

Networks of knowledge

Knowledge transfer is a reality of contemporary research, and it is a reality that **Dr Volker Heinz** and his team are embracing in the field of food processing technology and innovation, through the **HighTech Europe** initiative

KNOWLEDGE TRANSFER REMAINS one of the main hurdles in the implementation of such high-tech technologies in food and feed industries. While excellent research is being carried out, this does not always lead to substantial introduction in the market. Key to the success of such activities, and the sustainability of such research, are networks of knowledge transfer across scientific research and industry, which is what Dr Volker Heinz's HighTech Europe project aims to strengthen.

OPENING THE INNOVATION WINDOW

Funded as a Network of Excellence (NoE) by the European Union, and coordinated by the German Institute of Food Technologies (DIL), HighTech Europe aims at overcoming the hurdle of knowledge transfer by the establishment of a European innovation window for the food processing sector. Its partners consist of nine basic-applied science centres and three universities, four SMEs, one industry partner, four industry federations and an Innovation Relay Centre. The main aim of HighTech Europe is to identify, evaluate and demonstrate potential cost-efficient innovations to be used by SMEs, via a Science Cube approach and the availability of high-tech pilot facilities. This approach links innovation resources (bio-, nano- and information and communication technologies), scientific principles (physical, chemical and biological) and food engineering operations (separation, stabilising, structure forming and conversion processes and packaging).

NOVEL APPROACHES

The Science Cube database links data following ontological principles, using them as mechanisms for specification, and as a way to connect information and organise sources of innovation. The Science Cube links scientific findings and industrial needs, thereby enabling the demonstration of innovation potential. Results from Science Cube approach are mapped and linked with these industrial needs using the novel Lighthouse Watcher concept, which also ensures the database is continuously updated.

HighTech Europe's tool of choice to elucidate the complex knowledge available to industry is an online Interactive Technology Portal (ITP) in a MediaWiki style, which it is hoped will facilitate the direct implementation of innovations into products, processes or services of the food industry especially of SMEs. The structuring and searching of information in the ITP will be facilitated using an ontology-based approach, which will also help overcome one of the main barriers to knowledge and technology transfer, i.e. the use of different 'languages' by academia and industry. The portal will allow the matching of concepts used by industry with concepts used by academia, which might produce scientific solutions that the user has not thought of before.

The portal, currently in the development and 'feeding' stage, will begin an online testing phase by HighTech Europe beneficiaries and associated

members in 2011. It will provide summarising technology data sheets, profiles of research institutes and enterprises, explanations to special industrial needs, literature references and more. It is hoped that it will show potential for innovations in food processing, as well as being a useful catalyst for new research and development activities.

ENGAGING PARTNERS AND INSPIRING PROGRESS

As well as the ITP and knowledge transfer activities like workshops and international meetings, HighTech Europe will develop new routes for implementation such as a Knowledge Auction and an Implementation Award, honouring full chain innovations. These knowledge transfer schemes will not only increase the profile of high-tech food processing technology, but elucidate feasibility studies and business cases based on unique patent portfolios, that will convince entrepreneurs and early adopters to acquire lead market positions. Here, ethical, legal, social aspects and consumer perception regarding high-tech food processing are taken into account in order to set up a first, well-balanced Agenda of the White Book on high-tech food processing for policy and regulatory bodies.

A SUSTAINABLE STRUCTURE

The overall aim of HighTech Europe is not just for immediate cooperation and exchange between science and industry, but to secure a

more lasting structure of networking, exchange and partnership in the field. This is where its ambitious plans for the establishment of a European Institute of Food Processing (EU-IFP) come in, about which Heinz is very enthusiastic: "This would be an outstanding achievement as most NoEs have not been able to implement a sustainable structure after their project end," he observes.

Such an achievement is not easy to achieve; many decisions are necessary to set up such a sustainable cooperation, between European research institutes, companies and interested public bodies. HighTech Europe will provide a basis for decision making for the final cooperation model, for financial and legal issues, for communication and human resources issues, and for facility sharing. The proposed EU-IFP will advance knowledge transfer in food processing and create a novel scheme for open innovation in Europe. Heinz and his team aim to have a business strategy and a sustainable action plan for the institute by the end of the project.

BROADENING NETWORKS OF EXCHANGE

Key to the success of both the HighTech Europe project and to its vision of a permanent European cooperation network in food processing is the principle of collaboration and exchange. Although it already comprises 22 partner organisations, HighTech Europe is aware of the necessity to broaden its network and open it to all kind of interested parties from science curiosity-driven or applied R&D centres, to enterprises acting on regional or multinational level, and to funding bodies and policy makers. They have just established an Associated Membership Platform (AMP) and welcome both providers and seekers of innovation potential in food processing. The platform will further boost the generation of knowledge and improve the efficiency of knowledge transfer for innovative products, processes or services in Europe.

TRAINING FOR THE FUTURE

Always looking towards the future and particularly to novel means of knowledge transfer,

professional development is an important aspect of HighTech Europe's ethos and a building block for the EU-IFP. HighTech Europe has a specific training unit for young scientists, with up to 10 one-week secondments planned within

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the project, which can be prolonged if desired. Although career development is not one of the primary activities of the project, the importance, of staff deployment as a means of knowledge and technology transfer, is unquestionable. HighTech Europe partners are already active in national and



Integrating innovation in food technology

High tech food engineering is increasingly important, for SMEs as well as large food processors. Bringing together a range of partners is the **High-Tech Europe** network, headed by **Dr Volker Heinz**, director of the German Institute of Food Technologies

What are the aims and objectives of HighTech Europe? How does your Network of Excellence differ from others?

HighTech Europe is the first Network of Excellence (NoE) in the area of food processing, bringing together 22 partners from science and industry to identify knowledge for innovation potential in high-tech food engineering to be used by industry, in particular Small and Medium Enterprises (SMEs). Our aim is to achieve a long lasting integration of European research and development activities into high tech food processing and to maximise smooth translation of knowledge into real innovation. The overall aim of HighTech Europe is to realise a sustainable cooperation model for a European integrated partnership, the European Institute of Food Processing (EU-IFP).

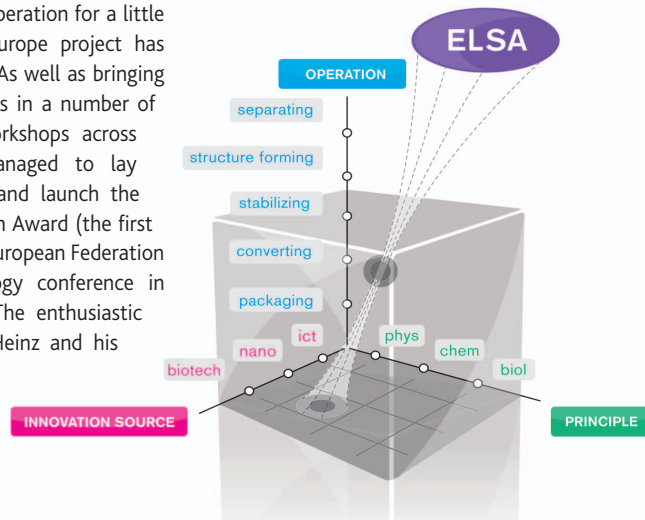
Could you elaborate on the Science Cube approach that you have adopted? How does it tie in with your novel Lighthouse Watcher concept?

The Science Cube is a tripartite model by which the innovation potential (1st dimension), underlying scientific principles (2nd dimension), and possible application in food engineering operations (3rd dimension) of scientific findings are mapped and linked. As such, it is a really useful approach to identify the relations and connections between scientific findings and industrial needs, input provided by experts. The Lighthouse Watcher concept is a procedure that screens and evaluates activities to continuously update - during and after the lifetime of the project - the database of

European PhD programmes like Initial Training Networks of the Marie Curie Programme, and will continue to foster these activities in future.

BUILDING A LASTING LEGACY

Although it has only been in operation for a little over a year, the HighTech Europe project has already achieved a great deal. As well as bringing together the initial 22 partners in a number of preliminary meetings and workshops across Europe, the project has managed to lay the groundwork for the ITP and launch the European Food Implementation Award (the first award ceremony being at the European Federation of Food Science & Technology conference in Dublin in November 2010). The enthusiastic and innovative approach of Heinz and his team, as well as of the HighTech Europe partners



THE SCIENCE CUBE: An approach to link the innovative scientific knowledge in biotechnology, nanotechnology and ICT and the food industrial needs by categorising into scientific principle and basic food processing operations

available high tech processes and applications matching industrial needs.

Knowledge transfer systems are an essential part of 21st Century research, and are key to promoting innovation. How is HighTech Europe encouraging knowledge and personnel exchange? What are the greatest challenges in facilitating such exchange schemes?

A knowledge transfer chain encompasses the flow and exchange of knowledge and experiences between different parties from university, research centres, associations and the private sector. HighTech Europe takes advantage of existing knowledge transfer chains in Europe and Australia, which at present mainly exist on regional or national level. A Europe-wide networking of these chains and the integration of latest finding from the biotech, nanotech and ICT area would bring added value to all. The greatest challenge is this: to sustain the HighTech Europe network in a long-term structure, which is what we hope the EU-IFP will do.

Training and career development opportunities plays an essential role in the European Research Area, with a special focus on young scientists. What opportunities do HighTech Europe offer and how important are they to Europe's knowledge economy?

Without doubt the career development of young scientists is of outmost interest for the knowledge-based bio-economy in Europe. Short-term exchanges of scientists are organised within the network to allow beneficiaries

across Europe and Australia, will most certainly achieve great things. The EU-IFP will hopefully be one of these, and will be an exciting and significant landmark in the future of high tech food technology in Europe.

to gain experiences in new technologies or methodologies. Various means of knowledge transfer exist and have to be used: publications, presentations and demonstrations by expert researchers. But we find that a lot of the knowledge that institutions and companies possess is more tacit than explicit. Personnel exchange and face-to-face contacts are therefore indispensable for successful and comprehensive knowledge transfer.

The project has been running just over a year now, and you have already launched the European Food Processing Implementation Award. Do you think that incentives such as this will help to encourage innovative approaches to food processing and raise recognition of research in this field?

We hope that the award will support us to achieve two aims. Firstly, to highlight the importance of a rapid and efficient knowledge and technology transfer in the food processing industry. Secondly, to encourage the linking of conventional food-processing technologies with new sources for innovation, such as biotechnology, nanotechnology and information and communication technology. We believe that this will be the key to the European food industry's success in the global marketplace. Our hope is that the award will animate science and industry to think more innovatively about new and unconventional approaches to solve existing problems. It is a great way to start the project – the aims being the very same as those of HighTech Europe and our end goal of the establishment of the EU-IFP.

INTELLIGENCE

HIGHTECH EUROPE

EUROPEAN NETWORK FOR INTEGRATING NOVEL TECHNOLOGIES FOR FOOD PROCESSING

OBJECTIVES

- To provide the building blocks for the establishment of the first European Institute for Food Processing.
- To facilitate the implementation of high-tech processing in the food industry by identifying, developing and demonstrating potential and cost-efficient innovations.
- To improve the knowledge transfer in Europe beyond the most well established knowledge transfer chains on regional, trans-regional or even trans-national levels.

PARTNERS

For a full list of the network's 22 partners, please see the website listed below.

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VOLKER HEINZ is Director & CEO of the German Institute of Food Technologies (DIL), a non-profit research centre based in northern Germany with 130 members of staff and an annual turnover of 10 million Euros. Founded in 1985 the DIL is specialised in food process engineering, microbiology and food chemistry. Until 2005 Heinz was principal scientist and lecturer at TU Berlin's Food Engineering Department where he is still in the teaching programme. He has a record of more than 100 scientific publications and invited lectures. His main fields of research are: food structure related high pressure processing, pulsed electric fields and ultrasound applications. Since 2009 he has been the coordinator of the EU FP7 Network of Excellence "HighTech Europe".



HIGHTECH EUROPE