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P8_TA(2017)0240

Digitising European industry**European Parliament resolution of 1 June 2017 on digitising European industry (2016/2271(INI))**

(2018/C 307/26)

The European Parliament,

- having regard to Article 173 (Title XVII) of the Treaty on the Functioning of the European Union (TFEU), which concerns EU industrial policy and refers, among other things, to the competitiveness of the Union's industry,
- having regard to Articles 9, 11 and 16 TFEU,
- having regard to Protocol No 1 on the role of national parliaments in the European Union,
- having regard to Protocol No 2 on the application of the principles of subsidiarity and proportionality,
- having regard to the Commission communication of 19 April 2016 entitled 'Digitising European Industry — Reaping the full benefits of a Digital Single Market' (COM(2016)0180),
- having regard to the Commission communication of 19 April 2016 entitled 'European Cloud Initiative — Building a competitive data and knowledge economy in Europe' (COM(2016)0178),
- having regard to the Commission communication of 19 April 2016 entitled 'ICT Standardisation Priorities for the Digital Single Market' (COM(2016)0176),
- having regard to the Commission staff working document of 19 April 2016 entitled 'Quantum technologies' (SWD(2016)0107),
- having regard to the Commission staff working document of 19 April 2016 entitled 'Advancing the Internet of Things in Europe' (SWD(2016)0110),
- having regard to the Commission communication of 2 July 2014 entitled 'Towards a thriving data-driven economy' (COM(2014)0442),
- having regard to its resolution of 19 January 2016 entitled 'Towards a Digital Single Market Act' ⁽¹⁾,
- having regard to its resolution of 9 March 2011 entitled 'An Industrial Policy for the Globalised Era' ⁽²⁾,
- having regard to its resolution of 16 June 2010 on EU 2020 ⁽³⁾,
- having regard to its resolution of 15 June 2010 on Community innovation policy in a changing world ⁽⁴⁾,
- having regard to the Commission communication of 28 October 2010 entitled 'An Integrated Industrial Policy for the Globalised Era — Putting Competitiveness and Sustainability at Centre Stage' (COM(2010)0614),

⁽¹⁾ Texts adopted, P8_TA(2016)0009.

⁽²⁾ OJ C 199 E, 7.7.2012, p. 131.

⁽³⁾ OJ C 236 E, 12.8.2011, p. 57.

⁽⁴⁾ OJ C 236 E, 12.8.2011, p. 41.

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- having regard to the Commission communication of 3 March 2010 entitled 'Europe 2020 — A Strategy for Smart, Sustainable and Inclusive Growth' (COM(2010)2020),
- having regard to the Commission communication of 6 October 2010 entitled 'Europe 2020 Flagship Initiative: Innovation Union' (COM(2010)0546),
- having regard to the Commission communication of 4 July 2007 entitled 'Mid-term review of industrial policy — A contribution to the EU's Growth and Jobs Strategy' (COM(2007)0374),
- having regard to the Commission communication of 6 May 2015 entitled 'A Digital Single Market Strategy for Europe' (COM(2015)0192), the accompanying Commission staff working document (SWD(2015)0100) and the subsequent legislative and non-legislative proposals,
- having regard to the proposal of 11 September 2013 for a regulation of the European Parliament and of the Council laying down measures concerning the European single market for electronic communications and to achieve a Connected Continent, and amending Directives 2002/20/EC, 2002/21/EC and 2002/22/EC and Regulations (EC) No 1211/2009 and (EU) No 531/2012 (COM(2013)0627),
- having regard to the proposal of 26 March 2013 for a regulation of the European Parliament and of the Council on measures to reduce the cost of deploying high-speed electronic communications networks (COM(2013)0147),
- having regard to the proposal of 7 February 2013 for a directive of the European Parliament and of the Council concerning measures to ensure a high common level of network and information security across the Union (COM(2013)0048),
- having regard to the Commission communication of 10 October 2012 entitled 'A Stronger European Industry for Growth and Economic Recovery' (COM(2012)0582),
- having regard to the Commission communication of 22 January 2014 entitled 'For a European Industrial Renaissance' (COM(2014)0014),
- having regard to the Commission communication of 3 October 2012 entitled 'Single Market Act II — Together for new growth' (COM(2012)0573),
- having regard to the Commission communication of 13 April 2011 to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions entitled 'Single Market Act: Twelve levers to boost growth and strengthen confidence' (COM(2011)0206),
- having regard to the Commission communication of 27 October 2010 to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions entitled 'Towards a Single Market Act: For a highly competitive social market economy — 50 proposals for improving our work, business and exchanges with one another' (COM(2010)0608),
- having regard to the Commission communication of 10 January 2017 to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions entitled 'Building a European Data Economy' (COM(2017)0009),
- having regard to its resolution of 15 January 2014 on reindustrialising Europe to promote competitiveness and sustainability ⁽¹⁾,
- having regard to its resolution of 10 December 2013 on unleashing the potential of cloud computing in Europe ⁽²⁾,

⁽¹⁾ OJ C 482, 23.12.2016, p. 89.

⁽²⁾ OJ C 468, 15.12.2016, p. 19.

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- having regard to its resolution of 12 September 2013 entitled ‘The Digital Agenda for Growth, Mobility and Employment: time to move up a gear’ ⁽¹⁾,
 - having regard to its resolution of 12 June 2012 entitled ‘Critical information infrastructure protection — achievements and next steps: towards global cyber-security’ ⁽²⁾,
 - having regard to its resolution of 13 December 2016 on a coherent EU policy for cultural and creative industries ⁽³⁾,
 - having regard to its resolution of 5 May 2010 entitled ‘A new Digital Agenda for Europe: 2015.eu’ ⁽⁴⁾,
 - having regard to its resolution of 15 June 2010 on the Internet of Things ⁽⁵⁾,
 - having regard to the opinion of the European Economic and Social Committee of 14 July 2016, entitled ‘Industry 4.0 and digital transformation: Where to go’,
 - having regard to Rule 52 of its Rules of Procedure,
 - having regard to the report of the Committee on Industry, Research and Energy and the opinions of the Committee on Employment and Social Affairs, the Committee on the Internal Market and Consumer Protection, the Committee on Transport and Tourism and the Committee on Culture and Education (A8-0183/2017),
- A. whereas energetic efforts with concrete policies, actions and incentives to reindustrialise the EU and its Member States should be pursued with the aim of combining competitiveness and sustainability, quality job creation and inclusiveness; recalling the EU’s target that 20 % of Union GDP should be based on industry by 2020, which must necessarily take into account the structural transformation of the industrial sector resulting from digital disruption and the emergence of new business models;
- B. whereas European industry represents the basis of Europe’s economy and wealth, and is facing major challenges arising from faster globalisation and innovation trends;
- C. whereas the digitisation of industrial manufacturing helps increase the resilience, energy and resource efficiency, innovation sustainability and competitiveness of our economies, thus transforming business models, manufacturing, products, processes and value creation and having a fundamental impact on the balance of opportunities and challenges for European industries and workers;
- D. whereas Europe, in view of its industrial heritage, its network of industrial sectors and value chains, its innovative strengths, strategic public investment in research and development (R&D), availability of private investment, efficient administration, its skilled labour force and its integration of industrial development with societal challenges, and the fact that it has over 30 national and regional initiatives for digitising industry, has a strong base from which to become a leader in the digital transformation; whereas there is an opportunity for the strengthening of EU industry if we manage to build fully integrated value chains for digitally enhanced industrial products and product-service bundles;
- E. whereas 5G will fundamentally transform our economies, putting digitisation at the centre of industrial development and social services;
- F. whereas it is imperative for a successful European industrial strategy to create a digital single market that boosts economic growth and employment in a socially conscious manner;

⁽¹⁾ OJ C 93, 9.3.2016, p. 120.

⁽²⁾ OJ C 332 E, 15.11.2013, p. 22.

⁽³⁾ Texts adopted, P8_TA(2016)0486.

⁽⁴⁾ OJ C 81 E, 15.3.2011, p. 45.

⁽⁵⁾ OJ C 236 E, 12.8.2011, p. 24.

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- G. whereas a well-designed technology-neutral strategy for digitisation of industrial manufacturing, which increasingly links people and machines as well as services across borders within the whole global value chain, is an important stepping-stone for increasing the resilience, sustainability and competitiveness of our economy and creating new jobs;
- H. whereas digitisation should tap into the potential of increasing efficient use of resources, energy and capital, thus contributing to a more integrated circular economy, lower material intensity and greater industrial symbiosis;
- I. whereas digitisation can boost the tourism industry to the benefit of travellers and their mobility, enabling, inter alia, easy access to real-time information and a wide variety of services;
- J. whereas well-developed language technologies can help industry to overcome language barriers that are obstacles to the development of the digital market;
- K. whereas digitisation creates new opportunities in the transport sector for manufacturers, operators, investors, workers and passengers, and is a precondition for the transport industry to remain both competitive and operational and increase its efficiency, and for transport services to become more sustainable and better-performing;
- L. whereas digitisation can contribute to safer working conditions, to greater product safety, and to the individualisation and decentralisation of production;
- M. whereas a large gender gap exists in employment and training in the ICT sector, with strong negative implications for equality in the labour market;
- N. whereas digitisation and the individualisation and decentralisation of production will lead to changing working conditions and will have a range of social effects; whereas safe and decent working conditions and high standards of product safety must remain a shared concern;
- O. whereas there are many studies highlighting that digitisation in industrial manufacturing will bring changes to labour market demand and employment in Europe; whereas this may have an impact on existing rules governing workers' rights and participation; whereas it is clear that there is a need to meet these changes by training the workforce in new ICT skills and increasing digital skills in society as a whole;

Developing an integrated Industrial Digitalisation Strategy (IDS) for the EU

- 1. Welcomes the Commission's communication on digitising European industry;
- 2. Strongly believes that an IDS is of critical importance in contributing to solving Europe's most pressing economic and societal challenges, by:
 - (a) strengthening economic dynamic, social and territorial cohesion and resilience vis-à-vis technological transformations and disruptions, through the modernisation and interconnection of Europe's industries and economic value chains and through increasing public and private investments in the real economy, and providing investment opportunities in a context of sustainable modernisation;
 - (b) fostering quality job creation and reshoring opportunities, improving working standards and the attractiveness of industrial sector jobs, contributing to providing consumers with more opportunities and information, pursuing a socially conscious transformation and an inclusive labour market with more diverse job models and work time schemes, and better conditions and integration of employment and lifelong learning;
 - (c) making more efficient use of resources and reducing the material intensity of manufacturing industry thanks to a strengthened European circular economy, recalling that this is critical for the material conditions of a European high-tech sector, as well as for digitised industrial production and its products;

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- (d) strengthening European cohesion through a reliable and ambitious European investment policy (paying particular attention to rolling out state-of-the-art digital infrastructure), utilising diverse European financing instruments including EFSI, regional funds, Horizon 2020 and others, as well as ensuring a coordinated, technology-neutral European industrial policy based on fair competition between a plurality of actors, innovation and sustainable modernisation, and technological, social and business model innovation that boosts the digital single market and the integration and modernisation of all European industry;
- (e) supporting Europe's goals in climate policy by increasing energy and resource efficiency as well as the circularity of industrial production, reducing emissions, and making the sustainability of industry go hand in hand with competitiveness;
- (f) strengthening economic, policy and social innovation through the principles of openness and accessibility of public and private data and information, while always protecting sensitive data in exchanges between businesses, workers and consumers and allowing for the better integration of economic sectors of all types and any policy fields, including creative and cultural industries;
- (g) improving the livelihoods of citizens in urban and non-urban areas and their awareness of and ability to take advantage of the opportunities offered by digitisation;
- (h) stimulating technological and social innovation in EU research through an industrial digitisation policy with a clear focus and vision;
- (i) improving energy security and reducing energy consumption through a digitised, more flexible and efficient industrial production that will allow better energy demand management;
- (j) partnering with other macro-regions in the world in developing innovative and fair digital open markets;
- (k) being aware of the need for a fairer and more effective European taxation policy, clarifying questions such as tax base in an era of globally connected digital markets and digitised production;
- (l) attracting investment and leading researchers and expertise at world level, thus contributing to economic growth and European competitiveness;
- (m) supporting new business models and innovative start-ups driven by digitisation and technological development;

3. Stresses the importance of creating a competitive business environment that facilitates private investment, an enabling regulatory framework that avoids bureaucratic road-blocks, a build-up of state-of-the-art European digital infrastructure, and an EU coordination structure for the digitisation of industry that facilitates the coordination of national, regional, and of U-wide initiatives and platforms on industrial digitisation; calls on the Commission to ensure achievement of the 20 % target for industry's share of GDP by 2020; stresses that in order to allow the EU to exert global industrial leadership, the digitisation of industry needs to be linked to a broader EU industrial strategy; underlines the importance of advancing digitisation particularly in those Member States, regions and sectors that are lagging behind and among those people who are affected by the digital divide; welcomes in this regard the proposed high-level Roundtable and European Stakeholder Forum; underlines the importance of cooperation between relevant actors, and expects that, besides industry leaders and social partners, academia, SMEs, standardisation organisations, policymakers, public administrations at national and local level and civil society will also be invited to play an active role;

4. Asks the Commission to continue its important work in examining manufacturing and digitisation trends, as well as trends in non-technical disciplines (such as law, policy, administration, communications, etc.), studying pertinent development in other regions, identifying new key technologies and striving to ensure that European leadership in these areas is maintained and new trends are integrated into policies and actions while taking into account the concepts of security by design and privacy by design and by default, and examining whether this work could be done via a specific industrial foresight network including national research and technology organisations (RTOs);

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5. Welcomes the Commission communication on 'Digitising European Industry — Reaping the full benefits of a Digital Single Market' (COM(2016)0180), but regrets that, as its focus on the transport sector is limited to connected and automated driving, it does not sufficiently address all existing challenges; recalls that although connected and automated vehicles represent one of the most exciting upcoming digital transformations in the sector, there is potential for digitisation in all modes of transport, in both operational and administrative processes and throughout the value chain from manufacturers to passengers and freight, as well as for coordination with all the new technologies used in the sector, such as the European global satellite-based navigation systems EGNOS and Galileo, from which results can be expected in the near future; asks the Commission to focus on digital transformations in all modes of transport, including transport- and tourism- related services;

6. Points out that the digitisation process has not been beneficial to the same extent throughout the transport sector, and that this has created a detrimental fragmentation within the internal market, both between different modes of transport and within the same mode; underlines that there are significant and increasing disparities between Member States in transport competitiveness and digitisation, reflected also between regions, companies and SMEs; believes that developing a coordinated IDS for the EU could help overcome such fragmentation and disparities and attract investment in digital projects; stresses that the objective should not be just another policy paper but a real strategy reflecting innovation trends and market potential, the implementation of which would be continuously evaluated;

7. Considers that an IDS will contribute to solving some of the most pressing challenges in the transport and tourism sectors; calls on the Commission, therefore, to further support digitisation in order to:

- (a) improve the overall safety, quality and environmental performance of the transport sector;
- (b) improve barrier-free accessibility for everyone, including older people and persons with reduced mobility or disabilities, and develop awareness of alternative mobility solutions providing passengers with more choices, more user-friendly and customised products and more information, throughout the EU and in both urban and less developed regions;
- (c) reduce transport costs such as maintenance costs, and improve the efficiency of the use of existing transport infrastructure capacity (e.g. platooning, cooperative intelligent transport systems (C-ITS), the European Rail Traffic Management System (ERTMS) and River Information Services (RIS));
- (d) improve competitiveness by fostering the emergence of new players, especially SMEs and start-ups, in order to challenge existing monopolies;
- (e) facilitate the proper and harmonised enforcement of EU legislation, through the development of traffic management systems, intelligent transport systems, digital tachographs, electronic toll systems, etc., and create regulatory frameworks suitable for real new situations that may arise from the application of advanced technologies;
- (f) cut administrative burdens for small and medium-sized transport operators and start-ups, for instance in the freight and logistics sector, by simplifying administrative procedures, providing for cargo tracking and tracing, and optimising schedules and traffic flows;
- (g) continue safeguarding passenger rights, including data protection, also in multimodal journeys;
- (h) diminish the problems related to information asymmetry in the transport market;
- (i) foster the attractiveness and development of the tourism sector, which helps generate around 10 % of European GDP, and of creative industries in urban, rural and outermost areas, for instance through a better integration of mobility and tourism services, including to lesser-known destinations;

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8. Points out that uninterrupted and high-performance connectivity is a precondition for fast, safe and reliable connections for all transport modes and for further digitisation of the transport sector; regrets the great fragmentation of digital coverage within the EU; considers that investments in broadband and the fair allocation of spectrum are crucial for the digitisation of the transport sector; highlights in this respect the need to have a cross-sectorial vision, for instance covering electronics, telecoms, transport and tourism; calls on the Commission and the Member States to meet their commitment to provide such a type of connectivity for main transport paths and hubs no later than 2025 and to initiate full coverage all over the EU;

Creating conditions for successful industrial digitisation: infrastructure, investment, innovation and skills

9. Underlines that an IDS offers the opportunity to advance innovation, efficiency and sustainable technologies that raise competitiveness and modernise the EU's industrial base, as well as removing obstacles to the development of the digital market; stresses that an integrated industrial digitisation must be based on strong enabling conditions ranging from a first-rate, future-proof digital infrastructure, R&D and an investment-supportive environment to an appropriate up-to-date innovation-nudging legislative framework, a deepened digital single market, high levels of skills and entrepreneurship, and a strengthened social dialogue;

10. Highlights the need to advance public and private investment in high-speed connectivity, for example through 5G, fibre optics, navigation and satellite communications infrastructure, in order to ensure a robust digital infrastructural backbone in the urban and industrial areas; highlights the importance of harmonisation in spectrum allocation, aimed at increasing demand for connectivity and enhancing the predictability of the network investment environment; highlights the need to establish leadership in digital industrial value chains and key technologies such as 5G, quantum technologies, high-performance computing, artificial intelligence, cloud computing, big data analytics, the Internet of Things (IoT), robotics, automation (including Highly-Automated Driving) and Distributed Ledger Technology; in this regard, supports the Commission working documents accompanying its communication;

11. Recognises the opportunities and challenges related to the digitisation of industry; notes the positive effects that the digitisation of industry has as it increases flexible working arrangements that can create a better work-life balance, diversify choices through mobile telework, and allow people from rural and isolated areas to join the labour market (provided they are equipped with the necessary infrastructure), thereby fostering economic growth; recognises, at the same time, that the digitisation-driven trend towards increased flexibility may increase the danger of unstable and precarious employment; stresses that new forms of work must not be used to circumvent existing labour and social legislation as regards the protection of workers' and consumer rights; points out that traditional industries and businesses in the platform economy must be on an equal footing;

12. Notes that the digital transformation in the transport and tourism sectors, in particular the development of the on-demand and collaborative economies, contributes to considerably reshaping passengers' and consumers' behaviour as regards mobility and tourism, as well as to the need for infrastructure adaptation; invites the Commission to assess the effects of digitisation in transport, mobility and tourism services, with particular emphasis on the behaviour and choices of the users of those services, and to further unleash the potential of this societal change;

13. Notes that growing digitisation in the distribution of travel tickets means that more information is readily available to consumers over the internet, but increasingly in a way that makes it difficult to compare offers; considers that it is therefore necessary to reinforce transparency and neutrality safeguards in distribution, and particularly internet distribution, so that consumers can make informed choices based on reliable information, regarding not only price but other parameters as well, including quality of service and ancillary offers; believes that such transparency will both promote competition and support the development of multimodal transport;

14. Believes that digitisation should provide consumers with more choice, more user-friendly and customised products, and more information, in particular on the quality of products or services;

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15. Points out that the impact of language barriers on industry and its digitisation has not been adequately considered or evaluated in documents on the digital market; urges the Commission and the Member States to promote the development of language technologies that will, alongside the digitisation of industry, reduce the fragmentation of the European market;

16. Stresses that special support for 'analogue' multilingualism in Europe is beneficial both in terms of digitising European industry and teaching comprehensive digital skills; stresses, therefore, that considerably more attention must be paid to basic research on statistical, intelligent and machine-supported translation and learning software;

17. Underlines that regions need to focus on their productive strengths and foster their development through Smart Specialisation, Smart Chains and clusters; believes that clusters and synergies between SMEs, industrial and social players, the skilled crafts sector, start-ups, academia, research centres, consumer organisations, the creative industry sector, finance and other stakeholders can be successful models in advancing digital manufacturing and innovation; encourages research, innovation and structural cohesion in the EU; stresses the importance of accelerator programmes and venture capital to help the scale-up of start-ups; notes the importance of utilising digitisation for advancing business model innovations such as 'pay-per-output' systems and mass customisation;

18. Believes that particular attention should be paid to the specific problems faced by SMEs in circumstances where the relative gains from digitisation efforts, in terms of energy, resource efficiency and production efficiency, would be the highest; favours the strengthening of SME associations and their outreach via digitisation programmes, the development of centres for applied sciences with a focus on digitisation, and co-funding for SMEs' in-house R&D; considers that attention should be paid to data ownership and data access, and to developing a European programme for digital apprenticeship;

19. Welcomes the establishment of the Smart Specialisation Platform for Industrial Modernisation, and, particularly, the Commission's proposal, included in the Action Plan on digitisation of industry, to create a network of Competence Centres (CCs) and Digital Innovation Hubs (DIHs) to strengthen industrial digitisation and digital innovation for SMEs in all regions; notes that the skilled crafts sector should not be ignored in this regard; calls on the Commission to particularly drive forward the establishment of DIHs and digital competence centres in less digitised European regions; calls on the Commission to provide more funding for DIHs through different European resources (Horizon 2020, Structural Funds, etc.), to support Member States' efforts and strategies aimed at developing a national DIH network, and to consider experimenting with a 'sandbox' approach in which cross-sectorial experiments in a controlled environment will not be blocked by standing regulation; calls on Member States to increase transnational cooperation among their DIHs; believes that designated DIHs should specialise in industrial digital innovations contributing to tackling Europe's societal challenges; believes, in this regard, that Horizon 2020 funding for the DIHs could be combined with funding from that programme for societal challenges; notes the option of ICT innovation vouchers for SMEs as regards accessing advice, best-practice sharing and DIH expertise;

20. Notes the important role of cities and local governments in developing new business models and providing digital infrastructure and support for SMEs, and other industrial actors, as well as the immense opportunities that digital-industrial innovation holds for cities, for example via zero-waste local manufacturing, closer integration of industrial production and local and urban logistics and transport, as well as energy production, consumption, manufacturing and 3D printing; considers that cities should also be able to access the DIHs; asks the Commission to look into local, national and international best practices and to foster their exchange; welcomes the publication of a European Digital City Index and initiatives to promote data and systems interoperability among European cities; notes that the SMART Cities initiative plays a role in this context; highlights the positive experience of regional advisory fora;

21. Highlights the role that public procurement and legal requirements for registration of business and reporting business activity or disclosure can play in advancing new industrial digital technology; asks the Commission to consider how public procurement could be employed as an innovation-pull mechanism; asks the Commission to include a digital check in its REFIT Programme, so as to ensure that regulations are up to date for the digital context, and to facilitate

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exchange of best practices between public authorities on the use of the innovation criteria in public tenders; recommends accelerating the adaptation of the legal and technological environment, such as IPv6 transition, to the needs of industry digitisation and Internet of Things take-off;

22. Stresses the importance of unlocking sufficient public and private finance for the digitisation of Europe's industry, with a better use of the European Fund for Strategic Investment (EFSI); believes that this must be significantly scaled up and public investments into digital infrastructure must be increased; underlines the centrality of financing from private and collaborative platforms; asks the Commission to establish a Finance Roundtable for Industrial Digitisation which will study the matter and come up with innovative financing proposals; regrets that the resources allocated to digital policies in the EU budget are too scarce to make a real impact; recognises the need to boost the European economy through productive investments; considers that the availability of existing European financial instruments, such as the European Structural and Investment Funds and Horizon 2020, should ensure that this objective is achieved; believes that the combination of these funds should be coherent with national resources and state aid regulations; recognises the role played by public-private partnerships and joint undertakings;

23. Calls on the Member States, in order to support an efficient industrial digitisation, to provide fiscal incentives for businesses and enterprises realising digital and smart production systems;

Securing European technology leadership and security in industrial digitisation: mergers and acquisitions (M&A), cybersecurity, data flows, standardisation

24. Recognises the imperative need to strengthen R&D; calls on the Commission to support both in-house and external R&D efforts and to foster innovation networks and cooperation between start-ups, established corporate players, SMEs, universities, etc., in a digital ecosystem; asks the Commission to study how to maximise the transfer to the market of Horizon 2020 research results and their exploitation by European companies; requests the Commission to increase the proportion of Horizon 2020 research projects generating patents and IPRs and to report thereon;

25. Emphasises the importance of safeguarding sensitive European technologies and know-how which form the basis of future industrial strength and economic resilience; highlights the potential risks in regard to strategic state and industrial policy-driven foreign direct investment (FDI), particularly by state-owned enterprises by means of M&A; highlights the fact, regarding FDI, that some external investors have been increasingly interested in acquiring sensitive European technologies via M&A; welcomes the Commission's initiative of studying the experience of the CFIUS (Committee on Foreign Investment in the United States); underlines that equal market access for investment should be enforced by establishing global rules;

26. Stresses that developments in regard to automation, robotics and the application of artificial intelligence in production, as well as the deep integration of technical components of different origin, are raising new questions as regards liability for products and production facilities; calls on the Commission to clarify as soon as possible the safety and liability rules for autonomously acting systems, including the conditions for testing;

27. Recognises that openness and connectivity also have potential effects on vulnerability as regards cyberattacks, sabotage, manipulation of data or industrial espionage, and underlines in this context the importance of a common European cybersecurity approach; recognises the need to raise awareness on enhancing cybersecurity; considers cyber-resilience as a crucial responsibility for business leaders and national and European industrial and security policymakers; believes that producers are responsible for ensuring safety and cybersecurity standards as core design parameters in all digital innovations according to the available state-of-the-art technology and the principles of 'secure by design' and 'secure by default', but that under certain conditions and criteria this producer responsibility can be deviated from; notes that cybersecurity requirements for the IoT and IT security standards, for example based on the reference architecture RAMI4.0

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and ICS, would strengthen European cyber-resilience; believes that the European standardisation bodies have a special role to play here and should not be sidelined; asks the Commission to study different models for advancing cybersecurity for the IoT; calls on public institutions, however, to make cybersecurity requirements mandatory for public procurement with regard to IT equipment and IoT products; considers that offering cybersecurity checks and advice to SMEs for their digitised industrial products is of great importance; believes that best-practice sharing between EU Member States could facilitate European cyber-resilience in that regard;

28. Believes that there should be common criteria for critical infrastructure and its digital security, and that the EU directive on security of network and information systems (NIS Directive) marks the first step towards achieving a high common level of security for network and information systems within the Union; calls on the Commission to push for its consistent and timely transposition by the Member States; stresses the need to strengthen the role that the governing bodies referred to in the NIS Directive have in establishing trust in future technologies; notes that cyberthreat monitoring mechanisms and horizon scanning should be recognised as important for the security of the EU's digital industries, with special emphasis on protecting SMEs and consumers;

29. Stresses that specific attention has to be paid to questions of collecting and accessing industrial or production-related data and information; underlines that in this regard particular emphasis has to be put on the principles of data sovereignty, open and standardised access and availability of data, on strengthening innovation and productivity, new services and business models, and on security auditability, while allowing for fair competition; stresses that new forms of regulation of data ownership and access to data need to be addressed very carefully and may only be introduced following extensive consultation with all relevant stakeholders; believes that both innovation and the privacy concerns of workers and consumers have to be protected and safeguarded in line with the general data protection regulation; stresses in addition that disclosure of and access to information for public interest and scientific purposes should be promoted; notes the Commission's proposal for a data economy in this regard in order to promote a common European data market; considers that in the ongoing debate on the data regime two essential aspects must be underlined with a view to fostering the development of technical solutions for reliable identification and exchange of data, i.e., on the one hand, default contract rules, and on the other, introducing an unfairness check in B2B contractual relations;

30. Stresses that the European Cloud Initiative, together with the legislative proposal for the free flow of data, which aim to remove unjustified data location restrictions, have the potential to further incentivise the process of digitisation of European industry, especially SMEs and start-ups, and to avoid fragmentation in the EU single market; calls on the Commission to monitor the adoption and coherent implementation of the European Cloud Initiative in order to enable the fair, swift, trustworthy and seamless flow and use of data; reminds the Commission of its commitment in its communication to present a legislative proposal on the free flow of data within the EU, in order to remove or prevent unjustified localisation requirements in national legislation or regulation;

31. Strongly believes that, especially in the transport sector, open data, big data and data analytics remain essential elements for reaping the full benefits of the Digital Single Market and fostering innovation; regrets that initiatives to facilitate the flow of data remain fragmented; stresses that more legal certainty, especially in terms of ownership and responsibility, is needed, on a basis of full respect for privacy and data protection;

32. Recognises the potential of digitising industry for the purposes of sectoral data retrieval and governance by public and semi-public authorities and market participants;

33. Underlines the role of integrating openness of architecture as a design principle of digital components;

34. Recognises the importance of protecting technical know-how as regards the exchange and interlinkage of industrial-digital components while at the same time allowing and furthering interoperability and end-to-end connectivity;

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35. Stresses that European leadership in industrial digitisation requires a strong standardisation strategy, to be coordinated with the Member States and the Commission, including interoperability in the digital domain; emphasises the important and unique make-up of Europe's standardisation bodies, with their inclusive and consensus-based approach integrating societal stakeholders and, particularly, SMEs; calls on the Commission to promote the development of open standards, and welcomes its intention to guarantee access to and efficient licensing of standard essential patents under FRAND (fair, reasonable, non-discriminatory) conditions and recognises that this is essential for promoting innovation and R&D in the EU; believes that the circular economy could be a major driver for a coherent standardisation of communication flows along industrial value chains; calls for an EU-wide coordinated approach through the European standards organisations (CEN, CENELEC and ETSI) in relation to international fora and consortia; believes that it is desirable to aim for global and universal standards, but also underlines that there is willingness to proceed with European standards should international cooperation in standardisation fora be proceeding unconstructively; considers interoperability necessary in particular in the domain of the IoT so as to ensure that the development of new technologies improves opportunities for consumers, who should not be locked in with only a few specific suppliers;

36. Stresses that trade barriers in the field of digitisation hinder the international activity of European industry and harm European competitiveness; believes that fair trade agreements between the EU and third countries can strongly contribute to common international rules in the field of data protection, data flows and data use and standardisation;

The social dimension: skills, education and social innovation

37. Believes that great efforts with regard to education, taxation and social security systems have to be undertaken in order to integrate the transformative effects into our European social and economic models; highlights that the digital transformation of industry is having a big societal impact, ranging from employment, working conditions and workers' rights to education and skills, eHealth, the environment and sustainable development; stresses the need to pursue security within this change; calls on the Commission to adequately assess and address the social effects of industrial digitisation and, as appropriate, to propose further measures to close the digital divide and promote an inclusive digital society while boosting European competitiveness;

38. Recalls that the Court of Justice of the European Union has defined the concept of 'worker' on the basis of an employment relationship characterised by certain criteria such as subordination, remuneration and the nature of work⁽¹⁾; calls for legal certainty on what constitutes 'employment' in the digital labour market in order to ensure compliance with labour and social legislation; states that all workers in the platform economy are either employed or self-employed, on the basis of the primacy of facts, and should be classified accordingly, regardless of the contractual situation;

39. Stresses that education, training and lifelong learning are the cornerstone of social cohesion in a digital society; stresses that Europe faces a digital gap in this regard; calls for the implementation of a skills guarantee, after consultation and with participation of the social partners, and calls on the Member States to find ways to satisfy citizens' needs for continuous (re-)training, uptraining and lifelong learning in order to ensure a smooth transition to a smart economy; emphasises the importance of ensuring the promotion and recognition of digital skills, and of the new trend towards 'multi-skilling'; believes that employers should make use of the European Social Fund for such training and in order to promote a digital toolbox for upskilling in collaboration with industry and the social partners; welcomes the development of teaching material and sector-specific curricula; asks the EC to study options for establishing a certification system for continued education programmes for digital skills;

40. Underlines that digital skills must be integrated into national education curricula; notes that examples of initiatives supported by the European Union Agency for Network and Information Security (ENISA), such as the European Cyber Security Month and the European Cyber Security Challenge, should be further developed in pursuit of this goal; emphasises the importance of specialised teacher training for digital skills and that digital skills should be taught to all children; calls on the Member States to ensure that all schools are equipped with Wi-fi and up-to-date IT material; notes that coding also plays an important role; calls for the exchange of best practices between Member States with a view to learning from established

⁽¹⁾ See CJEU C-596/12, paragraph 17, and CJEU C-232/09, paragraph 39.

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practices such as the Fit4Coding programme, digital academy initiatives, e-learning programmes, or coding schools such as Webforce3; asks the Commission to promote the integration of digital skills testing in the IGCU/Pisa studies so as to allow competition and comparison between EU Member States; calls on the Member States, in cooperation with the Commission, to devise interdisciplinary study programmes aimed at integrating several competences, such as IT together with business management or engineering and data sciences; stresses that all Member States should develop comprehensive national digital skills strategies with targets, as they have been invited to do by the Commission; stresses the key role that the social partners and other stakeholders can play in the development and implementation of such strategies; notes that so far only half of EU Member States have created national coalitions for digital jobs; stresses that a specific budget line supporting the activities of the Digital Skills and Jobs Coalition would strengthen the dissemination of information and further activities;

41. Emphasises the importance of investing in the digitisation of vocational training and the skilled crafts sector; highlights that digital skills also need to be combined with engineering skills and the promotion of education in Science, Technology, Engineering and Mathematics (STEM subjects), as well as the promotion of soft skills such as communications, team coordination and cross-sectoral thinking;

42. Demands that the gender perspective be incorporated in all digital initiatives, ensuring that the ongoing digital transformation also becomes a driving force for gender equality; emphasises the need to address the severe gender gap within the ICT sector, since this is essential for Europe's long-term growth and prosperity;

43. Notes the potential of digitisation with regard to the accessibility of social services and other public services, as well as the inclusion of persons with disabilities and persons with limited mobility in the labour market; stresses, in particular, the importance of teleworking in this context;

44. Points out that, as evidenced by the Europeana initiative, the digitisation of European works represents a significant opportunity to improve their accessibility, distribution and promotion, and that digital innovation can provide the impetus for a revolution in how cultural goods are exhibited and accessed; stresses the importance of promoting in particular the use of 3D technologies for data collection and the reconstruction of destroyed cultural goods and heritage; emphasises the need to guarantee funding for the digitisation, preservation and online availability of the European cultural heritage;

45. Regrets the fact that historical and cultural sites are often not easily accessible for those with a disability, and highlights the opportunities that a stronger digital cultural platform presents in improving engagement and making cultural experiences, sites and artefacts throughout Europe more accessible regardless of geographical location;

46. Encourages research on, and the development of, assistive technologies which could be used and become new industrial products for the inclusion of disabled people;

47. Favours the establishment of a regular exchange of best practices, a biannual progress review, and recommendations on the digitisation of industry;

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48. Instructs its President to forward this resolution to the Council, the Commission and the Member States.
