

Managing innovative science and technology, where uncertainty in both the outcome of research and the potential benefits are great, is a difficult task. ATBEST will develop novel assessment tools for interdisciplinary research with high societal and/or technical uncertainty, to help manage these tasks. The tools will be validated by practitioners working in new and emerging, potentially breakthrough fields, such as fuel cells or nanotechnology. If successful, the 'tool kit' will be a valuable asset for actors, ranging from public laboratories to private R&D, and high-level support programmes such as NEST.

# Managing new and emerging science and technology

NEST supports unconventional and visionary research with the potential to open new fields for European science and technology. In such research areas, regular approaches to assessing research value and managing development may not be suitable. Current 'best practice' guidelines cannot be reliably used to measure the new paradigms and knowledge generated by ground-breaking research that, by its very nature, supplants existing ideas. NEST's SUPPORT actions provide the space for focusing on conceptual and practical questions associated specifically with NEST. ATBEST (Assessment Tools for Breakthrough and Emerging Science and Technology) is one project funded as NEST SUPPORT action that aims to develop a new process approach, with corresponding tools, for the assessment of new and emerging science and technology.

## Richness

The start point for ATBEST is the recognition that emerging and potentially

breakthrough areas of science and technology are characterised by a 'richness' in terms of discoveries to be made, and possibilities for their exploitation. Exploitation implies that only some, out of a multitude of possible linkages with actual use and uptake, will be pursued and realised. This will result in a push towards specific development, in contrast to the emphasis in pure research on openness and variety. It is important to take both aspects into account, because often studies of innovation (and policy-makers and managers) tend to focus only on specific developments and their outcomes.

## A new process approach

The combination of great uncertainty and great potential requires assessment of processes, including search, articulation and interactive learning. Retrospective case studies on fundamental research have shown the 'knocks' and setbacks that can occur during the research process. Complementary technologies, secondary



## ATBEST NEST SUPPORT



*The tools will be validated by practitioners working in new and emerging, potentially breakthrough fields, such as fuel cells. © MAN*

### AT A GLANCE

#### Official title

*Assessment tools for breakthrough and emerging science and technology*

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#### Partners

- France: Association pour la Recherche et le Développement des Méthodes et Processus Industriels
- United Kingdom: University of Edinburgh

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assets, and social and cultural changes are vitally important to success. 'Picking the winners', as an approach applying selection criteria for the short-term evaluation of R&D performance, effectively restricts the many possibilities the potentially breakthrough science or technology offers. As it is impossible to definitively identify and assess possible 'breakthrough' scientific developments at an early stage, there is a need to focus on the process of development itself and the quality assurance of that process. Essentially the ATBEST assessment tools will use the tension between exploration (research) and exploitation (application) by asking how this tension is handled productively. If it is handled well then the chance of an emerging science and technology actually delivering on its promises will be high.

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### ATBEST deliverables

In a recent report, ATBEST has consolidated the insights and experiences in the literature. The researchers are currently undertaking case studies in order to explore the dynamics of scientific and technological change, especially in areas

of high technical risk and interdisciplinary research like nanotechnology, biotechnology, and fuel cells and the hydrogen economy. In such areas, all sorts of assessments occur continually, and the project team will identify those which can be used to develop further into generally usable tools and approaches.

From the portfolio of tools and approaches that will be produced, two will be selected for further development and a test in a workshop with practitioners (active scientists as well as managers and staff of science organisations). They will express

their reaction to the approaches and tools as experts, with experiences and insights that can contribute to the project, but they will also be subjects because the ATBEST team will observe and document how they handle the two tools/

approaches they are asked to work with. Among the participants will be researchers who have actively participated in NEST activities.



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SIXTH FRAMEWORK PROGRAMME