Digital Single Market: The Evidence

Commission Staff Working Document
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1. The Digital Economy and the Single Market

It is no secret that digitalisation has been changing not just our economy but also our daily lives for at least the last twenty years. Nor is there much doubt that this process will continue for the foreseeable future. Where digital was once a niche market for specialists, it has become a general purpose technology which is affecting all sectors of the economy and society – the digital economy.

Inevitably, this requires Europe to improve the security of supply of non-energy raw materials, which are the building stones for a prosperous digital economy but also the best way to recover these raw materials through enhanced control of waste flows.

This digital economy has the potential to create growth and employment. It does so by providing opportunities for investment and innovation, which leads to expanding markets and, thanks to increased competition, to better goods and services at lower prices. Better information flows can improve pretty much everything, from health, food security, and resource efficiency to energy, intelligent transport systems and smart cities. Already in the recent past, digital technologies made a major contribution to economic growth. Between 2001 and 2011, digitalisation accounted for 30% of GDP growth in the EU¹.

The key variable for the digital economy is scale. Digital technologies, which know no borders, enable businesses, including small ones, to handle large numbers of customers cheaply. The positive effect of digitalisation on the economy is therefore limited by the number of potential customers. The larger the market in which companies operate, the stronger the growth impulse. Conversely, the larger the market, the more consumers can benefit from the opportunities offered by a wider choice and better prices.

This is why the Commission has identified the completion of the Digital Single Market (DSM) with more than 500 million people as one of its top political priorities. The DSM is also a key priority for the European Council and the European Parliament and has been highlighted in the Annual Growth Strategy 2015.

To maximise these opportunities and achieve a fully functional DSM, the Commission is launching this Strategy which sets out ambitious steps towards a connected DSM. The Strategy focuses on five strands: building trust and confidence, removing restrictions, ensuring access and connectivity, building the digital economy, and promoting e-society.

Within the five strands the Commission intends to focus on a number of core initiatives aimed at removing obstacles for businesses and consumers to cross-border e-Commerce. The EU needs to break down regulatory and other barriers to a truly connected DSM so that consumers can securely and conveniently access goods and services, including digital content, wherever they are in Europe and regardless of borders. It needs to create also create a level playing field where all companies are subject to rules that enable them to offer their goods or services in the European Union, regardless of where they are based and where innovators can start up and grow their European business easily and quickly. At the same time, the

Commission will take forward a number of key enabling measures which will provide the right conditions for the DSM to develop.

2. The benefits of the Digital Single Market

Between 2001 and 2011, ICT accounted for 30% of GDP growth in the EU but 55% in the US. The difference is partly the result of the sectoral composition of the corresponding economies but also the result of disparities in the perception of ICT, investment volume in ICT, production, and use. For the period 2006-2011, the estimated productivity differential between the US and EU due to ICT represented an annual growth gap of 0.2%.

The DSM is an opportunity to close this gap. The achievement of such a fully functioning DSM has been estimated to contribute between 260 and 340 bn € to European GDP. The long-run growth impact of the already observed digital reform effort has been estimated above 1%, the further efforts in line with the Digital Agenda for Europe targets would entail additional 2.1% of GDP growth. On the other hand, without a completed, secure and trustworthy DSM, new digital services for end-consumers and businesses as well as services underpinning them (Internet of things, big data and cloud computing) may happen later or to a lesser extent in Europe.

The benefits of a DSM are based on two key elements: economies of scale and increased choice. Citizens benefit by enjoying a wider variety of goods and services and lower prices through increased price competition. Some of these benefits will increase GDP (lower prices increase purchasing power for other goods, increasing demand), while others, even though they do not show up in national accounts, will improve quality of life (the so-called consumer surplus, i.e. the option to buy a good or service which better corresponds to consumer’s desires).

Businesses benefit by enabling economies of scale which reduce costs, increase efficiency and promote competitiveness, improving total factor productivity. In many cases, without these economies of scale many on-line businesses may not be viable at all, either because there is not enough demand in a single Member State (in the absence of the so-called long tail) or because smaller production increases the price too much for consumers to purchase the good or service. This could be especially important for SMEs that remain confined to a small home market with high production costs. If a DSM can lower cross-border trade costs for SMEs it

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3 “The Economic Impact of Digital Structural Reforms”, Economic Papers 529, September 2014, D. Lorenzani, J. Varga
6 Agais and Waldofgel (2014) “Quality predictability and the welfare benefits from new products: evidence from digitization of recorded music”, JRC/ITPS Digital Economy working paper 2014-12. The authors estimate the consumer welfare benefits from increased online music choice and quality at 15 times the benefits of the long tail.
could increase their production, lower production costs and make them more competitive. A DSM is also of particular importance for innovative businesses setting up online-only operations.

Another issue where scale is important is the adoption of new technologies, such as the Internet of Things, Big Data Analytics or Cloud Computing. Companies may refrain from investing in the deployment of these technologies if they have to use different costly specifications every time a border is crossed, making it unprofitable to innovate. In the long run, this can lead to a further weakening of Europe’s industrial base, as competitors from abroad with more advanced technology will take more market share.

Evidence shows that the potential of the digital revolution is so far dramatically under-exploited in Europe — with only 2% of businesses taking full profit of the new digital opportunities. A fully functioning DSM will present European businesses, particularly SMEs, with a potential customer base of more than 500 million people, enabling the companies to make full use of ICT to scale up for productivity gains, creating growth and jobs along the way.

Regarding e-Commerce, it is growing rapidly in the Union at an average annual growth rate of 22%, surpassing 200 Bln € in 2014 and reaching a share of 7% in total retail sales in the EU28. But if this, 40% of sales are made through pure internet retailers that operate only online and around 14% corresponds to mobile commerce. The share of online sales is much larger in services. For instance in Travel and Tourism online represents some 40% of total retail sales. Online sales are concentrated in a limited number of products such as Apparel and Footwear; Consumer Electronics and Appliances; and Media Products, which represent nearly half of all online e-commerce transactions (49%). In addition, online sales are also heavily concentrated in a small number of firms: the top 100 online retailers represent 52% of total online retail turnover in 2013. Among these firms, 52% only sell in their home country; those that do cross-border sales cover on average only three export markets in the EU.

European citizens are enthusiastic adopters of online services. In 2014 50% of EU consumers shop online (10%+ annual growth rates), achieving the goal that the DAE envisaged by 2015. However, disparities among MS have been rising: the gap between the share of population buying online in the top and bottom countries has been on the rise since 2002. Cross-border e-commerce is a different story. In 2014 only 15% of the population bought cross-border online and the 20% target will not be met by 2015.

European firms have been slower in adopting online sales. The number of firms doing e-commerce has been growing rather modestly over the past years. This may be related to the limited range of products that lend themselves more easily to online sales. The expansion in the volume of online sales has been driven by increasing sales by firms already present in online markets. Average turnover per firm increased significantly in the period 2010-2013. For the top 100 online retailers it went from 674 to 924 million Euro (+37%). For the top 500


Reference DG GROW

online retailers, online turnover increased by 56% in the same period. On average, 80% of EU online expenditures go to domestic shops. However, the extent of consumer preferences for the home market varies considerably across MS. Consumers in smaller MS have a stronger tendency to shop across borders because local supply and variety is limited and better price deals may be found across the border.

Beyond online retail services (e-commerce), the use of online services in general in the EU, including "free" and "freemium" services, is very concentrated on a small number of global platforms that actively operate cross-border while the bulk of online service providers cater for domestic markets only. About 43% of all online services websites used in the EU are used in only one MS and account for only 17% of all online services traffic. Two thirds of all websites used in the EU are used in four MS or less and account for only a third of all online services traffic. At the other end of the distribution, only 1% of all websites used in the EU are truly pan-European service providers with clients in all 28 MS; they account for nearly half of all online services traffic. Some types of online services do not lend themselves easily to cross-border activity. For example, restaurants, real estate and health services involve a physical delivery that requires the consumer and supplier to be in the same place. On the other hand, some purely digital online services such as search, social networking and software delivery lend themselves more easily to cross-border activity. Consumers' home market preference is much more pronounced in the first group compared to the second.

**ENV**: It is estimated that the global geospatial services sector generates $150 to $270 billion annually. By comparison, this is greater than the $25 billion generated by the video games industry, roughly equivalent to the $140 billion in revenue from the global security services industry, and about one-third of the global airline industry's annual revenues of $594 billion.

People are increasingly accessing and using geographic mapping and location-based services ('Geo services'). In the five largest European economies, 50% of Internet users access maps online and 35% of smartphone users do so with their handsets. In addition to this regular use of Geo services, a whole range of systems has been, and is being, designed to put Geo services to use in innovative ways. The report also estimates that the Geo services sector has a global GVA of $113 billion, accounting for roughly 0.2% of the global gross domestic product (GOP). Compared to this, the global airline industry has a GVA of approximately $221 billion and the global video games industry a GVA of approximately $22 billion.

It also presents an estimate of the current impact of Geo services. However, it also recognises that the industry is growing rapidly – at a rate of 30% per annum globally. Hence, many of the estimates presented here will quickly become underestimates, as Geo services become more widespread.

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10 Duch-Brown and Martens (2015) ibid
12 Alavers and Martin (2015) "Online services trade in the Digital Single Market", JRC-IPTS Digital Economy working paper (forthcoming). "Traffic" is measured in terms of page views on a website, from the country of the user to the country of origin of the website. "Online services" comprises all websites, whether they offer paid or unpaid services.
13 2012 study by Oxera. Available at: http://www4.uwm.edu/gis/careers/occ-outlook.cfm
3. The building blocks of a Digital Single Market

Currently, the Digital Market is not really Single. It is a bipolar market dominated to a large extent by domestic online services in the each MS (39%) and cross-border use of US-based online services (57%). Intra-EU cross-border online services trade between MS accounts for only 4% of total traffic. About a third of all EU-based online services export to at least one other EU MS. However, export traffic is very limited for most of these and to a large extent confined to neighbouring countries with which they share a language and culture. The situation is similar in other regions in the world outside the US. The US is the prime exporter of online services: about two thirds of all traffic on US websites comes from other parts of the world13.

Apart from "natural" obstacles such as language and physical distance15, there are a number of man-made obstacles which prevent cross-border online activities from being as seamless as national ones. Firstly, the basic condition for efficient online activities is the availability of reliable high-speed broadband networks (with efficient Internet Service Providers). Secondly, a true DSM requires that consumers can buy and companies can sell across the EU without facing undue regulatory or privately-imposed cross-border barriers. Furthermore, value-tax administration for business selling across borders should not be burdensome. Last but not least, consumers will engage in online activities if they have trust in the online environment. Cross-border online activities can only take place if efficient cross-border parcel delivery systems are available for physical goods. Beyond e-Commerce, in a DSM companies need fair access to key resources, borders should not limit the spread of new technologies and non-discrimination between taxation for offline and online companies should be ensured.

ENV: It is also crucial to remove obstacles to the use of digital technologies and data for a more effective and cost-efficient government both at EU and Member States levels. Location information for instance is elementary to e-Commerce16, EU initiatives such as Galileo (for positioning), Copernicus (for satellite Earth observation data collection) and regulatory frameworks such as the Infrastructure for Spatial Information in the EU (INSPIRE) already contribute to the realization of the DSM (cross-border data and service policies, interoperability of network services data, cross-border 'governance' including all stakeholders).

A prominent feature of a data-driven economy will be an 'ecosystem' of different types of players interacting in a DSM, leading to more business opportunities and an increased availability of knowledge and capital, in particular for SMEs, as well as more effectively stimulating relevant research and innovation.

A thriving data-driven economy will have the following characteristics: availability of good quality, reliable and interoperable datasets, and enabling infrastructure.17

13 Alavares and Martens (2015), JRC/IPTS, ibid
15 It is often believed that distance no longer plays a role in online activities. Several studies have shown that the "death of distance" (Carin cross, 2002) is not valid. See for instance Blum & Goldfarb (2006), Lendle et al. (2013), Gomez et al. (2014), Alavares & Martens (2015).
17 See in particular: Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'Towards a thriving data-driven economy' (COM(2014) 442 final)
Accomplishing a DSM requires action on many fronts at the same time. A simple classification could split the issues into five groups:

1. **Access and Connectivity**: Promote market integration, competition and investment to give households access to reasonable/high speeds and bandwidth across the EU. Achieve a true single telecom market in the EU with a view to boosting sector investment and performance prevents the development of national silos.

2. **Trust and Confidence**: Everybody should be in a position to have trust in online activities and be able to access services easily and with confidence cross-border. Consumers should feel and experience a level of trust and safety in online activities and transactions comparable to what prevails in the physical world. An important safeguard for consumers is easy access to effective redress mechanisms, both in- and out-of-court, in case their rights are not respected.

3. **Removing Restrictions to e-Commerce**: Consumers should not be discriminated against in their online activities on bases of nationality, residence or localization. Remove all unjustified restrictions for selling and buying goods and services (including digital content) online.

4. **The Digital Economy**: Businesses should be supported, not hindered, when offering goods and services across the DSM to customers including public authorities. Producers should not hinder downstream online distributors from selling products online. Different regulatory management regimes across MS can create undue trade costs for cross-border online services delivery. Industry renewal should be enabled. Digital entrepreneurs should have easier access to funding.

5. **E-Society**: Citizens and businesses should benefit from a-government, e-health, e-democracy, e-modernisation, e-solutions and e-services that are interlinked across EU and have the skills to operate in an e-society. Increased efforts are needed to improve the educational systems to build the human capital, which underpins the DSM. Also, public administration should embrace digital technologies to provide better services to citizens and companies, reduce administrative burden and enable interoperability, including in the area of justice, cross-border cooperation and joint procurement. Fundamental rights must also be respected and enforced in the digital environment. In particular, enhanced online services should be made available to citizens also in terms of easy access to the information that will help them effectively exercise their EU right to study, live or work in another Member State than their own as well as to participate to EU's democratic life in whichever Member State they choose to reside, by strengthening Digital Citizens' rights and Digital participatory rights.

Note that in a complex environment, removing one obstacle at a time may not have the desired impact if the effects of obstacles overlap. For example, ensuring that citizens can access websites in other countries may not be effective if they are not confident that they have the same rights when using the foreign website as with the websites in their home country, and conversely creating cross-border confidence will not be of much help if users are being geo-blocked.
3.1 Access and Connectivity

A single market in telecommunications

All activities in the digital economy depend on electronic communication (broadband) networks. The DSM can only be realised when all European citizens and businesses are connected to reliable, high-speed and affordable networks.

[Current situation in Europe. Is there European regulation? Policy steps taken so far etc. and need for addressing at European level]

We have today a series of national telecommunications markets with different supply and demand conditions. Telecom operators have national strategies even when they form part of larger multinational groups. Important differences exist within the EU as regards telecoms regulation and spectrum policies. This situation prevents the EU from reaping the full potential of an EU-wide telecoms market in which EU consumers could obtain telecoms services from operators present in the EU regardless of national borders, and operators could offer telecoms services across Member States.

The current regulatory framework for electronic communications (in force since 2002 and updated in 2009) has successfully liberalised previously monopolistic national markets and reduced barriers to entry, promoting effective competition and creating common principles for electronic communications markets across the EU. The main economic regulation provisions of the framework are based on market analysis by national regulatory authorities (NRAs) which impose ex-ante remedies to ensure effective competition in the presence of significant market power (or dominance) of one or more operators. The current framework is therefore premised on the implementation of rules by national authorities in 28 Member States. Experience shows, however, that these rules tend to be implemented in different ways, making it burdensome for operators to invest in networks and related services on a cross-border basis or to enter new markets on the basis of a mere extension of existing commercial and technical models. Businesses in all sectors and consumers may have access to electronic communication services of varying quality across countries; low quality access networks hinder the performance of certain economic sectors and reduce citizens’ interest in engaging in online activities.

The current regulatory framework has been broadly successful in creating the conditions for effective competition in the distinct national markets. Traditional providers of vertically integrated telecommunications services (incumbents) compete against access seekers (“entrants”) and with providers of cable networks (historically delivering television services). Innovation in mobile broadband networks has delivered a new service platform.

However, the framework has not to date shown its capability to provide favourable conditions for widespread investments in capital-intensive broadband networks of the type likely to be increasingly needed in the future (e.g. with high upload as well as download capacity, and demanding quality of service parameters), especially in less densely populated areas. The beneficial effects of liberalisation have been felt so far at national level only and have not resulted in real market integration at EU level. Figures show that new market entrants have driven broadband uptake in the EU, rather than national incumbents: incumbents have a 42% market share of all fixed broadband subscriptions but only 22% of NGA subscriptions (above 30 Mbps) (source: Digital Agenda Scoreboard 2014)
Rules in the current framework were designed to spur competition in existing networks. The social return from investment in higher quality networks tends to be greater than for the individual operator. The framework was not conceived to resolve such market failures or to lead to generalised roll-out of new networks in accordance with public-policy objectives.

[Problem and Problem drivers (with figures and results of surveys)]

Recent technological developments are crucial to understand the change in the environment of electronic communications and the speed of change. Important steps have been: i) technological convergence of broadband connections of traditional telecommunications (copper) and broadcasting (cable) networks; ii) development and greater political emphasis on new generation access networks based on fibre optic technology, (iii) important developments in wireless communications thanks to the quality ensured to mobile broadband by 3G and 4G networks standards, the significant provision of wireless connectivity through Wi-Fi offloading to fixed networks, together with the advent of the smartphone; (iv) the introduction of flat-rate offers followed by a trend in bundling telephone, tv, internet and mobile services; (v) the rise of the internet platforms and of the app ecosystem, including the polarisation of the operating systems.

The migration to high-capacity fibre-based networks has however been slow [as compared to target? international comparison?]. In the current market structure incumbents appear to lack incentives to overbuild their own largely depreciated copper network assets; they react to competition by cable operators by upgrading incrementally existing access networks. Alternative operators may not always have the financial capacity to deploy new networks on a large scale (although they have been behind major network upgrades). Finally, their investment incentives may be reduced if regulated wholesale access is made too attractive.

More generally, it can be concluded that the current framework fosters competition "in the market" (or more precisely "in the network"); but as traditional incumbent fixed-line networks increasingly face retail competition, at least at regional level, from cable and sometimes other alternative infrastructure developers such as utilities, often now allied with mobile assets to make bundled offers, proportionate regulation in the face of "infrastructure competition" raises difficult questions. At the same time, the framework does not currently promote to any significant extent "competition for the market", i.e. incentives to be the first to provide qualitatively superior networks to those currently in existence, that could override higher investment risk.

Nowadays broadband is available to 97% of EU homes. Specifically, full broadband coverage has been achieved by Cyprus, Denmark, Luxembourg, Malta, the Netherlands, and the United Kingdom. Progress can be traced also in terms of fast networks grown from 48% in 2011 to 61.8% today [what are ‘fast networks’ and what exactly do the percentages here refer to?]. Nevertheless, these improvements, mostly driven by network upgrade, they have been concentrated in some Member States and in urban areas, and, the actual take-up of fast broadband remains instead very low [low compared to target or low compared to other countries/continents?]: around 21.8% of all subscriptions are above 30Mbps and the situation is fragmented across [‘fragmented across’ means: ‘varies within’?] Member States. [NOTE: these figures seem to change very fast. Is there any possibility to update them?]

ECFIN: Increased take-up of high-speed fixed broadband is found to affect TFP by increased efficiency in the production process due to actual firms' use of these technologies. Simulating the effects of further reform efforts in this regard revealed rather similar GDP impacts across
the EU, mainly differing in terms of their speed (between 0.18% and 0.32% of GDP relative to the baseline over a period of 10 years, and some 0.43% in the long-run). (see Lorenzani and Varga, 2014, p. 53)

A particular problem is identified in the rural areas of the large majority of the Member States, where broadband high-speed access is available only in less than 20% of those areas, compared to 62% in the urban centres. This is explained by the fact that the market does not deliver broadband in the rural areas as the critical mass there is small to ensure profitability.

At the same time, as regards wireless connectivity, Europe has witnessed significant time lags in the roll-out of the latest 4G technology, in part at least to the non-availability of suitable spectrum such as the 800 MHz band. This is accompanied by often wide variations in national spectrum assignment conditions regarding factors of relevance to investment returns and
decision-making, such as pricing, licence durations, territorial coverage, spectrum tradability, spectrum caps and reservations and regulated wholesale access to mobile networks.

ECFIN: Spectrum reforms are found to decrease the retail prices of mobile services, including indirectly through decreased sectoral market concentration. Simulations based on Quest III model suggest gradually increasing productivity enhancing effects over time with an EU-wide GDP increase relative to the baseline estimated to be between 0.11% and 0.16% (after 5 years) and between 0.23% and 0.34% in the long-run, which could be added up to the further potential GDP growth over the baseline from the competition channel amounting to 0.04%. (see Lorenzani and Varga, 2014, p. 28)

In addition to evolving market trends and changing business models, data gathered through market monitoring indicate the lack of harmonisation and consistency in the implementation of regulatory approaches across Member States. Results from the EU consultation mechanism on market regulatory measures have also highlighted inconsistent practices by NRAs when regulating relevant electronic communications markets, which are not explicable solely by the acknowledged objective differences in market circumstances (e.g: presence or absence of cable, different levels of consumer demand) which are often as great within Member States as between them. The follow-up of the implementation of the Radio Spectrum Policy Programme has revealed considerable lack of coherence across Member States with regard to the authorisation and the opening and use of spectrum bands on a technology-neutral basis for the provision of wireless broadband connectivity.

![](image)

Finally, Member States have stepped up their efforts to make broadband a political priority through national plans, but the level of ambition varies greatly among them. A € 90 billion investment gap has been identified to meet the 2020 broadband target of 100 Mbps.

The impact from these technological developments matter also in light of potential spillovers from the electronic Communications sector to other sectors, improving their productivity and ultimately the sustainability of their growth models. For example, broadband can serve as a complementary investment to other infrastructures (buildings, roads, health and electricity grids, transportation systems), allowing them to be “smart” and, for instance, save energy or improve safety. For instance, smart technologies can at the same time help consumers reap the
benefits of the energy market by taking control of their energy consumption both in terms of energy bills and the energy mix (for instance increase the share of renewable energy in the mix). Smart grids can therefore innovate the ways electricity is produced, managed, and consumed, and ICT applications can allow structural shifts in its consumption and sustain its supply. Digital infrastructure can lead to better exploitation of traditional infrastructure and creates numerous new business opportunities. An ever smarter energy system and a more digital infrastructure come with the price of increased vulnerability to cyber-attacks and more concerns on data protection, which have to get addressed in an appropriate manner.

[Expected Impact – what changes/opportunities do we expect from solving the issue and, if possible, brief indications of options for action]

A genuine single market in telecommunications ultimately implies the gradual removal of national barriers to cross-border competition, including different national sector regulations, different national consumer laws relating to telecommunications contracts, and, and different national conditions for allocating and assigning and using spectrum. It also implies a framework that is more consistent, stable, legally certain, competitive, with a greater degree of harmonisation which will in turn be more conducive to investment: ensuring more choice, faster broadband, including in rural areas, and better cross-border services. It should also be one where consumers can switch their Internet provider without having to face a series of barriers (early terminations fees, long contract duration, difficulty in comparing offers, lack of clear information by providers). The EU is deprived of the benefits of pan-EU strategies and scale of operations, a situation which ultimately hampers broadband investment. This set of problems concerns also differences in coverage, network availability and quality as well as the fact that resources like numbering, mobile network codes remain national.

The review should address questions of greater regulatory simplification and convergence, and of more proportionate regulation in those areas where infrastructure competition has emerged at regional or national scale.

In addition, as part of the review of the Universal Service Directive, consideration should be given to an enhanced role and wider, more equitable funding base for broadband universal service, covering the most inaccessible areas or to realise public-interest objectives (like high-capacity connectivity for schools and university/research hubs or for public protection).

On spectrum, action is needed on a number of fronts:

- to ensure harmonised radio spectrum assignment across the EU, or, as second best, a strong coordination of national allocation procedures
- to promote an efficient use of spectrum and efficient network and spectrum sharing

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10 As identified in the 2012 Commission market study on the functioning of the market for internet access and provision for a consumer perspective. Available at: http://ec.europa.eu/consumers/consumer_evidence/market_studies/internet_services/index_en.htm
11 For example, codification of existing regulatory guidance; the possibility of longer term binding regulatory cycles for market reviews (in lieu of 3-yearly review cycles); more consistent and simplified wholesale access regulation, inter alia, based on harmonised access products, including a potential reduction in number of access products adapted to all-IP, software-defined networks.
to promote rapid deployment of small cells for more capacity and more use of licence-exempt spectrum

- to ensure enhanced coordination of spectrum policies

As regards the institutional set-up, consideration should be given to models that provide for more coordination and reduce the risk of inconsistencies between national regulators. As indicated in the Commission Work Programme 2015, an evaluation of the performance of the current Regulatory Framework 2009, with a focus on regulatory fitness, is foreseen in line with the new Commission working methods, REFIT and Smart Regulation principles. It is expected to consult all categories of stakeholders, experts and the public at large through a first dedicated public consultation, which will be launched at or shortly after the time of the publication of the White Paper on the DSM Strategy (June 2015).

This consultation, in addition to interim results of certain studies, will allow the Commission to draw certain preliminary conclusions about the REFIT evaluation and about the most promising avenues for reform to meet future policy objectives. These preliminary orientations, possibly set out in a Green Paper, will be the starting point for launching a wide second consultation. This is a crucial step to build common ground for a reform that meets the level of ambition set out in the Commission Work Programme. [The main problems will be identified in this process and addressed in the eventual legislative proposals in the second half of 2016.]

3.2 Trust and Confidence

Consumer protection rules and other regulatory fragmentation in cross-border online activities

[Problem and Problem drivers (with figures and results of surveys)]

The specificities of online activities – lack of human interlocutor, no physical shop one has seen and can come back to in case of problems – may increase the threshold to engage for some people. 72% of internet users in Europe still worry that they are being asked for too much personal data online. 80% of people express concerns about using Internet for things such as online banking or buying online, up from 75% in 2013. While three quarters of Europeans in 2014 use the internet on a regular basis, only 44.1% engage in eBanking, 44.1% in e-Government and 50.2% in e-Commerce.

Therefore, special efforts are required to boost consumers’ trust in the online environment, in particular cross-border. In fact, while 61% of EU consumers (2014) feel confident about purchasing via the Internet from a retailer/provider located in their own country, only 38% feel confident about purchasing via the Internet from a vendor located in another EU country. When it comes to the actual transactions, only 16% of consumers bought online

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20 Ibidem, p. 54
21 In the latest special Eurobarometer survey – ref DG JUST
22 Eurostat, ICT survey of Households and Individuals, 2014
23 Data to be published in the next Consumer Conditions Scoreboard (September 2015)
from other EU countries in 2014, while 50% did so domestically. It is clear that the economic potential of the DSM for consumers is currently not exploited enough. EU consumers could save €11.7bn each year if they could choose from a full range of EU goods and services when shopping on line.26

Moreover, results of yearly sweeps to persistent compliance gaps in consumer markets, including for on-line practices (on average 60-80% of websites checked are found to be non-compliant)27. For example the 2012 sweep into digital content online sales showed serious irregularities in areas such as pre-contractual information.

Consumers who want to buy foreign products often simply do not get access to products and they are often faced with a refusal to sell or are re-routed to national websites. These practices can partially be attributed to discriminatory commercial practices. However, regulatory differences also create a major barrier for companies which prevents them from offering consumers access to their products. Moreover, in particular for SMEs, lack of information about the rules which would apply to cross-border sales is already a major obstacle. The most recent Commission survey28 shows that the most often cited barrier stopping retailers who currently sell on line nationally from engaging in cross-border activities is lack of knowledge about the regulatory frameworks in other Member States. The complexity of the legal framework also affects consumers’ trust in buying cross-border. Consumers therefore often do not get the desired products and/or do not enjoy the better deals offered in the Single Market.

The DSM consumer survey will provide evidence on the main reasons why consumers purchase products online, what their main concerns are when purchasing products online either domestically or cross-border, and whether shoppers are more confident purchasing online from sellers that also have a physical shop. By combining survey with clickstream data, the study will also give insights into whether consumers tend to under-report their cross-border purchases.

+ DATA FROM NEW SURVEYS – DG JUST to confirm/specify data from current consumer survey

While only 17% of SMEs in the EU sell online29 (which is already very low), only 7% of them30 sell cross-border. If we concentrate on retailers (of goods and/or services) the picture is somewhat more favourable: 41% of these businesses (2014) sell online to final consumers and 12% sell online cross border (in the EU).31 In addition, while 59% of retailers say they are confident to sell online (whether they currently sell online or not), only 31% are confident selling online to other EU countries. Among the retailers who sell online cross-border, higher risk of fraud and non-payments, differences in national contract laws, differences in national tax regulations and differences in national consumer protection rules are the most frequently

26 Reference DG GROW
26 Eurobarometer 413
27 Eurobarometer 413. Among companies that are considering starting selling their products online in another EU country not knowing the rules which have to be followed is a major problem for 31% and a minor problem for 32%. In the sample of companies that do not sell or consider selling online cross border, 29% mention it as a major problem and 25% as a minor one.
28 Eurostat, survey on ICT use by enterprises (2013)
30 Data to be published in the next Consumer Conditions Scoreboard (September 2015)
quoted obstacles to the development of cross-border sales (indicated respectively by 42.7%, 38.8%, 38.6% and 38.4% of businesses)\textsuperscript{31}. In addition, three out of the top ten major obstacles quoted by businesses trading online to consumers or interested in doing so stem from the regulatory differences related to contract law. Among these, finding out the provisions of applicable foreign contract law is the most cited\textsuperscript{32}, while the need to adapt and comply with different consumer protection rules in the foreign contract laws comes third and obtaining legal advice on foreign contract law comes sixth. Clearly, if companies are not selling across borders the benefits of the economies of scale identified above will not materialise. This can be changed: 54% of companies that are at least considering selling online cross-border reported in the most recent Commission survey\textsuperscript{33} that they would start or increase their cross-border online sales if the same rules of e-commerce would apply in all EU Member States.

ECFIN: Increased take-up of e-Commerce within the EU internal market is found to affect total factor productivity (TFP), through higher efficiency of the production process entailed by firms’ recourse to online sales, and have a price effect due to some specificities of online trade. The correspondingly simulated GDP gain from additional structural reform efforts deepening the EU internal market for e-Commerce amounts to some 0.8% over 10 years and up to 1.9% in the long-run, ranging from 0.94% in DK to 2.87% in IT. (see Lorenzani and Varga, 2014, p. 47).

The rate of growth of SMEs selling online cross-border is similar to the rate of growth of SMEs selling online. The overall proportion is stable at 40%, although the share varies significantly by sector and member state\textsuperscript{34}.

The number of firms doing e-commerce has been growing rather modestly over the past years. The expansion in the volume of online sales has been driven by increasing sales by firms already present in online markets. Average turnover per firm increased significantly in the

\textsuperscript{31} Flash Eurobarometer 396, “Retailers’ attitudes towards cross-border trade and consumer protection”, 2014. Data to be published in the next Consumer Conditions Scoreboard (September 2015)
\textsuperscript{32} Flash Eurobarometer 321 European contract law, consumer transactions 2011
\textsuperscript{33} Eurobarometer 413
\textsuperscript{34} Eurostat, survey on ICT use by enterprises (2013)
period 2010-2013. For the top 100 online retailers it went from 674 to 924 million Euro (+37%). For the top 500 online retailers, online turnover increased by 56% in the same period.35

The costs for businesses of adapting to the laws of other Member States are significant: roughly 9,000 € per business and country to export to, which for a small enterprise, including start-ups, (92% of all EU companies) which is exporting to only four other countries amounted to 17% of its average annual turnover. Therefore, the cumulative contract-law related costs incurred by companies active in cross-border B2C trade (legal, IT and translation costs) ranged between approximately €4 and €8 bn.36

The length, complexity and opacity of terms and conditions of many service providers may either discourage consumers from making online purchases, or produce harm when they are not clear about consumer rights and obligations, as well as the use of personal data. Available evidence show that when buying products and services online, the vast majority of consumers who accept terms and conditions do not read them.37 This leaves consumers in the dark about their rights, and 21% of people surveyed in the UK said that they had suffered as a result of blindly accepting online terms and conditions.38 Consumers may face unexpected situations such as geographical limitations in the use of services or large excesses they have to cover in case of damages during car hire. In particular, consumers are often left without appropriate safeguards ensuring the quality of the digital content and remedies in case of lack

36 Reference DG JUST.
37 Terms and conditions: not reading small print can mean big problems. The Guardian, 11 May 2011;
40 Terms and conditions: not reading small print can mean big problems. The Guardian, 11 May 2011
of quality. The Commission is currently investigating the stakes involved with blind acceptance of terms and conditions and what the most appropriate levers are in this field.30

Furthermore, regulatory differences are not limited to contract law: technical specifications, different labelling rules and selling arrangements require producers and traders to adapt their products and packaging as well. Many online retailers are not prepared to export to specific countries on a large scale, but they would be willing to cater to the demands of all European consumers. Consumers at the same time, understanding that products available in other Member States do not necessarily comply with their own national legislation, expect that they can purchase the products marketed on-line in other Member States as if they travelled to that Member State physically.

ENV: Recent policy evaluations of the PSI directive40 and the INSPIRE directive41 demonstrate clearly the lack of trust among public authorities regarding sharing and re-use of their data. The market size and growth of the geographic information sector shows the potential of public data as an engine for job creation. The German market for geo-information in 2007 was estimated at €1.4 billion, a 50% increase since 2000.42 In the Netherlands, the geo-sector accounted for 1500 full-time employees in 2008. Other areas such as meteorological data, legal information and business information also form the basis of steadily growing markets.

A recent study estimates the total market for public sector information in 2008 at €28 billion across the EU.43 The same study indicates that the overall economic gains from further opening up public sector information by allowing easy access are in the order of €40 billion a year for the EU27. However, the total direct and indirect economic gains from easier PSI re-use across the whole EU27 economy would be in the order of €140 billion annually.

New growing digital services such as cloud computing, although very useful for consumers and SMEs, also bring new challenges. Cloud contracts often favour the cloud service provider over the consumer and small companies as customers, for example by excluding or limiting the liability of the cloud provider if the data is no longer available or destroyed or by making it difficult to terminate the contract and recover the data stored in the cloud.44

In a single market, companies should be able to sell to customers according to a single legal framework. Several key aspects of consumer and contract law have been fully harmonised for online sales, such as pre-contractual information and the right of withdrawal.45 However, in

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30 The behavioural study on Terms and Conditions is expected to be finalised in February 2016, and should provide some initial results in June 2015.
31 Review of recent studies on PSI re-use and related market developments, G. Vickery, August 2011.
32 Assessment of the Re-use of Public Sector Information in the Geographical Information, Meteorological Information and Legal Information sectors, MICUS, December 2009.
33 Review of recent studies on PSI re-use and related market developments, G. Vickery, August 2011.
35 There are also pieces of European legislation in specific sectors that protect consumers when buying online. For instance, in the area of consumer credits, borrowers have the right to obtain standardised advertisements, pre-contractual and contractual information. If the medium does not enable full information, the creditors have to provide full information immediately after the conclusion of the contract. More generally, in all cases of distance marketing of financial services consumers have the right to receive information about the identity of the trader and about the features of the product sold before contract is concluded, and then have right to withdraw from the contract during 14 days after its conclusion (or after reception of terms and conditions).
other areas there are only minimum EU rules (for example on remedies for defective goods or unfair contract terms) or no EU rules exist at all. This leads to the existence of 28 at least partially different sets of regulations, that online shops may need to comply with. Moreover, finding out which regulation applies in which case is extremely difficult, leading to a lot of uncertainty especially for companies not specialised in cross-border sales. The Rome I Regulation provides that the applicable law is that of the country of residence of the consumer, provided that this is the country where the professional carries out his/her activities or to which his/her activities are directed. The professional may also – and in practice always does – choose to apply his/her own law, but in any case has to respect mandatory rules of the consumer’s country (such as for example the rules on unfair contract terms as well as on remedies in case of non-conformity of tangible goods with the contract) where those rules offer a higher level of protection. Also, in case of conflict, the consumer may go to the courts of his country of residence. DG GROW: This results in a discernable risk that even more specific, divergent national laws will start appearing. This fragmentation obliges businesses to learn about as well as adapt their contracts to foreign laws when they offer goods to consumers abroad.

Furthermore, regulatory differences are not limited to contract law: technical specifications, different labelling rules and selling arrangement require producers and traders to adapt their products and packaging as well. Many online retailers are not prepared to export to specific countries on a large scale, but they would be willing to cater to the demands of all European consumers. Consumers at the same time, understanding that products available in other Member States do not necessarily comply with their own national legislation, expect that they can purchase the products marketed on-line in other Member States as if they travelled to that Member State physically.

To be certain of its legal position in relation to sales to 28 Member States, an online shop must therefore be aware of 28 consumer protection legislations. This situation creates prohibitive information and compliance costs for many online traders, especially for SMEs, in particular when the value of the transaction remains low. Adding up only costs related to contract law differences, the costs suffered by businesses when they sell to consumers in other EU countries is between €1bn and €8bn. These costs are of course heavier for smaller businesses interested in exports. For instance, for micro-enterprises (92% of all EU companies) exporting only to four other Member States, the resulting costs represent almost 17% of their average annual turnover.

In addition, the case of digital content products, there are no EU rules at all regarding remedies for non-conformity with the contract.

Moreover, there are different rules for non-contractual issues such as product labelling and legal requirements regarding cooperation with law enforcement authorities.

New data from enterprise and consumer survey coming soon especially for this section

The borderless nature of digital technologies poses also new challenges for the enforcement of consumers’ rights. Results of yearly sweeps point to persistent compliance gaps in consumer markets, including for on-line practices (on average 60-80% of websites checked are found to...

46 Reference DG GROW
be non-compliant. For example the 2012 sweep into digital content online sales showed serious irregularities in areas such as pre-contractual information.

Whilst consumer rights are based on nationally implemented legislation, big players in the online world implement similar business models at global level. Problems occurring in several Member States can therefore be more efficiently addressed through common action of all Member States closely coordinated at EU level. Calls have been made to strengthen enforcement capacity at the EU level so as to increase legal certainty, reduce compliance costs and prevent certain traders from playing on inconsistencies in the Single Market.

When the consumers encounter problems when buying goods or services in the Single Market (the resulting financial losses of which has been estimated at 0.4% of the EU’s GDP), it is important that they should be able to seek and obtain redress. Yet when disputes arise with traders, cross-border proceedings can be disproportionately costly and lengthy for the average online transaction. Even when the consumer obtains a judgment in his/her favour, he/she may not be able to effectively enforce it against the trader. At the same time, the possibility of litigation in foreign courts and, even more, differences in the laws applicable to the contract also lead certain businesses to refrain from engaging in cross-border online activities.

Resolving complaints and disputes across the border is too expensive for firms as well. Around 20% of firms engaged in cross-border e-commerce declare this issue to be a major problem, affecting particularly micro firms (1-9 employees).

[Current situation in Europe. Is there European regulation? Policy steps taken so far etc. and need for addressing at European level]

EU rules on online and digital purchases

While the Consumer Rights Directive has fully harmonised certain rules for online sales and provision of digital content (pre-contractual information and right of withdrawal), no EU rules for online sales exist to protect consumers against defective digital content and only minimum harmonised rules cover online purchase of defective tangible goods. Furthermore, for both types of products there are minimum requirements on unfair terms. In contrast, the Consumer Rights Directive that is applied since June 2014 has fully harmonised certain rules for online sales and provision of digital content (namely pre-contractual information and right of withdrawal). The Commission had adopted in 2011 a proposal for a Common European Sales Law putting forward a self-standing common set of rules that consumers and businesses could choose as applicable law for their cross-border transactions, but the proposal did not find a majority in Council.

Article 34 of the Treaty prohibits quantitative restrictions on the import of goods and all measures having equivalent effect shall be prohibited between Member States. This provision, however, does not preclude Member States from applying additional national labelling requirements or requiring certain product specifications. These national restrictions have existed in offline trade, but cross-border sales to consumers were rather limited before the Internet. In online trade this problem is exacerbated since the EU legislation has not been

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47 http://ec.europa.eu/consumers/enforcement/sweeps/index_en.htm
48 http://ec.europa.eu/consumers/enforcement/cross-
border_enforcement_cooperation/docs/140703_commission_report_epc_reg_en.pdf
49 JRC/ITPS calculations with data from Flash Eurobarometer 413
updated to meet the demand of online consumers to have access to all goods available in any given Member States.

For tangible goods, the Consumer Sales Directive (CSD) harmonises the notion of conformity with the contract and the remedies in case of delivery of defective goods. However, the CSD is a minimum harmonisation directive and a number of Member States have implementation laws or case-law going beyond its standards. Equally for both tangible goods and digital content products, the Unfair Contract Terms Directive (UCTD) provides a protection against unfair contractual clauses. The UCTD is a principle-based instrument, which calls for a case-by-case assessment by the relevant courts or enforcement authorities. It entails minimum harmonisation which means that Member States can impose stricter requirements which go beyond its minimum standards.

Therefore, under the current legal framework for tangible goods businesses are faced with diverging national laws regulating online sales contracts. This fragmentation can oblige businesses to learn about as well as adapt their contracts and business models to foreign laws when they offer goods to consumers abroad. In addition, regulatory differences are not limited to contract law: technical specifications, different labelling rules and selling arrangement require producers and traders to adapt their products and packaging as well.

For digital content products (e.g. web-streamed music or movies or sport events broadcast over the internet) national contract laws apply, but the relevant rights and obligations as well as the remedies differ. This is not only because the different national laws diverge, but also because the relevant contracts for the supply (e.g. download or streaming) of such products are qualified differently in the Member States. Some Member States are applying the rules on service contracts, others those on rental contracts and again others those on sales contracts. This complex legal situation leads to real or perceived legal uncertainty which further discourages businesses from going cross-border. In addition, there is a discernible risk that specific, divergent national laws are appearing. For instance, the United Kingdom recently proposed new rules on the quality of and the corresponding remedies for all digital content products. The Netherlands also proposed rules on conformity and remedies, but intends to apply these rules only to certain categories of digital content, thereby excluding on-line services such as news- and movie subscriptions and sport events.

In addition, consumers of digital content products are often faced with unbalanced contracts. Digital content products are sold as off-the-shelf products on the basis of non-negotiable contracts, i.e. the user can influence neither the product features nor the contract clauses. These existing contracts contain many contract clauses which could not be subject to challenge in court on the basis of the UCTD as they may be found to be below the level of the 'unfairness threshold' of the UCTD. Nevertheless they put potential risks and losses on the shoulders of the user and favour unilaterally the supplier. They thereby increase the users' detriment and reduce their trust.

Enforcement of consumer legislation

To ensure an equal enforcement of consumer legislation across the EU, the Consumer Protection Regulation (2006/2004 EC) requires national consumer authorities to cooperate to stop infringements that harm collective interests of consumers and which have a cross border dimension. Every year this network carries screening of e-commerce websites in a given sector (the "sweeps") to check their compliance to consumer legislation and request the infringing ones to be put in conformity (more than 3000 websites have been corrected since
2007). This network is also tackling issues of common interest at the EU level and screens online malpractices carried out across the EU so as to address them directly with the operators concerned. In 2014, for example, it tackled the misleading marketing of online games as "free" and the fact that default payment setting were insufficient to ensure the explicit consent of consumers to purchase. This action resulted in a significant change of practices by major internet platforms and was considered as an efficient and pragmatic model by the business sector and by national authorities.

In view of the twin challenge of globalisation and digitisation, there is a need to increase the rapidity, agility and efficiency of enforcement to support the effectiveness of the consumer rules for on-line and digital purchases. Such enforcement must also cover other actions such as the safety of products sold online.50

Consumer advice and redress

The European Consumer programme, together with national consumer authorities, funds the Network of European Consumer Centres so that individual consumers can get information and assistance for their cross border purchases. This network, active since 2005 and now counting an office in the 28 EU member States, Norway and Iceland, help solve in an amicable manner more than 35000 complaints per year.

The implementation of the legislation on Alternative Dispute Resolution (ADR) and the launch, in January 2016, of the Online Dispute Resolution (ODR) platform will increase consumer’s and trader’s confidence in trading online and cross-border since they will have at their disposal effective remedies in place in case things go wrong. The Directive on consumer ADR makes sure that quality ADR entities are available in virtually every business sector. The Regulation on consumer ODR provides for the establishment of an EU-wide ODR platform to facilitate the online resolution of disputes between consumers and traders over online transactions.

Expected Impact – what changes/opportunities do we expect from solving the issue and, if possible, brief indications of options for action

Addressing regulatory fragmentation ambitiously will result in a strengthened Internal Market, more competitive European e-commerce companies and overall stronger competition. This would deliver significantly broader choice and lower prices to European consumers. Different options could be envisaged for such a result including full harmonisation, setting certain core consumer rights, allowing traders to use their national law for the transaction or developing a model contract as a practical tool. A mixed approach building on these options could preserve a high level of consumer protection while allowing companies to use a single, simple regulatory framework.

Increasing the protection of consumers in the online environment, in particular for the sale of digital content products would contribute to enhancing consumer trust allowing them to enjoy products from anywhere in the EU.

The expected impact of the initiative offering both consumers and businesses modern and simple rules for online and digital purchases, is to do away with legal fragmentation in the

50 As per the Multi-Annual plan for Market Surveillance 2013-2015
DSM, to ensure that consumers are adequately protected and that business benefits from a level playing field.

The initiative will help businesses and consumers to take full advantage of the DSM by reducing the effects of legal fragmentation. Additional transaction costs and legal uncertainty for businesses caused by differences between national contract laws would be reduced; cross-border competition would be increased consumer confidence in the DSM would be increased and consumers and SMEs would be less reluctant to engage in cross-border transactions.

The initiative will help to build up trust in the DSM. Unbalanced terms and conditions for transactions concluded in the market for digital products due to a lack of adequate legal safeguards and clear remedies would be reduced. Ultimately users would be less reluctant to access and take advantage of the benefits of digital content products especially when offered in a cloud environment.

To achieve the objectives mentioned above the proposal should cover both tangible goods (e.g. televisions, clothes, DVDs, CDs) and digital content products (e.g. downloaded and streamed music and software) supplied online. It may cover both B2B and B2C transactions.

Several options could be envisaged subject to an assessment in the Impact Assessment which will accompany the proposal:

- A fully harmonised set of rules via a Directive or a Regulation
- A minimum harmonisation approach allowing Member States to go beyond the rules adopted
- Offering traders the possibility to opt for trading on the basis of their domestic law ("home option"). This will lead to traders being able to market their products on the basis of their own law and for consumers to "virtually move" to shop in another MS.
- A mixed approach with a regulatory European model contract that businesses and consumers can use for their cross-border transactions while for issues, which are not foreseen in the contract, the law of the trader would apply. SMEs would be able to download from the web a model contract, available in all EU languages, where they would simply have to introduce the details of the transaction, mainly quantity and identification of the goods, price, delivery place and time. They could then rely on the basis of this European model contract to consumers in all EU countries, without having to comply with the different mandatory laws of the consumers' countries. The European model contract would be succinct in order to be practicable. This would mean for instance all general contract law issues like conclusion of contract and more details of some of the core rules in the European model contract, e.g. detailed rules on damages, prescription or restitution in case of termination, while the European model contract would contain only the most important rules in these areas. For consumers, the advantage would be to have a sufficiently high standard to create trust in the internal market. It would not be an accumulation of the highest levels of national consumer protection standards because using this EMC would not be economically reasonable. It would however have an equal or higher level than the existing minimum harmonisation rules in order to re-assure the consumer and create consumer trust. Many rules in the European model contract would be mandatory, i.e. could not be changed by the parties but there could also be some default
rules applying if parties do not agree otherwise. If the parties do not use this European model contract, the present status quo on the basis of the Rome I Regulation would apply.

- The European model contract, which could be symbolized by a kind of EU logo, could consist in a EU set of terms and conditions safeguarding consumers' rights for cross border digital transactions. A behavioural study on the information notice for the Common European Sales Law came to the conclusion that significantly more consumers trusted in this European solution compared to a national law suggested by the trader as the applicable law.

- A mixed approach consisting of a set of mandatory consumer rights (above the minimum harmonised level) that businesses and consumers should use in order to be able to apply the law of the trader beyond these rights. The trader should on the website provide information about these rights to consumers. This regulatory framework could, in order to facilitate selling across border in particular for SMEs, be complemented by a voluntary model contract which would include these consumer rights and other elements of a contract. This tool could be provided in all EU languages, and could be updated based on experience of its application.

- The options above include sub-options as to the scope of the regulatory barriers addressed.
  
  a. the application of the trader's law can be limited to contract law, or
  
  b. the application of the trader's law could include regulatory differences beyond contract law, such as technical specifications, labelling.

As for the **Alternative Dispute Resolution (ADR) and Online Dispute Resolution (ODR)**, its implementation will benefit traders by saving on costly court proceedings, maintaining their business reputation and good customer relations. The new legislation is also expected to encourage traders to open up their business to consumers from other EU Member States.

In addition, the **European Small Claims Procedure** gives parties easy access to cross-border simplified court procedures. This procedure is currently being revised in order to make the procedure available also for SME's (by raising the threshold of the claims which fall within the scope of this procedure from EUR 2,000 to EUR 10,000) and to modernize the procedure bringing it in line with 21st century justice (by improving the use of electronic means (e.g. videoconferencing for carrying out oral hearings, electronic service of documents, distance means of payment of court fees). This should reduce the costs and length of cross-border proceedings.

In the EU, the private international law rules on determining jurisdiction and applicable law have been harmonised, leading to increased certainty and predictability for both traders and consumers. In B2B contracts, parties are free to choose the law applicable to their contract. In B2C contracts, consumers who are directly targeted by traders in other countries are protected in that they are guaranteed the level of protection which they would receive had they shopped in the physical world. However, evidence shows that the existing rules and their implementation in the DSM are not sufficiently known by both traders and consumers. Therefore, a **Communication on applicable law and jurisdiction in the DSM** will be adopted in order to give both a political and practical overview of the EU private international law rules which play a key role in boosting legal certainty and trust in the DSM, in particular
by providing guidance on their application in key situations. The Communication should analyse new emerging business practices and technologies and give guidance as to the application of the existing rules. Together with new contract rules for the purchase of digital content and tangible goods online, this communication should establish a clear legal framework for buying and selling in a European digital market. It will assist in removing any legal uncertainties which may exist both on the part of traders and consumers and which may constitute an obstacle to cross-border digital trade.

At the same time, the enforcement of consumer rights is of paramount importance to ensure that consumers engage with the DSM. In this context it is planned to review the Consumer Protection Regulation by spring 2016 so as to make it more fit to the DSM. The coverage of this Regulation could be extended to cover Article 20 of the Service Directive on non-discrimination as well as the Digital Contracts instrument, so as to offer these laws a proper and efficient cross-border enforcement mechanism. It is also planned to introduce additional powers for Member States to tackle infringements related to e-commerce made by companies active in several countries whatever their business model (through agents, branches, subsidiaries, franchisees, or only online media) as well as short lived infringements (e.g. a few months online misleading publicity campaign). National authorities should also be allowed to request information from various operators facilitating online trade (domain name registries, e-commerce platforms, social media platforms, telecom operators, payment services) and impose interim measures on a website. A unique procedure to tackle widespread online infringement (i.e. covering more than 2 countries and meeting some criteria such as amount of estimated harm) could also be designed as well as a strengthened online market monitoring systems (possibility for various organisations to post alerts, coordination of national monitoring plans, auditing/benchmarking of MS capacities). Impact assessment studies are currently being carried out to assess these possible policy measures.

Finally, it is also planned to increase informal international cooperation in the field of enforcement of consumer legislation so as to coordinate Member States work within the informal international network of enforcement agency ICPEN and OECD and to participate to the newly set ICANN consumer safety group.

To make it easier for businesses to go online, the Commission is planning to develop a toolkit for companies with all legal requirements regarding consumer rights that any cross-border on line business needs to respect in the EU under a European Parliament funded pilot project. This can become relevant in providing practical input for businesses that go online.

Data protection and other fundamental rights

Problem and Problem drivers with figures and results of surveys

Citizens' trust is also undermined by concerns around fundamental rights, in particular data protection, in the digital environment. These difficulties stem from the sheer volume of data collected every day, and the fact that citizens are often not adequately informed that their data are collected, what happens to their personal data, for what purpose and/or whether previously collected data is reused with a different aim, potentially by new users. Although many
Europeans consider that disclosure of personal data is increasingly a part of modern life, they feel they are not in control of their data. A large majority of Europeans (74%) would like to give their specific approval before the collection and processing of their personal data. Moreover, trust in Internet companies is low. Only 22% of Europeans have full trust in companies such as search engines, social networking sites and e-mail services. This feeling is exacerbated by the large number of personal data breaches and frequent identity theft and usurpations incidents, but also by potential discriminatory treatments following profiling based on collected personal data. Citizens are not properly informed of what happens to their personal information, to whom it is transmitted and for what purposes.

Data protection worries are also relevant for firms. Firms concern about data protection are a major problem for cross-border transactions, especially for purchases, and particularly for firms trying or considering buying online across the border affecting 30% of firms in such a circumstance. These data protection issues are more likely to be a problem when firms are dealing with other firms than when they do with consumers.

The ongoing data protection reform addresses these concerns and needs to be adopted as a matter of urgency.

On the other hand, a social change is already taking place where citizens become more active in collecting and sharing information. "Citizen science" and citizens' observatories in particular provide civil society with alternative ways of acting by harnessing the collaborative power of new ICT means to collect information (e.g. about their environment) and participate in decision-making. This could lead to social innovation, business creation and contribute to more transparency in governance.

[Current situation in Europe. Is there European regulation? Policy steps taken so far etc. and need for addressing at European level]

The Data Protection Directive was adopted in 1995. Twenty years ago, many digital concepts affecting personal data had different meaning or did not exist at all. Meanwhile, enforcement of data protection rules across the EU was inconsistent. Moreover, the Directive is not clear on whether an individual is protected when his personal data are being processed by a company or public authority established or based outside the EU. Businesses are facing serious problems too in this environment. They are faced with varied and sometimes even inconsistent data protection requirements, due to different national laws on data protection. To sum up, the current rules are outdated, often limited to national borders and thus not in line with the economic and social realities. That is why the Commission's proposal a reform of EU data protection rules. A single law would do away with the current fragmentation and reduce administrative burdens and costs. The Commission therefore proposed a Reform of the

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51 See Special Eurobarometer 359 – Attitudes on Data Protection and Electronic Identity in the European Union, June 2011, p. 23
52 Ibidem, p. 148
53 Ibidem, p. 2
54 JRC/IPTS calculations with data from Flash Eurobarometer 413
55 Proposal for a Regulation of the European Parliament and of the Council on the protection of individuals with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation), [COM(2012) 11 final]
EU data protection, in particular a proposal for a General Data Protection Regulation[56] that will strengthen data protection principles, update and modernise the EU data protection rules, in order to make fundamental rights in relation to the processing of personal data effective and ensure the free flow of data within the Union.

As it was stated in the President Juncker’s mission letter to Guenther Oettinger, Commissioner for Digital Economy and Society, the adoption of the Data Protection Reform should be followed by a reform of the e-Privacy Directive. The revised e-Privacy Directive should be prepared in co-operation between Commissioner Oettinger and Vice-President Ansip and with the support of the Commissioner Jourová.

The ePrivacy Directive is lex specialis regarding the current Data protection Directive. The two instruments must work coherently together. The review of the data protection Directive will require subsequent assessment of changes to the ePrivacy Directive.


In addition to the above, the review will address other issues of substance and scope. Indeed, most of the articles of the current ePrivacy Directive apply to providers of electronic communications services (ECS), i.e. traditional telecom companies only. Information society service providers using the web to provide communication services are thus excluded from its scope. Exemptions from a number of provisions should also be considered, e.g. for research purposes (notably health research).

ENV: The Directive on access to environmental information[57] and the INSPIRE Directive provide for restrictions on the flow of online data, however these limits, are deemed to serve a higher interest so it can be concluded that access has its limits in a well-functioning framework, where public and private interest is balanced.

More generally, there is a need to establish more effective safeguards for ensuring respect, in the online environment, for fundamental rights as enshrined in the EU Charter of fundamental rights.

[Expected Impact – what changes/opportunities do we expect from solving the issue and, if possible, brief indications of options for action]

The General Data Protection Regulation will put an end to the patchwork implementation across the Member States and will provide a simplified, streamlined and directly applicable regulatory framework. It will equip individuals with a new set of rights fit for Digital Age, such as the “right to be forgotten”, the right to data portability and the right to be informed when the security of personal data is breached. The latter should in particular increase individuals’ trust in digital services. The Regulation protects individuals in respect of all companies that offer their services on the European market and introduces the concept of “data protection by design” and “by default”, which means that the default settings should

[56] Proposal for a Regulation of the European Parliament and of the Council on the protection of individuals with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation), COM (2012) 11 final
[57] Directive 2003/4/EC on access to environmental information

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implement the principle of data minimisation so that only personal data which are necessary for the specific purpose will be processed. Data controllers will also have an obligation to carry out data protection impact assessments for high risk processing.

The Regulation also introduces a one-stop shop system for data protection in the European Union, meaning that only one supervisory authority enforces compliance of a business in cross-border cases, regardless of how many countries the business may be active in. Through the risk based approach, it pairs flexibility with effective protection, so that obligations of data controllers/processors must take into account in particular the likelihood and severity of risks for the rights and freedoms of individuals posed by specific processing. Furthermore, it improves cooperation between the supervisory authorities across the Union and provides strengthened and harmonised powers of national supervisory authorities. Finally, as regards the international transfers of personal data, the Regulation clarifies and streamlines rules on international transfers, in particular on criteria for decisions on adequacy and for transfers by way of appropriate safeguards.

Cybercrime

[Problem and Problem drivers (with figures and results of surveys)]

Cybercrime\(^{38}\) is a borderless problem and a threat to citizens' fundamental rights and to our economy. Offences (for instance data interception, child pornography, online payment fraud, identity theft) involve unlawful processing of personal data and gross privacy violations therefore increased security and effective law enforcement are necessary means to safeguard privacy.\(^{39}\)

Whilst the value of the cybercriminal economy as a whole is not precisely known, the losses are thought to represent billions of euros per year. Recent studies highlight how cyber attacks cause economic and productivity losses and generate unpredictable additional costs related for instance to malware cleanup, investigation and post-incident management. Furthermore, companies may not recover from all cyber-attacks: data loss or theft of trade secrets can prove fatal for industries that rely heavily on the quality and secrecy of their manufacturing. Many companies will also have to address their loss of credibility and market positioning.

The scale of the problem is itself a threat to law enforcement response capability – with more than 150,000 viruses and other types of malicious code in circulation and a million people victims of cybercrime every day.

A Eurobarometer\(^{40}\) on cyber-security survey published in February 2015 shows that Internet users in the EU remain very concerned about cybercrime. Specifically, 85% of Internet users across the EU agree that the risk of becoming a victim of cybercrime is increasing (a 9% increase from a similar study in 2013). The levels of concern about each specific type of cybercrime (e.g. identity theft; hacking of email/social media account; being a victim of bank card or online banking fraud) are also considerably higher than in 2013.

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\(^{38}\) Cybercrime definition used in the EU Cybersecurity Strategy to be inserted

\(^{39}\) See European Court of Human Rights, case K.U. v. Finland (Application no. 2872/02), of 02/03/2009

\(^{40}\) http://ec.europa.eu/public_opinion/archives/eb_special_459_420_en.htm#423
The fear of cybercrime is a fundamental barrier, still holding many people from fully engaging in online activities, for example online payments and online banking. There is ample evidence that the risk itself as well as the perceived risk of becoming a victim of online virus, targeted scams or phishing, are on the rise, as more and more people and activities are moving online and as criminal modus operandi are getting more and more sophisticated.

According to a recent survey by the World Economic Forum (WEF), if businesses and governments do not develop adequate defence policies, and if they do not do so quickly, economic losses caused by cyber attacks could reach 3,000 billion dollars by 2020.61

Cybercrime that is primarily driven by economic incentives includes several types of crimes suffered by organizations and individuals. According to the PWC 2014 Global Economic Crime Survey, one of the most salient problems linked to online economic crime is intellectual property theft62. Both authors and victims of online economic crime can be public or private entities: a report from The Economist's Intelligence unit63 suggests that a significant part of online economic crime linked to IP infringement (whose scope also includes trade secrets) is state-sponsored. A policy against online economic crime must therefore include both a redress toolbox for rights holders, and relevant measures to protect network and information systems.

IP infringements on a commercial scale have progressively increased in recent years and dissuade investments in innovation and creativity. A study from the OECD estimates the global cost for counterfeiting and piracy amounted to $250 billion in 200764. Another study by RAND Europe on behalf of the Commission suggests the annual figure varies from $200 billion to $60065 billion globally. In addition EU businesses and consumers suffer from growing infiltration of illicit and IP-infringing products and services into legitimate supply chains and consumer markets. Innovators, in particular SMEs, are often dissuaded from defending their IP due to high costs (e.g. ranging from €200,000 in Spain or France to €1,5 million in the UK66 per action) and complex/lengthy litigation proceedings.

Despite acknowledging the general increase of cross-border IPR infringements, the majority of stakeholders do not launch proceedings concerning such infringements that occurred in another Member State or in several Member States (only 6% of the respondents to the Commission's 2013 online consultation did so). A few of them recognized the possibility to consolidate claims raised in one jurisdiction.

[Current situation in Europe. Is there European regulation? Policy steps taken so far etc. and need for addressing at European level?]

Given the development of cybercrime in recent years, the European Commission has designed a coordinated policy in close co-operation with European Union (EU) Member States and the

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63 The Economist Intelligence Unit/Booz Allen and Hamilton, Cyber Theft of Intellectual Property (2012)
64 OECD (2009)
65 RAND Europe, Measuring IPR infringements in the internal market – Development of a new approach to estimating the impact of infringements on sales (2012)
66 WIPO Magazine (2010)
other EU institutions on issues such as attacks against information systems, online offensive material and child pornography, online privacy, and online fraud and counterfeiting.

The Directive on Attacks against Information Systems\(^\text{67}\) was adopted in 2013 to deal with the growing number of large-scale cyberattacks against businesses and also government organisations. It includes the penalisation of illegal access, system interference and data interference, introduces new offences and improves cooperation among law enforcement agencies at EU level.

At operational level, the European Cybercrime Centre (EC3) was officially launched on 11 January 2013 in order to boost law enforcement cooperation. Hosted by Europol, the Centre serves as the European cybercrime information focal point; pools European cybercrime expertise to support Member States; and provides support to Member States' cybercrime investigations. Further functions of the Centre will include the strengthening of forensic law enforcement capabilities for cybercrime investigations, and better cooperation between relevant agencies, including Europol, Eurojust, CEPOD and ENISA.

The Commission started assessing the transposition of the 2001 Framework Decision on combating fraud and counterfeiting of non-cash means of payment.\(^\text{68}\) Member States were requested to communicate implementation measures in a consolidated way and on the basis of the information received, it will be possible to determine the adequate way forward, leading or not to a revision of the current rules. In this context due consideration will need to be given to the phenomenon of virtual currencies.

Proposal 2013/0027 for a directive concerning measures to ensure a high common level of network and information security seeks to reinforce the CII (critical information infrastructure protection) in order to ensure trust and security in the internal market. Under this directive, intermediaries (internet service enablers, public administration, and critical infrastructure operators) would have to notify cyber attacks (most of which are driven by economic considerations) to a competent national authority. This should obviously assist in reducing cybercrime/ malware diffusion etc and would therefore provide the DSM a more trustworthy network on which to expand upon.

The Directive on the enforcement of intellectual property rights (IPRED. 2004/48/EC) requires all Member States to apply effective, dissuasive and proportionate civil remedies and penalties against those engaged in IPR infringing behaviour. It sought to ensure that all Member States have a similar set of civil measures, procedures and remedies available for rights holders to defend their IPR. This includes the possibility for injunctive relief by intermediaries whose services are being used by a third party to infringe the rights holder's IPR.

However, and according to a 2010 report on the application of IPRED\(^\text{69}\), the conditions and procedures relating to the application of such injunctions are not harmonized but left to the national law of the Member States and fragmentation remains. In order to avoid this


deficiency in the current legal framework, right holders have called for an initiative at EU level in their responses to a 2013 online consultation by the Commission\(^{30}\), which would facilitate cross-border measures (i.e. against intermediaries), consolidation of claims and automatic enforcement of specific injunctions/judicial decisions issued in one Member State throughout the European Union (either directly or in expedited court procedure).

The **proposed directive on the protection of** undisclosed know-how and business information (trade secrets), against their unlawful acquisition will ensure more feasible cross-border civil redress against such misappropriation of IP which is a recognised form of unfair competition. Since for a trade secret to be recognised its owner must have taken steps to keep it confidential, the implementation of this directive should also encourage companies to put in place internal security systems including cyber security systems that should again reduce the possibilities for economic cybercrime. This is currently in discussion within the EP.

**[Expected Impact – what changes/opportunities do we expect from solving the issue and, if possible, brief indications of options for action]**

Creating a risk-free environment is not possible. The DSM should offer EU citizens the same level of safety and the same expectations in online dealings that they have in their day-to-day offline life.

To achieve this goal, we need to step up our response, by enabling effective investigations and prosecutions thereby sending a strong signal to cybercriminals that the Internet is no risk-free environment for them either.

This is only possible if (i) legislation is in place and (ii) sufficient (human and financial) resources are invested in fighting cybercrime both at national and at EU level. Cybercrime investigations require very efficient cross-border cooperation and highly-skilled law enforcement staff.

Future actions will also be determined on the basis of the priorities identified under the European Agenda for Security.

It is clear that the conditions for access to data stored in the cloud as well as the criteria for determining the applicable law for law enforcement purposes will need to be clarified. The EU needs to adopt a consistent approach on applicable law and jurisdiction throughout all initiatives related to data stored and accessed over the Internet, be it for data protection purposes or for accessing evidence in the context of targeted criminal investigations. It is fundamental that any new rules in this respect do not prevent law enforcement authorities from doing their job effectively, on the contrary. Let’s keep in mind that the biggest threat to privacy rights and to the smooth functioning of the digital internal market comes from criminal activities, which can only be countered through effective law enforcement.

In light of the evolution of commercial scale IP infringing behaviour, the Commission highlighted in recently adopted **Action plan** \(^{1}\) that it would seek with the MS to re-orientate its policy for IP enforcement towards a better compliance of IP rights by all economic actors. Rather than penalizing the citizen for infringing – often unknowingly – IP rights, the non-legislative actions set out in this Action Plan pave the way towards a *follow the money*

\(^{30}\) Synthesis of the Responses, "Civil enforcement of intellectual property rights: public consultation on the efficiency of proceedings and accessibility of measures" (2013, July)
approach”, seeking to deprive commercial scale infringers of the revenue flows that draw them into such activities.

Therefore, and in order to establish a coherent and comprehensive framework of action against online economic crime, two additional elements of IP enforcement could become important building blocks of the DSM, and would play a key role in improving trust and security of IP intensive businesses.

(1) a “fair” DSM where all economic agents (not only ISPs) apply due diligence principles in their value chain - thus ensuring compliance and enforcement on the internet. This could be encouraged by clarifying existing injunctive provisions in the IPRED directive. On the basis of Article 11 of IPRED - which already opens the possibility to seek injunctive relief but form intermediaries, the aim would be to encourage due diligence to be applied by all (on-line and off-line) intermediaries as a means to avoid commercial scale infringing. This would fulfill the “follow the money approach to IP enforcement.

(2) a “secure” and therefore “fair” EU network on which to build the DSM that could be achieved by the adoption of a revised 2013/0027 proposal. This might include placing commercial scale on-line intellectual property/major economic cybercrime infringements in the scope of the circumstances that the selected network essential service providers would have to notify to public authorities responsible for the security of critical infrastructures.

(3) a “fair” and proportionate cross-broader redress toolbox in order to protect their investments in innovation and more generally their growth strategies in the digital market place, behaviour. This follow the money approach to IP enforcement would provide for better respect of IP rights in the DSM allowing it to grow further and be characterised by new innovative entrants.

Trust between businesses and data platform providers

Providers of digital platform become more and more important actors in the value chain, but businesses are far from considering them as a strategic partner. The issues of ownership of data and access to industrial data are currently solved mainly through ad-hoc contractual arrangements: when there is no law, the contract is the law. This scenario put businesses and specially SMEs in a weak position, due to their weak negotiation power.

The digital integration of manufacturing, based on automated communication between machines (M2M communications) and between machines and the object being processed, relies on communication protocols and data formats. In this prospective the proper functioning of the partnership with data platform providers should be assured by avoiding any monopolistic position on communication protocols and data.

A possible action could be develop EU standards for communication protocols and data formats, following an integrated approach covering all steps along the industrial value chain, from design, manufacturing, M2M communications, quality control, industrial data storage and processing.
Online Intermediaries

(Problem and Problem drivers (with figures and results of surveys))

[Need for introductory paragraph setting the scene: importance for growth of digital economy that intermediaries should not be liable for the content that they hold in their systems, provided they do not change or take ownership of it. At the same time need to ensure that when illegal content is identified, intermediaries take effective action to remove it, whether it be information that is against the public interest (terrorism/child pornography) or information that infringes the rights of others (e.g. copyright, etc.). Importance of this principle for security and trust in the DSM. Lack of transparency in the process and differences in national practices also impedes enforcement (with detrimental effect on the fight against online crime) and undermines confidence in the online world. Growing nature of the problem as online activity grows. Any figures/data, e.g. from previous IA? Lack of legal certainty also undermines intermediaries' and other service providers willingness to develop new services, particular on a cross-border basis.]

[As regards notice-and-action, on 4 June 2012, the European Commission launched a public consultation on procedures for notifying and acting on illegal content hosted by online intermediaries. In total, 1060 responses were submitted. Commission services have also conducted a complete Impact Assessment.]

Moreover, in 2010 a public consultation on e-commerce was conducted; two main studies on the economic impact of the e-Commerce Directive and on the liability of Internet intermediaries and a study on the transposition of the liability exemptions regime in all Member States are available.]

[Current situation in Europe. Is there European regulation? Policy steps taken so far etc. and need for addressing at European level]

One of the key elements of the e-Commerce Directive (2000/31/EC), and one that has underpinned the development of the internet in Europe, is the principle that intermediary service providers (ISPs) are not liable for the content of 'illegal' information that they transmit, cache or host, provided that they do not modify the information or have actual knowledge of its illegality and act expeditiously to remove or disable access on becoming aware of it. This exemption from liability is sometimes referred to as the "mere conduit" exemption.

The intermediaries' exemption under the e-Commerce Directive and the conditional liability regime that results are generally seen to have remained relevant despite technological and market developments since its adoption and as having provided the legal certainty needed to allow Internet-based services to evolve. However, the current procedural rules for dealing with illegal content by hosting providers are unclear, due to a highly diverse approach to implementation of the e-Commerce Directive rules, leading to a patchwork of different regimes across all 28 Member States. In the current situation, the removal of illegal content can be slow and complicated. There is also a lack of transparency on individual intermediaries' procedures and practices when taking down content. At the same time there are also strong indications that the current uncertainty leads to a significant amount of unjustified take-downs which adversely affects the freedom of expression and the freedom to conduct a business on-line. [Data/evidence-base?]
The EU legal framework on the liability of online intermediaries is complemented by the legislative framework for civil IPR enforcement (Directive 2004/48) covering all on-line and off-line intermediaries including ISPs as well as the injunctive relief provisions provided in the copyright directive (Directive 2001/29) solely for on-line service providers. The differences in implementation of these provisions in the Member States, with their differing national jurisprudence on tort and unfair commercial practices have not allowed for effective enforcement on the internet across the borders of the internal market. This was recognised in the results of the public consultation on IPRED undertaken in July 2013\(^{13}\) where the lack of clarity of the role of intermediaries in assisting in enforcement of IPR and the difficulties to get injunctive relief from intermediaries across the Union against on-line commercial scale infringers was highlighted.

In particular, stakeholders have expressed the view that the current fragmentation and legal uncertainty have rendered the protection of property rights inefficient and are having a detrimental effect on the fight against online crime, including in areas such as the fight against hate-speech and child pornography.

[There is also a question as to where the dividing line should be drawn between passive use of content by intermediaries, benefiting from the liability exemption, and activities which involve use of the content in such as way as to stay outside the scope of the exemption. Some players in the digital economy (platforms and aggregators) might be regarded as no longer having a genuinely neutral role in relation to the content they host because they run activities that are not limited to a "mere conduit" or storage of information.]

There are therefore calls from public authorities, law enforcement and the IPR / copyright community to re-balance the rights and obligations of online intermediaries and other actors as regards illegal or harmful content. The question is whether to enhance the overall level of protection from harmful material by requiring a more rigorous and harmonised implementation and enforcement of the conditions allowing online intermediaries to benefit from the liability exemption or whether also require intermediaries to exercise greater responsibility and due diligence\(^{22}\) in the way they manage their networks and systems, in a context of due process and legal oversight, so as to improve their resilience against the propagation of illegal content and increase transparency and thereby confidence in the online environment.

[Therefore, the Commission's proposal for a Directive on Network and Information Security added an obligation on ISPs to report incidents having a significant impact on the security of the core services they provide. Ideally, there should even be an obligation for ISPs to report serious incidents of a suspected criminal nature to law enforcement authorities. However, the proposed provision in the NIS Directive has not made so far its way through the decision-making process.]

\(^{13}\) http://ec.europa.eu/internal_market/consultations/2012/intellectual-property-rights_en.htm

\(^{22}\) Article 15 of the e-Commerce Directive bans the imposition by Member States of a general obligation to monitor content. On the other hand, following its Recital 48, the e-Commerce Directive does not affect the possibility for Member States of requiring hosting service providers to apply duties of care, which can reasonably be expected from them and which are specified by national law, in order to detect and prevent certain types of illegal activities. Finally, Article 16 encourages the drawing up of codes of conduct at Community level (involving associations or organisations representing consumers) to contribute to the proper implementation of the Directive. At national level, some self-regulatory initiatives have taken place with diverging results, especially as regards protection of minors (hotlines), in the framework of Directive 2011/92/EU.
[Expected Impact – what changes/opportunities do we expect from solving the issue and, if possible, brief indications of options for action]

An increase in consistency in dealing with unlawful digital content and an improvement in the enforcement of the law in this respect would allow for better returns to be achieved and greater trust to be held in the DSM. This could give rise to increased growth and be an essential factor in stimulating the DSM.

Preparatory work in the field of IP enforcement has already been launched and the issue has been raised in the Commission's Action Plan on enforcing IP\(^\text{13}\) where the need upstream for due diligence in supply chains and downstream for due diligence by intermediaries (the so-called "Follow the money approach" to IP enforcement) has been supported as an effective means to reduce commercial scale IP infringement levels by the Council\(^\text{14}\) and is being discussed by the European Parliament. Self-regulatory European due diligence schemes can be an option\(^\text{15}\) but the differing national legal frameworks also suggest that a legal instrument to encourage and frame such standards should not be excluded at this stage.

[N.B. Specific description of new options (e.g. Notice and Action Procedure and additional duty of care/due diligence requirements) not included at this stage]

3.3 Removing Restrictions to e-Commerce

Territorial restrictions and geo-blocking: goods and services

[Problem and Problem drivers (with figures and results of surveys)]

In a single market, consumers should be able to buy from any shop they like. Instead, in the EU consumers often find that online shops based in a different Member State will not sell certain goods or services to them or only sell them via a different website specifically targeting their country of residence, frequently under different conditions. Indeed, while 97% of domestic online orders lead to a successful shipment, only 48% of all attempts at cross-border orders does the seller actually deliver to the country of the consumer\(^\text{16}\). Refusal to deliver is most prominent for electronic goods, possibly due to supply side restrictions imposed by the producers. 10% of consumers with the experience of cross-border online shopping report that on at least one occasion over the past 12 months the foreign seller refused to deliver to their country, 8% were at least once redirected to a website in their own country where prices were different, while 5% report that retailer did not accept payment from their country\(^\text{17}\). In addition, 74% of the complaints concerning services received by the European Consumer Centres Network related to consumers facing difference in price or

\(^{13}\) http://ec.europa.eu/internal_market/enforcement/action-plan/index_en.htm


\(^{15}\) See for example the MoU against on-line counterfeiting:


\(^{17}\) Flash Eurobarometer 397. “Consumer attitudes towards cross-border trade and consumer protection”, 2014
service when buying online cross-border. Such barriers do not exist in the offline world, where consumers can travel to another Member State and access any good or service. Their existence explains at least partly why cross-border e-commerce is underdeveloped, with only 15% (2014) of consumers shopping cross-border compared to 44% shopping nationally. This phenomenon is usually referred to as geo-blocking or geo-filtering and is typically based either on the location of the consumer, determined on the basis of the IP address used by the consumer, the country which is registered for the customer’s means of payment or the postal/delivery address indicated by the consumer.

The previous section highlighted the influence of legal fragmentation and other regulatory barriers and their associated on business decisions not to sell to foreign consumers. However, traders’ business decisions and practices are also the result of other factors. Sometimes small and medium enterprises do not sell abroad because the delivery and overhead costs of occasional online exports are not viable, or because the producer of the goods does not allow them to sell cross border. Often, however, companies which have websites in several countries, use geo-blocking (or automatic re-direction) to force customers to use a different website where conditions offered to the consumer are different, and sometimes less favourable (e.g., higher prices. This market segmentation allows companies to apply differentiated pricing strategies across the EU.

Such price differences based on the country where the consumers are resident can be significant even though the prices are often applied to the same service provision taking place at the same location. Automatic rerouting to national websites of a company when booking a service online (e.g. in car hire) has been a frequent technique in the past. An additional barrier for citizens and consumers is the lack of access from other member states to support from service providers (e.g. customer service offered only via national free or premium rate number not accessible from other member states).

Consumers’ behaviour on the market is greatly influenced by their perception of fairness regarding market conditions and prices. In the Internal Market, prices charged by service providers in one Member State, are often used as “reference prices” by consumers in other Member States, which determines their perception of price fairness. This practice has intensified by inter alia the increased use of price comparison tools. For that reason, consumer’s perception of fairness and their sensitivity to price discrimination may be amplified in the context of the Internal Market. To analyse the extent of price discrimination

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[80] Besides its use for geo-blocking purposes, location information plays an essential role for e-Commerce, where EU initiatives such as Galileo (for positioning), Copernicus (for satellite earth observation data collection) and regulatory frameworks such as the Infrastructure for Spatial Information in the EU (INSPIRE) already constitute a major contribution to the realization of the DSM (cross-border data and service policies, interoperability of network services data, cross-border ‘governance’ including all stakeholders)
[81] See Duch-Brown and Martens (2014), JRC/ITPS, ibid, for evidence on price differentiation in the household appliances market in the EU. Gomez & Martens (2015), JRC/ITPS, provide evidence for price differentiation for music and films in the Apple iTunes country stores in the EU.
the Commission initiated a web-scraping study in 2013. The study showed that a leading car rental company consistently set different prices based on the consumer's place of residence. A car could be up to 53% more expensive if the consumer resided in the UK compared to Romania, Slovenia and Poland. The study also showed that a major provider of online music and entertainment applied price differences of 9% for movies and 6% for albums. An online book retailer applied a 7% price difference depending on the IP address of the consumer.

The European Consumer Centres (ECCs) analysed all complaints received in 2010-2012 related to discrimination cases in the field of services. Most frequent were cases related to distribution of goods and services including downloads, which stood for 73% of the cases. Services in the field of tourism and leisure parks amount to 20% of the cases. Different prices depending on the consumer's country of residence concerned 30% of the cases.

Companies tend to apply geo-blocking for three reasons: (a) compliance with legislation, (b) contractual arrangements, and (c) unilateral commercial decisions.

a) Compliance with legislation

Certain companies use geo-blocking to comply with applicable legislation. For instance they might restrict access of consumers to betting websites when they come from a Member State where online betting is prohibited, or access to certain content might be limited in order to comply with the law on protection of minors.

b) Contractual arrangements

Companies may block consumers' access to online content or simply refuse to deliver to consumers across borders because of the contractual agreements in place between rightholders/manufacturers and distributors. This applies equally to copyright-protected content online and to sale of goods and services online. This may include arrangements which effectively partition the market on the basis of distribution agreements, which are then enforced in practice by geo-blocking.

c) Unilateral commercial decisions

An individual company may also decide not to sell to a customer from another Member State (refusal of passive sales). This qualifies as discrimination based on the place of residence but, in some cases, can be justified under so-called 'objective criteria' (Article 20 (2) of the Services Directive).

[Current situation in Europe. Is there European regulation? Policy steps taken so far etc. and need for addressing at European level]

Customers Perceive That Prices Are Unfair? The Case of Premium Pricing for Large Sizes,” Marketing Science, 27(3)


Again, this may apply to copyright-protected content online and to the sale of goods and services online. Traders can invoke various 'objective criteria' when discriminating between consumers based on the latter's place of residence. Such justifications include (1) legal obligations (i.e. the copyright license is not cleared for the territory of the recipient of the service), (2) factual impossibility (i.e. under certain circumstances it is impossible to deliver fresh food to long distances), (3) references to public policy objectives (i.e. protection of the environment) and (4) economic considerations (additional operational costs or costs of compliance with diverging national contract and consumer laws for the company).
The e-Commerce Directive lays down the country of origin principle for information society services with the aim of dismantling barriers to online activities on the Single Market. However, it does not contain any provision related to geo-blocking.

EU competition law can tackle vertical agreements for the sale and purchase of goods or services which are entered into between companies operating at different levels of the production or distribution chain that create barriers to cross-border e-commerce. However, competition law can only address restrictions that are imposed through agreements and not unilateral business decisions of non-dominant companies to apply geo-blocking for certain territories. Under competition law companies with a dominant position are prohibited from abusing their dominant position.

More generally, the Services Directive prohibits discrimination based on nationality or place of residence in the provision of services, including online services, unless there are objective justifications (Art. 20). This provision has proven difficult to enforce effectively because of the broad range of objective justifications.

Finally, there are transparency requirements about geo-blocking vis-à-vis the consumer. The Consumer Rights Directive obliges traders to inform about delivery restrictions clearly and legibly at the latest at beginning of the ordering process (Article 8(3)).

[Expected impact – what changes/opportunities do we expect from solving the issue and, if possible, brief indications of options for action]

Geo-blocking for commercial reasons is a manifestation of the DSM's present fragmentation and the existing discrimination on the basis of nationality or place of residence. Addressing the problem of geo-blocking for commercial reasons could bring increased price transparency, more competition in cross-border e-commerce and greater availability and choice of products for consumers.

Several actions are currently under consideration to address commercial geo-blocking practices and the underlying problems. Geo-blocking itself is being examined both from a competition law perspective, as well as from other legal perspectives (e.g. non-discrimination and freedom to provide services, enforcement of consumer rights, commercial practices and contractual law).

In addition, the underlying problems and other root causes, such as regulatory fragmentation or the absence of alternative and online dispute resolution, should also be addressed, in order to encourage businesses to engage more in cross-border e-commerce. As explained above the Commission considers an initiative in order to develop both consumers and businesses contract rules to ensure that consumers are adequately protected and that business benefits from a level playing field. Once the envisaged framework is in place, businesses should not be able to invoke costs of compliance with diverging contract and consumer laws as a valid reason for geo-blocking.

Territorial restrictions and geo-blocking: digital content (copyright)

[Problem and Problem drivers (with figures and results of surveys)]
Accessing digital content is one of the most popular online activities\textsuperscript{55}. Cross-border activity or sales of digital content should be less cumbersome than sales of physical good, since no delivery or expensive return shipments is required. Nevertheless, accessing such (copyright-protected) content from another Member State is often subject to restrictions. 71% of the broadcasters offering an online service provide only selected highlights from their schedules and exclude international programming, especially US content, international sports and music events. In addition, about 35% of broadcasters offering an online service use geo-localisation to restrict access to certain types of content\textsuperscript{66}. Only 53% of films are available in the 27 iTunes country stores (for music the share is closer to 80%), and the share is lower for EU-produced films\textsuperscript{67}. Yet there is significant curiosity in the population for foreign content. 19% of citizens are interested in watching or listening to content from other EU countries\textsuperscript{68}. Moreover, the cross-border barriers make it difficult for citizens to access content in their home country when abroad for holidays or business, which 27% would like to do.

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\textbf{New data from specific consumer survey on copyright by DG CNECT coming soon} & \\
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Barriers to cross-border access to online content are often based on the territoriality of copyright and on licensing practices. In the audiovisual sector for example, copyright licences are generally awarded for national territories on an exclusive basis. As a result, an online content service in one member state may not be able to legally deliver the content to a consumer in another member state. Even when right holders hold the rights for all territories or when service providers are granted multi-territorial licences, they can decide to distribute the content on a territorial basis, thus segmenting the market. Therefore, business decisions also play a significant role in the limited availability of content across borders.

The territorial selling of media rights is explained by the primarily national character of the material, for example national sports competitions\textsuperscript{69}. Market outcomes therefore reflect the varying degrees of interest and demand for products that are by nature of national character. For sports programmes, the price of the rights usually vary according to the level of interest and demand in a specific territory and the variation between the national market and non-national one is often very substantial. The possibility of multi-territorial selling of media rights - which already exists under the current framework - is not exploited more broadly due to the nature of the demand.

In the specific case of audiovisual content, different release windows may increase differences in the availability of content between different Member States. A film may be available online for consumers residing in one Member State, while it would not have been released yet in another Member State.

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\footnotesize
\textsuperscript{55} 35% of Internet users engage in playing/download games, images, films or music
\textsuperscript{56} Data based on a review of the websites of the top 5 broadcasters in each country measured by television audience share (May 2011)- Plum study – the economic potential of cross-border pay-to-view and listen audiovisual services (March 2012) http://ec.europa.eu/internal_market/media/docs/elecplay/plum_trs_final_en.pdf
\textsuperscript{57} JRC/ERTS Digital Economy Working Paper. "Language, copyright and geographic segmentation in the EU Digital Single Market for music and film"
\textsuperscript{58} Special Eurobarometer 366; http://ec.europa.eu/public_opinion/archives/cbs/cbs_366_en.pdf
\textsuperscript{59} Taking the example of professional football, the English Premier League currently sells its media rights annually for £1.3bn in the UK, and a total of around €200m in the other 27 EU national territories combined. This reflects the product's primarily national audience, with a value that is much higher in the UK than anywhere else. In France, the rights for Ligue-1 are sold for €700m, while the income for Ligue-1 from sales in the rest of Europe amount to just €70m. The situation is identical for other national sport competitions.
\end{flushleft}
As for physical goods, consumers can be automatically redirected to the website of their country of residence, which may offer a different catalogue of content, under different conditions. However, in many cases, consumers can be simply refused access to content on the basis of their country of residence. The same content may either be available from another service provider (the licensee for the country where the consumer is based), or it may not be available at all.

In addition to making cross-border access to online content difficult or impossible, the current situation also makes access to one’s home content difficult or impossible when citizens move temporarily abroad, for example for holidays or for business, even if they are paying for this access (e.g. they are not able to use their service they have subscribed for while travelling in other member states).

[Current situation in Europe. Is there European regulation? Policy steps taken so far etc. and need for addressing at European level]

In the music sector, the collective rights management directive — which is to be transposed by April 2016 - should make it significantly easier for online service providers to get multi-territorial licences for the use of authors’ online rights in music. Other non-regulatory actions undertaken so far, e.g. Licences for Europe should also be mentioned.

[Expected Impact – what changes/opportunities do we expect from solving the issue and, if possible, brief indications of options for action]

Reflections on policy options to facilitate the portability of content within the EU as well as the cross-border access to online content are ongoing. The impacts of these options on consumers, creative industries and service providers are being carefully considered. Specific measures could be proposed to address restrictions aimed at limiting cross-border access at the level of right holders/service providers and service providers/consumers. Changes to the current regime must comply with criteria established by international copyright and trade treaties (to which the EU and their Member States are parties).

Due consideration will be given to potential negative consequences on cultural diversity and more generally on the creative sector, particularly on the funding of Europe’s audio-visual productions and in the field of sport and to the expected final impact on consumer prices in the different markets.

**Copyright**

[Problem and Problem drivers (with figures and results of surveys)]

Across the EU, as in most world jurisdictions, certain uses of copyright protected works take place on the basis of exceptions and limitations to copyright, which are contemplated in law in response to the inability of the licensing markets to deliver contractual solutions (market failure) or to support public policy objectives. In these cases, a defined group of users does not have to ask for the authorisation of right holders and enter into licensing agreements to

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90 Directive 2014/26/EU on collective management of copyright and related rights and multi-territorial licensing of rights in musical works for online use in the internal market
carry out certain activities (for example, cultural heritage institutions making copies for preservation purposes).

Given the current framework in the EU (see below), the existence and scope of exceptions to copyright varies in different Member States. Whilst this can have a little relevance for the DSM in certain cases (e.g. exceptions for broadcasting in hospitals and prisons), differences in the way Member States implement exceptions can be problematic for activities where the cross-border aspects or the European significance of a certain activity is relevant and growing in importance, for instance in the area of education and research (for example a recent study identified 253 cross-border higher education programmes operating in the EU\textsuperscript{31}).

\textit{[Current situation in Europe. Is there European regulation? Policy steps taken so far etc. and need for addressing at European level]}

Most exceptions to copyright foreseen in European law remain optional for Member States to implement, resulting in a fragmented landscape across the EU. Exceptions may or may not have been transposed in national law, and their wording and scope can vary considerably. The most recent development in this area the Orphan Works Directive, which introduced an exception for the use of orphan works\textsuperscript{32} by institutions like libraries, museums and archives. This is one of the very few exceptions in EU law that are harmonised and mandatory for all Member States.

The DSM objective could therefore warrant more harmonisation at EU level for certain exceptions, as well as flanking measures to ensure that their implementation and application do not keep acting as a barrier in the single market.

\textit{[Expected Impact – what changes/opportunities do we expect from solving the issue and, if possible, brief indications of options for action]}

Exceptions must comply with criteria established by international copyright and trade treaties (to which the EU and their Member States are parties), while solving identified problems or objectives. Challenges, opportunities and options for intervention are very specific to the different areas for which exceptions exist. The scope for EU intervention will depend on the availability of evidence and the maturity of given issues.

\textit{Other issues:}

The enforcement of copyright online continues to raise increasingly difficult challenges for rights holders, impacting the functioning of the DSM and outlining a need to innovate.

The fragmentation of EU law in the area of civil procedure law makes it cumbersome for the rights holders to enforce their rights across the EU. As an example, where local legislations implementing article 8.3 of the InfoSoc Directive provide instruments for obtaining injunctive measures against intermediaries whose services are used by a third party to infringe a copyright or related right, these injunctions need to be sought after in each Member State, with very little possibility to leverage on the costs, time and/or efforts incurred in the first proceeding.

\textsuperscript{31} European Commission, "Delivering education across borders in the European Union", 2013

\textsuperscript{32} Orphan works are copyright-protected works whose right holders cannot be identified or located after a diligent search
The case of massively infringing websites, often located outside EU, has created the need to develop new types of actions to complete traditional enforcement measures. For instance, "follow the money" approaches have been put in place in order to reduce advertising revenues available to these infringing websites. Actions are sought from intermediaries such as advertising companies or payment processors. Whilst a follow the money approach has been implemented in a number of countries, including in the EU, schemes are not available in all Member States.

Measures could be proposed to ensure a better coordination of enforcement measures taken at Member State level.

With the development of new online services, a sense of unfairness has grown among stakeholders regarding the split of the revenues generated by works and performances online. This sense of unfairness is perceived in two areas:

- **In the relations between Internet platforms and rights holders**: there is growing concern from certain stakeholders from the creative sector regarding the market power of certain platforms in the online market, potentially able to impose their conditions to consumers and SMEs. In addition to this market power, the liability exemption provisions provided under the E-commerce directive to the benefit of certain intermediaries (see 3.2 "Trust and confidence") acts, de facto, as a tool enabling platforms hosting third party content, to provide services to the public equivalent to fully licensed services (such as Spotify), without having to seek an authorisation from the rights holders or negotiate the conditions of use of their contents.

- **In the relations between the various rights holders**: new means of exploitation question the current shares of revenues between authors/performers, on the one hand, and producers/publishers/broadcasters, on the other hand, and the need for new remunerations and levies, or for a broader use of a collective management of rights.

While assessing the need and the legal possibility to remove any of this sense of unfairness in the DSM, in all or in part, careful consideration shall be given to the objective of not impacting the room for digital disruption in Europe and not creating further fragmentation of the single market.

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**Audiovisual Media Services**

**Delivery services**

*Problem and Problem drivers (with figures and results of surveys)*

E-retail continues to drive growth in the European parcels market, which is estimated at €42.8 billion for all parcel categories combined. Most parcel traffic is still domestic, representing

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[La Poste annual report 2013]
85% of total EU shipments. The market has increased by 5.7% in value terms compared with 2011, yet it is a very concentrated market, with five MS accounting for 70% of the total EU parcel market.

Consumers and e-retailers are increasingly demanding in terms of expectations of delivery services when buying online. The growth of cross-border e-commerce is hampered by a lack of affordable, high-quality delivery services, which are consistently amongst the top barriers mentioned by both e-retailers and consumers for not engaging in cross-border e-commerce. Stakeholders complain about a lack of transparency, the excessive costs of small shipments and the lack of inter-operability between the different operators typically involved in a cross-border shipment and the lack of convenience for the final consumer. One third of firms selling or buying online declared the high costs of cross-border delivery to be a major problem for them. In the case of firms trying or considering selling/buying online to/from another EU country, these figures go up to 40%. This is the most prevalent barrier to cross-border e-commerce for firms selling online and the second most important for firms buying online. Evidence from several research shows that more convenience and lower delivery prices would encourage consumers in engaging in cross-border online shopping.

38% of e-shoppers show dissatisfaction with one or several aspects of delivery in relation to their most recent online purchase. The importance of convenience is stressed in the same survey, where delivery within two to four working days, delivery at an agreed time slot, track and trace, electronic delivery notifications and convenient return procedures are revealed as important features to between 70-85% of e-shoppers, with delivery to the home address mentioned by more than 85% of the e-shoppers. In another survey, EU citizens say that most problems with cross-border online shopping relate to delivery, most commonly a delay in the delivery (12%), delivery at home when nobody was there (10%), and the lack of a means to track the delivery status (5%). Price is also an important barrier for e-shoppers. In the same survey 8% of EU citizens mentioned that delivery costs were too high. In addition, another survey refers that more than 85% of e-shoppers consider delivery price (either ‘free’ or standard delivery) as the most important feature for buying online (next to home delivery). Furthermore, almost one out of five EU citizens (19%) mention that cheaper delivery prices are the main improvement that would encourage more online shopping from sellers located in other EU Member States. In short, consumers' decision to buy cross-

95 Germany, UK, France, Italy and Spain
96 JRC/ IPTS calculations with Flash Eurobarometer 413 data
99 Eurobarometer 398
100 Eurobarometer 398
101 Internal market report, October 2013. Eurobarometer 398
border online is heavily influenced by the cost of delivery\textsuperscript{102} (and return\textsuperscript{103}), reliability of the service (lost or delayed deliveries) and convenience (time and place of delivery).

Likewise, e-retailers are also concerned with the availability, quality and price of delivery options. Between 85-100% of e-retailers consider delivery within two to four days, delivery at an agreed time slot, and next day delivery to be the top-three most important delivery features\textsuperscript{104}. E-retailers want to reflect consumer needs and expectations by offering to consumers simple, transparent and reliable shipping services (e.g. track-and-trace, on time delivery). In addition, 36% e-retailers identified the high costs of cross-border delivery as an important barrier to the development of cross-border e-commerce\textsuperscript{105}. E-retailers want to reflect consumer needs and expectations by offering to consumers simple, transparent and reliable shipping services (e.g. track-and-trace, on time delivery). They also want low delivery and return costs to attract (and retain) consumers. Notably, due to their lack of bargaining power, SMEs are the most affected as they face high delivery costs\textsuperscript{106} (which in some instances are twice as high as domestic delivery cost) for low volume cross-border shipments. This limits SMEs’ competitiveness in cross-border e-trade. Besides, their growth opportunities are dependent on a seamless EU delivery market.

However, the single delivery market is not yet a reality across the EU. The EU delivery market is fragmented, with 28 national delivery markets populated by national postal operators, alternative parcel delivery operators, express operators or global integrators\textsuperscript{107}, logistics players\textsuperscript{108} and in-house operators\textsuperscript{109}. Global integrators have developed an integrated network but traditionally focused on B2B deliveries and, except for integrators, cross-border delivery usually requires the combination of two or more national delivery networks. Domestic postal networks are however optimised in view of historically high letter volumes, rather than parcels. Thus, existing postal networks were not designed to address the current rapidly changing needs stemming from growing e-commerce, and especially not cross-border delivery requirements. Postal delivery operators’ IT and electronic communication systems were developed independently and primarily for domestic services and are not integrated with each other, resulting in heterogeneous services (e.g. track and trace), labelling practices and quality measurement across the EU/28 MS. The lack of compatibility affects the quality of the service offered (e.g. relabelling items increases the cost and time of a cross-border delivery), the convenience of the service (alternative delivery options may not be available) and the price. Insufficient interoperability (e.g. IT systems, logistics systems).

\textsuperscript{102} Almost one out five EU citizens (19%) mention that cheaper delivery prices are the main improvement that would encourage more online shopping from sellers located in other EU Member States - Eurobarometer 398
\textsuperscript{103} 75% of UK online shoppers say they are unlikely to use a retailer again if they had a difficult return experience, and 81% are unlikely to go back if they were charged for returns – Delivery Matters (2013). Royal Mail. In addition, 20% of firms selling online across the border indicate that the high cost of guarantees and returns is a major problem for them and an additional 25% declare it to be a minor problem (JRC/IPPTS with Eurobarometer data).
\textsuperscript{104} Flash Eurobarometer 359, Retailers attitudes towards cross-border trade and consumer protection, June 2013. Available at: http://ec.europa.eu/public_opinion/flash/fl_359_en.pdf
\textsuperscript{106} Multinational operators with world-wide presence, such as DHL, FedEx, TNT express and UPS
\textsuperscript{107} Such as consolidators, brokers, fulfilment services, third party logistics providers. The latter provide assistance to customers for outsourced services for part, or all of their logistics, such as pick and pack, warehousing, documentation, labelling procedures and distribution. Online brokers and parcel consolidators offer discounts on single shipments by integrators, or national operators.
\textsuperscript{108} Operators set up by an e-retailer itself
delivery solutions offered, value added services offered) between operators and low volumes consumers or areas result in a weak competitive pressure in the delivery market. More integration can provide for more growth opportunities for both operators and e-retailers.

Concerning price, several research studies estimate that listed tariffs for cross-border parcel delivery (for non-account customers) charged by National Postal Operators are often two to five times higher than domestic prices. High prices are commonly attributed to low volumes and lack of bargaining power by low volume senders, typically SMEs and consumers. Low volumes generate a higher cost per item than high volumes and may partly explain the narrower range of services available for cross-border deliveries compared to domestic deliveries. On the other hand, high prices may also reflect weak competitive pressure in the cross-border delivery market.

Although in most Member States there are typically more than three delivery operators, it doesn’t mean that they all provide the delivery service e-retailers need (e.g. a simple, cheap, traceable and reliable delivery). Another possible reason for high prices is related to complex and opaque interconnection costs. As members of the Universal Postal Union, national postal operators comply with a set of rules on tariffs that evidence shows may distort the real costs incurred. Furthermore, operators can engage in bilateral agreements or multilateral agreements such as REIMS, EMS, or EPG. Some of these agreements on tariffs may be contradictory to Article 13 of the Postal Service Directive (PSD) which regulates the cost orientation of cross-border tariffs. Lack of enforcement of the PSD principles on tariffs are also amongst possible reasons for high prices. Few Postal National Regulatory Authorities (NRAs) focus their responsibilities on cross-border delivery markets, as many NRAs have a limited mandate on this segment.

Transparency of information in this market is also a problem for e-retailers and consumers on a micro-level and for NRAs, on a macro level. Despite the existence of more than three operators in the cross-border parcel segment in most countries, one out of five e-retailers say that they are aware of only one delivery operator. This lack of information, which also results from lack of inter-operability, is also visible in the range of choice of services available.

103 Copenhagen Economics (2013)
105 Study on the external dimension of the EU Postal Acquis, WIK (November 2010), FTI (2013) The Economics of Terminal Dues, Copenhagen Economics (September 2014)
106 Voluntary multilateral agreement between postal operators setting out rules for calculation of terminal dues, i.e. the remuneration that postal operators pay each other for the delivery of incoming cross-border mail (it applies to mail up to 2Kg)
107 EMS is an international postal Express Mail Service, for documents and merchandise, offered by postal operators of the Universal Postal Union (UPU). See site http://www.ems.post/
108 The E-Parcel Group (EPG) is made up of 31 postal parcel operators committed to deliver their priority parcel products through an integrated delivery network. The network uses a track-and-trace system and an automated customer service system linking each postal operator’s call centres to ensure stable and reliable quality of service for their customers.
110 “European Cross-border e-commerce parcels delivery 2014- ERGP opinion to the European Commission on a better understanding of European cross-border e-commerce parcels delivery markets and the functioning of competition on these markets”, ERGP (2014)
111 Copenhagen Economics (2013)
From a regulatory perspective, on a macro-level adequate information on the parcel market is lacking, making it more difficult to assess the impact and address effectively any market inefficiencies. Currently, the available information on the delivery market is fragmented, and is in the hands of market operators and only partly of national postal regulatory authorities. At present, the latter have a limited mandate to monitor and regulate cross-border delivery, often limited to parcel markets that fall under the universal service obligations of postal services and represent a small share of the delivery market.\textsuperscript{120}

\textit{Current situation in Europe. Is there European regulation? Policy steps taken so far etc. and need for addressing at European level}

It is therefore clear that delivery barriers are considered an obstacle for both e-retailers and consumers, hindering their further participation in e-commerce growth, particularly cross-border. These barriers have already been acknowledged by the Commission both in the Green Paper\textsuperscript{121} and in the Roadmap\textsuperscript{122} on parcel delivery. In these documents the Commission identifies the following challenges as action points: lack of transparency of information, excessive costs for low volume shipping, lack of convenient services for the final consumer and lack of interoperability between the different operators typically involved in cross border delivery. The Roadmap set out a number of actions which aim to improve the quality and availability of cross-border parcel delivery services (including complaints handling procedure) and information about the services on offer.

The Commission’s roadmap defined an eighteen months period for the assessment of industry led initiatives taken to address the issues identified on cross-border delivery. This deadline ends in June 2015. The industry (postal/delivery operators and e-retailers) are already addressing a few of the areas of concern identified in the roadmap. For example the postal incumbents have committed themselves to introducing a number of improvements in the area of quality of service. The role of the Commission is to monitor the implementation by the industry of their commitments and ensure that they are fulfilled. Other areas where the industry has not yet proposed any solutions might however need complementary measures.

\textit{Expected Impact – what changes/opportunities do we expect from solving the issue and, if possible, brief indications of options for action}

Improving the availability and affordability of cross-border delivery services will make it easier for e-retailers to sell across borders, especially for SMEs. This would enhance SMEs’ growth potential and contribute to more jobs. Citizens would also benefit from parcel delivery services that are more affordable and more convenient, as well as from a wider choice and lower prices. Improved cross-border delivery options would be especially beneficial for e-retailers and consumers located in rural or peripheral areas. Moreover, any improvements in the cross-border delivery market might also have positive spill-overs to the domestic delivery market.

\textsuperscript{120} Estimated at around 17% of total EU Shipments. Copenhagen Economics (2013), pg 103
Possible areas for complementary measures by the Commission could include affordability and regulatory oversight

amongst other to be assessed. The Commission will therefore launch a public consultation and is currently undertaking an Impact Assessment to evaluate the remaining issues, the options and additional actions that may be needed.

**VAT procedures on cross-border on-line sales.**

*Problem and Problem drivers (with figures and results of surveys)*

In the European Union, in principle every supply of goods or services for consideration by a business is subject to VAT and this typically at the standard rate of at least 15% of the sales price. This VAT is – like a general sales tax – a consumption tax, and by now there is a consensus amongst Member States that VAT revenues should – in principle – accrue to the Member State of consumption.

Unlike a sales tax that is in its entirety charged only at the level of final consumption (typically the retail level), VAT is generally levied on the value added (difference between sales price and the cost for all purchases) generated by the suppliers involved in the supply chain. This approach minimises the risk of unreported turnover as each supplier has an incentive to report his sales as otherwise he would not be entitled to claim back the VAT he has paid on his input. Nevertheless, as it cannot be assumed that all suppliers are voluntarily compliant with existing VAT obligations, a set of registration and reporting obligations needed to be put in place as well, which are especially (relatively) burdensome for SMEs.

Also, this system of fractionated payments triggers certain complications, notably in cases where the value and supply chains stretch over more than one Member State or involve a third country and, thus, different national VAT rules apply and different tax authorities are involved. Member States have tried to solve these issues by agreeing that – as a general rule – the taxable supply of a good or service should be taxed in the country of destination / consumption and that the VAT rules of the country of destination should apply. An important exception to this rule had been the supply of broadcasting, telecommunication and electronic services, where until December 2014 taxation took place in the country of establishment of service providers.

Digitalisation and the world-wide web have on the one side given new impetus to the secular trend of an internationalisation and fragmentation of industrial value chains. On the other side, such (and other) technical progress also enables a short-cutting of supply chains with more and more producers wherever located in the world nowadays directly interacting with their European consumers, without having to rely on wholesale and retail trading intermediaries. Even SMEs are going international or even global that would not have dared doing so in the traditional “brick and mortar” world.

Indeed, as the online ordering of goods and services and the online supply of services turns from being the exception to being the rule, more and more SMEs conduct cross-border e-business and are, thus, now confronted with having to comply with tax legislation in all the countries in which they have clients as well as the need to communicate – often in another language – with foreign tax administrations.
In general, a vendor making supplies of goods to consumers in other Member States is required to register and account for VAT in each of these Member States, while a vendor of electronic services supplied to consumers in other Member States has to charge the VAT of that given country but can benefit from the Mini One Stop Shop (MOSS), i.e. while he cannot benefit from the tax-free turnover threshold for non-domestic supplies he is only required to register and account for VAT in his home country.

In contrast to this, for goods ordered online from a third country, the non-EU supplier generally benefits from the small consignment import exemption (usually up to EUR 22) to ship its goods VAT free to EU private customers. This puts them at a competitive advantage over EU suppliers and market distortions have already been signalled in various Member States. Thus, a provision that aimed at reducing administrative burdens for tax administrations for small suppliers has nowadays turned into an expensive tax subsidy for big global players located outside the EU.

Complications derived from different taxation schemes hinder cross-border e-commerce: 15% of firms declare that dealing with foreign taxation is a major problem when trying to sell across the border. This is particularly relevant for SMEs and firms selling online services for both consumers and other firms.123

So, digitalisation and e-commerce raise challenges both for SMEs and businesses at large that were used to primarily operate nationally only and that now would like to benefit from going international / global and for tax revenues and fair competition between EU and non-EU suppliers of goods triggered by the small consignment import exemption.

[Current situation in Europe. Is there European regulation? Policy steps taken so far etc. and need for addressing at European level]

Since 1 January 2015, with the coming into effect of new rules, VAT on all telecommunications, broadcasting and electronic services is taxed where the customer is based, rather than where the supplier is located. This change brings important benefits. Firstly, it ensures fairer competition between domestic and non-domestic businesses selling the same services. Secondly, it creates a level playing field for SMEs and other companies that cannot relocate to a lower-tax Member State and who, up to now, may have lost out to more mobile competitors. Finally, it ensures fairer distribution of tax revenues between Member States, as they will receive the tax on the services consumed by their own residents.

In parallel, as a simplification measure, a mini One Stop Shop (MOSS) has been implemented, which will reduce the costs and administrative burdens for businesses concerned. Instead of having to declare and pay VAT to each individual Member State where their customers are based, businesses will be able to make a single declaration and payment in their own Member State. Suppliers will use a web portal in their Member State of establishment to account for the VAT due on sales in other Member States.

There is a lack of knowledge and lack of clarity about the application of the existing private international law rules. The perception of having to incur additional costs due to compliance with different consumer protection rules and contract law as well as with different tax

123 JRC/IPTS calculations with Flash eurobarometer 413 data
4. Provide for simplified risk driven audit arrangements on the basis of harmonised rules or the rules applicable in the Member State of the supplier, and therefore ensure that a business is not subject to the possibility of audits from each Member State he makes supplies to.

Each of these options requires much closer cooperation between tax administration across the EU as well as more “European thinking” of national tax legislators and authorities:

- The single VAT registration and payment system for cross-border supplies of goods and services requires that the countries in which the suppliers are established would need to properly collect VAT revenues that would eventually accrue to the Member States in which the customers are residing.

- The removal of the VAT exemption for the importation of small consignments requires that customs and tax authorities collaborate closely with each other and that the authorities of the importing countries properly collect VAT revenues which would accrue to the Member State in which the customers are residing.

- The introduction of an SME threshold for cross-border e-commerce would mean that Member States of destination would have to forego tax revenues only because the supplying company benefits from an SME status in its country of establishment.

- Putting the main responsibility of auditing internationally active business on the country of establishment requires close cooperation as well as mutual trust in the auditing capacity of other Member States.

The benefits of the proposal can be summarised as follows:

- A business selling goods and services cross-border can account and remit for the tax due in the Member State in which it is established rather than having to register and remit the tax in every Member State in which it does business. This is a significant simplification for many businesses. In this context, it is relevant that total VAT compliance cost has been estimated at EUR 80 billion of which EUR 67 billion may relate to its complexity and variation across EU.

- Simplification, particularly in the start-up phase, for small businesses in the digital sector operating cross-border.

- A simplified legislative code brings certainty for business and tax administrations.

- Breaking down barriers within the single market can allow business to grow and provide an enhanced choice for consumers.

- Removing the exemption for the importation of small consignments allows EU business to compete on a level playing field and can reduce the administrative costs for customs administrations.

The challenge for direct tax systems

Problem and Problem drivers
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**The challenge for direct tax systems**

*Problem and Problem drivers*
There is broad and rising public and political concern over the fact that some multinationals currently succeed in paying very little corporate income tax in the EU. Several of the high profile public examples concern digital companies such as Google, Amazon, Facebook or Apple. Aggressive tax planning strategies concerns all industries. Increased mobility through digitalisation merely exacerbates the scale of it for purely digital companies.

Beyond the general issue of aggressive tax planning which is being addressed by both EU and OECD initiatives, there is a broader issue regarding the fact that digital (multinational) companies, by their nature have no or limited need for physical presence in the countries of their users. The growing importance of the service component of the economy, and of digital products that often can be delivered over the Internet, has made it possible for businesses to locate many productive activities in geographic locations that are distant from the physical location of their customers.

As a result, such companies often have no taxable presence in the EU (absence of 'permanent establishment') to which any profit could theoretically be allocated. Such an issue may lead to unfair tax competition and a lack of level playing field between economic operators (EU v. non-EU, and within the EU), and may therefore constitute an obstacle to the development of digital activities by EU economic operators.

In its report of 28 May 2014, the Commission Expert Group on Taxation of the Digital Economy concluded that there should not be a special tax regime for digital companies. However, it also found that it is also important to investigate more profound changes in international corporation tax.

3.4 The Digital Economy

Platforms

[Problem and Problem drivers (with figures and results of surveys)]

An increasingly crucial set of conditions of online activities is access to key resources such as platforms, defined as multi-sided markets where suppliers and consumers of content, goods and services meet. Their relationship is organised by the platform provider, which in this way accumulates large amounts of data. Since the value of these platforms to consumers increases with their size (network effects), they may become large and act as gatekeepers. More than one third of Internet traffic goes to the only 1% of websites which are used in all Member States.

This intermediary role gives platform an enormous power advantage relative to both consumers and SMES. For consumers this is often reflected in a lack of clarity and transparency on “what they see on their screen”, for example to clearly distinguish between organic and paid-for search results, the “ranking” (order) of results and the prices indicated. There are several findings on web search personalization and on price discrimination and

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127 Reference IPTS
steering. A first study\textsuperscript{128} concludes that 12\% of the search results are personalized (either new results are shown or are re-arranged), mainly due to geo-location, prior search history or whether the user is logged in or out of the search engine. Another study\textsuperscript{129} found evidence of price discrimination (even when controlling for commonly known technical variables) on four general retailers and five travel sites. The differences for the same hotel/car per day/night can easily run into hundreds of dollars (e.g. in some cases with prices ranging from 50 to 1000 dollars for the same item and day). These price differences are not explained by mere market forces. Other authors have found similar results\textsuperscript{130}. In addition, the study on “comparison tools and third party verifications schemes” commissioned by the European Commission and to be published in March 2015, shows that less 40\% of comparison websites describe their business model or explain their relationship with the suppliers/manufacturers whose offer they display. Only 18\% indicate the frequency at which data on their website is updated, 14\% what their source of revenue is and 11\% give an indication on the market they cover. Information provided on these aspects is almost never provided by apps. If we want to build trust on the reliability of comparison tools to compare products in the DSM, then it is recognised by all stakeholders that we must work at improving the transparency of these websites and apps.

For SMEs, the terms and conditions used by platforms, which may take the form of unfair contractual clauses (determining price, quality, duration, delivery) are crucial. SMEs frequently are not aware of their rights and find complaints too cumbersome.

Platforms provide a basis for small and medium businesses in all sectors of the economy, from manufacturing to services, to innovate and to exploit the advantages of online commerce. This is hugely beneficial to a great number of companies (in particular SMEs) and to the economy as a whole. Moreover, platforms have proved to be innovators in the digital economy and can be expected to be important drivers towards the further development of the sharing economy. Finally, the global nature of the Internet means that these opportunities are no longer limited to domestic markets, but extend far beyond. This is why platforms are core to the DSM.

In so far as the platforms control the flow of data, and accumulate over time an enormous set of market data, there is a clear asymmetry of information problem with both consumers and suppliers, often SMEs. For example, 72\% of European consumers use comparison websites and apps in their decision-making process. However there are issues with the quality and reliability of the information and reviews that these tools display: less than 37\% of comparison tools explain on their website their relationship with the suppliers whose offers they compare and less than 11\% give an indication on the size of the market they cover\textsuperscript{131}.

On platforms, just like on the Internet as a whole, the key bottleneck for suppliers is visibility, which in turn depends on how the platforms classify and filter the available offerings. This gatekeeper role gives platforms economic power over their suppliers, since a simple change of


\textsuperscript{131} Reference DG JUST
their ranking mechanism can impact on the sales and business of the provider. There is a power asymmetry between big platforms and SMEs.

Furthermore, the advantage of strategic information may enable platforms to vertically expand their activities. If they do so, the platforms then enter into competition with their own providers, where the temptation to use their control of the ranking mechanism might be strong.

[Current situation in Europe. Is there European regulation? Policy steps taken so far etc. and need for addressing at European level]

The Directive on Unfair Commercial Practices approaches a broad range of unfair business practices, such as providing misleading information to consumers and not to companies. Currently existing regulatory tools under the regulatory framework for electronic communications services and networks do not apply to online platforms.

Under Competition law companies with a dominant position are prohibited from unfairly exploiting their strong market positions (Article 102 TFEU). Article 101 TFEU prohibits vertical agreements for the sale and purchase of goods or services which are entered into between companies operating at different levels of the production or distribution chain that prevent, restrict or distort competition. Distribution agreements between manufacturers, wholesalers or retailers and platforms are typical examples of vertical agreements. Competition procedures can be very lengthy. For example the Google case has been ongoing for more than five years, the Microsoft case took six years. A good example of fast decision is the Apple/Motorola case which took more than two years. Bearing in mind the speed and dynamics of the digital economy, this is still too long.

[Expected Impact – what changes/opportunities do we expect from solving the issue and, if possible, brief indications of options for action]

In order to determine which of the options outline above is appropriate, a policy process could be launched by the DSM Strategy, including the launch of a green paper.

Standards and interoperability

[Problem and Problem drivers (with figures and results of surveys)]

Users experience compatibility problems such as apps running on a specific operating system, e-books readable only on a specific e-reader, home services available only on certain devices. There are costs for developing the same application for different operating systems or adapting same content for different hardware or software. It appears that citizens and companies are not benefit fully from new technologies and digital services because of a lack of interoperability, being it at a technical, semantic or process level.

Interoperability means ensuring interconnection between digital components like devices, networks or data repositories, in a mutually understood language. ICT Standardisation is strategic to increase interoperability of new technologies and can bring significant benefits to industry and consumers. However today there is on the market a proliferation of competing technical standards and specifications, also due to the fact that formal EU or international standards were lacking in certain areas, while the adoption of existing international standards by public and private operators is only starting in some others.

There is a lack of interoperability in the industrial sector, in particular a lack of common standards across the spectrum of communication needs (from design, prototyping and testing to the production process to aftersales service). Shared data interfaces are crucial for the gathering, transfer and processing of data from different sources in an interoperable manner and consequently the seamless flow of data across sectors and in vertical markets.

Interoperability is also an issue which concerns public services that work across borders, 1.500 000 citizens and 300.000 businesses are likely to use cross-border online services each year in 2020.113 Digitisation of administrative formalities is an opportunity for standardisation of documents that businesses have to present to national authorities in different Member States, yielding additional cost savings. More generally, lack of interoperability among public entities and private operators compromises the full implementation of digital end-to-end services, one stop shop, single data entry and full transparency of public services and the full exploitation of public open data.

Big data interoperability will be an important asset, notably for the development of initiatives, which include work to standardise and harmonise data from across the EU and globally and address collectively data protection and ethical issues.114

In the context of the current digital data revolution, multi-disciplinary interoperability will also be essential to achieve the Sustainable Development Goals Post-2015 and to address societal challenges such as disasters, energy, water, agriculture, biodiversity, weather and climate that increasingly depend on cross-thematic and trans-disciplinary knowledge and observations at various scales. Further efforts will be required to develop big data analytics and to interconnect existing geospatial data infrastructures including those addressing new data streams such as from citizens’ observatories, social media, drones and sensors on the web, following a system of systems approach.

Moreover, further progress is needed to ensure sharing of information and interoperability of systems for cross-border delivery of goods and services and mobility of people and businesses and cooperation among public authorities, at national and EU level. Recent data confirm this is the case: 25% of firms in the EU-28 state that interoperability issues are a problem for cross-border online sales, although only 10% declare it to be a major problem. Important differences by sector are present, being most prevalent a problem within the information and communication sector (30% of firms).115

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113 Study on Analysis of the Needs for Cross-Border Services and Assessment of the Organisational, Legal, Technical and Semantic Barriers (SMART 2011/0074)
114 Data pervades many aspects of the DSM and presents policy makers with two kinds of challenges: (i) creating the appropriate legislative framework for research data, (ii) and fostering optimal technical and IT conditions to ensure a free flow of data. The Research Data Alliance is a research driven movement that works on global solutions to make data interoperable between disciplines. It therefore has the potential to make a significant contribution towards innovation and growth through research data sharing in an open science context.
115 JRC/IPTS calculations with data from Eurobarometer 413
Lack of interoperability of chargers for portable devices generates costs and waste (an estimated 500 million mobile phones are in use in the EU. It has been estimated that some 8000 tons of chargers for mobile telephones were sold every year in the period 2011-2013 in the EU).

Reaping the benefits for the DSM from the deployment of innovative services such as the Internet of Things, cloud computing, connected cars, digital and online education, and resource efficient business models, etc. will require the use of open standards or other tools to improve interoperability.

[Current situation in Europe. Is there European regulation? Policy steps taken so far etc. and need for addressing at European level]

The role of ICT standards is essential to ensure openness and interoperability so that markets for technical goods and services operate in a fair and competitive way, and thus benefit consumers, and also to provide access to international key markets. As a matter of fact, increasingly in the ICT sector, standards are set in ad hoc bodies dominated by non-EU players creating technical barriers to trade.

The Commission presented in 2011 its strategic vision for European standards, and the Regulation (EU) 1025/2012 sets up the rules for the European standardisation. The ICT standardisation Multi-Stakeholders Platform (MSP) has been established as advisory group bringing together European and International standardisation organisations, ICT standards setting fora and consortia, industry and social representatives as well as Member States to provide advice on ICT standards issues and identify ICT common technical specifications for public procurement.

Within the new standardisation Regulation, public authorities can make now use of the ICT technical specifications most currently applied in the market when procuring new technology services by using the so-called identification process managed by the Commission with the advice of the European Multi-stakeholders Platform on ICT Standardisation.

An area of concern today is the management of IPR in relation to standards. Standards are closely linked to patents, and patents are a key source of income for EU industries. Today some new players are willing to downgrade the value of Standard Essential Patents (SEPs) owned by innovators. Others, like patent trolls, may not provide fair access to the standards to implementers. This has resulted in increased litigation and risk for proprietary solutions to proliferate. The rate and extent of diffusion of new technologies risks to be limited by legal uncertainty in the conditions for licensing and exploiting SEPs.

Another area where interoperability is deficient is that there is no EU legislation on common chargers. Following a request from the European Commission, major manufacturers of mobile telephones signed a Memorandum of Understanding (“MoU”) in 2009 to harmonise chargers for data-enabled mobile phones sold in the EU, which expired end 2012. A majority of signatories prolonged their commitment to the common charger for phones place on the market in 2013 and 2014 in two Letters of Intent (LoI) The results of a study finalised in 2014 confirmed the success of the MoU and examined follow-up options.

In what concerns interoperability in the public sector, the great majority of the Member States have transposed nationally the European Interoperability Framework (EIF), adopted by the

139 COM(2011) 311
Commission in 2010. Consequently, there is today a common understanding among Member States on the basic requirements to achieve interoperability between public services. This common understanding on basic requirements, accomplished with the ELF, should now be updated and extended with other concrete and practical instruments to be shared around Member States administrations such as the European Interoperability Reference Architecture (EIRA) and the European Interoperability Cartography (EUCart).

A horizontal action at EU level, across sectors, is fully justified to avoid having Member States opting for mutually incompatible solutions that will build new barriers to the delivery of European public services. These barriers would prevent citizens and businesses from interacting electronically with national administrations other than their own with the same ease as native citizens and businesses and prevent the making of the DSM. Moreover, Member States acting independently could not achieve the necessary interoperability for cross-border or cross-sector electronic public services and establish common and shared solutions in support of the interaction between European public administrations.

Some Member states have defined an interoperability strategy which identifies compulsory and recommended technical specifications (TS) for public administrations and gathered them in national standards catalogues. The DSM could not be achieved if these national catalogues were incompatible, especially if we consider cross border e-Government services for example. In some areas, such as e-Health, Member States have developed an ambitious work program in the frame of the e-Health Network, to converge in the use of standards and specifications. Where EU or international standards are lacking, TS accepted by the market need to be identified for their use in public procurement. The purpose of the Connecting Europe Facility is to deploy interoperable cross border digital services, according to common building blocks, standards, technical specifications and open architectures.

The INSPIRE Directive is aiming to establish a EU-wide spatial data infrastructure to give cross-border access to information that can be used to support EU environmental policies, as well as other policies and activities having an impact on the environment. The actual scope of this information corresponds to 34 environmental themes, covering also areas of cross-sector relevance – e.g., addresses, buildings, population distribution and demography. In order to ensure cross-border interoperability of data infrastructures operated by EU Member States, INSPIRE sets out a unique framework based on common specifications for metadata, data, network services, data and service sharing, monitoring and reporting. Such specifications consist of a set of implementing rules (i.e., legally binding legislation), along with the corresponding technical guidelines. Recent studies point to the need that interoperability of the existing infrastructure should be improved. Recent surveys on implementation show that 20% of users indicated that data interoperability as a main benefit of INSPIRE.

[...]

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[^2]: The Interoperability Solutions for European Public Administrations (ISA) programme (2010 – 2015) supports and monitors the ELF implementation in Europe. It will be followed by the ISA programme (in the inter-institutional procedure at the time of this writing).
[Expected impact – what changes/opportunities do we expect from solving the issue and, if possible, brief indications of options for action]

There is an opportunity for Europe to have a stronger role to play in this area, taking profit of the fact that since 2013 the EU has put in place a new EU Standardisation framework that aims at achieving better efficiency in the standardisation process, as well as greater synergies and co-ordination between European stakeholders, namely the Commission, the European standardisation Organisations (ESOs)\textsuperscript{139}, Member States, European industry and businesses (both in the ICT sector and in other sectors that rely heavily on digitisation). This process is facilitated by the European Multi-stakeholders Platform on ICT Standardisation, which is now fully operational.

Failing to act at EU level would mean to leave the status quo, which sees today a strong market push driven mainly by private interests and a weaker role for European and international standards. This is because ICT standards must have a global reach in order to be successful on the market and today, given the status of the global ICT market (largely dominated by US corporations), the interest of European companies are not as well safeguarded, as they would be by an open and transparent standardisation process such as the EU system. There is a concrete risk of lock-in in proprietary specifications and systems which will prevent competitiveness and limit considerably the choice of consumers and businesses alike.

The alternative would be to push for an EU strategic approach for ICT standardisation: to anticipate the market and give priority to strategic and achievable policy projects based on clear and concerted business cases. This should be done by carrying out a strategic reflection with European standardisation Organisations (ESOs) and Member States and identify interoperability priorities, in particular for technologies that are deemed to be critical to DSM.

This coordinated approach could go even further: Member States, Commission and ESOs could work together to increase European influence on the standardisation activities in international standardisation bodies on strategic policy projects, including the crucial aspect of the protection of intellectual property in the conditions for licensing and exploiting Standard Essential Patents.

On the common charger, new generations of mobile telephones, in particular smartphones, and new charging technologies are starting to enter the market. It is important to ensure that harmonisation of chargers of mobile telephones includes them. An extension of this approach to other small portable devices such as e-readers, cameras, tablets and laptops should further contribute to a reduction of unnecessary waste and to make the everyday life of the citizens easier. The options available are further voluntary agreements, or where necessary, legislation. The revised Radio Equipment Directive\textsuperscript{140} applicable as of June 2016, empowers the Commission to require radio equipment within certain categories to interoperate with accessories such as chargers.

A revised version of the European Interoperability Framework extended with concrete and practical tools for the implementation of interoperability by public administrations in Europe

\textsuperscript{139} CEN-CENELEC and ETSI
will be instrumental for the full implementation of "One-stop-shop" and "once-only" principles ("end-to-end services"), in a coherent manner, at European and national levels of public administration. It will enable public processes and data transparency and it will also contribute to achieve a coherent way of publishing public data by different public entities so that open public data across Europe will deliver its full potential contribution to the EU digital economy. The possibility of making the EIF, transposed in National frameworks, of mandatory application could be envisaged. This mandatory application would bring all Member States on board and constitute also a leveraging instrument for the full application of the same principles across all national administrative entities.

Public procurers could drive the adoption of international and EU standards, and hence interoperability of digital products and services in Europe. For that purpose, a set of sectorial EU catalogues composed of common standards, technical specifications, guidelines, and testing tools, could be developed. For defined use cases, public procurers would need to comply to the EU catalogue in their calls for tender, or explain why they chose not to. Financial schemes could also be launched to incentivize private operators and suppliers to adopt specifications included in the catalogue. As compliance to common standards is not sufficient to ensure interoperability between products and services, interoperability testing, quality labelling, and certification schemes could be developed at EU level. A proper legal basis for such catalogues and certification schemes could be required.

Digitisation of the industry and data-based economy

[Problem and Problem drivers (with figures and results of surveys)]

Industry is one of the pillars of European economy – e.g. the manufacturing sector in the EU accounts for 2 million enterprises, 33 million jobs, a quarter of all EU added value and 60% of productivity growth. European industry, including the agro-food sector, needs to be at the forefront of developing and fully using the potential of ICT, automation, sustainable and clean as well as human-centred manufacturing and processing technologies to serve the markets of the future. The digitisation of all industrial sectors will be key for keeping a strong European industrial base and will enable Europe to manage the transition to a smart industrial system (Industry 4.0). This transformation process offers huge potential for increasing flexibility, efficiency, resource productivity etc. in the production and service sector, but also in our everyday life.

Yet the use of advanced digital technologies is very low, with only 1.7% of EU enterprises making full use of such technology, while 41% not using any of them. There are a number of challenges particular for industrial production, such as the need for open access to industrial platforms.

The IDC European Enterprise Software Survey 2012 regarding short-term intentions to increase usage of Big Data technologies revealed that 29% of European companies (excluding very small organizations) considered themselves ready for Big Data, while over 50% stated they were not, and the rest were undecided on their readiness.

111 Under Article 170 of the Treaty on the Functioning of the European Union (TFEU), to help achieve the objectives referred to in Articles 26 and 174 TFEU
112 Reference DG GROW

Kommentar [92/46]: DG COMP [see comments in sections above. We do not think that such a general need exists. There are numerous benefits of closed platforms, in particular the fact that they allow for monetisation of innovation and investment. This text should not express a generalised bias towards the openness of platforms.]

Kommentar [92/47]: DG GROW suggests some changes and additions as follows. Yet the usage of the second wave of advanced digital technologies (mobile communication, social media, cloud, big data analytics, Internet of Things) is very low even they have a massive transformative power. Taking into account a set of four such advanced technologies, around 2% of EU enterprises make full use of such technology, while 41% are not using any of them. There are a number of challenges particular for industrial production, such as the need for open access to industrial platforms.
In some manufacturing sub-sectors such as computer & electronics, and automotive & aerospace, there is a relatively large share of early adopters of Big Data technologies, as shown in Figure 1, particularly among larger businesses but in most other vertical markets, and among SMEs the situation is different: only 6.2% of companies with between 10 and 250 employees have already adopted Big Data technologies, against just over 30% penetration among companies with more than 250 employees.

Collecting, processing, accessing and protecting data is another major challenge: This includes issues such as ownership of data, treatment of personal and industrial data, availability, access and re-use, contractual terms and conditions, data security, quality of data (e.g. timely updates), authentication of users, cybersecurity, acceptance of electronic of documents, liability for incorrect information, standardization of languages and formats. One of the obstacles to effective facilitation of new digital businesses is due to the current legal framework in which traditional businesses fear to lose control on business analytics in favour of the digital platform providers. The latter have the forefront technologies and tools for analysing data and possibly to understand the business process, product errors, other deficiencies and customer preferences. Building trust is a key point.

Transition to digital often implies entire system change and requires many involved actors to act in a coordinated manner. Additional barriers might come from the industry structure and interrelation among sectors. Coordination failure is particularly evident in services like transport, that still suffer from non-interoperable legacy information systems, non-harmonised messages, missing technical standards and a limited legal framework for sharing information. Individual operators and administrations are collecting data on transport vehicles and cargo and their movements, without having coherent means to share it or to develop value added services. Even when initiatives on information exchange are being developed, these happen at sectorial level, in various modes of transport, and by different communities of stakeholders.
without extended communication between them. As a result, standards and information systems are only usable for specific purposes, on a specific part of the transport chain, and in specific regions. This lack of data sharing between transport sectors and modes leads to inefficiencies in the overall transport system—particularly in areas such as cargo transport. It hampers future opportunities for Europe to lead in rapidly developing technologies such as connected cars and automation. This makes it difficult to optimise processes with the help of ICT tools and prevents considerable economic and environmental gains from more efficient use of resources. At territorial level, the need also exists to have in the rural areas the same quality of ultra-rapid and low-cost penetration for ICT and broadband as the ones available in the urban areas. This is necessary for the rural areas in order to keep or attract new businesses and investments.

ENV: However, the opportunities of the ‘4th industrial revolution’ open up new ways of creating value and new forms of employment, for example, through downstream services. Smart algorithms can be applied to the large quantities of diverse data (big data) recorded by smart devices in order to provide innovative services. There are particularly significant opportunities for SMEs and start-ups to develop B2B (business-to-business) services.

Information and industrial technologies are now increasingly coming online or are being deployed at scales which can support closing reverse loops whereby waste becomes a resource and comes back into the production cycle. These digital advances can allow better tracking of materials (e.g., critical raw materials), more efficient collaboration and knowledge sharing about products and the umbrella term of “Big Data technologies”, is seen as very promising in terms of reduction of systemic waste. Cyber-Physical Systems (CPS) for example allow manufacturing processes to be optimised on a case-by-case basis across the entire value network. Moreover, rather than having to stop production, systems can be continuously optimised during production in terms of their resource-efficiency.

It is also important to aim for the convergence of technologies. Integration is the key issue. Such convergence is at the forefront of digital market development with mergers in the IT sector between traditional ICT developers, geospatial technology developers and service industry. EU companies are lagging behind, also due to the absence of EU legislative or policy measures.

The volume of data is rapidly growing: It is expected that by 2020 more than 16 zettabytes of useful data will exist (16 Trillion GB)\textsuperscript{145}, which implies an equivalent growth of 236% per year from 2013 to 2020. This data explosion is a reality that Europe must both face and exploit in a structured and aggressive way to create value for society, its citizens, and its businesses in all sectors.

At the same time, it is clear that data is a core asset that can create a significant competitive advantage and drive innovation, increase competitiveness and create societal impact. The following table provides examples of how Big Data will impact different sectors:

<table>
<thead>
<tr>
<th>Sectors/Domains</th>
<th>Big Data Value</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public administration</td>
<td>EUR 150 billion to EUR 300 billion in new value</td>
<td>OECD, 2013</td>
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<td></td>
<td>(Considering EU 23 larger governments)</td>
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<th>Segment</th>
<th>Potential Impact</th>
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<td>Healthcare &amp; Social Care</td>
<td>EUR 90 billion considering only the reduction of national healthcare expenditure in the EU</td>
<td>McKinsey Global Institute(^{12}), 2011</td>
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<td>Utilities</td>
<td>Reduce CO2 emissions by more than 2 gigatonnes, equivalent to EUR 79 billion (Global figure)</td>
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<tr>
<td>Transport and logistics</td>
<td>USD 500 billion in value worldwide in the form of time and fuel savings, or 380 megatonnes of CO2 emissions saved</td>
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<td>Applications &amp; Services</td>
<td>USD 51 billion worldwide directly associated to Big Data market (Services and applications)</td>
<td>Various(^{14},^{16})</td>
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\(^{12}\) Applying assumptions from the MGI report “Big Data: The next frontier for innovation, competition, and productivity” to the European healthcare sector

\(^{14}\) Big Data Market By Types (Hardware; Software; Services; BDaaS - HaaS; Analytics; Visualization as Services); By Software (Hadoop, Big Data Analytics and Databases, System Software (IMDB, IMC). Worldwide Forecasts & Analysis (2013 – 2018), marketsandmarkets.com, August 2013

\(^{16}\) Big Data Vendor Revenue and Market Forecast 2013-2017, Wikibon, February 2014

[Current situation in Europe. Is there European regulation? Policy steps taken so far etc. and need for addressing at European level?]

[Expected Impact – what changes/opportunities do we expect from solving the issue and, if possible, brief indications of options for action]

A quick push to the digital transformation of existing industries and the necessary cross-fertilisation with digital innovators represent a strategic input and the biggest opportunity for Europe. Researchers estimate that “75% of the value of the digital economy for Europe is in the potential for increased productivity, competitiveness and therefore job-creating ability of Europe’s existing businesses and enterprises”.

There is a strong correlation between companies that are adept at using new technology and those that grow and thrive (The Scale-up report on UK economic growth) and recent researches state that the companies making use of this second wave of technology are performing 10 times better than their peers.

On the enormous opportunity to reduce costs, IDC Manufacturing Insights, 2014, an International Data Corporation’s research estimates that if the top 100 European manufacturers could get scrap and rework to zero by incorporating systematically in their business process the results of their big data analytics, they’d save €160 billion.
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crowdfunding provided a frame for the Commission's work to support the development of alternative sources of finance for SMEs.

The Commission is also enhancing SMEs' access to finance by deploying financial instruments mainly in the form of loan guarantees and venture capital, channelled through selected financial intermediaries. The Competitiveness and Innovation Framework Programme 2007-2013 has so far supported over 350,000 SMEs in Europe, by mobilising over 18 billion EUR loans and 3 billion EUR of venture capital. Its successor, COSME, aims at mobilising by 2020 financing up to EUR 25 billion to a number of firms up to 330,000, through a loan guarantee and an equity facility. COSME instruments will work in synergy with those available under Horizon 2020 and will be part of a full set of instruments made available by the European Commission for the period 2014-2020.

Co-funding for public administrations and digital entrepreneurs to support the creation or the upgrade of public infrastructure and/or investments can be made available under different EU-level instruments, including:

1. the regional and cohesion funds;
2. the rural development fund;
3. the Connecting Europe Facility;
4. EIB/EIF; and, soon
5. the new European Fund for Strategic Investment.

Such instruments have a high potential to stimulate investments towards the achievement of the EU 2020 objectives to fully cover the EU territory by ultra-fast broadband, while ensuring at the same time the necessary conditions for investments, growth and job creation. This potential should be fully exploited by enhancing synergies and complementarities between the Funds, in particular in the programming of the regional, cohesion and rural development funds.

[Expected Impact – what changes/opportunities do we expect from solving the issue and, if possible, brief indications of options for action]

The upcoming Capital Markets Union initiative will aim at reducing SMEs' high dependence on bank financing. As a follow up of the Green Paper released last February 18th 2015, an action plan will aim at tackling the major issues which hamper businesses' access to greater finance, including risk capital, at reasonable costs. A Capital Markets Union should also help businesses to tap into more diverse sources of funding from investors in the EU and all over the world.

The new European Fund for Strategic Investment (EFSI), could be mobilised to support investments in projects, products or services that help SMEs to make the transition to digital more quickly, or offer targeted support for digital companies which want to go global, which will be co-financed by the EIB and the European Commission. One quarter of the EFSI resources will be used to support risk finance for SMEs and mid-cap companies, leading to investments of approximately €75 billion and relying on the European Investment Fund for the operational implementation. This should help SMEs overcome capital shortages
The reasons behind poor access to bank financing in Europe are twofold. On the supply side, banks are struggling with big balance sheets and tight capital regulations which make it far more costly for them to lend to SMEs. Lending to small businesses is riskier than other forms, so more cautious banks are more likely to direct their money to safer big companies or somewhere else. On the demand side, SMEs are currently more risk-adverse and less keen to get themselves into investment projects requiring external financing.

Non-banks forms of finance may constitute an alternative, complementary source of finance for SMEs, although some of them are not fully accessible for SMEs, as compared with their bigger brothers. For instance, a few SMEs are accessing corporate bonds, private placement, IPOs for various reasons, including high administrative costs. Alternative sources of finance, such as crowdfunding, are emerging, although their availability is still in an early stage and not fully developed in all Member States.

The Startup ecosystem is fragmented, which creates difficulties in accessing resources such as the right technical, entrepreneurial and leadership expertise. Scaling up the business across borders is cumbersome in terms of e.g. access to partnerships and funding. 18% of innovators in ICT FP7 projects consider expanding to more markets as the key need to capitalise on innovations. As a result, many EU companies which are successful on the Internet such as Spotify, Skype or Rovio find it difficult to reach critical mass for creating digital businesses across Europe. Some of the most successful ones are bought by US or Asian companies or settle in the US. Thus, European Internet and/or Cloud companies are trailing their US competitors, although there is scope for EU industry to play a greater role in the central layers of the digital value chain, in particular when it comes to hardware, software or applications/OTT.

Having different regulatory regimes across Member States makes the cross-border flow of investment capital difficult. At a time when businesses need more funding not only for growing, but also for investing in more sophisticated production environments and smart solutions, funding opportunities are scarcer in Europe. Furthermore, lack of financial expertise in Europe drives business opportunities away from digital. Exit – when investors seek to withdraw their investment from a company to release the associated profit – remains problematic in Europe with too few options.148

148 There is a clear link to the Capital Markets Union project in both entrepreneurship and the digitalisation of financial services.
Digital technologies and the exponential growth of data are key drivers to move research and science into open modes of operation. In order to further develop Open Science in Europe, raising awareness, building the necessary framework conditions and adapting skills are important steps. Open access to publications and research data, in full respect of the right to property and data-protection, can be promoted as a key element of open science by enabling a change in business models in the publishing world. Public authorities could also promote the take up of new technologies, including through innovative procurement.

A majority of stakeholders has expressed the wish to establish a European research cloud which would establish data driven science in secure virtual environments to generate smart solutions for analyzing complex data from different sources.

[Current situation in Europe. Is there European regulation? Policy steps taken so far etc. and need for addressing at European level]

[Expected Impact – what changes/opportunities do we expect from solving the issue and, if possible, brief indications of options for action]

If ‘Open Science’ becomes a target of coordinated EU Policy and bottom-up Stakeholder involvement then:

- The European Research Area will become more efficient by sharing and better use of resources
- A European Open Science Agenda under the European Research Area would make it easier for Member States to work together on issues of common concern (societal challenges)
- The establishment of an European Research Cloud would facilitate the storage and re-use of data under European governance and legislation

3.5 e-Society

Digitally skilled entrepreneurs, workforce and consumers.

[Problem and Problem drivers (with figures and results of surveys)]

A digital skilled workforce and digitally competent consumers are a driving force for the achievement of a truly connected DSM and a precondition for Europeans’ participation in the digital world of online commerce, services, communication and other forms of interaction. In Europe, however, we are witnessing a digital skills mismatch and shortage. To make sure that we have the necessary pool of digital skills in Europe (that is basic, intermediate and advanced level) human capital development needs to be improved.

Digital skills are a prerequisite for functioning effectively in the digital society. Yet almost half the EU population (47%) can be considered as insufficiently digitally skilled (having either low or no digital skills). Thus far, 20% of the EU population has never used the internet, mainly older people (55-74 years old), the low educated and the inactive, retired. More than 40% of European adults are digital illiterate. More than 70% of EU citizens have

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151 Cf. recent DG RTD-DG CNECT Public Consultation of the European Commission on Open Science (Science 2030: Science in Transition)
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only low to basic digital skills. Learning and acquiring digital competences goes beyond pure ICT skills and involves the critical, creative and collaborative, safe use of ICT. This includes the need to educate and protect consumers in relation to new disguised forms of marketing in social media, e-privacy and behavioural targeting of marketing through on-line tracking. Consumers and individuals often do not know about their online rights and the way to enforce them. All citizens need to have the right skills to actively participate in society and in the economy and benefit from digital services such as e-Health and e-Government, safe internet and on-line commerce.

The EU workforce also needs the right skills to participate in the digital economy and to benefit fully from the DSM. In the near future, 90% of jobs will require some level of digital skills; as a consequence, all EU citizens need to be equipped with, and be able to benefit from, digital competences. However, so far 39% of the EU workforce has insufficient digital skills and 14% has no digital skills at all. Demand for digitally competent professionals across all economic sectors continues to grow and is outstripping supply. Even though the number of ICT professionals is growing by more than 100 000 every year, 40% of enterprises trying to recruit ICT professionals have difficulty doing so. ICT professionals contribute to increased productivity in firms. It has been estimated that by 2020 up to 825 000 ICT jobs could be filled if only there were enough skilled employees.

Despite this strong shortage, the number of graduates is not increasing. In particular women need to be enticed to pursue ICT careers. Only 3% of female graduates have an ICT degree compared to 10% of male graduates; only 4 out of every 1000 female graduates with a computing or related degree go on to work in ICT-related activities. Effective study guidance in high school and college needs to attract more students into technical careers, particularly to expose more women to computer science classes. To the challenges outlined above, the DSM will need both qualified women and men. In order to meet the challenges, secondary and higher education institutions have to step up efforts in guiding more students into technical careers, for example by encouraging women to take computer science classes.

132 Digital Agenda Scoreboard 2014
134 Special Eurobarometer (2011) 'Attitudes on Data Protection and Electronic Identity in the European Union' found that 54% of respondents felt uncomfortable about websites using information about their online activity to tailor advertisements or content to their hobbies and interests. Seven out of ten people are concerned that companies might use data for purposes such as targeted advertising without informing them. Up to 22% trust search engines, social network sites or email services with their data Google’s privacy policy of 2012 stands accused of breaking existing national data protection rules in several EU countries, notably by combining personal data of users to target them with personalized advertising. The privacy policy change of Facebook has also raised concerns about the use of personal data to target advertising. It has for example led within days to an investigation by the Dutch Data Protection Authority.
137 Empirica study, reference
Additional efforts should also be undertaken to attract more STEM graduates and to introduce digital skills in curricula of vocational education and training which covers more than half of all the students in education and training in the EU.

Attracting more people into ICT careers will not be enough. In order to boost the acquisition through education and training, schools and universities need to themselves be ICT-minded.

Education and training are the key public services to enable citizens, irrespective of social background and gender, to take full advantage of the digital world and in particular the DSM. This requires well trained educators and modern and well equipped education institutions making best use of digital and other innovative tools to provide citizens with the skills and knowledge to fully participate in social, economic and political life. While infrastructure provision in schools in Europe varies considerably between countries, highly digitally equipped schools are on average a reality for only 37% of grade 4 students, 24% of grade 8 students, 55% of grade 11 students and 50% of grade 11 vocational students. Between 20-25% of students are taught by digitally confident and supportive teachers having access to ICT and facing low obstacles to their use at school. Only one out of three teachers in the EU reports frequent use of practices involving ICT. In terms of participation in online communities of practice, only one out of three students at all grades in the EU are taught by teachers who report participating in such communities.

Europe also lags behind in adopting new ways of learning, e.g. Massive Open Online Courses (MOOCS). In January 2015, less than 1000 MOOCS out of nearly 4000 stemmed from EU providers. Also in terms of users Europe’s largest MOOC provider (MiriadX) only reached 1,000,000, while American MOOC providers for example have reached 10,000,000 (Coursera) and 3,000,000 (edX) users. Digital skills are not a separate subject but are taught across subjects and are not embedded in the educational curricula and learning outcomes. Only one out of three teachers in the EU reports frequent use of practices involving ICT. Teacher education does not focus on pedagogical approaches using ICT. The use of open educational resources is fragmented.

Digital skills however are mostly learned outside formal education, in the workplace, in experiential learning or in other informal settings. Nonetheless validation and recognition of digital skills acquired in these settings is insipid. Mechanisms to identify, assess, recognise

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164 Reference DG EAC - OpenEducation Europa details
and validate these skills are rare and fragmented across Europe and not EU-wide accepted. This hampers the further acquisition of digital skills and the matching between job seekers and employers’ needs.

If citizens do not have access to digital and innovative education opportunities in formal, non-formal and informal education they might never unlock their full potential as digital learners, employees, entrepreneurs or citizens. This in turn will exacerbate the digital divide affecting primarily groups already at risk of discrimination and marginalisation. Educational institutions need to improve their capacity to adapt, promote innovation and exploit the potential of technologies and digital content. Additionally these opportunities need to be available with a lifelong perspective.

ECFIN: The same study also found enhancing digital skills in a professional setting to increase the intra-sectoral allocative efficiency of resources in the economy, e.g. due to the better capacity of firms to react to changes in the competitive environment. The possible impact of further reform efforts was estimated to be about 0.44% of GDP in the long-run.

[Current situation in Europe. Is there European regulation? Policy steps taken so far etc. and need for addressing at European level]

Member States and regions have most competences and instruments in the area of education and labour. Nevertheless, with the recognition of a digital skills shortage and mismatch affecting Europe, several private and public initiatives have been implemented at national and European level. The Commission has launched several studies to better understand the nature and scope of the problem and its implications for education as well as several projects and initiatives that aim to mitigate the identified digital skills problem and raise civil and political awareness of the topic. Noteworthy initiatives include “Opening up Education: Innovative teaching and learning for all through new Technologies and Open Educational Resources”, the eSkills Campaign, the European Coding Initiative, the EU Code Week and and the Grand Coalition for Digital Jobs, which aims to bring educational institutions and employers closer together to increase the supply of ICT practitioners in the EU.

To reinforce digital skills and learning across Europe, to empower Europe’s workforce and consumers for the digital era and to support Member States in tackling the issue, a holistic strategy is needed, with a view to building the capacity of education providers to engage in the DSM, and to design and deliver digital education and skills to European citizens as well as

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100 E.g. ICT for Work – Digital Skills in the Workplace, launched in 2014, and ICT in Schools study, 2012. An update of this study will be re-launched in 2015.
101 I.e. an action plan to facilitate schools and universities to deliver high quality education through ICT and digital content, as well as the digital skills which 90% of jobs will require by 2020. The initiative focuses, inter alia, on the uptake of ICT-based innovation in learning and teaching (in particular open learning environments, open educational resources and improvements in educational infrastructure), underpinning the delivery of skills for the 21st century, including digital skills. It calls for better ICT infrastructure and connectivity in schools, including actions to connect every school, every classroom to high speed broadband services by 2020.
102 Initiative based on the Communication "e-Skills for the 21st Century".
103 Initiative led by ICT-companies and European Schoolnet to bring coding skills to teachers, kids and adults.
104 Other projects are e.g. the Open Knowledge Technologies - Mapping and validating knowledge, EP Pilot I and II, the Platform for Learning and Inclusion, the Safer Internet Programme; the Platform for ICT training & learning
105 I.e. a multi-stakeholder partnership that endeavours to facilitate collaboration among business and education providers, public and private actors to take action attracting young people into ICT education, and to retain unemployed people
the new pedagogies they foster. Such a strategy should address Member States' national context, not only due to the significant differences across Member States in terms of skills needs and deficits, but also because Member States and regions have most competences and instruments in the area of education and employment. At the same time, such a strategy should gain from EU-wide synergies — in terms of sharing of best practices, peer learning, access to EU level funding, support to institutional infrastructure and equipment, teacher training for new pedagogies, support for the development and delivery of innovative digital materials, better cross-European recognition of digital/ICT qualifications (e.g. those obtained through non-formal and informal learning, such as MOOCs), support to European educational technology and software provision, mobility of ICT students and specialists within Europe, immigration to the EU, support to reforms in this area through the European Semester and Education & Training 2020 processes and anticipation of skills needs.

The key objectives of such a strategy could aim at: (a) modernising and strengthening education systems across the EU to make sure to boost horizontal competences including digital competences for educators and learners; (b) harnessing digital technologies for learning, (c) improving the digital skills of the general workforce and ICT specialists in the short term, comprising new, highly specialised digital skills, like big data analysts, cybersecurity specialists and coders/programmes (d) promoting the recognition and validation of skills to promote confidence, encourage uptake of digital materials and new teaching methods and facilitate free movement of workers and (e) anticipating and analysing skills needs to enable education and training systems to continuously improve and adapt, where needed.

Further developing a EU competency framework and online assessment tool will facilitate the recognition of digital skills and qualifications for citizens and consumers in an EU-wide online skills portfolio.

[Expected Impact — what changes/opportunities do we expect from solving the issue and, if possible, brief indications of options for action]

Strong, modernised and inherently innovative education systems will be able to provide the skilled and competent, and in particular the digitally competent workforce which is the foundational basis required for the DSM. It is without doubt that the DSM can and will not succeed unless European citizens have the highest possible level of competences and skills, in particular in the digital field; this is only possible through access to the best possible education and training systems and ongoing learning opportunities.

The provision of such systems across the EU will ensure the capability of citizens to continuously adapt to new needs and changes in the labour market, but also civic and social life needs — such as in particular the case for digital skills which continuously need to be updated and upgraded.

The forthcoming European Skills Strategy should therefore also address the need to develop digital skills and education, with a view to bringing education and training systems into the digital era. This will be the best possible investment in the short-, medium- and long-term, to ensure that Europe's population is creative, innovative and competitive compared to the global standard.
Businesses' and citizens' interaction with public services.

[Problem and Problem drivers (with figures and results of surveys)]

While the take up of e-Government services is growing, progress is far less rapid than growth in other online services, such as e-Banking, etc. e-Government is crucial to reduce business costs and increase efficiency and the quality of the services provided to citizens and companies. Conversely, analogue public services slow down the digitalisation of businesses as well as reducing convenience for citizens.

The "once only principle" has not been widely adopted: only in 48% of cases public administrations reuse information about the citizen that is already in their possession without asking again. The extension of this principle would likely generate an annual net saving at the EU 28 level of around 5 billion EUR per year by 2017. A digital by default strategy in the public sector at EU28 level could result in around €10 billion of annual savings. The adoption of e-invoicing in public procurement across the EU could generate savings of up to €2.3 billion. By fully exploiting public sector data, governments could reduce their administrative costs; for Europe’s 23 largest governments, some estimate potential savings of 15% to 20%. Estimates suggest the overall economic gains from opening up this resource could amount to €40 billion a year in the EU. For example, access by companies and consumers to information stored by national public registers is still difficult in a cross-border context. As an example, while the interconnection of business registers will soon provide access at EU level on certain companies, this will only cover 45% of the total number of businesses registered in the Member States. Another example is the case of medical technology industry for which 70% of outputs result from hospital procurers.

Information gaps increase costs for business, in particular SMEs. Contact points between public authorities and citizens/businesses are currently fragmented (thus less visible), often outdated and incomplete. For example, contracting authorities that have already switched to e-procurement report savings of between 5% and 20%. Nevertheless, the public procurement market is by far less integrated at European level. Whilst the average import penetration in the private sector is estimated at 19.1%, in the public sector it accounts for merely 7.5%. The continued existence of barriers in the Single Market prevents European enterprises from taking full advantage of business opportunities in other Member States.

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177 “Delivering the European Advantage? How European governments can and should benefit from innovative public services”, e-Government Benchmark Report by Cap Gemini (conducted on behalf of the European Commission, Content Technology and Networks Directorate General) A study by DG CNECT (April 2014)
178 Reference DG GROW
179 End-to-end e-procurement to modernise public administration, COM(2013) 453 final
181 Open data: An engine for innovation, growth and transparent governance, COM(2011) 882 final
182 As per Directive 2012/17/EC the Commission is supporting the interconnection of business registers providing access at EU level to information on limited liability companies, to be operational by early 2017.
183 The European market size of the medical technology industry is estimated at roughly €100 billion in 2011 (representing 30% of the world medical technology market)
185 Reference DG GROW
186 Reference DG GROW

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Public expenditure accounts for almost 50% of GDP and the public sector represents about 17% of total employment\(^3\). Furthermore, public administrations have a powerful means to pull innovation; in the EU, the overall market for purchases of goods, services and works by the public sector accounts for almost 20% of GDP. Whilst e-procurement has a great potential to facilitate access to markets and stimulate competition across the Single Market, it also carries the risk of further Single Market fragmentation in case of the lack of interoperability between the various systems. This needs to be addressed with appropriate tools and measures.

Improving access to justice through electronic means for citizens and businesses is essential for ensuring effective redress both in- and out-of-court and for the enforcement of rights guaranteed under EU law. European e-Justice\(^4\) facilitates access to justice and cross-border judicial proceedings through the use of information and communication technology, for example by making it easier for citizens to find a lawyer/notary in the EU and for businesses to search for insolvent entities through interconnected insolvency registers. Improvements to the functioning of European e-Justice are needed for further increasing the inter-operability of both national and EU justice systems.

Public administrations do not sufficiently encourage the use of online procedures and digital by default is still rare. In addition to steps already taken to enable businesses and citizens to interact with public services in the analogue world, there seems to be a potential for a more systematic inclusion of e-Government elements in new proposals and regulatory frameworks, particularly for those which have been shaped mainly for the off-line world and may no longer be fit for purpose in the digital world. This set of problems includes public services including justice and health not yet being digital first. Digital approaches are often implemented in silos thus hampering the provision of end-to-end services to citizens and businesses. The "once only principle" has not been widely adopted and public sector information is published in disparate formats raising barriers to the exploitation of this data by third parties etc. In general, existing rules in company law and corporate governance do not sufficiently integrate the benefits of digital technologies. Companies are still faced with paper-based formalities, whether for registration purposes or for filing and reporting purposes. In particular, cross-border online registration of companies is not yet available in the EU.

The full implementation of the DSM in Europe is highly dependent on having in place interoperable digital public services, at European, national, regional and local level to European citizens and businesses.

Translating into reality “One stop shop” and “once only” concepts, implementing transparency and open public data, all necessary ingredients of the public sector modernisation, require underlying interoperability among public sector entities.

The digitalisation of the public administration enables public sector innovation. Open and collaborative government and new forms of service delivery empower citizens and firms to co-create in collaborative services. At the same time, a full use of digital technologies requires changes in the administrative cultures and innovation inside public administration.

\(^3\) Annual Growth Survey 2013, COM(2012) 750 final
\(^4\) https://e-justice.europa.eu/home.do
Specifically in the urban context the European Innovation Partnership on Smart Cities and Communities (EIP-SCC)\(^{15}\) tries to tackle the e-Government gap by developing concrete projects and best practices for further replication in Europe. Its concrete and manifold links to public administrations (spanning from small cities to regions) and companies (including a large number of SMEs) helps both the effective and efficient roll-out of new ways to use e-Government concepts and consolidate and share lessons learnt from these efforts.

The EIP-SCC has a specific working group (a so called "Action Cluster")\(^{16}\) on Citizen Focus, dealing inter alia with citizen platforms and various forms of citizen engagement.

[Current situation in Europe. Is there European regulation? Policy steps taken so far etc. and need for addressing at European level]

Citizens today are more aware of their rights, have better access to information on public services and consequently have higher expectations of service levels, especially as they become accustomed to private sector organisations providing customisation and other benefits. They expect efficient and effective service delivery, less red tape, greater transparency and participation.

The Annual Growth Survey for 2015 indicates – yet again – that 'improving efficiency in public administration' is an area for reform. The European Council Conclusions of October 2013 state that "EU legislation should be designed to facilitate digital interaction between citizens and businesses and the public authorities. Efforts should be made to apply the principle that information is collected from citizens only once, in due respect of data protection rules."\(^{17}\)

There are a number of legislative initiatives with direct relevance for e-Government, such as the eIDAS regulation on mutual recognition of electronic identities and signatures; the Directive on Public Sector Information to maximise the impact and benefits of Open Data; the Services Directive and its requirement that any requests to establish a company in another Member State shall be done electronically via the Points of Single Contact; eProcurement Directives, etc.

The Services Directive\(^{18}\) was one of the first EU legal instruments requiring the Member States to put in place electronic procedures and to make it possible for service providers to comply with the necessary legal and administrative formalities electronically, for both domestic and cross-border businesses.\(^{19}\) The main goal of the Points of Single Contact...

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\(^{15}\) [http://ec.europa.eu/eip/smartcities (official page) and http://eu-smartcities.eu (market place)]

\(^{16}\) [http://eu-smartcities.eu/citizen-focus (Action Cluster on Citizen Focus)]

\(^{17}\) Directive 2006/123/EC on services in the internal market

\(^{18}\) One of the key issues for making the electronic procedures works across borders was to facilitate the interoperability of national solutions. For this purpose, the decisions adopted under the Services Directive, put in place legal framework to ensure acceptance of electronic signatures. This approach was latter incorporated in the Regulation Commission Decision 2009/767/EC of 16 October 2009 setting out measures facilitating the use of procedures by electronic means through the ‘points of single contact’ under Directive 2006/123/EC of the European Parliament and of the Council on services in the internal market, as amended by Commission Decision 2010/425/EU of 28 July 2010 amending Decision 2009/767/EC as regards the establishment, maintenance and publication of trusted lists of certification service providers supervised/accredited by Member States and by Commission Decision 2011/130/EU of 25 February 2011 establishing minimum requirements for the cross-border processing of documents signed electronically by competent authorities under Directive 2006/123/EC of the European Parliament and of the Council on services in the internal market.]
created under the Services Directive was to simplify administrative requirements. It is clear that the Point of Single Contact potential is much greater; they bring the benefits of government to entrepreneurs and are a major step towards more efficient public online services. In fact, many of the Member States clearly link their PSCs efforts with their e-government agendas. However, the assessment of the Points of Single Contact carried out by the Commission\textsuperscript{189} (Deloitte study and the Capgemini study – currently ongoing – to be finalised by April/May 2015) as well as business organisations\textsuperscript{190} (Eurochambres, BusinessEurope, report of the High Level Group on Business Services) shows that the Points of Single Contact do not yet fulfill the businesses’ needs in terms of the scope of information that the Member States are required to provide, the availability of information in the foreign language or the possibility for interacting with the public authorities fully online, including for foreign businesses. The PSC Charter\textsuperscript{191} proposed by the Commission in 2012 encouraged Member States to work towards more ambitious Points of Single Contact to make life easier for businesses. This approach remains to large extend voluntary and does not resolve the issues of the differences in the scope and quality of e-services offered to businesses. Additionally other pieces of EU legislation have also put in place other contact points for businesses. This is above all the case for the product contact points and construction product points\textsuperscript{192}. Compared to the points of single contact under the Services Directive they differ in the way they provide the information and lack of electronic procedures. From the point of view of businesses, it creates unnecessary duplications, uncertainty where to look for information and provides varying degree of e-services.

The Commission’s priorities should include:

- Making the interconnection of business registers (BRIS) a reality by early 2017, allowing for an expansion of the scope to cover all other types of businesses - allowing citizens, businesses and investors to have greater access at EU level to data about European companies, thus increasing transparency and legal certainty in the Single Market. Once in place, the platform for communication between registers could easily support further exchanges of information between the business registers.

- Online registration of companies across borders: For facilitating cross-border mobility of businesses, online registration, in particular cross-border, currently proposed for private single-member companies, should be available in the EU for all types of businesses (for cross-border and cross-application interoperability, e-government systems need to apply common definitions of attributes characterising persons, companies, locations and public administrations. Standardised core vocabularies have to be developed, maintained and promoted at the EU level).

- Digitalisation of company law: The Commission is also planning to assess to what extent the current company law framework is fit for the digital age. In the longer term, the areas where improvements may be necessary include electronic filing (“digital by default”).

\textsuperscript{189} Study on the functioning and usability of the Points of Single Contact, Deloitte 2012. Available at: http://ec.europa.eu/growth/single-market/services/services-directive/study_on_points_of_single_contact_en.htm, currently ongoing assessment by Capgemini


\textsuperscript{191} http://ec.europa.eu/internal_market/services/docs/services-dirpse-charter_en.pdf

\textsuperscript{192} 2008 Mutual Recognition regulation for goods and the 2011 Regulation for construction products
"once only reporting principle"), electronic exchanges of documents between authorities across the EU for example using the platform for interconnection of business registers, and the introduction of electronic voting systems for company shareholders.

The EU e-Government Action Plan 2011-2015 is the key policy instrument, steering Member State and Commission actions in four priority areas: Strengthening the Single Market, enhancing efficiency and effectiveness of public administrations, empowering citizens and businesses, and developing the necessary preconditions.

The European Interoperability Framework promotes and supports the delivery of European public services by fostering cross border and cross-sectoral interoperability. The great majority of the Member States have transposed nationally the European Interoperability Framework (EIF), adopted by the Commission in 2010\textsuperscript{105} which has brought a common understanding among Member States on the basic requirements to achieve interoperability between public services. This common understanding on basic requirements, accomplished with the EIF, should now be updated and extended with other concrete and practical instruments to be shared around Member States administrations such as the European Interoperability Reference Architecture (EIRA) and the European Interoperability Cartography (EUCart),\textsuperscript{104} as explained in the section "Interoperability and standards".

In addition to the legislative and policy instruments, e-Government is supported through a number of funding programmes: (1) The Connecting Europe Facility Digital Services Infrastructures (CEF DSI) deploys digital public services that work across borders, an essential precondition for the DSM. (2) The ISA programme (Interoperability solutions for European Public Administrations) creates a framework that allows Member States to work together to create efficient and effective electronic cross-border public services for the benefit of citizens and businesses. (3) Horizon 2020’s Societal Challenge 6 finances projects aimed at ICT-enabled open government. (4) Finally, the European Structural Funds also provide investments in the field of e-Government in less favoured regions as it is seen as a strategic component of their economic and social development.

[Expected Impact – what changes/opportunities do we expect from solving the issue and, if possible, brief indications of options for action]

Economic assessment of the implementation of the Services Directive estimated that further procedural streamlining via Points of Single Contact in Member States could generate up to 0.15% of GDP in the medium run (5-year horizon) and up to 0.21% of GDP in the long run. Extending the scope of the Points of Single Contact and making them comprehensive business portal could further contribute to simplification, savings for public administration and more coherent approach in providing information and e-services to businesses.

A revised version of the EIF extended with concrete and practical tools for the implementation of interoperability by public administrations in Europe will be instrumental for the full implementation of "One-stop-shop" and "once-only" principles (end-to-end


\textsuperscript{104} The Interoperability Solutions for European Public Administrations (ISA) programme (2010 – 2015) monitors and supports the EIF implementation in Europe. It will be followed by the ISA programme (in the inter-institutional procedure at the time of this writing).
services”), in a coherent manner, at European and national levels of public administration. It will enable public processes and data transparency and it will also contribute to achieve a coherent way of publishing public data by different public entities so that open public data across Europe will deliver its full potential contribution to the EU digital economy.

According to a citizen survey, the main benefits of e-Government are: saving time (80% of respondents), flexibility location and time-wise (76%) and saving money (62%). Some concrete examples:

- The use of digital signatures in Estonia has saved an average working age person one week’s worth of time per year.
- In Norway pension claims which used to take months to settle are now dealt with in a matter of minutes.
- The UK has estimated savings of nearly 2 billion pounds per year thanks to the introduction of on-line service delivery by default.

In the short to medium term the following actions should be implemented in order to maximise the impact of e-Government, both at EU level and in the Commission itself.

- Once only principle: as a first step, work towards setting up an EU wide centralised once-only system for a limited range of frequently used documents containing the same data, related to a specific (business) sector and store them in an ‘eSafe’.
- Joining up, expanding and improving EU and national information and assistance services into a common platform that operates as a Single Digital Gateway to provide a seamless user friendly system enabling citizens and businesses to better benefit from the Single Market.
- Speed up the deployment of cross border digital public services: Deployment and promotion of the CEF DSIIs (digital service infrastructures) to achieve 100% availability by 2020 of a number of cross-border digital services (e-Procurement, e-Justice, e-Health, business mobility, interconnected business registers, open data)
- E-procurement: provide technical and financial support to MS with a view to accelerating their transition towards full electronic procurement.
- e-Invoicing: support the implementation of a European standard for electronic invoicing and the requirement for all contracting authorities to receive and process e-invoices complying with this standard by 2018/2019.
- Make the interconnection of business registers (BRIS) a reality by early 2017, allowing citizens, businesses and investors to have greater access at EU level to data about European companies, thus increasing transparency and legal certainty in the Single Market.
- Make online registration of companies across borders available to all types of businesses.

193 Delivering on the European Advantage: "How European governments can and should benefit from innovative public services"
• Revise and extend the existing European Interoperability Framework for digital public services (already applied in 24 Member States)

**e-Health**

**[Problem and Problem drivers (with figures and results of surveys)]**

Digital technologies for health and care offer opportunities for patients, citizens, health and care providers and industry. Digital solutions can empower citizens to manage their health and diseases. With digital solutions health and care systems can improve their efficiency and effectiveness and cope with staff shortages to meet the increasing demand from an ageing population. For the European industry, they constitute a large and growing market, serving the public sector and citizens, and creating high quality jobs and growth by combining the sectors of high-tech, ICT, biotech and health. A strong European industry will have a global reach.

In spite of the evidence of positive impact, most e-Health and e-Care solutions don’t benefit from the large internal EU market potential. The deployment of digital health and care is stopped by barriers and borders. Implementations are small scale, with proprietary designs due to the lack of interoperable ICT solutions and European standards. The market is fragmented, resulting in increased costs and slow uptake by public authorities and citizens. The uncertain market makes industry risk-averse, while also public authorities are hesitant to invest and procure these solutions. As a consequence many citizens do not benefit from innovation in the field of digitally enabled health and care products and services.

Cross-border healthcare in the EU is a growing phenomenon. However, lack of technical and legal interoperability of health information systems means that patient data cannot be transferred across national borders. This acts as an obstacle to the free movement of patients for planned care, and makes situations involving emergency care more difficult than they should be. The lack of an EU-wide legal framework for recognition of telemedicine services and providers means that cross-border market access for such providers is difficult: clarifying the rules would facilitate the provision of innovative and cost-effective health services.

The 2014 Green Paper on mobile health found that safety requirements for lifestyle and wellbeing apps are not covered by EU legislation. The public consultation confirmed that concerns about the safety of apps and security of data reduce citizens’ trust and use of mHealth solutions.

**[Current situation in Europe. Is there European regulation? Policy steps taken so far etc. and need for addressing at European level]**

The e-Health Action Plan 2012-2020 is guiding the current efforts in e-Health.

Horizontal EU legislation in place or in the law-making process applies to e-Health: Directive on the application of patients’ rights in cross-border healthcare, Data Protection Directive (under review), Regulation on electronic identification and trust services for electronic transactions in the internal market, Medical Devices Directives (under review), General Product Safety Directive (under review), and the Cyber security Strategy of the European Union (including a proposal for a Directive to ensure high network and information security across the Union).
Directive 2011/24/EU on patients' rights in cross-border care clarified the legal framework for patients to be reimbursed for cross-border healthcare. Firstly, it established the principle that an episode of telemedicine is considered to be provided in the Member State where a provider is established (thus a patient at home having a consultation with a doctor in another Member State is receiving cross-border healthcare). Secondly, the e-Health Network established cooperation between Member State health systems. The intention was to allow the Commission and Member States to work together on measures which are not legally binding but provide additional tools to facilitate interoperability and to support patient access to e-Health applications. The Network has adopted guidelines on patient summaries and e-Prescriptions, and is working on the use of health data for public health and research. The IT system supporting the exchange of patient summaries and e-prescriptions is being built funded by the Connecting Europe Facility.

The Multi-Stakeholder Platform is working on standardisation in e-Health alongside ISO/CEN/CELENE and other standardisation organisations, as well as industry.

Under Horizon 2020 (and previously in FP7) many research, innovation and development actions have been implemented to test solutions (e.g. ICT-based solutions for management of chronic diseases and independent living) for the European market. Particular focus is on patient empowerment.

The European Innovation Partnership on Active and Healthy Ageing (EIP AHA) has formed a community across many EU regions of a critical mass of over 3000 stakeholders with considerable expertise in innovative digital solutions (such as m-Health, telehealth and telecare) for citizens, care systems and industry. In six Action Groups they tackle health and ageing related challenges at European scale, involving 2 million patients. The EIP AHA Reference Sites and other regions have already deployed a range of innovative practices. These are available for sharing, transferring to other regions and scaling up. In addition, the EIP AHA has developed a Scaling-up Strategy that can underpin EU policy actions concerning deployment of services. The EIP AHA via sharing and replication of good practices, common interoperability specifications and joined-up procurement of digital solutions can continue to promote stronger collaboration of national and regional authorities on the implementation of products and services for health and social care.

Despite these initiatives, additional measures are needed to improve access to trusted digital health solutions and to provide legal certainty to users, service providers and businesses.

[Expected Impact – what changes/opportunities do we expect from solving the issue and, if possible, brief indications of options for action]

- Empowered citizens that have the means to look after their own health, increase their quality of life and independence, and enjoy their freedom of living and working where they prefer while connected to their care providers.

- The demand side participating in the EIP AHA demonstrates the growth in the use of digital care and well-being services and its impacts on citizens, healthcare systems and the economy. Together with regions that have smart specialisation strategies for health and ageing, they test and demonstrate DSM measures related to their areas and sectors.

- More effective, resilient and sustainable health and care systems. However, disruptive change will also result from digital services becoming widely available.
- A DSM for digital products and health and well-being solutions in particular, meriting citizens' trust in their effectiveness, security and respect of privacy.

- Increased competitiveness of the European industry and making Europe a world leader in the provision of digitally enabled health and care products and services to citizens.

- Substantial acceleration in the availability of trusted, digitally enabled healthcare products and services across Europe, with a consequent creation of a scalable internal market with new companies and emerging jobs in other health related industries.

**e-Energy**

The energy sector and the related infrastructure have started a radical change. In the new system, millions of citizens, industries and commerce will engage in active management of their energy, supplying electricity from residential, industrial or community-based renewable sources. They will exploit the flexibility of their new electricity uses for transport, heating and cooling. Users and companies will be able to optimise their withdrawal or supply of energy through different vectors and local storage, on the basis of new digital retail and local markets. The on-going deployment of smart meters in many EU countries will provide massive amounts of data and new opportunities for the coordination of this distributed demand and generation. The digital energy system will also open up opportunities for new services and new actors. The take-up of digital e-energy is key in progressing towards the agreed energy transition in Europe. In view of competing developments in countries such as the US, Japan and South Korea, the strong European energy technology manufacturers need to fully embrace these new innovations and validate them in Europe to nurture their world-wide competitiveness.

- A major part of the change will take place on electricity distribution networks. Following the unbundling of the energy sector, distribution system operators (DSO's) have focused on improving quality of supply, reducing costs and for many, connecting increasing amounts of renewable generation. Many are now planning and starting the deployment of smart metering systems, opening up opportunities for embracing digital technologies. While the legacy assets of over 2,400 distribution system operators in Europe show a very patchy structure, the recent standardisation efforts at CEN/CENELEC/ETSI level promises the potential of better convergence on digital solutions for the energy sector. Interoperability of solutions will be key in motivating infrastructure upgrades in a traditionally prudent sector. The deployment of digital monitoring and control technologies is key in mitigating the infrastructure investments that will be required to parallel the energy/climate objectives for 2030 and 2050. An important aspect will be ensuring early adoption and deployment of interoperable smart charging solutions for plug-in electric vehicles, ensuring their expected massive rollout brings benefits rather than unwarranted costs to the energy sector.

(6) According to the IEA world energy outlook 2014, Europe will need to invest about 2 trillion € in the energy system between 2014 and 2035. A sizeable share of this could be invested by citizens and the private sector "on the edge" of the grids, if an appropriate retail market incentivises intelligent energy producers/consumers.
A wide adoption of digital technologies will raise important questions in terms of roles of incumbent and new players, particularly in the management of the e-energy data streams, and responsibilities in terms of access rights, data privacy and cyber security. It will raise issues in terms of domains, IP addresses, and big data handling, and in terms of compatibility among regulations for energy, electronic communications and transport.

**e-Transport**

*Problem and Problem drivers (with figures and results of surveys)*

In transport, digitisation can drastically increase the efficiency of processes and abate administrative burden, improving transport management and developing new services/businesses and the rollout of new vehicle services and technologies. There are many potential developments already taking place or likely to be introduced over time through market initiatives.

However, several barriers still need to be tackled for a full exploitation of the possibilities offered:

- Transport involves many different actors (public or private, administrations, companies, individual users), who have difficulties to coordinate. This leads to a mosaic of standards/formats for data exchange, hindering the reuse of data from one mode to another. Therefore, although a large part of the data exchanged between transport players is common to several documents, transport players spend time and money to repeatedly submit the same data into different systems (e.g. for reporting to authorities, out of the 2300 elements required for various modes and authorities, 800 are common to all reporting requirements[^1]). Stakeholders call for more coordination, towards a common "language" for logistics data.

- The lack of recognition by all stakeholders of electronic documents still hinders the use of e-documents: for road or air transport, transport operators cannot always use electronic consignment notes as some authorities require them to present paper documents for controls, in addition to electronic documents. Further, for electronic bills of lading to keep their potential status of "negotiable documents" (documents of title), banks would need to accept e-transport documents. More generally, legal rights normally obtained through the transfer of a transport document from a stakeholder to another (such as insurances) need to be transferred irrespectively of the means of transfer (e.g. electronic; physical).

- Stakeholders involved in the transport chain all have at their disposal large quantities of information, which could serve new opportunities (e.g. use of data owned by transport network managers on traffic conditions could enhance real-time supply chain management). But data owners are in general reluctant to share their data more widely for questions such as the trust framework, business models (who should pay for collecting data, who should pay for using it), information on potential success stories, information on data quality levels, and liability for the veracity and quality of data submitted or transmitted.

[^1]: Source: e-Freight FP7 project, D.3.2
• Stakeholders are still hesitating to use digital transport services because there is often a lack of trust in the security of information flows, in systems reliability, in protection of personal data and sensitive data like commercial / safety / security data. Secure logistics data exchange is especially key given the sensitiveness of logistics as a trade enabler.

• Finally, the whole process needs to accelerate in order to give a head start to EU industry. At present, there are rapid developments occurring in the area of connected and automatic vehicles—where data transfer will be key to the rollout of these new opportunities.

[Current situation in Europe. Is there European regulation? Policy steps taken so far etc. and need for addressing at European level]

The importance of smooth information flows is reflected in the developments by public authorities of tools to simplify access to traffic and transport data within specific modes: tools are at different stages of development and implementation for transport by sea (SafeSeaNet, Directive 2010/65/EU, Blue Belt, eMaritime), inland waterways (RIS), rail (TAF-TSI), road (ITS-Directive 2010/40/EU), air (SESAR).

e-Commerce also provides a wide variety of tools, including single window services for easier clearance to customs, based on requirements defined in international legislation and included in the Union Customs Code (UCC) recently adopted. The 'UCC Work Programme' contains an ambitious plan to set up further EU wide customs systems in the coming years.

However, these systems lack coordination: standards are dispersed and their implementation is not uniform. Tools still stay dedicated for specific purposes, to a specific part of the transport chain, to specific regions, and flows of information remain fragmented. That leads to the difficulty to reuse data from a "form" to another, and therefore to repeated data submission into different forms.

[Expected Impact – what changes/opportunities do we expect from solving the issue and, if possible, brief indications of options for action]

Through developments in the field of digital transport, more reactive, efficient, collaborative and reliable transport can be expected. In particular:

• Companies sending goods will have all elements to choose the transport services which fit their needs at best thanks to online platforms listing available services in all modes. They will also be able to bill consignees more quickly, thanks to real-time confirmation of goods delivery.

• Passengers will be aware of all possible travel options, allowing them to choose the most suitable combination of modes for the journey, tailored to their needs (e.g. for disabled persons / passengers with reduced mobility). Reliable and frequent public transport services have been shown to contribute to higher levels of satisfaction with public...
transport and an increase in demand levels. Further, 1% of modal shift from car to bike and public transport accounts for the reduction of 24 000 tons of CO$_2$/year.

- Transport operators will optimise transport management through real-time information and reaction to delays or incidents, for instance by rerouting passengers or goods towards another transport mode: first studies estimate that tracing goods could reduce costs by €4.3 billion from 2012 to 2027 in Europe.

- Resources spent at controls or for complying with administrative requirements will decrease, thanks to online handling of administrative tasks (savings of up to $12 billion per year in the air sector), and thanks to remote access to trucks on-board systems which will limit the time trucks have to stop for controls.

- Factories will optimise inventory management and need fewer storage capacities through better predictability of goods arrival times ("just-in-time deliveries").

- Transport operators will more easily measure and work on a reduction of their environmental impacts. They will either optimise each transport leg (e.g. ecodriving, slow steaming), or the entire logistics ecosystem: thanks to tools matching supply and demand of transport capacities which will enable more cooperation between all transport players, e.g. for bundling several shipments in the same vehicle, load factors as well as the overall efficiency of the whole logistics ecosystem will increase, and thereby CO$_2$ emissions and costs will be saved. There is indeed large potential for improvement when today, 24% of goods vehicle kms in the EU are running empty and average load factor is 57%.

- Safety: drivers will be helped by on-board systems alerting them on dangerous areas. Driver assistance in vehicles is developing rapidly – leading to much safer vehicles. Furthermore, emergency services will more easily know the content of the goods involved in an accident, and better define how to react.

- Security: through more and better data on the goods and security controls already applied to cargo, security risk assessments by authorities will further improve. And real-time information on vehicles will reduce thefts of trucks (these represent €8.2 billion per year in Europe).

- Need for maintenance of vehicles and infrastructure will be identified more quickly thanks to information sent by vehicles or by infrastructure components. This will increase safety and decrease resources spent to identify those needs.

- Congestion: according to a study on real-time traffic information, if no further intervention by the European Commission is undertaken beyond the actions already

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200 According to the Lyon conurbation (Urban ITS Guidelines 2012) (1.5 million inhabitants) who has identified the different costs of measures to reduce CO$_2$ emissions

201 "Legal, technical and organisational support on exploring the expediency a Directive on GNSS-based multimodal logistics" www.gps.gov/subscribe/202 http://reports.weforum.org/global-enabling-trade-2013/ata/ the World Economic Forum (WEF) estimates benefits of moving from paper to electronic documents up to $12 billion per year in the air sector


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required by the ITS Directive within the time line 2015-2025, congestion costs could amount to about € 13.6 billion in EU27 in 2025. Developments such as improved connectivity between vehicles and later in automated vehicles can further contribute to dramatically easing traffic congestion.
Annex: Data sources, collection and analysis


- “Consumer market study on the functioning of e-commerce and Internet marketing and selling techniques in the retail of goods”, Final Report by Civic Consulting for the European Commission, September 2011.

- “Consumer market study on the functioning of the market for internet access and provision for a consumer perspective”.


- "The economic impact of digital structural reforms" (Economic Papers 529, September 2014), by DG ECFIN.

- A number of scoreboards including the Digital Agenda Scoreboard or the Consumer Conditions Scoreboard.

- Studies on an economic assessment of the main barriers for businesses and consumers to the DSM has been launched by a number of Commission services.

- Multiple studies on specific issues such as: "Reaping the benefits of electronic invoicing for Europe", December 2010, COM(2010) 0712.

- Europe 2020 mid-terms review – responses to consultation on Digital issues.

- Sizing the EU app economy - February 2014 – GIGAOM research.

- “Internet matters, the net’s sweeping impact on growth, jobs, and prosperity”, McKinsey Global Institute, May 2011.

- “Turning local: from Madrid to Moscow, the Internet is going native”, Boston Consulting Group, September 2011.

- 2 studies on trustmarks (EP and DG CNECT).

- Study on the coverage, functioning and consumer use of comparison tools and third-party verification schemes for such tools”. Final Report by ECME Consortium (in partnership with Deloitte), November 2014

- The impact of online intermediaries on the EU economy – Copenhagen Economics April 2013.

JRC studies on DSM and copyright:

- “The drivers and impediments to cross-border e-commerce in the EU” (2013), JRC/ IPTS Digital Economy Working Paper nr 2013-02
"What does economic research tell us about cross-border e-commerce in the EU?, JRC/IPTS Digital Economy Working Paper nr 2013-05

"Does online trade live up to the promise of a borderless world? Evidence from the EU Digital Single Market", JRC/IPTS Digital Economy working paper nr 2013-08


"Supply side barriers to cross-border e-commerce in the EU", JRC/IPTS Digital Economy working paper nr 2014-13

"The macro-economic impact of online trade in the EU DSM", JRC/IPTS Digital Economy working paper nr 2014-10


"Digitization, Copyright, and the Welfare Effects of Music Trade in the EU", JRC/IPTS Digital Economy working paper nr 2014-05


"Has the digital divide been reversed? Evidence from five EU Member States", JRC/IPTS Digital Economy working paper nr 2013-06


Special Eurobarometer study n.404 on Cyber Security (November 2013), repeated in 2014 (to be published)

"Policy Making 2.0: Unleashing the power of big data for public governance" JRC/IPTS article in book "Open Government: Opportunities and Challenges for Public Governance" p. 171-188 vol. 4

"The 2013 PREDICT REPORT: An Analysis of ICT R&D in the EU and Beyond" JRC/IPTS Scientific and Technical Research Reports 2014


Guide to High-Speed Broadband Investment (October 2014)


- Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions “Towards a thriving data-driven economy” (COM(2014) 442 final)

- “Establishing the Digital Single Market: policy recommendations” published by the European Policy Centre