EUROPEAN RESEARCH ADVISORY BOARD

REPORT ON

EUROPEAN TECHNOLOGY PLATFORMS

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Contents

1 INTRODUCTION

World-class scientific research and development (R&D) is essential for Europe's future prosperity. However, to deliver benefits, such R&D must be successfully integrated into the fabric of European society: into homes, supermarkets and town halls as well as industry, business, transport, health and energy systems.

R&D is only one link in the innovation process. R&D must be financed, must pass through legislative and administrative systems, and must still respond to the changing economic and social requirements of Europe. This is a complex task, going far beyond the laboratory, the test site and the prototype. In Europe, with its multiplicity of national financial, economic and regulatory systems, it is a task, which can slow or even halt innovation and destroy competitiveness. The development of effective "European Technology Platforms" can help ensure European investment in R&D rapidly and effectively:

- Delivers benefits to the European citizen,
- Creates competitiveness for our companies and
- Ends the situation in which high EU R&D investment often produces fewer than expected benefits.
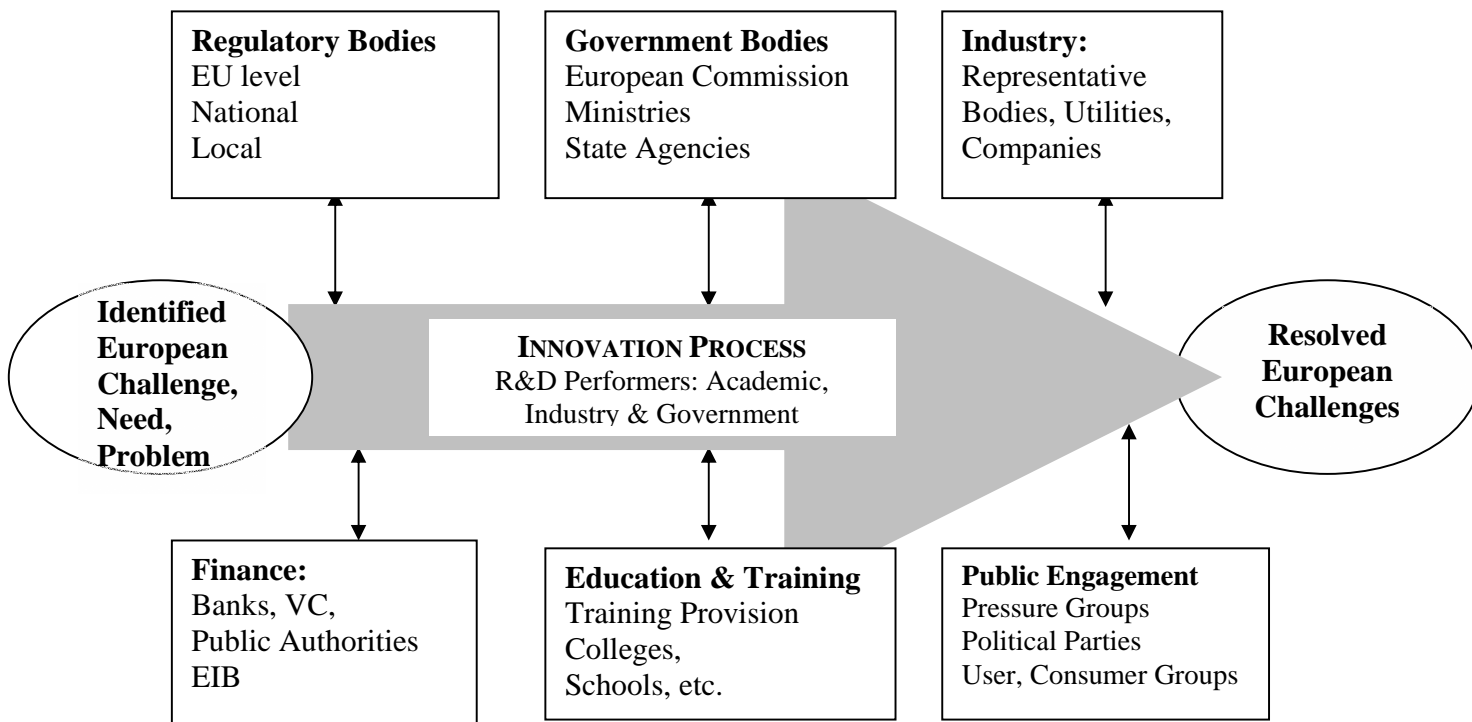
These Platforms will also help to give shape to the European Research Area on a sector-by-sector basis. But such Platforms are, of course, not new. They already exist, at least partially, at a national level, in many Member States and even at a European level in bodies such as EUREKA. One of the tasks of European Technology Platforms will be to bring together and build upon the experience of these existing activities.

2 EUROPEAN TECHNOLOGY PLATFORMS

In this document we understand a European Technology Platform to be a major, pan-European, mission-oriented initiative aimed at strengthening Europe's capacity to organise and to deliver innovation - strengthening the European-wide innovation process. The Platform will bring together relevant stakeholders to identify the innovation challenge, develop the necessary research programme and implement the results.

2.1 FROM R&D INVESTMENT TO THE ECONOMIC & SOCIAL BENEFITS

R&D is essential but here we are making sure that it delivers concrete benefits, as rapidly as possible, to Europe's citizens and enterprises. Besides academic, industrial and governmental R&D, the Figure below shows some of the parties, which may modify or transform, amplify or attenuate, delay or accelerate or even halt the potential benefits of European R&D investment. All too often in the past, European R&D which could solve many of our economic, technical and social challenges, has failed to deliver. Issues related to regulation, finance, education, and markets created barriers in the innovation process. European Technology Platforms will bring together these stakeholders to ensure successful innovation and the rapid and effective delivery of the benefits of European R&D.

Regulatory Bodies EU level National Local	Government Bodies European Commission Ministries State Agencies	Industry: Representative Bodies, Utilities, Companies

Identified European Challenge, Need, Problem

INNOVATION PROCESS
R&D Performers: Academic, Industry & Government

Resolved European Challenges

Finance: Banks, VC, Public Authorities EIB	Education & Training Training Provision Colleges, Schools, etc.	Public Engagement Pressure Groups Political Parties User, Consumer Groups

Even now, there is much important, even life saving, European scientific research and technology available, which is not deployed – not for commercial or cost reasons – but because of informational, political, educational or organisational barriers: witness "The 50% Barrier" in healthcare (See Box below). In the communication industries - with their rapid rhythms of development, need for synchronised actions and speedy establishment of de-facto standards - difficulties relate more to problems in economic and regulatory coordination across the EU. Similarly, in the related areas of energy and environmental research, successful innovation is strongly dependent establishing effective regulatory and taxation regimes. Again European Technology Platforms could prove important. Indeed, well-defined Platforms in these sectors might be particularly effective.

The key actors in a European Technology Platform are not only scientists and R&D practitioners, but

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"The 50% Barrier"

Take the case of a new drug struggling against "The 50% Barrier".

- Fifty percent of those with the illness (mostly men) don't go to the doctor.
- Only 50% of those what go are correctly diagnosed.
- Only 50% of those correctly diagnosed receive the correct medicament.
- And of those with the right drug, only half actually take the medicine, leaving 90% of the population with, say, a chronic degenerative disease, which, in time, becomes more costly to treat, when finally diagnosed.

The problem here is *not* R&D, but information and communication systems and health education. And the problem is common across Europe.

come also from the other end of the innovation process: the regulators, industrial federations, Government Ministries, companies, consumer groups, trainers, and so on. For efficiency, sub-structures of the Platform (Working Groups, Mirror Groups, Task Forces, etc) will gather coherent interests / actors together to address particular issues (legal, standards, industrial strategy, government policies, etc.)

The Platform will act as

- *A vertical coupling* – The scientific research community in industry and academia, to Government Departments, to legislators, to consumers – strengthening the innovation process and creating an integrated system for the adjustment and implementation of the technology - And
- *A horizontal coupling* – Ministry-to-Ministry within the Member States, DG to DG within the Commission, consumer group to consumer group – creating a more concerted European voice and coherent European market. Also research group to research group creating a concerted and interdisciplinary European R&D effort to solve European problems.

2.2 CHARACTERISTICS OF A EUROPEAN TECHNOLOGY PLATFORM

- **Mission Oriented:** A European Technology Platform must tackle a major European *need, challenge or problem*, rather than simply seek to implement a technology. That is to say, the focus must be on the overall innovation challenge, including its social- economic- legislative- political- implementational aspects, rather than only the technological issues. Recognising the requirement for a Platform may well come from directly identifying the problem – or realising that if such a Platform is not put in place serious problems will arise in the future – as in the demographics and aging of Europe, and in rising environmental concerns. This problem focus implies Platforms must be mission-oriented with the crucial initial activity as articulating clearly the mission: saying what the European need/challenge/problem is and what needs to be done – for example, fighting cancer, creating clean energy. And social science research will be a major support. All this requires an adequate preparatory phase.
- **A Road Map:** European Technology Platforms require a Road Map, which develops 1) a medium to longer-term vision of what is needed for Europe, 2) a dynamic strategy for achieving this vision and meeting the challenge and 3) a detailed Action Plan, including any research necessary to fulfil the vision and strategy. Sound management and organisational structure and a clear set of Terms of Reference for the Platform are important. Action lines might include the launch of major Integrated Projects or similar initiatives within future European Framework Programmes. However, if an Action Plan consists of only research activities, then it cannot be considered to be a Technology Platform. Action lines might also work to bring together, develop and support strategic innovation activities, which are currently operating only at a Member State or regional level. Such tasks will require Platforms to work effectively not only with regional and national research authorities but also with industrial and finance as well as health, transport, training authorities in Member States - depending on the requirements. .
- **Scale & Technologies:** The mission and vision of European Technology Platforms imply that they are usually dealing with a financially and

organisationally sizable activity – not with small, relatively narrow issues and, probably, with a broad set of technologies, rather than with the generation and application of a specific technology. This said, European Technology Platforms must be sufficiently focused to be efficient in identifying and carrying out tasks, yet broad enough to be able to generate political awareness[1].

- **Leadership & Commitment:** In many European Technology Platforms, the key players - the Platform leaders - will be those engaged in bringing the technology successfully into the market. This emphasises the companies commercialising the technology and other non-technical groups such as regulators and users. And it will be essential to get the right players – especially from industry. Leadership must rest with the stakeholders rather than the European Commission in drawing up the Road Map and particularly in its longer term implementation – the Commission is, of course, a stakeholder, but one among many. While the leadership will come mainly from industry, the major European R&D laboratories and research groups will be centrally involved. Their expertise will be critical to drawing up and carrying out the research programmes needed to meet many of the innovation challenges identified. Similarly, the participation of SMEs will be critical, particularly in moving from R&D to implementation of results. In addition, there is a need for strong commitment from all participants: to be effective, the number of stakeholders should remain fairly limited. Those who cannot provide such commitment should not be in the driving seat of the Platform. If there is a lack of commitment, the Platform should close.

- **The Platform Title:** To ensure effective communications and awareness building the Platform title should also reflect the problem / solution end of the innovation spectrum – rather than only the scientific research / technology end. "Benefiting from Alzheimer's research on a European Scale", "Aging in an Active Society", "European Initiative on Tackling Dementia", "Fuel Cells for Clean & Safe Energy" or "The Hydrogen Economy", rather than genomics, proteomics, neurobiology, solar cells or fuel cells. However, titles should not be so specific as to exclude relevant issues.

- **Flexibility:** The type of structure and participants in European Technology Platforms will necessarily vary, reflecting political, industrial and market structures associated with the Platform Mission. The shape and approaches to implementation and even time horizons will vary from Platform to Platform.
  - Platforms with a relatively homogeneous membership, such as the aircraft industry, may be structurally simpler than, say, Platforms related to heath issues, where the diversity of interests and variety and complexity of the different national health systems will make for a more complex Platform.
  - Platforms may need parallel working groups. For example, a Platform aimed at "Improving European Road Safety" may need to be divided into sub-groups working on 1) physical safety, 2) emissions, environment and sustainability and 3) mobility and congestion.

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[1] ACARE (Advisory Council for Aeronautics Research in Europe), despite being R&D focused, shows one potentially useful model. Similarly, issues and approaches to the EU and the US "Hydrogen Initiative" could be examined in designing European Technology Platforms.

- Platforms may need different representative and participation structures. SMEs and sub-suppliers may need representation at the higher levels of a Platform, but become the key operation actors in the implementation layers of the Platform structure.

In all, the substructures of Platforms are likely to vary considerably. There is no one correct set of structures and procedures for running a Platform.

- **Political Awareness & Visibility:** Being problem-driven**,** Platforms will function across national boundaries, across regulatory boundaries, across technological boundaries. Here, they may face substantial difficulties in changing established practices. As such, they need political awareness, even political support, and certainly high-level, public and political visibility. This said, their scale and strategic nature would also create substantial, high level, political visibility.

- **Adding Value:** Many areas of innovation work well, even in the absence of European Technology Platforms. To avoid misusing the new instrument, proposed Platforms must, a priori, clearly demonstrate the need for such an activity. Why is a European Technology Platform strategically important for Europe? What will Europe lose, if a European Technology Platform is not put in place? Clear European added value must be justified. Selection criteria for setting up a Platform must be explicit and rigorous. They must not degenerate into a "this will solve everything" activity.

- **Security of Funding:** There are some concerns that European Technology Platforms may become "talking-shops". There is a need to integrate secure sources of funding into the Platforms' Action Plans for internal meetings, communications, writing the Road Map and administration. However, the funding for the substantive tasks of the Road Map should come from the appropriate sources: Member States, industrialists, banks, structural funds, as well as the EIB, which is already active in supporting such Platforms. The development and implementation of a programme for such funding at a national, multi-national and EU level will be the core activity of a Platform.

- **A European Innovation Initiative?** The term *European Technology Platform* may be somewhat misleading. The focus of the activity is firmly on employing *innovation* to solve European economic and social problems with tools – legislative, organisational, economic, social, technological - which go well beyond research and technology. The focus on "technology" may be highly misleading and may hamper the initiatives. Other terms may be more appropriate:
  - "European Innovation Initiative" emphasising the innovation and change role.
  - "European Strategic Innovation Alliance" emphasising the collective mission oriented nature of the activity.
  - "Strategic Innovation Coordination Initiative" again emphasising the mission / future oriented / problem solving aspects along with the cooperative / coordinating role.

  In all cases, the emphasis is - more usefully - on the mission / problem solving aspects rather than the more limited technological issues. If the term "European Technology Platform" cannot be avoided, each Platform should

be known by a working title, which reflects its central innovation /mission / problem solving aspects.

2.3 THE ROLE OF THE EUROPEAN COMMISSION

The European Commission services have an important role as the catalyst in developing European Technology Platforms. They should -

- Support the identification of key European problems, which would benefit from the development of a European Technology Platform.
- Provide the bridges for European Technology Platforms to 1) EU bodies developing legislation so as to obtain coherent regulations, 2) EU financial sources such as structural funds, FP, and the EIB so as to promote coherent investment, 3) appropriate DGs so as to ensure consistent policies.
- Match funding on certain types of project developed by the Platforms and provide catalytic funding for newer Platform initiatives.
- Foster the better coordination of public investment across all Member States as well as with EUREKA and other such bodies - avoiding unnecessary duplication. *European Technology Platforms will help give shape to the European Research Area on a sector-by-sector and domain-by-domain basis.*
- And specifically, with regard to DG Research, help to coordinate such public scientific R&D investment with the other elements of the innovation process.

2.4 BENEFITS TO PARTICIPANTS

European Technology Platforms promise significant benefits to the participants in European Technology Platforms.

- **The R&D Community:** 1) A long-term road map and guidance for scientific and technological research. 2) Help to develop Europe as a location that encourages the rapid application of technologies and good commercial returns. Europe then becomes a good location for science and R&D investment, with many such companies also supporting basic scientific research. 3) Indicate new needs and opportunities for R&D. 4) Provide the launch-pad for an increase in interdisciplinary research, as research groups from different fields are brought together to tackle common European problems.
- **Industrialists:** 1) Clear interfaces with the research community, public and regulatory authorities, 2) Potentially, more efficient and coherent regulations, standards and markets.
- **Governments:** 1) Greater coherence in policies, 2) Coordination of resources and avoidance of duplication of funding, 3) Input for future research initiatives.
- **The Consumers and Users:** 1) A formal channel to influence the development of solutions, 2) More rapid and appropriate solutions to real problems.

3 CONCLUSIONS & RECOMMENDATIONS

3.1 A EUROPEAN TECHNOLOGY PLATFORM

A European Technology Platform is, in reality, a European Innovation Initiative which is mission-oriented to solve a major European challenge / need / problem. It draws together the main stakeholders – industrialists, governments, legislators, politicians as well as researchers - from across Europe – even globally – who, working together, can provide the solutions.

- In the first phase, through discussions and consultations, the members of the Platform develop a vision and a strategy for solving the challenge and then work up an operational Action Plan – a process we have called developing the Road Map.
- In the second phase, the Platform will oversee and coordinate the Action Lines of the Road Map. The time horizon on implementing a Road Map may well be in the order of a decade or more – Platforms will tackle major European / Global challenges – other instruments can tackle short-term, fire-fighting issues.

3.2 FIVE GUIDING PRINCIPLES

We see five guiding principles for European Technology Platforms, which should guide the Commission Services and potential participants. Platforms should be:

1. **A Response to Major European Challenges:** The Platforms are mission-oriented and address *major* European economic-environmental-technical-social challenges. They are not short-term, problem solving devices.
2. **A Strategic European Initiative:** Platforms should be set up *only* when there is a well-defined, European strategic need for such an instrument, and European added value can be clearly justified.
3. **Politically Highly Visible:** To affect change across national, industrial, technological boundaries, Platforms must create strong political support and be highly visible at a European, even at a global level.
4. **Industry Led:** To be effective, Platforms must be driven by actors from the applications / problem end of the innovation process.
5. **Well planned and executed**: There must be a Road Map with a longer-term vision, a sound strategy for achieving this vision and a detailed action-plan for carrying out the necessary activities.

3.3 AN EVALUATION CHECKLIST FOR COMMISSION SERVICES

Our recommendations take the five guiding principles and turn them into a practical checklist, which the Commission Services might employ in the evaluation of proposed Platforms.

A Major European Challenge:
The proposed Platform must • Address a major, pan-European challenge – they are mission oriented. The challenge must be1) European and / or Global, 2) economically significant in scale and 3) longer-term – dealing with day-to-day problems will devalue the specificity of our approach. • Address, in an integrated way, the economic/technical/environmental/ social challenge – including social science research as appropriate.
A Strategic European Response:
The proposed Platform must • Have clear *strategic* reasons for its establishment. It must, of course, be set up through an open and transparent process. • Offer significant European added value. Only those challenges, which can be addressed easier, faster, or cheaper at European level or need a certain critical mass, should be considered. • Not become misused. Not all Europe's innovation problems can be tackled by such Platforms. They are not the answer to everything. If they become simply the fashion of the year, they will lose their value and industry will refuse to participate.
Politically Highly Visible:
The proposed Platform must be • Broad enough in the challenge it addresses and involvement of stakeholders to both attract and create political support from Member States, their politicians and industrialists. This breadth is also essential for easy and successful communication. • Focused enough, however, to effectively solve concrete problems. The challenge / mission must be tightly defined. The groups of stakeholders must be sufficiently homogeneous to have a common goal.
Industry Led:
The proposed Platform must • Be proposed in a bottom-up fashion, incorporating the essential stakeholders from the innovation process. If support from these groups is lacking, no Platform should be launched. • Have a clear leadership coming from those with the power and responsibility for market entry – that is to say industrialists, regulators and users.
Well Planned and Executed:
Platforms should have • A longer-term vision related to the specific challenge, • A coherent, dynamic strategy for overcoming the challenge and • A sufficiently detailed, practical Action Plan for moving Europe beyond the identified barriers to innovation.

3.4 SETTING UP EUROPEAN TECHNOLOGY PLATFORMS

In this section we indicate how the Commission and potential stakeholders might operationalise the concept of European Technology Platforms.

Phase	Actions
1. Proposal	• *Commission:* Inform Member States and industry on European Technology Platforms, their objectives, principles and basic criteria of operation. • *Industrialists / Regulators:* Industrialists, regulators and other stakeholders should then come together to propose- and justify - the setting up of a Platform.
2. Preparatory	• *Commission & Proposers:* Joint review and development of the proposal, in line with the principles (Section 3.1) of such a European innovation initiative. Here, the initial decisions on key Platform stakeholders and leadership as well as preliminary Platform structures must be taken. • *Commission:* Decision (yes/no) on setting up of Platform – including a support budget (secretariat / communications / planning / writing Road Map.).
3. First Year	• *Stakeholders:* Broad consultation to define the Road Map (vision/strategy/ action plan), arriving at a wide consensus among all stakeholders on solutions and priorities. • *Commission and Secretariat*: Support Platform and the whole high level group of stakeholders involved as necessary – including marketing / information / dissemination activities.
4. Implementation	• *Stakeholders:* Formal commitment of whole group to Road Map. • *Commission & Stakeholders*: Launch priority actions, seeking financial resources from appropriate sources (Governments, industry, structural funds, Framework Programme, European Investment Bank as well as other banks and financial institutions), including public-private partnerships as necessary.
5. Review	• *Commission:* A brief, independent, Annual Review to comment on achievement of tasks might be useful to press for progress and action. Certainly, by end of Year 2, a review should decide if the Platform is effective and should continue.

A EUROPEAN TECHNOLOGY PLATFORM

INPUTS	PLATFORM ACTIVITIES	OUTPUTS	BENEFITS
Financial: • Framework Programmes • European Investment Bank • Commercial Banks • Structural Funds • Industrial Investment • Member State & Regional Investment. **Non-Financial:** • High-level People • Organisational and Time Commitments • Political effort, • Etc.	**Phase I:** • Development of Road Map – vision, strategy and Action Plan. **Phase II:** • Oversight / Supervision of implementation of Action Plan by industry, government and researchers.	• Focussed Research Initiatives. • Coherent & Stable Legislation & Standards. • Consistent EU & Member State Policies. • Education & Training Programmes, • Political / Market Initiatives, • Etc.	• New Products & Services, • Industrial Competitiveness • Integrated EU Markets, • Improved Employment Prospects, • Better Trade Prospects