



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, xxx
SEC(2006) 1313/2

COMMISSION STAFF WORKING DOCUMENT

Accompanying the

**Proposal for a Regulation of the European Parliament and of the Council on the European
Institute of Technology**

IMPACT ASSESSMENT

integrating ex ante evaluation requirements

**{COM(2006)-604 final
SEC(2006) 1314}**

This report commits only the Commission's services involved in its preparation.

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1. INTRODUCTION

In line with the Communication on "Better Regulation for Jobs and Growth in the European Union"¹, all major proposals of the Commission are accompanied by an impact assessment. The Financial Regulation and its implementing rules also require the Commission to carry out ex ante evaluation for all programmes and activities which may entail significant spending.

This impact assessment report addresses all the ex ante evaluation requirements. Its purpose is to explain the options considered for the establishment of the European Institute of Technology (EIT) and discuss the likely impact on EU's innovation capacity of its creation.²

The structure of this report is as follows:

- Section 1: Introduction
- Section 2: Procedural issues and consultation of interested parties
- Section 3: Problem definition
- Section 4: Policy Objectives
- Section 5: Policy Options
- Section 6: Assessment of the Policy Options
- Section 7: The preferred Policy Option and its key challenges
- Section 8: Cost effectiveness
- Section 9: Monitoring and evaluation
- Annex A: Detailed Assessment of the Policy Options

The proposal to establish a European Institute of Technology was put forward by the Commission in its 2005 Spring Report³. Building on a wide consultation process throughout 2005, the Commission adopted a first Communication on the EIT⁴ on 22 February 2006, outlining the ambition and possible scope of this institute. The March 2006 European Council⁵ recognised that the EIT would be an important step to fill the existing gap between higher education, research and innovation, and invited the Commission to submit by mid-June 2006 a second communication outlining further the steps to undertake.

¹ COM(2005)97

² This report commits only the Commission's services involved in its preparation, is prepared as a basis for comment and does not prejudice the final form of any decision taken by the Commission.

³ COM(2005)24, "Working Together for Growth and Jobs: a New Start for the Lisbon Strategy", par. 3.3.2.

⁴ COM(2006) 77, "Implementing the renewed partnership for growth and jobs: Developing a knowledge flagship: the European Institute of Technology".

⁵ European Council of 23/24 March 2006 – Presidency Conclusions (point 25): http://ue.eu.int/ueDocs/cms_Data/docs/pressData/en/ec/89013.pdf

The Commission presented this second Communication on the EIT⁶ on 8 June 2006, providing further information on a number of specific issues and outlining further steps for its establishment. The June 2006 European Council reaffirmed the importance of the EIT and called on the Commission to come forward with a formal proposal to be presented in autumn 2006.

⁶ COM (2006) 276 “The European Institute of Technology: further steps towards its creation”

2. PROCEDURAL ISSUES AND CONSULTATION OF INTERESTED PARTIES

This proposal relates to Commission's work plan item 2006/EAC/004⁷

The main analysis for the impact assessment was conducted from May 2006 to September 2006. Given the broad range of potential impacts, a steering group composed of different services of the Commission was convened to work on this.

2.1. Consultation and expertise

Since the Commission first put forward the idea of the EIT in Spring 2005, several rounds of consultation at different levels took place:

- A first public consultation on the idea of a European Institute of Technology took place from 15 September to 15 November 2005 in which some of the most important university, research, business and industrial innovation organisations took part, along with numerous individuals from these sectors⁸.
- A series of consultation meetings with Member States representatives⁹ were held following the communications of February and June 2006.
- A similar series of meetings took place with stakeholders represented by EU level organisations in the business, research and education sectors¹⁰.
- Throughout the period since the initial proposal of March 2005, President Barroso as well as Commissioners Figel', Potočnik and Verheugen have had numerous exchanges of views with a large number of political leaders, representatives of the education and research communities and CEOs of large European companies. Numerous meetings were held, letters were exchanged and many individuals and organisations submitted position papers.
- An ad hoc meeting between the President and members of the ERC scientific council was convened on 3 May 2006.
- First discussions on the EIT took place during the ministerial lunch of the "Competitiveness" Council (Brussels, 13 March 2006) and in the Informal Education Ministerial Conference in Vienna (16-17 March 2006). On both occasions the Commission had the opportunity to address a number of concerns expressed by ministers and provide clarification on important issues cited in the February 2006 Communication.

⁷ The Commission legislative and work programme 2006 of 25 October 2005, COM (2005) 531 final

⁸ 741 responses were submitted via a web-based questionnaire designed for the public consultation. In addition, 22 position papers were submitted and considered, where possible, in the analysis. The results of the public consultation have been presented and analysed in detail in the Commission's staff working document of 13 March 2006, (SEC 2006-368):

http://europa.eu.int/comm/education/policies/educ/eit/consult_en.pdf

⁹ Three consultation meetings with representatives of the Member States were organised on 24 April, 17 May and 8 September 2006;

¹⁰ Three consultation meetings with approx. 40 European associations and organisations representing various stakeholders (universities, students, research, business, regions) on 25 April, 18 May and 7 September 2006.

- Discussions on the EIT have taken place within both the Council's Education Committee and its Research working party.
- The Commission also had recourse to inputs from:
 - (a) expert workshops organised by its services¹¹;
 - (b) findings of external experts that assisted the Commission in delivering the Impact Assessment¹²;
 - (c) The European Research Advisory Board (EURAB);
 - (d) other material (reports, articles, position papers on the EIT).

The consultation activity undertaken by the Commission is in conformity with the current Commission's standards and guidelines¹³. Its outcomes have been taken into account in the elaboration of the policy options and the evaluation of their impact.

¹¹ Three experts workshops were organised by each of the DGs EAC, ENTR and RTD on 30 June, 6 July and 13 July 2005 respectively. The purpose of these meetings was to discuss the major issues associated to an EIT project. A fourth workshop was also organised on 5 April to explore further the EIT concept and to assist in the preparation of the impact assessment work requirements. In total more than 50 experts participated in the above meetings.

¹² Support services to assist in the preparation of the Impact Assessment on the establishment of the European Institute of Technology, Framework Contract 2004/S243-208899 with the Commission Services.

¹³ COM(2002) 704; SEC(2005) 791.

3. PROBLEM DEFINITION

3.1. The global problem: helping to bridge EU's 'innovation gap'

The Mid Term Review of the Lisbon Strategy stressed the importance of knowledge and innovation as key drivers of European competitiveness, and outlined a variety of proposals aimed at increasing the level, efficiency and the exploitation of education and research as the drivers of innovation¹⁴.

The global problem is the relatively weak level, and concentration, of investment in higher education and R&D and the poor exploitation of knowledge and R&D results into economic activity and jobs in EU, compared to key competitors, Japan and the US in particular. This 'innovation gap' between EU and the key competitor economies shows little sign of closing; indicators suggest that at this speed EU will need almost 50 years to catch up with its competitors¹⁵. There are a number of indicators of this problem:

- Lower levels of R&D funding in the EU, particularly in the private sector. In the EU25 in 2005, business R&D expenditure represented 1.26 per cent of GDP, compared to 1.91 per cent in the US and 2.65 per cent in Japan¹⁶.
- Insufficient capacity to attract and retain mobile research talent and R&D investment. In the past few decades too much EU research talent has been lost to competitor economies, in particular the US¹⁷, even if the losses are very small in relation to the total pool of talent in EU¹⁸. Moreover, the EU has been less successful in attracting research talent from the main competitor countries than the reverse¹⁹. The EU has also a relatively poor performance in R&D investment and in attracting globally mobile R&D investment²⁰.

¹⁴ COM (2005) 24 Working Together for Growth and Jobs: A New Start for the Lisbon Strategy

¹⁵ TrendChart (2005) European Innovation Scorecard, 2005

¹⁶ TrendChart (2005) European Innovation Scorecard, 2005

¹⁷ For example, in science and Engineering, a large proportion of European Doctoral Candidates in American universities firmly plan to stay in the USA and this proportion has been increasing during the last decade. In the beginning of the 1990s it was around 45%; by the turn of the millennium it had risen to almost 58%. Key Figures 2005 on Science, Technology and Innovation: Towards a European Knowledge Area, European Commission.

¹⁸ Mogueurou, P. (2006) "The 'brain drain' of Ph.Ds. from Europe to the United States: What do we know and what do we need to know", European University Institute Working Papers RSCAS No. 2006/11. Although these represent a very small number of Doctorates compared to the total number of Doctorates awarded in Europe (about 2%, over the period 1991 to 2000), it could very well be that they represent a much higher share of European top-quality talent that Europe is not able to attract. Indeed, when looking at the Chemistry, Physics, Medicine and Economics (CPME) Nobel prizes awarded since 1980, it can be seen that 22% of these prizes awarded to individuals affiliated with US institutions at the time of awarding were born in countries of the European Research Area (ERA). Moreover, these individuals affiliated with US institutions also represent 41% of all CPME Nobel prizes awarded to ERA-born individuals.

¹⁹ Third European Report on Science and Technology Indicators 2003, Towards a Knowledge Based Economy, European Commission;

²⁰ Europe benefits less from the increased globalisation of R&D than its main competitors. Over the years 1997-2002, R&D expenditure by EU companies in the US increased in real terms much faster than R&D expenditure by US firms in the EU (+54 % against +38 %). Emerging countries like India and China are those that benefit more from US R&D outflows. Key Figures 2005 on Science, Technology and Innovation: Towards a European Knowledge Area, European Commission.

- Poor performance in exploiting the results of R&D. In 2005 the EU25 countries generated 22 triadic patents per million population, compared to 54 in the US, and 93 in Japan²¹.
- Whilst comparisons between the EU25 and the US as a whole paint a bleak picture, it must be remembered that there is considerable variation in performance within both The EU and the US. The Scandinavian countries, for instance, spend relatively more on R&D than almost all states within the US²².

Factors underpinning the global problem

Given the complexity of the global problem, at least five main issues can be identified as underlying factors:

- insufficient concentration of resources in poles of excellence –both educational and research- able to compete on the global scene;
- the poor integration of the three elements of the knowledge triangle;
- insufficient trans- and inter-disciplinary research and education focused on medium- and long-term innovation challenges;
- lack of innovative governance and organizational models in European research and education in academic and research institutions;
- an excessive number of barriers that contribute to the costs of ‘non-Europe’ in innovation.

Insufficient concentration of resources in poles of excellence able to compete on the global scene

When compared with the major international players, the EU is characterized by an insufficient concentration of resources in globally competitive poles of excellence. Not only does the EU spend less than its counterparts in its Research and Education sector, but its expenditure is much less concentrated in a few top-class institutions than in the US. Moreover, the EU's scientific and technological output appears to be more diversified and distributed evenly across all fields of science than that of the US. Efforts are therefore required to counter fragmentation²³. The US university system is much more segmented with R&D resources concentrated in few top level universities. In the US, for example, most academic R&D is concentrated, both in terms of resources and expertise, in a small proportion of the 3.300 higher education institutions. The top 3% of institutions take about 80% of all R&D expenditure²⁴. Moreover, research expertise and resources are more concentrated in a small number of universities in the US, with fewer than 100 recognised research intensive

²¹ European Innovation Scoreboard (2005). Triadic patents are those filed with all 3 of the European Patent Office, the Japanese Patent Office, and the US Patent and Trademark Office.

²² Luger, M. (2005) The innovation gap between the US and Europe: myth or reality? Presentation given at the TrendChart Workshop, 15-16 November 2005 in Brussels

²³ Key Figures 2005 on Science, Technology and Innovation: Towards a European Knowledge Area, European Commission.

²⁴ Science and Engineering Indicators – 2004, National Science Foundation.

universities²⁵. This contrasts with the situation in the EU where almost all of our nearly 4.000 universities aspire at least to be research active.

The lack of differentiation and concentration in the EU landscape leads to a situation in which the average quality of research is good but there is not enough which is excellent²⁶. This is borne out by international rankings of the performance of European universities. According to the Shanghai academic ranking, in 2005 there were just two European universities in the global top 10 (8 are from the US) and this proportion grows to 9 EU to 39 US at the top 50. Within the first 500, nearly half are European²⁷ reflecting a good average performance. American universities are thus far more focussed than their European counterparts, with the result that many of their best have become centres of excellence in particular fields.

The poor integration of the three elements of the knowledge triangle

The EU performs poorly, in comparison to the US and Japan, in the commercial exploitation of research outcomes²⁸. A key cause of this is the limited level of knowledge transfer between higher education and research centres on the one hand and business on the other²⁹. Many European universities and researchers still consider business as a separate, perhaps even an undesirable world, and many businesses do not consider interaction with universities or other research organisations as a strategic input into their future. Whilst this is, in part, a demand-side problem resulting from widespread private sector reluctance to work with the higher education sector³⁰, the responsibility also lies with European universities, and their ability to deal with the demands of commerce³¹. This shortcoming is crucial; it has been argued that the emerging paradigm for R&D in the 21st century is that of ‘open innovation’, where collaboration between businesses and universities or independent research centres is increasingly important³². This gap is even more problematic for the EU; the proportion of researchers employed by universities is much higher in the EU than in its competitors. In the EU, just under half of researchers are employed by business, whereas in Japan the business sector employs two out of three researchers and in the US four out of five researchers work in a business environment³³.

This different relationship between the academic and the business sector is revealed also by the capacity of American universities in attracting private sector investment (equal to 0.17 per cent of GDP in the EU25 compared to 1.8 per cent in the US³⁴), and also benefit from

²⁵ Lambert, R. and Butler, N. (2006) *The Future of European Universities: Renaissance or Decay?*

²⁶ Dosi, G et al. (2005) *Science-Technology-Industry Links and the "European Paradox": Some Notes on the Dynamics of Scientific and Technological Research in Europe*, LEM Working Paper Series, 2005/02

²⁷ The Institute of Higher Education, Shanghai Jiao Tong University (2005) *Academic Ranking of World Universities*. Though there are problems with the methodology of this ranking system, it is generally accepted as being the most research-centred of the international rankings

²⁸ *Key Figures 2005 on Science, Technology and Innovation: Towards a European Knowledge Area*, European Commission

²⁹ OECD (2002) *Benchmarking Industry-Science Relationships*

³⁰ (2003) *The Lambert Review of Business-University Collaboration*

³¹ Lambert, R. and Butler, N. (2006) *op cit*;

³² Chesbrough, H. (2003) *Open Innovation*, Harvard Business School Press

³³ *Key Figures 2005 on Science, Technology and Innovation: Towards a European Knowledge Area*, European Commission

³⁴ COM(2005)152 *Mobilising the Brainpower of Europe: Enabling Universities to make their full Contribution to the Lisbon Strategy*

generous support from alumni and philanthropic foundations³⁵. Only two European universities have private endowments comparable in size to those of the top 150 US universities³⁶.

Insufficient trans- and inter-disciplinary research focused on medium- and long-term innovation challenges

Concern has also been expressed that EU research and higher education may not be sufficiently focussed and directed towards addressing strategic medium- and long-term innovation challenges³⁷. Investment in new and cutting edge technologies – such as ICT and biotechnology which have hugely important commercial potential– has been much lower in the EU than in the US³⁸. The deficit is largely to be found in the lower research effort of the business sector³⁹. Moreover, many of the major challenges facing the EU (such as an ageing population and climate change), require solutions that are characteristically trans- and inter-disciplinary⁴⁰. Again, European institutions have been slow to adopt such approaches. The main challenge for the EU is not only about how to increase the supply of commercial ideas from the universities into business, but also how to raise the overall level of demand by business for research from all sources⁴¹. Innovation needs a mutual learning process based on trust and full understanding of all parts involved, not just a transfer of knowledge at the end of a research endeavour. A reinforcement of inter-disciplinarity in education and research linked to a strengthened exploitation focus through the involvement of business partners throughout the process is thus required. Students and researchers need to develop entrepreneurial skills to facilitate the creation of new opportunities out of research⁴². Managerial competences are needed to coordinate the work of people that belong to different disciplines and sectors, and other “soft” skills are needed to facilitate the dialogue between groups and teams that work in different fields and have different cultures.

Lack of innovative governance and organizational models in European research and education

It must be questioned whether the governance and organizational models of most European higher education and research organizations, and in particular Universities, are appropriate to meet current and future challenges⁴³. In the EU, universities largely tend to conform to the traditional Humboldtian model of public institutions, with a remit to educate and where academic freedom is paramount. This may leave them remote from contemporary concerns

³⁵ COM (2005) 152 Annex to Mobilising the Brainpower of Europe: Enabling Universities to make their full Contribution to the Lisbon Strategy

³⁶ Patten, C. (2006) Europe Pays the Price for Spending Less. Nature 441 p 691-693, published online 7 June 2006

³⁷ Dosi, G, Llerena, P, and Labini, MS (2005) Evaluating and Comparing the Innovation Performance of the United States and the European Union

³⁸ Key Figures 2005 on Science, Technology and Innovation: Towards a European Knowledge Area, European Commission.

³⁹ Dosi, G, Llerena, P, and Labini, MS (2005) Evaluating and Comparing the Innovation Performance of the United States and the European Union

⁴⁰ Report by the Forum on University-based Research “European Universities: Enhancing Europe’s Research Base”, 2005

⁴¹ (2003) The Lambert Review of Business-University Collaboration

⁴² COM (2006) 33 “Implementing the Community Lisbon Programme: Fostering Entrepreneurial Mindsets through Education and Learning”

⁴³ COM (2006) 208 “Delivering on the modernisation agenda for universities: Education, Research and Innovation”

regarding how best to serve students, communities, and states. They are overwhelmingly state-controlled, with little autonomy over crucial decisions in respect of curricula, employment practices and salaries, admission thresholds or numbers, and financial arrangements⁴⁴. They are often run in ways that render close partnerships with businesses difficult, and lack transparent financial and accounting systems or professional management structures. Measures such as performance-related pay, for instance, through which universities would be able to reward their most valuable members of staff and attract experts from elsewhere are rare. On the whole university staff has a poorly developed entrepreneurial mindset in Europe that results in few spinouts and new businesses⁴⁵. Though the modernisation of European universities is underway, overall progress has been slow and highly variable between Member States.

An excessive number of barriers that contribute to the costs of ‘non-Europe’ in innovation

There are certain costs of ‘non-Europe’ in R&D and the operation of the knowledge triangle within the EU, certainly in comparison to competitor economies such as the US. Perhaps the most costly of these problems is the absence of a cost effective and legally certain patent system in the EU⁴⁶. The drawbacks of the existing European patent system mean that the costs of applying for – and enforcing – patents in the EU are much higher, when compared to Japan and the US⁴⁷.

There is a relative lack of mobility of human and financial capital in Innovation, Research and Education within the EU, especially compared to the US⁴⁸. Researcher mobility – between institutions, across borders and between academia and business – facilitates knowledge transfer and allows research institutions to draw on a much wider pool of talent than might be available within individual member states. Though programmes such as Marie Curie have gone some way towards reducing the problem, language barriers and a lack of mutual recognition of qualifications are holding back a free flow of skilled workers within the EU.

This lack of mobility is not just restricted to workers; students also suffer from a lack of a unified system of degree recognition and accreditation within the EU. Through the Bologna Process there has been significant progress in degree harmonisation (such as the three cycle system), whilst Erasmus and Erasmus Mundus programs have resulted in large numbers of students receiving their university education in more than one member state. Nevertheless, the EU has not gone far enough in large scale collaborative degree programmes spanning international borders. Similar barriers have also contributed to the fact that Europe’s universities have less of the global talent -researchers and students- as other competitors.

⁴⁴ COM (2006) 208 “Delivering on the modernisation agenda for universities: Education, Research and Innovation”

⁴⁵ COM (2006) 33 “Implementing the Community Lisbon Programme: Fostering Entrepreneurial Mindsets through Education and Learning”

⁴⁶ See http://ec.europa.eu/invest-in-research/policy/ipr_en.htm#1

⁴⁷ A European patent is estimated to be around three times as expensive as a Japanese patent, and five times as expensive as a US patent – European Commission (2000) Commission Proposes the Creation of a Community Patent, Press Release issued 5 July 2000

⁴⁸ European Commission (2006) “Creating an Innovative Europe: the Aho Report”

3.2. Existing initiatives at the European level

The revised Lisbon Strategy has placed innovation, research and education activities at the heart of the Growth and Jobs Agenda. While the implementation of the Lisbon Strategy lies primarily in the Member States' National Programmes for Growth and Jobs, there is also a Community dimension that complements, facilitates and coordinates Member States' policies and responses.

Following the mandate of the European Council of June 2005, the Commission presented in July 2005 a "*Community Lisbon Programme*⁴⁹", covering all actions at Community level under three main policy areas: knowledge and innovation for growth; making the EU an attractive place to invest and creating more and better jobs through a coherent mix of policy, legislative and financial instruments.

Several policy initiatives pertaining to the knowledge triangle have been taken to implement the Community Lisbon Programme. These initiatives have helped to create a framework within which EU universities, research centres, enterprises and other actors in the knowledge triangle can make a positive contribution to the Growth and Jobs Strategy:

The Commission has proposed a coherent framework⁵⁰ to promote research and innovation throughout the Union. It sets out framework conditions as well as specific measures in support of research and innovation that will contribute to meet the Lisbon targets, including the objective of increasing research and development spending up to 3% of the GDP.

The Commission has also supported the modernisation agenda for universities⁵¹, which aims at creating a framework within which universities can adapt to the emerging demands and become stronger players in the global knowledge society and economy, and thereby play a vital role in support of the knowledge and innovation objectives of the Lisbon Agenda. Furthermore, the Commission⁵² has proposed a systematic approach to entrepreneurship education at all levels, from the primary school to university, with a view to encouraging more start-ups and a better commercial exploitation of new research developments.

Finally, following the conclusions of the European Council of March 2006, the Commission has recently presented a broad-based innovation strategy for the EU, aimed at translating investments in knowledge into products and services⁵³. It aims at supporting Member States in their endeavour to alleviate their structural weaknesses in the transformation of research results to new products and services, notably in pursuing the innovation-related integrated guidelines of the Lisbon National Reform Programmes. The strategy sets out a framework and a ten-point programme to take innovation forward by bringing together all policy areas which have an impact on innovation. It re-enforces the role of political leadership for an effective governance of the reform process, the importance of education to innovation and the improvement of market conditions to attract innovations.

⁴⁹ COM (2005) 330 "Common Actions for Growth and Employment: the Community Lisbon Programme"

⁵⁰ COM (2005) 488 "More research and Innovation, Investing for Growth and Employment: a common approach"

⁵¹ COM (2006) 298 "Delivering on the modernisation agenda for the Universities: Education, Research and innovation"

⁵² COM (2006) 33 "Fostering entrepreneurial mindsets through education and learning"

⁵³ COM (2006) 502 "Putting knowledge into practice: A broad-based innovation strategy for the EU"

The broad range of policy initiatives will be financially underpinned by various Community programmes: the new Financial Framework 2007-2013 will devote a significant amount of resources to innovation, knowledge and research related activities to contribute to boost the EU economy and create more and better jobs.

The 7th Framework Programme for Research and Technological Development will be the main financial tool through which the European Union supports research and development activities. It also exercises a structuring influence on the research fabric in Member States by stimulating trans-national cooperation. The programme will also support European investigator driven research, with the creation of the European Research Council (ERC), which will be a funding mechanism aiming at increasing the level of excellence in EU frontier research. Moreover, its main focus is on research rather than on education or innovation activities. The **Networks of Excellence (NoEs)** are trans-national multi-partner projects grouping together key players in the EU on a given research topic. NoEs aim at overcoming fragmentation of the European research landscape, by focussing on the integration of research capacities but do not address the integration of the educational or business dimension.

Furthermore, the European Technology Platforms (ETPs) are groups of stakeholders which together informally define a Strategic Research Agenda, including a deployment plan on issues of high societal relevance and are dependent upon major research and technological advances in the medium to long term. They involve mainly business and research partners. A limited number of ETPs have achieved such an ambitious scale and scope that informal agenda setting and implementation is not enough. Dedicated legal structures, in the form of **Joint Technology Initiatives (JTIs)** are thus being proposed to co-ordinate the mobilisation of large-scale public and private investments and substantial research resources. The main focus of both ETPs and JTIs is on integrating all stakeholders in the definition and deployment of strategic research agendas, with education not being a main component.

The **Competitiveness and Innovation Programme (CIP)** aims at improving the structural innovation and growth conditions of the Union. For this purpose, it includes actions in support of innovation and of growth for SMEs. It provides financial instruments for SMEs, in particular start-ups, support to a large pan-european network for trans-national knowledge and technology transfer, the Innovation Relay Centres, as well as a wide range of innovation specific initiatives. The innovation policy initiatives such as the Europe INNOVA and the PRO-INNO Europe⁵⁴ comprise actions which assist Member States in the improvement of the environment for interactions between investors, researchers, entrepreneurs and other innovation actors through policy learning. The goal of the CIP is, therefore, not to provide a proof of concept for the integration of all elements of the knowledge triangle in one technological area. The CIP does not engage in education or research activities.

The integrated **Education & Training 2010 Programme** will address important needs concerning the modernisation and adaptation of Member States' education and training systems, particularly in the context of the strategic Lisbon goals. It will also bring added value directly to individual citizens participating in its mobility and other cooperation actions.

⁵⁴ More specifically, the PRO INNO Europe initiative aims at fostering closer co-operation on such topics between actions in Member States just as the Europe INNOVA initiative comprises the identification of barriers to innovation in important sectors. Each of the activities addresses a specific issue, providing incentives for those who in the past showed excellent achievement on this issue in their specific context to further evolve learning with others towards excellence on the European level.

Nevertheless these programmes only tackle the education component of the knowledge triangle.

The new generation of **economic and social cohesion programmes** should seek to earmark a significant proportion of the total financial envelope of 308 billion for investing in the main drivers of growth and employment, especially in the fields of research and development, innovation, business-support activities, employment and education. The Community Strategic Guidelines for Cohesion Policy⁵⁵ call inter alia for increased and better targeted investment in RTD, strengthened co-operation among businesses and between businesses and public research tertiary and education institutions through the creation of regional and trans-regional clusters and the promotion of RTD activities in SMEs. Equally, priority will be given to the modernisation of higher education and the development of human potential in research and innovation, through post-graduates studies and further training of researchers. However these programmes are not excellence-driven. Each country or region will define its appropriate policy-mix in the light of its specific characteristics, its economic and employment structure and the nature and extent of its structural deficits and competitive advantages.

In conclusion, the knowledge and innovation components of the Lisbon Strategy will be supported by a number of Community financial instruments characterized by different yet complementary goals. However, none has so far fully integrated all three components in a mutually-reinforcing manner; the existing instruments address either one section of the knowledge triangle in isolation, or at maximum integrate two. Furthermore, none of these initiatives has stimulated the development of a world-class research and innovation oriented critical mass in a specific field of intervention. This potential is still unfulfilled.

The changes needed to bridge the innovation gap between the EU and its major competitors will no doubt take place in existing organisations, but it will face inertia and it will take time. The EU needs a fresh approach to bridging the gap between education science and society, to act as a reference model and inspire long term change. It is necessary to support excellence-driven strategic partnerships at the EU level between all actors involved in the three parts of the knowledge triangle on an inter and trans-disciplinary basis. A new initiative in this direction, thereafter referred to as the European Institute of Technology (**EIT**), can complement existing policies initiatives and financial instruments, by setting up new governance model which pools resources and further integrates the various partners.

3.3. Community Added Value

There are marked variations between EU countries in their approaches to innovation, and many positive initiatives and developments which should be sustained and reinforced. However, given the nature and scale of the innovation challenge, action at the European level may generate additional benefits which may not be achieved through the separated actions of Member States.

First, some Member States, particularly the larger ones, may be able nationally to create globally competitive initiatives. However, the instances of these **critical scale** initiatives in recent decades have been limited, and there may be fewer in future, not least because of growing competition from India and China as well as traditional competitor economies.

⁵⁵ COM (2006) 386 “Proposal for a Council decision on Community Guidelines on cohesion”

Second, the ability to fully integrate all the components of the knowledge triangle benefits from a **transnational approach** as it expands the pool of potential interdisciplinary and cross-sectorial partnerships and collaborations. In this respect the EIT would provide a new legal base to foster an innovative form of cooperation in the EU between Universities and research centres and the private sector, in all areas of the knowledge triangle.

Third, the EIT would help improve the prospects for the exploitation of research and make the knowledge triangle more efficient. Whilst the number of universities and research centres directly involved would be small, the EIT high profile would enable it to act as a **reference model** for Member States and existing institutions. The EIT could also be a vehicle through which key best practices are identified and disseminated. The high number and wide range of responses to the consultation processes are indicative of its potential in this regard.

Fourth, through its **European character**, the EIT has the potential to further involve the major European (and international) companies in the knowledge triangle, who may not currently be able to find suitable partners or partners with the necessary scale of operation at national level. The EIT could also attract resources from benefactors wishing to support innovation at European level. Funding of this type is more evident in competitor economies.

Finally, with regard to education, the challenges of competing in a global knowledge arena brought European States to create the Bologna Process, with the goal of creating a European Education Area by 2010. The EU needs an education system where degrees are comparable and mutually recognized by Member States, where quality of education is assessed, benchmarked and rewarded, and where students can choose where to study, overcoming existing barriers to mobility. The Bologna process is in line with Community policy in higher education supported through European programmes and notably Socrates-Erasmus, Tempus and Erasmus Mundus. But such a reform takes time. Creating a European flag of excellence in higher education will contribute to this process, facilitating the recognition of its degrees across the EU, and offering a terrain to experiment with new forms of collaboration between partners located in different Member States to produce European level degrees. It can constitute a best practice for other European networks and collaborations.

3.4. Subsidiarity

The discussion of European added value is relevant to consideration of subsidiarity. The principle of subsidiarity applies in so far as the EIT proposal is not in an area where the Community has exclusive competence. Specifically, it is the principle whereby the Union does not take action (except in the areas which fall within its exclusive competence) unless it is more effective than action taken at national, regional or local level.

Art. 157 of the Treaty states that for the purpose of increasing Europe's competitiveness, the Community shall undertake actions to foster the innovation potential of the EU. In doing so, when a coordinated action at the European level is necessary, the Commission may take any useful initiative to promote such coordination. As seen above, the nature and scale of the innovation challenge requires the EU to coordinate its efforts both pooling a critical mass of resources in strategic domains and coordinate them within new models able to integrate the three aspects of the knowledge triangle. These are exactly the goals of the EIT, which aims at improving the innovation capacity of the EU by involving partner organisations in integrated innovation, research and education activities at the highest international standards. In particular the EIT will focus on innovation areas where:

The required scale of quantity but also quality of resources can be hardly matched by the individual action of a Member State;

The required full integration of the innovation, research and education activities benefits from a transnational approach which cannot be done on a purely national basis.

4. POLICY OBJECTIVES

4.1. Review of the political level objectives

The origins of the EIT lie in the mid-term review of the Lisbon Strategy, where the European Commission announced that the proposed Institute would:

“...act as a pole of attraction for the best minds, ideas and companies from around the world”⁵⁶.

More detailed plans were set out in the Commission’s February 2006 Communication. President Barroso, commenting on the release of this document, reiterated the importance of the EIT as a high profile means by which to reverse the brain drain of talent to the competitor economies and act as a focal point for increasing research and innovation activity in the EU:

“Excellence needs flagships: that’s why Europe must have a strong European Institute of Technology, bringing together the best brains and companies and disseminating the results throughout Europe”⁵⁷.

The European Council discussed the proposal at the March 2006 meeting and noted that, rather than competing with existing initiatives designed to promote innovation (the Community Innovation Programme) or research (the Framework Programmes), the EIT will be an additional tool:

“...a European Institute for Technology – based on top-class networks open to all Member States – will be an important step to fill the existing gap between higher education, research and innovation...”⁵⁸.

Though contributing to the European Community’s wider goals in respect of innovation and research, the EIT should have a clearly defined set of objectives and is not intended to directly address other aims and initiatives (such as regional policy or enterprise and entrepreneurship policy).

Marking the release of the June Communication, President Barroso stressed the wide-ranging objectives of the EIT and its role in showcasing cross-border cooperation:

“The EIT is part of the Commission’s strategy to create a thriving and dynamic environment for research, education and innovation. We need a close connection between all these three

⁵⁶ COM (2006) 24 op cit, par 3.3.2.

⁵⁷ EurActive (2006) Commission reveals plans for European Institute of Technology. Press release issued 21 February 2006

⁵⁸ Presidency conclusions, par 25

areas of the knowledge triangle. The EIT will be more than simply an operator in education, research and innovation; it will be a reference model for excellence at the European level⁵⁹.

Commenting on the June Communication, Commissioner Ján Figel emphasised the importance of the business community in the proposals:

“Businesses will be core partners at the Institute’s strategic and operational levels. Companies will be directly involved in research and education activities, thereby helping to nurture an entrepreneurial mindset among graduates and researchers”⁶⁰.

It is in this broad context that the June 2006 European Council called for follow-up to the Commission’s Communication modernising universities and encouraged Member States to:

“promote excellence and foster modernisation, restructuring and innovation in the higher education sector in order to unlock its potential and to underpin Europe's drive for more growth and jobs;”

It also affirmed that:

“the European Institute for Technology (EIT), working with existing national institutions, will be an important step towards filling the existing gap between higher education, research and innovation together with other actions that enhance networking and synergies between excellent research and innovation communities in Europe”⁶¹.

These conclusions set out clearly the intention to increase Europe’s innovation capacity through universities and by the creation of the EIT. In addition, funding mechanisms such as the 7th Framework Research Programme and the Competitiveness and Innovation Programme will provide support for research and innovation at the highest levels of excellence.

4.2. General objectives

The general objectives of the EIT are:

- to contribute to improving the innovation capacity of the EU by involving partner organisations in integrated innovation, research and education activities at the highest international standards;
- to become a model and flagship for the integrated European Innovation Research and Education area by generating innovations in areas of key economic or societal interest and providing a reference for managing innovation.

4.3. Specific objectives

The EIT shall in particular:

- undertake and/or promote trans- and inter-disciplinary strategic research in areas of key economic or societal interest;

⁵⁹ European Commission (2006) The Commission details its plans for a European Institute of Technology. Press release issued 8 June 2006

⁶⁰ ibid

⁶¹ Presidency Conclusions, paragraph 21;

- act as a reference model that will promote wider beneficial changes and the ‘modernisation’ of higher education and research in the EU both directly through the resulting activities and indirectly;
- promote the use of the ‘products’ of the EIT activities for the benefit of the EU;
- achieve a ‘critical mass’ of human and physical resources in strategic trans- and inter-disciplinary fields of knowledge from partner organisations hence attracting and retaining high level researchers and private sector investment in R&D;
- promote new forms of collaboration among the type of partner organisations involved in the Knowledge triangle;
- strengthen synergies (and avoid duplication) with other EU policies and programmes in the field of education and R&D.

4.4. Operational objectives

The operational objectives of the EIT are:

- to increase the level of ‘excellence’ in innovation oriented research and education in the EU;
- to improve the exploitation of research outcomes to the benefit of the EU economy;
- to attract and retain high level staff and students;
- to create a critical mass in the selected fields of activity;
- to eliminate or reduce other constraints in integrating the knowledge triangle at the EU level;
- to ensure coordination and synergy among the various activities performed or supported;
- to ensure flexibility and capacity to adapt its activities to changing conditions;
- to generate indirect impacts through the actions of other organisations thanks to the presence of the EIT. These are:
 - the capacity to propagating ‘analogous models’;
 - increasing the level of ‘excellence’ in innovation oriented research and education in other EU organizations;
 - improving the exploitation of research outcomes in other EU organizations;
 - contributing to building an EU identity and become a knowledge flagship;

4.5. Indicators

In order to measure the relevance, efficiency, effectiveness and impact of the EIT, two sets of indicator providing examples of the relevant operational objectives have been identified. The

first will be used to monitor progress achieved with regards the direct impact of the EIT and the second will revolve around four areas where the EIT is expected to have an indirect impact. These are presented in detail in section 9. The indicators would be benchmarked with figures corresponding to existing institutions in the EU or US.

5. THE POLICY OPTIONS

5.1. The choice of the policy option

The Impact Assessment has considered five Policy Options: 1) the Centralized EIT; 2) the Distributed EIT; 3) the Integrated EIT; 4) the Funding-Labelling EIT; 5) the Status-quo.

The first three of these provide new operational mechanisms for carrying out innovation, research and education but they differ in the degree of centralization and top-down / bottom up organization. The fourth option is not an operator but would seek to achieve its effects through grant-quotas. The fifth (status-quo) option provides a benchmark against which to measure the others.

These options were selected on the base of the following considerations. Option 1, the Centralized EIT, includes some of the main features that characterized the EIT proposal as set forth by the Commission in the February 2005 Communication⁶². Option 2 and 4, the Distributed EIT and the Funding-Labelling mechanism, include some of the main features proposed by various stake holders during the EIT consultations held in 2006. The first maintains the EIT as a knowledge operator, the second limits its role to the distribution of funds. Both options 1 and 2 also represent the almost equal distribution of responses emerged during the Public Consultation around the choices of a strong rather than a loose structure⁶³. Option 3, the Integrated EIT, is a compromise between Option 1 and 2; it represents some of the main features that characterize the current evolution of the EIT proposal. It is also consistent to the qualitative analysis of the Public Consultation results, which highlighted the need to consider structures able to balance centralization and distribution issues⁶⁴. Option 5 represents the status-quo, which is a standard scenario that must be taken into account in the evaluation of impacts.

Excluded options were:

- The single green field institution: although it resembles Option 1, this option would assume that there are no contributions from partner organizations. As a consequence, physical resources should be acquired or created from scratch (e.g. laboratories) and human resources should be recruited crowding out existing organizations. Assuming the goal of pooling what already exist and complement ongoing initiatives, this option was judged as unviable.
- The network of organizations: although it resembles Option 2, it assumes that the partnership doesn't establish any common governance structure to coordinate activities. Partner organizations would simply cooperate to achieve some common goal, and this cooperation would be managed only by means of mutual agreements. This kind of model is

⁶² COM(2006) 77, "Implementing the renewed partnership for growth and jobs: Developing a knowledge flagship: the European Institute of Technology".

⁶³ (SEC 2006-368): http://europa.eu.int/comm/education/policies/educ/eit/consult_en.pdf

⁶⁴ *ibid*

already implemented in many contexts and is already supported by current mechanisms (see NoEs as well as many other national or trans-national networks). Experience shows that this model has goals which are different from those of the EIT; namely, it aims at supporting cooperation between partners and not at strongly integrating and jointly performing activities related to research, education and innovation. For this reason it was not taken into account.

5.2. Option 1: the centralized EIT

This option would involve the establishment of an EIT that would select and manage Knowledge and Innovation Communities (KICs) in strategic trans- and inter-disciplinary area(s) undertaking education, research and innovation activities. The KIC would comprise resources ‘seconded’ to and employed by the EIT. Resources are contributed by partner organizations and would become legally part of the EIT which would be configured as a single new institution. The EIT under this option would confer post graduate degrees. It would be managed by a central governing body. The governing body would have a high measure of autonomy to select the KIC, reward its staff members, co-opt through negotiation elements of existing institutions, and cooperate with other parties. This body would play a direct managing role setting the common framework and rules through which KICs activities are organized and people evaluated and rewarded. Initial funding would be provided by the EU.

Summary

- Governance: centralized at both strategic and operational level (top down).
- Legal configuration: one single legal entity comprising the governance and the operative units.
- Type of activities: the EIT performs directly research, education, innovation activities.
- Geographical layout: presumably one or few main locations.

5.3. Option 2: the distributed EIT

This option, like Option 1, would involve the creation of a series of Knowledge and Innovation Communities but these would be completely autonomous from both a central governance and between themselves. These are new legal entities created by various partners (Universities, research centres and enterprises) that contribute resources to establish long term collaboration and perform research, education and innovation activities in a selected area. The EIT would be a funding body able to channel resources to these new legal entities. They would have the option of conferring post graduate degrees using more flexible models such as joint degrees. Existing institutions would be invited to put forward proposals and would be offered ‘start up’ funding from the EIT. Governance would be heavily delegated to the KIC level and to partner organizations. The only central guidance would be provided by EU level institutions (e.g. the Commission or an ad hoc body) that would set the broad parameters and administer the EIT grant. The central coordination would not determine either the areas of interest or the specific operational frameworks. Both would be provided through a bottom-up process by the KICs. However it would set the criteria to receive funding.

Summary

- Governance: delegated, bottom-up.
- Legal configuration: several legal entities each comprising a Knowledge and Innovation Community.
- Type of activities: KICs perform directly research, education, innovation activities.
- Geographical layout: distributed, but it might be the case that some KICs will polarize around few locations.

5.4. Option 3: the integrated EIT

This option is a mix between Options 1 and 2. Like option 2, it envisages the creation of new legal entities to which partner organizations from the education, research and business sectors contribute human and physical resources (KICs). These “joint ventures” would have a high degree of autonomy but within a common framework of principles and guidelines set by the EIT Governing Board (GB). In fact, as in option 1, the KICs would be coordinated by another legal entity, the EIT Governing Board, which sets the overall strategy (in which areas it is worth investing), selects and evaluates candidate partnerships, assigns them the status of EIT KIC and related funding, monitors their evolution and sets the broad principles that should ensure synergy and coordination among them. However more as in Option 2, KIC will retain a high degree of autonomy. Within this framework, KICs would autonomously organize their work and activities, including recruitment. Thus the EIT is made of two types of legal entities: the Governing Board and the KICs. It is both top-down (the GB sets the strategy and ensures coordination) and bottom-up (partners come together with a proposal and, if selected, concretely organize their work).

Summary

- Governance: centralized at the strategic level-decentralized at the operational level (top-down – bottom-up).
- Legal configuration: one legal entity represents the governing structure, several legal entities represent the Knowledge and Innovation Communities.
- Type of activities: performs through the KICs research, education, innovation activities.
- Geographical layout: distributed, but it might be the case that some KICs will polarize around few locations. The central governance would have a physical presence.

5.5. Option 4: the labelling mechanism

Under to this option, the EIT operates as a funding body awards an EIT label and allocates resources to existing organisations meeting excellence criteria. It is assumed that this policy option would involve the establishment of the EIT as a new labelling/funding mechanism somewhat analogous to the ERC. It would have the same governance structure as envisaged for policy option 1. It would select and fund existing organisations that meet excellence criteria on the basis of calls for proposals. Some of the funded organisations might involve

transnational cooperation but this would be achieved through existing collaborative mechanisms. The institutions selected would adopt an EIT label.

Summary

- Governance: no direct governance is necessary, only indirectly through selection.
- Legal configuration: one legal entity represents the funding agency, separate legal entities represent any organization that apply for funding.
- Type of activities: supports others that perform research, education, innovation activities.
- Geographical layout: distributed.

5.6. Option 5: status quo

The ‘status quo’, in which there is no EIT, and instead the problems discussed above are addressed by existing programmes and policies.

These include those activities of the FP6 and FP7 programmes, such as the European Technology Platforms, the Networks of Excellence, the proposed Joint Technology Initiatives, Integrated Projects, the support to mobility of human resources in research and to research projects benefiting SMEs, and the European Research Council. Innovation activities will continue to be pursued under the aegis of the Community Innovation Program as well as the educational ones as part of the Life Long Learning Program.

Moreover, the European reform processes already underway at the European and Member State level, in the fields of universities, and degree harmonisation, intellectual property regimes (including patents), will all be carried on in order to address the problems discussed above. This policy option would not involve any additional Community financial resources.

Table 5.1 Comparison between the main features of the policy options

	Governance	Legal configuration	Type of activities	Geographical layout
PO1 Centralized	centralized at both strategic and operational level (top-down)	one single legal entity comprising the governance and the operative units	The EIT performs directly research, education, innovation activities	presumably one or few main locations
PO2 Distributed	delegated, bottom up	several legal entities each comprising a Knowledge and Innovation Communities	The KICs perform directly research, education, innovation activities	distributed, but it might be the case that some KICs will polarize around few locations
PO3 Integrated	centralized at the strategic level-decentralized at the operational level	one legal entity represents the governing structure, several legal entities	The EIT performs through the KICs research, education, innovation activities	distributed, but it might be the case that some KICs will polarize around few

	(top down - bottom up)	represent the Knowledge and Innovation Communities		locations. The central governance would presumably have a physical presence.
PO4 Funding / Labelling	no direct governance is necessary, only indirectly through selection	one legal entity represents the funding agency, several legal entities represent any organization that apply for funding	supports others that perform research, education, innovation activities	distributed
PO5 Status quo	Not applicable	Not applicable	Not applicable	Not applicable

6. ASSESSMENT OF THE POLICY OPTIONS

6.1. Introduction

The following sub sections consider the five policy options in turn. Each policy option is briefly assessed in its main strengths and weaknesses, and then a comparison between them is proposed. The detailed assessment is available in Annex A, and has involved a consideration of the potential direct and indirect effects of the policy options relative to criteria that derive from the policy objectives, the underlying problems being addressed by the EIT proposal and the more general considerations of impact assessment and ex ante evaluation. It also elaborates in detail other considerations such as the distribution of effects (who benefits, who loses), feasibility issues, and the main associated risks.

The assessment is based on the wide range of contributions produced by various stake holders through various means such as the Public Consultation, position papers, articles, and meetings. It has been assumed that the level of dedicated funding (from both the EU and other sources) that would be made available for the EIT under policy options 1, 2, 3 and 4 would be the same but that the status quo (policy option 5) would not involve any additional EU funding. This level is assumed as 2.4 Billion Euros for the period 2008-2013. As regards Option 1, 2 and 3, this amount is intended to cover the costs for the operations of the KICs and coordination activities performed by the governance structure; in this case the possible sources of non Community funds are hypothesised in Section 8.

6.2. Policy Option 1: the Centralized EIT

6.2.1. Main strengths

- The centralized nature of the institute would allow it to have a strong and autonomous governance structure able to select priorities and KICs without excessive influence by political bodies or other interest groups.
- Such governance would provide strong coordination among KICs exploiting synergies and avoiding duplication.
- Strong autonomy would enable it to experiment models to integrate the triangle characterized by more discontinuity and novelty.
- The pooling of a critical mass of resources in some KICs would enable the EU to lead or compete with competitor economies in terms of the ‘excellence’ of research undertaken.
- It would favour the building of poles of excellence which are also geographically concentrated thus facilitating the possibility to enact cluster effects.
- The legal autonomy of its operations would enable flexible pay structures that would facilitate the attraction and retention of the best researchers in Europe.
- The presence of central governance would maximise the possibilities for long term cooperation with major European and multinational companies, and other sponsors, at the EIT level.

- It would influence beneficially the culture of the existing institutions, components of which would be ‘seconded’ to the EIT through illustrating new means through which the ‘knowledge triangle’ can be reinforced.
- Its character as a new European level institution would represent an opportunity to move forward and progress the debate on key constraints that affect the EU landscape such as EU degrees or EU level IP regulation.
- It would represent a visible European flagship and reinforce the building of the European identity extending its scope to the knowledge triangle.

6.2.2. *Main weaknesses*

- The strong governance implies risks of bureaucratization which may hinder the EIT capacity to evolve its KICs to respond to external changes and challenges.
- There is danger that the EIT under this option will develop and operate in the ‘political’ and ‘bureaucratic’ manner. Many key actors perceive this as being ‘most likely’ or ‘inevitable’.
- The process of co-optation and secondment from the ‘top down’ could be extremely difficult. Universities will naturally resist ‘giving up’ their best departments and will point to the drawbacks of having ‘dual campuses’ where some on site staff are employed by the EIT.
- Its competitive nature may hinder the capacity to achieve critical mass building on existing resources thus leading to the creation from scratch of new capacity.

6.3. **Policy Option 2: the Distributed EIT**

6.3.1. *Main strengths*

- The pooling of a critical mass of resources in some – potentially many – KICs, would enable the EU to lead or compete with competitor economies in terms of the ‘excellence’ of research undertaken.
- The legal autonomy of each KIC would enable flexible pay structures that would allow them to attract and retain some of the best researchers in Europe.
- The presence of a governance structure at the KIC level would increase the possibilities for long term cooperation with major European and multinational companies, and other sponsors.
- It creates an instrument that would not preclude organisations in the future generating suitable new organisations (some may do it without EU funding).
- It would be attractive to partner organization due to its bottom up approach.
- The devolution of decisional power at the KIC level would make it very adaptable to changes that occur in the environment and capacity to evolve.

6.3.2. *Main weaknesses*

- Since strategic choices would be delegated at the KIC level, the choice of priorities and KIC can be influenced by the short term interest of the KIC partners.
- The lack of strong central governance would expose funding decisions to political considerations.
- Due to the lack of central governance, KICs would be poorly coordinated reducing the opportunity of synergy and increasing the possibility of duplicating efforts.
- The models proposed by the partners to integrate the knowledge triangle may not be substantially different from current practices. This would not contribute to substantially address EU level constraints to the integration of the K triangle.

6.4. Policy Option 3: the Integrated EIT

6.4.1. *Main strengths*

- The pooling of a critical mass of resources in some – potentially many – KICs, would enable the EU to lead or compete with competitor economies in terms of the ‘excellence’ of research undertaken.
- The legal autonomy of each KIC would enable pay structures that would allow them to attract and retain some of the best researchers in Europe.
- The presence of central governance would maximise the possibilities for long term cooperation with major European and multinational companies, and other sponsors, at the EIT level.
- The strong and autonomous governance would allow it to select priorities and KICs without excessive influence by political bodies or other interest groups.
- Such governance would provide strong coordination among KICs exploiting synergies and avoiding duplication.
- Strong autonomy would enable to experiment models to integrate the triangle characterized by more discontinuity and novelty.
- It would favour the building of poles of excellence which are also geographically concentrated thus facilitating the possibility to enact cluster effects.
- Its character of a new European level institution would represent an opportunity to move forward and progress the debate on key constraints that affect the EU landscape such as degree recognition or EU level IP regulation.
- It represents a visible European flagship and reinforces the building of the European identity extending its scope to the knowledge triangle.
- It would be attractive to partner organization due to its bottom up approach.

- The devolution of decisional power at the KIC level would make it very adaptable to changes that occur in the environment and capacity to evolve.

6.4.2. *Main weaknesses*

This policy option does not have major weaknesses. However, its success would be crucially dependent upon several factors:

- The choice of priorities and KICs is crucial and thus setting up a competent and autonomous GB is a major challenge.
- The mixed nature of the institute, with elements of both centralization and distribution, requires a proper balance between a series of opposing forces. This poses challenges in terms of governance, human resources, and other issues. These challenges are explored in more detail in section 7.

6.5. **Policy Option 4: the Labelling/Funding mechanism**

6.5.1. *Main strengths*

- Through the allocation of funds based on excellence criteria, it has the potential to create conditions in some areas enabling the EU to lead or to compete with competitor economies in terms of the ‘excellence’ of research undertaken.
- This option is simple and could be implemented without delay.
- It can easily adapt to changes in the external environment through the reallocation of funds to more promising areas.

6.5.2. *Main weaknesses*

- It may not directly address the constraints to attracting and retaining the best researchers and on the exploitation of research results in the EU. However, criteria could be introduced in the funding decisions that increase the likelihood that these constraints could be addressed.
- The success of the policy option will critically depend upon the choice of the beneficiaries and organisations funded. These choices will be influenced by scientific, political and commercial considerations and would have to be made by the EU. There is likelihood that resource allocation would be influenced by Member State considerations rather than ‘excellence’ at the EU level.
- It implies no major change in the way in which the three aspects of the knowledge triangle are integrated thus attracting a more systematic involvement of businesses and an increased capacity to exploit research outcomes.

6.6. **Policy Option 5: Status-quo**

6.6.1. *Main strengths*

Under this policy option no further action would be required

6.6.2. *Main weaknesses*

- Under this policy option there is no initiative to address the need to integrate the three aspects of the knowledge triangle as elaborated above.
- Doing nothing further might imply a loss of political capital as the commitment to re-launch the Lisbon strategy with new concrete actions would have no further follow-up.

6.7. **Comparative assessment of Policy Options**

The above analysis suggests that three Policy Options have a major overall additional impact compared to the status-quo. These are options 1, 2 and 3. Differently from option 4 and 5, they address not only the need to pool resources to achieve critical mass in selected fields, but also to organize them within new models able to integrate the three aspects of the knowledge triangle. A summary comparison of the 5 options is presented in Table 6.1.

The three options differ mainly in the model of governance through which this integration is achieved. On the one hand, Option 1 stresses the need of coordination thus providing a stronger role to the governance structure in setting priorities and organizing the work of KICs. This option leads to stronger synergies between KICs, to the creation of conditions for experimenting more innovative models and involving private partners. Moreover, it is expected to present more clearly on the table the need to overcome EU barriers to mobility and cooperation, and to represent a more visible flagship and symbol of the knowledge Europe. On the other hand, the strong centralization may lead to bureaucratization and a lack of flexibility that is needed to cope with new knowledge domains; further, the same centralization may hinder the willingness of partners to contribute, thus reducing the capacity to achieve critical mass by pooling what already exists.

Option 2 is positioned somehow on the opposite front. It delegates most of the strategic and operational tasks to the KICs, which are more open to the influence and actions of the partners. If this option balances the weaknesses of option 1, representing a more adaptable and attractive model for participants, nonetheless presents a series of drawbacks which are complementary to the strengths of option 1. KICs would be less coordinated thus leading to a risk of overlapping activities; the models they would experiment to organize their work would be less innovative when compared to current practices, they would less clearly address the need to provide EU level solutions to overcome barriers to mobility and cooperation; last, they would not have the visibility and symbolic impact of an EU level initiative.

Option 3, the preferred one, represents a model to address the underlying trade-off. It aims at balancing a series of opposing needs: the need for coordination to ensure synergy and strategic orientation with the autonomy needed by the KICs to be adaptable; the need to be independent from external influences to pursue the EIT's own agenda with that to be enough attractive to involve partner organizations; the need to experiment novel ways to integrate research, education and innovation with that of relying and building on existing good practices. On the other hand, these same strengths represent a series of key challenges; as a matter of fact, the correct balance of these trade-offs will be heavily dependent on concrete implementation of the model. This is exactly the goal of the following section that highlights these challenges and proposes some guidelines to address them when implementing the proposed model.

Table 6.1 Summary Assessment of strengths and weaknesses of the Policy Options

Policy Option	Strengths	Weaknesses
1. The Centralized EIT	<p>Strong governance to select priorities and experiment new models</p> <p>Strong coordination within and among KICs</p> <p>Concentrates also geographically a critical mass of excellence in strategic areas</p> <p>Provides attractive environment for talents</p> <p>Enables long term cooperation with major business players</p> <p>Spreads change and best practices through seconded personnel</p> <p>Strong European identity and visibility, capable of supporting the overcoming of EU constraints</p>	<p>Weak capacity to evolve and adapt to external changes</p> <p>Weak capacity to attract potential partners</p> <p>Risk of duplicating resources</p> <p>Risk of bureaucratization</p> <p>Risk to crowd out existing organizations</p>
2. The Distributed EIT	<p>Concentrates a critical mass of excellence in strategic areas</p> <p>Provides attractive environment for talents</p> <p>Enables long term cooperation with major business players at the KIC level</p> <p>Spreads change and best practices through various forms of personnel affiliation</p> <p>Creates an instrument to generate other organizations in the future</p> <p>Is more attractive to partners</p> <p>Strong adaptability to changes</p>	<p>Risk that choices on areas are influenced by short term interests</p> <p>Weak capacity to coordinate the activities between KICs</p> <p>Risk not to produce new and innovative cooperation models between academia and business</p> <p>Risk not to be perceived as a European level flagship</p>

<p>3.</p> <p>The Integrated EIT</p>	<p>Concentrates also geographically a critical mass of excellence in strategic areas</p> <p>Provides attractive environment for talents</p> <p>Enables long term cooperation with major business players at the KIC level</p> <p>Spreads change and best practices through various forms of personnel affiliation</p> <p>Strong governance to select priorities and experiment new models</p> <p>Strong European identity and visibility, capable of supporting the overcoming of EU constraints</p> <p>Is more attractive to partners</p> <p>Strong adaptability to changes</p> <p>Strong coordination within and among KICs</p>	<p>Difficult balance of power between the central structure and KICs</p> <p>Risk of structural complexity which could lead to bureaucratization</p> <p>Risk that the choice of KICs might be influenced by various interests</p>
<p>4.</p> <p>The labelling/funding mechanism</p>	<p>Supports existing institutions to become globally competitive</p> <p>Simple and immediate implementation</p> <p>Is able to adapt to changing external conditions</p>	<p>Weak capacity to improve attraction of talents</p> <p>Selection of beneficiaries may be influenced by various interests</p> <p>Risk of increasing the divide between excellent and non excellent institutions</p> <p>Poor capacity to ensure coordination and synergy between beneficiaries</p> <p>Weak capacity to improve the integration of the k triangle and improve the exploitation of research outcomes</p>
<p>5.</p> <p>The status quo</p>	<p>No further action would be required</p>	<p>There is no initiative to address the need to integrate the three aspects of the knowledge triangle.</p> <p>This option might imply a loss of political capital as the commitment to re-launch the Lisbon strategy with new concrete actions would have no follow-up.</p>

7. THE PREFERRED POLICY OPTION AND ITS KEY CHALLENGES

On the basis of the assessment undertaken in section 6, policy option 3 emerges as the preferred option. This option aims at finding a balance between option 1 and 2 keeping the benefits of both while avoiding their drawbacks. On the other hand, such a balance poses a number of challenges which derive essentially from the need to manage a set of underlying trade-offs. This section elaborates these challenges and trade-offs, proposing some guidelines to address them.

7.1. Governance

The preferred Policy Option poses a series of Governance challenges that emerge from the need to ensure a proper balance between a series of opposite needs.

- On the one hand the EIT, in order to be an organization able to compete on the global scene, needs to have the capacity to set its own strategy and to give the necessary degree of strategic guidance on the activities undertaken by KICs. In this respect, the EIT needs to be able to make strategic decisions independently of political considerations and of the sectional interests of the stake-holders.
- On the other hand, as a body which is both publicly funded and charged with a high-level political mission it will need to be politically accountable. Its representative bodies must be able to orient the EIT towards socially and economically relevant goals as well as measure its capacity of achievement.
- As the EIT will address fields of knowledge which are clearly complex and dynamic, it will need to devolve enough autonomy to its operating units (the KICs) to allow them to respond to the particular dynamics of the field in which they operate, while maintaining a sufficient degree of overall strategic guidance and monitoring over their activities.

Thus, setting a proper balance between autonomy and accountability between EIT and the EU institutions, and between the Governing Board and the KICs will be crucial questions. Given these requirements, the EIT Governing Board should be:

- composed of autonomous individuals selected solely on the base of their expertise;
- evaluated on the base of simple and clear parameters;
- light, in order not to become a bureaucratic body which would interfere unduly in the running of the KICs;
- provided with enough authority to ensure that the various KICs coordinate their activities to achieve the overall goals of the EIT.

7.2. Selection of KIC

The selection of KICs poses a series of challenges mainly at two levels.

At a first level, the domains of activity should represent medium / long term strategic challenges in fields with high innovation potential and thus with strong commercial, social and economic impact. This requires:

- a composition of the EIT governance body that balances academic and business expertise, and whose members have a capacity to detect trends and signals in emerging fields of investigation;
- to set a dialogue with those European initiatives (such as ETPs, JTIs, or NoEs) that are currently approaching emerging technological challenges;

At a second level, the partners should be excellent in their own field as well as capable to strongly integrate their activities for a medium / long term horizon. On the other hand, excellence and capacity of integration should not lead to an a priori exclusion of teams and individuals which may have a less prestigious track record but nonetheless show a high potential. This requires:

- a selection process which is open, transparent and based on competition;
- to set selection criteria able to detect excellence not only in past record terms, but rather in terms of potential achievement.

7.3. Human resources

The relationship between the EIT and those members that participate on behalf of partner organizations is crucial as it implies the balance between:

- the need to ensure an incentive for partner organizations to participate in the EIT. This suggests human resource arrangements in which people involved in the EIT operations maintain a strong relation with the contributing organization;
- the need to ensure that those involved in the EIT do operate for the benefit of the EIT which has its own distinct goals to achieve. Such a need goes also in the direction of being able to propose both attractive career prospects (which are needed to attract and retain talented people) and innovative working models (with, for example, strong autonomy but also a strong performance evaluation component). This suggests human resource arrangements in which the KICs personnel have a strong relation with the EIT.

These questions can best be decided in the specific conditions of a KIC (different domains may require different types of commitments) and over time (in time these needs may evolve). The above considerations suggest that the specific human resources arrangements should:

- be defined in the specific case of each KIC;
- be proposed by the partners who have a deeper understanding of the field in which the KIC will operate and, thus, of its requirements;
- nonetheless be part of the evaluation of a KIC proposal in the selection process, whereby proponents must convincingly show that the KIC is able to achieve the goals set and provide sufficiently motivating working arrangements.

7.4. Intellectual Property

The management of the intellectual property generated throughout and available for the activities of the EIT poses challenges similar to those outlined as regards human resources but with some additional elements of complexity. These include:

- the need to ensure an incentive for partner organizations to participate in the EIT. This suggests IP rules or arrangements in which the benefits of generated IP heavily accrue to contributing organization;
- the need to ensure that the EIT is able to flexibly manage IP so that it can both gain value out of its exploitation and use it as a lever to establish long term partnerships with businesses. This suggests IP arrangements in which generated IP is managed under the guidelines established by the EIT with due consideration to the circumstances of each KIC.

In addition, there is a more general need to establish organizational models in which IP is effectively and systematically used, rather than stocked, as a means to motivate participating individuals and organisations and to facilitate exploitation of results. In the end, precise arrangements should depend upon the specific domain of activities. The above considerations suggest that the specific IP rules and arrangements should be:

- considered as a core process that the EIT will need to address when establishing its operations;
- defined in collaboration between the EIT and its KICs to match the concrete requirements of the specific domain of activity;
- managed primarily by the EIT to foster the use of its results and to contribute to EU innovation capacity;
- equipped with appropriate incentives for the EIT and partners, including individuals involved, KICs and partner organizations.

7.5. Education: awarding of degrees

Education is a crucial component of the EIT as it represents one of the three cornerstones of the knowledge triangle and the award of its own degrees would be an important step in establishing the EIT as a significant operator. On the other hand, the awarding of degrees and diplomas could raise sensitive legal and other questions about the relationship between it and the educational institutions which will participate in its work.. This generates a series of alternative approaches:

- The need to mark the EIT as a knowledge flagship suggests that it should be identified as the source and originator of those degrees and diplomas linked to its activities. By this logic, the EIT should be able to award degrees.
- The need not to crowd out the investment made by potential partners in building a capacity and reputation in education. By this logic, the EIT degrees should be awarded by the partner universities.

In addition, there is a more general need to speed the process of creating a European Education area in which degrees are comparable and mutually recognized. Lastly, there is a demand to supply degrees which should reflect the innovative approaches which EIT activities will entail, for example, trans and inter-disciplinarity and the entrepreneurial component. The above considerations suggest that:

- education activities in the EIT should concentrate on reflecting what will be the new and unique features of an EIT education: trans and inter-disciplinarity and the strong entrepreneurial component;
- the degrees made under the aegis of the EIT, while awarded through partner organizations, should be clearly identifiable as EIT awards;
- especially in areas not covered by the existing supply and in which the interdisciplinary nature requires a scope of activities hardly achievable by individual organizations, the EIT should work with partner organizations to develop new degree programmes.

7.6. Funding

To be successful, the EIT will need to rely on a level of resources comparable to its major competitors. Especially in its initial stages, it is unlikely that these resources would come from the private sector that will step in after the success of the EIT is proven. Thus, the larger amount of funds should be provided by the public sector. On the other hand, the capacity to attract private investments should be set as a medium term criteria to evaluate the success of the initiative.

8. COST EFFECTIVENESS

8.1. Financial and human resource implications of the proposal

8.1.1. Main assumptions

During the period of the forthcoming financial perspectives (2007 – 2013), the operational objectives of the EIT are to establish 6 Knowledge and Innovation Communities (KICs) and a Governing structure for the coordination of the overall system. The KICs will perform innovation, research and teaching activities by integrating contributions from partner organisations.

At a cruising speed, each KIC could involve about 1000 staff: about 100 Academic staff, 300 researchers and 600 supporting staff (administration, technical staff). A KIC would host approx. 600 Master students and 400 PhD candidates at any given time.

The Governing Structure would be strictly limited in size and would build up over time to a total of 30 scientific and senior staff and 30 support staff.

The activities of the EIT and the Knowledge and Innovation Communities (KICs) will be financed from a combination of sources:

1. from external sources including:
 - (a) Member State, regional or local authorities
 - (b) private sources (companies, venture capital, banks, including the EIB);
 - (c) resources resulting from its own activity (eg, from intellectual property rights);
 - (d) resources from the endowments the EIT may accumulate.
2. from Community sources through the budget to the EIT or to the KICs directly, from unallocated margins beneath the ceiling of sub-heading 1A, and through the structural Funds and participation, in accordance with normal procedures, in the 7th Framework Programme, the Lifelong Learning Programme, the Competitiveness and Innovation Programme.

Resources flowing to the EIT directly would be used: (i) to finance the KICs through a competitive process based on excellence and in accordance with the criteria set by the Governing Board of the EIT; (ii) to finance the running costs of the EIT; or (iii) to contribute to the EIT's endowment

Resources flowing to the *KICs directly* have to be attracted by the KICs and/or their partner organisations, including through the normal procedures applicable to Community programmes and the Structural Funds. They would constitute elements of the offer of the KICs in the competitive process for obtaining resources from the EIT or could be attracted once a KIC has been awarded such resources.

However, the precise arrangements for the funding of the EIT and the KICs will clearly evolve over time. The Commission estimates that the EIT will require front loading from the

Community Budget in the start up phase, the objective remaining to maximise in the mid term contributions from external sources. There is also a trade-off between the resources flowing directly to the KICs, including from Community programmes, and the contribution from the Community budget to the EIT directly.

The level of ambition entailed in the proposal means that the total spending of the EIT and the KICs during the period 2007–2013 could be estimated at €2,367.1 million. The financing of this amount can either come directly from the Community budget, directly or indirectly through Community programmes or from other external sources.

The Commission has been in regular contact with the private sector, and believes that there is a reservoir of interest in the EIT which can be tapped, including block grants to the EIT's endowment. In practice, the capacity of the EIT and the KICs to attract outside (particularly business) funding will depend on a credible business plan. Two factors are crucial: (i) the capacity to attract into KICs the most advanced firms and the best universities and research teams; and (ii) the extent to which the Community itself makes a public declaration of trust by committing itself to making available a substantial financial contribution to kick start the process and show openness to consider at a later stage other forms of contributions flowing either to the EIT directly or to the KICs. On this basis a virtuous circle can be generated.

8.2. Cost justification

The KICs will be the source of the impacts of the EIT and will account for the expenditure of most of the resources. Given that the direct and indirect effects of the EIT are varied and diverse and that the actual effects will depend almost entirely on the choice of the KICs and their success, it is extremely difficult to provide estimates of cost effectiveness at the level of the EIT as a whole. However, the following comments can be made:

- The administrative and governance costs of the EIT as a whole should represent a relatively small amount of the overall costs. It seems appropriate to consider that a maximum of 3 per cent of the total costs should be allocated to cover the costs of the EIT governing structure.
- These costs represent the costs of coordinating the overall process of integrating innovation, research and education. In order to assess cost effectiveness, these costs need to be compared with the added value that can be derived from providing a new and strong institutional basis for collaboration at the European level and from the potential to create critical mass and excellence that will increase EU competitiveness. If the proposed EIT model is successful, then the EIT would prove to be highly cost effective.
- Most of the Community resources would be spent on the productive capacities of the KICs. The level and the nature of the administrative resources needed at the level of the KICs will reflect their overall profile of income and expenditure. These costs should be comparable with the most cost effective universities and research institutes in the EU and should not represent additional costs providing the reporting and management requirements generated by the EIT are proportionate.
- Since the EIT intends to avoid duplication of efforts, to create synergies among existing resources, the resources spent on the productive capacity aim to be cost effective. On one hand, the Governing Board will identify the most relevant and promising areas of activities taking in account the existing initiatives at the European and national levels, trying no to compete with already well established organisations and infrastructures. On the other hand,

within the framework of the KICs, the resources (staff, facilities) provided by the EIT will complement and will not substitute existing ones.

9. MONITORING AND EVALUATION

9.1. Introduction

This section outlines the basis for future monitoring and evaluation of the EIT. It identifies key indicators and the evaluation processes that are appropriate for the preferred policy option. Given the nature of the impacts, in particular those related to indirect effects, in several instances simple quantitative indicators would not be appropriate and qualitative assessments based on case studies, interviews and drawing together empirical information from several sources would be required.

9.2. Key indicators

Table 9.1 presents examples of indicators relevant to the monitoring of the operational objectives and targets of the EIT identified in Section 4. Given the nature of the indirect effects in several instances changes in the scores on these indicators would not necessarily be attributable to the EIT but detailed case study evaluation work would enable causal linkages to be explored. Monitoring progress on the indicators would provide insights into whether the overall context within which the EIT operates was improving or not. Examining similar indicators for competitor economies would be helpful.

Table 9.1 Examples of Possible Indicators relating to the operational objectives of the EIT

Operational objectives of the EIT	Indicator
Direct Impacts	
Increasing the level of 'excellence' in innovation oriented research and education in the EU	<ul style="list-style-type: none"> - EIT ranking in international academic rankings - actual number and evolution of articles produced by EIT/KIC researchers; quality of articles (impact factor); quality of EIT/KIC researchers (citation index); -actual number and evolution of the number of EIT/KIC candidates being awarded a Doctorate; -number of KIC staff receiving international awards; -number of fellowships and affiliations of EIT/KIC researchers with prestigious institutions -number of EIT/KIC Post Doc candidates -initial salary for EIT/KIC graduates;
Improving the exploitation of research outcomes to the benefit of the EU economy	<ul style="list-style-type: none"> -actual number and evolution of the number of patents generated under the aegis of the EIT. -revenues generated from these IPRs (share in the overall budget of the EIT). -number of spin-offs created by the KIC, level of capitalization by external sources (e.g. VCs), ROI. -number and amount of contracts with external parties and in particular with businesses for innovation related activities. -average period spent by an EIT/KIC researcher in business organizations.
Attracting and retaining high level staff and students	<ul style="list-style-type: none"> -actual number and evolution of the number of high level staff attracted to the EIT/KIC. -actual number and evolution of the number of candidate students. -number of non EU students and researchers attracted by the EIT/KIC
Creating critical mass of expertise and infrastructure	<ul style="list-style-type: none"> -volume of KICs research activity. -volume of private resources attracted by KICs and the EIT globally -volume of public resources attracted by KICs and the EIT globally -number of researchers for each field of activity

	-average capital expenditure per student / researcher
Eliminating or reducing constraints in integrating the knowledge triangle at the EU level	<ul style="list-style-type: none"> -number of EIT degrees that have trans-national recognition -number of trans-national cooperations established through the EIT -number of EIT/KIC students that undertake education activities in a country different from that of residence -number of EIT/KIC researchers that undertake research activities in a country different from that of residence -number and level of involvement of private researchers in KIC activities -number and level of involvement of EIT/KIC researchers in business activities
Ensuring coordination and synergy among the various activities performed or supported	<ul style="list-style-type: none"> -number of collaborations established between different KICs -number of joint publications produced by researchers that belong to different KICs -number of joint projects undertaken by researchers that belong to different KICs
Ensuring flexibility and capacity to adapt to changing conditions	<ul style="list-style-type: none"> -turnover of KIC's partner organizations -rate of re-allocation of funds by KIC to new sectors of activity
Indirect impacts	
Propagating 'analogous models'	number of organizations that adopt the EIT model and practices and survey on adoption (qualitative assessment)
Increasing the level of 'excellence' in innovation oriented research and education in the EU	<ul style="list-style-type: none"> -evolution of the ranking of EU academic institutions who have parts of them involved in the EIT in international university rankings -evolution of the number of articles; quality of articles (impact factor); quality of researchers (citation index) of EU academic institutions who have parts of them involved in the EIT
Improving the exploitation of research outcomes to the benefit of the EU economy	<ul style="list-style-type: none"> -actual number and evolution of the number of patents generated in EU. -number of patents generated by EIT spin-offs -number and level of R&D collaboration activities generated by EIT spin-offs with other businesses or research organizations
Contributing to building an EU identity and become a knowledge flagship	-survey on the recognition of the EIT brand in EU and non EU countries (qualitative assessment)

9.3. Evaluation procedures

The proposal for establishing the EIT contains provisions for the periodic independent evaluation of its activities, including those managed through KICs. The purpose is to ensure both the highest quality of outcome and the most efficient use of resources.

It shall be mandatory for the Commission to make public an evaluation of the EIT within five years from the date of adoption of the decision to establish the EIT and every four years thereafter. This will be based on an independent external evaluation, and will examine how the EIT fulfils its mission. The evaluation will cover all activities of the EIT and its Knowledge and Innovation Communities and will examine the effectiveness, sustainability, efficiency and relevance of the activities pursued and their relation with Community policies. It will take into account the views of stakeholders, at both European and national level.

ANNEX A

DETAILED ASSESSMENT OF THE POLICY OPTIONS

1. Introduction

The following sub sections consider the five policy options in turn. Each policy option is elaborated and assessed relative to the status quo option. The assessment has involved a consideration of the potential direct and indirect effects of the policy options relative to criteria that derive from the policy objectives, the underlying problems being addressed by the EIT proposal and the more general considerations of impact assessment and ex ante evaluation. More precisely the assessment criteria were as follows:

Direct effects

- (1) Increasing the level of ‘excellence’ in innovation oriented research and education in the EU.
- (2) Improving the exploitation of research outcomes to the benefit of the EU economy.
- (3) Attracting and retaining high level staff and students.
- (4) Creating critical mass.
- (5) Eliminating or reducing other constraints in integrating the knowledge triangle at the EU level.
- (6) Ensuring coordination and synergy among the various activities performed or supported.
- (7) Ensuring flexibility and capacity to adapt to changing conditions.

Indirect impacts, produced not directly by the EIT but through its “flagship” effect in influencing the actions of other organisations.

- (1) Propagating ‘analogous models’.
- (2) Increasing the level of ‘excellence’ in innovation oriented research and education in the EU.
- (3) Improving the exploitation of research outcomes to the benefit of the EU economy.
- (4) Contributing to building an EU identity and becoming a knowledge flagship.

Other considerations

- (1) The distribution of effects (who benefits, who loses).
- (2) Feasibility issues.
- (3) The main associated risks.

The assessment is based on the wide range of contributions produced by various stake holders through various means such as the Public Consultation, position papers, articles, and meetings.

It has been assumed that the level of additional EU funding that would be made available for the EIT under policy options 1, 2, 3 and 4 would be the same but that the status quo (policy option 5) would not involve any additional EU funding.

The assessment has involved making comparisons between the policy options. These comparisons are presented vis-à-vis the status quo option 5. A five point scale was used covering the following levels of impact: no/low/moderate/high/very high impact vis-à-vis the status quo option 5. At the end of each sub section on the individual policy options the main strengths and weaknesses of the policy options are summarised.

The Section concludes with a comparative assessment of the options and the identification of the preferred option.

1.1. Policy Option 1: the centralized EIT

1.1.1. Direct impacts

Increasing the level of ‘excellence’ in innovation oriented research and education in the EU

A high impact is estimated. The option would lead to a concentration of excellence within a single new legal body. Additionally, the likely concentration of resources in few geographical locations and the strong synergies between the different KICs due to their belonging to the same structure would provide additional benefits in this respect. On the other hand, the feasibility of concentrating excellence in this way could be hindered by the resistance of partners to contribute their best teams, as they would see the EIT as a competitor. The risk could be that the EIT is forced to acquire excellence on a competitive rather than a cooperative basis, thus paying a premium price and crowding out existing initiatives. The process of creating a concentration of excellence in this way would probably be slow. In short, the EIT might be excellent, but this would be either achieved through a slow internal development of excellence, or through a competition with existing organizations. The latter will be possible thanks to the possibility of the EIT offering attractive career prospects; on the other hand, it would be done at the expense of existing organizations.

Improving the exploitation of research outcomes to the benefit of the EU economy

A rating of very high impact is given. This assumes that the choice of KICs would be strongly influenced by considerations of potential future commercial exploitation, including the integration of the business dimension. The presence of individuals from the business world on the governing board that play a direct role in organizing the KICs activities would support this process. However, much of the EU funding would be on pre-competitive R&D. Some of the resources would be spent on research and education with wider social and environmental objectives. On the other hand, the likely concentration around one or few campuses would maximize the possibility to create a cluster effect where new companies are spun-off by research activities and existing ones would benefit from a continuous interaction with the research and education environment.

Attracting and retaining high level staff and students

A rating of high impact is given. This assumes that the KIC selected by the EIT will have the freedom to provide attractive packages, including salaries, infrastructure and high calibre staff to attract and retain within Europe the best researchers at all appropriate levels of experience from Europe and elsewhere. It assumes to that the EIT will attract the best students, many of whom will continue to work within the KIC. Highly selective student admissions policies may further increase the attractiveness of the KIC to experienced researchers. On the other hand, this effect could be mitigated by the fact that talents are attracted not just by better reward packages, but also by the prospect of working with other excellent people. Excellence attracts excellence. Although this is a goal for the EIT, as seen above, it might take time to build such excellence also considering that, being a new institution competing with existing ones, it might be difficult to involve the excellence that already exists. Issues related to critical mass (especially in the sense of a minimum bootstrap level of high level researchers) could reduce the EIT's attractiveness.

Creating critical mass

A rating of high impact is given. It is assumed that the selection of KIC for funding by the EIT under this option would be strongly influenced by the opportunity to create critical mass both in terms of bringing together within a single legal body both a critical mass of people and/or a critical mass of infrastructure. On the other hand, the competitive nature of the structure may make it more difficult to rely on the contributions of partners. In this sense, critical mass may be achieved but with a risk of duplication, in particular as regards infrastructures; and it might be that it could only be achieved slowly

Eliminating or reducing other constraints in integrating the knowledge triangle at the EU level

A rating of high impact is given. In fact, this option would imply by definition the need to overcome a series of boundaries and constraints that affect the integration of the knowledge triangle at the EU level. The overcoming of these constraints could be seen as both a measure of the EIT success, but also a threat to its feasibility. These are analyzed here only from the first perspective, while the second will be analyzed in the section of feasibility. First, the EIT could provide a legal base to enable long term integrated cooperation between different organizations across the EU and across sectors. In addition, the assumption of an EIT degree is consistent with the widely advocated need to create a European Education Area, which is currently slowly progressing through processes such as Bologna. The EIT could provide an impetus in this respect. Similarly, the EIT implies a strong degree of mobility of staff and students across member states but also across regions; this process involves a series of issues such as the portability of pension rights or the recognition of professional qualifications. Last, one single institution would clearly put on the table the issue of a common EU approach to intellectual property, as this would be needed to ensure the collaboration with businesses.

Ensuring coordination and synergy among the various activities performed or supported

A rating of very high impact is given. This policy option envisages that all of the activities funded by the EIT would take place within one new legal body. Given the scale of activity within the EIT as a whole, the prospect that much of the infrastructure would be new and the likely requirement that each KIC may benefit from a central node for organisational purposes

and/or for particular infrastructure needs (specialist laboratories etc), there is a strong case for much of the EITs activities to be concentrated on the same site. Further, the strong guidance of the Governing Board would ensure that coordination issues are explicitly dealt with. In such circumstances the EIT would be likely to generate significant synergy effects between KICs. Such synergy effects have been seen as important benefits from the physical concentration of staff within campuses. Proximity and ‘clusters’ can generate new connections between people and is associated with spin offs and exploitation of research.

Ensuring flexibility and capacity to adapt to changing conditions

A rating of moderate impact is given. The presence of a central governing board that needs to manage the differentiated, complex, and evolving work occurring at the KIC level may hinder the EIT’s capacity to adapt flexibly to changes. The Governing Board could become a bureaucratic structure that sees in its ruling role the main reason for its existence. This could create a divide between the KICs, whose attention is targeted on the evolution of their field, and the central structure, who could try to impose new rules to make the work more predictable (and thus controllable). On the other hand, in particular in cases in which the required change is not incremental but rather discontinuous, the role of a governance structure may mitigate inertia at the KIC level.

1.1.2. Indirect impacts

Propagating ‘analogous models’

A rating of moderate impact is given. Under this option there would be only one EIT so no directly analogous models would be possible. There may be interest in equivalent national and regional level cooperation between universities in priority technological areas. Some of the principles of reform of higher education could be promoted by this policy option⁶⁵. A successful EIT, irrespective of what structure it takes, would probably influence practices in academia, research and innovation beyond its confines. Those parts of institutions that become part of the EIT may well be influenced by the ‘new culture’. So too might national governments but the pattern of influence would be by no means clear cut. On the other hand, the competitive nature of the EIT would not promote a collaborative attitude on the side of those organizations which are not or don’t want to be involved.

Increasing the level of ‘excellence’ in innovation oriented research and education in the EU

A rating of low impact is given. Indirect effects on excellence in research could occur if for example stronger emphasis was given to the concentration of research and creation of excellence through national funding regimes as a result of the EIT. However, the geographical concentration of this option would not be conducive to these effects to arise at a large scale.

Improving the exploitation of research outcomes to the benefit of the EU economy

A rating of high impact is given. The indirect effects of the EIT under this policy option could include promoting through ‘demonstration effects’: increased commitments of European and international business to the exploitation of research at the national and regional levels; and, shifts in the culture amongst European universities in general towards improving the potential

⁶⁵ COM (2006) 208 op cit

for exploitation. In addition, the strong autonomy of the institute in testing and implementing new models able to strongly incorporate the business dimension, and the involvement of people seconded by partner organizations, would positively contribute to the diffusion of new best practices in research based innovation and the management of the knowledge triangle.

Contributing to building an EU identity and becoming a knowledge flagship

A rating of very high impact is given. The strong autonomy of the institution, its clear cut European dimension, and its focus on excellence would make the EIT a flagship of the knowledge Europe and a concrete symbol of the Lisbon achievements. Its top-down nature would facilitate the establishment of new working practices which are not directly rooted in existing institutional and national settings. This would contribute to the extension of the European identity also to research, education and innovation activities.

1.1.3. The distribution of effects (who benefits, who loses)

The policy option has been formulated to generate economic, social and environmental benefits at the European level. The EU as a whole would benefit. Some, indeed most, of the benefits would be in the medium and long terms. In the meantime the main direct beneficiaries would be the partners and staff directly involved in the KIC and the EIT as a whole. The potential opportunities to work with the best and with the best possible infrastructure for research would be highly attractive. The ‘parent’ institutions providing resources could benefit from the visibility and excellence of being involved with the EIT as well as more directly through means that would, in practice, have to be negotiated on a case by case basis (compensation for resources seconded, income from services provided, stakes in future IPR etc). But in this scenario, benefits will be greater for individuals and teams involved than for partner organizations.

The localities in which the parent institutions are based could further benefit, especially those where KIC physically concentrate their activities. Industry that became directly involved would benefit from research outcomes in which it had a stake and indirectly through being associated with what should become a highly prestigious institution.

The policy option does however involve the deliberate concentration of excellence. Institutions not selected for involvement in the EIT might take a step back in their excellence rating (in the fields prioritised by the EIT), and lose key staff to the EIT. It is reasonable to assume that the bulk of the parent institutions that will become part of the EIT would be based in the more economically successful regions of the EU thus weakening the benefits which could limit the spread of positive regional impacts. This could be however mitigated by the fact that the target of the EIT recruiting would not be the entire institution, but teams and individuals. As a consequence, less excellent teams operating in prestigious institutes might be excluded, whereas excellent teams operating in less prestigious institutes shall be included.

1.1.4. Feasibility issues

There are important aspects that will have to be addressed to maximise the feasibility chances of success in generating the anticipated benefits. They are:

- Whether suitable procedures can be devised to ensure the proper accountability of a body that will (as currently envisaged) both allocate large amounts of public funding and be responsible for its oversight.

- Whether the right choices are made over which KIC to support. The choices will be influenced by political (economic, social and environmental), technical and scientific factors. In this respect, the autonomy of the governance structure is crucial.
- Whether consortia of the best parent institutions will wish to join the EIT. The availability of substantial EU funding and the new basis for collaboration within the same legal body will be strong incentives. So too the prospect of the potential flexibility of the management and reward arrangements, and access to new private sector partners would be attractive. However, against this, potential participant institutions would have to weigh the following: they would lose control of their more or most successful and eminent departments; and, the future of these departments would be in the hands of an entirely new and, untested institution that would have responsibility for a potentially wide range of KIC other than that focussed on the area of the department concerned. If the KIC was not successful the department would be weakened, if not destroyed.
- Whether if suitable consortia did not come forward, the embryonic EIT would be able to build KICs from scratch.

1.1.5. The main associated risks

The main risks relate to the feasibility issues. They are:

- partners do not find enough reasons to participate and contribute;
- related to the previous, the risk of reinventing the wheel if capacity needs to be built from scratch;
- risk of bureaucratization and lack of adaptability;
- the EIT ‘crowds out’ activity undertaken in existing institutions.

The policy option is of high risk.

1.1.6. Summary of the assessment

The main strengths and weaknesses are summarised below and the assessment of the option relative to the status quo option is summarised in Tables A.1.1 and A.1.2.

Main strengths

The policy option would:

- have a strong and autonomous governance structure able to select priorities and KICs without excessive influence by political bodies or other interest groups;
- provides strong coordination among KICs exploiting synergies and avoiding duplication;
- strong autonomy would enable to experiment different models to integrate the triangle;
- create ‘critical mass’ in some KICs, enabling the EU to lead or compete with competitor economies in terms of the ‘excellence’ of research undertaken;

- build poles of excellence which are also geographically concentrated thus facilitating the possibility to enact cluster effects;
- enable flexible pay structures that would facilitate the attraction and retention of the best researchers in Europe;
- have a strong governance structure that would maximise the possibilities for long term cooperation with major European and multinational companies, and other sponsors;
- influence beneficially the culture of existing institutions, components of which would be ‘seconded’ or employed to the EIT illustrating new means through which the ‘knowledge triangle’ can be reinforced;
- represent an opportunity to move forward and progress the debate on key constraints that affect the EU landscape such as EU degrees or EU level IP regulation;
- represent a visible European flagship and reinforce the building of the European identity extending its scope to the knowledge triangle;

Main weaknesses

There are four main weaknesses of this policy option:

- The risk of bureaucratization may hinder the EIT capacity to evolve its KICs to respond to external changes and challenges.
- As a single ‘EU institution’ there is danger that the EIT under this option will develop and operate in the ‘political’ and ‘bureaucratic’ manner typical of such institutions. Many key actors perceive this as being ‘most likely’ or ‘inevitable’.
- The process of co-option and secondment from the ‘top down’ could be extremely difficult. Universities will naturally resist ‘giving up’ their best departments and will point to the drawbacks of having ‘dual campuses’ where some on site staff are employed by the EIT.
- Its competitive nature may hinder the capacity to achieve critical mass building on existing resources thus leading to the creation from scratch of new capacity.

Even if successful the concentration of the EIT in a few centres causes its degree of linkage to and impact on the rest of the European infrastructure to be limited.

Table A.1.1 Summary Assessment of Impacts for Policy Option 1

General Criteria	Specific criteria	Impact rating
Direct impact on the underlying problem/achievement of specific policy objectives	Increasing the level of ‘excellence’ in innovation oriented research and education the EU	High
	Improving the exploitation of research outcomes to the benefit of the EU economy	Very high
	Attracting and retaining high level staff and students	High
	Creating critical mass	High
	Eliminating or reducing specific observed constraints	High
	Ensuring coordination and synergy	Very high
	Ensuring flexibility and capacity to adapt	Moderate
Indirect impacts via reference model, Visible symbol	Propagating ‘analogous models’	Moderate
	Increasing the level of ‘excellence’ in innovation oriented research and education in the EU	low
	Improving the exploitation of research outcomes to the benefit of the EU economy	High
	European Identity and K flagship	Very high

Table A.1.2 Summary Assessment of Strengths and Weaknesses for Policy Option 1

Strengths	<ul style="list-style-type: none"> • Strong governance to select priorities and experiment new models • Strong coordination within and between KICs • Concentrates (including geographically) a critical mass of excellence in strategic areas • Provides attractive environment for talents • Enables long term cooperation with major business players • Spreads change and best practices through seconded or employed personnel • Strong European identity and visibility, capable of supporting the overcoming of EU constraints
Weaknesses	<ul style="list-style-type: none"> • Weak capacity to evolve and adapt to external changes • Weak capacity to attract potential partners • Risk of duplicating resources

	<ul style="list-style-type: none"> • Risk of bureaucratization • Risk of crowding out existing organizations
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1.2. Policy option 2: the distributed EIT

1.2.1. Direct impact

Increasing the absolute and relative presence of ‘excellence’ in innovation oriented research and education in the EU

A rating of high impact is given. The option would lead to a deliberate concentration of excellence within a series of new legal bodies (the autonomous KICs). Unlike option 1, physical concentration is not ensured although it is likely to happen to some extent within KICs. Further, in the absence of a central governance, possible synergies among different KICs would depend entirely on their interest in cooperating, and thus probably not be fully achieved. This would hinder the capacity to achieve critical diversity exploiting the synergies between the competences held by the different KICs.

Improving the exploitation of research outcomes to the benefit of the EU economy

A rating of moderate impact is given. This assumes that the choice of KIC would be strongly influenced by consideration of potential future commercial exploitation. To do so, the presence of individuals from the business world in the governing body should be ensured and criteria requiring business involvement should be a precondition for funding. Further, the presence of a strong autonomous governance structure at the KIC level able to ensure an effective management of the collaboration would be a precondition for business collaboration

Attracting and retaining high level staff and students

A rating of very high impact is given. The effects would be similar to policy option 1. This assumes that the KIC selected by the EIT will have the freedom to provide attractive packages, including salaries, infrastructure and high calibre staff to attract and retain within Europe the best researchers at all appropriate levels of experience from Europe and elsewhere. It assumes too, that the KIC will attract the best students, many of whom will continue to work within the KIC as researchers. Highly selective student admissions policies may further increase the attractiveness of the KIC to experienced researchers. As opposed to option 1, the more bottom-up nature of the structure would also facilitate the participation of partner organizations and ensure a critical mass of excellence able to attract other excellent staff and students.

Creating critical mass

A rating of high impact is given. It is assumed that the selection of KICs for funding by the EIT under this option would be strongly influenced by the opportunity to create critical mass in terms of bringing together a critical mass of people and/or infrastructure within a series of new legal entities. As opposed to option 1, the more bottom up nature of the structure would also facilitate the contribution of partner organizations and the likely capacity to create a critical mass of resources without duplicating what already exists. On the other hand, the weak coordination among KICs would not maximize potential synergies between them.

Eliminating or reducing other constraints in integrating the knowledge triangle at the EU level

A rating of low impact is given. The effects would be similar to policy option 1 but with a lower impact in particular as regards Education. In fact, the more bottom up and open approach to KICs would enable existing organizations to keep their own degrees while agreeing on some form of joint recognition; however this could be numerically insignificant among the more than 2000 European universities.

Ensuring coordination and synergy among the various activities performed or supported

A rating of moderate impact is given. Synergies are ensured at the KIC level through the KIC governance structure. Some synergy effects would be possible between KICs but these would not be of the type associated with physical proximity and concentrating large parts of the EIT activities on a single site. Moreover, coordination would be based on the spontaneous will of the various KICs as it cannot be required by the governance structure. There could also be the risk of developing overlapping activities among the various KICs thus producing duplication of efforts within the same EIT.

Ensuring flexibility and capacity to adapt to changing conditions

A rating of very high impact is given. As each KIC has a high degree of autonomy, it would be easier to adapt and change the KIC configuration to cope with changes that occur in the wider environment. KICs governance bodies will have a closer view and deeper understanding of their respective environments. On the other hand, especially when dealing with more fundamental changes, the lack of a strong central governance capable of giving strategic direction could hinder the capacity to recognize the need for drastic change.

1.2.2. Indirect impacts

Propagating ‘analogous models’

A rating of high impact is given. Under this option there would be scope for the proliferation of KIC type activities. In due course universities and partners may establish analogous KIC within the framework of new legal bodies, independently of large scale EU financial backing. There may also be interest in equivalent national and regional cooperation between Universities in priority technological areas. Some of the principles of reform of higher education could be promoted by the policy option⁶⁶. Other parts of institutions which are included in KICs may well be influenced. So too might others but the pattern of influence would be by no means clear cut. This is also facilitated by the bottom up nature of the KIC, which makes the concept more acceptable and attractive to partner organizations.

Increasing the level of ‘excellence’ in innovation oriented research and education in the EU

A rating of moderate impact is given. As with policy option 1, indirect effects on excellence in research could occur if, for example, stronger emphasis was given to the concentration of research and creation of excellence through national funding as a result of the EIT. As a more

⁶⁶ COM (2006) 208 op cit

geographically distributed initiative, there would be more opportunities for KICs to reflect the local needs, facilitating the way whereby other organizations in the region could improve their practices.

Improving the exploitation of research outcomes to the benefit of the EU economy

A rating of high impact is given. The indirect effects of the EIT under this policy option could include promoting through ‘demonstration effects’: increased commitments of European and international business to the exploitation of research at the national and regional levels; and, shifts in the culture amongst European universities in general towards improving the potential for exploitation. Certainly European ‘success stories’ would have the potential to inspire new developments. The establishment of KICs with light governance structures, independent of their parent institutions, highly focussed on research with potentially large commercial value at the global level would be attractive to major European businesses.

Contributing to building an EU identity and becoming a knowledge flagship

A rating of moderate impact is given. Provided that trans-nationality and the creation of a new legal entity are requirements for funding, the EIT would contribute to create a series of European level initiatives in the knowledge triangle. On the other hand, these would not have the scale and scope of option 1, which could claim to be the European symbol of excellence.

1.2.3. The distribution of effects (who benefits, who loses)

The distributional effects of this policy option are similar to policy option 1 but have some differences. First, the balance of benefit would increase on the side of partner organizations. Since KICs are autonomous from any central governance, the influence of partner organizations would be greater. Thus, there would be less incentive to experiment particularly innovative working models which include more attractive working conditions. Second, in respect to option 1, there would be presumably a greater geographical dispersion, thus distributing the benefits on a wider geographical basis.

1.2.4. Feasibility issues

There are important aspects that will have to be addressed to maximise the feasibility chances of success in generating the anticipated benefits. They are:

- Whether the right choices are made over which KIC to support. The choices will be influenced by political (economic, social and environmental), technical and scientific factors. This issue is particularly relevant as regards this option due to the lack of a strong governance structure able to filter these pressures.
- Whether consortia of the best parent institutions will wish to form KICs. The availability of substantial EU funding and the new basis for collaboration within the same legal body will be strong incentives. So too the prospect of the potential flexibility of the management and reward arrangements, and access to new private sector partners would be attractive. Further, as opposed to option 1, the more autonomous nature of the KIC would provide partners with a greater degree of influence over the KIC.

1.2.5. The main associated risks

The main risks relate quite closely to the feasibility issues. They are:

- The ‘wrong’ choices of KIC could be made as partners have a strong interest in promoting areas in which they feel they are already strong, and the selection body would not have the capacity to define its own agenda of key strategic challenges. The lack of an autonomous strong governance also exposes the selection process to political or interest-based considerations.
- The distributed nature of the EIT would weaken the coordination capacity between the various KICs, thus producing a risk of duplication.
- The strong bottom-up nature may not facilitate the creation of new and innovative cooperation models in the knowledge triangle characterized by strong discontinuity.
- In the event that the EIT failed to generate the necessary interest from the potential partners, the comparative weakness of the central structure would make it more difficult for the organisation to respond.

The policy option is of medium risk.

1.2.6. Summary of the assessment

The main strengths and weaknesses are summarised below and the assessment of the option relative to the status quo option is summarised in Tables A.2.1 and A.2.2.

Main strengths

The policy option would:

- create ‘critical mass’ in some – potentially many – KICs, enabling the EU to lead or compete with competitor economies in terms of the ‘excellence’ of research undertaken;
- enable flexible pay structures that would allow KIC institutions to attract and retain some of the best researchers in Europe;
- have light governance structures that would maximise the possibilities for long term cooperation with major European and multinational companies, and other sponsors;
- create an instrument that would not preclude organisations in the future generating suitable new organisations (some may do it without EU funding);
- be attractive to partner organization due to its bottom up approach;
- be very adaptable to changes that occur in the environment and capacity to evolve.

Main weaknesses

Its success would be crucially dependent upon several factors:

- The models proposed by the partners to integrate the knowledge triangle may not be substantially different from current practices. This would not contribute to substantially address EU level constraints to the integration of the K triangle.

- The choice of priorities and KIC can be influenced by the short term interest of the KIC partners and, at the funding level, is more exposed to political considerations.
- KICs are poorly coordinated reducing the opportunity of synergy and creating the possibility of duplicating efforts.
- The models proposed by the partners to integrate the knowledge triangle may not be substantially different to current practices.

Table A.2.1 Summary Assessment of Impacts for Policy Option 2

General Criteria	Specific criteria	Impact rating
Direct impact on the underlying problem/achievement of specific policy objectives	Increasing the absolute and relative presence of 'excellence' in research the EU	High
	Improving the exploitation of research outcomes to the benefit of the EU economy	Moderate
	Attracting and retaining high level and staff	Very high
	Creating critical mass	High
	Eliminating or reducing specific observed constraints	Low
	Ensuring coordination and synergy	Moderate
	Ensuring flexibility and capacity to adapt	Very high
Indirect impacts via reference model, Visible symbol	Propagating 'analogous models'	High
	Increasing the absolute and relative presence of 'excellence' in research the EU	Moderate
	Improving the exploitation of research outcomes to the benefit of the EU economy	High
	European Identity and K flagship	Moderate

Table A.2.2 Summary Assessment of Strengths and Weaknesses for Policy Option 2

Strengths	<ul style="list-style-type: none"> • Concentrates a critical mass of excellence in strategic areas • Provides attractive environment for talents • Enables long term cooperation with major business players at the KIC level • Spreads change and best practices through various forms of personnel affiliation • Creates an instrument to generate other organizations in the future • Is more attractive to partners
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	<ul style="list-style-type: none"> • Strong adaptability to changes
Weaknesses	<ul style="list-style-type: none"> • Risk that choices on areas are influenced by short term interests • Weak capacity to coordinate the activities between KICs • Risk not to produce new and innovative cooperation models between academia and business • Risk not to be perceived as a European level flagship

1.3. Policy Option 3: the integrated EIT

1.3.1. Direct impact

Increasing the absolute and relative presence of ‘excellence’ in innovation oriented research and education in the EU

A rating of very high impact is given. The option would lead to a deliberate concentration of excellence within new legal bodies (the KICs) which are nonetheless coordinated within a common framework. This would ensure that critical mass is achieved not only at the KIC but also at the overall EIT level. Physical concentration is likely to happen when this is needed by the nature of the work both at the KIC level (as in option 2) or between them (as in option 1).

Improving the exploitation of research outcomes to the benefit of the EU economy

A rating of very high impact is given. This assumes that the choice of KIC would be strongly influenced by consideration of potential future commercial exploitation. The presence of individuals from the business world on the governing board of the EIT would ensure this process. The formation of the KIC as a legal counterpart for businesses has the potential to further the involvement of the private sector at the KIC and project levels. But also the legal position of the EIT creates the opportunity to establish wider and longer term cooperation with major international players. Moreover, the presence of a strong and autonomous governance would facilitate the creation of innovative models of cooperation that could act as key principles for each KIC in organizing its activities. In this respect, KICs can be prompted by the governing Board to adopt more innovative models for integrating the K triangle.

Attracting and retaining high level staff and students

A rating of very high impact is given. The effects would be similar to policy option 1. This assumes that the KIC selected by the EIT would have the freedom to provide attractive packages, including salaries, infrastructure and high calibre staff to attract and retain within Europe the best researchers at all appropriate levels of experience from Europe and elsewhere. It assumes too, that the KIC will attract the best students, many of whom will continue to work within the KIC as researchers. Highly selective student admissions policies may further increase the attractiveness of the KIC to experienced researchers.

Creating critical mass

A rating of very high impact is given. The effects would be similar to policy option 1. It is assumed that the selection of KIC for funding by the EIT under this option will be strongly influenced by the opportunity to create within a series of integrated legal entities a critical mass of people and/or a critical mass of infrastructure. As opposed to option 1, the strong

autonomy of KIC should increase the willingness of partners to contribute. As opposed to option 2, the presence of a strong governance would ensure that critical mass is achieved also as regards the relationships between different KICs.

Eliminating or reducing other constraints in integrating the knowledge triangle at the EU level

A rating of high impact is given. The effects would be similar to policy option 1.

Ensuring coordination and synergy among the various activities performed or supported

A rating of very high impact is given. As in Policy Option 1, the strong guidance of the Governing Board would ensure that coordination issues are explicitly dealt with. In such circumstances the EIT would be likely to generate significant synergy effects between KICs. Coordination could also be improved by the likely evolution towards physical concentration within KICs and perhaps, between them around a few poles where this is required by the nature of the work.

Ensuring flexibility and capacity to adapt to changing conditions

A rating of very high impact is given. As in Option 2, since each KIC has a high degree of autonomy, it is easier to adapt and change the KIC configuration to cope with changes that occur in the wider environment. Those sitting in the governance bodies of the KIC will have a closer view and deeper understanding of their respective environments.

1.3.2. Indirect impacts

Propagating ‘analogous models’

A rating of high impact is given. Under this option there would be scope for the proliferation of KIC type activities. In due course universities and other partners may establish analogous KICs within the framework of new legal bodies, independently of large-scale EU financial backing. There may also be interest in equivalent national and regional cooperation between Universities in priority technological areas. Some of the principles of reform of higher education could be promoted by the policy option⁶⁷. This is also facilitated by the bottom-up nature of the KIC, which makes the concept more attractive and acceptable to partner organizations. Other parts of institutions involved in KICs may well be influenced. So too might others but the pattern of influence would be by no means clear-cut.

Increasing the level of ‘excellence’ in innovation oriented research and education in the EU

A rating of moderate impact is given. As with policy option 2 indirect effects on excellence in research could occur if, for example, stronger emphasis was given to the concentration of research and creation of excellence through national funding as a result of the EIT. As a more geographically distributed option, there would be more opportunities for different KICs to reflect the local needs and capacities, facilitating the way whereby other organizations in the region could improve their practices.

⁶⁷ COM (2006) 208 op cit

Improving the exploitation of research outcomes to the benefit of the EU economy

A rating of high impact is given. The indirect effects of the EIT under this policy option could include promoting through ‘demonstration effects’: increased commitments of European and international business to the exploitation of research at the national and regional levels; and, shifts in the culture amongst European universities in general towards improving the potential for exploitation. Certainly European ‘success stories’ would have the potential to inspire new developments. The establishment of KICs with light governance structures, independent of their parent institutions, highly focussed on research of potentially large commercial value at the global level would be attractive to major European businesses.

Contributing to building an EU identity and becoming a knowledge flagship

A rating of very high impact is given. As in option 1, the presence of a strong governance body would ensure that the EIT is perceived as one European initiative, although built on a system of autonomous KICs. This is consistent to the European cultural underpinning which is based on the concept of unity within diversity. This would contribute to the extension of the European identity within research, education and innovation activities.

1.3.3. The distribution of effects (who benefits, who loses)

The distributional effects of this policy option are similar to those of option 1 and 2 but with the difference that benefits would be more equally distributed between individual participants on the one hand, and partner organizations on the other.

1.3.4. Feasibility issues

There are important aspects that will have to be addressed to maximise the feasibility chances of success in generating the anticipated benefits. They are:

- Whether the right choices are made over which KIC to support. The choices will be influenced by political (economic, social and environmental), technical and scientific factors. In this respect, it is crucial to ensure the autonomy of the GB and to define a proper power balance between it and the KICs.
- Whether consortia of the best parent institutions will wish to form KIC. The availability of substantial EU funding and the new basis for collaboration within the same legal body will be strong incentive. So too the prospect of the potential flexibility of the management and reward arrangements, and access to new private sector partners would be attractive. However, against this potential, participant existing institutions would have to weigh the following: they would partially lose control of their more or most successful and eminent departments; However, this would be mediated as partners are strongly involved in the management of the KICs activities.

1.3.5. The main associated risks

The main risks relate quite closely to the feasibility issues. They are:

- The ‘wrong’ choices of KIC could be made at the governing board level.
- Finding the right balance between the autonomy of the KICs and the coordination power of the GB.

The policy option is of medium risk.

1.3.6. Summary of the assessment

The main strengths and weaknesses are summarised below and the assessment of the option relative to status quo option is summarised in Tables A.3.1 and A.3.2.

Main strengths

The policy option would:

- create ‘critical mass’ in some – potentially many – KICs, enabling the EU to lead or compete with competitor economies in terms of the ‘excellence’ of research undertaken;
- enable flexible pay structures that would allow institutions to attract and retain some of the best researchers in Europe;
- have light governance structures that would maximise the possibilities for long term cooperation with major European and multinational companies, and other sponsors;
- influence beneficially the culture of the many existing institutions, components of which would be ‘seconded’ to the EITs by illustrating new means through which the ‘knowledge triangle’ can be reinforced;
- have a strong and autonomous governance structure able to select priorities and KICs without excessive influence by political bodies or other interest groups;
- provide strong coordination among KICs exploiting synergies and avoiding duplication;
- enable the EIT to experiment with different models which integrate the knowledge triangle in ways characterized by more discontinuity and novelty;
- build poles of excellence which are also geographically concentrated;
- have a strong governance structure that would maximise the possibilities for long term cooperation with major European and multinational companies, and other sponsors;
- represent a visible European flagship and reinforce the building of the European identity extending its scope to the knowledge triangle;
- be more attractive to partner organization due to its bottom up approach;
- be very adaptable to changes in the environment with a strong evolutionary capacity;

Main weaknesses

This policy option does not have major weaknesses. However, its success would be crucially dependent upon several factors:

- The choice of priorities and KICs and thus setting up a competent and autonomous GB.

- A proper balance of power between the GB and the KICs to ensure autonomy and coordination.

Table A.3.1 Summary Assessment of Impacts for Policy Option 3

General Criteria	Specific criteria	Impact rating
Direct impact on the underlying problem/achievement of specific policy objectives	Increasing the absolute and relative presence of 'excellence' in research the EU	Very high
	Improving the exploitation of research outcomes to the benefit of the EU economy	Very high
	Attracting and retaining high level and staff	Very high
	Creating critical mass	Very high
	Eliminating or reducing specific observed constraints	High
	Ensuring coordination and synergy	Very high
	Ensuring flexibility and capacity to adapt	Very high
Indirect impacts via reference model, Visible symbol	Propagating 'analogous models'	High
	Increasing the absolute and relative presence of 'excellence' in research the EU	Moderate
	Improving the exploitation of research outcomes to the benefit of the EU economy	High
	European Identity and K flagship	Very high

Table A.3.2 Summary Assessment of Strengths and Weaknesses for Policy Option 3

<p>Strengths</p>	<ul style="list-style-type: none"> • Concentrates also geographically a critical mass of excellence in strategic areas • Provides attractive environment for talents • Enables long term cooperation with major business players at the KIC level • Spreads change and best practices through various forms of personnel affiliation • Strong governance to select priorities and experiment new models • Strong European identity and visibility, capable of supporting the overcoming of EU constraints • Is more attractive to partners • Strong adaptability to changes • Strong coordination within and among KICs
<p>Weaknesses</p>	<ul style="list-style-type: none"> • Difficult balance of power between the central structure and KICs • Risk of structural complexity which could lead to bureaucratization • Risk that the choice of KICs might be influenced by various interests

1.4. Policy Option 4: the labelling/funding mechanism

1.4.1. Direct impact

Increasing the absolute and relative presence of ‘excellence’ in innovation oriented research and education in the EU

A rating of high impact is given. Additional resources ‘from the EIT’ would be awarded to institutions that were found through competitive calls to be the best in Europe in the particular KIC areas, and this would lead to important increases in the absolute and relative presence of excellence in research in the EU. However, the organisation of KIC would be ‘loose’ and the institutional arrangements would be not significantly different from those within existing and planned activities within the FP6 and FP7. In the absence of a strong central structure capable of monitoring “excellence” throughout the relative long life of a KIC, the incentive to maintain the excellence shown initially at the point of selection might fade.

Improving the exploitation of research outcomes to the benefit of the EU economy

A rating of moderate impact is given. This assumes that the choice of KIC would be influenced by consideration of potential future commercial exploitation. The presence of individuals from the business world on the governing board of the EIT funding body would support this process. However, as control would be essentially at the hands of the financed organizations, activities would be probably organized according to traditional models which are less innovative in integrating the three aspects of the knowledge triangle.

Attracting and retaining high level staff and students

A rating of low impact is given. The additional resources ‘from the EIT’ would have the effect of increasing the numbers of staff in the institutions undertaking work within the selected KIC. However, the recruitment and employment policies would remain those of the existing institutions within existing rules. Thus the impact with respect to this criterion could be minor.

Creating critical mass

A rating of low impact is given. The additional resources ‘from the EIT’ could have the effect of increasing the critical mass of researchers and/or facilities within individual organizations or small networks. However, the network would not necessarily have the means to ensure intensive cooperation between institutions as in policy options 1 and 3 where those working at the KIC level would be part of the same legal body.

Eliminating or reducing other constraints in integrating the knowledge triangle at the EU level

A rating of low impact is given. The resources would promote collaboration and transnational working within the KIC. However, no new collaborative mechanism would be put in place to achieve this and the effects of this constraint would be minor.

Ensuring coordination and synergy

A rating of low impact is given. As funds are allocated to individual organizations or to networks of autonomous institutions, and in the absence of a central body capable of driving synergy, few coordination effects are likely.

Ensuring flexibility and adaptability

A rating of very high impact is given. As a funding mechanism the EIT can flexibly and quickly tune its funding policies to match emerging needs and trends. On the other hand, the EIT would not provide any particular mechanism to ensure an increased adaptability also on the side of the receiver or to ensure that the KIC remains flexible and adaptable throughout the contractual period. In this sense, flexibility is achieved on the side of the funding body and not on that of the receiver.

1.4.2. Indirect impacts

Propagating ‘analogous models’

A rating of moderate impact is given. The policy option would further enhance the role of excellence, building on for example the already existing networks of excellence. It could provide a reference model for the development of excellence at the Member State and regional levels. On the other hand, as opposed to previous options, the net separation between the EIT and the people working in financed organizations would not allow beneficiaries to be exposed to new working practices, thus reducing the possibility for their spread.

Increasing the level of ‘excellence’ in innovation related research and education the EU

A rating of low impact is given. Those organizations not deemed of a level to be awarded a label would have incentives to learn from the experience of successful institutions. However, these incentives would still have been present before the EIT labelling mechanism would be put in place, so that the impact of the EIT would be low.

Improving the exploitation of research outcomes to the benefit of the EU economy

A rating of low impact is given. For the same reason as in the previous point, the capacity to spread best practices in research exploitation and innovation is very limited due to the strong separation between the funding body and beneficiaries. These would be limited to promotion of success stories through demonstration effects.

Flagship and identity

A rating of moderate impact is given. The requirement of excellence could increase the visibility and prestige of some organizations on the global scene. But this effect would be limited in impact when compared to the other options (as one organization could hardly match the size and scale of a KIC composed of different organizations).

1.4.3. The distribution of effects (who benefits, who loses)

The policy option has been formulated to generate economic, social and environmental benefits at the European level. The EU as a whole would benefit. Some, indeed most, of the benefits would be in the medium and long terms. In the meantime the main direct beneficiaries would be the institutions and staff directly involved in the beneficiary organizations. These would benefit from the presumption of excellence inherent in being selected as part of KICs. Individual researchers and students will benefit much less as they would continue to operate under the same conditions. The localities in which institutions are based could further benefit. Industry could benefit if their involvement is a precondition for funding, although this would not produce any significant difference when compared to existing models of cooperation.

The policy option does however involve the deliberate concentration of excellence. Institutions not selected for involvement in the KIC might take a step back in their excellence rating (in the fields prioritised by the EIT) while those financed will increase their relative performance. Given the emphasis on excellence in the allocation of resources EU regional development objectives would not necessarily be furthered directly.

1.4.4. Feasibility issues

There are no overriding constraints to establishing the ‘EIT’ under this option. There are however aspects that will have to be addressed to maximise the feasibility chances of success in generating the anticipated benefits. They are:

- Whether the right choices are made over which organizations to support. The choices will be influenced by political (economic, social and environmental), technical and scientific factors. This is a higher risk than under other options, due to the absence of a strong and independent central body.

- Whether suitable procedures can be devised to ensure the proper accountability and effective management of the financing contract.

1.4.5. The main associated risks

The main risks of this policy option are:

- Since the resources would be focused on the selected institutions, some of the best components of less successful organizations may be excluded while less successful components of prestigious organizations may be facilitated.
- The collaborative arrangements between the institutions within specific KIC do not work. (Establishing arrangements for analogous transnational activity between public bodies has been difficult).

The implementation of the policy option is low risk.

1.4.6. Summary of the assessment

The main strengths and weaknesses are summarised below and the assessment of the option relative to the status quo option is summarised in Tables A.4.1 and A.4.2.

Main strengths

This policy option:

- has the potential to create conditions in some areas enabling the EU to lead or to compete with competitor economies in terms of the ‘excellence’ of research undertaken;
- is simple and could be implemented without delay;
- can easily adapt to changes in the external environment through the reallocation of funds to more promising areas.

Main weaknesses

The main weaknesses of this policy option are:

- It may not directly address the constraints to attracting and retaining the best researchers and on the exploitation of research results in Europe. However, criteria could be introduced in the funding decisions that increase the likelihood that these constraints could be addressed.
- The success of the policy option will critically depend upon the choice of the beneficiaries and organisations funded. These choices will be influenced by scientific, political and commercial considerations and would have to be made by the EU. There is a likelihood that resource allocation would be influenced by Member State considerations rather than ‘excellence’ at the EU level.
- It implies no major change in the way in which the three aspects of the knowledge triangle are integrated thus attracting a more systematic involvement of businesses and an increased capacity to exploit research outcomes.

Table A.4.1 Summary Assessment of Impacts for Policy Option 4

General Criteria	Specific criteria	Impact rating
Direct impact on the underlying problem/achievement of specific policy objectives	Increasing the absolute and relative presence of ‘excellence’ in research the EU	High
	Improving the exploitation of research outcomes to the benefit of the EU economy	Moderate
	Attracting and retaining high level and staff	Low
	Creating critical mass	Low
	Eliminating or reducing specific observed constraints	Low
	Ensuring coordination and synergy	Low
	Ensuring flexibility and capacity to adapt	Very high
Indirect impacts via reference model, Visible symbol	Propagating ‘analogous models’	Moderate
	Increasing the absolute and relative presence of ‘excellence’ in research the EU	low
	Improving the exploitation of research outcomes to the benefit of the EU economy	Low
	European Identity and K flagship	Moderate

Table A.4.2 Summary Assessment of Strengths and Weaknesses for Policy Option 4

Strengths	<ul style="list-style-type: none"> • Support existing institutions to become globally competitive • Simple and immediate implementation • Able to adapt to changing external conditions
Weaknesses	<ul style="list-style-type: none"> • Weak capacity to improve attraction of talents • Selection of beneficiaries may be influenced by various interests • Risk of increasing the divide between excellent and non excellent institutions • Poor capacity to ensure coordination and synergy between beneficiaries • Weak capacity to improve the integration of the K triangle and improve the exploitation of research outcomes

1.5. Policy Option 5

1.5.1. Direct impact

Increasing the absolute and relative presence of ‘excellence’ in innovation oriented research and education in the EU

The policy option will not further contribute on this front.

Improving the exploitation of research outcomes to the benefit of the EU economy

The policy option will not contribute further on this front.

Attracting and retaining of high level staff and students

The policy option will not contribute further on this front.

Creating critical mass

The policy option will not contribute further on this front.

Eliminating or reducing other constraints in integrating the knowledge triangle at the EU level

The policy option will not contribute further on this front.

Ensuring coordination and synergy among the various activities performed or supported

The policy option will not contribute further on this front.

Flexibility and capacity to adapt to changing conditions

The policy option will not contribute further on this front.

1.5.2. Indirect impacts

Propagating ‘analogous models’

The policy option will not contribute further on this front.

Increasing the level of ‘excellence’ in innovation oriented research and education in the EU

The policy option will not contribute further on this front.

Improving in the exploitation of research outcomes to the benefit of the EU economy

The policy option will not contribute further on this front.

Contributing to building an EU identity and becoming a knowledge flagship

The policy option will not contribute further on this front.

1.5.3. The distribution of effects (who benefits, who loses)

There are no further distributional effects to consider.

1.5.4. Feasibility issues

There are no technical and financial constraints on this option. Some political capital invested in the EIT proposal would be lost.

1.5.5. Stakeholder views

Stakeholders were not asked to comment on the potential effects of a status quo scenario, and from the statements released it is clear that all favour additional investment on top of that already committed to existing programmes and initiatives.

1.5.6. The main associated risks

The loss of political capital in support of Knowledge Triangle.

1.5.7. Summary of the assessment

The main strengths and weaknesses are summarised below and the assessment of the option is summarised in Tables A.5.1 and A.5.2.

Main strengths

Under this policy option no further action would be required

Main weaknesses

The main weaknesses of policy option 5 are:

- Under this policy option there is no initiative to address the need to integrate the three aspects of the knowledge triangle as elaborated above.
- Doing nothing further might imply a loss of political capital as the commitment to re-launch the Lisbon strategy with new concrete actions would have no further follow-up.

Table A.5.1 Summary Assessment of Impacts for Policy Option 5

General Criteria	Specific criteria	Impact rating
Direct impact on the underlying problem/achievement of specific policy objectives	Increasing the absolute and relative presence of ‘excellence’ in research the EU	No
	Improving the exploitation of research outcomes to the benefit of the EU economy	No
	Attracting and retaining high level and staff	No
	Creating critical mass	No
	Eliminating or reducing specific observed constraints	No
	Ensuring coordination and synergy	No
	Ensuring flexibility and capacity to adapt	No
Indirect impacts via reference model, Visible symbol	Propagating ‘analogous models’	No
	Increasing the absolute and relative presence of ‘excellence’ in research the EU	No
	Improving the exploitation of research outcomes to the benefit of the EU economy	No
	European Identity and K flagship	No

Table A.5.2 Summary Assessment of Strengths and Weaknesses for Policy Option 5

Strengths	No further action would be required
Weaknesses	<p>There is no initiative to address the need to integrate the three aspects of the knowledge triangle.</p> <p>This option might imply a loss of political capital as the commitment to re-launch the Lisbon strategy with new concrete actions would have no further follow-up.</p>

1.6. Comparative assessment of Policy Options

1.6.1. Comparing the strengths and weaknesses

General Criteria	Specific criteria	PO1	PO2	PO3	PO4	PO5
Direct impact on the underlying problem/ achievement of specific policy objectives	Increasing the absolute and relative presence of 'excellence' in research the EU	High	High	Very high	High	No
	Improving the exploitation of research outcomes to the benefit of the EU economy	Very high	Moderate	Very high	Moderate	No
	Attracting and retaining high level and staff	High	Very high	Very high	Low	No
	Creating critical mass	High	High	Very high	Low	No
	Eliminating or reducing specific observed constraints	High	Low	High	Low	No
	Ensuring coordination and synergy	Very high	Moderate	Very high	Low	No
	Ensuring flexibility and capacity to adapt	Moderate	Very high	Very high	Very high	No
Indirect impact via reference model and visible symbol	Propagating 'analogous models'	Moderate	High	High	Moderate	No
	Increasing the absolute and relative presence of 'excellence' in research the EU	Low	Moderate	Moderate	Low	No
	Improving the exploitation of research outcomes to the benefit of the EU economy	High	High	High	Low	No
	European Identity and K flagship	Very high	Moderate	Very high	Moderate	No
Summary direct and indirect impacts		High	High	Very high	Moderate	No

1.6.2. Comparing the impacts

Policy Option	Strengths	Weaknesses
1. The Centralized EIT	<p>Strong governance to select priorities and experiment new models</p> <p>Strong coordination within and among KICs</p> <p>Concentrate also geographically a critical mass of excellence in strategic areas</p> <p>Provide attractive environment for talents</p> <p>Enable long term cooperation with major business players</p> <p>Spread change and best practices through seconded personnel</p> <p>Strong European identity and visibility, capable of supporting the overcoming of EU constraints</p>	<p>Weak capacity to evolve and adapt to external changes</p> <p>Weak capacity to attract potential partners</p> <p>Risk of duplicating resources</p> <p>Risk of bureaucratization</p> <p>Risk to crowd out existing organizations</p>
2. The Distributed EIT	<p>Concentrate a critical mass of excellence in strategic areas</p> <p>Provide attractive environment for talents</p> <p>Enable long term cooperation with major business players at the KIC level</p> <p>Spread change and best practices through seconded personnel</p> <p>Create an instrument to generate other organizations in the future</p> <p>More attractive to partners</p> <p>Strong adaptability to changes</p>	<p>Risk that choices on areas are influenced by short term interests</p> <p>Weak capacity to coordinate the activities between KICs</p> <p>Risk not to produce new and innovative cooperation models between academia and business</p> <p>Risk not to be perceived as a European level flagship</p>
3. The Integrated EIT	<p>Concentrate also geographically a critical mass of excellence in strategic areas</p> <p>Provide attractive environment for talents</p> <p>Enable long term cooperation with major business players at the KIC level</p> <p>Spread change and best practices</p>	<p>Difficult balance of power between the central structure and KICs</p> <p>Risk of structural complexity which could lead to bureaucratization</p> <p>Risk that the choice of KICs might be influenced by various interests</p>

	<p>through seconded personnel</p> <p>Strong governance to select priorities and experiment new models</p> <p>Strong European identity and visibility, capable of supporting the overcoming of EU constraints</p> <p>More attractive to partners</p> <p>Strong adaptability to changes</p> <p>Strong coordination within and among KICs</p>	
<p>4.</p> <p>The labelling/funding mechanism</p>	<p>Support existing institutions to become globally competitive</p> <p>Simple and immediate implementation</p> <p>Able to adapt to changing external conditions</p>	<p>Weak capacity to improve attraction of talents</p> <p>Selection of beneficiaries may be influenced by various interests</p> <p>Risk of increasing the divide between excellent and non excellent institutions</p> <p>Poor capacity to ensure coordination and synergy between beneficiaries</p> <p>Weak capacity to improve the integration of the k triangle and improve the exploitation of research outcomes</p>
<p>5.</p> <p>The status quo</p>	<p>No further action would be required</p>	<p>There is no initiative to address the need to integrate the three aspects of the knowledge triangle.</p> <p>This nothing might imply a loss of political capital as the commitment to re-launch the Lisbon strategy with new concrete actions would have no follow-up.</p>