

General Information	
Preliminary title of the European Partnerships	European Partnership on Smart Networks and Services
Short description of the partnership	A European Partnership on Smart Networks and Services reinforcing European industrial leadership in developing and deploying the digital infrastructures of the future, underpinning the Next-Generation Internet and digital industries.
Services directly involved	DG CONNECT
Context and problem definition	<p>Smart Networks and Services will be essential for European competitiveness, strategic autonomy and as infrastructure backbone for digital economy and Digital Single Market policies. 5G connectivity infrastructures are already set to become the backbone of a digital economy and Digital Single Market policies, as well as one of the most important elements of Europe's competitiveness and strategic autonomy. Next generation infrastructures beyond 5G will be critical infrastructures, vital for the good functioning of a multiplicity of key economic and societal processes (health, automotive, manufacturing, etc.). This key role of Smart Networks and Services calls for a strategic leadership and a long-term commitment of key stakeholders. A more strategic approach is needed to ensure synergies with Member States initiatives in particular for large-scale experimentation and deployment. The digital transformation is now starting and the next decade will be decisive for Europe to master the next wave of technologies as well as their deployment.</p> <p>In particular the following problems and their drivers call for an EU level partnership in :</p> <p>The need for global consensus in standardisation and regulatory issues will remain key drivers to achieve economies of scale and global roaming of smart networks and services beyond 5G. The challenge will therefore be to provide a unified European approach in front of the initiatives in this field currently starting in other regions on the world (Asia, USA notably) with large public support expected in the order of 400-600M€ per programme.</p> <p>We do not have an appropriate coordination mechanism in place among Commission and Member States when it comes to reinforcing the European knowledge potential and industrial capabilities in the area of smart networks and services requires coordination with Member States and industry. This is especially important when transferring knowledge to new application areas such as mobility, energy, and health. There is considerable investment in Europe – some Member States are investing in R&I on Smart Networks in the order comparable to Horizon 2020 5G-PPP. Also, many Member States have programmes supporting the development of Internet of Things technologies and services. Moreover, the scope of the challenge to be addressed requires the creation of new industrial value chains across different sectors such as network equipment and service providers, big data, cloud, software-defined infrastructures and Internet of things technologies and services.</p> <p>The current levels of investment towards 5G experimentation and deployment actions are not sufficient to reach the critical mass required at European scale. Currently, Member States invest in 5G large-scale testing capabilities, but in an uncoordinated manner, resulting in duplication of efforts and lack of strategic planning at EU level. A closer coordination of investments would foster integration of resources. Coordination with national programmes and initiatives as well as other financial instruments at EU level such as InvestEU ("blending") is needed to ensure the coordination for supporting large-scale experimentation and deployment programmes of public interest. At EU level, 5G Corridors under CEF Digital will be a strategic case to consider for very close cooperation. Whereas CEF Digital projects will focus on cross-border corridors, complementary public investment in areas beyond cross-border sections within MS will be necessary to achieve pan-EU corridors for connected and automated mobility. This requires to coordinate a Strategic Deployment Agenda and suitable project pipelines.</p>

<p>Objectives and expected impacts</p>	<p>The objective is for Europe to ensure a competitive role in the global scene. Europe has to stay at the leading edge of innovation by leveraging its know-how and industrial strengths. Building on the EU's strong position in 5G and Internet of Things technology, a well-structured roadmap under a partnership will enable Europe to master and lead the technology evolution of smart networks and services towards beyond 5G and later 6G networks.</p> <p>Specific objectives of main activities</p> <p>The main scientific and technological objective is to develop and deploy technologies and architectures that will define beyond 5G and later 6G networks and services required for a new range of consumer and industrial use cases. These will offer Terabit capacities and perceived zero-latency and will be based on real-time capable service provisioning infrastructures leveraging opportunities of next-generation cloud and next-generation Internet of Things (IoT) technologies. Key technologies will include for example Visible Light Communication, software defined radio and network technologies enabling spectrum reform, cloud native network and service architectures designed for Artificial Intelligence and Big Data, green cloud and edge computing. Security and trust and energy efficiency are also key requirements to support a human centric Internet.</p> <p>The industrial and competitiveness related objective is to consolidate European strongholds in connectivity whilst seizing current emerging technological opportunities in future generations of connected devices, and in future service platforms. Such platforms are expected to contribute to the SDG's (sustainable development goals) with a sustainable platform infrastructure underpinning energy and resource optimised digital processes across a myriad of industrial segments.</p> <p>In addition, the objective is to unlock the deployment of 5G-based solutions in areas of public interest such as 5G Corridors for Connected and Automated Mobility or Smart Cities.</p> <p>Relevance for Horizon Europe and European objectives</p> <p>The partnership falls within the priority area of Next Generation Internet under the Cluster "Digital and Industry". It is of very high relevance to the following European objectives:</p> <ul style="list-style-type: none"> – <i>DSM strategy.</i> The Gigabit Society Strategy sets out strategic objectives for 2025, with a view to optimising investment in digital connectivity infrastructure. This strategy is complemented by the 5G Action Plan, whose objectives focus on 5G coverage targets for urban areas and main transport paths by 2025. The CEF Digital pillar included in this partnership is key to supporting these policy objectives. – <i>The European strategy on industry digitisation</i> as promoted under the Digitising Industry package of 2016. Future Connectivity platforms will be designed to provide ad-hoc functionalities to industrial vertical digital use cases. This has also been recognised in several MS initiatives, with initiatives like Industry 4.0 in Germany. The partnership on smart networks will implement deployment actions under CEF Digital for the policy objective of pan-European 5G Corridors for Connected Cars as set in the 3rd Mobility package. – <i>Strategic autonomy</i> is a rising concern in Europe. Market access of EU connectivity technologies in China, for example, remains a recurring problem in contrast to the high market share for Chinese providers in Europe. – <i>Competitiveness of industry</i> and supply side. Whilst Europe is less prominent on cloud and device technologies, the proposed partnership proposes a “value chain” approach with a strategy based on leveraging our strongholds in these domains, through stronger coupling with domains like cloud computing and IoT. – <i>Societal objectives and development of a full digital economy.</i> Today no advanced digital services exist without an underlying connectivity and service platform. Smart Connectivity is the nervous system allowing digital ecosystem of “apps” to develop.
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	<p>Expected Timeframe</p> <p>The current industrial status target for 5G deployment is early 2020. The target work goes clearly beyond 5G and beyond 5G boundaries. The target delivery of the envisaged deliverables is in the 2025-2030 range.</p>
Necessity test: rationale for a European Partnership	<p>The global stakes for next generation Internet infrastructures are high. A partnership will be instrumental to federate European forces and investments, both private and public, to secure leadership and strategic autonomy in a critical infrastructure technological domain through shared objectives and a common strategy at EU level.</p> <ul style="list-style-type: none"> – The magnitude of investments is very high, as the underlying infrastructure requires huge R&I investments and costly validation cycles. R&I intensity in this domain is of about 20%, second only to the microelectronic sector (JRC report “The Top World R&D-investing Companies from the ICT Sector: A Company-level Analysis” EUR 24841 EN - 2011) which requires long term planning; – The time to market cycle of smart connectivity infrastructures remains high, between 7 and 10 years from R&I to full deployment; notably because of the magnitude of the investments required. This justifies a long-term strategy. – Heavy R&I investments justify shared risk in a public-private partnership approach allowing for European critical mass in view of fierce global competition in this domain; – An extended scope spanning sectors such as network equipment and service providers, big data, cloud, software-defined infrastructures and Internet of things technologies, will permit the creation of the necessary new industrial value chains. – The issue can only be addressed at EU level, with support of the Member States. Whilst several Member States are today building R&I and validation facilities for 5G, none has the real potential to reach the critical mass that is needed to influence global developments (e.g. standards, spectrum) and to ensure European strategic autonomy in key technologies and systems underpinning the Internet as a critical infrastructure for Society. – The targeted synergies between R&I and deployment of CEF2 actions involving related stakeholders require also strong partnership with Member States and local/regional entities which favours a partnership.
Relevant for the following parts of Horizon Europe	<p>Pillar II 'Global Challenges and European Industrial Competitiveness'</p> <p><input checked="" type="checkbox"/> Cluster Health</p> <p><input checked="" type="checkbox"/> Cluster Digital, Industry and Space</p> <p><input checked="" type="checkbox"/> Cluster Climate, Energy and Mobility</p>
Currently identified links with other partnership candidates / Union programmes	<p>Collaboration with the proposed partnership on Key Digital Technologies is needed for a full value chain across different sectors such as network equipment and service providers, big data, cloud, software-defined infrastructures, IoT and services.</p>
Does the proposed partnership build on currently active ones?	<p>The proposed partnership draws on several industrial initiatives:</p> <p>-5G PPP; Alliance for IoT Innovation ; DSM Cloud Stakeholders Working Groups.</p>
Expected type and composition of partners	<p>The following industry sectors could be considered to partners:</p> <ul style="list-style-type: none"> - Telecom operators, network manufacturers, research institutes and SMEs active on the communication networks - building on current the 5G Infrastructure Association (5GIA) and the European Technology Platform Network2020 (more than 1000 organisations) - Internet-of-Things – building on the Internet-of-things Alliance (AIOTI) - Mobile critical communications technologies – building on The Critical Communications Association (TCCA) - Vertical industries from automotive and factories - building on the 5G Automotive Association (5GAA) and the 5G Alliance for Connected Industries and Automation (5G-ACIA)

	<ul style="list-style-type: none"> - Next generation Cloud – building on the DSM Cloud Stakeholders Working Groups <p>Stakeholders necessary to involve are from vertical sector and the CEF Digital Deployment part with operators, service providers, vendors and vertical players. Citizens and public administrations will be necessary to involve in relation to public policy objectives such as Next-Generation Internet services. This will be done through public consultation and targeted polls and through direct participation in deployment oriented or pilot projects.</p> <p>Openness and geographical coverage of the partnership will be ensured by the open process to develop R&I roadmaps.</p>
Contributions and commitments expected from partners	<p>Key industrial players are already contributing to the 5G Infrastructure Association in financing the association and providing in-kind contributions, e.g. human resources to coordinate partnership activities. The association has confirmed that the industrial players is ready to reinforce its commitment to a partnership in the area of Smart Networks and Services. In particular, the following contributions will be supported:</p> <ul style="list-style-type: none"> – in-kind contributions with leveraging factor about 5; – set up, financing and operations of the industry association; – coordination of running projects; – engagement to develop standards as spin offs from R&I; – engagement to support policy related aspects: spectrum identification and allocation, data privacy needed regulation for such platforms; – coordination with MS initiatives and co-creation of SRIA and SDA; – Investments in the context of operational infrastructure deployment (CEF Digital part).
Currently envisaged implementation mode(s).	<input checked="" type="checkbox"/> Institutionalised European Partnership
Justification of the implementation mode	<p>Through its strong formalised nature, an institutionalised partnership provides the long-term R&I commitment of industrial actors to drive a partnership with significant leverage of investments and resources. This is in line with the demands of stakeholders willing to engage in scaling up starting from the 5G-PPP to include IoT, cloud computing, and technologies for network and device components.</p> <p>An institutional partnership is envisaged as the most efficient coordination mechanism for EU and national actions for the programme definition and implementation, in particular as regards large-scale experimentation and deployment, and provides the necessary tools and critical mass to ensure strategic autonomy by tailor-made approaches for participation. This is also particularly important as this industry operates at global scale and such a partnership will significantly help to reach European consensus among both stakeholders and Member States towards global standards, spectrum allocation and other regulatory issues.</p> <p>An institutionalised partnership would also ensure synergies with programmes and facilities for large-scale experimentation and infrastructure deployment at EU and MS-level, in particular instruments like Connecting Europe Facility, Digital Europe Programme and InvestEU.</p> <p>Finally, it would ensure the necessary longer-term planning certainty and thereby the necessary strong commitment by stakeholders and Member States.</p>
Proposed starting year	2021