REPORT OF WORK PACKAGE 3a

Policy Implications: future training needs

Contract n: HPV1-CT-2001-50002

Call identifier: IHP-STRATA-00-01

Title: A European Research Arena on Intangibles (E*KNOW-NET)

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Reference period: March 1, 2003 to October 1, 2003

Date of issue of this report: October 15, 2003

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1 Executive summary

The aim of work package 3a is to explore the new training needs at European level with regard to the management of intangibles in order to link Science & Technology policy with education policy.

This report addresses the new training needs at European level with regard to the management of intangibles, in order to propose the development of training schemes at European level.

In order to connect to existing policy recommendations, a bibliographical study was performed based on a key words in the library databases of three main European actors in Education and Training – the European Union, the OECD and the CEDEFOP.

Existing recommendations are founded on statements made at the Lisbon Summit (March 2000), the European Forum on Training for Entrepreneurship (October 2000), and at Stockholm Summit (March 2001). These revolve around the EU's strategy to become the world's most competitive and dynamic knowledge-based society. The key elements in this strategy are clustered in 4 goals that act as framework for this report:

- Adaptation of education and training to offer tailored learning opportunities to individual citizens at all stages of their lives;
- The promotion of employability and social inclusion through investment in citizens' knowledge and competences;
- The creation of the information society for all;
- The fostering of mobility.

E*Know-Net is well qualified to pronounce itself on the education agenda based on two arguments: its established track record on intellectual capital and intangibles, and its insights on how knowledge is produced and intellectual capital creates value.

Knowledge production is based on connectivity between the elements of human capital and structural/organizational capital. Connectivity refers to relating relevant knowledge, experfience and insight at individual level to organizational infrastructure and capabilities. This relating is called connectivity and is also known as relational capital. Connectivity requires:

- *Locating* the right resources (where is the human capital)?
- *Accessing* these resource (getting that human capital mobilized), and

- *Combining* these resources (getting them to exchange insights).

The following future education agenda of three (3) items is proposed, with the following related policy recommendations, some of which find their basis in recent and ongoing EU initiatives:

Agenda item 1 - Connectivity
promoting connectivity between diverse actors, both in terms of established institutions and in terms of experienced (groups of) individuals. Locating, accessing and combining diverse actors are the key elements in promoting connectivity.
Specific policy recommendations - Connectivity
• to use the locating, accessing and combining framework to categorise policy initiatives • to use the knowledge production process / learning as policy basis instead of the institution (university, school, firms) • to use communities and (relational) networks as policy levers to assess knowledge results.

Agenda item 2 - Diversity
processes and procedures to develop and maintain knowledge diversity revolving around the continuous flow of knowledge exchanges and away from knowledge stock-taking and inventory building.
Specific policy recommendations –
• to use interdisciplinary diversity as an constituting criterion for training and research programmes; • to develop (or include in ongoing initiatives) an inventory of methodologies, procedural systems and incentive processes related to the design of interdisciplinary training and research programs • to include interdisciplinarity as an important criterion in the development of innovative pedagogies and the subsequent inventorisation, diffusion and use of those.

Agenda item 3 - Community as policy lever
Community as policy lever revolves around collaborative activities and its networked community aspects and any improvements thereof.
Specific policy recommendations – Community as policy lever
• to use the community level of analysis as basis for policy interventions and measures in education and training; • to consider the creation of a uniform European company statute as a format to stimulate truly European Community focussed educational initiatives; • to use ongoing initiatives at regional, urban and SME levels to formulate educational policy interventions and measures.

Within Agenda item 2 – Diversity, the following training programme suggestions are put forward, based on their interdisciplinary and diversity:

Traditional training programmes – interdisciplinarity in course substance
1) A traditional doctorate Programme as part of an established academic training trajectory.
2) A professional Master Programme with one or several modules to cover the interests of different professional groups and stakeholders (e.g., financial analysts, banks, public sector)
3) A research-based Master Programme of 1 year that may be followed by the Doctoral Programme as mentioned under 1). This research-based Master would fit the Bologna process presently underway.
Non-traditional training programmes – interdisciplinarity in course substance, and in participant diversity
4) Summer Schools: A short-duration course once a year devoted to a particular actual issue in the area of Intangibles, Intellectual Capital and Knowledge Management. Such programme can be made repetitive over time, although with a different issue every time, and act as research window as well as “diversity platform”.
5) A virtual learning Center, in the tradition of the Open Univerity programmes available in many European countries. A selected number of Open Universities already offer course modules on intellectual capital, the information society, or knowledge management.
6) An adult, life-long learning institute that offers executive as well as post-graduate degree programmes and modules in the field of intellectual capital, the information society, or knowledge management. (see section 6.5. for a good practice example brought about by a number of E*Know-Net partners)
Meta-training programmes - interdisciplinarity in participant diversity, and in hosting institutions
7) A programme to encourage mobility of young researchers among European Research Centers for short or long-term periods, connected or not with the above Doctoral or Master programmes.

For all above program designs, the E*Know-Net group has both the pedagogical experience and the substance material to initiate these.

As an unprogrammed extra outcome of E*Know-Net, several of its individual members have initiated an ongoing field experiment in creating an adult, life-long education program based on the three agenda items mentioned above. This is venture is undertaken on personnel title and is not formally endorsed by E*Know-Net nor its member institutions; it is mentioned as section 6.5. in this report.

2 Introduction

The E*KNOW-NET project aims to exploit and enhance the results of the MERITUM (Measuring Intangibles to Understand and Improve Innovation Management) project, making them useful for Science, Technology and Innovation policy decision making.

The main objective of the Network – to create a European Research & Communication arena on Intangibles – was addressed in the first work package where excellence centers and existing and potential users of knowledge on intangibles from different European Countries and countries world-wide were brought together to exploit and diffuse existing expertise in the analysis of knowledge production, acquisition and diffusion by companies and its implications for Science, Technology and Innovation Policy. In the next work package the E*KNOW-NET activities resulted in a dissemination of previous research results to over 11000 firms and organizations, through distribution of the MERITUM guidelines and information on previous research results through supporting institutions. Furthermore, almost 1400 companies and organizations already using or potentially adopting the guidelines have been involved in different presentations and workshops on the management and measurement of intangibles.

The aim of work package 3 is to promote discussion in order to define both the research agenda that might help better the policy decision making process and to explore the new training needs at European level with regard to the management of intangibles in order to link Science & Technology policy with education policy. This report addresses the second part – to explore new training needs at European level with regard to the management of intangibles, in order to propose the development of training schemes at European level. A new training agenda will lead to the design of a European Training Scheme on Knowledge management, that will, in future, encourage the mobility of researchers and practitioners and the possibilities of receiving multidisciplinary training based on the different expertise of the members of the network. A very specific aim is to develop a framework for the development of European doctoral programmes on intangibles

A substantial amount of research until now in the area has focused on how to identify, classify and report intangibles but more research is needed in order to assess the implications for management and policymaking. The European Union is experiencing a number of rapid and far-reaching changes in society and the economy. These changes pose serious challenges for education and training systems, which must be met if the systems are to equip people to respond to the growing demands of a knowledge-based economy and society.[1]

Addressing these changes requires a new way of approaching learning systems and has, thus, put a premium price on a high level of general education. Although a well educated workforce and an enlarged European Union will enhance resources in the region, in order to capitalise on these enormous opportunities, Europe needs to focus on the economy's most precious asset: people.

The way that systems change will be determined by the interaction of a wide range of interests, including governments at various levels, employers, the social partners, trade associations, professional bodies and individuals. New interest groups have also emerged, such as the press and media, teacher associations, private training providers and commercial advisers, each with their own agenda. The worldwide web is a more recent development, offering new possibilities for the globalisation of learning which have not yet really begun to be exploited or even understood.

The co-ordination with other European programs and initiatives is on the one hand achieved by reviewing available documents, reports and papers and on the other hand by surveying the opinion of the members of excellence centers and users registered in work package 1.

3 Methodology

As the work package takes the two previous activities in the E*Know-net project as its starting point, it was planned that the report would build on their insights as well as take into account existing information from European and multilateral organizations, such as the OECD, the European Commission and European level agencies. This in order not to reinvent the wheel nor to provide recommendations that are totally unconnected with the scope and frameworks of ongoing policies initiatives or the lessons learned from earlier efforts. The latter also specifically includes the lessons learned by the E*Know-Net participants, both in and outside the activities formulated in Work Packages 1 and 2.

For example, part of the diffusion and try-outs of the MERITUM Guidelines involves teaching introductory seminars to a diverse set of audiences in order to explain the working of the Guidelines and its line-of-argument on, for example, the difference between dynamic and static resources (i.e., stocks and flows).

[1] Cedefop, http://www2.trainingvillage.gr/etv/policyreport/summaryEN.asp

These introductory sessions are part and parcel of diffusion but provide much tacit information on how to educate the various audiences on the issue. To mention one example, introducing the topic of Intellectual Capital takes a totally different shape and form when done in front of a student audience, an academic audience and a practitioner audience. Both the substance content and the pedagogics used to "get the message" across link up with an equally rich variety in feedback. Diffusion of the gained knowledge in a classic teaching context, i.e., university curricula, or in a learn-how-to-do-it, implementation context of practitioner interest, has strong effects on what these difference audiences want to hear and how it should be provided to them – theoretical justifications and empirical verification versus instruments and examples of first/best practices. In both cases, there is a clear education agenda in terms of content but there is far less clarity on *how* this content is best transferred to create effect, be that stated in terms of education degrees obtained or business value created. This tacit education knowledge and experiences of the E*Know-Net partners are an equally important part of this report as is the conventional verification of what has been said and done before by the relevant institutional actors at European and international level.

The institutional material incorporated into this summary has been found using a general key word based search on the EU, OECD and CEDEFOP websites. Search terms where the words: intangibles, training agenda, knowledge management, knowledge transfer, European training scheme, doctorate programme, intellectual capital and network. All searches involved combinations of the various words in other to increase the hit chance in finding interrelated policy initiatives and interventions.

4 Findings

In the below table, the policy voices of three main European-level actors are summarized in relation to the basic Why and How questions on education and training in Europe. The Why-question typically focusess at which economic and societal challenges the education policies confronts. The How-question addresses the typical characteristics (of these challenges) that the education policy interventions need to cover. As can be observed, the different European actors have prioritized different challenges, in line with their different mandates and stakeholder interests.

- Table 1: Policy Voices on Education & Training

	EU Commission[2]	OECD[3]	CEDEFOP[4]
Why Educate and Train Europe (Economic and societal challenges)	- Technological changes, ⇑ ICT ⇒ IT skills shortage - Ageing population - New managerial & business practices - ⇑ social inequity - ⇑ debt burden of developing countries	- Low literacy rates across Europe - 'Youth problem' ie; need to foster entrepreneurship - 'New economy' i.e.; information driven economy - Poor competitiveness & Performance of SME's - Teacher shortage, quality problems	- Globalisation, competitive pressure on European producers - Economic & Social change due to ⇑ tech. - Ageing population - Gender inequality - ⇑ demand or IT know-how & skilled workforce - ⇓ Demand for low-skilled jobs - Industry shift from basic to sophisticated products - ⇑ concern for sustainable economic development and social cohesion - ⇑ youth unemployment
How to Educate and train Europe (Specific characteristics programs should address)	- adapt to requirements of knowledge-based society - ⇑ transnational cooperation - boost mobility - improve adult education - promote ICT - encourage social cohesion - promote life long learning - ⇑ strategic relationships b/w academic and business world - promote gender equality - regular teacher retraining	- adapt to requirements of knowledge-based society - ⇑ adult learning - promote lifelong learning - promote education reform in accession countries - boost entrepreneurship - encourage social cohesion - ⇑ performance & competitiveness of SME's	- ⇑ transnational cooperation - continuous monitoring, evaluating & benchmarking - clearly defined & agreed strategies - successful integration of results into policies & practices - promote mainstreaming - encourage empowerment - boost innovation - thematic approaches - effective dissemination tools

With respect to the How-question, there is a broad distinction between learning & training policy measures on one hand and training schemes on the other hand. The former are more broad in terms of the challenges they take one while the latter is more specific in taking on the challenge of social inequity and cohesion. Proactive learning and training measures aim at preparing Europeans for a knowledge-based society. That is, a society which fosters economic growth, sustainable development, and social inclusion, and which aims to increase the competitiveness of European economies and companies, through higher levels of productivity and profitability as well as to create more jobs of higher quality. Training schemes aim at helping individuals

[2] Information deduced from search conducted at http://europa.eu.int/geninfo/query_en.htm using following keywords: intangibles, training agenda, knowledge management, knowledge transfer, european training scheme, doctorate programme, intellectual capital, network

[3] Information deduced from search conducted at http://tug.lib.uoguelph.ca/indexes/descriptions/sourceoecd.html# using same keywords as above

[4] Information deduced from search conducted at http://www.cedefop.eu.int/ using same keywords as above.

adapt to rapid changes in the workplace, technology and society as well as enhancing active citizenship, independence, teamwork, creativity, personal development and inter-cultural communication skills.

4.1 Focus of Current Programs with Respect to the Commission

In order to facilitate the stated policy objectives, the Commission (mentioned as the left hand column in the above table) has launched several programmes and calls for action. The main ones are mentioned below and briefly explained. The main purpose of these programmes was to provide funding to realize the stated objectives.

The objectives of **boosting transnational cooperation and mobility** have been facilitated by:

- With a focus on teaching staff and schools: Encouraging transnational cooperation between schools, improving professional development of school staff and promoting language learning and intercultural awareness (e.g. Comenius 1 January 2000 for 7 years http://europa.eu.int/comm/education/programmes/socrates/generalen.pdf).
- With a focus on university institutional cooperation: Boosting mobility between European countries and encouraging transnational cooperation between universities (e.g. Erasmus 2000-2006 http://europa.eu.int/comm/education/programmes/socrates/erasmus/erasmus_en.html).
- With a focus on maintaining the momentum of cooperation and change: Improving the exchange of information and experience in the field of education between the countries participating in Socrates (e.g. Observation and Innovation 2000-2006 http://europa.eu.int/comm/education/programmes/socrates/observation/index_en.html).

The objectives of **improving adult education and promoting life-long learning** have been facilitated by:

- With a focus on adult education: Improving adult education in the broader sense, fostering improvement of the education possibilities available to people without basic school qualifications, and encouraging innovation in alternative educational pathways (e.g. Grundvitg 2000-2006 http://europa.eu.int/comm/education/programmes/socrates/grundtvig/home_fr.html).
- With a focus on life-long learning, social cohesion and the knowledge-based society: Improving the skills and competence of people to improve the quality of, and access to, vocational training and the life-long learning possibilities (e.g. LeonardoDaVinci2000-2006 http://europa.eu.int/comm/education/programmes/leonardo/leonardo_en.html).

The objective of harnessing transnational cooperation and mobility has been facilitated by:

- With a specific focus on language versatility and transnational mobility: Foster linguistic diversity in Europe, enhancing the quality of language teaching and improving access for individuals to learning resources (e.g. Lingua 2000-2006 http://europa.eu.int/comm/education/policies/lang/languages/actions/lingua2_en.html).
- With a specific foucs on promoting ICT: Promoting European cooperation in the use of Information and Communications Technologies in education, and promoting Open and Distance Learning (e.g. Minerva2000-2006 http://europa.eu.int/comm/education/programmes/socrates/minerva/ind1a_en.html).

4.2 Existing recommendations for European education schemes

Recommendations for new European education and training schemes should address the need to adapt to the requirements of the knowledge-based society and the increasing need for lifelong acquisition of knowledge and skills (shift towards life-long learning), not only in education settings but also through family life, from experience with communities and in business. They must also promote individual responsibility and social dialogue, as guiding principles of contemporary human resource management and training policies, and help to increase employment and improve quality. (European Forum on training for entrepreneurship, Nice Sophia Antipolis 19-20 October 2000 http://europa.eu.int/comm/enterprise/entrepreneurship/support_measures/training_education/nice_00/proceedings_nice_2000en.pdf)

Specific actions included in the document of October 2000:

1. **Creating a digitally literal Europe**, that is, making new technologies and IT skills as widely available as possible; getting everybody online mastering Internet and multimedia resources and using this to learn and acquire new skills, intercultural communication and problem solving. Plans include local learning centres accessible to all; promoting a European Diploma for IT skills; and increasing mobility. More specifically, a main strategic aim of Cedefop is to further develop the knowledge management system (KMS) – a new web-based system, running on a platform using cutting-edge technology, will be a transversal activity to which all areas will contribute – in the

context of enhanced cooperation in vocational education and training.[5] Furthermore, the identification of new skills needs to be progressively updated in line with changing requirements.

2. Programs should be **socially inclusive**, not only focusing on the technical aspects but on the changing contemporary economic and social context of human resources development and training. The EU voices a strong commitment to promoting social progress and strengthening social cohesion[6].

3. Education and training schemes must not only enable durable basic information to be acquired but also **promote learning, independence, problem solving, intercultural communication, teamwork, multidisciplinarity, creativity and critical thinking**.

4. By considering the historical development of education and training at national and international levels and the influence of programs on European integration, previous projects may be used as a potentially rich source of material and insights to encourage future research in these areas. (e.g. VET 2003-2006, http://www.cedefop.eu.int/download/current_act/wp2003_4021_en.pdf)

   Training programmes at international level have to be developed, both in terms of functional management and in terms of policy-making so as to correct our incomplete (quantitative and qualitative) understanding of the knowledge production process and its impact. This is especially relevant for firms and institutions who are starting to work on their intangibles, such as SME's. Simultaneously, there must be reinforcement of research potential in **new areas of research.**

5. Creation and promotion of the development of **real strategic lasting relationships between academic world and the world of enterprises** aiming at the establishment of lasting collaborations of mutual interest.

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[5]Cedefop, http://www.cedefop.eu.int/download/current_act/wp2003_4021_en.pdf

[6] Cedefop, http://www2.trainingvillage.gr/etv/policyreport/summaryEN.asp

6. **Multilateral transnational cooperation projects between different types of institutions, mobility grants, joint preparation of courses, teacher exchange, intensive programs and thematic networks** all enable the development of knowledge in different working environments, the acquisition of new knowledge and additional benefits realised upon return to the home institution Transnational cooperation is seen to improve quality and encourage innovative approaches. (e.g. Marie Curie http://europa.eu.int/comm/research/fp6/mariecurie-actions/pdf/mcbrochure_en.pdf)

7. **Training young people** entering the labour market is of high importance. The OECD suggests that the "new economy" will be built on a culture of entrepreneurship and, thus, ensuring that young people can play a full role in society requires fostering **entrepreneurship** for job creation, innovation and economic adaptability. (OECD Social Issues/Migration/Health, February 2001, vol. 2001, no. 4, pp. I-103) This must be combined with **giving opportunities to those who are already in work, to all age groups, to both women and men, skilled and unskilled**, if significant increases in the skill levels are to be achieved. Learning should contribute to the promotion of equal opportunities.

8. The conditions and rewards of the teaching profession must be improved. **Regular retraining of teachers** is necessary in order to improve the quality of teaching. (OECD Education & Skills, November 2002, vol. 2002, no. 9, pp. I-136)

9. The **development of lifelong learning**, based on knowledge, skills and competencies is certainly one of the key instruments for fostering the knowledge-based society. It requires organisations to understand the necessity to have the will and appropriate instruments to adapt to the quick pace of change. Concurrently, as part of the wider perspective of lifelong learning, **adult learning** is now clearly recognised as an important tool for equity and social cohesion, for economic and social development in knowledge-based societies, for reducing unemployment and skills shortages, for personal development, and for furthering citizenship and democratic values. (OECD Education & Skills, February 2003, vol. 2003, no. pp 80-117)

10. **All relevant partners**, the European Commission, the national governments and social partners, at all appropriate levels and according to their specific responsibility, **must exhibit a strong commitment and play an active role** in order to create the necessary conditions and instruments for the successful implementation of new training schemes. The effective management of these various interests implies a need for consensus building and partnership at different levels between all those involved, from the different layers of government through the social partners, training providers and individuals. If systems are to change significantly in effective ways, all need to be aware of the overall strategy, the general direction of change and the objectives being pursued, as well as the opportunities and benefits likely to stem from achieving them.[7]

11. Reform of education, training and human resource development is an integral part of the transition to a democratic society and market economy. Many of the **accession countries** have shown progress in these reforms since 1990. The challenge in the coming years will be to **promote and support changes, within these countries, that meet the needs of the new economy and society** as well as the interests of all young people and adults, in the face of a shortage of financial and human resources. (OECD Transition Economies, February 2002, vol. 2002, no. 5, pp. I-273)

12. Education and training systems should be **evaluated according to quality indicators and results should be continuously monitored, evaluated and benchmarked**. Where appropriate, results should be integrated into policies and practice (of political decision-makers, companies, social partners, and other key actors), by using effective dissemination tools and methods and by meeting labour market and policy demands. The social partners have a role to play in the identification of these indicators as well as in the evaluation process. Universities and research organizations will have to implement new management instruments and reporting systems, which must incorporate intangibles. As mentioned previously, their main ‘assets’ are forms of intellectual capital; it is obvious that the findings by some in the academic research community, and experiences made by some private firms, are fruitful for the new tasks within these institutions and organizations in general. In addition, private enterprises have the chance to gain from experiences in research organizations in the future, particularly when dealing with the topic of valuing R&D.

[7] Cedefop, http://www2.trainingvillage.gr/etv/policyreport/summaryEN.asp

13. Education and training must **create free, responsible and critically thinking individuals** whom can more readily integrate into society, particularly into labour markets that demand increasingly higher levels of skills and flexibility.

However, the European Union, in its European Council declarations initially made during the Lisbon Summit in March 200 and subsequently reaffirmed at the Stockholm Summit in March 2001, has bundled several of the above requirements in its strategy statement to become the most competitive and dynamic knowledge-based society in the world. The key elements of this strategy – many of which are recognizable from the above list - are clustered in the following goals to be achieved:

- Adaptation of education and training to offer tailored learning opportunities to individual citizens at all stages of their lives;
- The promotion of employability and social inclusion through investment in citizens' knowledge and competences;
- The creation of the information society for all;
- The fostering of mobility.

We will consider these four goals to be the goal-oriented framework for the next part of the report in which we propose the insights and related policy suggestions that originate from the E*Know-Net project. First, we will illustrate why E*know-Net is qualified to vocalize these insights and policy suggestions, i.e., why should one listen to E*Know-Net? Second, we will briefly explain the concept of knowledge production as originating from our work on Intellectual Capital and, third, based on the aforementioned concept of knowledge production, we will provide education policy suggestions that are specifically based on how value can be derived from knowledge and Intellectual Capital. We will integrate these suggestions with the four policy goals and the more detailed list of twelve education policy recoomendations.

5 What does E*Know-Net add?

The E*know-Net project's purpose was to build a Europe-based network in the area of knowledge management and intellectual capital, and use that network to propagate the earlier developed MERITUM Guidelines for Measuring, Managing and Reporting Intellectual Capital.

Therefore, E*Know-Net provides both a body of knowledge and a distinguishable group of entities that share a common interest. In academic terminology, this is known as a community of practice (COP) while in European parlance it is know as a Special Interest Group or SIG.

The E*Know-Net website at http://www.eu-know.net is the main vehicle to bind the various entities and to act as platform for exchange of knowledge.

5.1 Experience and active knowledge

The experiences gained, both by the core partners and the regular members of E*Know-Net, are diverse and represent the many different national circumstances in which each group has to operate. This ranges from different regulatory frameworks and national policies to different historical and cultural preferences. Experiences by the E*Know-Net members also include those referring to the implementation of concepts and tools for managing the knowledge resource, predominantly at firm and sector levels.

Implementation of concepts and tools has shown itself to be strongly related to educational efforts, revolving around issues of explaining the concepts and illustrating the tools used by front running firms and agencies. The development of the MERITUM Guidelines specifically shows the condensation of the core partners' educational experiences into a single document, available on the E*Know-Net website. In that sense, the E*Know-Net group of members provides an important knowledge platform that should be an integral part of the future education agenda, both as a group and as an accumulated body of knowledge.

The body of knowledge inherent to E*Know-Net reflects the composition of the education agenda, and it is based on the line of argument on how knowledge is produced and creates value.

5.2 Knowledge production and education

The below line of argument is the result of the various field experiments in developing and managing intellectual capital undertaken by the MERITUM group, notably the ones in Norway.

First of all, knowledge is produced by the exchange of individual or partial insights and understandings of a particular problem (Roberts, 2003; Hussi, 2003). Such partial insight is located in the ***human capital*** of an entity, whether that be a firm or a nation. Once the exchange of knowledge takes place, novel insights and alternative perspectives are developed and innovation occurs. This exchange is based on relating the different, partial insights to each other; that is, to relate human capital and lifting it up to create a meso-level relational capital. Typically, ***relational capital*** is defined at the level beyond the individual player or the partial insight, and focuses at the network where many different forms of exchange can occur. Relational capital equals the **connectivity** of a diverse sets of micro-level based, insights the carriers of which are the human capital. Not unless human capital gets mobilized and connected, is knowledge produced.

Hence, relational capital is the core of knowledge production processes and revolves around the deliberate management of connectivity (of human capital). **Connectivity** means bringing the right people together at the right time and on the right topic. Although connectivity cannot be steered in itself (first order control), it can be "landscaped" in the sense that it s made possible by a number of interventions (second order control). These interventions are based on creating a platform for exchange and then providing incentives for it to function.

Managing connectivity requires:

- *Locating* the right resources (where is the human capital)?
- *Accessing* these resource (getting that human capital mobilized), and
- *Combining* these resources (getting them to exchange insights).

The definition of what a "right" resource is depend on the issue at hand, for example, formulating a education agenda or programme, which would involve human capital from academia, business and public actors. Combining resources typically is based on heterogeneity, bringing diverse insights together, and not on homogeneity, accumulating similar resources. Hence, a key criterion for creating connectivity is to provide incentives that develop and maintain heterogeneity among the human capital that is connected.

However, in order to move beyond the mere occurrence of innovative ideas and bring these into practical applications and outcomes, connectivity created within relational capital needs to be turned into ***structural capital***. That is, into permanent outcomes that create value and are of an more immediate tangible value. The step between relational capital and structural capital consists of the harvesting of connectivity results. It revolves around the procedures and processes that develop and maintain heterogeneity in the exchange processes and flows. Examples are reward & recognition systems, incentive systems, operating procedures for exchange, agreements on gain sharing, and procedures on membership (entry and exit). A set of operating procedures for connectivity is what constitutes structural capital.

In sum, knowledge is produced by having human capital carriers relate to each other thus resulting in relational capital, while the latter is harvested in terms of processes and procedures for connectivity, making up the structural capital component. The final outcomes are ultimately codified in financial capital, including both intellectual property rights as shown on the balance sheets but also in terms of increased revenues. The relational capital basis of knowledge production is mirrored in the networked or group-level denominator of financial results; collaborative arrangements are the analytical denominator for financial results, whether these take the shape of teams, workgroups, alliances, joint-ventures or consortia. Financial visibility and codification, therefore, should take this meso-level of activity as level of analysis, and represent results accordingly. That is, relational capital will need to be reflected as the basis of financial results, if not used as its principal measurement basis.

Second, the proposed education agenda builds on the above line of argument that originated from the accumulated work of the MERITUM and E*Know-Net group. That is, the E*Know-Net members provide the human capital in all its diversity, both geographically and disciplinary, while the E*know-Net website provides the platform on which knowledge can be exchanged. In that sense, creating the website provides an example of the codification of relational capital into structural capital. The structural capital component itself (i.e., how the website is managed) is made up of the few procedures that regulate E*Know-Net membership and the exchange mechanism, such as the newsletter and the open forum. The performance criteria to be used for E*Know-Net equally represent how its members collaborate, be that in terms of academic outputs (e.g., papers, conferences, projects) or in terms of practitioner outputs (business development and entrepreneurial initiatives, connectivity tools, exchange approaches).

5.3 Suggested future education agenda

The suggested future education agenda consists of

1. ***promoting connectivity*** between diverse actors, both in terms of established institutions and in terms of experienced (groups of) individuals. Locating, accessing and combining diverse actors are the key elements in promoting connectivity.
2. ***processes and procedures to develop and maintain knowledge diversity*** revolving around the continuous flow of knowledge exchanges and away from knowledge stock-taking and inventory building.
3. ***community as policy lever*** revolving around collaborative activities and its community aspects and any improvements thereof.

6 Discussion of the suggested education agenda

6.1 Connectivity

In terms of discussing these items, the following. The promotion of *connectivity* already has some history in terms of existing policy initiatives by the Commission. For example, the activities related to human capital and mobility, multilateral and transnational cooperation, and the promotion of the relationships between the academic and business world as mentioned under section 4.2 are all related to linking up the relevant parties. Moreover, the so-called "Bologna process" in higher education provides a recent effort at systemic level to achieve connectivity between the various educational programmes within Europe. The "Bologna process" itself already hints at a key element in creating connectivity as promoted in this report – focusing on learning instead of focusing on the learning institutions. The fact that different member sates of the European Community seem to implement the Bologna process of a Bachelor/Master degree structure ("the 3+2 structure") is a clear hint that the (national) educational institutions have strong differences in absorptive capacity when it comes to learning and educational change.

In contrast, what comes forward from the work by E*Know-Net is that learning in itself is what constitutes knowledge production. And that learning takes places if not shapes its own institutional framework. Stated differently, the explicit and formal learning and knowledge production taking place in universities and business organizations is giving way to learning that is both formal and informal, tacit and explicit and takes place in networks and temporary organizational format. Specifically, it implies that institutions as policy levers are reducing in importance. It is being slowly replaced by knowledge production at individual and group levels with organizational formats that are defined at these levels. Connectivity thus becomes defined in the individual ability to locate relevant other individuals and groups of individuals, access to groups and individuals, and create a knowledge production process that is relatively less formalized than entering into an existing academic program.

The Commission has implicitly incorporated some of these characteristics in recent initiatives, all of which tend to revolved around the triplet of locating, accessing and combining. For example, the creation of a European CV serving as a summary of qualifications and competences acting as locating of other's full intellectual capital and not just formal training and degrees obtained. Another example is the encouraging and supporting of learning communities, regions, cities and setting up local learning centers improving the connectivity in a spatial sense and opening up for alternative organizational frameworks to act as learning organizations. Moreover, accessing-type policy initiatives presently underway include the voluntary development and implementation of European (and not national or institutional) diplomas and certificates, the establishing of an inventory of methodologies, systems and standards for the identification, assessment and recognition o non-formal and informal learning, and the development of a modular system for the accumulation of qualifications allowing people to combine education and training from various institutions and countries (based on the European Credit Transfer Systems, ECTS).

In short, the **policy recommendation**s comprised in the promotion of connectivity are:

1. to use the locating, accessing and combining framework to categorise policy intitiatives
2. to use the knowledge production process / learning as policy basis instead of the institution (university, school, firms)
3. to use communities and (relational) networks as policy levers to assess knowledge results.

6.2 Diversity

The ***processes and procedures to develop and maintain knowledge diversity*** are key to keep the knowledge production processes flowing. Once diversity diminishes, the flow of knowledge stagnates and ultimately freezes. Recall that knowledge production is a matter of coupling of human, relational and structural capital with innovation and value being specifically generated in the relational capital component but mostly ‘harvested’ in the structural capital component, the latter being the one of procedures and processes allowing for the combination of insights, ideas, experiences, and formal knowledge. That implies that procedures for locating, accessing and, specifically, combining are the ones of relevance. Procedures for combining refer to defining process rules for input, incentives/recognition, and output; who does what, for what reason/motivation, and with what expected output?

In terms of educational agendas and knowledge creation, this implies the promotion of (procedures for) combining unequals instead of looking for common denominators. More specifically, the issue is not one of multidisciplinarity with different fields and groups working in silos next to one another while occasionally bridging the disciplinary gaps at conferences and in research projects. Instead, the issue is one of interdisciplinarity, with disciplines acting and working together and creating knowledge that is, in a sense, hard to classify in functional terms – it is neither fish nor meat. This is already taking place in the natural sciences where, for example, biology and medicine have merged in a new field of ‘life sciences’. It also has implications for the creation of relationships between business and higher education; requiring diversity and spill-over in other than the initial field of the cooperative relationship.

Once again, the Commission seems to implicit recognize this element of diversity via its 6th Framework Programme (FP6). The so-called Network-of-Excellence (NoE) as one of the key instruments in FP6 is a recognition of the importance of collaborative communities of which the exchange of knowledge and the mobility of human capital are defined as key processes while the knowledge outcome as such is not subject to clear definition as a "deliverable". In that sense, NoE are created as "process landscapes" in which the river of knowledge will flow but without stringent steering on whereto. On the downside, the excellence part of these NoE's though might also be the undoing of these networks as it is implicit effort to unify membership on the basis of a relatively homogeneous knowledge area. A common and shared interest might provide a necessary requirement to start up but the diversity required to sustain the flow of exchanges might be designed out at the same time. The connectivity between the various NoE and the procedures on how to establish these cross-flows are of great relevance here.

6.3 Specific training programme suggestions

An specific example of interdisciplinary collaboration are the specific training programs that E*Know-Net would like to suggest as part of this Work Package 3a. Interdisciplinarity is strongly involved given that Intellectual Capital, Knowledge Management or the Management of Intangibles do not fall into a specific discipline. In stead, it contains elements of economics, business administration, sociology, management, and (information and communication) technology. The last years, the E*Know-Net group has been actively involved in various training programs at graduate and post-graduate levels, in executive seminars & trainings, and in programs developed by partners and other research groups. These experiences have resulted in the suggestion to create an interdisciplinary program on Intangibles. This can take the following shapes:

Traditional training programmes – interdisciplinarity in course substance
8) A traditional doctorate Programme as part of an established academic training trajectory. 9) A rrofessional Master Programme with one or several modules to cover the interests of different professional groups and stakeholders (e.g., financial analysts, banks, public sector) 10) A research-based Master Programme of 1 year that may be followed by the Doctoral Programme as mentioned under 1). This research-based Master would fit the Bologna process presently underway.
Non-traditional training programmes – interdisciplinarity in course substance, and in participant diversity
11) Summer Schools: A short-duration course once a year devoted to a particular actual issue in the area of Intangibles, Intellectual Capital and Knowledge Management. Such programme can be made repetitive over time, although with a different issue every time, and act as research window as well as "diversity platform". 12) A virtual learning Center, in the tradition of the Open Univerity programmes available in many European countries. A selected number of Open Universities already offer course modules on

intellectual capital, the information society, or knowledge management.

13) An adult, life-long learning institute that offers executive as well as post-graduate degree programmes and modules in the field of intellectual capital, the information society, or knowledge management. (see below for a specific example brought about by a number of E*Know-Net partners)

Meta-training programmes – interdisciplinarity in participant diversity, and in hosting institutions

14) A programme to encourage mobility of young researchers among European Research Centers for short or long-term periods, connected or not with the above Doctoral or Master programmes.

The policy instruments for most of the above training programmes are already in place, for example, the Mari Curie fellowships and the clauses on human mobility within Networks-of-Excellence. However, **the criterion of interdisciplinarity** has been limitedly applied in a deliberate sense. For example, the requirement of co-authored publications or co-taught course modules is uncommon while it would provide major knowledge spill-overs, if not produce new knowledge.

In itself, the E*Know-Net group is a living example of interdisciplinarity, with its constituting mix of economists, business administrators and practitioners. As stated in section 5.1., this group is well-qualified to undertake any of the above indicated training programmes and, in many cases, has already done so, mostly in collaboration with others from inside and outside E*Know-Net. However, most of this knowledge is tacit and has not been formalized in how to teach, design or integrate these interdisciplinary, intellectual capital programmes within existing, traditional contexts.

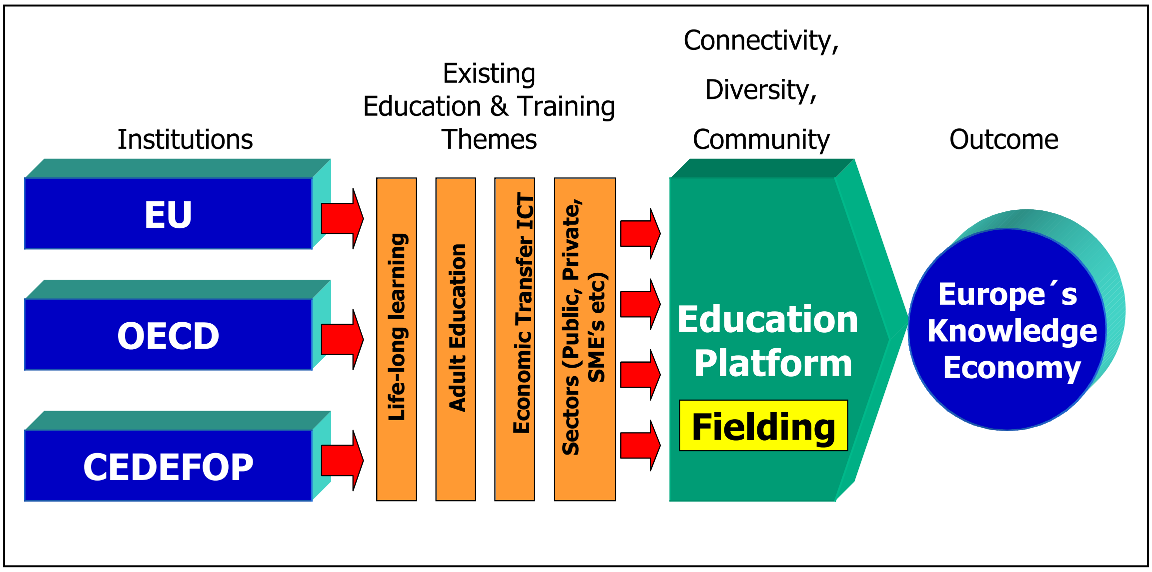
In short, the **specific policy recommendations** comprised in the processes and procedures to develop and maintain knowledge diversity are:

1) to use interdisciplinary diversity as an constituting criterion for training and research programmes;
2) to develop (or include in ongoing initiatives) an inventory of methodologies, procedural systems and incentive processes related to the design of interdisciplinary training and research programs
3) to include interdisciplinarity as an important criterion in the development of innovative pedagogies and the subsequent inventorisation, diffusion and use of those.

6.4 Community as policy lever

The ***community as policy lever*** revolves around the need to create a level of analysis and action that is representative of the knowledge society. In other words, to move away from a level of analysis that is based on either the individual, the institution or the nation and, instead, embrace the community network as the most representative level of analysis. When it is relational capital where knowledge exchange and innovation takes place, then the relational capital level of analysis, i.e., the community network, needs to be used for policy formulation, intervention and assessment & evaluation.

Once again, the Commission has several ongoing activities that already work with this but which tend to be distributed throughout the policy landscape and related agencies. For example, the explicit recognition of learning regions, cities and local learning centers in an effort to stimulate life-long learning (EC, COM(2001)-678 final), as well as the attempts to visualize and put forward 'good practices' on life-long learning in SMEs all address the community level of analysis. Similarly, policy interventions for specific professional groups and clusters (e.g., financial services, agriculture, public management) and the ones related to Information and Communication Technology (ICT) equally have a community network level of



analysis. The value added of this community level of analysis is in using existing and ongoing initiatives that already are (implicitly or explicitly) based on identified communities and networks, see Figure 1 below.

- Figure 1: Community creation of a value-added education platform adding.

At the level of **removing barriers** and actually being able to use the level of analysis of community networks, a negation of the existing institutional bases might be appropriate. Specifically, the multilateral and transnational cooperation in education and training, whether between educational institutions or between higher education and business enterprises, is based on bridging the vertical silos of existing national frameworks, and creating a horizontal linkage through which knowledge will flow and eventually gets produced. Instead of solving historic, national and political vertical barriers by horizontal measures, the design of truly horizontal structures might be a valid alternative. In terms of education, this refers to the few **European educational institutions** that have a truly European mandate. Thus far, there are only four of these institutions and their creation has been arranged by a specific charter signed by the European Council, i.e., at the highest European level. It can be argued that such truly Pan-European, horizontal institions that function at European *community* level are conceived as threats to national institutions; hence, creation of more and in a wider variety of sorts could be conceived as incumbents to national education markets. In that sense, a recommendation would be to latch onto the present ongoing process to create a European Community-level business format that has a legal charter valid across all member states. Such a truly European Community enterprise might be a format to **encourage private educational intitiatives at European level** to come forward. This would avoid the need for initiatives that bridge existing institutional frameworks, and link up well with other initiatives of a truly communitary nature, such as the Europass, the European CV and other inititiaves mentioned under the Connectivity paragraph above. See the below insert for a Good Practice example that has originated from several of the E*Know-Net members.

In short, the **specific policy recommendations** comprised in the ***financial impact assessment at meso-level*** are:

1. to use the community level of analysis as basis for policy interventions and measures in education and training;
2. to consider the creation of a uniform European company statute as a format to stimulate truly European Community focussed educational initiatives;
3. to use ongoing initiatives at regional, urban and SME levels to formulate educational policy interventions and measures.

6.5 GOOD PRACTICE EXAMPLE

The Fielding European Post-graduate Institute for Advanced Studies

In order to advance the E*Know-net education agenda and go beyond being an interesting report, a selected number of E*Know-Net core partners have **created a hands-on field experiment**. They teamed up with a venture capital firm, a European institution (the European Investment Bank[8]) and an experienced US-based educational institution (the Fielding Institute, granting doctorate degrees for adult learners since 1978) in order to develop the first pan-European, post-graduate institute.

The purpose of the **Fielding - European Post-graduate Institute (EPI)** is to "turn knowledge into value". It does so be collaborating actively with the Fielding institute in the USA (http://www.fielding.edu) of which it is formally endorsed as the sole representative in Europe.

The European equivalent of the Fielding Institute will be solely focusing on granting Doctorate degrees for adult learners from all over Europe. The educational offer revolves around a doctorate degree in Human, Organizational and Community Development (HOCD) which is based on the HOD-degree offered by Fielding in the USA but adapted to European diversity and including the main intellectual capital themes that have been researched by the MERITUM and E*Know-Net groups in their broadest composition.

The Community element of this degree clearly relates to the education agenda suggested by E*Know-Net while the niche focus on adult learners (the average age of Fielding students in the USA is 47 years) and the pan-European, collaborative efforts relate strongly to existing EU and OECD initiatives in adult education and life-long learning.

This field experiement involves locating the EPI in a European country and with very strong intentions to keep it as pan-European (i.e., non-national) as practically possible.

The relation with the E*Know-Net group is based on the above described education agenda items as well as using the human and relational capital of the E*know-Net group as means to develop the EPI. That is, experience, competences, and informal qualifications are considered as explicit contributing elements in the educational curriculum. Academic and practitioner members of E*Know-Net will be asked to take up faculty roles and provide access to relevant other learning communities.

The accreditation[9] process of EPI is underway while its business plan has been developed since September 2002. Funding arrangements and negotiations on its physical location (with the governments of Luxembourg, Denmark and Sweden) have been ongoing since May 2003.

We foresee this field experiment to be a concrete example of the E*Know-Net project's outcomes and ways of thinking. Moreover, it acts as a way to keep the relational capital and accumulated body of knowledge of MERITUM and E*Know-Net together and put it to use at European community level.

Disclaimer: This concrete example is the initiative of a few individual members of the E*Know-Net project. It has not been formally endorsed by E*Know-Net as an entity nor by any of its constituting member institutions.

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[8] The EIB has formally endorsed the EPI project but is, by charter, not allowed to play an active funding role. Nevertheless, the relational capital and connectivity of the bank is considered an important part of the EPI assets. Moreover, the EIB participant in the E*Know-Net project plays an important gate keeping and facilitating role in this respect.

[9] Accreditation will be based on the Western Association of Collegiate Schools of Business (WACSB) accreditation of the Fielding Institute in the USA while European national accreditation applications will be submitted to the government of Luxembourg, with additional accreditation s being considered for Denmark and Sweden.

7 Conclusion

The education agenda proposed by E*know-Net will need to be connected with the existing EU policy voices to prevent isolated education agenda without any concrete significance. For that matter, the EU agenda items of social inclusion, the focus on knowledge and competences alike, the creation of the information society, and the mobilization of educational efforts along the life-path of the individual learner are the key items that connect with the proposed teaching agenda of E*Know-Net.

Notably, the **central role of connectivity and collaborative learning in groups and networks** suggested by the E*Know-Net agenda, links up strongly with the EU ideas around inclusion and involvement. The meso-level of analysis proposed by the E*Know-Net agenda would translate itself into a regional agenda for education with impacts on local communities, where the local stands for community networks. As such, it purports to contrasts itself strongly from national education agendas, and the subsequent national regulatory and institutional frameworks for education. Community here as involves a plea for more (and easier to create) European Community level, private education initiatives that act as innovative frontrunners.
Moreover, connectivity as suggested by the E*know-Net education agenda implies latching onto recent EU initiatives that allow individual human capital(ists) to mobilize their full range of experience, knowledge and competences, and not only the ones based on formal learning. Individual knowledge and abilities are multiple and need to be matched by an equivalent requisite variety of educational combinations, processes, and interdisciplinary content substance.

The transnational and multilateral cooperation projects advocated by EU policy voices deserve special mentioning as first attempts to access and combine resources for European knowledge production.. These projects provide concrete bases for impact assessment at community level where these are not defined according to national boundaries and their subsequent regulatory frameworks.
The background of E*Know-Net as an interdisciplinary community in developing the European field of intellectual capital and knowledge resources provides **an ideal base position to create such an interdisciplinary education programme.**

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