The Connecting Europe Facility – Digital (#CEF2digital) the EU tool to digitally connect citizens

> Fields marked with * are mandatory.

Introduction

The Connecting Europe Facility – Digital (#CEF2digital) - the EU tool to digitally connect citizens

The achievement of the digital single market relies on universal access to reliable, affordable, high and very high capacity networks. The Communication on "Connectivity for a Competitive Digital Single Market – Towards a European Gigabit society" (the Gigabit Society Strategy) sets out strategic connectivity objectives for 2025, which Member States are working on.

With its proposed budget of 3 billion euro, CEF2 Digital will support the Member States during 2021-2027 to trigger the necessary digital infrastructure investments to reach these strategic objectives. The programme will contribute to a balance between rural and urban developments by complementing the support provided for the deployment of very high capacity networks by other programmes, in particular the European Regional Development Fund, and the InvestEU Programme.

The draft CEF2 Regulation has been subject to political agreement on its main substantive points between the European Parliament and the Council of the EU. In particular, CEF2 Digital, with grants with different co-funding rates, will enable the Commission to co-fund projects of common interest (PCI) in the area of digital connectivity infrastructure "that are expected to make an important contribution to the Union's strategic connectivity objectives and/or provide the network infrastructure supporting the digital transformation of the economy and society as well as the European Digital Single Market" (Art.8), such as:

- uninterrupted coverage with 5G systems of all major transport paths, including the trans-European transport networks;
- the deployment of and access to very high-capacity networks, including 5G systems, capable of providing Gigabit connectivity in areas where socio-economic drivers are located;
- the provision of very high-quality local wireless connectivity in local communities that is free of charge and without discriminatory conditions;
- the deployment of new or significant upgrade of existing backbone networks including submarine cables, within and between Member States and between the Union and third countries;

- digital connectivity infrastructure requirements related to cross-border projects in the areas of transport or energy and/or supporting operational digital platforms directly associated to transport or energy infrastructures.

In order to ensure that the implementation of the CEF 2 Digital programme addresses the most urgent strategic needs in the Member States, the Commission seeks the views of all citizens and stakeholders regarding which investments in these different categories should be prioritised, as well as how the programme should best be designed to improve the business case for investments in digital infrastructure deployments, where relevant in synergy with other infrastructure investments.

The Commission is therefore interested in your views about possible strategic co-funding actions that should be supported with priority by CEF2 Digital in 2021-2027, in particular:

1.   Cross-border   5G   corridors   along   transport   routes

2.   Connectivity   for   5G   smart   communities   in   Europe

3. Backbone networks of strategic importance (Terabit connectivity to HPC/ EU cloud federation   /   Submarine   cables)

3.1   Terabit   connectivity   for   High   Performance   Computing   (HPC)
3.2   Energy   efficient   inter-connections   of   an   EU   cloud   infrastructure   federation
3.3   Submarine   cables   of   strategic   importance

4.   Synergy   actions   (Transport   –   Energy   –   Digital)

4.1   Operational   Digital   Platforms
4.2 Cross-sector programmes

The Commission invites citizens, legal entities and public authorities to submit their answers by 11 September 2019. The Commission will assess and summarise the results in a report, which will be made publicly available on the website of the Directorate General for Communications Networks, Content and Technology. The results will also be reflected in a Roadmap for the Implementation of CEF2 Digital in autumn 2019.

Thank you for your contribution!

About you

* I am giving my contribution as
  - ⚪ Academic/research institution
  - ⚪ Business association
  - ⚪ Company/business organisation
  - ⚪ Consumer organisation
  - ⚪ EU citizen
  - ⚪ Environmental organisation
  - ⚪ Non-EU citizen
  - ⚪ Non-governmental organisation (NGO)
  - 🔘 Public authority
  - ⚪ Trade union
  - ⚪ Other

* First name

* Surname

* Email (this won't be published)

* Scope
- ○ International
- ○ Local
- ○ National
- ◉ Regional

* Organisation name
255 character(s) maximum

Catalan Government - Generalitat de Catalunya

* Language of my contribution
- ○ Bulgarian
- ○ Croatian
- ○ Czech
- ○ Danish
- ○ Dutch
- ◉ English
- ○ Estonian
- ○ Finnish
- ○ French
- ○ Gaelic
- ○ German
- ○ Greek
- ○ Hungarian
- ○ Italian
- ○ Latvian
- ○ Lithuanian
- ○ Maltese
- ○ Polish
- ○ Portuguese
- ○ Romanian
- ○ Slovak
- ○ Slovenian
- ○

- ○ Spanish
- ○ Swedish

* Organisation size
- ○ Micro (1 to 9 employees)
- ○ Small (10 to 49 employees)
- ○ Medium (50 to 249 employees)
- ● Large (250 or more)

Transparency register number

255 character(s) maximum

Check if your organisation is on the [transparency register](#). It's a voluntary database for organisations seeking to influence EU decision-making.

[   ]

* Country of origin

Please add your country of origin, or that of your organisation.

○ Afghanistan	○ Djibouti	○ Libya	○ Saint Martin
○ Åland Islands	○ Dominica	○ Liechtenstein	○ Saint Pierre and Miquelon
○ Albania	○ Dominican Republic	○ Lithuania	○ Saint Vincent and the Grenadines
○ Algeria	○ Ecuador	○ Luxembourg	○ Samoa
○ American Samoa	○ Egypt	○ Macau	○ San Marino
○ Andorra	○ El Salvador	○ Madagascar	○ São Tomé and Príncipe
○ Angola	○ Equatorial Guinea	○ Malawi	○ Saudi Arabia
○ Anguilla	○ Eritrea	○ Malaysia	○ Senegal
○ Antarctica	○ Estonia	○ Maldives	○ Serbia
○ Antigua and Barbuda	○ Eswatini	○ Mali	○ Seychelles
○ Argentina	○ Ethiopia	○ Malta	○ Sierra Leone
○ Armenia	○ Falkland Islands	○ Marshall Islands	○ Singapore
○ Aruba	○ Faroe Islands	○ Martinique	○ Sint Maarten
○ Australia	○ Fiji	○ Mauritania	○ Slovakia
○ Austria	○ Finland	○ Mauritius	○ Slovenia
○ Azerbaijan	○ France	○ Mayotte	○ Solomon Islands
○ Bahamas	○ French Guiana	○ Mexico	○ Somalia
○ Bahrain	○ French Polynesia	○ Micronesia	○ South Africa
○ Bangladesh	○ French Southern and Antarctic Lands	○ Moldova	○

○ Barbados
○ Belarus
○ Belgium
○ Belize
○ Benin
○ Bermuda
○ Bhutan
○ Bolivia
○ Bonaire Saint Eustatius and Saba
○ Bosnia and Herzegovina
○ Botswana
○ Bouvet Island
○ Brazil
○ British Indian Ocean Territory
○ British Virgin Islands
○ Brunei
○ Bulgaria
○ Burkina Faso
○ Burundi
○ Cambodia
○ Cameroon
○ Canada
○ Cape Verde
○ Cayman Islands
○ Central African Republic
○ Chad
○ Chile
○ China
○ Christmas Island
○ Clipperton

○ Gabon
○ Georgia
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○ Ghana
○ Gibraltar
○ Greece
○ Greenland
○ Grenada
○ Guadeloupe
○ Guam
○ Guatemala
○ Guernsey
○ Guinea
○ Guinea-Bissau
○ Guyana
○ Haiti
○ Heard Island and McDonald Islands
○ Honduras
○ Hong Kong
○ Hungary
○ Iceland
○ India
○ Indonesia
○ Iran
○ Iraq
○ Ireland
○ Isle of Man
○ Israel
○ Italy
○ Jamaica

○ Monaco
○ Mongolia
○ Montenegro
○ Montserrat
○ Morocco
○ Mozambique
○ Myanmar /Burma
○ Namibia
○ Nauru
○ Nepal
○ Netherlands
○ New Caledonia
○ New Zealand
○ Nicaragua
○ Niger
○ Nigeria
○ Niue
○ Norfolk Island
○ North Korea
○ North Macedonia
○ Northern Mariana Islands
○ Norway
○ Oman
○ Pakistan
○ Palau
○ Palestine
○ Panama
○ Papua New Guinea
○ Paraguay
○ Peru

○ South Georgia and the South Sandwich Islands
○ South Korea
○ South Sudan
◉ Spain
○ Sri Lanka
○ Sudan
○ Suriname
○ Svalbard and Jan Mayen
○ Sweden
○ Switzerland
○ Syria
○ Taiwan
○ Tajikistan
○ Tanzania
○ Thailand
○ The Gambia
○ Timor-Leste
○ Togo
○ Tokelau
○ Tonga
○ Trinidad and Tobago
○ Tunisia
○ Turkey
○ Turkmenistan
○ Turks and Caicos Islands
○ Tuvalu
○ Uganda
○ Ukraine
○ United Arab Emirates
○ United Kingdom
○ United States

○ Cocos (Keeling) Islands	○ Japan	○ Philippines	○ United States Minor Outlying Islands
○ Colombia	○ Jersey	○ Pitcairn Islands	○ Uruguay
○ Comoros	○ Jordan	○ Poland	○ US Virgin Islands
○ Congo	○ Kazakhstan	○ Portugal	○ Uzbekistan
○ Cook Islands	○ Kenya	○ Puerto Rico	○ Vanuatu
○ Costa Rica	○ Kiribati	○ Qatar	○ Vatican City
○ Côte d'Ivoire	○ Kosovo	○ Réunion	○ Venezuela
○ Croatia	○ Kuwait	○ Romania	○ Vietnam
○ Cuba	○ Kyrgyzstan	○ Russia	○ Wallis and Futuna
○ Curaçao	○ Laos	○ Rwanda	○ Western Sahara
○ Cyprus	○ Latvia	○ Saint Barthélemy	○ Yemen
○ Czechia	○ Lebanon	○ Saint Helena Ascension and Tristan da Cunha	○ Zambia
○ Democratic Republic of the Congo	○ Lesotho	○ Saint Kitts and Nevis	○ Zimbabwe
○ Denmark	○ Liberia	○ Saint Lucia	

* Publication privacy settings

The Commission will publish the responses to this public consultation. You can choose whether you would like your details to be made public or to remain anonymous.

○ **Anonymous**
Only your type of respondent, country of origin and contribution will be published. All other personal details (name, organisation name and size, transparency register number) will not be published.

◉ **Public**
Your personal details (name, organisation name and size, transparency register number, country of origin) will be published with your contribution.

☑ I agree with the [personal data protection provisions](#)

Do you agree to be contacted by the European Commission services for possible follow-up questions to your response / information provided.
◉ Yes
○ No

1. Cross-border 5G corridors along transport routes

Description of the action:

5G is expected to be a major enabler of connected and automated mobility (CAM) in Europe, for all forms of transport, including roads, railways and inland waterways. Thanks to its ultra-reliability and low latency for the critical exchange of data between any types of vehicles, mobile users, transport infrastructures and core networks, 5G will contribute to enhance road safety, reduce CO_2 emissions and traffic congestion, as well as empower innovative digital ecosystems around vehicles. For these reasons, and considering as well the impact of 5G on the competitiveness of the telecom and automotive industries in Europe, the Commission's 5G Action Plan of September 2016 has set as a strategic connectivity objective the deployment of 5G infrastructure along main transport paths in Europe by 2025. This is part of a broader CAM strategy for investment as part of the 2018 3rd mobility package.

The action foresees support for the deployment of 5G coverage along cross-border transport corridors (road, rail or inland waterways), allowing for 5G-connected mobility between EU Member States. In addition, CEF Transport will invest in automated mobility.

The maximum co-funding rate foreseen is 50%, for actions with a strong cross-border dimension. An additional 10% can be added to the EU funding rates in the case of cross-sector synergy projects (see below "Synergy actions" (Transport – Energy – Digital)).

The draft CEF2 Regulation recognises that actions implementing uninterrupted coverage with 5G systems of all major transport paths, including the trans-European transport networks are among the strategic digital projects of common European interest that can be supported by the programme.

1. Do you agree that the EU should prioritise financial support from the programme for efforts in Member States to improve the business case for investments in such strategic digital infrastructure deployments?
- ⦿ Yes
- ○ No

2. Are you interested in investing in this area, or otherwise directly involved?
- ⦿ Yes
- ○ No

3. In which geographic corridor(s) and by when (2021-2027) would your organisation be interested to intervene? Is the corridor on the list of Appendix V of the Regulation? With which role could you participate? How would your investment relate to investments in roads and/or railways under the transport section of CEF?

> Catalan Government in coordination with Occitanie Pyrénées-Méditerranée Region (Spanish Kingdom and Republic of France) are preparing a proposal to apply to the Mediterranian corredor on 2019 (H2020 ICT-53-2020: 5G PPP – 5G for Connected and Automated Mobility (CAM)). The role of Catalan Government will be "partner" of the proposal, which will be liderated by an industrial partner.
> The aim of Catalan Government is to get knowledge in the project to plan the coverage of 5G in Catalonia. Catalan Government is managing more than 750 Km of highways in Catalonia and more than 6.000 Km of roads.

4. What are the actors whose involvement you consider essential for the participation in a 5G corridor project? What forms of cooperation among them do you anticipate? Upon completion of such project, under which business model would your entity participate in the value chain of a 5G corridor providing connected and automated driving? What project size do you expect?

> The aim of the 5G corredor projects should be to explore ways to deploy the 5G technology in an eficient way, explore business cases or develop European Technology to be used internationally. That is why the aim of the projects should help European Industry to concrete products, business cases or solutions, testing them in a real and complex environment to obtain products or solutions to the market.

5. To what extent do you think that more than one network providing uninterrupted 5G services along cross-border sections of corridors could be necessary and can be expected, given that such areas are often rural and generally poorly covered?

> 5G services will be a must for safety and logistics, so, we believe it is not an option not to offer that services even in rural areas. On the other hand, to have multiple networks everywhere could be a not eficient use of the funds (públic or private). Other options could be explored. It is important to ensure the coverage of 5G services for public purposes (autonomous mobility, but also emergency services), but, perhaps, also other business models could be explored (neutral operators, infrastructure operators, etc.). The price of the licenses to use the frequencies should be used to ensure the coverage, but the value chain to provide 5G services could be flexible to ensure efficiency.

6. Given that several national public authorities are imposing certain coverage obligations for major transport paths on telecommunication operators via the conditions of spectrum rights of use, how do you estimate the investment needs on the remaining parts/sections, which are not covered by such obligations? What are the most relevant frequency bands for those latter sections?

> Rural areas or areas with no population would need coverage because of the need of emergency services. Low frequency bands should be used in these areas and should be considered as a possible solution.

7. Which category of use cases or digital services enabled by 5G networks along transport paths do you expect to be most used in the 2021-2026 period?

> Assisted mobility (perhaps not yet autonomous mobility). Also the migration of emergency services from actual solutions (TETRA) to 5G.

2. Connectivity for 5G smart communities in Europe

Description of the action:

Europe must seize the countless opportunities offered by the digital transformation everywhere. This requires investing in future-proof infrastructure, including 5G networks, as a prerequisite. An early 5G

deployment in urban centres and along the major transport routes are important objectives. However, Member States also need to ensure that digital services become a means to close territorial divides and that all European citizens and business, including those living in rural and remote areas, have equal opportunities to participate in the Digital Single Market and to benefit from modern public services.

Indeed, communities all around Europe consider digital networks as enabling an array of new innovative services that will transform mobility, healthcare, the use of energy, and many other services and sectors, bringing them into the era of the internet of things. Ubiquitous connectivity of 100 Mbps upgradable to Gigabit is therefore increasingly recognised by citizens and businesses as a pre-condition to thrive in the digital future, wherever they live.

Given that the business case for investment in networks depends on economic factors such as population density and income levels, it is imperative to ensure Gigabit connectivity in the first place to all socio-economic engines of digital growth, regardless where they are located (this includes public services, such as schools and hospitals, as well as digitally intensive enterprises, etc.). The availability of such networks will stimulate the use and take-up of innovative online services.

In order to ensure that such services are available locally, CEF Digital will support network deployments to 5G smart communities in Europe by offering targeted co-funding for:
  - Gigabit network deployments in areas where socio-economic drivers, such as educational and medical centres, public administration buildings, transport hubs or business parks are located, but where they would only be partly delivered by the market and where they are needed as prerequisite for the deployment of 5G to support innovative smart communities' applications;
  - Wireless equipment (Wi-Fi and 5G small cells) in areas with a risk of lagging behind in terms of 5G coverage, to provide communities local free of charge very high quality internet access (e.g. via Wi-Fi networks) and to support the rollout of 5G-based innovative smart communities applications. Local connectivity indeed often relies on the installation of many small wireless access points/small cells.

The maximum co-financing rates for this action range from 30% to 75%: whereas the default rate for connecting households is capped at 30%, deployments to socio-economic drivers can be funded up to 75%. Moreover, specific actions, in continuation of the Wifi4EU programme, can be funded up to 100% when implemented via low value grants. Cross-sector synergy projects can benefit from an additional 10% compared to the maximum applicable funding rate (see below "Synergy actions" (Transport – Energy – Digital)).

The draft CEF2 Regulation recognises that actions supporting the deployment of and access to very high-capacity networks, including 5G systems, capable of providing Gigabit connectivity in areas where socioeconomic drivers are located, as well as the provision of very high-quality local wireless connectivity in local communities that is free of charge and without discriminatory conditions, are among the strategic digital projects of common European interest that can be supported by the programme.

8. Do you agree that the EU should prioritise financial support from the programme for efforts in Member States to improve the business case for investments in such strategic digital infrastructure deployments?
  ◉ Yes
  ◎ No

9. Are you interested in investing in this area or otherwise directly involved?
- ⦿ Yes
- ○ No

10. Which other socio-economic drivers – in addition to schools and hospitals – would you prioritise for receiving Gigabit connectivity and why (benefits of services, quality of life, job creation, gaps in your region / country, etc.)?

> Gigabit society has to be developed not just in urban areas; that is why, from Catalan point of view, examples of rural industry should be checked and demonstrations promoted (intelligent agriculture, wood industry, industry 4.0 in rural areas, logistic, etc.). Alternatively, rural economy has the benefit of Gigabit society or we will create a two-speed European economy.

11. Under which circumstances would you consider that stand-alone deployments to socio-economic drivers (i.e. not involving also deployments for the respective surrounding areas) would be economically reasonable and should be supported from CEF Digital?

> Just demonstrations with clear outputs and clear metrics of what should be considered success or fail, with compromises from the agents to exports or expand the demonstration to the area or the economical sector should be considered.

12. What are in your view the most appropriate safeguards that should be put in place to avoid market distortion, while aiming at quick project selection and deployments of networks that would underpin smart IoT and/or 5G enabled services across EU territories?

> An option could be if projects financed under CEF Digital support have a clear compromise to mobilise a private/public investment in case of success, that could justify the public investment. If projects under CEF Digitals support helps to decrease the risk, the barreer of a private/public investment or deployment of the solution according a plan previously compromised, then CEF Digital could act as a lever to mobilise a bigger investment.

13. What would be the optimal size of network deployment projects (e.g. in terms of areas, households, number of socio-economic drivers or others) to underpin smart community projects and what will be the most important challenges to ensure availability of digital services on these networks? What project size do you expect?

> The project size should be the minimum to get a clear output of success or fail of the demonstration. If it is a social project, a complete village or community should be covered; if it is an economic-demonstrator project, the value chain of the demonstration should be the minimum requirement. That logic consideration should be the basic principle.
> On the other hand, we understand resources are limited and not all sizes of projects could be financed. A demonstration or test project should have a limited size and investment, not a completed and final solution deployment, should be an initial test to expand the solution or to create the product to sell.
> Taking into account that Gigabit Society will require infrastructure investment (to provide the village or industry) with connectivity (wire or wireless), demonstration project should not exceed one million Euros (public funding of 30% or 75% depending on the compromises of investment if the project results on success).

14. What business model do you anticipate will be the most prevalent for the deployment of 5G networks supporting the digital transformation of local communities and what barriers / obstacles do you expect for such 5G deployments?

The deployment of 5G networks in rural areas can be a good opportunity to different local and regional partners to develop their business. That's why, the first action to consider is the necessity of fiber access to these local communities, in order to be able to deploy 5G technology over it. Related to local communities, probably the fiber access will have to be co-funded by public administrations, because private fiber operators can consider the lack of potential customers in order to not deploy fiber until there. Once the fiber has reached the local community, local or regional fiber operators can appear. On the one hand, to do an FTTH deployment in the area and, on the other, the deployment of 5G. These operators also can bid to offer a neutral infrastructures operator, to create the scenario for mobile phone operators, with minimum investment, to deploy 5G from these neutral infrastructures, including even ran-sharing services between mobile phone operators in these areas.

15. What would be the best way, in your view, to ensure synergies and complementarity with other sources of public funding, whether from Member States and/or EU programmes?

ERDF and CEF complementarity should be analised, especially if the success of a research or test project should be implemented as a result. As an example, one H2020 project could produce a new technology or solution to be tested in a CEF Digital smart community combining some infrastructure deployment with ERDF.

3. Backbone networks of strategic importance (Terabit connectivity to HPC/ EU cloud federation / Submarine cables)

3.1 Terabit connectivity for High Performance Computing (HPC)

Description of the action:

The exponential growth of data, combined with increased networking and computing resources and new algorithmic paradigms, such as Artificial Intelligence, is today one of the major drivers of innovations and productivity gains in the global digital economy. Europe's scientific capabilities, industrial competitiveness and sovereignty depend critically on continuous access to world-leading HPC and data technologies and infrastructures to keep pace with the growing demands and complexity of the problems to be solved.

We need a secure digital infrastructure of world-class computing, data and connectivity capacities consistent with the economic importance of Europe, underpinning our Digital Single Market, and making it trustworthy, attracting investments and stimulating economic competitiveness. This infrastructure is essential for processing in Europe the data produced by EU research and industry, with top of the world HPC capabilities that ensure that strategic know-how for innovation and competitiveness stay in the Union.

The EuroHPC Joint Undertaking (EuroHPC JU) has been established to address this situation. The EuroHPC JU gathers the Union and 28 European countries (with the support of two private associations on HPC (ETP4HPC) and Big Data (BDVA)) in a strategic instrument to foster leadership in HPC and in the global digital economy. The EuroHPC JU mission is to develop, deploy, extend and maintain in the Union an integrated world-class supercomputing and data infrastructure and to develop and support a highly competitive and innovative High-Performance Computing ecosystem, for the next generation exascale supercomputing era and beyond. This world-leading infrastructure will be deployed across many Member States, and the most advanced and high-speed connectivity capabilities will be critical to fully maximise its huge computing potential.

CEF Digital support will complement European high performance computing resources with adequate terabit-capacity connections where these would not be provided on time, or at all, by the market. Eligible actions include the deployment of new or significant upgrade of existing backbone networks, within and between Member States.

The maximum co-funding rate is 30% for actions within a Member State and 50% for cross-border actions. An additional 10% can be added to the EU funding rates in the case of cross-sector synergy projects (see below "Synergy actions" (Transport – Energy – Digital)).

The draft CEF2 Regulation recognises that actions supporting deployment of new or significant upgrade of existing backbone networks, including submarine cables, within and between Member States and between the Union and third countries, are among the strategic digital projects of common European interest that can be supported by the programme.

16. Do you agree that the EU should prioritise financial support from the programme for efforts in Member States to improve the business case for investments in such strategic digital infrastructure deployments?

- ⦿ Yes
- ○ No

17. Are you interested in investments in this area or otherwise directly involved?

- ⦿ Yes
- ○ No

18. Which investments in high-speed data networks are required beyond the current state-of-the art to reap the benefits of the future European HPC infrastructure and ecosystem?

Catalonia hosts Barcelona Supercomputing Centre (BSC) and has a good optical fibre network and international connectivity. In order to guarantee the proper growth and ecosystem development and sustainability, adequate investment should be planed to improve not only the high-speed data network for BSC, but also to second and third level compute centers in the region. Easy and fast access to HPC Tier-0, Tier-1, and Tier-2 levels will minimize the unnecessary replication of HPC, Data and Compute resources. Nevertheless, actual situation would not guarantee the needs of a near future connectivity according the importance of the BSC in European HPC strategy.
Backbone networks in Catalonia should be reinforced to support European arquitecture and, specially, international connectivity.
Catalan Government can help, but other public funds will be necessary and also private initiative.
Submarine cable could help to facilitate the impact of actual European strategy and reinforce the BSC

projects. Mainly, submarine cables are promoted by private investors, but European funds could help to attract the private investment.

19. What is the need and level of EU support (to address market failure) and what form should this support take (grant, loan, anchor customer, etc…)?

In case of public projects (invest in a public backbone to connect universities, schools or international connectivity with public backbones), grants should be considered. In case of private projects (submarine cables or increase of international backbones), loans should be considered.

20. What would be the main characteristics of the investment project in which you would be interested in co-investing, in terms of project size and cost, capacity, network segments, location (cross-border, or national access backbone), timing, connection of commercial data centres to HPC, etc.?

Catalonia is investing in backbone infrastructure (optical fibre deployment), including deployment to the border open to the wholesale market. Two main objectives are driving that deployment: internal objective (public services –healthcare system, education, public administration sites connection, etc.-) and private market (regulated offers according National Regulation Agency and State aid rules).

Private market is using the deployment and connecting private infrastructures (data centres, FTTH offers, etc.), but also science infrastructure (public or private).

Cross border or resilience of the network (also rural areas) are now on our focus of investment.

21. What would be the business model/rationale that would make your organization interested in applying for co-investing in such a project (collateral benefits, opportunities for new services, etc.)?

Having a basic backbone (even if we still have to access to rural areas) allow Catalan Government to support industrial areas with that new infrastructure or increase the capacity to help HPC projects to grow. Business model is ensured partially with public services used by the Government, rest of business model has to be completed by private market usage of the infrastructure (according State aid rules through National Regulator Agency control of pricing). To expand actual network to arrive to some industrial areas or access network to arrive to concrete industries or infrastructures would need co-investment (public/private).

3.2 Energy efficient inter-connections of an EU cloud infrastructure federation

Description of the action:

The imperative to sustainably and strategically manage ever-growing energy-hungry data flows across the EU in the policy context of the Free Flow of Non-Personal Data EU Regulation and the impacts of the 'US Cloud Act' on the European economy and society call for targeted European strategic investments. The growing demand for highly specialised and tailor-made cloud products and services from European industrial sectors to enhance their competitiveness in the digital age and the critical role of cloud infrastructures to enable a swift roll-out of novel technologies such as AI, blockchain and IoT, reinforce this investment imperative.

European investments are thus of utmost importance to foster the deployment of a competitive, energy efficient and secure European supply of interconnected cloud infrastructures (the 'Federation'). It will support companies to operate at scale across the whole European single market, enable responsible free flow of data and, ultimately, contribute to building the 'next generation' European competitive advantage in digital infrastructures in the global economy.

Finally, companies and public entities are not yet fully taking advantage of the socio-economic potential that cloud computing offers as an enabler. Cloud uptake is at an average of 26% among European companies, with large discrepancies among Member States, companies and sectors of the economy, with the public sector using in average 4 times less cloud computing than the private sector. EU strategic investments should thus also stimulate cloud uptake among the public sector to deliver better services of general public interest across the EU. This can be achieved by investing in interconnecting existing cloud infrastructures of public administrations across the EU territory.

The action therefore foresees support for pan-European, energy efficient, cross-border interconnections of European cloud infrastructures of strategic importance through backbone networks and middlewares to provide the necessary scale to foster the competitiveness of European companies; optimise energy consumption deriving from data flows and enable a swifter cloud uptake among the public sector.

The maximum co-funding rate is 50% for cross-border actions. An additional 10% can be added to the EU funding rates in the case of cross-sector synergy projects (see below "Synergy actions" (Transport – Energy – Digital)).

The draft CEF2 Regulation recognises that actions supporting deployment of new or significant upgrade of existing backbone networks including submarine cables, within and between Member States and between the Union and third countries, are among the strategic digital projects of common European interest that can be supported by the programme.

22. Do you agree that the EU should prioritise financial support from the programme for efforts in Member States to improve the business case for investments in such strategic digital infrastructure deployments?
 ○ Yes
 ○ No

23. Are you interested in investing in this area or otherwise directly involved?
 ○ Yes
 ○ No

3.3 Submarine cables of strategic importance

Description of the action:

Adequate and future oriented digital connectivity throughout the territory of the EU is one of the prerequisites for a fully functional Digital Single Market and for Europe-wide economic and social cohesion and strategic autonomy.

Submarine cables are the essential element in ensuring high capacity and high performance (resilience, security, redundancy, latency) connectivity throughout the territory of the European Union, including island states, outermost regions, overseas countries and territories, or international connectivity of strategic importance between the EU and specific international hubs.

CEF will support "the deployment of new or significant upgrade of existing backbone networks, including submarine cables, within and between Member States and between the Union and third countries".

The objective of the action is to fill in the missing links contributing to increased capacity, resilience and redundancy of the EU digital communications infrastructure.

The maximum co-funding rate is 50% for cross-border actions. An additional 10% can be added to the EU funding rates in the case of cross-sector synergy projects (see below "Synergy actions" (Transport – Energy – Digital)). Specific co-financing rates of up to 70% may apply for actions located in outermost regions.

The draft CEF2 Regulation recognises that actions supporting deployment of new or significant upgrade of existing backbone networks including submarine cables, within and between Member States and between the Union and third countries, are among the strategic digital projects of common European interest that can be supported by the programme.

28. Do you agree that the EU should prioritise financial support from the programme for efforts in Member States to improve the business case for investments in such strategic digital infrastructure deployments?
- ◉ Yes
- ○ No

29. Are you interested in investing in this area or otherwise directly involved?
- ◉ Yes
- ○ No

30. Which challenge should be addressed with EU support as a priority in the area of submarine cables (ex. resilience, fast connectivity for all EU citizens, solve backbone connectivity bottlenecks, decrease latency, lack of competitive pricing, etc)? Please explain in detail.

> Catalonia has a correct international connection, but the importance of the knowledge economy, the Barcelona Supercomputing Centre or plans of private investments in Data Centres will need and important upgrade and the resilience of international connectivity should be considered also.
> It is known the existence of private interest to invest in submarine cables in Barcelona or Catalan area and the latency will be one of the important variables to concrete the investment (for supercomputing projects, but also for private investments in global data centres).

31. What would be the main characteristics of the investment project in which you would be interested in co-investing, in terms of project size and cost, capacity, network segments, location (cross-border, or national access backbone), route(s), timing, connectivity shortcomings addressed by the project)?

> Submarine cables are financed by consortiums, private consortiums. We are not considering investing public money in these consortiums or possible new ones. However, the existence of that infrastructures are important key elements in order to provide new opportunities or resilience to the European networks.

32. What type of public support would be needed (anchor customer, grant, loan, equity etc. or a mixture of the above)? Please explain in detail.

> Just when private interest is demonstrated, we consider that soft loans to favor the existence of infrastructures would help to Europe competitiveness.

33. Which aspects and/or indicators would you consider most suitable for assessing the project's performance?

> Pricing of the services offered (connectivity), latency and number of alternative ways to international markets.

4. Synergy actions (Transport – Energy – Digital)

4.1 Operational Digital Platforms

Description of the action:

Support operational digital platforms directly associated to transport or energy infrastructures. Operational digital platforms are physical and virtual ICT resources that support the flow, storage, processing and analysis of transport or energy infrastructure data, e.g. an EU platform connecting cross-border data centres and the smart grids, a renewable energy availability platform, a cybersecurity platform for CAM, etc. These platforms operate on top of the communication infrastructure. They include hardware (sensors, actuators, servers, storage subsystems, and networking devices like switches, routers and firewalls) and software (e.g. data bases, analytics, simulation tools).

The maximum co-funding rate is 50% for cross-border actions. An additional 10% can be added to the EU funding rates in the case of cross-sector synergy.

The draft CEF2 Regulation recognises that actions implementing digital connectivity infrastructure requirements related to cross-border projects in the areas of transport or energy and/or supporting operational digital platforms directly associated to transport or energy infrastructures, are among the strategic digital projects of common European interest that can be supported by the programme.

34. Do you agree that the EU should prioritise financial support from the programme for efforts in Member States to improve the business case for investments in such strategic digital infrastructure deployments?
- ○ Yes
- ○ No

35. Are you interested in investing in operational digital platforms contributing to the digitalisation of energy or transport or otherwise directly involved?
- ○ Yes
- ○ No

4.2 Cross-sector programmes

Description of the action:

The future needs for decarbonisation and digitalisation of the European Union economy will imply a growing convergence of the transport, energy and digital sectors. Synergies between the three sectors should thus be harnessed to the full extent, maximising the effectiveness and efficiency of EU support. The ongoing CEF programme has shown that several potential synergies among the three sectors exist but that a systematic framing and inclusion in the financing work programmes has not been done. Synergies have been exploited by projects by default, but they have not been programmed by design. In order to capture those synergies and provide them with adequate funding for the necessary intervention, the newly proposed CEF has a dedicated 'synergy pillar'.

CEF Digital is particularly apt to be part of synergies activities due to its pervasive and underpinning nature. Examples of synergy areas include connected and autonomous mobility, clean mobility based on alternative fuels, energy storage and smart grids, cross-border cooperation in the area of renewable energy, green ICT, including data centres. This will support, among other priorities, all connectivity aspects serving the projects of common interest identified in this pillar as well as the cybersecurity-specific aspects related to the security of critical infrastructures.

Actions contributing simultaneously to the achievement of one or more objectives of at least two sectors shall be eligible to receive Union financial assistance under this Regulation. An additional 10% can be added to the EU funding rates in the case of such cross-sector synergy projects.

Furthermore, within each of the transport, energy or digital sectors, actions may include synergetic elements relating with any of the other two sectors, provided that the cost of these synergetic elements does not exceed 20% of the total eligible costs of the action, and allow to significantly improve the socio-economic, climate or environmental benefits of the action.

40. Do you agree that the EU should prioritise financial support from the programme for efforts in Member States to improve the business case for investments in such strategic digital infrastructure deployments?

- ⦿ Yes
- ○ No

41. Are you interested in investing in synergy projects or otherwise directly involved?

- ⦿ Yes
- ○ No

42. What kind of synergy projects, in conjunction with the other parts of the CEF on Energy and Transport, are you interested in and what would be the best way support them (via joint calls, coordinated calls, others)?

> Catalan Government is considering projects mainly combining energy and digital or transport and digital. Digitalise the energy production and control is one of the objectives, but also digital industry (datacentres or HPC) are heavy users of energy market.

Transport is evolving very rapidly towards the digital management of goods and people.
Catalonia is working actively in these areas.

43. What should be the fundamental aspects and/or indicators for assessing a synergies project performance against completed tasks?

One of the important areas would be coordinating the initialtives, do not make separate projects, execute projects of different areas combining and exploiding the synergies between the areas to create something better.
Take advantage of power generation to power data centers without having to go through the external power operator, minimise environmental impact suing combined cooling between infrastructures, coordination of emergency plans, etc.

44. Who should be the beneficiaries of the grant (consortium members)? What project size do you expect?

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