



WHEN FUNDAMENTAL RESEARCH MAKES CENTS

Trust between the industry contact person and the researcher is of great importance. So is involvement from start to end.

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PUBLIC PRIVATE PARTNERSHIP ENHANCES MEAT QUALITY

High tech equipment for online measurement of fat in pigs is a result of close collaboration between Carometec A/S and the University of Copenhagen.

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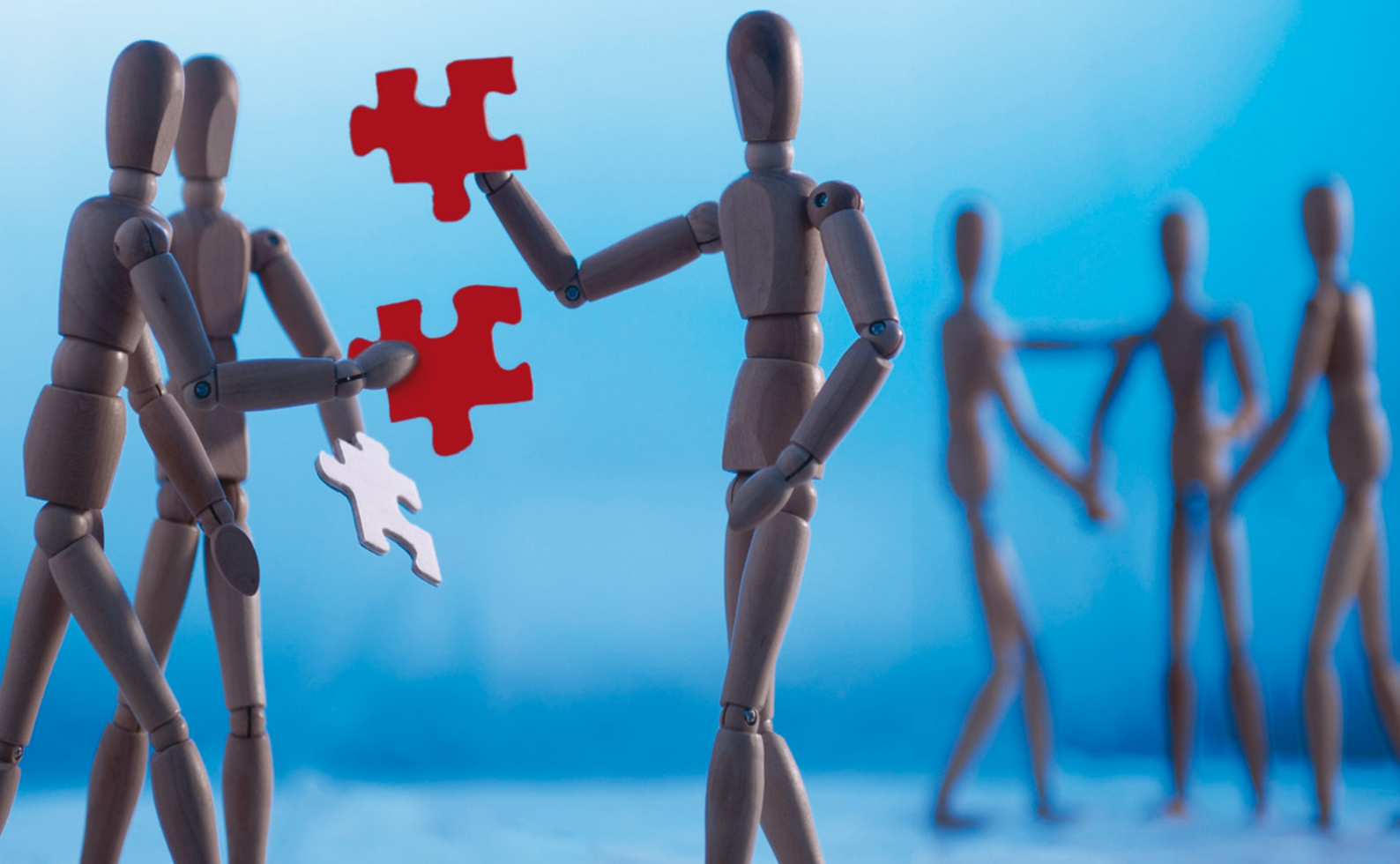
GREEN DUCKLING IN A POND OF INNOVATIVE STUDENTS

A new centre for innovation and entrepreneurship is established in Green Lighthouse to help student entrepreneurs on the way.

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UNIVERSITY OF COPENHAGEN

Profile / MATCHING KNOWLEDGE



Let's innovate together

The University of Copenhagen with our leading edge scientists and our excellent students would like to continue our close and committed collaboration with industry. With this magazine we wish to illustrate the wide range of collaborative projects and to foster ideas for new Public Private Partnerships.

The University has since long enjoyed close collaborative links with the pharmaceutical, agricultural and food industries. However, the University's areas of expertise extends to a range of other sectors, eg. the oil industry, banks, IT companies, law firms, service companies and public authorities. This magazine will give you a flavour of the breadth of our activities. We would like to contribute to Public Private Partnerships where academia and industry can work to find solutions to the major societal challenges facing us today.

Our ambition is to develop a framework where collaborations and partnerships can thrive. And we need your input in order to optimise this framework. We need your thoughts on how to remove barriers and create opportunities for collaborative partnerships. The University's prime mission is to create and disseminate knowledge to society, be it through teaching, research or innovation. The launch of "Easy Access IP" where we offer non-commercialised inventions to companies free of charge is just one example of our committed efforts to ease the flow of knowledge between academia and industry.

Partnerships for the future are partnerships where we develop ideas for joint research projects together with industry from the outset. Our students play an important role in this vision. Entrepreneurship and innovation are becoming an integrated part of our students' education. The students, through their knowledge, are important vehicles of innovation both to existing companies and to the economy as a whole through the creation of spin-outs.

We hope this magazine will inspire you and illustrate how you can engage with the University of Copenhagen. We are looking forward to working with you.

Sincerely



Thomas Bjørnholm
Prorector




Anna Haldrup
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Joint research and involvement of both parties from start to end is essential.

When fundamental research makes cents

Science adding value on the bottom line

BY JES ANDERSEN

UNDERSTANDING HOW FLUIDS interact with mineral surfaces is fundamental research - but when the fluid is oil and the mineral is from an oil reservoir, the answer to a fundamental question could be worth billions of Euros.

For petroleum companies such as Maersk Oil and BP, research at the NanoGeoScience Group at the University of Copenhagen could translate into more efficient oil extraction, so both companies have been financing activities there. Leader of the group, Professor Susan Stipp, says: "Private companies are happy to pay for fundamental research, but only if they are convinced it will lead to money on their bottom line."

She stresses that the key to gaining private corporation interest is to understand their needs.

"I try to find the company's driving question and then figure out how our team can contribute."

Professor Stipp also underlines the importance of trust between the industry contact person and the researcher and the need for involvement by the contact person from start to end.

"For joint proposals, such as EC (European Commission) or the Strategic Research Council, it is not enough to write a convincing proposal, go to industry, and ask them to sign," Stipp explains.

Her strategy has secured the NanoGeoScience Group many millions in private funding over the last years. The group has 50 scientists, all paid by research grants. Aside from the oil projects, activities have included decreasing



Professor Susan Stipp, leader of the NanoGeoScience Group at the University of Copenhagen.

nickel contamination in drinking water with DDH (Hedelskabet) and Roskilde County and safer nuclear waste storage with Swedish Nuclear Fuel and Waste Management Company.

Susan Stipp is currently negotiating to bring NanoGeoScience researchers into puzzles involving topics as far flung as plastics, ceramics, aviation risk assessment, beer and biomimetic materials such as artificial bones and teeth.



Professor Fritz Henglein is director of the new co-operative research centre HIPERFIT.

Research centre helps predict the next financial crisis

The financial crisis of 2008 demonstrated that the banking sector is more vulnerable to global market fluctuations and financial risks than ever before. The banks need increased capacity to execute complicated calculations and develop models to control risks. A new large scale co-operative research project at the University of Copenhagen tries to respond to this need.

BY CECILIE TOUDAL PEDERSEN AND SIDSEL HANSEN

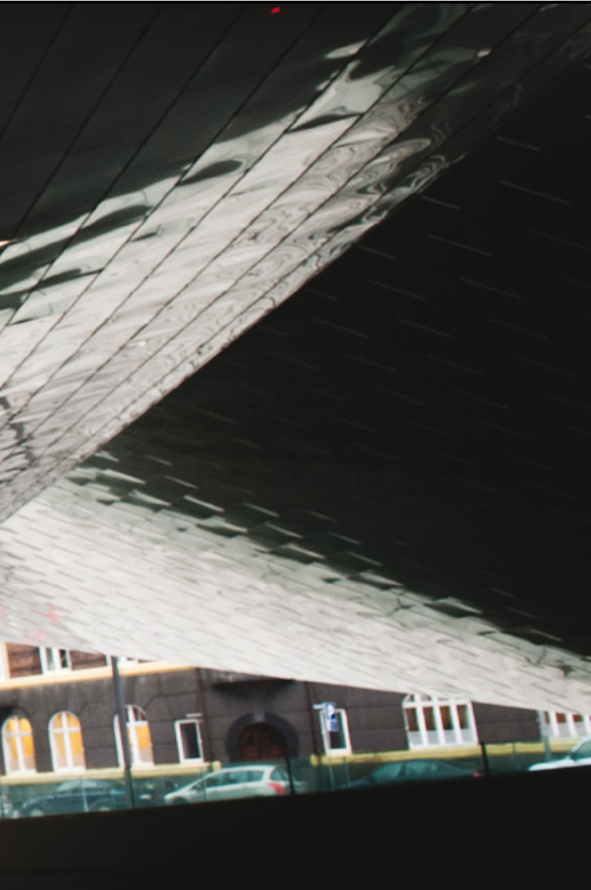
IN CO-OPERATION WITH four of Denmark's largest banks and two IT companies, the new HIPERFIT Research Centre at The University of Copenhagen seeks to establish a new and rapid platform for predictions to the financial sector.

“The entire Danish financial sector is behind this project. The unique collaboration between the banks and the research community will hopefully result in improvements in financial predictions and risk modelling as well as a considerable performance boost for the benefit of public

authorities and private organisations in the financial sector,” says professor Fritz Henglein, director at the Centre. HIPERFIT opened on 1 January 2011 at the Department of Computer Science and will continue its activities for the next five years.

A need for quick analysis

“Technology has for many years been a cornerstone of investment banking and trading and its importance is rapidly growing. We generally integrate research knowledge into our



customer services. Nordea's own banking needs, and our customer driven business needs, demand best solutions. It is important to enable faster and more precise calculations for financial product pricing and risk management purposes. I am convinced that the new research centre will contribute to these ambitions," Executive Director at Nordea Markets and member of steering committee of the project, Gorm Praefke, says.

The centre will develop a completely new programming language for computers – faster and better at validating financial calculations than current programmes. I.e. the researchers are to invent new software able to co-operate with more processing units than those inside a processor today. In this way it will be possible to manage a lot of data in a fast and reliable manner.

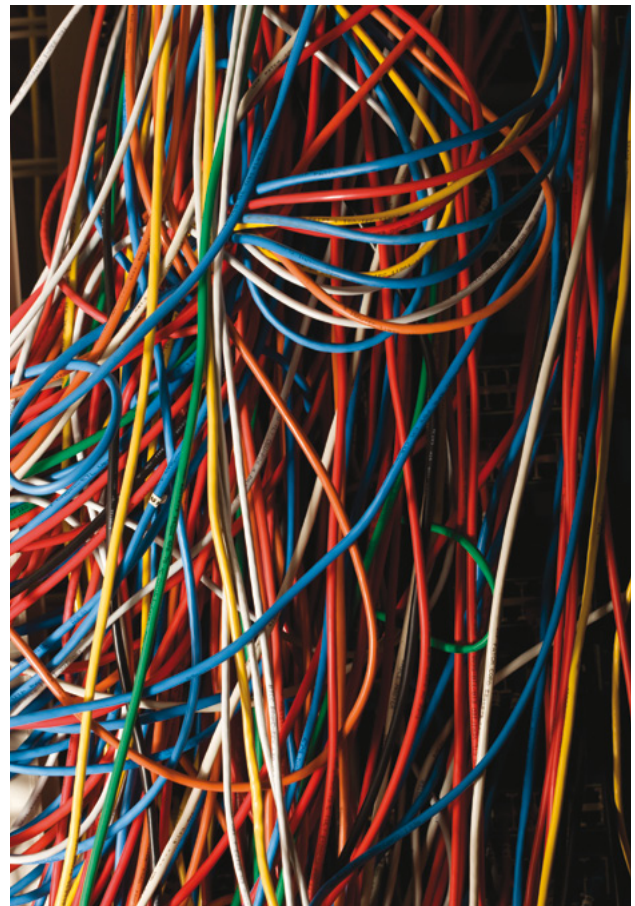
"The HIPERFIT Research Centre will strengthen Copenhagen and Denmark as a specialised finance region within finance IT. The Centre can contribute to the development of unique expertise in investment software, high-performance computing and programming language. This will help develop and attract high-value jobs," says Anette Broløs, director of Copenhagen Finance IT Region.

* HIPERFIT is short for 'Functional High Performance Computing for Financial Information Technology'

Follow the research at www.hiperfit.dk

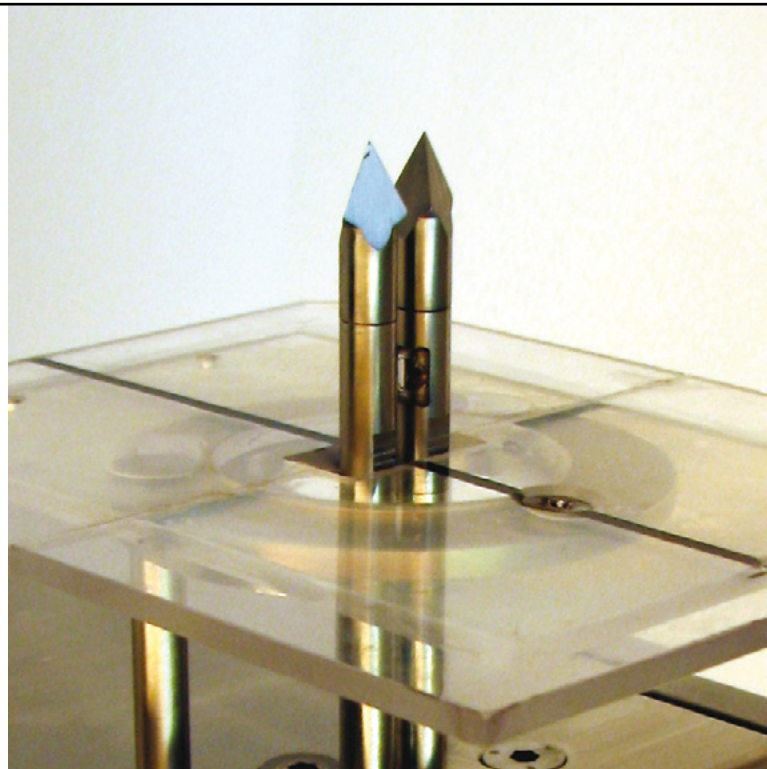


The HIPERFIT Research Centre will strengthen Copenhagen and Denmark as a specialised finance region within finance IT.





Professor Søren Balling Engelsen, head of the Quality and Technology Research group at the Department of Food Science.



The harsh environment in the slaughterhouse required for mechanical tough solutions. The shown nitfom probe was designed with these specifications in mind.

Public Private Partnership enhances meat quality with fat detective

BY SIDSEL HANSEN

CAROMETEC A/S, A LEADER IN ITS FIELD with more than 20 years of experience producing measurement equipment for the industry, experienced an increase in demand for quick measurements of meat and fat quality in the slaughter process. The ambition was to extend their product line to provide rapid online chemical analysis of primal cuts of pigs.

At the University of Copenhagen the Q&T research group at the Department of Food Science, headed by Professor Søren Balling Engelsen, had been involved in several projects related to Process Analytical Technology (PAT), and their outstanding knowledge within chemometric modelling and spectroscopy could contribute substantial to Carometec's ambitions.

When Carometec and Søren Balling Engelsen met to discuss the possibilities of setting up a collaborative project, it seemed like a perfect match.

Innovation through partnership

"It has been a fantastic experience working with Søren Engelsen's research group," says Klavs Sørensen, R&D Manager of Carometec. "Early on in the project, the participants of the two groups mixed – it was not uncommon to see people from the University working at the company or vice versa."

In partnership they developed an instrument using spatially resolved near infrared spectroscopy to analyse the fat quality of pigs online in the slaughter process. This new fat detective makes it possible to identify the composition of fat and thereby give a quick indication on the potential of ending up with the most delicate roast pork for Christmas. The



It was not uncommon to see people from the University working at the company or vice versa.



New fat detective makes it possible to identify the composition of fat and thereby give a quick indication on the potential of ending up with the most delicate roast pork for Christmas.

High tech equipment for online measurement of fat in pigs is a result of close collaboration between the company Carometec A/S and the Quality and Technology Research group at the University of Copenhagen. Slaughterhouses worldwide are expected to invest in the new equipment to secure high quality in production.

technology can thereby improve food quality and security to the benefit of consumers.

“The flow of knowledge between the parties was very industrious. The University provided a steady stream of solutions to the technological problems we faced, and the people from the company worked with these in terms of implementation and durability. At the same time, the University provided an essential platform for conducting laboratory investigations and tests,” Klavs Sørensen explains.

Both parties considered the project to be such a success that it seemed natural to continue the good partnership. They started identifying the potential of continuing the development of the technology. The outcome was yet another Danish National Advanced Technology Foundation funded project, which started 1 March 2011.

The research project NitFom has been carried out with support from the Danish National Advanced Technology Foundation and it has been the outset of a valuable public private partnership.



Scan this code to download more information on the NitFom project.

Green Duckling in a pond of innovative students

Anne Sophie Vinther Hansen is both a biotech student, innovation ambassador and entrepreneur. The drive and the courage to start up a business have always been deeply embedded in Anne Sophie, but engaging in activities within Katapult – a student business incubator at the University of Copenhagen – kick-started her entrepreneurial career.



Anne Sophie is one of our many entrepreneurs at the University of Copenhagen.

BY JULIE DUE AND SIDSEL HANSEN

ANNE SOPHIE HAS A BACHELOR'S DEGREE in Natural Resources focusing on plant science. During her studies she has worked for companies within the field, and through this she learned how to use her professionalism to provide consultancy services about chemical substances within plant science. Anne Sophie quickly saw the prospects of becoming an entrepreneur while studying, and launched her own consultancy – Green Duckling.

She noticed Katapult's posters offering workshops, lectures and counselling within the area of entrepreneurship. At this point of time Anne Sophie was in need of guidance and advice in order to develop her consultancy, and thus she decided to participate in one of the events. The meeting with Katapult became a crucial point for her. Anne Sophie was given the chance to talk to other students who were all in the same situation, and she was encouraged to participate in Katapult's Innovation Camp in the following autumn.

Copenhagen Innovation and Entrepreneurship Lab (CIEL)

The University of Copenhagen has joined forces with Technical University of Denmark and Copenhagen Business School in order to establish a centre for innovation and entrepreneurship. The purpose of the collaboration is to create a new framework for creativity and interdisciplinarity as well as new interplay between research, tuition and the business community. In order to achieve this goal, CIEL focuses on students' education through research-based knowledge about – and new approaches to – innovation and entrepreneurship.



Green Lighthouse is home of entrepreneurship and student services.

“

It was extremely exciting to work on a real-life case study, which actually was perceived as a challenge for a company.

Innovation camp with interdisciplinarity

The purpose of the Innovation Camp was to select students from diverse academic disciplines, in order for them to contribute with their perspective and generate ideas, which the students probably would not have been able to come up with individually. The companies Novozymes and Haldor Topsoe provided a number of cases, and within a week the companies were presented with solutions.

"It was extremely exciting to work on a real-life case study, which actually was perceived as a challenge for a company," Anne Sophie says.

At the Innovation Camp, Anne Sophie sat next to Theis Brock-Nanestad, a PhD fellow in chemistry. Anne Sophie and Theis concluded that despite their very different backgrounds and scientific qualifications they were able to work on and discuss the processes surrounding second generation biofuel. In rapid succession, Anne Sophie and Theis continued to work on their idea and participated in workshops on developing a business plan. Together they are now working on the project Tomo Liquid on aviation biofuel.

For Anne Sophie much time is spent on her graduate studies, the consultancy Green Duckling and the Tomo Liquid project, but there is no doubt, that she is doing something great:

"Some people think that playing badminton is fun. I enjoy working with my clients. It has become an interest," she says.

Student business incubators

The student incubators Katapult and Katalyst can help your company get in contact with students in actual co-operative work. This includes solving a case defined by you as a part of the tuition, a thesis co-operation where the student ends up developing a Business Plan for your company as well as a part of Proof of Concept funding.

Project Next Generation – New knowledge entrepreneurs under way

Next Generation aims at equipping students and new graduates for creating growth by establishing a large supply of courses, workshops, entrepreneurship in tuition, teaching programme for professors as well as practical guidance and counselling of young students who wish to start up their own business or create growth in established companies. More than 2000 students from three universities have already been engaged in the many different activities in the project. Read more about Next Generation and the possibilities for co-operation between students, researchers and the business community at nxtgen.dk.



Scientists go Supermodel



watAgame, the company behind goSupermodel, joins forces with researchers from the University of Copenhagen in a cross-disciplinary project combining both computer science and communications theory. The aim is to develop the user interface to ensure proper business development.

BY CECILIE TOUDAL PEDERSEN AND SIDSEL HANSEN

THE CROSS-DISCIPLINARY PROJECT aims at mapping gamers' behaviour and how they interact within the game. The goal for the co-operation is developing goSupermodel to meet the exact expectations of the female gamers.

goSupermodel was launched in 2006 by the Danish game company watAgame. It is the biggest and most successful interactive community for Scandinavian girls aged 9-15 - often with several thousands of players online. In Denmark approximately five million profiles are registered and worldwide the number reaches more than 23 million. Gamers play with a unique look, design their own clothes, get new friends, co-operate to create and publish magazines. The success of goSupermodel is the result of a strong concept and the fact that watAgame was first-mover with a unique product to the so-called tweens.

At a business event scientists from the Department of Media, Cognition and Communication and the Department of Computer Science met with Copenhagen Entertainment, a project working to promote growth and employment within the film, TV and video game industry. They were willing to support a collaborative research project between the scientists and a game company. The scientists contacted watAgame, who seized the opportunity to develop goSupermodel in co-operation with the University.

Advantages from a cross-disciplinary approach

"It is interesting for us to see the scientists' approach and focus. I am convinced that we can derive advantage from the media and computer science and create value from real changes in the design of the game to come even closer to the demand of our users," says Henrik Riis, founder and managing director at watAgame.

The scientists scrutinise around 20,000 gamers' behaviour on the goSupermodel site. They analyse how goSupermodel is played and develop a typology of the players to understand how the game is functioning, and how it appeals to the audience. That enables them to propose design improvements.

"We have a cross-disciplinary approach to the study. Thereby we can uncover a broader field and give a more holistic picture based on typologies," says assistant professor Rasmus Helles, Department of Media, Cognition and Communication.

Particular the different ways the game is played has caught the scientists' interest. The game distinguishes itself by having intensive and low-intensive users. Those playing often find it entertaining to compete with players who are as far in the game as themselves. But showing off to the less active players is also important. In that way there is a close relation between the active and the less active players.

"We are uncovering the character of this relation and it enables us to make design suggestions. The ambition of the project is in the end to create an even more entertaining and popular game," says Rasmus Helles.



We have access to theory and methods of strategic importance.

Industrial PhD

An Industrial PhD project is a three-year industrially focused PhD project where the student is hired by a company and enrolled at a university at the same time.

The company receives a monthly wage subsidy of DKK 14,500 while the university has its expenses for supervising etc. covered. The PhD student works full time on the project and divides his or her time equally between the company and the university.

Industrial PhD

Studying football on the Internet

Football, fans and their virtual behaviour occupies sociologist Casper Radil in his working life. He is Industrial PhD in Interfazes – a consultancy offering services within usability tests and digital communications – and spends time “tracking” football fans’ behaviour on the Internet. The study of football fans’ use of the Internet serves as a means for the development of a new method of web analytics at Interfazes.

BY SIDSEL HANSEN

THE OVERALL PURPOSE of the co-operation between Interfazes and Casper Radil, who is attached to the Department of Media, Cognition and Communication, is development of method and long-term evaluations of Interfazes’ tests.

“The idea is further development of existing tools for analysis to ease the study of media use in a sociological perspective,” says 33-year-old Casper Radil.

In his PhD project Casper Radil examines behavioural data on football fans’ use of different websites and compares them with other types of data drawn from Interfazes’ customer databases and questionnaire surveys. The analysis provides knowledge about the production of cultural products (videos, blogs, news, discussion forums etc.) on the Internet and how they are part of our everyday lives - eg. why, when and how football fans visit various websites.



Analysis of great strategic value

For a consultancy like Interfazes it is essential to keep up with the latest research and add new perspectives to their services. The ambition is to continue raising the level of usability tests and counselling on digital communications. High academic skills serve as means to fulfil this ambition: “Having Casper employed as Industrial PhD means that we have access to theory and methods which we can use strategically to develop our company and services,” says Anja Thrane, CEO at Interfazes.

Hiring an Industrial PhD has also led to contact with students at the University and the appointment of two student assistants who contribute to the development of Interfazes’ projects and solutions. The contact between business and the University also offers new perspectives for the employees:

“The University contact has also brought along that Interfazes’ employees participate in open lectures at the University and contribute with concrete experience from their projects,” says Anja Thrane.

It is already agreed that Casper Radil remains employed at Interfazes after finishing his Industrial PhD.



Spin-out company on anti-fungal drug discovery mission

The ambition for the scientists behind the spin-out Pcovery is to produce an anti-fungal drug molecule that can save lives in the future. The company was founded in 2009 on basis of new technology that can aid the development of such medication, and the researchers got in contact with the investors Novo Seeds and Østjysk Innovation, which identified a great commercial potential.

BY SIDSEL HANSEN

MORE AND MORE PATIENTS with weak immune system are infected with serious fungal infections, which can be life-threatening. Moreover, several of the fungi causing diseases have become resistant to already existing drugs. This makes them even harder to combat. Hence there is a great need for attacking fungal infections in a new and more effective way.

Pcovery's technology platform takes advantage of the three dimensional structure of a specific fungal protein in the drug discovery process. This may have important consequences for the possibility to deliver future drugs as it becomes easier and faster to design the proper chemical scaffolds. Ultimately this may lead to a significant improvement in quality of life for people who suffer from a fungal infection and may eventually save lives.

"The motivation to start our own business came after building up know-how on the three-dimensional structure of membrane protein structures at our basic research centre. We wanted to use this know-how and technology to develop a new drug to treat fungal infections," Pcovery director Morten Buch-Pedersen says.

Research creating value for society

It was a combination of acquired skills and knowledge and the desire to drive it forward that led the researchers to start their own business.

"We were aware of the possibility that we could have something unique to offer the market. To develop the research underlying the patent is an exceptional opportunity to create value for society," says Pcovery director Morten Buch-Pedersen.

At the University's Tech Transfer Office it is of great importance that knowledge can lead to growth and that basic research through technology can be transferred successfully from the university to society.

"Pcovery is an example of knowledge leading to growth. Undoubtedly, it requires a strong entrepreneurial spirit," says head of the Technology Transfer Office, Karen Laigaard, University of Copenhagen.

The basic scientific assumptions originate from the Danish Nobel Prize winner Jens Skou Christian, who demonstrated the existence of ion pumps more than 50 years ago.