

The Quantum Technologies Flagship

An introduction to the Governance structure

21 November 2018

1. VISION AND OBJECTIVES OF THE QUANTUM FLAGSHIP

The long-term vision of the Flagship is to develop in Europe a so-called quantum web, where quantum computers, simulators and sensors are interconnected via quantum communication networks. There are three goals underlying this vision:

- To consolidate and expand European scientific leadership and excellence in quantum research, including education and training for developing the relevant know-how and skills;
- To kick-start a competitive European industry in quantum technologies in order to position Europe as a leader in the future global industrial landscape;
- To make Europe a dynamic and attractive region for innovative research, business and investments in quantum technologies, thus accelerating their development and take-up by the market.

2. THE STAKEHOLDERS OF THE QUANTUM FLAGSHIP

The Flagship has a wide range of stakeholders involving scientists and innovators from academia and industry as well as stakeholders from the public authorities.

All the stakeholders will be actively participating in the different activities of the Flagship through its governance structure.

3. GOVERNANCE STRUCTURE OF THE QUANTUM FLAGSHIP

The governance structure of the Quantum Flagship consists of:

- The Board of Funders (BoF): the BoF is bringing together the main funders, namely representatives from the Member States and Associated Countries of Horizon 2020 as well as the European Commission with the purpose of programming activities in support of the FET Flagships, including the Quantum Technologies Flagship.
- The Strategic Advisory Board (SAB): This is a group of high-level independent quantum experts from academia and industry. Its mandate is to monitor progress in state of the art developments worldwide, as well as the Flagship's progress and provide strategic advice and recommendations to the Board of Funders on the further development of the Flagship in Europe. This includes preparing, with the help of the research stakeholders, the

Flagship's strategic research agenda, the Flagship's key performance indicators, the international cooperation strategy to put in place, etc.

- The Science and Engineering Board (SEB): This is composed of the representatives of the Flagship's funded projects. Its mandate is that of coordinating the common activities of the Flagship's projects, including in particular the identification of collaboration opportunities.
- The research stakeholders: Stakeholders in the Quantum Technology field are players in research and industry in many different sectors such as IT, telecom, manufacturing, engineering, but also in the medical and geological field. The *quantum community network* consisting of representatives of the national quantum research communities was created to facilitate the interaction with the Strategic Advisory Board.

In addition to the above, a Coordination and Support Action (CSA) will be supporting the coordination of the different stakeholders who will be participating in the Flagship's activities. The CSA will be the secretariat for all governance bodies and will coordinate the activities of the flagship in respect to relevant international and national programmes. It will also identify training and education needs and identify and coordinate relevant standardisation activities and help support different international coordination activities of the Flagship.

Figure 1 provides an overview of the governance structure of the Flagship.

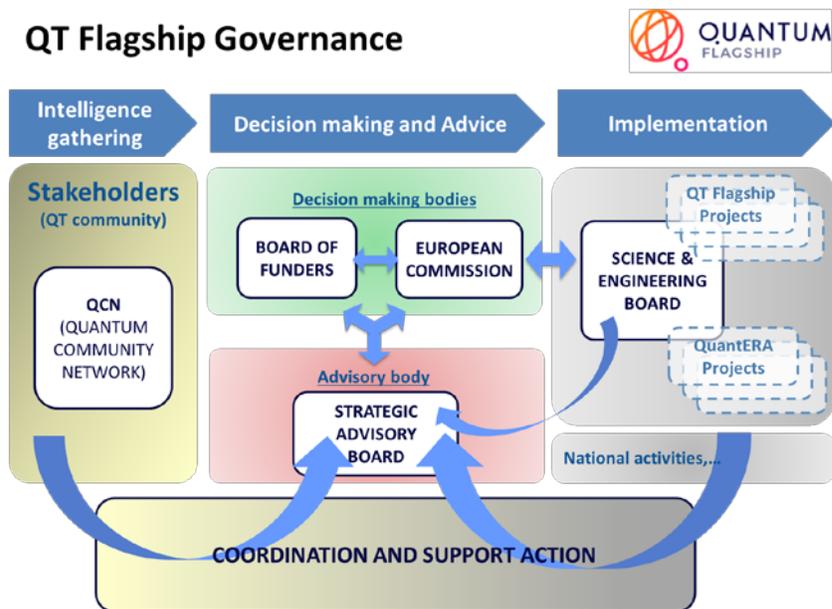


FIGURE 1: GOVERNANCE MODEL OF QUANTUM TECHNOLOGIES FET FLAGSHIP

3.1 THE BOARD OF FUNDERS (BoF)

The main role of the BoF is to overview the progress of the Quantum Flagship, enable discussions to align national and European priorities and initiatives in Quantum and discuss and possibly plan the financial support to the Flagship for its whole duration.

A presentation of the BoF and of its terms of reference is available at <https://www.flagera.eu/about/policy-context/board-of-funders/>.

3.2 THE STRATEGIC ADVISORY BOARD (SAB)

The mandate of the Strategic Advisory Board (SAB): The SAB is set up as an Expert Group of the European Commission.¹ Its objective is to provide advice for strategic decision-making to the European Commission and to the Board of Funders, with long-term impact across the whole Flagship. More specifically:

- The SAB will be preparing and updating the Strategic Research Agenda based on the input received from the Flagship's Science and Engineering Board (SEB) and the Quantum Stakeholders, including the Quantum Community Network (QCN).
- The SAB will monitor the Flagship's progress towards both its research and innovation goals and its non-technical goals, such as education and outreach. For this, it will propose Key Performance Indicators (KPIs) for the Flagship's output and impact and regularly evaluate them.
- The SAB will regularly report to the Commission and BoF and recommend actions to close the identified gaps.

The SAB is tasked to consolidate contributions from the wider group of relevant stakeholders from academia, industry, Research and Technology Organisations (RTOs) and Member States. To fulfil its tasks, the SAB interacts closely with both the SEB, the QCN and the CSA, which is also providing logistical support to the SAB activities.

Duration of the SAB: The SAB is established for an unlimited period. SAB members are appointed by the European Commission for a fixed period of two years. The renewal of the appointment is possible. Members of the Science and Engineering Board (SEB) cannot be members of the SAB.

Composition of the SAB: The SAB is composed of up to 15 high-level representatives. Up to six are from academia, up to six representing industry and up to 3 from the Research and Technology Organisations (RTOs). The SAB Chair and Vice Chair are appointed by the European Commission.

Meetings and decision making of the SAB: The SAB holds meetings up to four times a year upon invitation by the European Commission, or as more frequent as the SAB Chair or the European

¹ <http://ec.europa.eu/transparency/regexpert/>

Commission deem necessary. The SEB Chair and Vice Chair as well as the QCN Chair and Vice Chair shall take part in the SAB meetings as observers, but shall have no voting rights.

Decisions of the SAB require the representation of more than the half of the SAB members. The SAB will make any effort to achieve consensus. If consensus cannot be reached, decisions of the SAB are taken by simple majority vote. Each SAB member has one vote.

3.3 THE SCIENCE AND ENGINEERING BOARD (SEB)

Mandate of the Science and Engineering Board (SEB): The SEB is the representation of the Quantum Flagship's projects and of the QuantERA projects. The main responsibilities of the SEB are to:

- Coordinate the Quantum Flagship Research and Innovation Activities (RIA);
- Identify collaboration opportunities, joint developments, and share infrastructures among projects;
- Interact with the other bodies of the Quantum Flagship in all the areas of activity of the Flagship (see also section 3.4 below on the CSA activities) and report to the SAB, the European Commission and the Board of Funders.

The SEB will report on the fulfilment of its responsibilities to the SAB, the EC and the BoF. The SEB may establish its own rules and procedures.

Duration of the SEB: The SEB is established for a limited period which is aligned with the duration of the projects funded by the Quantum Flagship. The renewal of the appointment is possible.

Composition of the SEB: Every coordinator of a Quantum Flagship project is automatically member of the SEB. Furthermore, the QuantERA project is represented by the two coordinators (as observers). The projects funded by QuantERA, are represented in the SEB by two representatives. The group of QuantERA project coordinators is responsible for electing these two representatives among the coordinators of the projects. The SEB members elect a Chair and a Vice Chair, whose terms are aligned with the duration of the projects funded by the Quantum Flagship.

Meetings and decision making of the SEB: The SEB members commit themselves to taking an active part in the endeavours of the Quantum Flagship, to comply with the responsibilities of the SEB and to attend to the extent possible all meetings of the SEB. In the case of being unable to be represented, a SEB member may be represented by a substitute from his/her project.

The SEB holds meetings at least at least two times a year upon invitation by the SEB Chair, or more frequently, if the SEB Chair deems this necessary. The QCN Chair and QCN Vice Chair can attend the SEB meetings as observers, unless decided otherwise by the SEB Chair, but will have no voting rights.

Decisions of the SEB made require the representation of more than the half of the SEB members. The SEB should make any effort to achieve consensus. If consensus cannot be reached, decisions of the SEB members are taken by simple majority vote. Each SEB representative has one vote.

Tasks of the SEB Chair and Vice-Chair: The tasks of the SEB Chair consist of:

- Being in charge of setting up the rules and procedures of the SEB
- Organising and chairing the meetings and moderating the discussions of the SEB
- Reporting to the SAB, the EC and the BoF
- Representing the SEB at external meetings

In case of absence of the Chair, the Vice-Chair shall be in charge of the tasks of the Chair. The Vice-Chair may also assist with the tasks of the Chair.

3.4 THE SECRETARIAT OF THE QUANTUM FLAGSHIP

The **Coordination and Support Action** (CSA) provides the following services to the stakeholders of the Quantum Flagship:

- Provide central secretariat services to the bodies of the Quantum Flagship Governance;
- Manage all matters related to participation and administration of the platform;
- Trigger networking of stakeholders;
- Prepare community based Strategic and Innovation Agenda (SRA) by involving academia and industry;
- Manage a central European communication platform on quantum technologies;
- Manage an information repository;
- Organize workshops, conferences and the benchmarking of the Quantum Flagship's projects;
- Monitor Key Performance Indicators (KPIs) and collect progress indicators;
- Promote, disseminate, maximise outreach;
- Identify education and training offers/needs;
- Identify standardization needs;
- Help establish a Quantum Technologies supply chain in Europe for industrial deployment;
- Propose joint funding activities of the Member States / Associated Countries;
- Collect and distributing information;
- Act as an internal and external single entry contact point;
- Define and monitor the implementation of the benchmarking activities.

The CSA will run the Quantum Flagship's Secretariat. The Secretariat is appointed by the European Commission via the funding decision of the CSA. The Secretariat will have access to all necessary information related to the above-mentioned activities of the CSA.

3.5 THE QUANTUM COMMUNITY NETWORK

The **Quantum Community Network (QCN)** represents the quantum technology communities of the Member States and Associated Countries of Horizon 2020.

The terms of reference of the QCN are available on the Quantum Flagship web site.²

4. IMPLEMENTING THE GOVERNANCE

The mandate and the tasks of each body of the Quantum Flagships are described in detail in the previous sections. The effective and efficient functioning of the Quantum Flagship depends on all these interactions among its different bodies and involved stakeholders. Some key roles include:

- The Board of Funders is regularly meeting with the SAB, the SEB and the Flagship stakeholders: The SAB chair will be invited to regularly attend the BoF meetings, as well as the SEB Chair and the Chair of the QCN (as needed).
- The SAB widely consults and receives inputs from the Quantum Flagship stakeholders (including the QCN), and the Flagship and QuantERA projects (via the SEB). The SEB Chair and Vice Chair as well as the QCN Chair and Vice Chair shall take part in the SAB meetings as observers, but shall have no voting rights.
- The SEB is essential to coordinate the activities between the different relevant Flagship projects and to provide an overview of the progress made towards the Flagship objectives both to the SAB and to the European Commission and the Board of Funders. QuantERA projects are represented in the discussions of the SEB. The QCN Chair and QCN Vice Chair can attend the SEB meetings as observers.
- The stakeholders including the QCN contribute to the S&T road-mapping of the Flagship as well as to its benchmarking, international cooperation, and education activities. They provide effective links to the national funded Quantum initiatives. They support all the governance bodies of the Flagship.

In addition to the above, the Flagship's CSA action organises every year, in close cooperation with all the bodies of the Flagship governance structure, the annual public event of the Flagship that brings together all the Flagship stakeholders. The SAB and the SEB may have closed meetings at these events.

² <https://qt.eu/>