Contribution ID: 4a93ddce-844f-4994-bb8d-02b409eef4f1
Date: 11/09/2019 17:49:18

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)

* Organisation name

255 character(s) maximum

Orange

* 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.

76704342721-41

* Country of origin

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

- Afghanistan
- Åland Islands
- Albania
- Algeria
- American Samoa
- Andorra
- Angola
- Anguilla
- Antarctica
- Antigua and Barbuda
- Argentina
- Armenia
- Aruba
- Australia
- Austria
- Azerbaijan
- Bahamas
- Bahrain
- Bangladesh
- Barbados
- Belarus
- Belgium
- Belize
- Benin
- Djibouti
- Dominica
- Dominican Republic
- Ecuador
- Egypt
- El Salvador
- Equatorial Guinea
- Eritrea
- Estonia
- Eswatini
- Ethiopia
- Falkland Islands
- Faroe Islands
- Fiji
- Finland
- (•) France
- French Guiana
- French Polynesia
- French Southern and Antarctic Lands
- Gabon
- Georgia
- Germany
- Ghana
- Gibraltar
- Libya
- Liechtenstein
- Lithuania
- Luxembourg
- Macau
- Madagascar
- Malawi
- Malaysia
- Maldives
- Mali
- Malta
- Marshall Islands
- Martinique
- Mauritania
- Mauritius
- Mayotte
- Mexico
- Micronesia
- Moldova
- Monaco
- Mongolia
- Montenegro
- Montserrat
- Morocco
- Saint Martin
- Saint Pierre and Miquelon
- Saint Vincent and the Grenadines
- Samoa
- San Marino
- São Tomé and Príncipe
- Saudi Arabia
- Senegal
- Serbia
- Seychelles
- Sierra Leone
- Singapore
- Sint Maarten
- Slovakia
- Slovenia
- Solomon Islands
- Somalia
- South Africa
- South Georgia and the South Sandwich Islands
- South Korea
- South Sudan
- Spain
- Sri Lanka
- Sudan

- 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
- Cocos (Keeling) Islands
- Colombia
- Comoros
- Congo
- Cook Islands
- Costa Rica
- 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
- Japan
- Jersey
- Jordan
- Kazakhstan
- Kenya
- Kiribati
- 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
- Philippines
- Pitcairn Islands
- Poland
- Portugal
- Puerto Rico
- Qatar
- 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
- United States Minor Outlying Islands
- Uruguay
- US Virgin Islands
- Uzbekistan
- Vanuatu
- Vatican City

- Côte d'Ivoire
- Croatia
- Cuba
- Curaçao
- Cyprus
- Czechia
- Democratic Republic of the Congo
- Denmark
- Kosovo
- Kuwait
- Kyrgyzstan
- Laos
- Latvia
- Lebanon
- Lesotho
- Liberia
- Réunion
- Romania
- Russia
- Rwanda
- Saint Barthélemy
- Saint Helena Ascension and Tristan da Cunha
- Saint Kitts and Nevis
- Saint Lucia
- Venezuela
- Vietnam
- Wallis and Futuna
- Western Sahara
- Yemen
- Zambia
- Zimbabwe

* 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 CO2 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?

Orange has identified several road corridors which could be valuable candidates for a deployment. As an active member of the 5G CROCO project (Cross border Control Project), Orange plans to deploy and test the technology in some parts of the Metz-Merzig corridor between France and Germany. The EU tool CEF 2 could be an opportunity to extend the covered trunks in case of difficulties for a coverage by the operators on their own. Moreover, as Luxemburg is also involved in the 5G CROCO Project, the border between France and Luxemburg (highway A31) it is worth considering this extension also for CEF2. This project is currently launched and first deployments for testing are scheduled in 2021.
In addition, highways between France & Spain or France & Belgium could also be good candidates for CEF2. Being involved in many European countries, Orange also examines the possibility to conduct some tests in Romania and Poland among others.

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?

Orange considers that a large number of actors should be involved in a 5G corridor project, and likely the contribution of each of them is essential to the success of the project. Main reference for background is ITS (Intelligent Transport Systems): ITS forms a unifying ecosystem between vehicles, smart cities, telecoms actors (both operators and manufacturers), road operators and last, but not least, public authorities' national, regional, local, in charge of transport- because of their competencies on road infrastructure and management, that are used in multiple use cases. All these actors are legitimate in such a 5G project. Nevertheless, we recognise that finding the right business models will be key to the development of this ecosystem and that's why all these actors must join forces to work together in such a project. Orange will develop them in a pragmatic matter, taking into account the lessons of the various experiments.

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?

Indeed, today there are several strategies to roll out and operate networks in less dense areas. Operators may share some part of their networks depending on their business cases and the license agreements.
For cross border sections of corridors on 5G, European projects such as 5G Croco, 5G Carmen or 5G Mobix will help to better understand the necessary level of cooperation between network operators.
However, should there be CEF2 intervention, it should be designed in order not to have an impact on the competition between operators in those areas.

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?

As indicated, the ecosystem for 5G corridor projects is very broad. Orange is currently in an evaluation phase: the dedicated experts expect that ongoing European projects (5G Croco, 5G Carmen or 5G Mobix) will provide valuable information/feedback to estimate the investment needs on remaining parts/sections. It might be that public incentives could certainly be needed to adequately cover rural areas.

Orange expects also that these projects (and their follow up) will refine the level of appetency of the automotive industry for 5G technology.

Regarding spectrum use, Orange considers that a mix of 700 MHz and 3,4-3,8 GHz will be a good working assumption.

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?

For practical and economic reasons, Orange considers 5G as an incremental roll out on top of our current network. 5G will enable to broaden our ability to support all kinds of services with a wide range of achievable QoS (latency, throughput, reliability). Thus at this stage we believe that it is worth working with the three large families of use cases being part of ITS i.e. infotainment, mobility/comfort and road safety. In practical, uses cases dedicated to road transport will include all technologies that will allow an enhanced 360° vison (so called "eye bird vision"), or that will allow to download HD maps for automotive vehicles, for instance.

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.)?

Orange strives on all its geographies to bring cost-effective connectivity to all.
Orange is interested to bring fiber-like connectivity to unserved and underserved areas provided that it can be done profitably and in an appropriate framework. Infrastructure sharing supported by European co-financing can be a way to deliver this.

Orange agrees with the principle for CEF Digital to support network deployments to 5G smart communities in Europe by offering targeted co-funding for various sectors, and, in particular medical centres. In the domain of Health digitalisation, which is underway, the main benefits will come from the ability for a patient to get health services at home and at work. As a consequence, the quality of European public connectivity is even more important than hospital connectivity. That's why, as a major player in Europe, Orange is currently investing a lot in 4G and Wi-Fi to invest this area, and expects that on-going developments on 5G will help to enhance the connectivity for medical cases.

In addition to schools and hospitals, Orange considers that Gigabit connectivity is a priority for BtoC business, shopping (commercial areas), leisure areas (concert hall, libraries…), transport areas (airport, train station, transport node), ie a wide range of activities that will bring benefits of services and give access to all services , and that aim to reduce the digital divide.

To enable value creation for all actors, Gigabit connectivity should be seamless to allow some change in the people's way of life. As a consequence, public efforts should be made to ensure that everybody is connected with a Gigabit solution everywhere, as a complement to private investment. Such public funding should thus not pre-empt private initiatives and occur only when there is no such plan.

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?

From a generic point of view, Orange considers there is a need to generate discounted pay-back of standalone deployment after several years.

Concretely, several considerations have to be taken into account:
1/ location considered should not be a competitive differentiator, or somewhere already deployed by one

network operator on private funds
2/ access to this standalone network should be given to all mobile network operators
3/ the stand-alone model should not lead to an overall cost increase (at the market level) to avoid a retail price increase
4/ if provided by standalone infrastructure providers, they should not be retailers because it would lead to market fragmentation, multiplying the number of subscriptions for a given customer, and at the end of the day more telecom expenses for the end-user. So they should be wholesaler only and subject to the general provisions regarding public funding (state-aid rules).

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?

The best way to generate profitability of investments in the lowest-density areas is to optimise the cost of deployed infrastructure, eventually through mutualisation.
Co-financing and wholesaling of deployed infrastructure, when properly put in place, can both bring profitability while avoiding market distortion.

The following conditions should be respected:
1/ standards & volumes predefined, including EMF
2/ geographical coverages agreed & monitored
3/ not link vertical application to network deployment, because this model will limit at day one the vertical player's number.

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?

Work has been done to develop investment profitability models that can define deployment thresholds. In any case, investment decisions need to be initiated on a case by case basis.

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?

For Orange, private commercial agreements at passive (sites mutualisation) and active level (capacity sharing and wholesaling models) will be prevalent (cf supra) and should tackle most of coverage issues.

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?

Ensuring complementarity between public and private funding is key, but complex. To facilitate this type of funding, avoiding the digital divide by providing 100Mbps connectivity is foremost. Application of profitability models can define the minimum level of public funding to make this happen. What EU programmes cannot fund for any reason will need to be covered by Member States and vice-versa.

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

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

24. The scope of the action only targets the interconnection of cloud infrastructures that are cross-border across the EU territory to achieve economies of scale and energy efficiency of data flows. Is there any other rationale to support this action in a cross-border setting?

There is also another rationale to support this action as the cross-border initiative is a de facto enabler for content indexing. To some extent, this could help eliminate duplication, as content storage is energy consuming, this can help to lower absolute energy consumption.

25. Which are the three most accurate key performance indicators to measure energy efficiency of cloud data flows in the context of this initiative?

PUE (Power Usage Effectiveness) is one of the well-known and adopted key performance indicators, but we can rely on SEE (Site Energy Efficiency) more accurate for small sites (Radio, Edge computing, POPs). Which make sense as the cloud services won't rely only on high-end DC but also on small "micro data-centers". In that case, SEE is easier to take in account and above all already standardized (ITU-T L.1350)

26. Who should be the main beneficiaries of the grant? What project size would do you expect? Could you provide a cost breakdown over the 7 years?

There are 4 options, one is to give the grant benefit to the housing provider, the second to the hosting provider, the third to the software service provider and last to the interconnection owner. There can be incentives to decrease energy consumption for all of them. Well, the most virtuous, which mean the process which will have highest incentive to limit energy-consumption is probably to give benefit of the grant with the providers that will pay the energy bill, directly or re-charged explicitly. Size of a project should be intermediate as there a perspective of clouds infrastructures expansions.

27. Which aspects and/or indicators would you consider most suitable for assessing the activity's performance against completed tasks?

Aim is to define an indicator that could be agreed by all concerned parties. Probably a KPI based upon watt per MIPS for energy consumption and also one related to CO^2 emission to also incentive to renewable energy.

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

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)?

Potentially : connected and autonomous mobility, clean mobility, powered by ICT and based on alternative fuels, energy storage and smart grids, cross-border cooperation in the area of renewable energy powered by ICT, green ICT, including data centres

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

The Climate benefits shall be estimated and be one of the key aspects of project assessment, before, during and after a project has taken place.

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

Adequate consortium members showing economic, social, energy efficiency and GHG emissions reduction or GHG sinks increase benefits.

Contact

EC-CEF2digital@ec.europa.eu