that the e-CIM cannot be lost nor damaged as well as that time and costs can be saved. There should also be the possibility to use the e-CIM in multimodal transport, e.g. when goods are transported in one delivery via rail and HDVs.

However, until now not all Member States recognise the e-CIM and additionally electronic signatures on e-CIM are not accepted by insurance companies, authorities and courts. An obstacle is also that the e-CIM is not accepted for transportation of dangerous goods, as it is the case in Germany.

Another problem is that due to different conventions, e-consignment notes for rail differ between West-Europe using the e-CIM and East-Europe using the Agreement on International Goods Transport by Rail (SMGS). The solution for this should be to have *one* consignment note representing both contracts (e-CIM and SMGS). To support the idea of this harmonised consignment note, a central information exchange system between cooperating countries from both west and east of Europe should be established.

→ BusinessEurope welcomes actions to ensure better interoperability for e-consignment notes in rail freight. This is of high significance for European logistics operators.

E-documents in air cargo

E-Freight is an industry-wide program that aims to build an end-to-end paperless transportation process for air cargo made possible with a regulatory framework, modern electronic messages and a high quality of data. The electronic Air Waybill (e-AWB) is the electronic contract of carriage between the “shipper” and the “carrier” (airline). In December 2016, the global e-AWB penetration reached 48.9% on the feasible trade lanes, a shortfall against the industry target of 56%.

The main challenges are that:

- e-AWB is not possible in all airports and all trade lanes due to regulatory limitations;
- e-AWB procedures are not harmonised between freight forwarders, airlines and ground handling agents in key airports where e-AWB is live;
- Many of the SME forwarders do not have the technical capability to enable them to transmit shipment data to airlines;
- Some large forwarders face the same issue: their local branches are the result of SME forwarders acquisition and their IT systems have not been aligned with the rest of the company.



- Experience and interactions with systems vary depending on the actor and the location concerned. Some points of entry have had electronic customs processes in place for several decades (e.g. UK), while for others; they are relatively new and coincide with EU accession (e.g. the Czech Republic).
 - Despite the introduction and widespread usage of e-AWB, there are residual paper forms required for the import and export of air cargo in the EU. For example, if the cargo is selected for inspection, supporting documents (such as the Air Waybill) may be requested, and these supporting documents are more often than not still paper-based, despite efforts to promote the adoption of an e-AWB.
- BusinessEurope urges Member States to address the e-AWB adoption challenges and to accelerate the growth in the penetration rate. Government support for e-freight initiatives needs to continue.

E-documents in maritime transport

A major step towards e-documents in maritime transport was paved by the EU Reporting Formalities Directive (2010/65/EU) aiming to simplify and harmonise administrative procedures and reporting requirements for ships calling at EU ports. Normally, Member States should have implemented a 'national single window' by 1 June 2015 allowing electronic submission and reception of reporting formalities. It is therefore regrettable that paper-based systems continue to exist at port or national level (in parallel with digital systems) and Member States did not do their utmost to their national requirements, meaning that there are even different systems in ports within the same country. With such barriers and discrepancies at national level, the objective of an EU-wide single window cannot be achieved.

- BusinessEurope calls on the Commission and Member States to continue its dialogue to find a real solution and thus acceptance for e-documents in maritime transport. This can also be discussed further in the framework of the European Commission's Digital Transport and Logistics Forum.

E-documents in Inland Waterway Transport (IWT)

In IWT the transport document based on the international CMNI Convention (Budapest Convention on the contract for the carriage of goods by inland waterways) is already available in an electronic version. Its use however is restricted as public authorities often do not accept electronic versions of the document. It would be a major step forward if the e-CMNI would be broadly accepted by public authorities. Besides tracking and tracing, for instance the carrying of dangerous goods already takes place via the electronic Reporting and Information System (RIS). The review of RIS however should allow the full cross-border implementation of RIS and the exchange with other modes.

E-documents in excise goods

Another positive example of the use of e-documents is the e-DA (electronic administrative document), which applies to excise goods. In this regard, the Decision No. 1152/2003/EC, established an electronic computing system, called EMCS, to



simplify and harmonise intra-Community movement of goods under suspension of excise duty. Nevertheless, the Directive 2008/118/EC requires that the consignor shall provide the person accompanying excise goods with a printed version of the electronic administrative document or any other commercial document, in a clearly identifiable manner: the unique administrative reference code.

- BusinessEurope regrets to observe that despite the effort to promote digitalisation, EU regulations maintain the obligation to use documents in paper. A targeted revision of existing legislation should be considered.

Enhancing multimodality

Digital multimodal solutions for both passengers and freight should be reinforced for which digitalisation can be positively disruptive. In this context, it would be appropriate to formulate policies that facilitate the development of European digital platforms and infrastructure by business. The main topic is that publicly generated data is released open source and via standardised protocol. This includes improvements on multimodal passenger information (e.g. via apps and/or screens) and introducing innovative digital solutions for freight which is delivered via multimodal transport.

There is a need to provide key infrastructures for people's mobility with means that allow them to integrate the operations of different transport modes and coordinate services already operating on them or potential ones in order to create value added chains for connected services.

- Existing best practices to commercialise combined passenger transport tickets should be promoted because of their beneficial impact on society when ensuring seamless mobility of people.

It is necessary to foster the development of digital solutions (apps, web, Big Data) that allow passengers to search, book, pay, and make door-to-door (D2D) multimodal trips in an integrated manner (airlines, railways, airports, ground transportation, etc.). These solutions have economic and operational benefits, such as easing citizens' mobility, reducing carbon emissions, and improving territorial integration.

As multimodal transport is steadily improving, the same electronic documents should also be accepted in the whole transport and logistics chain and thus in all modes. Already similarities exist between transport documents in different modes, e.g. the e-CMR for trucks and e-CIM for rail. It is therefore of great importance that there are adequate trusted solutions in order to guarantee that transport data (e.g. in e-consignment notes) is not manipulated. To enable smooth and easy multimodal transport, exchanged data needs to be correct, consistent and complete.

It is important to improve the interoperability between modes, for example for the acceptance of e-documents. A Dutch initiative to have goods delivered in international transport by a combination of lorry and barge with one digitised set of documents failed, because Member States did not even accept the digital documents of one mode.



The crucial role of Industry 4.0

Data plays a fundamental role in transport logistics. Already data from cars, HDVs, planes and ships is used for more flexible route planning, based on forecasts of the traffic situation or actual traffic flows. The next step would be to launch intelligent self-driving, sailing or rolling vehicles, boats and trains in a traffic infrastructure based on the Internet of Things (IoT), paving the way for new dimensions and more automated and flexible logistics solutions.

As e-commerce is stimulating both production and sale of goods, their distribution is heavily dependent on the efficiency and flexibility of logistics. Taking the vision of the 4th industrial revolution into account, smart logistics can guarantee that finished as well as unfinished goods ready for shipping are at the right place at the right time.

Data deriving from e-transport documents, drivers and goods needs to be available and shared to ensure correct and smooth transport and logistics. In fact, forced data localisation is a burden for many companies, also operating in the transport and logistics sector. Therefore, transport and logistics operators need to be able to efficiently transfer data across the single market in order to deliver goods faster as well as provide better customer support (i.e. in public transport). Nevertheless, it needs to be maintained that ownership and protection of data, i.e. being from logistics operators, public authorities or even customers, is sufficiently addressed and respected. This is of course linked to the discussion on data economy and the related Communication on Building a European Data Economy which was adopted on 10 January 2017. For the public consultation which was launched with this Communication, BusinessEurope submitted a response in order to address the mentioned points².

Big Data Opportunity

Data can be used to transform mobility for passengers, authorities and operators. With this (data) mobility opportunity, we believe that a potential growth could be pursued through adequate investment in European transport networks. Already examples exist in which innovative data sources are used to plan new efficient public transport, e.g. automating existing metro networks with data, and users are helped through optimising their journey by opening up mobility data. These developments range from infrastructure planning using Big Data with the Utrecht light rail, predictive maintenance in regard to the Eurostar, rail automation with the metro in Paris, intelligent transport systems such as the Berlin's traffic control centre or London's smart ticketing system and open data leading to the development of numerous apps for users in Amsterdam.

These practical examples visualise that Big Data can play a major role in transport. The positive effects of Big Data are that journeys will take less time for commuters due to better traffic flows, passengers have more control over their journey and better transport information encouraging multimodal travelling (e.g. using metro, airplane, bus and car in one single journey). Moreover, Big Data use as for example with intelligent

² More info: BusinessEurope's [position paper](#), entitled "Building a European Data Economy" of 26 April 2017



transport systems, can lead to faster flow of priority vehicles enabling more effective public transport and emergency services.

Furthermore, Big Data also needs to operate in a trusted environment, thus making sure that data is better used along the logistics chain combined with trust-building tools, such as cybersecurity and adequate data governance. More details can be found in BusinessEurope's response to the Communication on Building a European Data Economy (referred to above).

- More opportunities in the field Big Data should not jeopardise the safety of transport modes with a direct and open access to transport generated data. Access to this data should be granted taking into account the purpose for which it is used, the nature of the usage and the type of data. Emerging business models based on the use of Big Data should also ensure a fair return on investment in order to maintain innovation potential.

The growing number of connected devices will result in huge data volumes. Social networks will add to this massive 'data lake' of IoT information to enrich pure machine data. By correlating all this data, participants can gain invaluable insight about operational performance, resource availability, equipment usage, cargo security, and passenger safety. The big question is how to make sense of it at all? Therefore, transportation providers need to develop a strategy to store and secure large volumes of data and enable advanced, actionable analytics. These capabilities will help them understand past actions and predict future trends so they can deliver the right service mix at the right time. In addition, this will enable them to act in the moment and provide efficient services. Cloud-based data warehouses and real-time analytics technologies will be essential.

The real value of the IoT for transportation and logistics providers is in connecting their infrastructure to their broader business and operations solutions. The use of in-memory technology will become a necessity to successfully combine IoT data with business transactional data in one shared database, in real time. For example, running the IoT for transportation or logistics services on an in-memory platform can enable unprecedented benefits in terms of asset and order insight and just-in-time delivery and maintenance. It enables an environment where participants can finally monitor, analyse, and automate in ways that greatly improve service delivery, streamline key business processes, and create new business models. The benefits of such a system include that deliveries can be easily adapted with last minute changes and evaluated for the most cost-effective route.

The importance of privacy and security

Data privacy and security must be part of every discussion around Big Data or IoT strategy. Security practices need to be infallible, and the IoT connections tamperproof. Beyond security, transportation and logistics providers need to clearly explain how they collect and use personal data. Privacy policies must prevent the unwanted sharing of personal information with third parties or in public forums. Opt-in programs that demonstrate the benefits of sharing data - such as incentives, exclusive offers, or loyalty rewards - should be part of the equation.



Developing user-friendly charging systems

In regard to the Mobility Package launched on 31 May 2017, the European Electronic Toll Service (EETS) revision is an opportunity for building, operating, improving, maintaining safe, efficient and reliable road infrastructure to the benefit of the users and the citizens. Digital solutions play an important role to fulfil that road charging systems are user-friendly. A common EETS needs to ensure a level-playing field with other modes of transport as well as a framework for electronic interoperable distance-based charging of road infrastructure, under certain conditions³. In this context, the EETS framework should allow for the deployment of newest technologies and ICT solutions.

Reducing CO₂ emissions with Intelligent Transport Systems (ITS)

ITS could help to reduce CO₂ emissions and increase safety of goods vehicles, buses and coaches. Studies have shown the most promising in-vehicle ITS applications. One of these is the eco-driving support which can save around 7-10% of CO₂ emissions on non-urban roads (without motorways). Another finding focuses on eco-routing providing carbon reductions of between 4% and 12% in urban areas for freight transport. In addition, truck “platooning” can reduce emissions by between 7% and 16% for following vehicles and between 1% and 8% for lead vehicles depending on the inter-vehicle spacing.

Infrastructure or back-office based ITS applications can also contribute to reduction of CO₂ emissions. An example are traffic signal systems which can lead to CO₂ savings of approximately 5% in cities, depending on traffic levels, spacing junctions and location of bus stops. Also, intelligent truck parking could result to cutting of 2% in carbon emissions for long distance freight transport by decreasing extra distance driven to search for parking facilities. A reduction of 14% to 17% carbon emissions in the immediate motor way ramp area can be achieved through the eco ramp metering. Furthermore, Intelligent Speed Adaptation (ISA) could enable vehicles in urban areas to keep the same (low) limit nearly all of the time, e.g. in 30 km/h zones.

The benefits of Cooperative Intelligent Transport Systems (C-ITS)

The successful deployment of C-ITS will be highly dependent on the cooperation between the transport, energy and telecommunications sectors, which is necessary to implement digital transport systems including infrastructure, vehicles and innovative services. Developments of C-ITS would have favourable effects, particularly in a long-term perspective, on the IT competence level, development of new skills, improved competitiveness of the EU data, as well as automotive and transport industries. New cars and trucks would be connected and comprised of systems that allow them to assist the driver (i.e. automated driving). These innovations can leverage the usage of the infrastructure when connected with each traffic management centres which will enable technology to offer more smooth traffic flows.

³ More info: BusinessEurope’s [position paper](#), entitled “Road transport in the single market - identifying challenges and the way forward” of 6 December 2016



To provide safety alerts for drivers and thus to improve road safety and the efficiency of the road network, C-ITS allow vehicles to communicate with other vehicles, traffic signals and roadside infrastructure. This is also regarded as vehicle-to-vehicle communications or vehicle-to-infrastructure communications. Moreover, C-ITS work by connected vehicles which use dedicated short-range wireless systems and share information, e.g. vehicle position, direction and speed, with other connected vehicles at a rate of 10 times per second.

Based on this, drivers in connected vehicles receive safety alerts about potential dangers, e.g. crests of hills or around bends, thus being warned of risks on the road ahead. For BusinessEurope, it is therefore clear that C-ITS have the potential to improve road safety and the efficiency of the road network which in the end contributes to a safer community.

The fleet industry, led by the car rental sector, has already demonstrated innovative ways to optimise processes. Anyone who travels frequently is familiar with the convenience of going directly to the assigned car for pick up and using the handheld devices to speed processing upon return. Additional connectivity to the vehicles could deliver data directly to the agent so that these processes become even more automated, perhaps even eliminating the need for human intervention.

Companies that offer rental services for commercial vehicles, equipment, and other items have business performance tied to the usage, efficiency, and availability of their fleets. The fleet industry may be the segment most impacted by the sharing economy, but companies that have existing assets and infrastructure, once they instrument it and analyse their data, will have a distinct advantage over asset-light newcomers.

Urban mobility solutions

Concerning smart parking, innovators provide real-time parking maps of community parking and participating parking houses which are able to connect existing sensors in modern vehicles to a cloud that processes the data with a learning algorithm.

When it comes to charge and pay, software applications can offer the driver of electric vehicles ad hoc information on near public charging stations, navigation to the selected station and paying in one service app.

Revenue models are based on the asset being in possession of the customer. Traditional models of picking up and returning to a rental centre create unbillable time. Incumbents are learning from disrupters - they use sensors and GPS technology to conduct changeovers (inspection after use) and handoffs (to the next rental customer) in the field. Fleet owners estimate that having this capability could add as much as 20% more revenue without investing in additional assets to rent.

In order to improve the decision-making of players and to provide updated information to citizens and tourists, a development of an integrated mobility management system is desirable where open data plays a key role with the co-existence of interoperability platforms. This consists on the integration of all the different elements that remain in the city, such as traffic lights, panels, cameras and park sensors considering all the



incidents and events that exist in a certain moment to achieve an anticipated and resilient smart management of mobility. Reduction of emissions in a planned way contributes to enhance welfare of both environment and citizens. Managing intermodality, improving coordination at intra- and supra-municipal level (urban, peri-urban, metropolitan and interurban) and developing new technologies (electric vehicles, connected cars or new business models etc.) are just some examples of integrated mobility management that contribute to enhance city administration and improve quality of life for citizens.

Long distance transport solutions

By attaching sensors to rail carts or ship containers, the Intelligent Freight system can contribute to optimisation of the operational performance, locate the freight at any point of their journey and measure the temperature and humidity inside of the containers allowing constant monitoring of the quality of the goods transported.

The implementation of different connectivity systems in road passenger transport not only ensures passengers' comfort and entertainment but also provides for greater safety in transport operations. In this way, transport is safer and passengers remain connected and amused along all the journey as well as the operator is informed regarding any current or future incident with the vehicle or with the itinerary.

Secure Truck Parking solutions provide parking spaces with security ranking for overnight truck stops, real-time information about availability of these spaces and the possibility to reserve them while on the road. This would increase safety on the road, reduce emissions caused by searching parking spaces, add comfort for the driver as well as secure the truck freight.

Digital transformation of railways

New mobility services and integrated multimodal transport will require change in existing business models, data access and availability. Furthermore, the digital transformation will place cyber security issues as one of the main challenges in the future. The more data is used in the railway sector, the more it also needs to be safeguarded that it is secured.

IT and digital technologies are still at an early stage within the rail industry compared to other transport sectors. Nevertheless, rail operators already contribute to the sector's digitalisation. In fact, this contains the improvement of railway performance, e.g. digital based maintenance or traffic management systems, end consumer satisfaction, e.g. infotainment (internet on board) or e-ticketing, and internal digital transformation of the railway manufacturing industry, e.g. Industry 4.0 in regard to automation of production, supply chain and collaborative workplaces.

An important step towards digitalisation is a Europe-wide implementation of the European Rail Traffic Management System (ERTMS). By introducing baseline 3, ERTMS can be the backbone of autonomous train systems.



Although there are digital developments within the railway sector, additional improvements are crucial to fulfil the future's need for an increased railway capacity, reliability and reduced life-cycle cost of the system. For the future, initiatives need to focus on:

- Cost-efficient and reliable trains leading to digitalisation of sub-systems and equipment of trains, producing new data which is useful for performance indicators, such as energy, maintenance and operation;
- Advanced traffic management and control systems focusing on innovative technologies, systems and applications in telecommunication, train separation, supervision, automation and security;
- Cost-efficient and reliable infrastructure with innovative technologies, systems and applications in the field of infrastructure and energy in order to improve track performance, predictive maintenance and energy efficiency;
- Digital solutions for attractive railway services, focusing on innovative technologies, applications and systems in the field of IT aiming for more innovative, attractive and end-users oriented rail services and a framework for multimodality, and;
- Technologies for sustainable and attractive European rail freight, leading to enhanced productivity and the punctuality of the freight transport while developing methods to automate the coupling of the trains, resilient time-table planning as well as conditions for monitoring predictive maintenance.

The Commission should play a leading role in guaranteeing the support of the digital transformation within the transport sector. The deployment of ITS in transport and logistics is a first significant step for this. Innovations and new technologies have the potential to extend growth, efficient transport and logistics networks as well as the use of existing infrastructure. There is need for a strong and deep dialogue to address cyber security threats and access to data allowing to attain greater efficiency. Furthermore, we urge that the support of the digitalisation of the transport sector goes on and that necessary safeguards will be created to accomplish this. It is clear that rail transport in Europe suffers from national differences in rules and regulations regarding railway traffic. Digitalisation can act also as an agent to remove such national barriers, e.g. with a "One Europe" approach to digitalising railways.

Digital transformation of ports

Ports in the EU cannot avoid significant digitalisation which is affecting also other industry sectors. In order to be able to be aligned with other means of transport, they need to streamline their internal business processes and systems to be interconnected with all parties in the integrated supply chain. There is a great example of the Port of Hamburg where by implementation of such solutions, precisely controlled incoming and outgoing traffic to the port, the Hamburg Port doubled capacity of transferred goods.

As ports are only one part of a multimodal logistic backbone for a country's exports and imports, their logistics solutions should be transformed into more modern, innovative



and interconnected manner. Internal logistics processes should be seamlessly connected to external logistics operators, like railways, freight forwarders, postal and trucking companies. To have this competence, such systems should implement integrated logistics platforms which are based on interconnected processes, goods, people and assets. There are already some good examples from ports in North-Europe, as well as at the Adriatic and Mediterranean. However, the aim should be to have more unity of digital practices in all ports within Europe in order to have a more functional and efficient incoming and outgoing traffic as well as handling of goods in ports. In order to have an integration hub for seamless communication between different parties in land and maritime operations, all information between stakeholders should be exchanged. This will enable them to get insights into specific operations and be able to act at right time with right action for a right process. Important is that each party has its own visibility into the whole process (common operational picture about flow of information and its current status). These are main capabilities of Port Community Systems (PCS) which are gaining traction in most of ports in the EU but are not yet fully deployed.

“Only-once” principle

Better re-use of information already submitted can enable efficiency and cost savings. In this context, digitalisation in all transport modes can facilitate the so-called ‘only-once’ principle. Instead of copying information several times within a logistics chain, it offers the possibility to always go to the original source of data, even across borders, meaning collecting and storing data only once. This also leads to a streamlined process by enabling automated data sharing. This system is mainly suited for container related cargo. For many other streams the cargo has got no digital information layer. This will truly scale up when standardised protocols will give digital handling a true competitive edge.

However, in practice, this only-once principle is often only partially applied. With the launching of the Reporting Formalities Directive (RFD) 2010/65/EU containing national single windows and e-Manifest, the Commission aimed to let ships which enter the EU to provide information only once. In reality, Member States have added their own requirements and use their own systems, which can differ between ports in the same Member States. The RFD does lack a standard in request and system, which prevents a smooth information exchange. Another example is related to truck drivers where they are currently required to carry on board several paper documents to offer proof of compliance for different aspects, such as a contract for transported goods, identification of suppliers and customers, documentation to prove that the transport service is not a cabotage as well as proof of road worthiness. It is clear that more needs to be done in this area.

Drones - a new transport opportunity

Digital and smart infrastructure can also lead to new ways to transfer goods and regular mail. A good example are drones which are a unique opportunity to stimulate additional growth and prosperity. With drones it will be possible to deliver mails to remote areas, which opens the door to a drone service market with huge economic



potential for postal services and parcel companies. The use of drones would also make these companies more competitive on the global stage.

However, there are still points which need to be addressed to take advantage of operable drones. This means that security issues need to be solved as soon as possible, e.g. cybersecurity. In order to have an airspace dimension, the concept of 'U-Space' on access to low-level airspace in urban areas needs to be further developed. A good step towards progress is the Single European Sky Air Traffic Management Research (SESAR) blueprint on the U-Space which was published on 16 June 2017.

As drones as the new transport opportunity have huge potential for the future, additional research and investments are needed, e.g. via the SESAR Joint Undertaking or other funding schemes. In addition, further dialogue and agreement between different stakeholders is essential in establishing an appropriate legislative framework for drones. It is positive that the Commission will propose a basic legal framework for the safe development of drone operations in the EU, as part of the new basic aviation safety Regulation, replacing Regulation 216/2008. It is important to embrace new opportunities and business models, but at the same time to regulate potential dangers of drone use for aviation safety. In this context, industry representatives should be welcome to provide the legislators directly with industry input, aiming to create more regulatory flexibility whilst achieving an overall high level of safety. This should be done through creating a risk-based framework to ensure their safe use in civil airspace, while at the same time guaranteeing legal certainty for businesses.

Enhancing and triggering investments and creating critical mass

In order to ensure that in the future transport and logistics will be completely transformed, meaning that most systems will be intelligent, vehicles automated as well as users' travel plans simplified by their mobile devices, sufficient funding and investments are needed for innovators to be able to launch new smart solutions on the market. Therefore, BusinessEurope wants to see that sufficient financial incentives are provided to support the important digital transition.

The current call for proposals combining Connecting Europe Facility (CEF) for transport with the European Fund for Strategic Investments (EFSI) is a good example of triggering investments in innovative solutions and upgrades. However, it needs to be ensured that European projects that are already in place are implemented in an efficient way. Additionally, there need to be adequate opportunities for investments, such as in the CEF and Horizon 2020, to finance European transport infrastructure projects. In order to make sure that in the future transport and logistics are clean, connected and competitive, we believe that it is crucial to boost further investments to fund upgrades in innovative and sustainable infrastructure.

Moreover, we call for public and private investments to support broadband, satellite and microwaves network along the Trans-European Transport Network (TEN-T) corridors. In fact, telecom, energy (new fuels) and transport should go together in new infrastructures. We would also support compulsory measures to equip the entire TEN-T core network with 5G. In this regard, innovative ways of financing should be considered for European large-scale digital projects in all modes of transport, based on the Single



European Sky Air Traffic Management Research (SESAR), European Rail Traffic Management System (ERTMS), Vessel Traffic Monitoring and Information System (VTMIS) and Cooperative Intelligent Transport Systems (C-ITS).

For the outlined transformations and to offer space for the mentioned solutions, it is important that not only transport and logistics businesses use digital tools and ICT solutions, but public authorities as well. Here, business-to-government communication in transport can play a crucial role. It is therefore essential to provide sufficient investments in the public and the private sector in new technologies and the right policies to accommodate the expected developments digitalisation of transport and logistics offers.

Critical mass is needed to attain a standard for digital solutions in transport and logistics. Additional EU pilot projects along the TEN-T corridors could play a major contribution to fulfil this. The role and approach of legislators is essential in this debate. We must rely on the market-driven solutions and of course any regulation should be balanced and put in place where necessary, however regulators must avoid any legislative measures that limit the potentials of new business models and take into account the disruptive technologies, e.g. drones and self-driving cars. In this context, it is also important to further develop the concept of 'smart cities', to see how highly urbanised areas can be more efficient, with the help of digital tools and ICT solutions.

Another significant factor for the digitalisation is the transformation of organisations and management. This requires right policies, new structures, as well as an evolution of the workforce towards more diversified tasks, such as using various new electronic tools instead of current paper forms.

* * *