

20/05/2021

JOINT CALL FOR PROPOSALS FOR FRANCO-GERMAN INNOVATION PROJECTS ON TECHNICAL DEVELOPMENTS AND APPLICATION ECOSYSTEMS FOR PRIVATE 5G NETWORKS



Coordinated jointly by
Bpifrance, Banque Publique d'Investissement
and
DLR Project Management Agency

Opening Date:
20/05/2021

Closing Date:
01/09/2021 at 12pm (noon)

Closing Date for Expressions of Interest (voluntary)
03/06/2021

Link to the call on the websites:

[France] : <https://www.bpifrance.fr/A-la-une/Appels-a-projets-concours/Appel-a-projets-entre-la-France-et-l-Allemagne-pour-des-projets-d-innovation-en-matiere-de-reseaux-privés-5G-developpements-techniques-et-d-ecosystemes-52281>

and

[Germany]: https://www.digitaletechnologien.de/DT/Navigation/DE/Foerderung/Foerderung/International/Kooperationen/intern_kooperationen.html

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CONTEXT AND AIM

As laid down in the Treaty of Aachen and in the Franco-German Dialogue on Technology (October 13, 2020), France and Germany will strengthen their collaboration in the field of 5G communication technologies. This Franco-German applied research collaboration will make an impact on this objective by fostering the creation of a common 5G ecosystem of technology and service providers with operators of local private 5G networks from both countries. Both countries agree that they offer leading research in the field of 5G and that they will deepen ties in existing structures deployed on the basis of their national 5G strategies.

[Germany]: As described in the Economic stimulus package, Article 45, Germany intends to play a leading role as a technology provider in future communications technologies 5G and, in the long term, 6G. Germany wants to facilitate market entry for innovative network technologies and to promote the rapid development and implementation of open standards at European level.

[France]: As part of the upcoming “Acceleration strategy on 5G and future telecommunications network technologies”, France intends to support the development of sovereign solutions on telecommunications networks via 4 main axes (1) development of 5G industrial and societal use cases, (2) constitution of a competitive French offer on telecommunications networks, (3) support to research and development activities, and (4) adaptation of training and educational programmes in telecommunications network technologies.

With this call, both countries intend to:

- foster the exchange and mutual benefits of the participating industries (esp. telecommunications providers, network equipment suppliers),
- foster SME ecosystems by opening the market to new players from the SME sector; and
- gain common impact for pan-European solutions and in international standardisation.

Under today's rapidly changing conditions in value creation, future-oriented companies and public institutions must constantly improve their adaptability, flexibility and efficiency. Digital transformation requires the automation of manufacturing and logistics processes in and between companies and institutions. Automation and digitalisation should lead to increase the networking of components, machines, systems and processes. In the future, even more data will be generated and this will lead to large amounts of data that must be transferred and processed securely and robustly in real time. Today's available communication systems, such as Wi-Fi and LTE, are reaching their limits and have high latency times and no longer meet the necessary flexibility and security standards in terms of cybersecurity. For fast, secure and robust communications, 5G technology can form the basis and is an essential key in the wireless networking of manufacturing sites, logistics systems and other relevant economic sectors and facilities.

5G, together with future developments towards 6G, will not only connect machines but also completely redefine human-machine interaction. 5G technologies enable low-latency communication, the transfer of increased data rates and high SLA-dependent network resilience (network slicing). This opens up completely new fields of application in areas such as Industry 4.0, telemedicine, AR/VR and autonomous driving.

In so-called campus networks for specialized use in industrial, economic and public application areas, new business opportunities and co-design potentials have arisen for French and German providers as well as users of 5G technologies.

Due to the specific requirements for the communication technologies in terms of flexibility, efficiency, reliability, security and latency, campus networks with corresponding industry-specific solutions are needed for the various application areas.

Furthermore, the current state of development shows the need to support small, medium and large enterprises as well as institutions in the effective and efficient design and implementation of their 5G campus networks. Based on virtualised, open, disaggregated and secure solutions, communication networks can be designed to be interoperable within companies and institutions as well as across manufacturers. As a result, a new market for communication technology with sector-specific solutions can develop across countries in France and Germany.

OBJECTIVES OF THIS CALL

The aim of this call for proposals is to create Franco-German ecosystems whose developments and cooperation will contribute to lowering the barriers to market entry in Europe and opening up the 5G communications market to new providers of sector-specific solutions for campus networks from France and Germany.

The aim of this call is to launch new collaborative projects, in particular new research-industry collaboration projects. The joint projects should aim at developing pre-competitive products and services and selecting topics that involve technological barriers while offering great economic potential in both countries. Scientific findings are to be transferred into the development of marketable high-end technologies with strong practical potential.

[Germany]: This call for proposals follows the already launched German call for proposals for 5G campus networks¹ and is intended to promote developments for 5G networks among internationally active users from the various sectors. For a broad impact of the deployment and integration of 5G solutions, the ecosystem for providers of 5G communication technologies shall be extended on the basis of mutual synergies.

[FRANCE]: This call for proposals is part of the 5G acceleration strategy. Indeed, the strengthening of the Franco-German cooperation on future networks solutions is one of the priorities identified to support a sovereign 5G equipment offer.

RESEARCH SCOPE

A - Fields of application

The following application scenarios, for example, can be used as part of a project to demonstrate the capabilities and added value of 5G virtualised and/or open solutions for campus networks:

- Industry 4.0: The application scenarios should demonstrate the possibilities of 5G in the context of smart factory of tomorrow and Internet of Things in the industrial environment (IIoT). The use and, if necessary, further development of already available reference architectures (e.g. IIRefA²) and toolkits is desired. Project proposals should show how their project relates to Industry 4.0 standards.
- Application scenarios in the context of logistics centres, ports or airports can take advantage of use cases to demonstrate how 5G campus networks improve operations, supply and transport chains or occupational safety, and overall increase sustainability and lead to cost savings.
- Applications with regard to rural areas can show how private 5G networks can contribute to the expansion with fast internet and to the comprehensive networking of value chains. This can, for example, benefit underserved, remote communities, by

¹ https://www.digitale-technologien.de/DT/Navigation/EN/Foerderung/5G_CampusOS/5g_campus_os.html

² See : <https://www.ic4f.de/whitepaper/IC4F-WP-iRefA.pdf>

equipping business parks in rural regions, or bringing 5G to agriculture. Application scenarios in the healthcare environment (e-health) can demonstrate the added value and potential offered by 5G campus networks. In the area of clinical patient care, in telemedicine or for clinic organisation, and how they can make an overall contribution to the quality of care and cost savings in healthcare.

- In universities and other educational institutions, 5G campus networks can be set up for experimental and educational purposes. The qualification of student and research teams can be coupled with the development of innovative technologies and with real use cases in the educational environment itself. Ideally, cooperation with regional companies (technology providers or users) should be established.
- The development of solutions for other relevant economic and social sectors to which 5G campus networks can make a relevant contribution are likewise desired.

B - Technical Focus

The submitted project proposals can particularly address the following technical focal points:

- Evaluation of virtualised and/or open specific campus network architectures, implementations and development of adapted system solutions.
- Development of virtualised 5G RAN and Core solutions meeting the actual 5G performance criteria in terms of throughput, latency and energy consumptions depending on vertical market requirements.
- Development and extension of 5G sandboxes / experimentation centres that will facilitate collaborations in the ecosystem and support the development of new 5G use cases. This should aim at providing innovation platforms that allow to integrate solutions from SMEs for 5G private networks.
- Development of scalable software-based 5G solutions beyond Lab-size which incorporate appropriate RF power amplifier and digital signal processing hardware.
- Development of solutions for automated network (re-)configuration and smart administration which allow non-telco organisations to operate 5G systems.
- Identification of harmonisation and development needs on EU level.
- Identification and advancement of standardisation on EU / International level (ETSI, 3GPP).
- Derivation of requirements for a joint R&D roadmap on 6G including network security and energy consumption as well as novel architectures for campus networks.
- Alignment with national research projects dealing with campus networks based on virtualisation and open architectures technologies.
- Expansion of the results of the first wave of projects in the area of industrial campus networks.

C - Transversal issues

In addition, project proposals can also address the following cross-cutting issues:

- Development of an ecosystem, for example with the aim of sharing German and French components, openness to a pan-European orientation
- Economic and geopolitical issues: Development of joint operator models, business models and global market strategies.

- Identification of legal and regulatory barriers for the operation and market entry of 5G campus networks and open 5G systems in Germany and France, including recommendations for policy makers
- Sustainability issues, e.g. studies on the optimisation of energy efficiency in campus networks or their indirect effects on sustainability
- Standardisation needs, for example, participation in standardisation bodies on reference architectures, in working groups on European harmonisation or on the further development of technologies toward 6G; projects can showcase different approaches on how to further standardise and open the RAN without moving to non-European standards.

Structure / Funding Scheme:

- a) “Main project”: Building ecosystems in the area of 5G private networks („campus networks“) with open and/or virtualised solutions: call for one large platform project (PP). Indicative scope: A number of 6 to a maximum of 10 partners per country are expected to form a consortium.

Applications for the main project must demonstrate that they build on existing reference architectures and standards for 5G campus networks and, where appropriate, evolve or adapt them to new application scenarios. German applicants should make a reference to the current national innovation competition "5G Campus Networks". French applications are encouraged to make a reference to winning projects within the national acceleration strategy for 5G and future telecoms network technologies.

Project management and application could be led by a research institution. Close cooperation with relevant network equipment suppliers is required.

Germany and France intend to provide common funding for the main project of up to 14 mio. Euro.

The main project could focus on several aspects within the following:

- Validation and further development of architectures for campus networks; mutual Franco-German transfer of available concepts and solutions.
- Development of a joint Franco-German technology kit with construction plans based on components from Germany and France
- Testing of solutions in reference test fields in Germany and in France
- Development of solutions for network interoperability between France and Germany given the differences in spectral resources
- Development of offers for components in test fields for open 5G campus networks in cooperation with the demonstration projects
- Establishment and continuation of a Franco-German provider ecosystem that is also open to companies from other EU member states (unsubsidized)
- Networking of the project with national funding programs in Germany and France; participation in EU research working groups and committees (e.g. SNS-JU)
- Realisation of use cases following a well structured user guidance approach as defined in industrial reference architectures.
- Analysis of standardisation needs and representation of interests in standardisation committees
- Development of transfer offers, public relations work

- b) “Demonstration projects”: Up to 6 technical projects in specific application areas to demonstrate use cases and the capabilities of campus networks and virtualized and open solutions and their benefits to the business community. Indicative scope: A number of 3 to a maximum of 5 partners per country are expected to form a consortium. Project management and application could be led by a user company interested in operating the 5G campus network. A research institution and at least one network equipment supplier must be involved in the project. Germany and France intend to provide common funding for the demonstration projects of up to 26 mio. Euro.

The demonstration projects could focus on:

- Use and application-specific adaptation/extension of the architectural concepts and solutions for open 5G campus networks developed in the main project,
- Development of specific components for virtualised and/or open 5G campus networks, for example in areas of artificial intelligence, cloud computing, optical communication, security, energy management, etc., which will be brought into the main project,
- Testing of components and solutions in at least one complex application scenario, in Germany and/or France,
- Development of demonstrators and test use cases,
- Participation in the German-French 5G provider ecosystem and public relations work,
- Close alignment and joint workshops with the main project.

SUBMISSION

French and German partners will prepare a joint innovation project proposal written in English following the template provided on call sites of Bpifrance and DLR. The project application has to be submitted by a consortium composed of at least one eligible partner from each of the two countries, France and Germany. One partner of each country has to be defined as Leading Principal Investigator (LPI), who will be the contact point for the respective national funding agency. Forms for the preparation of the proposal can be found on the websites of the funding agencies. Project proposals must be submitted in full in a one-stage competition. The project description has to be submitted identically to both national funding agencies.

The overall project description has to include:

- Budget overview and financing plan,
- Brief summary of the overall project and in particular of the binational cooperation (overall goal of the binational cooperation, summary of the project application, description of the application(s) achieved, desired innovations),
- Presentation of the added value of Franco-German cooperation in the project and the sustainable strengthening of Franco-German cooperation. Justification of the alignment of the project with the French acceleration 5G strategy³,
- Description of project consortium listing all French and German partners and describing the distribution of roles,

³ The objectives of the 5G acceleration strategy are available here : <https://www.entreprises.gouv.fr/fr/actualites/numerique/ressources/strategie-d-acceleration-sur-la-5g-et-reseaux-du-futur>

- Work plan with descriptions of the work of the partners, including subcontractors; and outlines of all project-related scientific and technical problems as well as the envisaged solutions,
- Planned R&D work of all French and German partners, including transfer points of results and solutions between the individual partners and in particular between the French and German national project parts,
- Utilisation and rights of use within the entire consortium, presentation of the design of the exploitation and usage rights within the consortium and how they are to be contractually arranged. Each partner is responsible for the compliance of intellectual property rights requirements with its funding agencies. The Collaboration Agreement between the partners will need to be in place within six months after the grant notification has been made and before the first payment,
- Economic impact of the project per each partner,
- Environmental impact of the project.

The overall project description and related documents for application must be submitted by each Leading Principal Investigator (LPI) to the following extranet websites:

France: <https://www.bpifrance.fr/A-la-une/Appels-a-projets-concours/Appel-a-projets-entre-la-France-et-l-Allemagne-pour-des-projets-d-innovation-en-matiere-de-reseaux-prives-5G-developpements-techniques-et-d-ecosystemes-52281>

Germany:

https://foerderportal.bund.de/easyonline/reflink.jsf?m=DIGITALE_TECHNOLOGIE&b=STRATEGISCHE_PROJEKT

Please note: All applicants are invited and highly recommended to submit a written expression of interest in English until 03.06.2020. Applicants who have submitted an expression of interest will be invited to an information and matchmaking event shortly thereafter.

The expression of interest can be informal (max. 1 page) and should provide information on:

- Applicant organization / business, including contact details (e-mail, telephone number)
- Initial thoughts on the project idea
- Initial thoughts on available or desired partners

A form is provided on the German website of this call at www.digitale-technologien.de or on the French website of this call at <https://www.bpifrance.fr/A-la-une/Appels-a-projets-concours/Appel-a-projets-entre-la-France-et-l-Allemagne-pour-des-projets-d-innovation-en-matiere-de-reseaux-prives-5G-developpements-techniques-et-d-ecosystemes-52281>

Interested parties from Germany and France can submit their expression of interest in English to: int-kooperationsprojekte-pt@dlr.de

ELIGIBILITY

The project proposal must fulfil the eligibility criteria common to the two funding agencies, as well as the criteria specific to each agency. Project proposals that do not meet the eligibility criteria, whether common to the two agencies or unique to each, cannot be funded.

1. Common eligibility criteria:
 - a. The project proposal must be in conformity with the designated innovation areas.
 - b. The project proposal must be submitted by the deadline by a binational consortium including at least one eligible partner for each of the two participating

agencies (Bpifrance for France, DLR for Germany). The consortium must be composed of at least one company and one research actor carrying out an activity in the general interest and without a project partner representing more than 70% of the project expenditure.

- c. Each of the two agencies must receive a complete application: the joint scientific document and the annex submitted respectively on the submission platforms; the joint scientific document could consist of technical and financial records.
 - d. The project must be scheduled to run for up to 3 years.
 - e. No company of the consortium may be in difficulty within the meaning of the European Regulation (AGVO (EC) no. 651/2014, article 2 paragraph 18, 17 June 2014).
 - g. The project proposal must aim at developing one or several technical solution which are not available on the market and which offer a high level of innovation.
 - h. The project proposal must present a work budget that has not already benefited from funding from the State, the territorial authorities, the European Union or their agencies, outside this call.
 - i. The project proposal must list the related R&D projects led by each partner and supported by a public authority (national, local or European), specifying the budgets of the R&D programmes and the amount received in grants so that the financial capacity of the partners to conduct the project can be evaluated.
 - j. Each consortium member must provide a letter of intent to collaborate within the consortium.
 - k. Funding recipients cannot be partners outside of Germany and France, but partners from other EU Member States can also contribute as associated partners (non-funded partners).
 - l. The project must have a significant size (budget above 1 M€) in each country.
2. Specific national eligibility criteria of GERMANY: The full catalogue can be accessed at <https://www.digitale-technologien.de/DT/Navigation/DE/Foerderaufrufe/Foerderrahmen/foerderrahmen.html>

Applications that do not meet the eligibility criteria will be eliminated from the selection process without possible recourse.

EVALUATION

A Panel of Experts (PoE) will evaluate each eligible proposal. They will then make recommendations to the funding agencies.

Members of the Panel of Experts (PoE) cannot be involved in any way in the project proposals submitted in response to the call.

Common evaluation criteria are:

- Idea, level of innovation and added value of the project (Innovative content and originality of the approach, scientific and technical quality, identification of specific process and value chains, compatibility and interoperability (consideration of open platforms; use or creation of standards and open interfaces), progress on or breakthroughs in the state of the art
- Compliance with the programme scope, capability of running activities on the national level of both countries and designated innovation fields

- Strategic nature for France and Germany, diffusing effect within a sector: level of impact on a sector, strategic nature of the project for the leading partner, ability for SMEs to integrate new technologies
- Feasibility (technical feasibility, management of technical and economic risks, clarity and holism of the approach of R&D services / quality of the work plan, appropriate ratio of effort, risks and benefits, profitability of the work plan, proof of data security; consideration of (international) safety standards, presentation of the legal framework for the desired solution and a possible need for further development of the legal framework, presentation of the compliance of the desired solution with ethical requirements and acceptance by the user)
- Quality of the consortium (completeness, complementarity and suitability of the consortium, coverage of the value chain or network (especially: user involvement), potential, competence and innovative strength of research, implementation and application partner (technology or market leader or position in relation to this), existing preparatory work and reference to relevant national and international activities, consideration of medium-sized players and start-ups, proof of the reliability and financial feasibility of the co-payment of each partner (creditworthiness)); ability of the consortium to conduct the project (ability, especially financial capacity, of the partners to carry out the project): the partners must present a financial situation coherent with the level of work they intend to lead in the project, and with the aid requested;
 - relevance of the envisaged arrangements for the project management (personal qualities of the project manager, resources allocated to the coordination between partners and to the follow-up of deliverables, project management skills, etc.);
 - relevant number of appropriate partners (SMEs, industrial groups, research establishments sharing the project objectives and ambitions);
- Market and application potential (quality of the utilisation concept, including presentation of the economic potential, market positioning and feasibility on the market, contribution to enhancing the innovative strength of companies, broad impact of the pilot application in terms of the overall programme objectives (flagship character), improvement of the competitiveness of German and French industries, transferability and sustainability of the solution, economic significance, in particular market and job potential, creation of activities and investments especially in France and Germany; openness, willingness to cooperate and broad impact (best practice or multiplier effects, results should be precompetitive products or solutions); credibility of the industrialisation phase and of the commercial objectives for each partner (envisaged markets or segments, envisaged market shares...), strengths and weakness with respect to competitiveness; quality of the economic model, business and financing plan showing a return on investment; level of inventiveness of the aid in terms of work acceleration which could not have been achieved without the public intervention.
- Social impact (quality of provisional fallouts in terms of short-term creation of activity and jobs for each of the partners).
- Environmental conditions (mandatory for projects from the sustainability field and optional for other fields): projects should demonstrate that the energy transition and sustainable development are considered through direct or indirect quantified contributions to: sustainable energy production, energy efficiency, GHG reduction, air pollution reduction, resource consumption reduction, waste reduction, impacts on biodiversity, life cycle analysis, societal responsibility. This criterion is mandatory for projects in the sustainability field and optional for projects in the economic and health fields.

- Contribution in terms of intellectual property (considering the issue of the protection of scientific and technical potential).
- Adequacy of the project with the technological priorities identified by the French 5G acceleration strategy⁴.

Additional criteria are:

- added value of Franco-German cooperation within the project and impact for sustainable strengthening of Franco-German cooperation and
- integration technological and economic benefits of European sovereign infrastructures such as GAIA-X or Fermat.

SELECTION AND FUNDING

Applications will be selected on the basis of a one-stage competition. The overall project description must be provided jointly in English. In addition, German partners have to provide the description of their individual participation in the project ("Teilvorhabensbeschreibung", in German). For French partners, the full project proposal application is required ("Dossier de candidature détaillé"). Administrative forms should be submitted in the respective national language. Projects can only be funded if both funding authorities agree on funding. Depending on the quality of the proposals received, the intention is to select a set of projects for funding and is to cover all intended application areas. Possible kinds of projects according to the national funding framework are binational projects with a total of up to five partners (per country).

Approval of grant applications is subject to the budgetary situation in both Germany and France.

Depending on the number of projects submitted, a second round of the call for projects will be organized, subject to the availability of budget funds.

REPORTING AND MONITORING

Each LPI reports to his/her respective funding agency in accordance with specific national rules. A final report is requested in order to collect the results and impacts of funded projects. This report is to be written in English. Kick-off and final review meetings of all funded projects will be organised by the LPIs in cooperation with the project management agencies. The participation of each consortium is mandatory and funds should be budgeted for this.

FINANCIAL CONTRIBUTIONS

The intended overall funding budget is €20 million in Germany and €20 million in France.

SCHEDULE

- Publication of the call: 20.05.2021
- **Deadline for expression of interest (voluntary): Until 03.06.2020**
- **Deadline for submission of project applications: 01.09.2021**
- Pre-selection of project applications: 17.09.2021
- Hearings of pre-selected projects: to be decided
- Approval of winning project applications: December.2021

⁴ The objectives of the 5G acceleration strategy are available here : <https://www.entreprises.gouv.fr/fr/actualites/numerique/ressources/strategie-d-acceleration-sur-la-5g-et-reseaux-du-futur>

- Project start: January.2022