

## Mission & Objective of High-Level Expert Group: Foresighting the New Technology Wave

### Introduction

*The objective of this paper is to define the methodology and scope of the group. In the broad, we want to find out what convergence is, how it will impact the future, and what Europe could do to meet its own policy objectives.*

The starting point of this reflection was the US NSF report, which was analysed and discussed but does not constitute the focus point of reflection. It is a question of reflecting and proposing a European approach of the convergence of the sciences/technologies in relation to European cultural, ethical, socio-economic approaches; and European strengths and weaknesses in these technological fields. Cognitive sciences were considered as the most innovative research area for a European approach. Questions – *sometimes profound reservations* - need to be specified, often they express legitimate concern on the use of these technologies for ideological or military purposes. It is a priority to clarify the civil and societal benefits of this research to give them a new legitimacy and to put them firmly in a context of positive social dynamics. The principle of precaution should be taken into account to fix the framework of the research. A number of themes that recurred throughout are:

- *What is it all about? Reality, Expectations and hype*
- *Is there a European Vision*
- *What is the role of the Social Sciences*
- *How do Cognitive Sciences fit into the picture*
- *What Horizontal Issues arise and*
- *What is the Educational Impact*

*It was concluded that in order to develop a European approach a top down approach was needed, with some concept of the way society is progressing and can impact the interplay between science systems and technology based systems. The focus is on convergence as interface, where the interesting players and issues sit (notwithstanding the need for basic sciences who generate the interfaces).*

### General Objectives

Three general objectives should guide the work of the group of ca 25 experts:

1. Develop a research agenda focused on social sciences research on co-operation models (this dimension being specifically European). The objective being to show how this approach can break with the idea of the individual performance being the only criteria for measuring success.
2. Whether to develop a programme building on the experience of application programmes targeted on specific fields like hearing, vision, ageing, cognition....
3. How to develop research agendas on “**contextualised technology**”<sup>1</sup>, which would have the advantage of being addressed to third world countries, but also to emergent countries (India, Brazil, ..) having currently mobile and often unexploited research worker resources. This would focus on the genuine emergent needs of the societies concerned, and the concern for rapid market implementation, which remains a priority for competitiveness.

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<sup>1</sup>By "contextualised technology" we mean all technologies which improve productivity, competitiveness and working conditions, **closely linked with identified needs of the society**. That does not exclude in any way the new technologies, which can be suitable answers in certain cases, but that also stresses the improvement of competitiveness in economic sectors considered as "traditional".

## Questions to be addressed

Once the question of what converging technologies are is addressed, and why are they important, the European picture needs to be painted and then possible European responses identified. The main questions are as follows:

1. Why adopt a **convergent** approach? What's the contribution or value added of this approach in relation to the European research and technology policies, but also in relation to the other policies of the Union?
2. What research would be the most urgent, important and/or necessary in Europe today in the fields of cognitive and social sciences to answer better comprehension of the convergent approach?
3. What are the ethical and societal concrete questions that the implementation of the technologies concerned raises?
4. How to articulate a competitive approach and simultaneously a co-operative approach? Does co-operation matter? What new instruments are necessary to answer this strategy, and at what level are they best implemented?
5. *As the FP6 proceeds, can one identify near terms research which can in some cases be deepened by investigation now?*

These objectives and questions will be steered by 10 "Guiding Principles" which need to be implemented throughout the work.

## Guiding Principles

The concept of "guiding principles" is to have, at each stage of the reflective development process, a series of perspectives in mind that will help shape the relevance of the debate. In any a pluralistic society and culture such as Europe, it is rare that any single approach or philosophy applied to any reasonably broad subject matter can reign supreme at the cost of others. The different technical approaches demand it, as well as the panorama of policies which may be impacted:

<b>PROCESS</b>
<ol style="list-style-type: none"><li>1. <b>Consistent and Integrated Reflections</b> - When working in reflective mode, frequent cross-referencing is needed to ensure a uniform and consistent approach in which diverse views can be captured. Convergence is the driver, Europe the context!</li><li>2. <b>Realism</b> - The US Key report is repeatedly criticised for containing a very wide ranging set of technology development assumptions.</li><li>3. <b>Inter-disciplinarity</b> - Whether Inter-, Multi-, Cross, Trans- disciplinary approaches are relevant is still open. It is the coming together of technologies and the implication of that that is the object, not the technologies themselves.</li></ol>
<b>CONTENT</b>
<ol style="list-style-type: none"><li>4. <b>Social Drivers</b> of Change - Social impact per se, and personal impact are the framework</li><li>5. <b>Education and Training</b> - There are many implications for all education, with the special demands converging technologies place on the traditional systems.</li><li>6. <b>Ethics</b> - in science is a wide area and still developing what is a European perspective. However, it is a key structural instrument in developing the ERA. The principle is the respect of ethics, support for their eventual development to meet new norms, and what that means for research into the evolution of ethics and norms and how they are inserted into research agendas.</li><li>7. <b>Sustainability</b> - with emerging technologies as a goal as an unambiguous gain for technology and society.</li></ol>
<b>CONTEXT</b>
<ol style="list-style-type: none"><li>8. <b>The European Dimension</b> - The issues to be discussed here need to be discussed in a Lisbon and European 25+ context. ERA, European policies and Europe's role in the global picture are the focus, building and complementing national deliberations where these exist. The new EC financial perspectives for beyond 2007 for the future framework programmes offer some early insight into possible structures.</li></ol>

**9. Pre-caution, Anticipation and Risk Management.** The guiding principle then on the reflections is that at each stage we need to consider what precautionary measures one can reasonably anticipate to ameliorate risk, build trust and offer scientists and society the safest way forward.

**10. Managing a strategic jump in Diversity** The technologies here coincide in timescale with a key fact for Europe – Enlargement from 15 to 25 to maybe then 30 States. This brings with it the biggest boost to S&T since the 1970's. Reflections on this moment in time are important, with an eye to the next scheduled round of enlargement and also the long term future of the EU S&T base.

### **Proposed Structure of Work**

The core group is responsible for achieving a number of horizontal tasks dealing with issues of general relevance as well as those of co-ordination. A number of specialised sub groups are proposed to deal with specific “vertical” issues; applying guiding principles throughout. Individual contributions may be solicited (Hearings)

### **Workpackages foreseen for the Core Group focus**

Common tasks foreseen for the group include:

- ✓ *Review of the State of the Art*
- ✓ *Foresighting the New Technologies Wave - Scenarios*
- ✓ *Quality of Life*
- ✓ *Education and Competitiveness Impacts*
- ✓ *Horizontal Issues*

**A Final Report** of ca. 30 pages is foreseen, for policy makers and the public alike.

### **Special Interest Groups**

**SIG 1 Cool - Convergence for Quality of Life** - Covering the convergence of social issues like ageing, social and demographic trends and convergence of biomedical visions of the future of QoL. The SIG adopted a workplan using the Calvert Henderson QoL matrices and questionnaire to the group.

**SIG 2 CCC – Cultural Configuration of Convergence** - The group will consider technologies and techniques that surround the emergence of converging technologies. It views ethical, legal, political discourses as interventions in the process of coming to terms with and directing the emerging convergence.

**SIG 3 EE-Economic Effectiveness** - What are the challenges and opportunities that NBIC poses for the economic effectiveness of Europe over the next 20 years? Social effectiveness will also be an issue, Europe tends to use more “total returns”; balancing the Lisbon objectives to including social cohesions.

**SIG 4 - Society, Cognition, and Group Performance** - Scientific Analysis and Technologies, like individual and distributed cognition, cognition and intelligence and their models, accumulation of knowledge in individuals as well as in groups, knowledge systems for support of individuals and groups, understanding the relation between local and global knowledge to support the development of technology for the area under consideration. Normative issues: like the relevant ethics involved in these technologies, risks to be taken into account in their development and deliberations about how they could evolve and be ameliorated, positive results coming out from such technologies such as enhancement of self-awareness and “happiness”.

**Dissemination** starts with a conference inviting a much broader group of participants to open a debate on the conclusions and proposed actions for the research policy. This will be on 14-15th Sep. 2004, in Brussels.