

5G-Infrastructure PPP Working Structure Suggestion and recommendations for project proposals

Purpose of this document:

This document is intended to give all parties considering submitting a proposal to the 5G-PPP Phase 3 an outline of the program level commitments they should consider integrating into their project plans and suggests the sort of activities they will be expected to actively contribute to.

Proposers responding to the 5G-PPP call are advised that proposals will be expected to show program level awareness and commitments to joint activities. However, the procedures of H2020 do not envisage retro fitting program level commitments after selection, as there is no negotiation phase for the Description of Work, so it is important for proposal evaluation that the proposals demonstrate their level of commitment to common activities and to increasing the impact of the 5G-PPP program as a whole.

The 5G-PPP Phase 3 projects, as foreseen in the work program, will have a special clause in their Grant agreement contracts that will be Clause 41.4 of the Annotated Model Grant Agreement¹.

Article 41.4 Relationship with complementary beneficiaries - Collaboration agreement

(NOTE: Article references in Article 41.4 are to other Articles in the Annotated Model Grant Agreement)

The beneficiaries must conclude a written 'collaboration agreement' with the complementary beneficiaries to coordinate the work under the Agreement and the complementary grant agreement(s) (see Article 2), covering for instance:

- *efficient decision making processes and*
- *settlement of disputes.*

The collaboration agreement must not contain any provision contrary to the Agreement.

The beneficiaries and complementary beneficiaries must create and participate in common boards and advisory structures to decide on collaboration and synchronisation of activities, including on management of outcomes, common approaches towards standardisation, SME involvement, links with regulatory and policy activities, and commonly shared dissemination and awareness raising activities.

The beneficiaries must give access to their results to the complementary beneficiaries, for the purposes of the complementary grant agreement(s) (see Article 31.6).

The beneficiaries must share the technical reports (see Article 20.3 and 20.4). The confidentiality obligations in Article 36 apply.

All projects contracted under the 5G-PPP Phase 3 will be considered “complementary grant agreements” and must provision for the appropriate joint actions, 5G Global Events, Work Groups, KPIs progress evaluation and the grant of additional access rights. In addition projects contracted under 5G-PPP Phase 2 will still be running at the beginning of Phase 3 so the new projects must join the existing collaboration agreement to ensure access to, and the right to build on, Phase 1 & 2 results.

This document introduces the current collaboration agreement, outlines the commitments to be made thereunder and suggests what the provisions for programme level interaction could entail.

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The authors of this document, Eurescom GmbH, Heidelberg Germany, are participants in the To-Euro-5G support action and they intend to submit a further support action proposal for the 5G-PPP Phase 3 under **ICT-19-2019**.

One objective of this proposed support action will be to facilitate the projects selected via the 5G-PPP Phase 3 calls, to fulfil their requirements related to the *complementary grant agreements*. In this context the recommendation is to have a common text related to interworking so that all successful projects demonstrate

¹ http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/amga/h2020-amga_en.pdf

the understanding and commitment to the 5G-PPP program. This is critical in H2020 as there is no negotiation phase where these commitments can be added after selection.

It is also to introduce the 5G-PPP Collaboration Agreement to potential project participants. In the 5G-PPP Phase 3, because of the use of Article 41.4 in the Work Programme, it will be a contractual requirement on all the beneficiaries in Phase 3 to join such a collaboration agreement. In order to simplify matters and to avail of the work done to date in Phases 1 & 2, the 5G-PPP Collaboration Agreement is being offered to the Phase 3 participants to ensure compliance with Article 41.4 and to facilitate Phase 3 projects building on the results of Phases 1 & 2.

Permission is given to all Research and Innovation Actions (RIA) and Innovation Actions (IA) project proposals for the 5G-PPP 3rd call to use this document in the preparation of their proposal as long as the context is not changed and the appropriate references are included.

Competing CSA proposals are asked to create their own recommendations.

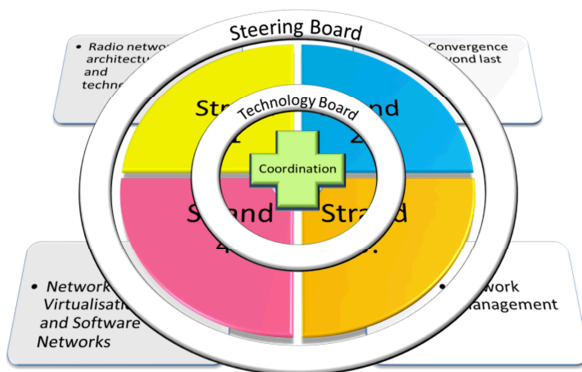
The 5G-PPP Program level context:

The 5G-PPP program will be made up of many different Actions (i.e. projects) addressing different aspects of the call. The role of this model is to ensure that all participating projects have the same understanding of the expectations on them in terms of their responsibilities to participate in program level activities and to commit the appropriate resources.

To ensure the set of individual project results will contribute to the program goals of defining, creating and demonstrating the 5G-infrastructure for 2020 there will be a need for close interworking between the projects. This can be achieved on several levels:

At the first level **a Steering Board (SB)** will be composed of the mandated project leaders of the 5G-PPP projects. These project leaders must plan on a number of meetings per year where the decisions on common activities to be undertaken will be made. Such decisions will include mandates for working groups, commitment to common events, actions on non-technical KPIs, joint demonstrations, etc. and manpower and dissemination costs must be planned for such joint actions.

Project coordinators must be prepared for program level decisions by having resources assigned to the program level activities from the start of the project. This should mean that the coordinator responsibility for assisting SB decisions on such activities does not imply any new or unforeseen resource allocations.



The next level will be **a Technology Board (TB)** where the issues of complementary scope, consistence and interoperability, interfaces as well as the technical planning of joint demonstrations and bake-offs will be considered. All cross-project technical issues will be addressed here.

The technology board will also monitor the progress against the technical KPIs, report progress against technical KPIs to the SB and identify points of concern if such KPIs are not being adequately addressed.

The third level will be the establishment of joint **Working Groups (WG)** across projects. Working groups will only be established based on identified needs of the Networld2020/5G-Association communities and the projects in the program and groups may be common to both.

The mandate of each working group is decided by the SB based on a Terms of Reference (ToR) document that includes:

1. Scope
2. Objective
3. Specific tasks and deliverables
4. Relation within and outside the 5G-PPP program
5. Duration
6. Progress reports
7. Administrative handling (Leadership, Participation, Meetings, Financing ...)

The SB will review the program WGs regularly and changes should be based on an updated ToR document.

These working groups should be consistent and may be shared with the working groups of the Networld2020 ETP² and 5G-Infrastructure Association³ as we should optimise the work on the same issues across the PPP and ETP communities. The aspect of openness and transparency and contribution to European consensus will be enhanced as the working groups are designed to include the wider community views via open workshops where other projects and initiatives can participate.

² <http://networld2020.eu/>

³ <http://5g-ppp.eu/>

The current set of work groups (subject to coordination between 5G-Association, Networld2020 and the PPP) is:

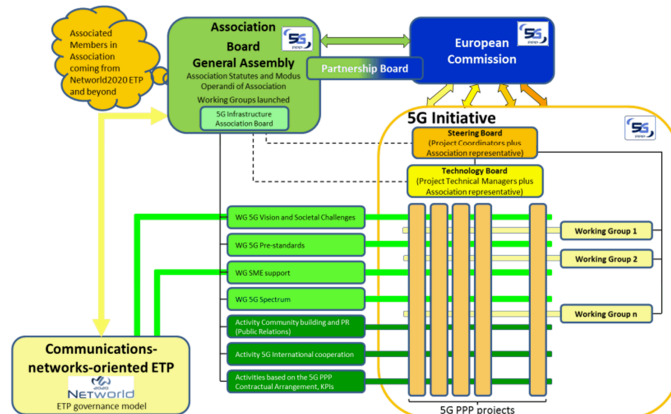
- Pre-Standards: Enabling 5G via Pre standards and standards roadmaps
- Vision & Societal Challenges: Developing the 5G Vision
- Spectrum: Shared Opinions and technical questions on spectrum for 5G
- Architecture: Facilitating consensus building on the 5G architecture.
- SDN / NDF: To address unification and applicability of Software Networking
- NetMgmt / QoS: Addressing these aspects in 5G networks and networking
- Security: Development and progression of 5G security
- SME: Help and support SME participation in the 5G PPP
- Trials WG: share info on European 5G trials
- Automotive WG: advance the uptake of 5G in the Automotive sector.

Increasing 5G-Infrastructure PPP consensus and impact

As a new approach to PPP structures, the WGs will host open workshops to allow and encourage external projects and programs (Celtic-Plus Eureka projects⁴ or EIT-ICT-Labs⁵ projects for example) to liaise and cooperate with the 5G-PPP program level activities and contribute to achieving the 5G-PPP KPIs⁶.

5G PPP: Bodies, Roles and Relationships

The 5G-PPP community is composed of a number of organizational structures which need to contribute and be part of the program activities to ensure the program is transparently and openly operated so that all community members have a fair chance of participation and benefit.



NetWorld2020 ETP

The NetWorld2020 community is a key component of the 5G-PPP structure as this community elects the ETP steering board that forms the Association.

This community also creates and iterates the visions and research and innovation agendas for the 5G-PPP.

5G-Infrastructure Association

The 5G-Infrastructure Association is the legal entity that signs, on behalf of the European ICT community, the partnership with the European community, through a so called PPP contractual arrangement, to jointly address the challenges of the 5G-PPP initiative. Through its Advisory role, the association will monitor the progress of the 5G-PPP and may prompt action via the industrial participants if the program is not achieving its goals. The 5G-PPP is a strongly industry driven initiative, and thus the commitment and participation of industry stakeholders is essential for success.

European Commission

The European commission will be awarding the contracts for the 5G-PPP projects under its standard H2020 procedures so they will also have a responsibility to ensure the program is meeting its targets. This means that the close collaboration between the Commission and the 5G-Association is key to maintaining the performance of the program and ensuring the best possible results are achieved. A partnership board, as outlined in the 5G-PPP contractual arrangement, is planned to fulfil this role.

⁴ <http://celticplus.eu/>

⁵ <http://eit.europa.eu/eit-community/eit-ict-labs>

⁶ <http://5g-ppp.eu/contract/>

Partnership Board

The partnership board is where the European Commission and the 5G-Infrastructure Association meet regularly to discuss the progress and evolving ambitions of the 5G-PPP.

Maximising the Impact by working smart

To realise its vision, the 5G-PPP program will establish strong collaborations between key stakeholders from different domains and ICT sectors working on the common goal of the 2020 Infrastructure. The outline for this Governance structure is included in the technical annex of the 5G-PPP contractual arrangement.⁷ The 5G-PPP grant agreement will include Article 41.4 so the projects will be obliged to commit the necessary human and financial resources to the program level activities by allocating management and technical resources to participate in the program roles and responsibilities.

The overall success of the 5G-PPP will only be achieved through a comprehensive collaborative effort by all partners in the 5G-PPP projects. The proactive collaboration towards the program goals is, therefore, a key priority for the project and program management groups and must be given appropriate precedence in case of conflict between project objectives and program objectives.

The willingness to collaborate and to compromise among projects and participant contributions when working towards the program goals shall be one of the criteria for evaluating program success.

Strategic Guidance and Advice inputs

The 5G-Infrastructure Association

The 5G-Infrastructure Association, will contribute to the strategy and overall direction of the 5G-PPP through giving general strategic advice to the 5G-PPP Program in terms of relevance, technology, commercial, & market implications, and to the European Commission on the industry issues related to the 5G-infrastructure.

The 5G-Infrastructure Association should continually advise on strategic choices, give suggestions on improving industrial relevance, and promoting the take-up and exploitation of the results beyond the 5G-PPP, based on a dialogue between the high-level management representatives of the industry participants and the commission. The official channel between the Commission and the Association is the Partnership Board.

The 5G-Infrastructure Association should also consider the progress of the 5G-PPP against the KPIs defined by the 5G-PPP partners in the contract and give improvement recommendations. It should also react by invoking the main industry players to act, if the KPIs are not being adequately addressed.

The 5G-Infrastructure Association members are also expected to assist the programme communications and visibility and, on occasion, the 5G-Infrastructure Association members will act as ambassadors for the 5G-PPP by performing high level communications on the impact of the programme results and may be supported in these roles. The 5G-Infrastructure Association should also collaborate on the 5G-PPP communications with high level EU representatives (Commissioners, MEPs, etc.) to ensure positive impact and correct perception of the programme value.

This high level representation/advisory role should be performed by members of the 5G-Infrastructure Association participating companies. To ensure substance and impact, the 5G-Infrastructure Association advisory role should be performed by senior executives, preferably representing the strategy and business development or strategic marketing, of the leading European 5G industry players, meeting the corresponding senior people from the commission at regular intervals to review progress, ambitions and ongoing commitment on all sides.

Actual resource planning

Typically, a 5G-PPP Research and Innovation project, or an Innovation project, with a commission budget in the order of 10 to 15 Million Euros for two years, should consider devoting approximately 2%-4% of its planned budget to programme level activities. These activities include appropriate joint actions, Global 5G Events, Work Groups, and KPIs progress evaluation.

⁷http://5g-ppp.eu/wp-content/uploads/2014/02/Advanced-5G-Network-Infrastructure-PPP-in-H2020_Final_November-2013.pdf

This 2%-4% represents a commitment of time, travel, participation in representation activities, giving talks-demos, etc., etc., where the individual instances will be decided upon depending on the current activities of the 5G-PPP.

Experience in Phase 1 & 2 has shown that proactive participation in the WGs can consume significant resources and should be part of the work plan of all 5G-PPP projects. This is even more important if a proposal is planning to participate in multiple WGs as then the parallel activities can be quite a load. However, all projects are expected to contribute to programme level position papers and white papers, so it must be part of the planning.

All proposals should identify how their idea contributes to the KPIs of the 5G-PPP – primarily the Technical KPIs, but also including the business and societal KPIs. In addition the proposals should indicate how their impact on the KPIs can be monitored.

Article 41.4 - Collaboration Agreement

The Phase 1 and 2 5G-PPP projects are currently sharing information, deliverables, work in progress and granting additional access rights to the 5G Action Results under the 5G-PPP collaboration agreement. This agreement has been signed by 303 of the 305 organisations participating in phases 1 & 2. The two missing signatories are an individual who participated as a legal entity in phase 1 who is not being given access to any shared information and common resources of the 5G-PP and a major European organisation in phase 2 who has committed to sign but just hasn't returned the form yet – again they, and their project, will not be given full access to program level resources until their signature has been received.

In Phase 3, because the use of Article 41.4 has been foreseen in the Work Programme, it is now a contractual requirement on all the beneficiaries in Phase 3 to join such a collaboration agreement. As many of the phase 1 and 2 players will already be parties to the current collaboration agreement, and, as it is intended to have just one agreement uniting the different phases of the PPP, the new players in phase 3 will be invited to join the existing agreement and thereby fulfil their legal requirement. Those who have signed in phase 1 or 2 need not sign again.

The full text of the 5G-PPP collaboration agreement is available on the [www.5g-ppp.eu](https://5g-ppp.eu/wp-content/uploads/2016/04/5G-col-agrmnt-after-consultation-July2-2015-FINAL-VERSION.pdf) website as a PDF file: <https://5g-ppp.eu/wp-content/uploads/2016/04/5G-col-agrmnt-after-consultation-July2-2015-FINAL-VERSION.pdf>

The form to accede to this agreement is also available there as a word file.

Annex 1: Recommendation of text for inclusion in 5G-PPP proposals

<The following text is proposed for inclusion in proposals. By including this text the proposers demonstrate that they understand what it means to be part of the 5G-PPP and have allocated adequate resources to program level responsibilities.>

This proposal is aware of the contractual commitment of the 5G-PPP as well as the organisational structure as described in the 5G-PPP contract and its technical annex. In particular it acknowledges the roles and commitments of the European Commission, the PPP partnership board, the Network2020 ETP, the 5G Infrastructure Association, the Industry Advisory Group and commits to constructive interactions with these bodies.

The proposal commits to work with its peer 5G-PPP projects as required under the *complementary grant agreement* clause 41.4 of the 5G-PPP grant agreement. This includes at least the following contributions:

- Appointment of a **Steering Board (SB)** mandated representative (i.e. the project leader) and full participation in the SB activities.
- Appointment of a deputy SB member to ensure the project is always represented.
- Full participation in the SB meetings, typically 8 to 10 per year (both physical and virtual), where program level decisions will be taken on actions to achieve the objectives of the program. Such decisions typically include; mandates for working groups, commitments to common events and joint demonstrations, approval of joint positions, etc.
- Reporting progress against KPIs via the SB, to the EC, program reviewers and advisors, and identifying any points of concern where KPIs are not adequately addressed.
- Participating in the consideration of, and responding to, the opinions and contributions of the European Commission.
- Participating in the consideration of, and responding to, the opinions and contributions of the 5G-Infrastructure Association.
- Allocate resources for SB participation according to the table below.

Note: The chair of the SB will be elected from candidates proposed by the SB members for a term of one year. The SB organisation is to be supported by the 5G-PPP Support Action.

- Appointment of a **Technology Board (TB)** mandated representative (e.g. the technical mgr. of the project)
- Appointment of a deputy TB member to ensure the project is always represented.
- Full participation in the TB meetings, typically 8 to 10 per year, where joint decision will be taken towards achieving the technical objectives of the program. Such decisions typically involve maintaining the overall technical consistency, assuring the complementarity of scope, assuring the end-to-end interoperability, and planning of technical planning of joint demonstrations. All cross-project technical issues will be addressed by the TB. The TB may propose new Working Groups (see below) to the SB for larger cross project issues.
- Contributing fully to actions to determine the progress against the Technical KPIs.
- Participating in the consideration of, and responding to, the opinions and contributions of the European Commission.
- Participating in the consideration of, and responding to, the opinions and contributions of the 5G-infrastructure Association.
- Allocate resources for TB participation according to the table below.

Note: The chair of the TB will be elected from candidates proposed by the TB members for a term of one year. The TB organisation is to be supported by the 5G-PPP Support Action

- Appointment of representatives to joint **Working Groups (WGs)**.
- To contribute to and on occasion, edit position papers, deliverables and reports from the working groups.
- To proactively drive working groups closely related to their project goals.

Working groups are established based on the identified needs of the community and the program which should be captured in a Terms of Reference (ToR) document. The mandate of a WG is approved by the SB based on the ToR. Changes to WGs will be based on the SB approval of updated ToR documents.

Meetings of all boards and groups will be a mixture of face to face and Audio/online conferences as required.

Mandate of the 5G-PPP level boards that the projects will support:

The bullet points listed here are indicative of the shared responsibility for the programme achievements that each project must contribute to. It is fully understood by **(this proposal)** that, while the grant agreements are contracts at project level, success may be evaluated in the program context. So, under the complementary grant agreements clause 41.4, this programme level responsibility is understood as part of the project undertaking.

The Steering Board has the following responsibilities:

- Perform the executive management of the programme
- Facilitate the effective and efficient collaboration between the projects (inc. resolution of conflicts)
- Ensure the global consistency of the programme
- Assure sharing of information across the projects of the programme
- Ensure the programme has an effective communications strategy for promoting the results of the PPP
- Perform self-assessment of the progress of the program towards achieving the program KPIs
- Initiate activities at program level when necessary
- Detect and address any risks endangering the functioning of the programme
- Delegate appropriate work items to the TB or specific WGs

The Technical Board has the following responsibilities:

- To monitor the technical progress of the work
- To ensure alignment of the technical work at programme level
- To consolidate the technical requirements related to the programme
- To assist the establishment of large scale test and experimentation infrastructures through consolidation of project results
- To report technical progress regular intervals to the Steering Board and advisory functions
- To design common demonstrations and trials of project results
- To delegate appropriate work items to specific WGs

Each Joint Working Group has the following responsibilities:

- Execute tasks spanning multiple projects that contribute to the program level objectives
- Complete the work and deliver the output according to the WG mandate
- Perform and organise the work according to the ToR document

Each retained and financed Project has the following Community responsibilities:

- To have all beneficiaries sign the Collaboration agreement as required by Article 41.4
- To share and discuss their 5G Action Results with other participants in other 5G Actions, who have signed the Collaboration Agreement.

Actual resource planning

Typical figures per project **per annum** that could be included in your project planning are:

Role:	Resources per annum:	Comment:	Programme Budget
Steering Board participation:	1 MM + travel	Part of the management WP	
Technology Board Participation	1 MM + travel	Will require technical inputs from the project WPs	
Working Group participations:	1-2 MM per WG + travel	Should be included in the relevant WPs resource planning	
Joint dissemination / demonstration activities:	2 MM + 30K Euro	Should be a visible dissemination role in the project (2x Global 5G events and 1 major EU conference per year)	Approx: 400k Euro p.a.
Programme representation	1 MM + travel	Speaking at conferences, global discussions, advisory boards, etc.,	
TOTAL	Approx 1 – 1,5 Person Year + costs (may vary depending on number of WG participations foreseen)	Approx 2% to 4% of project budget	Up to 30 Person-years/year