

Programme Inria Quadrant (PIQ)

As part of the France 2030 plan and the Agence de Programmes Numérique (Digital Programmes Agency) - ALU (Algorithms, Software and Uses) headed by Inria, the Inria Quadrant Programme (Programme Inria Quadrant - PIQ) aims to encourage and support scientists carrying out high-risk projects within Higher Education and Research institutions (ESR).

Within this framework, PIQ offers support and funding to scientists wishing to undertake high-risk, high-impact research projects.

PIQ is open to all scientists in the broadest sense of the term, including researchers, faculty members and research engineers from all French higher education and/or research institutions.

The scope of the programme covers the entire spectrum of digital science and technology, from its foundations to its uses, and therefore covers both projects centred on digital technology and interdisciplinary projects involving digital technology.

The notion of risk refers to projects that may involve a high degree of uncertainty, very early-stage or exploratory projects, projects requiring major experimental or software development, projects that straddle several disciplines, projects with no identified scientific community, projects break with the state of the art or projects that propose to redefine the theoretical foundations of a subject. This list is not exhaustive.

There are no constraints regarding the nature of the impact of the projects supported, which may be societal, scientific, technological, economic, a breakthrough in knowledge or the shaping of a scientific dynamic, meeting national objectives or even leading to the development of benchmark software or technological tools. Again, this list is not exhaustive.

The name of the programme is inspired by Pasteur's quadrant, a classification of research projects that aim for a fundamental understanding of scientific problems while being of immediate interest to society. The term was introduced by Donald E. Stokes in his book *Pasteur's Quadrant*.

Ongoing assessment, based on risk-taking and ambition for impact, and anchored at site level

Applications and entry to the programme are made on an ongoing basis. The PIQ Site Coordinators are the first point of contact for potential candidates. The PIQ Site Coordinators provide information and advice, and ensure that the projects submitted are compatible with local scientific policy.

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Eligible projects are then appraised by PIQ Programme Management based on their suitability in terms of the specific requirements of the PIQ call for proposals in terms of risk, impact and commitment on the part of the project leader.

Once the appraisal phase has been completed, the applications are taken up by an autonomous and independent PIQ Expert Committee. This committee proposes the pre-admission of projects based on the criteria of risk, ambition and originality of the scientific approach envisaged. For this, it relies on the analysis of one or more external experts, who are asked to consider the state of the art and the scientific context presented by the project leader, as well as the scientific and methodological approach proposed in the project. Finally, admission is proposed by the PIQ Expert Committee following an interview with the project leader.

The members of the PIQ Expert Committee are appointed by decision of the CEO of Inria on the proposal of the Inria Quadrant Programme Director on the basis of their expertise in their respective fields of activity, their ability to assess project proposals and the complementarity of their profile and professional experience.

Project engineering adapted to the uncertainty inherent in risk-taking

A PIQ project has a starting point - a description of the state of the art and the scientific context - and an objective - the desired impact. These elements are described in the application document and are key to the assessment of the project. Between these two points, the approach proposed for a high-risk project generally includes a degree of uncertainty. The commitment of the project leader and their ability to envisage an exploratory and agile approach are therefore key factors in selection.

This uncertainty is also the reason why project leaders are not asked for a precise description of the project's progress when they apply. Instead, the programme proposes to formulate projects in successive phases, the content of which is largely forward-looking and set out in a roadmap.

The project roadmap describes the succession of phases envisaged to bring the project to a successful conclusion, with each phase lasting from six to eighteen months. Each phase is associated with a request for financial resources and a commitment by the project leader. These phases are also associated with an end-of-phase milestone, which is designed to facilitate a simple assessment of the progress made by the project. The project roadmap is produced by the project leader during the application phase. The project leader is supported in this process by PIQ Management.

Appropriate resources to support the vision and ambition of projects

The financial resources required for each phase are defined according to the needs of the scientific project when the roadmap is drawn up during the application process. For this reason, the PIQ programme does not impose a minimum or maximum amount of funding. However, given the current scope of the programme, the indicative range is, but is not limited to, €10k to €400k per one-year phase.

Agile support throughout the life of the project

At the end of each phase, the associated milestone should make it possible to assess the momentum of the project and any achievements or uncertainties that have arisen during the phase. Where necessary, the project leader may be asked to revise the roadmap, with the

support of the programme management team. This revision may have an impact on the content of the subsequent phases, their milestones and the financial resources requested, with the aim of adapting the support for the project to the reality of its progress and to any changes in the state of the scientific art.

The PIQ Expert Committee is asked to issue an opinion on any changes to the roadmap. On the basis of this advice, PIQ management may decide whether to commit the programme to the new roadmap or to proceed with an early exit from the programme. This exit will not, however, affect the commitments already made by the programme in terms of the resources allocated to the project.

Support for projects upon exit

When projects exit the programme, whether prematurely or otherwise, this departure is accompanied by a review and feedback with the project leader and the PIQ Site Coordinator. This review is also designed to examine the prospects for the project, in terms of new sources of funding, research dynamics and, finally, impact, both globally (scientific, technological, societal, etc.) and locally, particularly on the site's research ecosystem.

A programme to support high-risk research that complements existing tools

The PIQ programme is designed to be complementary to and different from existing funding programmes such as the ANR, ERC, EIC, etc. The role of the PIQ programme is to launch projects at a very early stage, which are uncertain and based on ideas that may still be imprecise, ill-defined and whose project leaders may not be able to demonstrate their feasibility from the outset. PIQ is also intended to support projects whose very nature makes it impossible to apply for existing funding. This is the case, for example, for projects with a strong technological or software development focus. The purpose of PIQ is to provide support for projects that would not otherwise find funding, despite their scientific or technological interest and impact, because of the risky nature of the project. In line with the specific nature of the projects targeted, the PIQ programme stands out for its project engineering. For example, the concept of a roadmap and its regular review are mechanisms that have the twofold aim of not locking project leaders into the initial vision of their project and being able to adapt the programme's support to the reality of how projects develop. The PIQ programme is centred around the project leader, particularly in terms of the role and responsibility given to them to steer and revise the project roadmap. Their commitment and ability to devote time and energy to the project are key selection criteria when assessing potential projects. Finally, the PIQ programme evaluates projects on an ongoing basis. The principle of a blank call for proposals, with no fixed budget or duration, means that a wide variety of projects can be supported, in terms of their nature, timing or the resources they require.

An ambitious programme

The PIQ programme itself is ambitious, operating on an ongoing basis and aiming to support a large number of projects, with up to 100 projects being supported per year over a 3-year period. Each year, the PIQ programme will assess and, if necessary, adjust its own milestones with a view to achieving its stated objectives : promoting and supporting high-risk research in and through digital technology.