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From: Presidency
To: Permanent Representatives Committee/Council
Subject: *Preparation of the Competitiveness Council on 12 March 2018*
European Semester 2018: Digitalisation of the EU Economy
– *Exchange of views*

Delegations will find attached a Presidency discussion paper relating to the Digitalisation of the EU Economy with a view to the exchange of views foreseen at the Competitiveness Council on 12 March 2018.

Digitalisation of the EU Economy**– Discussion Paper –**

Digitisation is radically transforming our economy and society. Digitised businesses are more innovative and are growing faster; digitised public services are more responsive to citizens' needs and are more efficient in their delivery. Digitisation is also crucial for the competitiveness of the industry in EU. Our global competitors have already included digitisation in their strategic agendas and in their industrial policies. Digitised product development and innovative manufacturing processes provide higher efficiencies, boosts development of new products and services and accelerate the accumulation of know-how.

Digitisation is an opportunity, where an EU level contribution from industrial policy and regional policy could significantly improve innovation and welfare of all citizens, industry and SMEs. Overall, a fully-developed Digital Single Market could create up to €415 billion in additional growth, hundreds of thousands of new jobs, and a vibrant knowledge-based economy. At the same time, the demand for digital talent keeps growing and digital skills increasingly become essential for successfully participating in the labour market.

To reap the benefits of the Digital Single Market, action is needed both at EU level (Digital Single Market Strategy and funding programmes) as well as at national and regional level in the Member States.

The annual Digital Economy and Society Index (DESI) and the Europe's Digital Progress Report (EDPR) monitor developments in connectivity, digital skills, use of internet by citizens and by business, digital public services, and investment in research, development and innovation in ICT. The 2018 reports are expected to be published in May. In addition, the Digital Transformation Scoreboard provides evidence and key insights towards a better understanding of the challenges faced by Europe's industry and enterprises in their transformation journey. DESI has become a key benchmark for Member States' progress in digital.

Europe lags in many areas compared to major competitors such as the US, Japan, South Korea and increasingly China. Therefore, adequate policies, actions and investments are needed at both European and national level to reap the full potential of the digital revolution and to accompany the transition. For example, the development of technologies like Artificial Intelligence, High Performance Computing, cybersecurity, or in their uptake. However SMEs, and occasionally mid-caps, often do not invest in digital technologies, either because they are unable to devote resources to this area, or because they feel that the implementation of digital technology is too complicated. In this context, Digital Innovation Hubs can play a major role, as they help companies improve their business models, production processes and skills through digital innovation. Indeed, the gains from European investments will only materialise if there is a sufficient number of skilled staff to develop, roll-out and use these new technologies. Therefore, investments in Digital Innovation Hubs and in education and training need to accompany the investments in infrastructure and technology. Further, the efficient uptake of innovative solutions in industry and SMEs can be improved with a supportive EU industrial policy, by ensuring a coherent and sustainable framework. The digitisation of industry is more than a simple use of digital tools. It frequently implies a more profound re-design of business processes and competitive factors. The role of EU coordination is therefore especially timely and needed for the transformation of EU industry and SMEs

Looking at how countries fare in digitising their economies (see Annex), the EU is making steady progress but all Member States need to step up their efforts. In most areas, disparities between the top performing countries and the Member States catching up are large. More upward convergence is needed to make the Digital Single Market work better.

National policy responses and their implementation vary. It will be important to provide appropriate funding to accompany the digital transition. Investment in digital at EU level is recognised as a major priority by Member States and the European Parliament. Today around 5 % of the EU budget is allocated to digital priorities. It will be crucial to continuously support the digital transformation of the economy and the society.

- 1. How can national digital reforms be better focused, in order to reap the benefits of digital transformation?**
- 2. Could funding decisions be better guided by the structural reform assessments, for example on promoting digital skills, boosting digitisation of the economy, and improving e-government?**

Background Paper: Digitalisation of the EU economy

Connectivity

Fast and high-capacity broadband networks have become an essential infrastructure of the digital economy and society. Today, all Member States have national broadband plans. Coverage of fast broadband (technologies providing at least 30 Mbps) continued to increase in 2017 and reached 80% of homes. Despite a persistent gap with urban areas, fast broadband is catching up in rural areas, covering 47% of homes in 2017 compared with just 39 % a year before. Ultrafast broadband (at least 100Mbps) is available to 58 % of homes, but only 15 % of homes subscribe (as opposed to the 2020 target of 50%). Most Member States use the European Investment and Structural Funds— notably the European Regional Development Fund (ERDF) and the European Agricultural Fund for Rural Development— for a total programmed amount of over €6 billion by 2020 to address the gap in rural and other underserved areas. Poland and Italy for example plan to invest more than €1 billion of ERDF each. In addition, the European Fund for Strategic Investments has already triggered around €3.2 billion of investment on broadband projects and a new Connecting Europe Broadband Fund is in preparation.

Best practice example: The Greek RURAL Project (Broadband Network Development in White Rural Areas of Greece) won the European Broadband Award 2017 in the category 3 (Territorial Cohesion in Rural and Remote Areas). The project is a PPP (Public Private Partnership) and it is expected to be finalised in May 2018.

Skills

Around 165 million people or 43% of adult Europeans have low or no digital skills. Although most jobs currently require basic level of digital skills, 26 million workers or 10% of the EU's labour force in 2017 still had no digital skills at all (down from 11% in 2016). Many Member States also struggle with meeting the rapidly increasing demand for STEM graduates and ICT specialists, resulting in skill shortages and unfilled vacancies. A larger digital talent pool is needed together with digital inclusion for all. A number of Member States have adopted digital skills strategies and action plans aimed at promoting ICT education, fostering ICT professionalism and enhancing digital literacy and skills or are in the process of doing so. Ireland, Latvia and the Netherlands are examples of 'early movers' in this respect. Most Member States have digital strategies for education and National Coalitions for Digital Jobs.

Best practice example: Spain has launched a grant program to promote training and employment of young people in the Digital Economy called "Profesionales digitales". The programme offers training that meets the requirements of the digital industry and new business models and facilitates young people's access to jobs in this sector. The grants are intended for training projects with commitment to recruitment in the field of ICT and Digital Economy, aimed at young people enrolled in the National Youth Guarantee System. The project is present in 15 autonomous regions (out of a total of 17 and 2 autonomous cities) in a total of 77 projects. It is co-financed by the European Social Fund (ESF).

Integration of digital technologies in the economy

Only one fifth of all companies in the EU is highly digitised and the situation varies across countries. While half of companies in Denmark are highly digitised in Romania, Bulgaria and Latvia, it is only one in ten. While most large companies make good use of the possibilities offered by digital technologies and business models, SME in general and small and very small enterprises lag behind. Finally, some parts of Member States' regulation is not well aligned to fully realize the economic opportunities created by new online technologies while maintaining a level playing field with traditional offline business. Most Member States have identified the uptake of digitisation by industry as a priority. The adopted strategies typically address challenges for small and medium businesses (SMEs) to transform the opportunities of digitalization into competitive advantage as well as specific digitisation plans for industry (Industry 4.0). In some cases, for example Denmark, Ireland, Malta and Sweden, support for start-ups or scale-ups are particularly significant policy initiatives.

Europe's economy does not reap the full benefits of digitisation and risks falling behind international competition. Despite progress, there are still considerable variations between industries, particularly high tech areas and more traditional ones, between Member States including regions, and between large companies and SMEs.

- **Knowledge gap:** With the rapid pace of change in digital technologies, many companies have difficulties to decide when to invest, up to what level and in which innovative field. Often, companies are working with a budgeting logic instead of an investment logic. Digitalisation is considered to be a cost factor and not seen as an opportunity. Not enough companies know how to translate the use of technologies into economic impact, and how to build a new incremental business. Nevertheless, the latter will be necessary to remain competitive. Not only companies suffer from a knowledge gap. Also banks are reluctant to provide loans for investments in digital technologies. They often lack the expertise to assess projects with a strong digital and AI component and concentrate therefore on more tangible ones (e.g. erecting a new building or buying traditional equipment), where there is a clear collateral available.

- Finance gap: The European Investment Bank estimates that the EU suffers a gap of €90 billion a year just to keep up with advanced manufacturing technologies. The volumes made available today for investments in AI and digital transformation be it public or private are not sufficient to overcome the significant investment gap in digital technologies and notably AI in Europe.
- Fragmentation: To overcome the knowledge gap, Member States and the EU are currently setting up a network of Digital Innovation Hubs. These are places where companies can get support with their digital transformation, through a "test before you invest" proposition. They help the company to develop a vision for their future business. They will propose suppliers that can help to implement that vision and subsequently they will offer the opportunity to experiment and test the new innovative technologies. This innovation experiment should give the company sufficient evidence to further invest (through e.g. loans) in its future business. The DIH will, in case of a positive assessment by the company, help them to get into contact with a bank or other financial intermediary. The bank can then rely on the outcome of the innovation experiment to understand the risk associated to the loan, and in case of a positive assessment, grant the loan.

The 2020 goal is to have a network of Digital Innovation Hubs, with at least one hub per region. Member States, regions and the EU are investing in the network, but through a fragmented approach. Only a soft coordination mechanism is available through the governance of the Digitising European Industry strategy. Current shortcomings are that it is difficult to pool the necessary investments; except for H2020 projects there are too few incentives for collaboration between hubs; Horizon 2020 is not designed for take up; there is a missing link between DIH and financial intermediaries.

Best practice example: The Danish government launched the Strategy for Denmark's Digital Growth that consists of 38 initiatives. It aims at bringing Denmark at the forefront of digital development, and creating the conditions for Danish companies to exploit the opportunities deriving from the digital transformation to create more prosperity for its citizens. The Strategy for Denmark's Digital Growth allocates 1 billion DKK (0.05 % of GDP) for initiatives running from 2018 to 2025.

Digital public services

In 2017, more than half of the population who needed to submit forms to a public authority did it online. However, the situation is different across Member States where Denmark is the top performer, followed by Estonia, the Netherlands and Finland. Hungary, Romania, and Bulgaria lag behind. Around half of the EU Member States have eGovernment strategies in place. E-procurement is central in this regard as it not only offers efficiency gains for both the tendering authorities as well as the bidders, but also helps promoting good governance for an important chunk of government expenditure. The eIDAS regulation that will apply for the eID from September 2018 allows for cross-border recognition of eIDs, e-signatures and trust services, all essential elements for successful digitisation strategies.

Best practice example: Bulgaria has become a trendsetter in Europe for open data. The open data portal (<https://opendata.government.bg/>) is a central web-based public information system that allows for the publishing and management of reusable information in an open, machine-readable format. The platform is constructed in a manner that allows the complete extraction of the published information or parts of it. The data are freely available and can be used for commercial or non-commercial purposes, as well as for building applications based on them. There are over 1700 datasets from some 50 national and regional administrations and agencies, and the system supports a variety of formats. The records include data on public procurement, the education system, healthcare facilities, regional public transport facilities, transport control data, lists of schools and kindergartens, information about air pollution, registries of employment agencies, public non-profit organizations, etc. Opening up data access is an essential tool to support in particular smaller companies and start-ups to develop data driven products and services.

Research and innovation in ICT

In the area of research and innovation in ICT, in Europe - in 2015 – the ICT sector drove about 16% of business' expenditure in R&D. The services segment of the ICT sector generates 92% of total ICT value added and is responsible for 63 % of ICT business expenditure on the contrary, ICT manufacturing represents 8% of ICT value added but is responsible for 37 % of total ICT expenditure. Finally, ICT R&D intensity amounted to 5 % in 2015 in the EU, markedly behind the US and Japan (12% and 9% respectively).

Best practice example: The Bura supercomputer at the University of Rijeka is the most powerful supercomputer in the Adriatic region. It is used in biotechnological and biomedical research and is also available to institutions and companies from abroad. Bura was installed by Bull Atos and is a “green” computer according to testing performed by Green 500, placing it at the 175th position worldwide with 234 teraflops. Croatia based Rimac signed an agreement with the University of Rijeka at the beginning of December 2017 on using the super computer for finishing the development of the latest high-performance electric cars.