



**FORWARD LOOK**

Quantum Information Science & European Strategy

Recent scientific and technological advances show that quantum information technologies have kicked-off. If so, the natural question arises: **What's up next?** In particular what are plausible future paths where quantum information technology drives advances of other sciences?

The **Forward Look** FARQUEST is purposefully designed as a prospective analysis of technological scenarios that build upon quantum information which cannot yet be thoroughly quantified. Its value lies in providing a methodology to reach beyond the state of the art or already forecasted roadmaps, and to reach beyond individual envisioning.

FARQUEST builds on joint expertise, insight, dialogue and participatory integrative stakeholder processes to 'make see' the outcome cross-roads of quantum information technologies and other tangent fields of non-profit organizations, places of higher education, or science businesses.

The aims of FARQUEST are three-fold:

- identifying the context, features, and influencing forces of inevitable/predictable/uncertain nature which affect research, businesses, and society
- systematically obtaining projections of anticipated futures of quantum information technology in yet unaddressed areas of high utilization
- assessing the impact and future potential of such 'story lines' for orientation and prioritization of European science policy to shape the future, and signals to monitor.

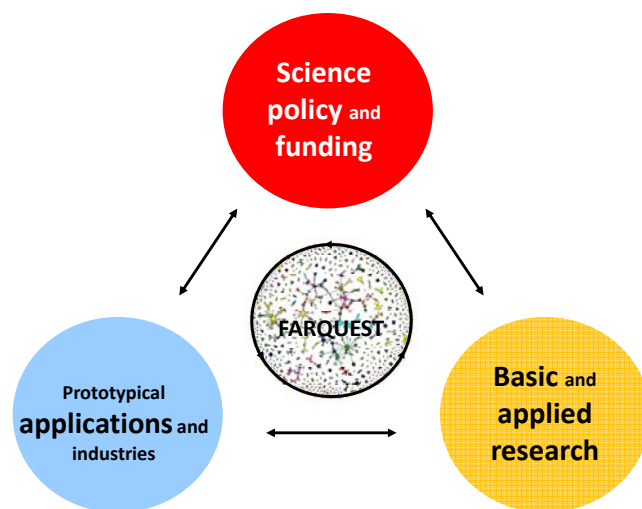
FARQUEST is about plausible futures. It **takes a 10 years view** on research fronts at the cross-roads of quantum information technology with fields, such as solid state physics, laser physics, material science, optics, supra-conductivity, electronics, mathematics, hard- and software, semiconductors and atom doping, or traditional IT and even the life sciences.

**Stakeholders of FARQUEST**

- European science policy and law makers
- funding bodies
- theoretical, pure and applied scientific researchers and engineers driving or having a keen interest in advancing quantum information technology.

**Activities.** This Forward Look brings together experts

from various fields in three parallel cross-topics of moderated 2-days future workshops of innovative network conversations ("world-cafes"), meta-analysis and reflection between thematic expert panels. Each cross-topic is chaired by a scientific leader. Experts are invited a) on the basis of systematic surveys of authors publishing in the realm of quantum information technology and tangent fields ("science maps"); and b) recommendations made by the scientific community. Workshops will be held in European cities throughout 2011 until spring 2012.



The Forward Look will be concluded in 2012 by a consensus conference (including scenarios build upon key drivers, measures to shape the future) and various formats of results dissemination.

**Why participate in FARQUEST?** Here are three good reasons: 1) the opportunity to voice your opinion in developing scenarios for the future of quantum information technology in Europe; 2) impact on EU/EC RTD policy, research agendas and getting familiar with the ESF; and 3) experience of new formats for joined learning, insight, and networking with like-minded people, including from outside your own field.

Before FARQUEST kicks-off, **we invite a small group of scientific leaders** to a one day-long **Scoping Workshop** in January/February 2011 to provide...

**Input and feedback on planned activities**

We will

- present, discuss and finalize aims, objectives, cross-topics, as well as FARQUEST activities, including Forward Look methodologies;
- approve ways to identify key opinion leaders, other stakeholders and chairpersons of cross-topics; and
- look at the time line and FARQUEST's steering and decision-making boards.

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[www.farquest.org](http://www.farquest.org) (online in January 2011)

## ESF Liaison

Established in 1974, the **European Science Foundation (ESF)** is an association of 79 member organizations devoted to scientific research across 30 European countries. It coordinates a wide-range of pan-European scientific initiatives. Its core purpose is to promote high quality science at a European level. The ESF is committed to facilitating cooperation and collaboration in European science. This cross-border activity combines both 'top-down' and 'bottom-up' approaches in the long-term development of science. The ESF provides scientific leadership through its networking expertise and by ensuring a European added-value to all of its initiatives and projects.

### ESF Forward Looks

Forward Looks are interactive processes by which scientific challenges and opportunities in fields of basic science are explored. They aim to identify needs and opportunities, as well as research agendas, for improved science policies for such fields at national and European level. As a flagship activity of ESF's strategic arm, they enable Europe's scientific community, in interaction with policy makers, to develop medium to long-term views and analyses of future research developments. Forward Looks are driven by ESF's Member Organizations and, by extension, the European research community. Quality assurance mechanisms, based on peer review where appropriate, are applied at every stage of the development and delivery of a Forward Look to ensure its quality and impact.

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