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Technology Transfer of Research Results (The 2xtra Project)

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**Ashtown Food
Research Centre**

RESEARCH & TRAINING FOR THE FOOD INDUSTRY

RESEARCH REPORT NO 95

TECHNOLOGY TRANSFER OF RESEARCH RESULTS (THE 2XTRA PROJECT)

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SUMMARY

The 2XTRA project (Technology Transfer Research Results Atlantic Area) was carried out with the aim of promoting economic activity based on research results and technologies developed within universities, research and technology institutes and companies in the European Atlantic Area**. This collaborative work was carried out by a strong partnership of 13 entities across this region and included universities, research and technology institutes, private consultants and TBC (technology-based company) incubators:

- Ashtown Food Research Centre, Teagasc (AFRC) Dublin, Ireland.
- The National University of Ireland, Galway (NUI-G) Galway, Ireland.
- Universidad Pública de Navarra – OTRI (UPNA-OTRI), Pamplona, Spain.
- Fundación Inasmet (INASMET), San Sebastian, Spain.
- Sociedade Para a Promoção de Iniciativas Empresariais Inovadoras (UNINOVA), Santiago de Compostela, Spain.
- Universidad de Cádiz – OTRI (UCA-OTRI), Cádiz, Spain.
- Comunicação das Organizações (ENUNCIAÇÃO), Figueira de Foz, Portugal.
- Instituto de Soldadura e Qualidade (ISQ), Porto Salvo, Portugal.
- Universidade da Beira Interior, (UBI), Covilhã, Portugal.
- Incubateur Regional D'Aquitaine (IRA), Talence, France.
- École Supérieure des Technologies Industrielles Avancées (ESTIA), Bidart, France.

***Refers to the Atlantic seaboard regions of five EU member states i.e. Spain, Ireland, UK, Portugal and France.*

- Startech Partners Ltd (STARTECH), Glasgow, United Kingdom.
- University of Manchester Intellectual Property (UMIP), Manchester, United Kingdom.

The specific goals of the project were:

- The exchange of information and experiences on technology transfer (TT) with a view to assisting project partners directly and feeding into their regional innovation systems.
- The promotion of new technology-based companies by drawing on collective experiences and developing methodologies relating to
 - identification and evaluation of business ideas
 - production of business plans, and
 - support of early stage companies internationalising.
- The creation of an Atlantic Area Network to support and promote technology-based companies (TBCs) and the technology transfer process.

These objectives were achieved through defined activities carried out in three separate stages of this project.

INTRODUCTION

Innovation is vital to socio-economic development. Europe has excelled in the generation of scientific and technological knowledge through research. However the successful delivery of this knowledge to industry and the transfer of resulting technologies to the marketplace continues to be disappointing. An important indicator of success is new company development and although public and business R&D expenditures are very similar in Europe, Japan and USA, the rate of creation of new technology-based companies in the USA is several times higher than in Europe.

The process by which technical know-how moves from a technology provider, such as a research organisation, to an interested industry counterpart is known as technology transfer (TT). Whilst there is a lack of homogeneity in innovation systems and technology transfer processes across Europe, this project provided an opportunity for different countries and regions within the Atlantic Area to learn from each other and to exchange ideas and mechanisms. The first stage (Stage 1) in the project was to identify the specific TT expertise within each of the partner organisations or companies. A collaborative approach was then taken to identify the best practice experiences in TT across Europe and to document success factors experienced.

The next stage (Stage 2) involved the validation and development of the knowledge elicited and the application of this knowledge to pilot projects. As mentioned previously, an important measure of successful TT is the creation and development of new technology-based companies (TBCs). This project therefore focused significant attention on the elaboration of common methodologies or tools to support such companies. These tools included the extraction of business ideas, interregional technology-based business incubation and procedures for helping the internationalisation of new TBCs.

The final stage (Stage 3) of the project was the establishment of an Atlantic Area Network for technology transfer, with special emphasis on supporting

TBCs. It is envisaged that this network will continue to grow and remain an important reference not only for the project partners but also for other European agents working to promote and support TBCs.

STAGE 1 - REPORTING CURRENT KNOWLEDGE ON TECHNOLOGY TRANSFER ACTIVITIES IN THE EUROPEAN ATLANTIC AREA

Approach:

Each of the project partners prepared a manual or guide outlining a technology transfer management practice or methodology in which their organisation or company had expertise. Each manual was presented and discussed by the other participating partners with a view to adapting the practices described in the manuals to other organisations.

A comprehensive study on Atlantic Area innovation systems was prepared with each project partner documenting the systems and supports within their particular region. A number of good practice TT cases were outlined and the contributing success factors identified.

Outcome:

The first stage of the project helped to develop the partnership through knowledge sharing and joint learning between the organisations involved. Twelve manuals, each outlining a good practice TT case, were produced by the partners and entitled:

1. Management of IPR in a public university – UPNA-OTRI
2. Business ideas from research results – INASMET
3. Quality procedures on entrepreneur services and monitoring of incubated companies– UNINOVA
4. Commercialising technologies – UCA-OTRI
5. Communication plan – ENUNCIAÇÃO
6. Best practices which foster innovation in SMEs – ISQ
7. R&D Projects with SMEs – UBI
8. Identification of ideas for new technology-based companies – IRA
9. Managing a “NBT” incubator centre – ESTIA

10. Technology entrepreneurship – STARTECH
11. Technology provider to the food industry – AFRC
12. Technology enterprise programme manual - NUI, Galway

Descriptions of the innovation systems in Ireland, Scotland, Aquitaine (France), Galicia, Basque Country, Andalucía (Spain) and Portugal were outlined and success cases in technology transfer within each of these regions were described. All of this material is available at www.2XTRA.info (refer to Downloads, Task A & Task B) and has been distributed widely on a CD produced by the project partners. Summaries of the TT manuals and information on the identified technology transfer success cases are available in a 2XTRA publication produced in the four languages of the project (English, French, Portuguese and Spanish).

STAGE 2 - VALIDATION AND DEVELOPMENT OF TECHNOLOGY TRANSFER KNOWLEDGE

Approach:

Each partner selected one of the manuals prepared in the first stage of this project that could be of use to their organisation. The objective of this was to acquire a certain methodology and adapt it accordingly in order to generate some added-value to their business. Ashtown Food Research Centre chose and adapted a manual prepared by UCA-OTRI entitled 'Commercialising Technologies'. A pilot project was defined and carried out with the purpose of identifying interesting research results by means of the customary techniques (final reports of projects, direct communication with researchers, workshops, seminars, etc.), evaluating the commercial possibilities of the technologies researched and devising a plan for the commercialisation of such technologies. The project entitled 'Developing procedures for commercialisation of meat technology research results' was assisted by UCA-OTRI, the manual provider, and constituted five specific steps:

Step 1 – Negotiation with researchers and research groups;

Step 2 – Identification of technology for commercialisation;

Step 3 – Incorporation of a technology promoter;

Step 4 – Preparation of a commercialisation plan;

Step 5 – Planning and monitoring.

The project partners with experience in technology-based business incubation compiled information relating to the practical, financial and legal aspects of the incubation support procedures used within their organisations. An elaborated document was then prepared through a comparison of the best practices and methodologies used by each partner. A protocol was also devised for managing co-operation among the partners in supporting the internationalisation of TBCs in terms of (i) scientific/ technological resources (ii) potential business partners (iii) market studies and marketing activities (iv) legal and financial advice and (v) joint development of new business.

Outcome:

Implementing a new methodology in an organisation can be a hard task to perform because of pre-established business activities and operating methods. Human factors, including the mentality of employees and the availability of skilled and motivated personnel, will strongly determine the ability of an organisation to implement a new technology transfer methodology and achieve the expected results. 2XTRA project partners reported that the pilot projects were a useful method of validating and developing the knowledge acquired in Stage 1. It also assisted them directly in the development and improvement of the technology transfer activities of their organisations. On the basis of the pilot project, Ashtown Food Research Centre has been able to make recommendations for changes to procedures currently used internally and also put forward suggestions for staff training requirements. We have also built up new contacts and learnt more about organisations with which we can work to develop and fund these technology transfer activities.

Using the experiences and expertise of the partners involved in business incubation activities, a guide was developed on the business development

process, providing a description of methodologies and templates for use in the support of technology-based start-ups in the European Atlantic regions. This guide includes information on practical, financial and legal aspects from idea generation to business development and copies are available at www.2XTRA.info (refer to Downloads, Task D-1)

A protocol was also devised at this stage of the project for the co-operation in internationalisation of new technology-based companies (NTBCs) by 2XTRA partners. This protocol includes an outline of the general process including company selection criteria, information on 2XTRA partner services, details of other internationalisation support organisations in the Atlantic Region and the development of confidential support projects. Questionnaire templates, completed jointly by the NTBCs seeking assistance and the project partner providing support, are also available at www.2XTRA.info (refer to Downloads, Task D-2).

STAGE 3 - IMPLEMENTATION OF AN ATLANTIC NETWORK FOR TECHNOLOGY TRANSFER

Approach:

This element of the project focused on the establishment of an Atlantic Network to serve as an important reference for project partners and other European agents involved in technology transfer. The main objective of the network is to promote and support new technology-based companies (TBCs).

Using procedures developed in Stage 2 of the project, a pilot study was conducted to assess the effectiveness of the 2XTRA partnership in supporting technology transfer and the formation of new TBCs. Templates were devised for the extraction and evaluation of possible technologies from ongoing and completed research work. Different criteria were examined thematically focusing on the technology itself and its potential applications. A second set of templates was then used to evaluate the business potential of the ideas or technologies and to develop a structured business plan. A number of the 2XTRA project partners specifically involved in research and development

activities, including Ashtown Food Research Centre, applied these templates within their own organisations to assess their effectiveness.

A second set of templates was prepared based on the internationalisation protocol developed in the previous stage of the project. These templates were completed, with the assistance of the technology promoter (2XTRA partner), by companies or individuals seeking support from the 2XTRA network. Applicants included entrepreneurs or company start-up teams, existing small or medium-sized companies and R&D project leaders within universities and research institutes. The templates requested candidates to supply information on both the technology and the activity sector they were seeking support in and to outline their specific needs.

Outcome:

Using the methods and templates developed, four technology-based ideas were extracted from ongoing research projects at Ashtown Food Research Centre. With the help of the lead researchers on these projects, the relevant templates were completed to assess the business potential of the extracted ideas. Four other project partners or promoters conducted similar exercises within their own organisations (UPNA-OTRI, INASMET, UNINOVA and UBI). The consensus, based on feedback from the promoters and idea generators or researchers involved, was that the templates were an extremely useful tool for identifying ideas or technologies with commercial potential.

A total of 16 technologies were assessed by the 2XTRA partners; eight fulfilled the business potential criteria and were progressed to business planning stage. The 2XTRA methodology for developing a business plan was applied to these eight ideas or technologies with the assistance of the relevant 2XTRA promoter partner. Eighteen submissions for internationalisation support from the 2XTRA network were made with the assistance of the relevant promoter partner. These applications were evaluated and requirements matched to a qualified 2XTRA support partner within the network. In cases where the suitable expertise and support was not available

within the network, 2XTRA partners worked together to determine where such assistance could be obtained and referred the applicants to the relevant organisations. The confidential linkages and co-operations established between applicant companies or individuals and 2XTRA partners during this stage of the project are ongoing. It is envisaged that the network will continue to grow and provide internationalisation support beyond the lifetime of this funded project.

CONCLUSIONS & OUTPUTS

- A comprehensive manual outlining selected technology transfer methodologies or practices was compiled. This is available in CD form from any of the project partners or by download from www.2XTRA.info. A summary booklet was also produced and distributed which includes the success stories for technology transfer in Ireland, Spain, UK, Portugal and France.
- Analysis of the innovation systems in Scotland (UK), Andalucía (Spain), Portugal, Navarra (Spain), Galicia (Spain), Ireland, Basque Country, Aquitaine (France) was documented and is available on CD from any of the partner organisations or at www.2XTRA.info.
- Two publications on a common methodology for the creation and support of new Technology-Based Companies (TBCs) and the mechanisms by which the partners in the project will co-operate in offering support for new TBCs have been produced.
- Templates have been prepared and piloted for the extraction of business ideas from research results and for the elaboration of business plans from business ideas.
- The inter-regional co-operation mechanism (2XTRA Network) for support has been piloted using applications from entrepreneurs or company start-up teams, existing small or medium-sized companies and

R&D project leaders within universities and research institutes. These collaborations are ongoing and will exceed the term of the funded project.

- Establishment of an Atlantic Network which has become an important reference for the project partners and other European agents working in technology transfer or providing support to entrepreneurs and technology-based companies.

RECOMMENDATIONS

Participation in this project has been extremely useful for Ashtown Food Research Centre, Teagasc and has highlighted the importance of effective technology transfer to the food industry. Since the commencement of this project, Teagasc has appointed an IP Officer responsible for the provision of advice on the identification, protection and exploitation of intellectual property generated by researchers within the organisation. The templates generated in the 2XTRA project, if adapted or simply implemented, could provide an important mechanism for the identification of potential IP and commercial opportunities. Pilot studies included interviews with four lead researchers at Ashtown who found the templates simple to complete and extremely beneficial in assisting with the extraction of business or commercial ideas from their work. However, this is just one stage in the technology transfer process and involvement in this project has provided opportunities to seek advice and assistance from organisations and agencies with dedicated technology transfer expertise. Based on the knowledge gained and network interactions over the duration of the project, the following recommendations can be made to research institutes such as Ashtown Food Research Centre.

- The establishment of an incentive policy (*e.g.* financial, promotional) could significantly influence the behaviour and attitudes of researchers towards IP and technology transfer.
- The importance of a more structured approach to industry consultation

was highlighted. This could also lead to an increase in collaborative work with private companies.

- Funding sources facilitating industry partnership have an important role in supporting technology transfer activities. A monitoring system to gauge industry uptake following dissemination from publicly-funded research should be employed. At Ashtown Food Research Centre, a subsequent project has been funded by the Irish government to identify the influence of publicly-funded research on industrial R&D and to examine the absorptive capacity of the Irish food industry. The overall aim of this project is to develop a research commercialisation toolbox to assist public research organisations to improve technology transfer and commercialisation of publicly-funded food research.
- All non-confidential research work of an applied nature should be evaluated for commercial potential using a formal procedure or marking system, led by a dedicated member of staff with technology transfer experience. Such a system is currently being explored by Teagasc and meat researchers at Ashtown Food Research Centre are participating in a project to develop such procedures and marking systems.
- When considering opportunities for industry collaboration, options such as staff placements, dedicated industry research units and industry panels are all successful methods proven across the European Atlantic area.

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