15th BILETA Conference: "ELECTRONIC DATASETS AND ACCESS TO LEGAL INFORMATION".

Friday 14th April 2000.
University of Warwick, Coventry, England.

Technology Law Efficient Development Process to meet Economic Globalization Requirements: The EU Cooperative RTD Effort Example

Juan-Carlos Barros
Solicitor and European Commission Consultant
Santander, Spain

Abstract: Global integrations requires EU to expand RTD cooperation. A range of implementations tools have being emerging according to the provisions of the Treaty, FPs representing a particular internal evolving instrument aiming at improving industry competitiveness characterize the process. Multisectoral relationed networks and platforms being other relevant elements downstream. Experts have a special role in the process.

As a result a holistic approach is occupating the forefront with mutually related elements improving and speeding the efficiency of the process around an institutionalised decision center which provides for externalities and formalizing.

Keywords: Interdisciplinarity, paradigm, cooperation, undertakings.

Introduction:

After drawing up the paper one further idea came to my mind. It was that a surrounding philosophic idea was needed and that an author should be cited. This is Garret Hardin.

The idea arises from a need to summarize and to adopt a more theorical standpoint. It underlines aswell a particular major feature of the paper: the paradigmatic global vision proposed. We are confronted with a major "numerical" aspect to add to any literate address. There is an enormous amount of information nowadays and we should avoid to result imprisoned in details when clarifying ideas are being more needed than ever.

Facing this challenge of saying too much in too litle time, I would like to refer to my own experience. I worked for several years in the European fisheries sector and fishermen say that the Sea is a treacherous one, it shows itself as an inmensity, but it is a mirage, and when it shows its limits it does it dramatically, you can become enriched suddenly one day, the next you can lose it all, even your life.

I had to deal mainly with competition matters (monopolistic abuses, unfair commercial behaviour, etc) and I frequently thought: theorically (and legally) and in line with my own principles there

should be free access to the sea and free commerce, but in practice I realized that much more efficient was to limit the number of vessels, to limit the number of merchants, because freedom for all was meaning the ruin of resources and some dramatic undertakings debâcles. The tragedy of the commons of Mr. Garret Hardin.

A bit of history.

When Robert Schumann formulated its declaration, a new approach for Europe to Organize was started. The idea of solidarity de facto process have been progressing for nearly 50 years. Firstly put into practice with ECSC the European industrial RTD has been part of the post-war European scene from the beginning, as in some areas, it has a great deal to gain from sharing know ledge, experience and resources. The increasing competition in today's global economy required Europe to expand RTD cooperation to every field of industry. In 1952 the ECSC was stablished after the Treaty of Paris was signed, this pooled the resources of 6 European countries. In 1953 CERN was set up, this was the first scientific organization stablished on a European level. In l958 the Treaty of Rome came into effect instituting the EEC and the EURATOM. The cost to stablish a complete European research programme could be huge because there was little European administrative infrastructure in place at that time. Instead the national governments decided to collaborate on joint projects.

The ECSC and the EEC both encouraged research in a limited way, the widest scope for RTD came from the EURATOM and within this framework the JRC was set up along with a cost-sharing contract research programme and procedures for the coordination of national RTD projects. The JRC performed Europe´s in house research and other European research was performed under a contract basis, using the facilities of national labs and universities.

As the l970´ approached, high-tech RTD into aeronautics, computing and microelectonics was rapidly emerging and European researchers were flocking to the USA. Many feared that American industry would take over Europe. As a result COST was set up and the tasks of the JRC redefined to try to improve the situation. Trough the l970´ Europe RTD agenda was driven forward. In the early l980´ many traditionally powerful European industries really began to struggle. To harness the potential of RTD a new strategy was built, the first of FPs was launched in l984.

Economic requirements

Parallel to the process of economic integration, particularly within the framework of the creation of the European Single Market, European economies have been confronted by a dramatic increase in the degree of structural change at world level, described as globalization, whose main feature is the dramatic reduction in the costs of information and communication processing. In many ways ICTs represent historically the first ever set of global techs that our societies have been confronted with; the world has indeed entered into something of a new era in which global acces has become the major characteristic of both production and consumption.

However the speed of the process is likely to raise some fundamental policy changes. This is particularly the case when compared to the slow, carefully planned European economic integration process, which in its implementation is increasingly becoming overtaken by this worlwide integration process (Luc Soete IPTS Report 15).

In April last year, ten rival companies entered an agreement that stands to garner litle or inmediate profit for any of them (The Scientist July 19, 1999). The companies not only embraces their rivals, they invested millions in a research project whose potentially valuable results will be inmediately be made public rather than kept private and patented as intellectual property. Several of world´s pharmaceutical giants are united to a common goal: To within the next two years scour the human genome to uncover 300.000 new heritable DNA sequence variations called SNPs, although there are

already likely several millions in the entire genome, only a few percent will have high commercial value from a diagnostic standpoint.

Although the Human Genome Project now draws more attention the genomes of smaller organisms collectively contain more information. Genomic data will continue accumulating as sequencing techniques and computing power keep advancing noted Craig Venter (The Scientist, February 15, l999) Since it was finished the first genome in 1995, about 20 genomes have benn completed, 80 more microbial genomes are under way and about 50 of those will be completed this year, we are in an exponential period of knowledge.

The last ERSTI Report published contains some valuable data and several key clear points emerge from: multinationals continue to play a major role. The increasing globalisation of techs is reflected in the growing number of international tech alliances, becoming as important as RTD competition. Europe is a leading world-wide partner. Two thirds of them are set up by firms that belong different industries, illustrating that the main reason for setting up such alliances is to combine different tech skeels, the need to share costs is a secondary consideration.

Much of the data in the report backs up the widely held view that cooperation RTD is of a paramount importance. Many of the global collaborative projects are designed to tackle scientific issues that arise of the global leve, it also includes money-hungry projects which even the rich industrialised nations cannot tackle alone. Much of the increase in international cooperation has been driven by the private sector but governments continue to have a major role in helping to develop and guide the RTD networks that made this possible.

A new paradigm.

A new paradigm do seems to be emerging and a major example could be drawn up from Nanobiotechnology for strategic options to adopt in the RTD realm: PHAMTOM is a network supported by the ESPRIT Programme, the full name meaning Physic and Tech of Mesoscopic ystems. Mesoscopic? According to Dr. Van Rossum mesoscopic fill the gap between the atomic and micrometer scales, where quantum mechanical effects come into play (RTD Info February,l999).CMOS tech has been refined for over 20 years, early this century feature sizes will enter the mesoscopic range of under 0,l microns, where a number of serious problems await. Eventually, however, CMOS may hite a fundamental barrier `the quantum world'. ESPRIT responded MEL-ARI aimed to pave the way for a quantum leap to a new generation of computing devices. New computing and manufacturing are being considered, and the field is starting to feel more multidisciplinary. A vision of systems not just devices has been stablished, and this according to Nobel Laurate Heinrich Rohrer is about time "the paradigm of the microelectronics industry is not the way forward(..) Or would be better off pursuing higher complexity instead of smaller transistors? (RTD Info February,l999) And he pointed to biological systems as a better paradigm "Natural systems do a lot processing at the periphery and only transmit useful information -not row data- to the centre.They achieve this through integrated complexity". The nanoescale research has to result in some revolutionary feature or provide new fubctionality.

Art. 130 F TCE Analysis.

It is time to analyze the Treaty. RTD is contained in Title XV, articles l30f to l30P and in the firts part art.3 provides that the EC actions implies the encouragement of RTD (art. 3.m TCE) and that is the scope for actions to be developped.

For the EC to act there is a double way, according to art. 3B TCE: The EC always act within its objectives, but it can also act, firstly, within the limits oif the competences entrusted by the Treaty which are exclusive competences in the case pf RTD, or secondly the EC can act/intervene in not eclusive areas, with the only subjection of objectives and improving the States´ actions.

Then, that is to say, EC actions with RTD exclusive competences equals art. 130F.2 "policies" of encouragement of undertakings (..) in its efforts of a high quality, and of support of its cooperation (undertakings) specially with the objective of enabling them the full use of the Internal Market potentials - the Treaty stresses particularly three means. And EC interventions in not exclusive areas equals art. 130G subjected to objectives and complementing the listed actions undertaken in Member States(..).

Both l30F.2 policies are targeted activities, according the 1st phrase of art. 130F.2 and they pursue the objectives expressed in art. 130F and according to article l30F the Community has the objective of strengthening the RTD base of its industry and to favour the development of its international competitivity, and to promote every action of research to be deemed necesary by virtue of the rest of the chapters. That means firstly an industry oriented RTD and secondly an RTD base competitive in a sense of the creation of economic relevant areas and therefore bussines opportunities for undertakings cooperation and both policies imply already on-going private activities.

Box 1.

If we would have to signal some elements for future developments, in both the expressed areas, we could emphasise in the 130f.2 area two basic elements: undertakings and cooperation. And in the 130G area, apart from the developping of programmes and dissemination and exploitation of results, we could point out to common undertakings or the any other structures envisaged in 130N.

Framewor Programmes.

FPs, stablished according to a tipic legal procedure (189B) shall include the whole of the actions. That, therefore, implies the l30f.2 actions to be not subject of planning and to be characterized more by its flexibility, being measures more to be found outside the RTD framework.

Figure 1.

FPs are to be implemented by means of programmes (acts), rules, agreements and structures (including undertakings).

The European Commission defines FPs as a single market for ideas (Brite-Euram A decade of developping competitiviness.l997) The concept reflects an idea of coordinated EC research within an stablished time frame and infrastructure. Institutionalised by the Single European Act, under the 2nd FP was accorded equal status with other areas of Community concern, by this time in become one part of a multipronged approach to improve European industrial competitiveness. Quite a small document, it simple sets out the overall budget, timescale, priorities and rules, but the implications are profound, FP approach provides continuity while simultaneously allowing Europe to reconfigure its priorities and refine its working methods every few years.

When the 1st FP was launched the primary focus was tech pure and simple. Today it is clear that a multidisciplinary approach is needed to ensure that the gap between science and society is bridged. In esence, Europe´s approach to RTD has become more holistic. The Environment, in fact, provides a good example of this systems approach with the Commission encouraging the sector in other ways. The overall picture is of a social priority being reflected across all European policies, helping the birth of a new industry.

A range of implementing tools.

FPs are implemented by means of EPs developped within each of the l30g actions. Every EPs provides details on how to put it into practice, timing and means deemed to be necesaries, they are

adopted through a tipic legal EC procedure. Complementary programmes could also be authorised with the participation of the States which contribute financially. It is also possible to foresee the Community to participate in programmes undertaken for various Member States and in the ad hoc created structures for its implementation. A full description of the instruments to develop EPs is contained in Annex IV of FP5, indirect shared cost actions, networks and concerted actions being the most important. Thematic networks were founded around a single aim to bring together all the actors (industries, users, academics, infrastructures) to ease coordination and transfer. They appeared under the 4th Programme and network RTD carried out across Europe into common socio-economic goals. Its aim is to strengthen Europe´s RTD infrastructure through the transfer of techs and konw-how, and to ensure that industry´ needs are widely undestood and adressed. In TMs research teams across Europe propose to network themselves together, they are bottom-up and only team up with others when the interests cponverge. By helping teams share their facilities, experience, results and staff, EU obtains a significant added value. The EU considers that networking is an activity important in itself and fund it accordingly.

The industrial platforms have a transfer mission, adopt particular rules for working and bear opinions to EU, they encourage participation, actors discussion and potential projects asesment. In order to make the most of the RTD results has encouraged this system (RTD Info March l998) In March l990 the Commission invited the biochemical, pharmaceutical and agrifood stuffs industries to get together with the scientists workiong on the project for yeast genome sequencing in order to asses its potential impact. There are now twelve Ips, all of them independent and self-financed, they make it possible for industry to follow EU-funded RTD closely and can also help encourage the direct participation of industries in programmes. They bring new prospects in very diverse fields and many of then have also set up coordination units and prepare a concerted response with a view to possible applications.

Although all the Ips have the same transfer mission, they each define their own specific objectives. It also provide an operational bridge between the world of enterprise and the Commission. This European dimension allows them to tackle global problems such as regulations on the use or marketing of certain products.

According to the Treaty there are two opportunities for the undetakings to be formed, when they are funded by various Member States and the Community or secondly when they are common undertakings, for example the Joint European Torus.

Experts.

They have different tasks to develop under FP5:evaluation previous to a proposal for a new FP, in a consultant body (CREST) and annual evaluation.It could be paradigmatic the new founded EAGs.

Strategy and transparency are the principal objectives behind the idea, they improve relationship between actors, and further the management. They advise on the content and direction of Key-actions, including the drafting of detailed work programmes and reorientation of te programmes direction, they have a less formal role than ProgrammesCommitees, their opinion is sougth before proposals are submitted to the latter. In addition the chairmen meet ocassionally to discuss the overall dof the programmes and the expolitation of results.

Aeronautics EAG chairman expressed (Cordis focus 18 Octubre l999) this group to be an ideal extension of the creation of networks in the industry. "Aeronautics is an industry used to think 20 years ahead and the group is an excellent position to steer it in the right direction". The group has already produced one report and made several recommendations. The group agreed that the work programmes should focus on two strands of activity: the acquisition of critical techs and the integration and validation of techs on techs platforms. Some advice was provided on the Commission criteria for evaluation of the projects, although they have no input in the actual

evaluations.

Experts have a role too through the pair system stablished for the assesment of RTD projects subsequent to the call for proposals stage.

Efficiency.

From an economic standpoint efficiency is not about cost cutting, but about making choices which derive the maximum total benefit from the finit resources available. We could also use a fruitful simile form Genetics on the role of vectors. Some of them have demostrated high levels of expression and genomic incorporation, but others, while not as efficient, avoid triggering an inmune response. In a number of systems it can be produce the same efficacy, but dumping huge amounts of non desired materials into the system. Some tools still need to become more efficient, they are not fully understood because they have not being in as many trials.

Many classic vector can already do many of these things naturally. Certainly ther is no perfect vector for every problem, it really depends on what you want to do. A synthetic vector will be more willing to be backed, a non viral system is easier to manufacture, cost and ease are key elements.

A philisophical difference may be at the heart of the question, it is not a product but a new paradigm for the treatment of problems.

An example from the proper RTD area is represented by THERMIE, when by lionking tech demonstration projects with dissemination and promotion, it has played a pivotal role in bringing new ideas into the mainstream. In this realisation, those principles must translate into a priorization of activities appropriate to the stage of the particular tech in the chain development- wether research, development, demonstration, dissemination or market penetration- their effort was further enhanced by focusing on networking.

An approach of creating and maintaining a partnering relationship with transnational project consortia is important in maximise the succes and spin-off benefits of the venture. A Thermie project, by its very definition, requires the organization of a transnational consortium, the funding mechanism allows for the creation of a vehicle vector to support the exchange of information and experience.

Despite the great European expertise, four to seven times less jobs and bussines opportunities in life science have been created in Europe than in the US. The first Conference of the "Biotech and Finance Forum" in May l998 has stroven to redress this imbalance by mixing people from both espheres (RTD Info June l998).

The main problem is the obstacles that entrepreneurs face on setting up small research-based biotech firms. Most o f Europe´s venture capital goes on development and acquisitions rather than on seed investments.

I-TEC, a Community pilot project designed to foster investment in star-up capital, an the symbiotic relationship between large and small firms. The importance of role models was put forward as a good vector to create a favourable atmosphere about biotech stars-up and to make the need for venture capital clear to venture capitalists.

More recently, in November last year, leading European investors werw brought together with Europe´s most promising information and communication tech companies at the "European Investment Forum". The Forum aimed to tighten the links between the entrepreneurial and financial communities to better exploit the results of RTD investment. Promoted by the Commission, it is organized by a consortium of priovate partners.

An institutionalised centre and "externalities".

Here we are roughly drawing an scheme, as we did above in chapters on 13OF analysis and implementing tools, and several elements would need to be refined.

The role of the centre resides mainly as a receptor which process the information arriving from networks, platforms and experts, by means of its translation into precise and flexible frameworking acts, which will be applied further to the private sector who has expressed their opinions in a structured way, and then integrates the externalities which have been perceived to be faulting in the process. But it is accompannied in all of the stages by other actors which play also varied tasks and interact with it.

Figure 1.

The Commission has the task of executing the planned activities, and the Council, as the centre institution, has the power of decision to guaranty to obtain the stablished Treaty aims, and according to 189B, after consulting ESC, can adopt FPs, rules for participation and dissemination, common undertakings and other structures, EPs are adopted by the Council acting by a qualified majority on a proposal from the Commission, after consulting the European Parliament and the ESC.

In a sense the externalities integration into RTD actions marks the final stage of evolution of this process we have been dealing with. Areas not covered yet, concerns of public interest, respect for humas values, the well being of animals are several of these new items. In FP5 is relevant to worth the new concept of key-action and is also worthy to value the JRC role. "I see the JRC as the the scientific and technical conscience of the European policy maker and regulator, and I consider that its role in the European decision making process is indispensable" said the former member of the Commission Edith Cresson (JRC,l998). The JRC is is the European Commission own research centre and its fundamental mission is to provide customer-driven scientific and tech support for the conception, implementation and monitoring of EU policies. It consists of 8 institutes.

Another example is the socio-economic research which was introduced under FP4, its two-fold aim is to facilitate the integration of techs into society and to anticipate tomorrow´s priorities. It was conducted under all the other specific programmes.

Finally and according to article 7 of FP5 refered Decision, the whole of the actions undertaken shall be implemented in accordance to the basic ethics principles, including the well-being of animals. FP5 has been conceived to help solve problems and to respond to major socio-economic challenges facing the EU, that integrated approach will be reinforced mainly by the key-action concept, enabling aspects of the identified problems to be targeted.

References:

Garret Hardin, Extension of the Tragedy of the Commons. Science 280, 1998 pp 682-3.

CODES:

RTD: Research, Technological Development and Demonstration activities.

ECSC: European Coal and Steel Community.

CERN: European Nuclear Research Organization.

CMOs: Complementary Metal Oxide Semiconductors.

JRC: Joint Research Centre.

ERSTI: European Commission Report on Science and Technology Indicators.

ESPRIT: Information Technology Programme.

TEC: Treaty of the European Community.

ICTs: Information and Communication Technologies.

EAGs: External Advisory Groups.

Eps: Especific Programmes.

THERMIE: Non-nuclear Energy Technologies Programme.

ESC: European Social and Economic Committee.

ESA: European Single Act.

BOX 1 130F.2 COMPARATIVE TABLE

Art. 130N

I- JOINT UNDERTAKINGS OR

STRUCTURES

OBJECTIVE: IMPLEMENTING Eps

EC CREATION

RTD CHAPTER TIPIC PROCESS

SPECIFIC RTD ACTIONS

FPS TIPIC IMPLEMENTATION

130F OBJECTIVES

KEY FEATURES:

STRUCTURES

EC PARTICIPATION

ART 13OF.2

UNDERTAKINGS

(SMEs, ACADEMIA)

RTD EFFORTS

INNOVATION

STIMULATED

BY EC

OUTSIDE RTD CHAPTER art. 130 F.2

COOPERATION EFFORTS

EC SUPPORT

OBJECTIVE:

INTERNAL MARKET

POTENTIALS

FULL USE

MEANS:

OPENING UP CONTRACTS PUBLIC

DEFINITION

OF COMMON RULES

ELIMINATE BARRIERS

KEY FEATURES:

BROADER SENSE OF UNDERTAKING

PRIVATE ONGOING ACTIVITIES

FRAMEWORK

PROGRAMME