



*In Guildford, Cordoba, Krakow and Eindhoven
... with contributions from Bologna*

FINAL REPORT

of the *ACTIVITIES*
and *RESULTS* of the
BBAS PROJECT
funded from the
GROW INTERREG
IIIC Initiative.





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Introduction

The INTERREG IIIc GROW project

The GROW project is a 7.5 million European funded programme conceived by five high growth European regions that aims at collaborative actions to support achieving a balanced, sustainable and economic growth.

This joint EU INTERREG IIIc funding programme that run from June 2005 to December 2007 covered a network of 5 Regional authorities in:

1. Andalusia in Spain
2. Emilia-Romagna in Italy
3. Noord-Brabant in the Netherlands
4. Malopolska in Poland
5. South East England

The participating regions have organised a series of calls for tenders against three priorities. Sixteen projects have been approved for the duration of the programme with an aim to support strategic co-operations in areas of:

1. **Green Growth** – Environment
2. **Business Growth** – Business cooperation, innovation and entrepreneurship
3. **Inclusive Growth** – Employment and social inclusion

Chapter 1

Aims of the BBaS project and the profiles of the project partners

The project 'Bridging Business and Science' was one of the 5 successful proposals under the heading of Business Growth.

In 2003 during the Spring European Council 'Working for growth and jobs' it was clearly stated that in order to meet the Lisbon agenda and Barcelona objective of 3% GDP invested in the research for innovation, it is necessary to increase the dissemination of the results of university research in Europe. Even more important is the access to research experts for the European Small and Medium Enterprises (SMEs) to facilitate the innovation.

The project Bridging Business and Science (BBaS) was part of the INTERREG IIIC GROW initiative that aimed at increasing through collaboration the economic development of five EU regions. The GROW project had three pivotal aims: People, Planet and Profit. The objectives of BBaS brought all these concepts together by facilitating the innovative scientific research leading to increase in profit. The BBaS project was focused in particular on facilitating collaboration between the university researchers and Small and Medium Enterprises (SMEs).

When the GROW project was initiated these activities were at a very different stage in different Regions of Europe and therefore the collaboration under the aegis of this project have an excellent opportunity to compare and make improvements in this area

Knowledge Transfer (KT) involves the process of capturing, collecting and sharing explicit and tacit knowledge, including skills and competences. It includes both commercial and non-commercial activities such as research collaborations, consultancy, licensing, spin-out creation, researcher mobility, publication, etc. (*definition by the European Commission MEMO/07/127 of the 4th of April 2007*).

The KT is a mechanism of spreading results of learning, experience and research from those who generate them to those who will transform them into economic outcomes. Knowledge transfer is a wider concept than "technology transfer", which is often understood in a limited way as creation of spin-out companies by university researchers.

UK view of Research & Development and Innovation

During the last decade most of the European countries introduced government programmes aimed at facilitation of such collaborative networks. In the UK particularly influential document was presented to the government in December 2003 by Richard Lambert. The main focus points of the 'Lambert Report' were:

1. Identification of the benefits to business of greater interaction with higher education, how these can be promoted and how any barriers holding back business demand for universities' knowledge and skills outputs can be addressed.
2. Examination of the national, regional and local economic impacts of business-university interactions, including how Regional Development Agencies and Sector Skills Councils can best support such interactions.
3. Assessment of the lessons to be learned from business-university interaction across a range of countries and from best practice across the UK.

4. Analysis of how business employers can better communicate their skills requirements to a responsive university sector, and how they can improve the attractiveness of career paths to graduates and postgraduates, especially in technology

The report¹ concluded that the increased collaboration between business and university research departments will bring significant economic benefits to the UK, but concerted action by business, universities, and government will be required in order to grasp the opportunities for the UK economy.

Richard Lambert concluded also that the biggest single challenge lies in boosting the demand for research from business, rather in increasing the supply of ideas and services from universities. However, he suggested that there are reasons for hoping that business investment in research will strengthen in the future, and the Review cites examples of a wide range of companies that have profited from working alongside academic researchers. Presenting the report to the Government, Richard Lambert commented: *"I am very positive about the economic potential which business in the UK can harness through developing stronger collaboration with universities. I am also clear that realizing this potential will require concerted action by universities and business, with support from Government. My recommendations pose a challenge to all those engaged in this increasingly important area of public policy."*

The response to this challenge resulted in the funds available for UK universities to invest in Business Development managers who are acting as intermediaries between the academia and industry facilitating the process of Knowledge Transfer ('KT professionals'). Similar processes have taken place in most EU countries, but the exchange of experience between Knowledge Transfer professionals from different EU countries is not widely spread and it seems that the KT methodologies developed by them vary considerably

Research, Development and Innovation in Spain

In contrast to the UK, and South of England in particular, in Andalusia the KT activities are low when compared with the EU average. The Spanish R&D+i (Research and Development & Innovation) system (both public and private) suffers from a major lack of critical mass which results in a limited progress on economic productivity and keeps real scientific output below its potential. This is clear, for example, from Spain's participation in the European Research Area (under the Framework Programmes) which is below the potential of the Spanish economy as a whole.

To address this problem within the Spanish economy as compared with its leading European and international competitors, in 2006 the Spanish Government presented the National Reform Programme (PNR), following the recommendations made by the spring European Council meeting in March 2005. As regards R&D+i, the PNR set specific objectives, including to increase investment in R&D as a percentage of GDP from 1.05% in 2003 to 1.6% in 2008 and 2% in 2010 and to increase private-sector participation in R&D+i investment.

Each of the Autonomous Communities of Spain has their own strategies for developing R&D+i activities in their regions. This situation is new compared with ten years ago and demonstrates that each Community has taken account of the importance of R&D+i activity in the areas for



¹ (http://www.hm-treasury.gov.uk/consultations_and_legislation/lambert/consult_lambert_index.cfm)

which the regions are responsible. The PNR report makes a series of detailed and specific recommendations for each of the 17 Autonomous Communities analysed, taking into account the weaknesses detected and the combination of analyses conducted as part of this study.

From the diagnoses of the R&D+i situation in Andalusia the following conclusions emerged:

1. Andalusia, as a big region that dedicates a high volume of resources to R&D activities, exactly the 9.3% of the global resources in Spain, so it in this respect is on the 3rd place amongst the Spanish regions. These investments are mainly developed by the Universities, with a very small participation of companies. In comparison with the regional GDP, the investment in R&D activities represents the 0.77%. This percentage represents the 8th position for Andalusia and below the national average.
2. From the employment point of view, Andalusia concentrates the 10.5% of the overall R&D employment in Spain. Nevertheless, in relative terms, only the 0.6% of the overall employment in Andalusia is dedicated to R&D activities, which is under the national average (0.9%).
3. High tech sectors are represented in Andalusia at a level below the national average.
4. The investment in technological innovation made by companies in Andalusia in comparison with regional GDP (1.03%) is under the national average (1.49%).
5. Andalusia is under the national average in terms of patents requested to the European Patent Office and the Spanish Office of Patents.

The BBaS plan for the development of good practice in Knowledge Transfer activities

The BBaS project aimed at initiating a collaborative research network between three groups of people working in five EU regions participating in the GROW initiative: South East England (UK), Malopolska (PL), Andalusia (SP), Noord Brabant (NL) and Emilia Romagna (IT). The three groups were:

1. KT professionals (Business Development Managers) employed at the business support organisations based or associated with the universities in these Regions (Universities of Surrey, Cordoba, Eindhoven, Bologna and the Jagiellonian University)
2. University academics from these universities (or the Regions)
3. Representatives of research oriented businesses (mostly spin-outs and SMEs)

The sustainability and efficiency of these networks was to be achieved through identifying, modelling and disseminating good practice in Knowledge Transfer (KT), crossing the intercultural and inter-sectorial multidisciplinary barriers between industry and academia, and leading to an increase in business interactions.

It has been proposed that by organizing structured meetings in the participant's locations



opportunities will be created for these three groups to interact on the research-business level. Additional focus points for the researchers and business were the three scientific areas that the BBaS was focused on:

1. Environment,
2. Biotechnology & Health
3. IT & New Materials

Additional aim of this collaborative project between 5 EU Regions was to learn about KT methodology and available funding and try to decide on best practice that should be implemented by the governments or the Regional authorities.

BBaS Partner profiles

PARTNER 1: The University of Surrey – represented by Research and Enterprise Support (RES)

The University of Surrey is renowned for the quality of its research, with many world-class rated departments. The Surrey academics are currently participating in over 120 FP6 projects, including Integrated Projects and Networks of Excellence in thematic priorities of ICT, Life Sciences and New Materials and Processes. In the BBaS project the University of Surrey is represented by Research and Enterprise Support (www.surrey.ac.uk/res), a Department of the University engaged in professional activities related to research support and development, knowledge transfer and enterprise. RES activities divide into two areas: support and promotion for University of Surrey research and enterprise activities, and liaison between the University of Surrey researchers and business.

The role of RES includes support for the University-based research and enterprise, including the protection and commercialisation of Intellectual Property generated at the University of Surrey. It also has responsibility for the provision and promotion of University expertise to industry and Small and Medium Sized Enterprises (SMEs). RES manages many of the processes involved in

creating, securing and monitoring the University's research income. In addition, RES is responsible for stimulating and maintaining a wide range of “third-leg” activity, entrepreneurship and other income-generating activities (for example, professional project management).

RES works in the following areas:

Research and Business Services promotes research expertise and builds new partnerships with business, sourcing demand-led solutions and giving advice on business-academic collaboration, including the UK Government sponsored Knowledge Transfer Partnership (KTP) and a range of EU funded research (FP7) and innovation projects

- **Projects and Enterprise Programmes Team** works to source and manage funding and deliver training to support SMEs and early stage businesses (for example, this team manages some of the programmes funded by the South East England Development Agency).
- **Research Support** offers administrative support for Research and Consultancy undertaken by members of staff at the University.
- **Technology Transfer team** is responsible for the pipeline of intellectual property from invention disclosure through patent applications to exploitation in the form of licence deals, spin-outs and joint ventures (Enterprise), and provides advice on all intellectual property issues within the University. It also helps manage the Cascade Seed Fund.
- **The SETsquared Centre at the University of Surrey** provides facilities and expertise to nascent entrepreneurs with an idea for a knowledge-based business with a high-growth potential (this unit is based at the university Science Park).

RES also works to co-ordinate the University's role

in promoting regional economic development, to create a first class environment for innovation and business enterprise.

The University of Surrey participates in a number of programmes related to the Bridging Business and Science:

- The London Technology Network (LTN) is a not-for-profit business networking organisation funded by the UK Government, the European Union and the London Development Agency. Its mission is to help technology-intensive companies be more effective in their knowledge acquisition from universities.
- Several European Social Fund projects are managed by UniSdirect (for example 'Flagship' resulting in contacts between university and industry)
- RES is managing for the South East England Development Agency (SEEDA) the technology networks under the Community of Innovations (COI) initiative. The COI aims to develop and nurture a series of business led South East technology networks between business and academia that can bring together regional capabilities and develop capacity to address sector and technology linked drivers of change and opportunity.



- With universities of Bath, Bristol and Southampton University of Surrey (RES) won HEIF2 (Higher Education Innovation Fund round 2) funding of £12.5M to encourage enterprise, build new businesses and work more effectively with industry. Within this partnership (www.universityenterprise.com). The SETsquared Partnership, the collaboration of the Universities of Bath, Bristol, Southampton and Surrey, is the largest university enterprise collaboration in the UK. As the largest single source for academic knowledge transfer in the UK and with a collective research base of over 6,500 researchers, the SETsquared Partnership has listed four companies on the Alternative Investment Market with a combined valuation of over £150m, raised over £30m in follow-on funding for spinouts, and supported a further successful 170 tech start-ups from the local entrepreneurial community through their unique SETsquared Business Acceleration Programme.
- The University of Surrey, alongside Royal Holloway University of London (RHUL), and Leatherhead Food International (LFI) is a founder partner of the Surrey Enterprise Hub - one of a network of 22 Enterprise Hubs targeted by the South East England Development Agency (SEEDA) at accelerating the growth of early stage ambitious technology and knowledge based business across the region. The Hubs key technology sector interests cover Digital Technology, Information Security, New Media and Creative Industries, Bioscience, Food Technology. These reflect the world class reputations of the founder partners - the University of Surrey, RHUL and LFI - who are committed to working in partnership with local industry to promote economic growth in Surrey. The Surrey Hub main office is located on The University of Surrey Research Park home to over 110 companies and SMEs engaged in a broad spectrum of research, development and design activities close to its campus in Guildford.

University's links with the ICT/new materials networks include: Connected Surrey, Wired Sussex (access to broadband) Secure Southeast (SEEDA's Sector Groups initiative) and Farnborough Aerospace Consortium (FAC).

The University of Surrey has exceptionally strong links within the south east region's biotech and health sector consortia. They include: The South East Health Technologies Alliance (SEHTA), the health services research Network (HSRN, a national network), Oxfordshire Bioscience Network (<http://www.oxfordshirebioscience.com>), UK Bioinformatics Forum, the Thames Valley Life Sciences Network (TVLSN).

Environmental technologies: There are 750 companies in the SEE from this sector – the DTI identified it as an “embryonic” cluster with largely regional significance in its 2001 First Assessment. Southampton University has been identified as being particularly strong on environmental technology research (Surrey's partner in SET squared Partnership), it also includes South East Centre for Built Environment (SECBE) and EnviroBusiness South East

PARTNER 2: The Jagiellonian University represented by CITTRU – the Centre for Innovation, Technology Transfer and Development of the University

CITTRU (www.cittru.uj.edu.pl) works in the following areas:

- Promoting the **academic entrepreneurship** – transferring the results of scientific research to the market and developing businesses created on the basis of scientific research. This activity requires broad co-operation with commercial companies and public institutions aimed at obtaining their support – both financial and essential – for the development of scientific projects;
- Supporting scientific research related to and using **new technologies**, able to compete with advanced research carried out by other economic subjects;

- Co-ordinating **strategic investments of the Jagiellonian University** related to the economic and social development of the school.
- Creating **entrepreneurial attitudes and promoting inventiveness** would not be possible without diversification of activities and identifying miscellaneous problems and needs – ranging from raising funds and gaining high visibility for the University's research to co-ordinating individual scientific ideas and providing business help. In this aspect, the wide scope of CITTRU activities also involves co-operation with local authorities, educational and scientific institutions and business environment (on the regional, national and international scales).

CITTRU specializes in organizing workshops and seminars for scientific staff of the university on entrepreneurship and innovation, mostly aimed at young researchers wishing to commercialize their results. The most recent events include:

- “**Commercialization of research and creating businesses at the Jagiellonian University**” workshops, with the cooperation of Dr. Klaus Plate, director of Technologiepark Heidelberg (October 2003) and Prof. Lars Jonsson, director of Uppsala Universities Utveckling AB (November 2003)



- Annual conference “University for Industry”
- **Branch Meetings** of specific companies and the scientific staff. So far the meetings were dedicated to the biotechnology and the cosmetic branch, companies which use chemical analyses, environment protection sector and IT companies; **Tailor-made Meetings** were organised with leading Biotech and IT companies in the region
- **Information Days** for University faculties on IPR protection, research commercialization and financial support
- **Projectleader”The development of cooperation in the area if knowledge transfer between the Jagiellonian Universities and Entrepreneurs”** including workshops and summer schools called “Innovative entrepreneurship, or how to turn innovation into business” (part-financed by the European Social Fund)
- **Innovativeness and business workshops** organised for students, PhD students and researchers
- Organizer and participant in two Interreg IIIC programs: **FINESSE** (Facilitating Incubator Networking and Exchanges of Services for Small Enterprises) and **BEPART** (Baltic Entrepreneurship Partners)
- **6th Framework** programs participant: **RIS-NAC**: Enhancing of Regional Innovation Strategy in Malopolska, and **ScanBalt** – Intellectual Property Knowledge Network
- Member of **ProTon Europe** Network (Innovation for Public Research)
- The Jagiellonian University supports the **Jagiellonian Business Club** (Jagielloński Klub Biznesu), the members of the club collaborate with CITTRU in their projects.

CITTRU staff is experienced in project management issues, project preparation, INTERREG III, FP6 (CITTRU staff participates in the activities of the

Branch Contact Point for European Programmes in the network of National Contact Points), business development, start-ups and IPR issues. The unit has also broad contacts with scientists working in the field of Life Sciences and biotechnology companies.

CITTRU is also involved in a number of projects relevant to the aims of BBaS:

- Other **INTERREG III C** programs in which CITTRU is involved are aimed at enhancement of trans-regional cooperation in the domain of entrepreneurship promotion, facilitation of business science interaction, creating new employment possibilities and stimulating growth in the region.
- **Regional Innovation Strategy – New Accessed Countries (FP6)**. The objective of the project is to work out a sustainable regional innovation strategy that should be build on the previous experience of the region and the experience of two RITTS (Regional Innovation and Technology Transfer Strategies) regions (Kent and Umbria) and one non-RITTS region (Thuringen). The RIS-NAC project enables the assessment and analysis of the regions strengths on the technology supply and demand side. It also creates possibilities for trans-regional and trans-border benchmarking practices.
- CITTRU manages 4 **European Social Fund Programs**, including activities aimed at promoting entrepreneurship culture at the



University (workshops and summer schools for students and young researchers) and facilitating of development of start-up companies.

- Organization of Conferences – “**University for Industry**” which bring together scientists from various areas of specialization, technology transfer institutions and company managers from the region. Next editions of the conference are planned to be international.
- CITTRU is a member of various initiatives connected with **Intellectual Property Management**.

The main regional organisations working with CITTRU are:

- Employers Union of Malopolska (regional representative of Polish Confederation of Private Employers)
- Polish Confederation of Private Employers
- Krakow Chamber of Commerce and Industry
- Malopolska Agency for Regional Development
- Polish Agency for Enterprise Development
- Innovation Relay Centre - South Poland
- British-Polish Chamber of Commerce - South Poland Business Link
- Internet websites: IT in Krakow Initiative - it.wkrakowie.org, biotechnolog.pl, nanonet.pl
- Regional Network of Capital Investors - Malopolska
- Business and European Information Centre, etc.

PARTNER 3: FUNDECOR, University Foundation for the Development of the Province of Cordoba,

FUNDECOR was established in 1996 as a non profit organisation aiming at the promotion and development of the dialogue between the university and industry, in a way that advances and promotes research benefiting both partners and finally benefiting the province of Córdoba.

FUNDECOR, in collaboration with other organisations, develops projects oriented at research, development and innovation of small and medium companies (SMEs), as well as working towards development of diverse technological advances that favour this type of companies. These activities include:

- **6th Framework Programme (FP6)** – FUNDECOR was involved in the specific activities for SMES with companies from Spain, Italy, United Kingdom, Austria and Hungary.
- **PROFIT** - program that promotes the research of the department of Science and Technology of Spain. This program aims at the stimulation of activities of research and technological development in the companies and other entities.
- **Entrepreneurship** – FUNDECOR is an intermediary between researchers and companies



- **Program EQUAL** - With this action FUNDECOR started to use the universities as a point of information and support to the labour market. This action is directed at those persons whose situation, due to discrimination and inequality, prevents them from the processes of integration in the job market and the access to the policies of promotion of employment. This project is integrated in more than 15 centres belonging to universities across Spain and the participants, as the foundation ONCE or the Secretary of State of Education and Universities, contribute to it.
- **Conference 'Management of Innovation'** - The aim of this conference is to show the university students how to manage innovating projects in the company.
- **FORINTEL** - This project is formed in New Technologies 15000
- **Foundation BIODIVERSITY** - Project related to information on environmental matters to all autonomous workers across Spain. This project consisted of presentations and seminars and a CD containing the legislative documents.



FUNDECOR stimulates the cooperation between the University of Cordoba and its social surroundings in the scopes of the research, development and innovation. Specifically in the matter of technological innovation the enterprise initiatives and joint projects of innovation are initiated, giving support to entrepreneurs in meeting with the research teams of the University, or other relevant experts. FUNDECOR also promotes the technological innovation among the companies through organization of innovation days, events and training sessions. The main contact networks for FUNDECOR are, for example, RAITEC (Red Andaluza de Innovación y Tecnología - Andalusian Network of Innovation and Technology), RATRIC (Red Andaluza de Transferencia de Resultados de Investigación - Andalusian Network for the Transference of Research Results), CESEAND (Centro de Enlace para la Innovación del Sur de Europa - Link Centre for Innovation in the South of Europe), RAFUEM (Red Andaluza de Fundaciones Universidad - Empresa - Andalusian Network of Foundations University - Companies), Parques Tecnológicos de Andalucía (Technology Parks of Andalusia) etc.

FUNDECOR is involved also in a number of projects related to the KT activities:

- **Projects at the national level** - The increase of the investment in Research, Development and Innovation on the part of the public authorities as a whole and on the part of the private companies is one of the main challenges for the definitive incorporation of Spain in the Knowledge Society and for the expansion into international markets. In this way, the innovation policies of the government promote and encourage the technology transfer, the cooperation between the public system of R+D+I and the companies, and the creation of companies by the university researchers (spin-out activities), supporting and financing projects of R+D+I and the creation of Technological Companies.

- **Projects at the regional level** - The modification in this new legislature of the structure of the Andalusian Government, with the creation of the new Ministry for Innovation, Science and Enterprise, shows the determination of the Presidency of the Andalusia Government to integrate in a single political structure the strategic decisions of all the main actors that take part in the development of the Innovation and the Knowledge. The Second Modernization is the opportunity for the incorporation of Andalusia to the Society of Knowledge, and represents the political motivation to carry out this transforming process. For this purpose, the Innovation and Modernisation Plan has been developed in Andalusia to support the work of other existing structures as in example, the Andalusian Network of Innovation and Technology, The Andalusian Network of Transference of Research Results, the Innovation and Development Agency of Andalusia, etc.

PARTNER 4: Eindhoven University of Technology (TU/e), represented by TU/e Innovation Lab (TU/e IL), Organisation for Innovation, Technology Transfer and Business Development.

Using its social responsibility as a platform, Eindhoven University of Technology strives to achieve more effective utilisation of the results of scientific research: valorisation of knowledge. It is used to support new products & services and to help new and, of course, existing technology-based companies. Eindhoven was, for example, the first university in the Netherlands to have a Transfer Point with a Starters' Centre and Temporary Entrepreneurs' Places (TOP). At Eindhoven University of Technology, a great deal of contract research is carried out and the teaching staff includes a large number of visiting professors on loan from industry. The university participates in public/private partnerships, advises industry and plays a leading role in Stimulus and Horizon Programmes. All the current projects in this area have been combined in TU/e

Innovation Lab. Within this inspirational setting, knowledge activities are extended, intensified and streamlined. As a result, TU/e Innovation Lab has developed into a crucial player on the cutting edge of scientific knowledge and its practical application throughout industry.

TU/e Innovation Lab objectives and activities are as follows:

- Expanding and providing professional support to contract research
- Facilitating and integrating Multidisciplinary Graduation on Entrepreneurship (spin-out opportunities)
- Enhancing the position of the knowledge owner through proactive marketing and sales of IP
- Making results quantifiable and offer performance-related rewards
- Improving and facilitating interaction with SMEs to stimulate knowledge based innovation
- Goal-oriented generation of more high-tech start-ups and spin-outs from TU/e



- Providing knowledge valorisation and innovation & entrepreneurship in education and research
- Acquisition, account management and relationship management
- Developing strategic partnerships and strategic collaboration in research and development
- Contacts & matchmaking, interaction management
- Process & project support, contract management
- Acquisition (or support) of funds and subsidies
- Incubator & start-up support (in Incubator)
- TOP scheme

The specific projects in this area include:

- **Incubator 3+** is an initiative of 8 organisations (TU/e, Fontys, TNO, BOM, Rede, Syntens, Rabobank, Philips) in the region Eindhoven to support technology-based start-ups by offering them a network, coaching, housing, facilities and small loans.
- **United Brains** is an intermediate for SMEs to get in touch with knowledge of TU/e, Fontys, TNO and ROC.
- **TechnoSpurt** is the regional interpretation of the national program **TechnoPartner**, to stimulate and support technology-based start-ups.
- The 3 universities of technology in the Netherlands are working close together, also on valorisation of knowledge. TU/e Innovation Lab is the southern pillar under the national platform **3TU Innovation Lab**.
- The **Cluster Department Entrepreneurship & Innovation** is a unique network focused on the needs of high technology entrepreneurs from the leading European Universities of Technology. It was created in 2000 to share best practices on educating technologists and scientists on the issues they will face in launching a high technology venture in Europe
- **High Tech Campus Eindhoven** is a well-known technology centre, with a diversity of high tech companies who work together in the development of new technologies, from idea, concept to prototyping. Together with TU/e and larger technology companies, it provides advanced facilities and an optimised working culture for many thousands of top-notch engineers. It focuses on crucial technological areas such as microsystems, devices, embedded systems, signal processing and nanotechnology.
- **Brainport Eindhoven** contains a close relationship between knowledge institutes, business and government (Triple Helix) to continue the unique position of Eindhoven as the only region in the Netherlands that meet the Lisbon objectives.
- In the **Eindhoven-Leuven-Aachen Triangle (ELAT)** knowledge institutes, business and government combine their forces to become an absolute top technology region in Europe and even worldwide, by 2010.
- The **Horizon Programme** is a strategic action plan to strengthen the economic structure of the Eindhoven Region over the medium term. Twenty projects were formulated at the outset based on the programme themes. In several of these programs TU/e plays an important role.

PARTNER 5. ASTER (OBSERVER STATUS)

ASTER, the former Emilia Romagna Technological Development Agency, was established in 1985 in order to promote the competitiveness of the regional industry by means of technology transfer and innovation. Its role and mission have been enhanced by the Regional Law 7/2002 and ASTER is now a consortium for industrial research, technology transfer and innovation,

composed by the Emilia-Romagna Regional Government, the Universities of the region, the national Research Centres CNR, ENEA and INFM, the regional association of Chambers of Commerce and Industry and the Entrepreneurial Associations.

ASTER's mission is to enhance, also on an international level, the results attained by the research organisations in Emilia-Romagna and guarantee the transfer of these results to the industry, thus encouraging innovation and competitiveness. Its main strategic objectives are:

- (1) to construct a network that encourages the creation and exchange of knowledge between research centres and to disseminate their findings throughout the companies/businesses of the Emilia-Romagna region;
- (2) to encourage the participation and collaboration of research centres and businesses throughout the region in the establishment of national and pan-European projects aimed at the development of technological innovation and
- (3) to exploit fully the value of regional research in Italy and abroad.

In the last years, Aster has assisted the Regional Government in the definition of regional policies

on innovation and industrial research, in particular for the elaboration of the Emilia-Romagna regional Law on Innovation n.7/2002 and the Regional Programme for Industrial Research, Innovation and Technology Transfer (PRRIITT Programme), as well as for its management. Within this framework, ASTER coordinate and support the activities of the regional High Technology Network, including 27 Networked Industrial Laboratories, 24 Centres for Innovation and 6 Innovation Parks and carries out specific initiatives and projects (in several cases funded within EC programmes), related to innovation, technology transfer, industry-science relations, regional and technology foresight, research spin-out support. As for this last field of activity, ASTER is managing also programmes and initiatives supporting and financing innovative start up and research spin-out creation, including the SPINNER programme addressing technology transfer and research spin-out, and I-TECH OFF a technology incubator offering services to ICT based companies. Finally, it is worthwhile mentioning the organisation of the first edition of RICUBO, a regional event including conferences, technical seminars, a venture forum, an exposition area and collateral events aiming promoting entrepreneurship, innovation and finance of start up companies. Finally ASTER is the manager of the KREO network, within the PAXIS programme, on behalf of the Emilia-Romagna Region.



Chapter 2

The methodology developed for creating the Industry – University Networks

The main objectives of the BBaS project were to:

1. Derive and disseminate to major players the models and protocols of best practice in key aspects of Knowledge Transfer (KT)
2. Build core international networks between the 4 participating institutions in three key sectors important for the regional economical development (BBaS focus sectors):
 - Biotechnology/Health (BTech),
 - Information Communication Technology/ New Materials and Technologies (ICT/NMT)
 - Environmental solutions (Env)
3. Create hands-on learning opportunities for 20+ Knowledge Transfer Professionals, 48 academics (researchers) and 48 industry representatives from the participating Regions
4. Create lasting and sustainable engagement between research institutions and industry leading to efficient and timely innovation agreements
5. Create consortia for EU funded research and innovation projects (in particular for FP7)

In respect of the ‘best practice’ aspect of our project it has been decided very soon (after the First Study Tour) that there is no possibility of defining the one and only ‘best practice’ for Knowledge Transfer, because the practice might

differ considerably between the regions, sectors and players. Therefore, we agreed that we should be seeking the ‘good practice’ and this phrase is used throughout the remaining part of the report.

It was proposed that the network building will be achieved by organising 4 Study Tours where on each occasion 12 academics, 12 industry representatives and a minimum of 9 KT professionals will have opportunities to engage with each other and with invited local companies and academics. The participating KT professionals were preparing the programmes, organising and facilitating the Study Tours. Each Study Tour was structured in such way as to stimulate the creation of personal collaborative research networks between the participants and provide opportunities to exchange the KT experience and to discuss the good practice in specified areas of KT.

The Study Tour events were aimed at providing sector-orientated models of good practice in Knowledge Transfer that could lead to more efficient contracting and business development processes. Dissemination of the guidelines for good practice in KT activities was done within the project networks, our regional development agencies and other existing networks leading to learning and training opportunities of all three groups of people (business-science-KT professionals). Also:

1. The models of KT good practice derived from the BBaS were widely disseminated to regional businesses, universities and relevant organisations to facilitate the learning about the critical success factors in KT activities
2. The process of dissemination and the content of the reports facilitated better linkages between the regional research active organisations, international KT organisations and identified technology needs in these three sectors (technology pull)
3. The observers from Emilia Romagna organized

specific focus groups and a Regional Platform in their region in order to disseminate regionally the good practice outcomes of BBaS and act as a liaison between the participants of the study visits and relevant organisations in Emilia-Romagna.

In order to achieve the goals listed above, the participating technology-transfer units organised 4 Study Tours located in the four participating regions. Each Study Tour involved 4 networking groups comprising of knowledge transfer professionals, academics/researchers or students/recent higher degree graduates interested in commercialisation of their research results and professionals from the industrial sector – the **Path Finder groups (PFG)**. In total these included 48 industry representatives (4 Regions, 4 Study Tours – 3 each from three sectors), 48 researchers and over 20 KT professionals.

To increase the impact of the Study Tours a number of supporting activities was organised between the tours:

- In advance of each tour there were regional preparatory meetings or workshops with the PFG and other invited members of the target groups, to create insight in their needs and wishes, questions, experience and expectations concerning the topics of each Study Tour.
- It was the intention of the project to create sustainable partnership between the university academics and the representatives of industry

and specific meetings were organised for the potential groups of research collaborators.

Whenever possible, the BBaS project partners were trying to find during these prep-meetings the information about the actual topics for collaborative research and the type of experts sought, so that the project partners could program their Study Tour “tailor made” and invite the most appropriate scientists and industrial partners.

Each Study Tour was rigorously structured to include:

- Information pack for the participants available a week before each meeting that included the information about the institution organising the Study Tour, detailed programme of the Study Tour and professional profiles of all PFG participants and Knowledge Transfer facilitators.
- Activities designed to stimulate networking between the PFG participants and pre-arranged meetings between potential research collaborators.
- KT specialists’ presentations summarising current practice of the various aspects of specific KT activity championed by the host-institution and presented for assessment and final agreement of good practice to the three sectors representatives.
- Sectorial and interdisciplinary cross-national round table discussions were led by appointed rapporteurs aimed at defining the good practice in each type of KT activity.
- Conclusions, in a form of a Study Tour Newsletter were disseminated to all participants and each of the BBaS partners forwarded the BBaS Newsletters to the regional businesses, research institutions, agencies and other industry-research networks and individual players
- The information pack for each meeting and the conclusive good practice report were available soon after each Study Tour on the BBaS web page (www.growbbas.com).



Each Study Tour created at least 6 networks per BBaS partner based on a personal contact between the 3 researchers and 3 industry representatives participating in the Path Finder Group and facilitated by the KT professional. These personal contacts form a nucleus network between research and industry that will be developed into further networks according to the entrepreneurial development needs of the specific industry.

The Study Tours had a considerable learning potential for all three parties: KT professionals, researchers and industry. Usually the working contacts between these three groups are not international and interdisciplinary. Additionally, the environment provided by the Study Tours was non-competitive and commercially non-committing.

Bringing together participants from 5 very different European regions and three different sectors has been in itself an important innovative potential. For the BBaS partners' technology transfer units, the experience of organising Study Tours was of high importance for their work; while for industry it should lead to lasting personal networking contacts with the members of the relevant research active academic community in their region and open possibilities of pan-EU innovation engagements.

It was envisaged that these actions improve and influence the process of technology transfer in each of the participating regions and foster more effective cooperation between industry and university, eventually leading to an improved economic performance of the regional small and medium size enterprises (SMEs).

The planned specific topics for discussion at the Study Tours were as follows:

- The UK Knowledge Transfer Partnership (KTP) (Surrey)
- Intellectual Property transfer procedures (Surrey and Eindhoven)
- Aspects of intercultural, interdisciplinary and international communication between the academic research and industrial communities (all partners)
- Multidisciplinary Graduation on Entrepreneurship (MGE) (Eindhoven)
- Educating Researchers in the potential of KT (Krakow)
- The importance of IT in Knowledge Transfer (Cordoba)



Chapter 3

The consideration of characteristics of selected sectors

To achieve the principal objectives (3P model – People, Planet, Profit) of the GROW project we have selected for the BBaS activities 3 economically important industrial sectors of Information Communication Technology and New Materials and Technologies, Environmental Solutions, and Biotechnology and Health. These sectors could also be considered as the common denominator for R&D in all participating regions. Additionally these are the high-growth sectors that strive to achieve a sustainable economic growth through innovation.

In the planning phase of the project we have hoped that an interdisciplinary participation will stimulate discussions between experts in different areas of science and industry, and will give opportunity for research and innovation crossing typical scientific and commercial boundaries. However, the discussions with our potential Path Finder Group members suggested that the majority was interested mostly in meeting professionals focused on a very narrow research field.

The Study Tour networking proved that the interactions between experts in different industrial sectors were often most revealing to the participants, but from the organizational point of view we could see that the attitude to innovation of participants representing different sectors differed in several aspects. Below we give some examples.

1. IP related sector characteristics

One of the most important keys for success for a new start-up is a clear position regarding the Intellectual Property Rights (IPR) of the idea, or the product on which the new venture is based. This is especially true here since the sectors selected need comparatively large investments in order to create a business out of the initial idea.

It is obvious that it is very difficult to persuade investors to invest in a new venture when the IPR position is unclear. During the Study Tours we addressed this issue several times, especially during the visit to Surrey. The discussions revealed that the Biotech and IT sectors were well aware of the importance of securing the IPR, while the researchers working on the topics related to the environment were less interested in this matter.

2. Entry level characteristics

All selected sectors have similar characteristics regarding the entry level for new businesses. Huge investments are needed to transform the first ideas to valuable products or services. This common characteristic formed a connection between the participants. Such high entry levels cause need for collaboration with partners that can provide needed investment. As a result the business people in the Pathfinder Groups were often looking for collaboration with (mostly foreign) universities and other companies to provide finance for the innovation they were working on. The BBaS project made possible such international collaboration between small businesses and universities. Many of the Path Finder group members would never be able to make such contacts as those arranged by this project. In a number of cases the EU research funding Framework Programme 7 (FP7) was considered as means for funding the needed innovation and the project Study Tours provided excellent opportunity for creating international research project consortia.

3. Throughput time of the innovation

Innovation in the sectors selected often requires relatively long lead times. Small business in particular finds these lead times difficult to manage. Furthermore, small businesses often do not have the possibility to work on an innovation during a long period of time. As a result the sectors selected all need the help of universities that have in place a research agenda that covers long periods of time.

For a short time scale research projects the industry representatives have learned at our meetings about government and university schemes to support university input into finding quick solutions to industrial development, the UK example of Knowledge Transfer Partnership (KTP) and schemes for university consultancy services were particularly useful.

4. Regional differences

Due to the collaboration of five different European regions the impact of the geographical spread on the sectors considered became apparent. This was especially true for the sector Environmental solutions. Each region has somewhat different interests in this sector and this fact can reinforce the potential collaboration. For example, in the Noord Brabant region and also in the South East England biofuel research is increasing in importance, but there is no land available to grow the necessary crops. Therefore the businesses concerned with production of biofuels are looking for solutions. It was important information for such businesses that in Malopolska there is a potential for the delivery of the basic input materials, and in the Province of Córdoba there is already a methodology for innovative ways to produce biofuels.

Some general remarks on the characteristics per sector

• Information Communication Technology and New Materials and Technologies

This sector is quite broad. As far as ICT is concerned, it seems that the above mentioned characteristics have the least influence. IPR can be established anywhere in Europe, although software cannot be patented. Also the entry level is low and throughput time is less relevant. Since ICT mostly uses internet as a communication tool regional differences are down to a minimum.

The creation of New Materials on the other hand needs the right infrastructure of

knowledge institutes and industry. Entry level in combination with regional influences can be of major importance. There is a lot to gain by joining forces over the different regions, as we've seen in the BBaS project.

• Environmental Solutions

For this sector throughput time and regional differences are important factors. Since these solutions need governmental approval it can take a lot of time before new technology can be implemented. Funding for R&D can be hard to get too. Environmental key questions differ substantially between the regions participating in the GROW initiative, but sooner or later every region will have to face them. Therefore a close collaboration of all regional authorities in Europe in this area will be of crucial importance in the long run.

• Biotechnology and Health

All four characteristics listed above are of utmost importance in this sector. Since it takes a lot of time and effort to reach success, patents are crucial to be able to generate profit in the long run. Also the entry level is high, due to state-of-the-art technology that is needed in this sector. Regional differences are still there, but the new EU countries are catching up very fast and sometimes even taking a lead.



Chapter 4

Individual Regional experience in organising the Path Finder Groups and the Study Tours

This chapter presents experiences of the BBaS regional partners in selecting the Path Finder Group members and organising the BBaS Study Tours in each partner region.

Recruitment of Pathfinder Group (PFG) members

Each of the BBaS partners has developed a region-specific scheme to reach industry and academic representatives who would be appropriate and committed to participate in the BBaS Study Tour as the PFG members.

The main channels used by partners were:

- direct personal contacts with researchers (regional universities) and entrepreneurs (regional business organisations), at BBaS dissemination events or at other meetings
- advertising the project through e-newsletters and magazines (CITTRU Newsletter, INFO RETA in Andalusia, Vector magazine in Eindhoven, SEE Innovation Hubs)
- dissemination of BBaS leaflets during different events (regional workshops, seminars, conferences, DTI FP7 conference in London);

It has been noted that for most BBaS partners, the researchers were more willing than the industry representatives to take part in the BBaS events, including Study Tours and regional workshops. It seems that this imbalance was related to the fact that the regional BBaS partners represent units established by the universities, and therefore are well known at their institutions and have extensive networks of personal contacts within universities.

Also, the academics have greater experience in participating in international conferences and seminars, and it was only necessary to convince them that they should focus more on creating links with businesses actually participating in the Study Tours.

At the University of Surrey the academics were generally interested in the project, but were concerned about the tangible outcomes of the Study Tours. The interest of both, researchers and SMEs, in participating in the BBaS meetings strongly increased with the launch of the EU Framework Programme 7. The small businesses were very curious to learn more about this source of research funding and could see BBaS events as a simple route to find research partners who were more experienced in applying for research funding.

It seems quite clear that creating a point of contact alone, without any subsequent funding for the collaborative project was not so attractive to both parties, academics and SMEs.

All of the BBaS regional partners acknowledge that they had the greatest difficulty in recruiting entrepreneurs for the ST. Their main argument was the lack of time as the Study Tours took about 3 – 4 days, including travelling, and this was seen as too long period of absence from the business, especially when outcomes of the meetings as to finding the exact research partner were uncertain. Another reason explaining weaker than expected interest of the beneficiaries could be that small and medium enterprises are less interested in establishing international contacts.

Use of English as a working language was also a problem for other than UK participants. It also became apparent that both researchers and entrepreneurs in some of the Regions (not South East England though) receive an excessive number of proposals through the same channels. In some cases, entrepreneurs seemed to be rather interested in gathering industrial intelligence than establishing contacts.

As the project progressed we have been modifying and adjusting our recruitment tactics. For example, for the first Study Tour, due to the very short period of recruitment, RES (University of Surrey) accepted two people representing networks of businesses. In principle it seemed like an idea worth testing, since they should have access to a large group of SMEs that could be helped to create more networks. However, it turned out to be not very useful, because the network facilitators themselves were not engaged in specific scientific problems. In one case CITTRU accepted two IT companies instead of just one as there were no company representing environmental solutions willing to take part.

Programmes and aims of the Study Tours

Organising the PFG recruitment and preparing the programme for the Study Tours was evolving in time as the project partners gathered more experience. We were collecting from the PFG members standardised evaluation forms after each Study Tour and that gave us the most important insight into their perspective at these events. It turned out that there should be more focus on creating opportunities for thematic networking and exchange of information about possible collaborative projects. Basically, they did not want to hear or discuss the 'good practice in KT', but they wanted to talk science and research ideas with the people sharing their interests. This opinion was expressed by many participants in evaluation forms. Presentations from the experts on specific KT issues were mostly considered as interesting and useful, but not always relevant to all participants.

Following this insight the programmes of our Study Tours evolved from the first, organised in Surrey, that was based on a number of presentations from experts on Intellectual Property and government funded KT schemes in UK, to the fourth ST in Krakow where we were visiting university departments and laboratories and facilitating one-to-one meetings between researchers and

company representatives to talk about a specific, earlier submitted, research proposals.

We have also discovered that networking games conducted in a bar on the first evening of the tour were extremely useful to make the participants to talk to each other and break the ice. This was introduced for the first time in Eindhoven, where we were all scoring points for talking to as many people as possible and the winner (from the UK) won a prize (a funny book about the Dutch).

In the further chapters of this report we include detailed reports from the Study Tours. Programmes, names of all participants of the Study tours, presentations and comments are available on our webpage: www.growbbas.com (this webpage will be on the Internet until the end of 2008).

Individual regional experiences

PARTNER 1: Research and Enterprise Support (RES), University of Surrey in Guildford

Organising the first Study Tour

The BBaS ST in Surrey was the first we have organised and there was very little time available after our kick-off meeting on the 14-15 of May 2006 to organise everything for the 28 of June. The agreed format of the ST was based on presentations from the experts on IP and KT methodology, plus round table discussions about these topics amongst the PFG members.

We had no difficulties in recruiting the speakers; we have been able to have top professionals in their field. The lectures were very useful for us, the Knowledge Transfer professionals, and of great interest for our guests from the other EU countries. However, for many of the PFG members it was only partly relevant. The rigid topic aiming at 'good practice' didn't seem so good anymore after the round table discussions.

Recruiting the Pathfinder Groups

For the first ST, considering the very short time available, we had to rely on personal contacts and that was not easy, again because of the short notice. At the end we had more than 3 researchers from our university, but really only one ‘business’ representative (spin-out from our university – he gave a really good presentation). The other two industrial PFG members were representing networks of businesses in the SE and that was not very useful for creating real research networks.

The second ST recruitment was done on the basis of a targeted BBaS dissemination meeting. Invitations went to over 200 e-mail addresses, about 24 people confirmed attendance, but only 12 attended. Out of these 12 we selected three business representatives. In fact only one of them was really interested in EU research collaboration. The others were just gathering intelligence, it seems, because they did not continue with any collaborative schemes. From the academic community we selected two researchers who were Spanish speakers, hoping that they will have easier access to the local researchers and business, but that did not work too well either. There were two more researchers in our PFG (one of them paid their own costs), but they have not found anyone within the group with whom they would have common research interests. This experience made us try harder at finding PFG members who would have scientific synergy with the institution organising the Study Tour.

This attitude helped us to find much better participants for the third ST in Eindhoven. Perhaps it helped that the University of Surrey and Eindhoven University of Technology have similar profiles. The recruitment of the SMEs for this Study Tour was made through a special dissemination seminar for one of the SEE Innovation Hubs. This was a very successful approach and we were able to select an excellent group of business representatives. The university researchers were recruited on the grounds of our personal knowledge of them and their research topics that fitted well with the Eindhoven areas of research. The PFG was very well focused and

collaboration outcomes most successful.

For the ST in Krakow the selection was made partly through the DTI FP7 meeting in London and partly through the SEE Innovation Hub. The university researchers were again selected on the grounds of their research interests and personal knowledge. This time we worked very closely with the organisers from CITTRU and arranged specific research meetings for our PFG. This was also a very successful methodology.

PARTNER 2: Centre for Innovation, Technology Transfer and University Development (CITTRU), Jagiellonian University, Krakow.

Recruiting the Pathfinder Groups

In the Malopolska region, project BBaS in general terms was perceived as interesting, useful and fruitful. Thus, there were no severe problems encountered during the recruitment processes. In CITTRU, we have elaborated a special recruitment form in order to safeguard equal access for potential participants in the BBaS Study Tours.

Each recruitment process – undertaken before every Study Tour – was preceded by similar dissemination actions in order to attract attention of industry and academic representatives to form the future PFG. There were various methods used, such as:



- dissemination of the CITTRU newsletter to the scientific staff of the regional universities and business organisations;
- direct contacts with researchers and entrepreneurs;
- information about the forthcoming ST during every regional workshops;
- dissemination of BBaS leaflets in seminars, conferences, etc

The recruitment process for the first Study Tour in Surrey went quite smoothly but on the other hand at the very beginning, it was difficult to attract proper people to participate in the ST because the project itself was not yet promoted widely and we did not know what to expect from the trip to Guildford.

However, we were able to select 6 persons fulfilling the recruitment criteria. They were all satisfied with the visit and impressed by some of the presented UK KT schemes. Our PFG members concluded that although it was difficult to find a perfect business/scientific match for research, the presentations and discussions provided them with very interesting and useful information, and ideas for solutions of problems in KT in Poland.

Recruitment for the ST in Cordoba was the most successful – the interest in participation was the highest in the overall BBaS. Nevertheless, there were also some problems with the quality and adequacy of the recruitment forms sent to us. Most of the people interested in participation were coming from the University side and also most of them from the biotechnological faculties.



But we managed quite easily to find a suitable PFG and also it was possible for the Financial Manager of the Jagiellonian University to join the BBaS group. They were also very enthusiastic about the ST programme, but unfortunately it was only one of our PFG members who found a partner to the business/scientific cooperation.

Recruitment process for the Eindhoven ST also was not difficult. The only change we had to make was to let 2 IT companies go to Eindhoven (instead of one), as both of them were very dynamic developing companies with a strong innovation potential and proved vested interest in participating in this ST. And here again – our PFG members were impressed by what they have seen in Eindhoven, but it was very difficult for them to establish sustainable contacts and undertake collaborative projects with other PFG members. The reason for this situation is that Polish researchers and entrepreneurs have still little experience in undertaking collaborative projects even locally, and starting international cooperation seems to them even more of a risk.

Undoubtedly, the visit in the Philips headquarters in the ST programme was a very strong incentive for the recruitment programme to be successful.

Organising the fourth Study Tour

When organizing the ST in Krakow, we realised that the most difficult task was to attract the required number of the participants of the appropriate profile. On the other hand we arranged a number of one-to-one meetings for visiting PFG members with researchers who were not included in our PFG.

We had also difficulties in convincing entrepreneurs and scientists to give presentations about their ideas for collaborative research during the ST. Recruitment process was conducted on a similar basis to the previous ones but in the very last moment some of our participants informed us that they could not come or they simply did not appear.

We learned here a lesson that it is better to take the PFG participants for a foreign trip, where they are engaged in such meetings 'full-time', because when they do not leave their own city then always something more important and urgent comes up.

However, in general terms, although some of our participants were circulating and attending the meetings only partially – we had a larger group of people interested in participation that is why – first of all, there was always someone present, secondly higher number of scientists/entrepreneurs could benefit from the meeting.

PARTNER 3: FUNDECOR, University Foundation for the Development of the Province of Cordoba

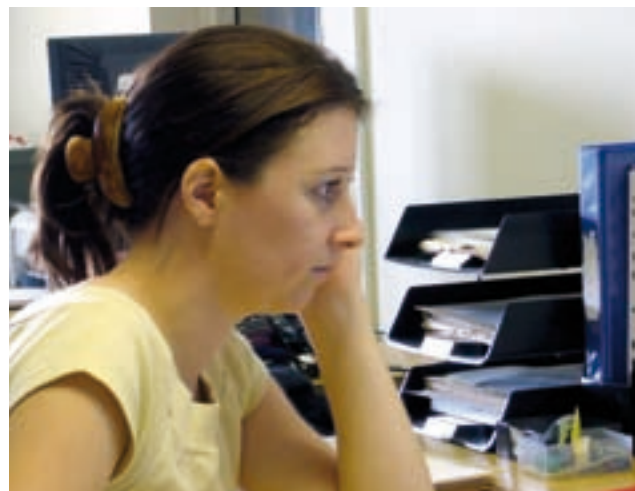
Recruiting the Pathfinder Groups

We have developed very similar dissemination processes and recruitment processes for all four Study Tours in order to reach the number of industry and academic representatives for the PFGs. The channels we have used were mainly:

- Direct contact with the research groups at the University of Cordoba (UCO);
- Press releases dissemination through e-bulletins (INFO RETA, etc);
- Dissemination of BBaS leaflets in seminars, conferences, etc;

The main problems of the recruitment process for all Study Tours have been very similar and usually linked to the lack of reply to the dissemination carried out previously (especially with industry representatives). The explanation of these problems could be associated with reasons such as the small size of companies in our region, the necessity of knowledge of English language and perhaps also excessive information through the same channels.

In the evaluation forms of each Study Tour returned to us by the PFGs members, we have found a number of similar comments:



- All of them considered the ST as an interesting initiative in order to establish potential networks to participate in joint projects in the near future (FP7 in particular was mentioned);
- Despite the fact that they had enough time for networking, in general terms they didn't establish fruitful cooperation during the Study Tours because the correct profiles for them were not available within the PFG members of other delegations. It seems that the language barrier was particularly important for the Spanish PFG members.

Organising the second Study Tour

With respect to the organisation of the 2nd Study Tour in October 2006 in Cordoba, we can highlight as a main problem the difficulties to obtain confirmation from speakers from our region on time in order to develop a final version of the Info Pack for the Study Tour and circulate it to the partners.

The emphasis of the programme of the second Study tour in Cordoba were on the efforts of the regional government to facilitate the KT activities using IT and also, due to the timing (October 2006) we had presentations about the forthcoming EU Framework Programme 7 (FP7) and meetings of the FP7 consortia that were preparing submissions of proposals.

PARTNER 4: TU/e Innovation Lab, Eindhoven University of Technology

Recruiting the Pathfinder Groups

For the Eindhoven partner, the process of organising PFG members for the Study Tours has evolved over the time of the project. At the beginning we were very much depending on the specific program of the Study Tour and its speakers. For the organising partners (including ourselves) it was always very difficult to have the exact list of speakers at an early stage. As a result it was difficult to use the program and speakers as selling argument to persuade people to participate in the Tour. During the project we have learned that we should not focus on the program and speakers but focus on the potential that our PFG members could experience by participating in the Study Tours. This potential was in meeting people from the five participating regions of the EU directly related to a specific sector. Based on these contacts further collaboration could be established. In our opinion meeting people first is essential for successful research collaboration.

In general we were actively approaching potential members of the PFG. Only for our meeting in Eindhoven we were contacted by those who were interested in participating. This was based on an announcement of the GROW BBaS project in Vector (magazine of TU/e Innovation Lab).

During the recruitment process we have been using information about the partner regions, their universities and the industrial sectors, in combination with the personal interest of our members, as arguments to persuade the relevant people to come with us to the Study Tours.

The main argument against the participation was usually the time availability in their business calendar. The Study Tour takes about 3 – 4 days (including travelling). It appeared that this was for some too much time to devote to an event when the outcome is uncertain. Therefore the efforts of the KT professionals to organise also specific personal 1-to-1 meetings with researchers or companies that might be potential research partners was much appreciated by the participants.

Organising the third Study Tour

The Study Tour in Eindhoven was from 28 – 30 January 2007. We have started organising our Tour at the beginning of September. We had a first draft of the program during the Study Tour in Cordoba and in general this first draft did not change that much in comparison with the final program.

It was not very difficult to find speakers for the Study Tour. It was quite easy to explain the objectives of the meeting and our speakers were very willing to contribute to the project. Our objective was to demonstrate to the partner regions our efforts in networking and spin-out activities in the Noord Brabant. Therefore, we had invited the key managers in this region from the University, from TU/e Innovation Lab, from Brainport and from the High Tech Campus. Based on the response of the partners we believe that we have succeeded in our objectives.

We have strongly promoted the project at the University. As a result the representatives of each university department were present to meet with the PFG members of the partners over lunch. In this way we wanted to relate the knowledge questions of these groups directly to the departments. We believe that this was a very efficient way of dealing with the individual needs of the participants.

PARTNER 5: ASTER Scienza Tecnologia Impresa, Bologna

The participation of Aster in all BBaS Study Tours allowed us to get detailed information about the relevant good practice developed by the hosting organisations and to establish contacts with researchers and entrepreneurs belonging to the different countries participating in the project. It also gave us a chance to spread information about the Emilia-Romagna High-technology Networks and to promote possible exchanges with some Italian research units and company start-ups.

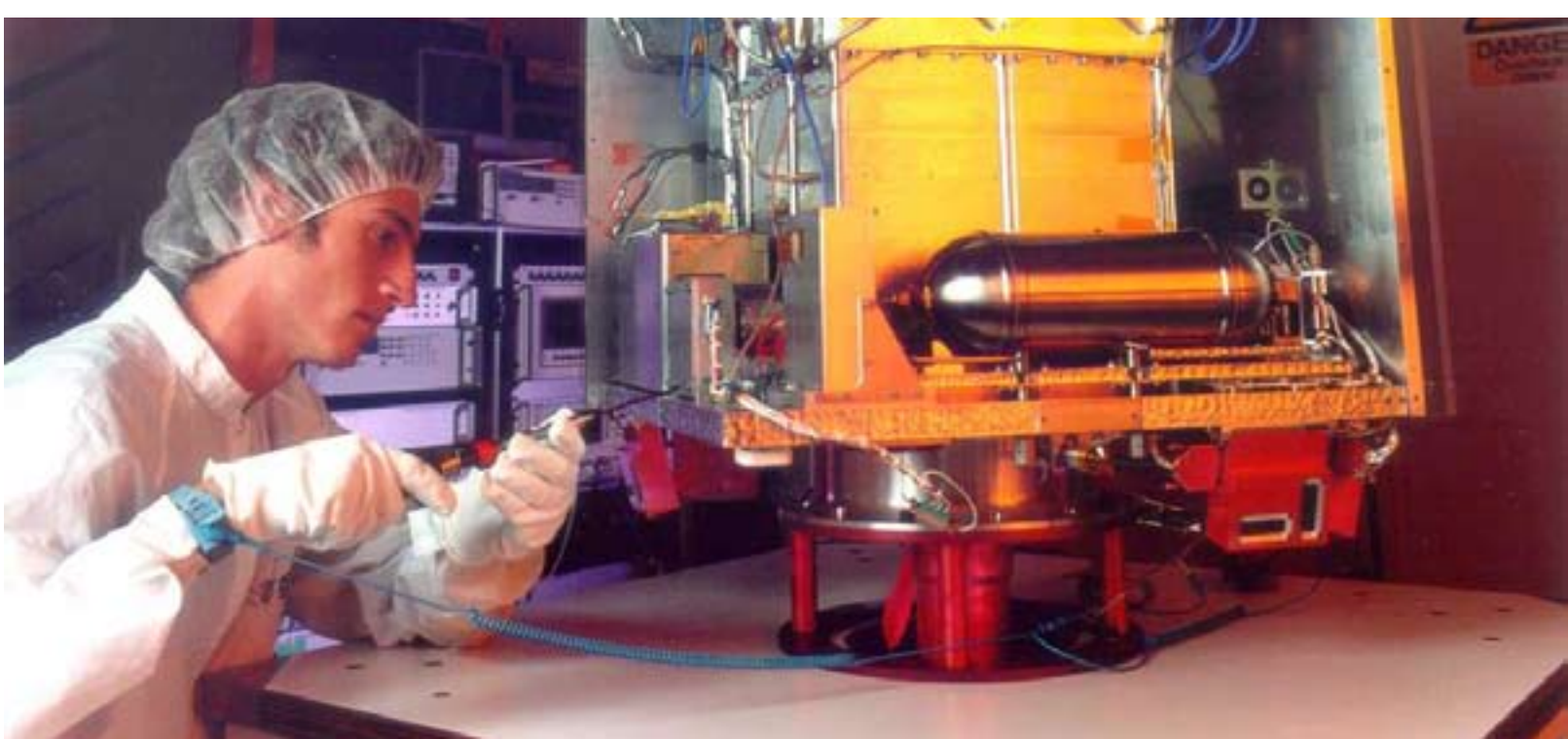
The active participation of Aster in all Study Tour sessions, including workshops, permitted us to introduce in the discussions the experience gained by Aster during its 20 years of activity in managing innovation and technology transfer projects in Emilia-Romagna.

Chapter 5

Study Tour 1 At the University of Surrey Guildford

26th -27th June 2006

The first Study Tour of the Bridging Business and Science GROW project took place in Guildford. The meeting brought together three groups of professionals engaged in scientific research and innovation activities: university researchers, representatives of the business community and Knowledge Transfer (KT) Professionals. The members of these 'Pathfinder Groups' (PFG) came from five different European Regions (South East England, Malopolska (Poland), Andalusia (Spain), Noord Braabant (Netherlands) and Emilia Romagna (Italy)), and three different market areas: IT/New Materials and Technologies, Health/Biotechnology and Environment. For a day and a half more than 40 participants discussed two specific topics of great importance for the economic development and innovation activities in their Regions: the management of Intellectual Property (IP) resulting from collaborative industry-university research and UK government schemes as examples of funding directed at stimulating KT.



The guest speakers, from both industry and academe, introduced topics for discussion representing the business-science interaction from both perspectives. This was followed by Round Table discussion groups which focused on providing suggestions for good practice in IP management and KT funding schemes.

Monday 26th of June

The meeting was opened by Greg Melly, Director of Corporate Services, the University of Surrey, who emphasised the importance of knowledge transfer to be included in all modern research intensive universities. Then two opinions on good practice in management of Intellectual Property rights were presented. Dr. Jeff Skinner (University College London and the Association of European Science and Technology Transfer Professionals – ASTP) talked about the *'University's perspective on Industry'*, and then *'Industry's Perspective on university- industry collaboration'* was presented by Ross Bradley, Chairman of the Farnborough Aerospace Consortium.

Dr. David Parry, Chief Executive of the South East Health Technologies Alliance (SEHTA) talked about *'IP and research collaboration with universities – the industrial experience'*. This was followed by Prof. John Hay, Head of School of Biological and Medical Sciences of the University of Surrey in a presentation of the opinion of the 'other side of the bridge' in a talk on *'IP and research collaboration with industry University perspective'*.

The mid-day session was centred on the UK schemes for support to the university-industry collaboration with Peter Hicks introducing the London Technology Networks, and Wendy Mannix, KTP Manager London and South East and Tanya Boardman, KTP Manager at the University of Surrey, presenting the principles and practice of the UK Government funded Knowledge Transfer Partnership (KTP). The first part of the day was

rounded up by Dr. Phil Martin, the Managing Director of 'Invitrogen' telling us *'How KTP changed my life'*.

The afternoon included a plenary discussion of proposed suggestions for the topics for Round Table sessions, and then everyone took a place at one of the 3 Round Tables (BTech, Env and IST/NMT). Each Round Table consisted of 8 PFG members + 1 *rapporteur* + 1 facilitator.

At the evening networking dinner in the Yvonne Arnaud Theatre in Guildford a number of the researchers from the University of Surrey took the opportunity to meet the BBaS PFG members and discuss the possible collaborative projects.

Tuesday 27th of June

The morning sessions started with presentations by the Round Table rapporteurs of the conclusions from the discussions. Then Mark Mawhinney, General Manager of the Isis Enterprise created by the University of Oxford some 15 years ago, summarised the Isis experience of the technology transfer. Finally we had two presentations of the UK Government and the Regional authorities view at the technology transfer, one by Lawrence Cullen of The Government Patent Office and the other by Ed Metcalf, Head of Innovation in South East England Development Agency (SEEDA).

The First study Tour of the BBaS GROW project was closed by Prof. Chris Snowden, Vice Chancellor of the University of Surrey.

Conclusions from the First Study Tour

It was generally agreed that universities represent a very different organisational culture to industries and that this represents the largest stumbling block for trouble-free cooperation. IP issues were also identified as an obstacle.



THE UNIVERSITY VIEW

There is an increasing pressure on universities to bring-in as much external funding as possible. The IP resulting from collaborative research can have an important monetary value to the university, although there is a new realism regarding its exact value. Disputes were identified between partners in European funded projects relating to this issue during contract negotiations.

Industry-university collaboration remains largely based on the research agenda driven by academics, not the universities' management strategy or the market pull. This situation can create a conflict between the need for funds and the academic mission.

THE INDUSTRY VIEW

A crucial point raised by the speakers representing industry is the different time scales of research activities in these two cultures. Industry very often needs quick and timely solutions which often cannot be provided by the academics, not because of the lack of scientific ability, but because research at the universities is a part-time activity shared with teaching and writing scientific papers.

For industry the main drivers are: profit, cash flow, competitive edge and maintaining flexibility and responsiveness to market changes. IP resulting from research gives a company a competitive edge.

All EU countries participating in the project appeared to agree with the workshop conclusions. For example, there was a complete agreement between the speakers representing business that the industry-university research collaboration has to be market driven rather than technology pushed, although applied rather than pure research is a culture change for some academic research groups.

It was remarked that multinational companies in certain sectors are not particularly interested in innovation, that they might find it hard to generate the same momentum as SMEs (Small and Medium Enterprise) involved in change, and in some cases are using mainly spin-in activity within the company to generate innovations. Therefore it was proposed that the best partners for universities should be SMEs. However, it was suggested that SMEs may have little knowledge

of universities and might feel intimidated by them and find it difficult to engage them due to cost, as universities may be competing in the same market. In the countries where the government has invested in KT professionals working at the universities, who can provide a contact point for SMEs the situation seems to be improving, while there are also regional funding sources geared towards providing financial assistance to SMEs to contact universities for development work. There was a common agreement amongst all speakers that there is a definite need for a professional cadre of people familiar with both cultures to provide the link between business and academe.

It was suggested that the KT office financed by a university might not be the best solution for regional economic development. The way forward may lie in separate business services supporting a number of universities and companies. The KT experts in these organisations should have experience of working with SMEs and autonomy for signing deals and contracts. This model has not been tested as yet.

Some University academics ask themselves if at all they should engage with IP. If so, a whole new set of questions are raised, for example: where the patent should be sought (national, EU, international?) and can their university afford it? It seems that even from the university perspective the optimum route for patents may be with an industrial partner. In this situation the company could bear the cost of a patent with the academic retaining inventorship. However, in this case the IP has to be realistically valued and there has to be both an unambiguous royalty agreement and an understanding about the link between the IP and future company products.

Considering the above, it needs to be emphasised that the three fundamental activities at the universities, namely teaching, research and KT are all related and feed back into each other.

GOOD PRACTICE IN IPR MANAGEMENT, CONCLUSIONS:

- The topics for collaborative research should be market-driven but Universities should be better at marketing their scientific expertise and the facilities available.
- To avoid problems with IP ownership

- collaborative research standard agreements should be used (for example, the UK 'Lambert' agreement)
- Exploitation of innovation has to be fast
 - The big companies could provide a pivotal role in KT and be a link between universities and SMEs, but this theory needs to be tested in case studies
 - KT offices should be independent from their universities, but royalties resulting from IP should be paid to the universities. This point has not been accepted by all participants and it has been suggested that test cases are needed.
 - University students and academics should learn about the importance of IP and knowledge flow on a regular and formalised basis
 - University professors should be involved in decisions concerning the value of IP in speciality research projects
 - There is a need for government research funding that is aligned with the market and the requirements of SMEs
 - The professional management of expectations of both industry and universities regarding the benefit of collaboration is essential
 - The universities and research centers should support the commercialization of their patents by getting industrial partners, so the IP ownership has to be agreed beforehand.
 - Different countries have different models of IP management. For example: in Poland and Netherlands the IP is negotiated on case by case basis, in the UK joint ownership is generally avoided while the university invariably owns the IP and not the academic; one party owns, the other has freedom to use. In Andalusia negotiations are undertaken mainly by the administration of Universities. Evaluation of these different models should be undertaken.

CONCLUSIONS ON VARIOUS SCHEMES OF KNOWLEDGE TRANSFER

- The International Relay Centres are a good tool for introducing cross-European collaboration, but they need to be better marketed, also, they don't work well as part time organisations

- The UK Knowledge Transfer Partnership has been assessed as an excellent scheme and was suggested as a very good way forward for the Polish KT needs.

- In Netherlands there is an organisation for Applied Technology (TNO) identified as a good

example of satisfying short term industry requirements for innovation.

- In Andalusia there are public and public/private bodies fostering technological innovation (Innovation and Technology Transfer Centres).

- The London Technology Network was seen as needing a specific assessment for its application in other countries

For Further information on the South East England Regional projects for Technology Transfer contact: Dr Sophie Stos, Research and Business Services, University of Surrey, Senate House, Guildford GU2 7XH, e-mail: s.stos@surrey.ac.uk

Chapter 6

Study Tour 2 at the University of Cordoba

16th-17 October 2006



Background

The second Study Tour of the 'Bridging Business and Science' GROW project (BBaS) took place in the Andalusian city of Cordoba on the 16th and 17th of October. Following the project's objectives this meeting brought together the four Path Finder Groups of researchers, industry representatives and Knowledge Transfer Professionals from the EU Regions that were participating in the BBaS. The members of these groups represented three key sectors important for the regional economical development (BBaS focus sectors): ICT/New Materials and Technologies, Biotechnology/Health and Environmental solutions.

On this occasion 34 participants had the opportunity to discuss the following specific topics relevant to innovation activities in our Regions:

- The Information and Communication Technology (ICT) based tools for Knowledge Transfer (KT).
- National and cultural differences between the participating regions in making sustainable contacts between academia and business.

The first part of Monday morning session included presentations of the current Andalusian ICT based projects that facilitate the collaboration of university researchers and industry. This part of the session was closed by the representative of the Dutch branch of Philips (The Royal Philips Electronics), who complemented the Andalusian regional point view of the previous speakers with his wider experience in managing innovation activities based on international collaboration.

In the second part of the morning all participants were involved in a professionally facilitated networking activities in small groups. This exercise focused on the main research areas of interest to the participants to promote discussions and collaboration ('getting to know each other').

In the afternoon the participants took part in Round Table discussions on good practice in ICT based tools for KT and making sustainable contacts in innovation activities between researchers and industry. The Monday evening guided tour of Cordoba and a traditional Andalusian buffet dinner gave excellent opportunity for informal discussions about possible collaborative research projects.

The second day of the meeting (Tuesday) started with presentations of the results of the Round Table discussions. Later part of Tuesday morning was devoted to the discussion of guidelines for preparation of research proposals for Framework Programme 7 by consortia created during the meeting.

Topic 1: Technology Offer & Demand Matching Service Based on ICT

The most interesting presentation on this topic was about the *MASTRIX tool* designed by the Innovation and Technology Transfer Centre in Andalusia – CITANDALUCIA (www.citandalucia.com). This software allows to detect the real R&D needs of the regional companies and to link them to the information about different technological advances and research results of various European research groups.

CITANDALUCÍA compiled a Database of Technological Resources that is fully integrated via Internet with the automatic matching and selective distribution system (GEOP). It contains a set of tools that can be applied in the Study of Innovation and Technology Strategies (MASTRIX and SET system).

MASTRIX is a cross-linked matrix of technologies and industrial regional sectors that allows the analysis of the Technology Transfer opportunities.

The operative nucleus of MASTRIX includes the contributions and technological needs of 1300 Innovation and Technology centres, university research groups and collaborating organizations. As well as holding all this information, MASTRIX connects the technology on offer to the demands of 10000 Andalusian SME.

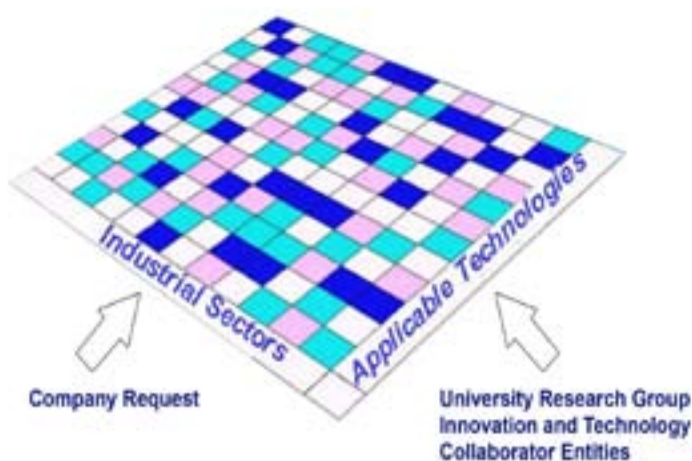
The SET system is aimed at establishing regional and sectorial technological strategies. It is based on information gathered from companies and R&D centres within any given regional sector and on the analysis of their capabilities and needs. By means of an appropriate codes assignation, led by a team of experts, sustainable “technology” relationships between science developments and industry applications can be established. MASTRIX can be used in any country, region or town, because is a territorial and sectorial system.

The representative of the Red Andaluza de Espacios Tecnológicos - RETA (Andalusian Network of Technological Spaces - (www.reta.es) stressed the importance of networking due to their wide geographic coverage (8 different parts of Andalusia) and the complexity of the tasks. This network of technological spaces and agents allows the flow of information and technology, as well as the knowledge transfer between organizations at different levels, regardless as to whether they are companies located in technology parks, technology centres, public or private research centres, or private companies. This networking requires excellent coordination and an efficient knowledge transfer among all the parties involved. This can only be achieved with management tools based on the latest developments in Information and Communication Technologies (ICT).

GOOD PRACTICES IN ICT TOOLS FOR KT, ROUND TABLES CONCLUSIONS:

Several ways of improving communication between university and industry were recommended: through the recognition of shared interests (usually university and industry have different points of view); through the use of Technology Transfer Organisations as intermediates; through the promotion of spin-outs; PhD students within companies; etc. However, for the assessment of the use of ITC based tools the following points were highlighted as the most important for the good practice:

- Very good ICT based tools for Knowledge Transfer are available, but the key potential users must be made aware of their existence.
- ICT tools help but the personal contact and service are the key issues in KT.
- Mastrix database is a good example of a useful system for both industry and researchers
- These tools should be managed by organizations in whose confidentiality the customers (research groups, companies, intermediaries) can trust.



- Different possibilities for these ICT tools management:
 - Ideal solution: Customers input their requests on the system.
 - Intermediate solution: The requests are collected and uploaded by one person responsible for each group (research groups/companies).
 - Easier solution: Intermediaries input the data.
- Bidirectional Communication should be pursued to facilitate the matching between Technology Offers (TO) & Technology Request (TR) - It seems that usually there are more TO than TR.

Topic 2: Sustainable Contacts in KT

This second specific topic was introduced by representatives of two main organisations working in Andalusia to enhance collaboration between academia and industry.

One of them is the network called OTRI which represent a national network of Technology Transfer Offices in universities and public research centres coordinated by the Spanish Universities Rector's Conference. Its main goal is to promote relations between University departments and research groups and the business world. To achieve it, the OTRI located in a university or research centre determines the actual R&D demand of companies and refers it to the appropriate department or a research group. Further, OTRI offices identify transferable results of research and disseminate them between the companies to facilitate their transfer; promote and negotiate R+D or technological support and guidance contracts, patent licensing agreement between University and companies; also they give advise on technical matters and deal with R&D European projects.

The other is the network of **Technological Parks** for a sustainable KT in Andalusia. The Parks are recognized as "Andalusian Knowledge Agents", have legal entity and are linked to the Andalusian Ministry of Innovation, Science and Enterprise.



Cartuja Island 86

The technology Parks should be considered within strategic planning of the region (usually it takes no less than 4 years to build them and 6 years to consolidate). It is worth mentioning the Cartuja 93 case, an example of reusing an infrastructure built and aimed at other objectives.



Expo 92



Cartuja 93

Technology Parks provide solutions for local sector and/or companies and they are integrated into the regional development policy of the Government. As such, many Andalusian Technology Parks are focused on a sector, and the managing board of each Technology Park tries to bring together on one site different organizations involved in Technology Transfer: Universities, Technology Based Companies and Research Centers.

Conclusions: Good practices in creating Sustainable research Contacts – Cultural differences between the regions, Round Table discussions:

It has been agreed at the start that if there are any minor cultural differences between the participating regions, then they are not as important as the difference between the cultures of academic research and industrial innovation.

Further points were raised in the discussions:

- Problems in creating and conducting collaborative research projects are usually the same in all EU countries:
 - Bureaucracy
 - Timescale - long for academia versus short for industry
 - Communication problems due to different backgrounds between scientists and entrepreneurs
 - Different aims - education versus profit.
- There are no real differences between the EU countries, but there are cultural differences between different branches of industry: for example, research in industry politically important for governments is usually much better funded than the rest
- Company size is important in collaborative projects:
 - Funding is the key factor for SMEs,
 - Larger companies often do not respect long term research targets of a university.

There was a common agreement that the KT units are useful as facilitators, but a number of complementary actions were also suggested to improve their results. For example:

1. early introduction of students into the “real world” through secondments in industry
2. collaboration between universities to bring together resources to solve specific industrial research problems

Another result of the discussion was a list of conditions to promote good collaborative projects:

- Clear definition of project objectives, structure, performance indicators, scheduled in separate steps, with description of short term results to be achieved;
- Flexibility (less bureaucracy);
- Creating networks of dedicated persons within the universities to support the links
- Facilitating exploitation of personal contacts;
- Integrating entrepreneurship courses in curricula

For Further information on the Andalusian Regional projects for Technology Transfer contact: Antonio Perez at FUNDECOR e-mail: europa1.fundecor@uco.es

Chapter 7

Study Tour 3 at the Eindhoven University of Technology 28th–30 January 2007



The 3rd Study Tour of the “Bridging Business and Science” GROW project (BBaS) took place on the 28 - 30 January in the Dutch city of Eindhoven. Once again, following the project’s objectives, this meeting brought together Path Finder Groups of researchers, industry representatives and KT professionals from the different EU regions engaged in the BBaS.

During this event the 53 participants attended presentations and held discussions on “Technology Entrepreneurship & Networking – How university and industry can cooperate in creating and supporting new high tech businesses”.

On the 29th of January, Monday morning, Wim Bens – Director of TU/e Innovation Lab – presented the main activities and general history of Eindhoven University of Technology, its connection and importance within the innovation scene as well as within the growth of the Eindhoven region, both economically and scientifically. The main aims and activities of TU/e Innovation Lab, the direct cooperation of three TUs (namely Delft, Eindhoven and Twente, Dutch technology universities), the different processes of knowledge translation and the Incubator 3+

Foundation were generically introduced and explained.

This was followed by presentation of the Technology Entrepreneurship program of TU/e by its coordinator, Peter Verdaasdonk. The presentation was focused especially on the content of the program, and some of the most successfully developed projects were discussed.

Three different round table discussions closed the morning session providing discussions on the following Technology Entrepreneurship projects presentations:

- Biotechnology & Health – Bioplasma Needle project
- ICT & New Materials – Validus project
- Environmental Solutions – Xpress project

The ‘Meet and Match’ Lunch that followed provided an informal encounter with representatives of all the 9 departments which constitute Eindhoven University of Technology, enabling contacts in innovation activities between the different parts involved within the BBaS and this University.

The afternoon part of the session took place at the Philips High Tech Campus, where Emile Aarts (Vice President of the Philips Scientific Research Program) presented the company ideologies, strategies and history, the open innovation concept, and the products and areas of research of the company. The afternoon ended up with a guided tour amongst some of the Philips prototypes, such as the I-cat (personal robot).

On the second day, Tuesday the 30th of January, the focus was on the value of networking, commencing with a lecture on the ‘Designing principles for creating Technology Entrepreneurship’ by Sjoerd Romme. This presentation was followed by the Brainport Eindhoven presentation of Robert-Jan Marringa program manager. This presentation illustrated a successful example of Business & Technology Communities. Afterwards the round table discussions were devoted to Networking and Entrepreneurship issues. The late morning

closing session began with the Study Tour review and evaluation, the follow-up actions suggestions and recommendations and the closing speech by Rob de Groot, which outlined how positive the BBaS and Grow projects' outcome have become for the general growth in the region.

The success of this Study Tour was also demonstrated by the number of participants who were absent from the morning session and instead were actively engaged in negotiations with future business and/or research partners within Eindhoven University of Technology and some companies in the Region. There are a number of research partnerships planned with TU/e staff and the participants of the Study Tour.

Monday 29th January

Innovation and Eindhoven University of Technology



TU/e Innovation Lab tries to assure the connection between two different worlds: Academe and Industry. The most important goal of TU/e Innovation Lab is to translate acquired knowledge to the companies, thereby dispersing this knowledge beyond the university walls.

The university reaches the outside world through three different knowledge translation and valorisation processes, namely:

- Start-ups incubator activity – equity support

in developing ideas and starting an enterprise at the university's risk. The university will only have profits if the company actually succeeds – if not the start-ups will not be charged. The basic theory is “When you'll earn 10 Ferraris, we will want one back” as the share for the university investment.

- Advice to SMEs – ‘Syntens’ is an agency which provides enterprise problem solving by giving advice, creating the right connections and by giving answers and / or direction regarding specialist institution which suit for a specific problem. These specialists are the so called ‘United Brains’ (formed by: TNO; TU/e; ROC and Fontys). In an obverse process, the University tries to bring people, on a free basis, to the campus, in order to create inspiration on both sides – university and company. TU/e Innovation Lab organizes amongst others roundtable discussions and breakfast meetings which potentially lead to new ideas, projects and solutions. Students get involved by translating scientific knowledge to the companies, and researchers are free to move on further.
- Large industry cooperation / involvement – creating people-based bilateral contacts has been found to be the best way to keep connected to the large industry. PhD projects should be related and match each other, in order to create bilateral inspiration, among projects, companies and universities.

Incubator 3+

The university, together with other 8 partner institutes, form the so called Incubator 3+, a regional inter-institutional linkage which supports start-ups. These partners concur on different ways according to their own field of work, expertise and interest, to the birth and growth of new high tech start-ups.

Incubator 3+ gives support during the “Idea” and “Plan” phases of the company creation, giving

support at a stage when almost no one else would. The Incubator 3+ offers money, a temporary salary, legal and investor contacts, tools, housing, lab facilities, assistance in creating a network, and offers a coaching team during the five to seven years of incubation time.

The partners that form the Incubator 3+ are TU/e, Fontys, Synstems, BOM, Philips, TNO, NV Rede and Rabobank, and its aim is to create 15 companies which will have a good chance of expanding out of the 400 hundred start-ups which will be supported for the next 4 years.

Certificate program Technology Entrepreneurship (CTE)

The entrepreneurship educational program aims to reach undergraduates, Master degree and PhD students. Its biggest challenge and yet main problem is how to reach all students and how to identify the future new entrepreneurs amongst them. At present the focus is mainly on the master TU/e students in the Certificate Technology Entrepreneurship program. In this program teams are created around ideas that will develop into new start-ups, through graduation projects.

The access procedure to this certificate program is based on a self-assessment tool available on the Internet, followed by an interview and by continuous research under the TU/e Innovation Lab advisors. Part of the program is an Advisory Board, which follows the newborn start-up during the whole incubation period for his company.

The future challenges will be the search for new ideas, the students stimulation for this kind of activity, the cooperation with other universities (Tilburg e.g.) and the engagement on European Projects, such as Grow and BBaS.

Round table discussions

ICT & New Materials start-up project: Security technologies

This project enables the application of an initial technology into different areas/markets, and was

the first one to be awarded a TE certificate. The young entrepreneurs developed an application for optical security and authenticity certification. In this project a new market for an existing technology was created.

Their experience as a start-up of TU/e is strongly positive, despite the initial difficulties in understanding how to negotiate their various individual agreements with the university and its departments. As a university spin-off important discussion have been held about: Who writes the patent? To whom does it belong to thereafter? Is it worth for the university to apply for the patents?

TU/e answers for these are:

- The university writes and owes the patent, but it's licensed exclusively to the start-up.
- Equities will be paid to the university.
- The concept has a cost, but is balanced by an increase in the university's reputation and encouraging student enrolment.
- In supporting these start-ups the regional and national growth is generated.
- TU/e applies for 5 to 8 patents a year, following a strict evaluation procedure.



Biotech & Health start-up project: Bioplasma Needle

The Bioplasma Needle is a project that aims at using cold plasma for healthcare purposes. The project is currently being carried out by two students: Tom Baede and Robin van Gastel. The main application fields of this technology development currently envisioned are dentistry (treatment of dental caries) and dermatology (treatment of burns). One other application that is under consideration is the treatment of atherosclerosis: a disease where arteries are blocked by the formation of plaques. From a business standpoint, this opportunity is less viable in the short term since it is much harder to get clinical approval for intra-body treatment.

There is a distinct possibility that this technique can be used for the treatment of cervical cancer. The plasma needle group from Eindhoven University of Technology is interested in exploring this application field in more detail.

During the presentation, it was said that additional funds are needed for further research and development to strengthen the plasma technology's business case. The European Framework Program 7 gives a good opportunity for young leaders with innovative ideas to get funding and support to build their businesses using the IDEAS programme and a proposal for this source of funding is planned.

Amongst the BBaS partners Bologna has a program similar to CTE called "Master" for PhD students that want to run a high-tech start-up or wishing to improve their managerial / entrepreneurial skills. It is a very new program, started just in December 2006. The University of Surrey has entrepreneurship course (ETITB-Enterprise, IT and Business) for engineering students that provides generic engineering skills along with an enterprise and business foundation.

Many universities around the globe offer programs that stimulate entrepreneurship. Should it be the objective of universities to create

(high-tech) start-ups? Members of the Surrey PFG were of the opinion that this is indeed the task of universities since not all university staff members have the capabilities to be top scientists or the Nobel laureates. People that are able to translate scientific output into useful concepts for industry and society are also very valuable. In that regard, universities should also generate and support start-up companies. The participants of this BBaS Study Tour agreed univocally that there is a need for a two tier system at the European Universities, whereby development activities are as important as research in support of the academic career progression.

Several difficulties can be seen for industry/SMEs to tap into the knowledge that is present at universities. Representatives of Cordoba and Bologna mentioned that universities are often not well-organized in providing information on available contacts for business; there is no single point of contact or place to access information. The 'United Brains' that serves as a single window for multiple organizations in Eindhoven is a good example of how to tackle this problem.



The other important question was, whether young researchers know how to present their innovative ideas to potential investors. This skill is seen as extremely important and needs specific training, in particular the ability to illustrate in a clear and persuasive way the strong points of new ideas and their potential economic advantages. In general, the marketing activity has to be taken into serious consideration for a successful start-up.

Environmental solutions: Xpress

Xpress is about precision engineering. The project is lead by Ernst Treffers and Edwin Bos. In their presentation they gave some details of their business and plans: 'Nano-metrology at your fingertips'. Xpress is able to measure objects in three dimensions with a 50nm resolution.

In these types of projects IPR is always an important topic. The patents are owned by TU/e, while Xpress has an exclusive license, with the researchers benefiting following the sale of the patent and the deduction of research costs. TU/e is an advisor on demand.

After the presentation by Xpress the discussion started with the aim of establishing a learning point in stimulating and supporting Technology Entrepreneurial start-ups. The following conclusions were drawn:

- There is a big gap between universities and companies. Most European universities have no interest in development, only pure research.
- The problem in the UK is to get co-financing for starting up a business, the public funding is assistance in a form of loans that have to be repaid whatever the outcome
- In Poland the development on entrepreneurial skills at universities is only just commencing
- In Spain valorisation awareness is beginning. However, students still do not receive entrepreneurial learning in courses.
- Small universities need to think on a regional scale.
- In the UK there is a net profit group methodology which is very successful. It comprises bringing together SMEs and exchanging experiences, for example in SEEDA Hubs – 22 of them located throughout the South East England.
- There is an initiative called the “Grow enterprise”, which offers information about the experience of the other grow regions on start-ups. Information can be obtained via Rob de Groot from the province of Brabant in the Netherlands (<http://www.growenterprise.nl/>)

The BBaS visit to the PHILIPS High Tech Campus in Eindhoven

During our visit Philips presented itself as an entrepreneurial company which looks into the future with an open innovation and investment attitude. Economic prosperity, environmental quality and social equality are the company's main concerns and strategy parameters, expressed by the new slogan Sense and Simplicity, focused on people rather than products, leading to the increase in sales.

The Philips High Tech Campus is the evidence of the Open Innovation attitude itself. Within this 1 km² there are research labs and facilities, the incubator - e.g. the prototype's “show room” which the competitors are invited to see. It is envisaged that such an open innovation concept will lead to mutual learning, development, and inspiration.

The Campus provides an extremely well-built infrastructure which manages to involve the city and the region, establishing close relations with TU/e and the government.

Although the cooperation with the university is not part of the company strategy, they work closely with universities in the region on some projects, occasionally giving access to their facilities and investing in PhD projects.

Tuesday 30th January

Creating university spin-outs – a design perspective, *Sjoerd Romme*

According to Sjoerd Romme there must be clear rules which enable the university spin-outs to succeed, thereby preventing damage to the university's reputation.

University spin-outs will for example provide funds for the start-ups, for the research facilities and labs, for legal matters, for example the patent, and for the coming start-up projects, but remain a difficult and risky solution which must be based on “*Construction Principles & Design Rules*”.

Some of the most interesting and valuable rules offered were the need of a good network of investors, managers and advisors around start-ups on one hand, and on the other, the need for the appropriate mix of entrepreneurial skills of the start-up team selected; the need for provision of facilities and centralized support infrastructures that will guarantee a good level of autonomy. Finally there is a need to reinforce the entrepreneurial attitude of the professors and researchers with the development of a university culture and reward system made of the appropriate mix of incentives.

Among the different design solutions mentioned were the entrepreneurship certificate programs, and the creation of formal and informal networks around incubators and start-ups. The advantages and the need for flexible oriented university policies

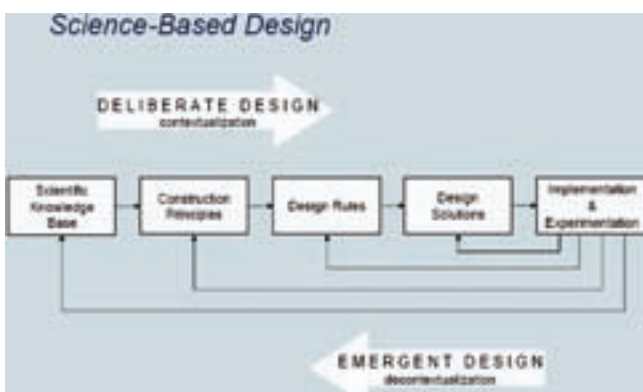
are obvious. The good example of flexibility in a policy of a company is well illustrated by the Philips example of “Friday research”, which allows employees to do their personal research that may turn into company's advantage using the Philips facilities.

Business & technology communities – networks in Brainport Eindhoven,

Robert-Jan Marringa

The Brainport Eindhoven is the 3rd economic port of the Netherlands, following Rotterdam (Exports) and The Hague (Finance), and its main goal is to enhance regional economic stability and raise the private and governmental investment, providing a continuum for economic and social development. At its basis are Eindhoven, Leuven and Aachen Triangle (ELAt) and its success is due to the close cooperation existing between government, business world and knowledge centres, universities and research institutes.

This success opened the doors to the future of the port: in the ‘Brainport Navigator 2013’ agenda the most important objective is to become the premier European Economic port. Through the creation of a stimulating environment for companies and individuals to meet in a natural way, for example at the Design Incubator or at the Design Café, and the leadership of various projects of cooperation (ADMIRE, Metaphors, Embedded House e.g.), the Brainport is attracting more companies and more students, it is creating better connections between various types of firms and promoting



their cooperation and entrepreneurship and is moving towards the top of the European Economical ports ranking.

Round table discussions

Networking & entrepreneurship topics:

- 'Teaching of entrepreneurship' vs. 'Learning entrepreneurship': the latter can be reached by exposing people to risks and engaging them in processes to develop an entrepreneurship attitude: this practical approach is more effective than teaching skills and knowledge, which will be learnt by experience in a natural way. This type of activity justifies needs for funds and is more effective.
- University and company flexibility: the university should be able to adapt, to support scientists leading the worthy start-ups, and to leave them free time for research. Occasional sabbatical leave or non paid licences are a good solution for employees, along with the use of laboratory and infrastructure facilities.
- Funds to create start-ups: Government departments, local economical and business institutions and public funds institutions are the principal resources for such funds.
- Big companies cooperation vs. brain drain risk: The wisest way of establishing cooperation with big companies is on a permanent basis, maintaining a profitable partnership for both.

According to professor Sjoerd Romme and Wim Bens there is no big risk of a brain drain, since university researchers and professors are usually heartily embedded within the university system and a better salary wouldn't be enough to motivate them to move to industry. The group of researchers who might want to work for a company is represented by part-time professors working also for companies thereby increasing their status and the company's at the same time. In Netherlands there are cooperative strategies based on government funds to bring and keep brains. For example, the recruitment training project where the university offers master degree to foreign top talent students and the company offers a work contract even before the start of the graduation studies.

- Strategies of the Eindhoven region to become the first High Tech Region of Europe: to distinguish from the direct competitors (Cambridge and Munich), study their strong and weak points, and develop both strong and weak points of Eindhoven in order to reach the number one position.

Closing Session: Study Tour Evaluation and Follow up Suggestions

The most important knowledge transfer issues that were suggested:

- Good organization of creating networks
- Network opening possibilities and facilitation
- Innovation and cooperation strategies
- Best systems of organization of Technology Transfer centres
- Entrepreneurial learning strategies
- Rules for start-up cooperation and university spin-outs
- Better awareness of the own situation, and how to improve it



Follow-up / improvement suggestions:

- More interaction between the participants on the following tour organization
- Display the information about the participating companies /research organisations
- Engage more regional government representatives (Rob de Groot participated in this Study Tour)
- Possibility of pre-arranging specific personal contacts
- TU/e is interested in Certificate Program exchange proposals
- Future companies' presentations should give more answers and explain better the basis on which the partnerships with the universities are founded.

For Further information on the Noord-Brabant Regional projects for Technology Transfer contact: Peter Verdaasdonk, TU/e Innovation Lab, Horsten 1, MMP 0.01, 5612AX Eindhoven, E-mail: P.J.A.Verdaasdonk@tm.tue.nl



Chapter 8

Study Tour 4 At CITTRU, the Jagiellonian University, Krakow

26th–28th March 2007

The 4th Study Tour of the GROW-Bridging Business and Science project (BBaS) took place on 26–28th March, 2007 in Krakow, Poland. The meeting brought together researchers, industry representatives and knowledge transfer professionals from five EU regions engaged in the BBaS. The Study Tour *“Bridging Business and Science in Kraków”* focused on creating networking opportunities for the participants, as well as on presenting the Polish experience in business-science cooperation.

On Monday, 26th of March, the participants had an opportunity to take part in a conference “University for Industry”, an annual event organised by CITTRU. During the conference academics and entrepreneurs discussed the most important issues of business-science cooperation with a special emphasis on the available funding. On the same day, some of the participants (both scientists and entrepreneurs) attended individual meetings with Krakow scientists. In the evening, a networking event was organised to enable all participants to exchange their ideas and expectations.

On Tuesday, 27th of March, the morning sessions were devoted to visits in the region’s research institutes and leading companies, where opportunities for cooperation were presented. All participants were divided into three groups according to their area of interest: Biotechnology & Health (BIO), Information Communication Technology (ICT) and Environmental Solutions (ENV). BIO group visited the Institute of Nuclear Physics (Polish Academy of Sciences) and Faculty of Biophysics, Biochemistry and Biotechnology of

the Jagiellonian University; ENV group went to the Institute of Catalysis and Surface Chemistry (Polish Academy of Sciences), followed by meeting with Institute of Environmental Studies of the Jagiellonian University; ICT group met with the representatives of four leading Krakow-based ICT companies and later paid a visit to the Department of Information Technologies of the Jagiellonian University.

The afternoon session started with the presentation of the Jagiellonian University’s regulations on intellectual property rights and the spin-out creation process. Some other aspects of business-science cooperation were also discussed. This was followed by the Round Table meetings, where each of the Pathfinder Groups members was able to present his/her offer for collaborative projects.

On Wednesday morning all participants gathered to hear examples of business-science cooperation initiatives realised in the Małopolska Region relevant to the research interests of the Pathfinder Groups. Later, all participants were divided again into three groups to discuss recommendations for the key players, e.g. governments, regional authorities, TT centres, on how to improve cooperation-support tools.

The second day was concluded with the Steering Committee Study Tour review and evaluation meeting.



TUESDAY 27TH OF MARCH

Biotechnology & Health

Institute of Nuclear Physics, Polish Academy of Sciences

Prof. Marek Jeżabek, Director of the Institute, presented the general information on the research conducted in the Institute in the area of biotechnology and health. All participants accompanied by Prof. Wojciech Kwiatek were taken around five laboratories of the Institute working on the developments in biotechnology. These were: Department of Radiation and Environmental Biology, Department of Radiation Physics and Dosimetry, Department of Applied Spectroscopy, Department of Physicochemistry of Ecosystems, and Department of Radiation Physics and Dosimetry. Research group leaders presented the most important results of their research (for example: equipment for proton eye radiotherapy), as well as products offered by the Institute (including thermoluminescent detectors for dose rate measurements).

Faculty of Biophysics, Biochemistry and Biotechnology, Jagiellonian University

Dominik Czaplicki, PhD student, welcomed the Biotech group in the new building of the Faculty of Biochemistry, Biophysics and Biotechnology at the Jagiellonian University Campus. He presented the main research conducted there, which comprises a wide range of both basic and applied studies which address important biomedical and biotechnological problems and focuses on fundamental biophysical and biochemical phenomena in animal, plant and bacterial cells.

Several laboratories of the Faculty were visited, starting from the Department of Analytical Biochemistry, where the vice-dean Prof. Adam Dubin gave an overview of the Faculty and presented his own start-up company BioCentrum Ltd., the first spin-out company at the

Jagiellonian University. Later on, laboratories of the Department of Microbiology were viewed and briefly described including a presentation of the confocal microscopy system at the Department of Biophysics. There was also an opportunity to see a chromatographic protein purification system of Department of Physical Biochemistry.

Environmental Solutions

Institute of Catalysis and Surface Chemistry, Polish Academy of Sciences

Dr. Tadeusz Machej welcomed environmentalists in the Institute of Catalysis and Surface Chemistry (ICSC), which is the only independent scientific institution in Poland and one of only eight in the world devoted entirely to the research in catalysis and chemistry of interfaces.

He presented one of the research groups where catalytic research is used to develop solutions for environment protection. It focuses on catalysis for green chemistry and end of pipe technology. They have now 44 patents (including international patents) and 10 licenses. He discussed one of them which is SWINGTHERM, a novel catalytic, low energy consuming process for purification of waste gases from organic pollutants. There are several hundred ICSC-licensed installations, available in



different sizes ranging from 300 to 30 000 m³/h capacities, sold in Poland, Europe, China, USA and Canada. The SWINGTHERM technology is used by a spin-out company Katalizator Ltd., which was created in order to promote the industrial implementation of catalytic materials designed at ICSC.

Institute of Environmental Studies, Jagiellonian University

Piotr Zygmunt, PhD student at the Institute of Environmental Studies and co-owner of a spin-out company Biospekt, presented the research potential of the Institute. The research and infrastructure were chosen to point out areas for possible cooperation. Participants were shown laboratories of molecular ecology and eco-toxic-chemistry. The Institute's climatic chambers, an equipment enabling simulation of different environments, were of great interest to the Tour participants.

In this context, Piotr Zygmunt discussed also cooperation of his company with the University.

Biospekt company is a spin-out company established by PhD students and young researchers. It offers commercial services of microbiological and chemical analyses using the equipment of the Institute. Discussion arose regarding the advantages and difficulties in the cooperation between the company and the University.

Information Communication Technology

ICT companies: Ericpol Telecom, Grupa Onet.pl, Google, Software Mind

Representatives of four Krakow-based companies presented their main business and R&D activities, as well as their experience in cooperation with universities and their offer for future collaboration.

Rafał Trznadel, Grupa Onet.pl Manager, presented the company, which operates the biggest internet



portal in Poland with more than 6 million users and more than 2 billion page views monthly. He presented Onet.pl activities in three main areas: content, community services and e-commerce. He talked also about his company involvement in cooperation with Polish top universities. It embraces different fields like exchange of experience and scientific knowledge, organization of training for students and university employees, workshops of company employees for students, transfer of practical knowledge about internet services, support in writing MSc and PhD theses and incubator-like activities for teams of professors, tutors and students.

Onet.pl presented also a special project called "Dream Concept", in which it looks for creators of innovative solutions based on newest technologies, construction of community services, interpersonal communication and creation of advanced multimedia.

Wojciech Burkot, Engineering Site Director at the Google R&D Centre in Krakow, presented Google philosophy of work, as well as reasons for establishing its R&D Centre in Krakow, the first and so far the only engineering centre in Central and Eastern Europe. He argued that two reasons were behind this decision: growing Internet market in CEE and high potential of Polish programmers (proven by number of finalists in various programming contests) coming from Małopolska universities.

Robert Szewczyk presented **Ericpol Telecom**, a company that is now the second largest Polish exporter of IT services. He discussed the main areas of its business activities, that is Consulting and Outsourcing Services in IT & Telecom and Solution Providing. Later on, he described cooperation of his company with Polish universities and pointed out main areas for future cooperation: Education and Recruitment (defining competence paths, preparing courses, giving lectures at universities, organizing internships, supervising MSc dissertations and participating in job fairs) and R&D projects in telecommunication, IT, and e-Health (FP7 projects and projects with other European or national grants).

Marcin Sieprawski, representing **Software Mind** has presented the development of the company. It was established in Krakow in 1999, now it has five offices in Europe, among them two R&D centers in Krakow and Nice-Sophia Antipolis, France. Software Mind focuses on two areas of business activities: IT Business Solutions & Services and Customer Management. He has underlined the importance of cooperation with universities. His company is involved in research and development collaboration with University of Southampton, Lviv Polytechnic National University, Ivan Franco National University of Lviv. They give also lectures on quality aspects at Higher School of Management and Banking in Krakow and AGH University of Science and Technology in Krakow. Finally, he has given information on their new developments in Semantic Web and Natural Language Processing.

Department of Information Technologies, Jagiellonian University

Christian Merkwirth, postdoctoral researcher at the Institute of Applied Computer Science, presented research group of the Department of Information Technologies, established in 2004. The group is carrying research and teaching in wide ranges of computer science topics. He outlined the following main fields of research interest:

- Pattern recognition used in clinical imaging of various biological tissues and organs helping develop new techniques for computer-aided diagnosing systems. They developed models utilizing textural information contained in the skin lesion images e.g. for early detection of cutaneous melanoma and leads to effective treatment;
- Applied Data Analysis using general mathematical concepts to cope with growing amount of data captured by means of digital technology;
- Statistical Learning, that includes development of a Matlab Toolbox for Ensemble Regression Modelling – ENTOOL, designed to make state-of-the-art machine learning algorithms available under a common interface;
- Random Networks. They use the random graphs theory to work on large sets of data for real-world networks.

They have presented two examples of their collaborative applied research:

- with the Department of Dermatology, Collegium Medicum (Jagiellonian University) they work on computer techniques and tools for solving some dermatoscopy diagnosis problems,
- with Drug Transport Group in Saarbrücken, Germany they developed statistical models for predicting percutaneous drug absorption.





IPR regulations and spin-outs at the Jagiellonian University, *Maciej Czarnik*

In 2005, there was introduced in Poland a new Law on Higher Education that described as one of the tasks of universities cooperation with business, especially by allowing companies to use (free of charge or upon payment) results of the research. Also, it has been stressed that Universities need to promote entrepreneurship among their employees and students. Unfortunately, lack of internal university regulations resulted in very limited cooperation between academics and entrepreneurs. Similarly, number of patents granted in Poland is extremely low when compared to Western European countries. Therefore, to stimulate business-science cooperation, the Jagiellonian University has decided to prepare the regulations on intellectual property rights and spin-out companies.

The regulations state that University supports researchers during the patenting process, both financially and organisationally. The scheme gives 50% of profits to an inventor(s), then 15% to a faculty, 10% to IP Support Fund and finally 25% to the University central budget. The regulations envisage three ways for commercialisation of IP: selling, licensing, or creation of a spin-out company. The regulations allow the University to take shares in spin-out companies in an amount which is equal to the University contribution to the IP of a company.

Finally, Maciej Czarnik concluded that the protection of intellectual property rights is one of the elements important in the commercialization process. Construction of effective mechanisms secures University and scientists' interests and helps to avoid conflicts of interest.

Round Table discussions

Biotechnology & Health

The following presentations were given in the Biotechnology & Health group:

Eduardo Pareja from Spain talked about his company **Era7 Information Technologies SL**, a bioinformatics company specialising in biomedical knowledge management. He presented the outline of the main research of the company and offered collaboration in R&D (e.g. EU Framework Programme 7) and in software development, as well as agreements in marketing and distribution of products. (as a result of the meeting in Krakow together with two scientists from the University of Surrey they submitted a proposal for FP7).

Franjo Cecelja representing School of Engineering of the **University of Surrey** invited collaboration in two projects: one aiming at creating biocompatible H-field sensors (as a result of the discussion there is a possibility of cooperation with another participant in this filed), and developing telemedicine solutions for patients with cardiac conditions (here, Eduardo Pareja expressed his interest in cooperating within this project).

George Kass presented an overview of Biomedical Science at the **University of Surrey**. He focused on the research conducted in five main areas, which are Neuroendocrinology, Pharmacology, Molecular Toxicology, Nutrition, Dietetics and Food Science, and Microbial Sciences. Discussions following this presentation suggest that in many areas there will be cooperation initiated with other participants of the Tour.

Environmental Solutions

The following presentations were given in the Environmental Solutions group:

Arno Pronk, Associate Professor at **Eindhoven University of Technology** presented his research on new solutions in architecture, especially membrane buildings and shell structures.

Prof. Włodzimierz Wójcik and **Joanna Bąk** gave a presentation on research led by their research group in the Department of Water and Wastewater Treatment of the **Cracow University of Technology** (Politechnika Krakowska). They focused on the research areas, where they want to start both scientific and business cooperation. These are: water/wastewater quality management, water/wastewater treatment technology, environment remediation, and ecological engineering.

Frans Bastiaanssen, President of **BasFood** company talked about their product called **CropLook**. It is a software that enables measurement of crop yield and gathering number of quality parameters during the growing season. Data is gathered via satellite based sensors.

José M. Bernabé and **Encarna Águila** presented their expertise in environmental and technical, consultancy which is used in their company **Emaplicada**, formed by a research group from the University of Seville. They concentrated on physical and chemical characterization of soils, study of content in toxic elements, evaluation of the contamination and potential risks, and recovery of polluted areas.

Han van Kasteren from **Telos** presented his research in environmental solutions in biofuels and solid waste issues. He discussed several issues related to different ways of producing biofuels from waste and biomass, like pyrolysis, gasification, bio-ethanol from biomass/waste, syngas or wood.

Michael Debije presented **Maxxun** company which is a spin-out company of **Eindhoven University of Technology** developing new technologies in solar energy use. The proposed direction of the research

is related to the current disadvantages of this form of energy and making it more competitive using the luminescent solar concentrators.

Piotr Zygmunt provided more information about his company **Biospekt - Research and Education**. He talked also about the services provided by his company in measuring the elemental composition of pollutions in the sewage treatment plants and fungi monitoring in buildings.

Rinie van Tilburg from **BioDsl** company talked about their plans to start production of biodiesel from used cooking oil, animal fat, and rape seed oil. He was looking for research partners in the areas of feedstock supply, development of production techniques, and support in logistics.

Steve Tennison represented company **MAST Carbon** that produces novel carbon materials used for catalysis, membranes and separations. The **MAST Carbon** also has experience in developing and producing carbon cloth for biomedical and military use. He described also their involvement in multinational projects on membranes, VOC control, water purification, catalysis and fuel cells.

Tony Book representing **Riomay**, talked about their business activities in the area of solar energy, especially solar thermal systems. For new research, the special interest of this company is in hybridisation of solar energy with other technologies and in use of the renewable energy technology in building designs.

Information Communication Technology

The following presentations were given in the ICT group:

Arturo Montejo from the **University of Jaén**, representing **Research Group on Intelligent Systems for Information Access (SINAI)**, presented some aspects of their research on **Natural Language Technologies**, which include: **Text Mining** (Document Classification, Question & Answering, Textual Entailment, Topic Detection and Tracking), **Multilingual/Multimodal Information Retrieval** and **Spoken Dialogue Systems**.

Fernando Bienvenido (University of Almería) talked about university's research groups and a spin-out company - Iberocons S.A. He invited other participants to join two of their projects: "Development of a Network of Sustainability Indicators for Rural Development Processes" and "Development of an Integrated Agrarian Information System for a Safe Management of the Production".

Christian Merkwirth from the Jagiellonian University expanded on his morning presentation, focusing on his own research. He expressed interest in cooperation with other participants in the research in the area of analyses of large sets of data.

Moira Smith, representing the Guildford-based **Waterfall Solutions** (*on the photograph*) has presented a general overview of their activities. It offers a wide range of products used in space, security & surveillance, transport and environment applications. She showed examples of their products: the electro-optic sensor model and a real-time image fusion.

Robert Szewczyk from Ericpol Telecom developed his presentation from the morning session, focusing on one project that his company has prepared, that is 'DrEryk' application for medical applications.

Ton Kooijmans from Kooymans Industrial Design brought another perspective to industry-science cooperation. He started from the user, his or her needs and preferences, to arrive to a

solution where specialist knowledge is demanded. He presented his idea of a bicycle rack that needs to be designed with the help of engineers and ICT specialists.

WEDNESDAY 28TH MARCH

Good practice in business-science cooperation – presentation of on-going initiatives

Life Science Cluster Krakow, Kazimierz Murzyn

Kazimierz Murzyn, Managing Director of the Cluster Life Science Krakow, presented the idea of a network of 32 institutions representing business, science, healthcare, business support organizations and the local government. The mission of this cluster is to create sustainable network that will provide global connectivity and optimization of existing potential of individuals and organizations. The Life Science Cluster supports innovation and encourages commercialization of results of the research. It also helps to develop the resources and competences in the Life Science sector in the Region in order to explore current and future opportunities related to development of a knowledge based economy. The Life Science Cluster directly addresses goals included in Małopolska Regional Innovation Strategy mission statement, which aim to increase the level of innovation and competitiveness of companies through stimulating the cooperation of SMEs with a wide range of institutions in the field of science, research & development, and transfer of technologies.



Moira Smith



Department of Ecological Microbiology, Prof. Katarzyna Turnau

Prof. Katarzyna Turnau from the Department of Ecological Microbiology of the Institute of Environment Sciences has presented her scientific work on mycorrhizal and saprobic fungi, which is used by her research group for recultivation of industrial waste. She remarked that their research is mostly done in collaboration with companies from abroad rather than from Poland, where there is still not much of the awareness of the environmental issues. Prof. Turnau has given an example of a zinc waste sedimental tank of Trzebionka Mining company, where specific plants were used to re-inforce the waste heaps.

Faculty of Biochemistry, Biophysics and Biotechnology, Piotr Liguziński

Piotr Liguziński, PhD student and research assistant at the Faculty of Biochemistry, Biophysics and Biotechnology, presented his collaborative research project in the area of bioinformatics with FQS Poland, Krakow-based subsidiary of Fujitsu Kyushu System Engineering Limited,. The aims of the project are in modelling of metabolism and quantum chemistry to improve algorithms of metabolic pathways in Cell Illustrator software tool. In this case the company is using a rare expertise of the university researcher to develop its product.

Round Table discussions - Recommendations for key players

All participants were asked to think of a perfect situation in business-science cooperation. It was to be a projection of their own experience in their national context. Participants were asked to relate this ideal future situation to five areas: Companies, R&D Public System, Innovation Support Infrastructure, Public Authorities and Environment. The following questions were raised:

- *how* to make companies aware of the relevance of innovation and how to change their attitude towards universities?
- *what* incentives should be introduced to encourage the scientists to produce market-oriented research results?
- *what* role should be given to the intermediary organisations that support innovation?
- *what* policies should be designed by the public bodies to facilitate the creation and growth of high-tech companies?
- *is* there a need to create special programmes to support business-science cooperation and technology transfer?

The discussions were continued in the same groups as the day before. The outcomes of the debates could be summarized as follows:

Biotechnology & Health

- Academics working on applied research should have bigger awareness of companies' real-life problems, hence the importance of networking (meetings, consultancy, student placement, etc.); researchers must get more commercial skills;
- In the UK, there is a model (KTP – Knowledge Transfer Partnership) where the government gives incentives to industry when they want to collaborate with universities; government pays up to 67% of project costs; it could be a useful model for less developed countries where SMEs don't have enough funds for research;
- In order to get connected there must be a prior relationship between the SMEs and the universities; networking is very important;
- One cannot speak about one strategy for all companies; different strategies must be developed for different type (size, sector, stage of development) of companies;
- One must not speak about knowledge transfer but about "people transfer" to bring knowledge to the businesses;

- Innovation needs to be seen by all players as an open model that can be tailored to the needs of industry;
- It can be difficult to find research partners in very specialized areas so the KT networking and exchange of information should be extended to the researchers and industrial entrepreneurs across the EU;
- There is a need for simpler procedures for SMEs to apply for EU R&D funding; For example, in the Netherlands there is a model of R&D funding for SMEs called the Innovation Voucher. The voucher is distributed by the Ministry of Economic Affairs and can be used only for research activities in collaboration with specific organizations (Universities, Scientific Foundations, etc.). In this way SMEs are stimulated to get in contact with universities and other Government funded research organizations.
- Other centres associated with different institutions should direct people to places where they could gain immediate and accurate information how to find the right contacts and appropriate solutions
- Focused and productive meetings of specific industrial sectors provide an ideal ground for developing ideas and should be frequently organised (by the regional authorities?)
- Implementation of the results of scientific research on the consumer level is important as it raises public awareness of science; researchers should be looking for practical solutions, and focus on the consumer's needs throughout the whole process; cooperation between business and science should be focused on the market goals;
- There is a need for more information about the Regional services related to R&D collaboration between the researchers and industry. Perhaps there should be regional websites enabling exchange of ideas, listing proposals, etc. (hosted by the business development offices?).

Environmental Solutions

- Both, researchers and entrepreneurs, need a support from development agencies, also there should be more collaboration with international support institutions to establish wider supranational networks;
- Universities need business development managers to provide advisory research support to university researchers and enterprising companies;
- There should be more projects like BBaS that help to establish personal contacts or an office should be created (supported by regional government) for matching industry needs with the research expertise;
- Such a matchmaking centre should be an institution supporting cooperation between industry and science, an institution on a regional level (not associated with any specific institution); this institution should set main paths of development, targeting sectors that should be developed according to the regional economical needs;



Information Communication Technology

- Current situation in the Noord Brabant region seems to be close to an ideal – research centres are working together with large companies; finding out the research agendas from large companies to match them with research strategies of universities and analyzing the market potential of products resulting from the research. The PhD students play a key role in taking the research results to the market and obtaining financial returns to universities to fund more research;
- Continuous monitoring of the market needs is essential, the need for solutions will inspire researchers to provide specific products (in the areas of ecology, energy, elderly people, diseases, logistics, etc);
- Region of Andalusia should try to use the Dutch and English models, including: strong and experienced organizations that would provide business-research intermediaries, clear and well organised start-up creation process and an increased collaboration with large industries. For companies it would be easy to find research partners in their fields (information, resources, etc) through the thematic clusters;
- Good examples for facilitating R&D partnership and KT are TU/e Innovation Lab, Brainport Eindhoven and the Incubator 3+; they were highlighted as networks and single doors to facilitate communication and to create spin-outs.
- Collaboration always generate problems because researchers prefer to work internally, so in a perfect situation the EU governments should create clear “market” objectives for them that would strengthen their university career path.
- Science and industry use different languages, therefore both sides should be supported by experienced intermediaries;
- Regionally there should be a single contact point between business and science, one-stop-

shop for scientists and business people;

- This single contact point should provide a reliable and up-to-date information (currently there are problems with a huge amount of available information and it's not easy to discriminate the relevant from not valuable);
- Informal networks should also play a relevant role in KT;
- There should be regionally available funding to start university-industry collaboration (for example: facilities, training)
- There is no adequate support from politicians and no influence of technical information in their strategies (i.e. incubators are being created with no clear objectives about beneficiaries, no strict access requirements and no specialized or focused services or links to research centres).

For Further information on the Malopolska Regional projects for Technology Transfer contact: Jaroslaw Dzialek, Jagiellonian University, Centre for Innovation, Technology Transfer and University Development (CITTRU), ul. Czapskich 4, Krakow 31-110, Poland
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Chapter 9

Problems and success in dissemination activities

A unified marketing plan was envisaged in the application form of the project proposal. This marketing plan was analysed in details during the Kick-off meeting held in Krakow in May 2006, and a timetable was agreed for the designing of the project website, printing of the BBaS project leaflets and wallets to be used in the dissemination of the results of the project.

The University of Surrey created and maintained the project website and FUNDECOR coordinated the design of logos and publicity material, and the wallets and leaflets were printed in Cordoba and delivered later to each partner.

All the dissemination activities, logos and materials meet the terms of the publicity standards set by the European Commission and the GROW programme.

WEBSITE

The project's website (*www.growbbas.com*) has been the main communication channel between the consortium and the stakeholders. The web page contains all the information relevant to the project: its objectives, calendar of activities, locations, news updates, newsletters, etc. The main information is in 3 languages (English, Spanish and Italian).

The BBaS Webpage contains detail information about the programmes of the Study Tours. The lists of all participants of the Study Tours (the PFG members) are also available on the website, but are accessible only with a pass word that can be obtained from the project Coordinator.

Since the creation of the BBaS website (July 06), it received more than 20.000 visits.

Page	Percent	Count
Main.HomePage	21%	5382
Main.Downloads	8%	1952
Main.About	8%	1943
Main.Objectives	7%	1865
Main.Partners	7%	1842
Main.StudyTours	7%	1841
Main.Contact	7%	1760
Main.Contact Download	6%	1608
Main.Help	5%	1342
Tour.Eindhoven	4%	1124
Tour.Cordoba	4%	1098
Tour.Krakow	4%	1047
Tour.Surrey	4%	981

Over 80% of our webpage visitors read the pages in English, Spanish pages were read by approximately 12% of readers, and Italian pages by 2%.

LEAFLETS

Wallets and leaflets explaining the project aims and benefits were designed, printed and delivered to all the stakeholders. The brochures have been widely used for the project promotion from the beginning of the project.

All materials have been disseminated by using the networks of each individual partner e.g. through the local development Agencies, Chambers of Commerce, strategic partnerships and other established Special Network events, partner's

website and publications. The EU and the GROW programme were acknowledged on all publicity and marketing materials produced. We also used the key European Regional events and the Regional offices in Brussels for practical dissemination of the BBaS information packs and leaflets.

STUDY TOURS NEWSLETTERS

During the whole project special attention was given to promote the results of each Study Tour. Study Tour Newsletters were distributed by each partner on a regional level, including information about proposals of cooperation, and subjects discussed of each area (Bio, Env, ICT). In order to support networking activities Aster prepared three catalogues collecting researchers and entrepreneurs basic profiles. Each catalogue was related to a specific area of activity, taking into consideration Biotechnology, Environmental Solutions, ICT and New Material Technologies.



All this documentation has been distributed via email, direct meetings, regional workshop, and major events arranged or participated by partners.

REGIONAL WORKSHOPS

Each region has organised its own regional workshops, aimed at disseminating the results from the Study Tours and stimulating a debate at the regional level. These workshops have been coordinated by each project partner and they must be focused on each relevant sector for the project; Biotechnology, Environmental Solutions and ICT and New Material Technologies.

For example: “Enterprises creation in the Biotech sector” coordinated by Aster, gave a good opportunity to analyse and compare opportunities and criticalities in enterprises creation, exploitation of results and collaboration between academy and business, exploring experiences and opinions coming from researchers, entrepreneurs and investors area.

“BBaS regional workshop Technology Entrepreneurship” coordinated by TU/e, aimed to young entrepreneurs and researchers

“BBaS and the opportunity to collaborate in EU research” coordinated by University of Surrey addressed to SMEs audience.

PARTNERS BULLETIN

Some of the partners disseminated the information about the BBaS, explaining the project’s aim and benefits through its own periodicals, reaching more than 1000 people representing science, business and business support institutions, including Aster’s electronic newsletter (FIRST), the CITTRU Newsletter and the Vector Magazine of TU/e Innovation Lab.

OTHER WAYS OF DISSEMINATION

Summarizing articles have been published in monthly Jagiellonian University magazine “Alma Mater”. Many other regional websites were used to disseminate the project in Malopolska region. Several announcements were broadcasted on the radio and during regional television programme in regional television channel.

CONCLUSIONS

It became apparent during the life of the project that the most successful dissemination relies on using personal contacts, workshops or seminars to potentially interested people. An active approach in trying to interest people in this project gave the best result.

Multiple dissemination actions (brochures, website and mailings) contributed to creating awareness in the regions, although they did not produce expected requests for more detailed information.



Chapter 10

Conclusions based on the results of the Study Tours

The aim of the Study Tours was two-fold:

- to create lasting collaborative research networks between ‘Two Cultures’ (Business and University), three different industrial sectors (IT, Biotech and Environment) and five European countries.
- to discuss the ‘good practice’ in the Knowledge Transfer with feedback from the representative of industry and the researchers

Our efforts in assembling the Path Finder Groups confirmed that the ‘Two Culture’ problem is still apparent, and this was the case in all participating regions. The intensity of the division varied: the Noord Brabant is perhaps most advanced in bringing these two worlds together. Malopolska has a long way to go in this matter, but it has to be said that the young entrepreneurs from the Jagiellonian University and other research organisations in Krakow engaged very strongly with the activities of the Bridging Business and Science. This group of young researchers (some of them PhD students) and entrepreneurial graduates was most enthusiastic and rewarding in our project.

We are not able to decide which group (academic researchers or entrepreneurs) were more willing to participate in the Study Tours; it seems that the response depended strongly on the effort put into the presentation of the project’s benefits by the Knowledge Transfer experts. However, the dissemination of the “good practice” did not seem to be of great interest neither to the SMEs nor to the researchers.

All members of the Path Finder Groups were interested only in specific projects for themselves and therefore as the Study Tours progressed we have been adjusting their programmes towards strictly specified thematic networking and the aims of BBaS had to be re-examined in the light of this experience. At first, the Guildford Study Tour was very much an exercise in examination of the relationship industry-university, with a number of experts expressing their views and everyone taking part in the discussion, but not having enough time to ‘get down to business’ of talking to people who might be really interesting research partners. This was the main complain from the participants. Therefore with each next Study Tour we were increasing the number of opportunities for the planned individual contacts and organised networking, rather than general discussions about the aspects of Knowledge Transfer.

The adjustment of the Study Tour programmes created a possibility of a very successful consortium meeting for the Biodiesel project in Cordoba, and several very promising collaborative undertakings in Eindhoven and in Krakow.

The ‘good practice’ aspect of the BBaS project was done somewhat on the side and perhaps it was most useful and engaging for the participating Knowledge Transfer experts, who have learned a great deal from the process of organising and from the participation in the Study Tours.



Over 95% of comments in the evaluation forms were praising the concept of bringing together the researchers and industry representatives in small groups focused on the possible collaborative research topics. The Path Finder group members who did not benefit as much as possible from these meetings were mostly limited by their poor knowledge of English, or by the lack of personal networking skills. This problem could be remedied by more extensive preparation for the Study Tour, including personal coaching by the Knowledge Transfer professionals.

It is clear from the study tours that all universities involved strive to achieve more effective utilization of the results of scientific research. It is also clear from the participants from industry that they are constantly looking for opportunities to collaborate with universities to help them with specific problems. This leads to the overall conclusion that it is worthwhile looking for structured ways for bridging the two different worlds.

Every bridge has two ends, in this context it is a business and a university. These two different types of organizations have different reasons to make a lasting connection. Therefore we consider their different points of view here:

BBaS: the business side of the bridge:

The experience from our project shows that it is difficult for SMEs to find their way to knowledge created by their local university, let alone international universities. It is important for business to have a clear understanding of how to get answers to their questions. In majority cases the small businessmen do not know how to find the specific scientists who might be able to help them.

At Eindhoven University of Technology, they have developed a model to open their knowledge to business. In this model they have created front offices that act as intermediates between the two worlds. There are different front offices based on the size of business. Start-up companies can go

to the Incubator officer, SMEs can contact United Brains, and large companies can contact their account manager.

We have seen that such a model with front offices help bridging the gap between business and science. The front offices understand the problems of business at one hand and on the other hand they can translate the knowledge question toward scientist. As a result businesses get a quicker and better answer.

We have also seen that a lot of the businesses that participated did not have international contacts that would be very valuable to them. For instance, based on the study tours, lasting contacts in Biofuels have been established between partners in Surrey, Cordoba and Eindhoven. Without the study tours it was very unlikely that these contacts would be established. This implies that there is a need to have an international platform on which business is able to look for answers to their questions and an active involvement of knowledge transfer officers is needed there.

When speaking about knowledge transfer, business is often greatly helped by the people transfer. People from universities could learn much about business when they are actively involved in the company's work, and then after some time they can cross the bridge again and go back to their university.

BBaS: the science side of the bridge

Bridging the gap to business is advocated by all universities. However, this need to bridge the gap is not felt by the majority of the scientists. Several reasons contribute to this situation. The most important reason is that transfer of knowledge to business is not included in the rewarding systems of universities. At the European universities scientists are evaluated on their research results represented by the number of papers published in high quality journals, and teaching results. Knowledge transfer is not included in the evaluation and the career path of the academics. As a result, only those scientist who

have a personal belief that knowledge transfer is important, are willing to put much effort in this. If the universities want to stimulate knowledge transfer they have to change this system.

We have seen that most of the universities involved put much effort in creating spin outs with knowledge created at the university. In order to be successful we have seen that some specific design rules have to be followed. At the BBaS Study Tour in Eindhoven Prof. Sjoerd Romme highlighted some of the rules that universities need to follow to be successful in creating business. Some of the most important points can be summarized as follows:

The Universities should:

- Allow exclusive licensing to entrepreneurs

Permit start-ups to use university resources

- Make disclosure of inventions by academic staff mandatory
- Create university funds to support students and academics in the orientation (pre-seed) stage
- Create ways to obtain significant amounts of industry funding
- Permit equity investments in spin-outs
- Create networks for the startup to integrate in industry and to acquire access to resources
- Cultivate the prestige of the university to gain access to external resources for the start-up
- Shape a university culture and reward system that reinforces rather than discourages entrepreneurial behavior



In retrospect it seems that the idea of organising small international meetings (around 30 participants) to create international industry-university research consortia is a very good one. It resembles in some way the benefits of scientific conferences and workshops, but while those focus on presentations of the results of research, our Study Tours were preparing ground for Knowledge Transfer. This concept worked better with each next Study Tour organised for the BBaS project.

This concept worked better with each of the Tours organised in the BBaS project.

The best results were achieved when the participants had time to prepare themselves to meet specific potential collaborators sourced by the KT professionals, who then were also able to advise on possible sources of funding for KT activities.

Chapter 11

Lasting Networks and projects

The main aim of the GROW project '*Bridging Business and Science*' (www.growbbas.com) is to create lasting networks between university researchers and companies (in particular SMEs) across the five EU regions participating in GROW. The scientific focus was on three industrial sectors: **Biotechnology, IT/New Materials and Environment**.

The project methodology was based on a recruitment of 4 Path Finder Groups (PFG), each consisting of 3 scientists and 3 representatives of industry, to participate in 4 networking events (Study Tours) organised by the Knowledge Transfer Professionals based at universities of Surrey, Cordoba, Krakow and Eindhoven. ASTER from Bologna participated in BBaS as an observer.

The methods of recruitment varied in different countries depending on the local innovation framework. For example, Eindhoven, Surrey and Cordoba relied mostly on the university and Regional networks, but in Krakow much wider recruitment, including local TV and media, was used. We were successful in creating the person-to-person contacts that will allow many future innovative research collaboration projects, but the time was not sufficient to bring the partners to the point of signing agreements and several projects are still in a preparatory stage. Only very few of our PFG representatives were coming to the meetings with specific ideas for research. In most cases the participation in the 2 day Study Tour was treated as an exploratory event and for many it was an 'eye opener' and a spring board.

The first 12 months of the project coincided with the launch of the EU Framework Programme 7 (FP7) and it also provided a focal point for EU inter-regional research collaboration. Interest in this source of

research funding has risen to a certain extent the participation of SMEs in our regional recruitment and dissemination meetings.

Tangible results after 12 months

1. International collaboration between SMEs and universities:

The Millennium Block – South East England SME in innovative building materials:

Following the Study Tour in Eindhoven the company engaged in a collaborative project with the scientists from the Department of Architecture, Building and Planning of Eindhoven University of Technology. The faculty is evaluating their innovative product for the building industry. Based on the information of this department the participants are now trying to get all necessary certificates in the UK first. Furthermore, a contact has been established between the Millennium Block and Thermeco, a Dutch company who works on a similar product. Thermeco want to start a factory in Romania and there is a possibility of collaboration between this Dutch company and the UK based Millennium Block. Also, Millennium Block sought assistance from the Civil Engineering Department at the University of Surrey for compliance testing of their product.

Riomay – South East England SME producing and installing solar heating panels:

Following the Study Tour in Krakow a meeting was arranged for Riomay and researchers from the University of Mining and Metallurgy in Krakow working on alternative sources of heating. With the support of the BBaS team they are currently negotiating a collaborative research project which will also involve some sales from the UK to Poland.

Cedova (NL)

Collaboration arranged with the University of Surrey (Dr. Stephen Sweeney) to do joined

research on photonic devices and a possibility of training MPhys students during their industry year in Cedova. Currently they are preparing a proposal for FP7 ICT 2nd call for the deadline in October 2007.

Xpress – Spinout from Eindhoven University of Technology

During the Study Tour in Eindhoven a guest participant from the University of Brighton and Xpress reached an agreement on research collaboration between the university, Xpress and one of their German customers on the development of a biotechnological application of one of their products.

Ingenia and Telos – two Dutch organisations in the sector of biofuels

These two companies made contact during the Study Tours with scientists from the university of Cordoba and together they received grant from the Dutch Ministry of Economic Affairs for funding of a research project on heterogeneous enzymatic process for biodiesel production.

Comment from Han van Kasteren of Telos:

‘Ronald Verberne from Ingenia, a Dutch SME, went to a GROW BBaS meeting in Guildford in June 2006 and met there Prof. Diego Luna from the University of Cordoba. I have a close cooperation with Ingenia about bio-energy projects and Ronald understood from Prof. Luna that it was interesting to meet each other in Cordoba to talk about biodiesel project we were both working in.

In October last year I went to Cordoba together with Alwin Hoogendoorn from Ingenia in order to speak to Prof. Luna during the next BBaS meeting. We discussed the interesting R&D Luna was carrying out in relation to biodiesel. It appeared that he found a way to produce glycerol free biodiesel production from used vegetable oils. Ingenia and I decided to investigate this opportunity more closely and applied for a grant in the Netherlands to carry out a feasibility study entitled: ‘Glycerol free biodiesel production with enzymes’. Besides this also a possible cooperation of Prof. Luna in

a bio-ethanol project was discussed and Luna decided to join a European consortium applying for an EU grant entitled: SYN2NOL (FP7-ENERGY-2007-1-RTD) Production of Bioethanol from Syngas Fermentation. Partners are: VTT-Finland, Cordoba University, JRC Europe, TU/e, Ingenia and Wageningen University Netherlands.

Without the BBaS meetings we would never have met and not be inspired by the ideas of each other because we are working in different expertise fields (Luna in catalysis and immobilization and TU/e and Ingenia in process engineering).’

2. Collaborative proposals for EU FP7 and other international Research funding

FP7 Call Environment: Three proposals on biofuels were submitted involving Universities of Cordoba, Bologna and Dutch SMEs.

FP7 Call Health: 1 proposal on secure and open middleware for personalised health telematics including partners from the University of Surrey and ERA 7 Information Technologies SME from Cordoba.

Polish-Spanish research programme: 1 proposal was submitted for collaborative research on hybrid photo catalysts based on TiO₂ by researchers from the Jagiellonian University and the University of Cordoba.

CIP call for support to Knowledge Intensive services: The BBaS consortium joined Oxford Innovation (the coordinator) and three universities from the new Member Countries in a proposal KISMET to the CIP call that closed in September 2007.

3. Collaboration on the Regional scale

This is the most surprising outcome of the project, participants of the BBaS Study Tours from the same Region had opportunity to talk to the researchers and KT professionals from the same geographical area!

Zinir Limited – South East England SME:

Through the BBaS, the University of Surrey Advanced Technology Institute has helped the company in securing proof-of-concept funding provided by CommercialiSE, through Finance South East. The financial support is to prove the company's technology and calibrate the device. Further collaboration is sought to widen the application of the technology. The relationship has been enhanced through the assistance of the SEEDA supported Enterprise Hub in Eastbourne.

Waterfall Solutions

Waterfall Technology is in negotiations with the University of Surrey in regard to participation in the UK Department of Trade and Industry Technology Programme for Collaborative Research and Development with a view to submitting a proposal for funding to the Autumn 2007 call.

4. Unexpected multidisciplinary collaboration

Two scientists, Prof. Diego Luna from the University of Cordoba and Han van Kasteren of the TU/e Innovation Lab met at our Study Tour in Cordoba and started a most fruitful research collaboration that would have never been possible without the BBaS.

CONCLUSIONS

1. The benefits from networking events are directly proportional to the careful selection of participants – ideally the matching of research interests should be done by the organizers before the meeting. To engage SMEs in research it is advisable to focus as much as possible on finding the researchers who are experts in the field directly relevant to the companies' product. General networking meetings do not bring good results. This raises the need for professional KT facilitators, scientifically trained, who are familiar with the research expertise in the Region.
2. Some kind of pump-prime funding is a strong incentive for both, SMEs and Universities, to engage in collaborative innovative research. On the EU level the funding from the European Commission Programmes could be a very important incentive for collaboration.
3. Regional thematic networks are good for bringing researchers and SMEs together, but there should be a Regional group of KT professional facilitators to work with the networks.
4. On the EU level, wider involvement of SMEs in the FP7 projects is beneficial to the innovation in the Region. However, small businesses need help that can be provided via the Regional authority by the universities. Alternatively, regional funds that can be spent on engaging with SMEs or researchers abroad would be very useful.



Chapter 12

Best Practice Recommendations

The bringing together of KT professionals from five European regions in the GROW INTERREG IIIc funded project on Bridging Business and Science was a very important learning experience for all of us. It is clear that all universities involved strive to achieve more effective utilization of the results of scientific research, but not all of them are equally effective in doing so.

We have discussed during our Study Tours mainly two aspects of 'bridging' universities and industry:

1. A straight forward scientific help in solving innovation problems arising in industrial sectors
2. A creation of university spin outs, most often very small and fragile business ventures based on the IP resulting from research conducted by the academics

Collaboration of universities with industry

To provide innovative solutions it is essential for universities to have contacts with appropriate industrial networks. We have been reassured by the Path Finder Groups members from industry that they are constantly looking for opportunities to collaborate with universities to help them with specific problems. This leads to the overall conclusion that it is worthwhile looking for structured ways of bridging the two different worlds.

The round table three-sided (Business - KT professionals - Researchers) discussions conducted during our project confirmed that for

small businesses it is difficult to find their way to knowledge created by their local university, let alone international universities. In our EU Regions there is no widely known and accepted common ground where the university researchers and small businessmen (and businesswomen) can meet and get to know each others needs and strengths. It is important therefore to create such 'market place' ('Agora'?) where such contacts and exchanges can take place.

In SEE and Noord Brabant the government and the regional authorities are funding various schemes to facilitate such contacts (for example: SEEDA funded Knowledge Networks), but the awareness of their existence is still low and they do not go beyond the Regional research resources.

At Eindhoven University of Technology, they have developed a model to open their knowledge to business. In this model they have created front offices that act as intermediaries between the two worlds. It is accepted that such a model with front offices help to bridge the gap between business and science. The front offices understand the problems of business at one hand and on the other hand they can translate the knowledge question toward scientist. As a result businesses get a quicker and better answer.



Close contacts with industry can benefit universities and some EU institutions have already developed such contacts. For example University of Surrey has a programme for students called Professional Training Year, where they can go and work in industry after their 2nd or 3rd year at the university and then come back to complete the degree course. However, this scheme is aimed at large companies or government institutions, not SMEs, because small businesses often cannot provide the right environment for training the students. A similar problem is with another UK scheme – the Knowledge Transfer Partnership (KTP).

We have also seen that a lot of the businesses that participated did not have international contacts. However, such contact would be very valuable to them. For instance, based on the Study Tours lasting contacts in Biofuels have been established between partners in Surrey, Cordoba and Eindhoven. The small construction business from SEE found research partners in Eindhoven, and a solar heating company started research on new types of renewable heating systems with the researchers from a university in Krakow. Without the Study Tours it was very unlikely that these contacts could be established. This implies that there is a need to have an international platform on which business is able to look for answers to their questions.

However, it has to be emphasized that in each of these cases the involvement of multilingual Knowledge Transfer professionals was vital.

The academics have generally low interest in talking to potential industrial research partners. The academic interest in this type of Knowledge Transfer is limited to small consultancy contracts or search for partners for the EU or nationally funded research proposals that require partnerships with industry.

It has to be considered, that not all research activities carried out at universities are of interest to industry, and on the whole only about half of the university academics is involved actively in innovative research. There is only a very small

group of academics who have a personal belief that knowledge transfer is important and are willing to put much effort in this type of activity.

New business resulting from research – the university spin-outs.

Bridging the gap to business by creating spin out companies is advocated by all universities. However, this need is not often shared by the university researchers. The most important reason for the low priority of research collaboration with business, or creation of their own company, is lack of the influence of such activities on the career development of the academics in all our countries. The professional progression of the university academics is based solely on their publication records backed-up by the science citation index, the number and value of the research grants held and their teaching activities, including the PhD students. Business related activities do not figure in the professional evaluation of the university researchers. If universities want to stimulate knowledge transfer they have to change this system.

There are also other important points that are related to the creation of spin out business from the university based research, for example the



personalities of the researchers are also of great importance, very often most innovative academics have no business skills and in a research group there is just one person who can communicate with industrial partners or sell an idea that would be useful in the industrial sector.

The points raised by the Path Finder Group members at our Study Tour discussions stressed the need of a supportive policy at universities and KT professionals that can advise about:

- IP and patents
- Provide seed capital
- Give access to venture capital
- Advise on commercialisation,

Conclusions

The main points raised by the Business participants of BBaS related to good practice in Knowledge Transfer activities were as follows:

- The market pull - The KT should be initiated by industry. The market pull should determine what is needed when the research is concerned. The industry has practically no interest in academics presenting them with their research outcomes, because usually it takes a lot of time and effort to tailor those to the needs of the commercial market. (This point was be disputed by the academics, because they believe that there is a strong need for an innovative research that does not respond to the immediate needs of commerce).
- The Intellectual Property Rights from a collaborative research should belong to industrial partner, since only the industry can utilize them. (The response of the university is that the IPR should be bought from them by industry).
- The Regional KT Contact Points - each EU region should have a clearly defined and

widely publicized KT Contact Point where the small businesses can get advice and support in finding a research expert to facilitate the development and innovation for their company. Such contact points could be located at a regional university, but it should not be focused on one university, but have a wide network of experts, preferably across the regional and national boundaries. Therefore such KT CPs need to be funded from regional or national funds. The European Commission's attempt at creating the Innovation Relay Centers was a very good idea, but it cannot work as a part time funded operation. The KT professionals in these centers need to be solely focused on facilitating such activities. Also funding for them should be long-term to allow for a proper development of methodology suitable for the regional circumstances. In Andalusia the Regional government created an IT KT Contact Point. This is a very good initiative, but IT is a passive tool, the innovation and KT needs facilitators who can engage actively in creating the contacts between the researchers and small businesses.



The main points concerning the good practice in KT based on the discussions with our Academic Path Finder Groups members are as follows:

- Change in the university career evaluation – the university staff evaluation systems must reflect the value of the university-industry research collaboration
- The Regional KT Contact Point – to provide a contact with industry including small business, not only in the Region, but also on the national and international (mostly EU) level. This activity needs to be carried out by KT professionals who aim at personal contact and knowledge of particular strengths of the scientists working in their region and have extensive networks with other KT professionals across Europe.
- Lack of time – The teaching and administrative commitments of the academics are often creating a serious barrier to their collaboration with industry. This point can be only solved by the universities.

And finally, when speaking about Knowledge Transfer, we must not forget that the best results could be achieved by transfer of people. The researchers from universities could learn a lot about business needs if they could work for a time in industry, and vice versa. There are attempts to achieve this in some of the EU countries. For example, in the UK the Research Councils and the Regional Development Agencies offer competitive funding for such schemes. However, the success of these programmes is not obvious yet. Usually, the scientists who want to work at universities do not want to work under the pressure of the commercial developments, and the successful businessman are not often good at teaching at universities, and the university salaries are not reaching the industrial levels.



The Bridging Business and Science is not an easy and straightforward activity, however, it is needed and it should continue to be supported by the national, regional and EU funds.

Thank you GROW

This report was prepared and edited by the BBaS Committee:

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