

Mercator NovioTech

Science Meets Business Nijmegen



Health Valley Event 2015:

where health leads innovation



Aia thesis awards:

jobs for RU Information Technology
talent



Prof. dr. Stan Gielen:


research as basis for spin-offs



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Meetings and connections

Availability and accessibility of knowledge important requirements for innovative companies and organisations. They go after the information they need themselves. Knowledge institutes work on their 'societal impact' in several ways, both digitally and in the real world. This issue of Mercator NovioTech provides examples of 'Science Meets Business': meetings and connections between knowledge and society. This spring, the Health Valley Event, ICT Network Nijmegen and the Innovation Boot camp 2015 of Gelderland Valoriseert! offered new opportunities to network at special locations in Nijmegen city centre, at the NovioTech Campus and the campus of Radboud University. When arranging any kind of meeting, excellent accessibility helps. An example of this is the new train station Nijmegen Goffert, which is now open for use.

The Nijmegen Business Climate Monitor shows that, next to accessibility, companies value building a network. This is very much the case for high-tech companies, that put the availability of knowledge as their main criterion for choosing a location. Research and the necessary facilities for this are essential. These are available at both campus locations in Nijmegen, with young knowledge workers receiving a thorough education and practical experience. Businesses are always looking for talent for their upcoming innovations. In such case, contacts with young researchers and (current) students are helpful, as could be seen at both the annual Beta Bedrijven Beurs and at the MeetINN of ICTNetwork Nijmegen, an event highlighting career prospects in the ITC sector. Just as the best researchers from Nijmegen do, various university spin-off companies look all over the world for technological-scientific innovations. Examples from the life sciences and chemistry industries are Synthon and Mercachem. In the ICT sector, both GX and Aia Software have growing numbers of international activities, including the American market. To strengthen the start-up ecosystem in the city and region, both connections and connectors are needed. (Inter)national connections are made through StartUp Delta and RockStart, primarily aimed at promising young entrepreneurs in ICT & digital health. The Province of Gelderland and the Municipality of Nijmegen are also committed to realising the potential of young innovative entrepreneurs. This was made clear during the Night of the Gelderland Economy in Nijmegen last spring. Before the summer is upon us, the City of Nijmegen will organise a meeting on Young Entrepreneurship. These are all ways in which connections are made within the dynamic start-up ecosystem of Nijmegen. By making use of the diversity of these innovative young entrepreneurs, further businesses will be able to blossom. As you can see, there are plenty of opportunities for the regional knowledge economy.

ir. drs. Antoine Fraaij,
BV Campus Radboud Universiteit.

drs. Hein van der Pasch,
Mercator Incubator Nijmegen.

dr. John J. Schalken,
SMB Life Sciences.

ir. Rikus Wolbers,
Novio Tech Campus.

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Radboudumc dean Prof. Paul Smits and Annemieke Traag, member of the Executive Council of Gelderland.



Health Valley Event 2015: even more innovations

On March 18 of this year, the seventh edition of the Health Valley Event took place at the Vereeniging in Nijmegen. The topic 'Where health leads innovation' drew over 1000 visitors, and was opened by Mrs. Chris Doormerik, Director of Health Valley. Hubert Bruls, Mayor of Nijmegen, praised the stimulating influence Health Valley has on innovations in health care. Annemieke Traag, member of the Executive Council of Gelderland, raised the bar: "Health Valley already supports 450 innovative companies, with the possibility for more."

EVENT

Innovation is cooperation

"Design is important for innovations in health care," remarked Prof. Caroline Hummels of Eindhoven University of Technology. "Aside from technology, innovations also require social interaction and creativity. Designers make use of their creativity to solve problems that would baffle other professionals. Successful innovation in health care is a creative process and requires changes in behaviour for all concerned." Board member Tiana van Grinsven, of Espria/Woonzorg NL, emphasised that health care looks for innovations with a focus on the well-being of patients, made possible by partners working together, such as city councils, voluntary carers, health care insurance companies, in-home care, GPs and other care providers. For new knowledge and the evaluation of results, universities and other research institutes are essential.

Digital Health

Various speakers took part in discussions, and

there were a range of presentations including examples of innovative ICT tools. Speaker Hajo van Beijma of Text to Change (TTC) spoke about successful 'mobile' example projects from real-life: "For innovations in Africa we first look at what people need and what kind of technology they have available." TTC is active in developing countries and upcoming markets, where people often don't have a computer but do own a mobile phone. By using text messages, TTC gives residents specific information about subjects such as health care or agriculture. Residents can also receive more information in answer to their questions asked by text message. The company started with an information campaign to promote HIV tests in Uganda in 2008. Today in 2015, TTC has 32 employees and is active in 23 countries. Trend-watcher Yuri van Geest showed the impact digitalisation can have on companies and in health care. During the past six years, he has seen a new type of organisation take shape which is ten times faster,

more effective and cheaper than its competitors in the same sector, which are organised in a linear way. These new organisations use innovative organisational concepts and new technologies, which enables them to quickly realise an enormous growth. Van Geest mentions examples like Uber, Airbnb and Tesla. These companies use exponential technologies such as 3D-printing, robotisation, social media, mobile technology, artificial intelligence or big data.

The topic 'Precision Medicine; effective health care tailored to the individual' was discussed in an interactive setting led by Mirjam Mol-Arts, Director of Pivot Park. She was joined by Prof. Alain van Gool, professor of Personalised Healthcare at Radboudumc; Prof. Albert van den Bergh, Scientific Director of MIRA, University of Twente; Hans Schikan, CEO of Prosensa, as well as others. In precision medicine, molecular or cellular patient data is combined with biomedical research to achieve



Introductory speaker Prof. Marcel Olde Rikkert, professor of Geriatrics at Radboudumc.

a fast and targeted treatment of individual patients.

Healthy Brain: vital society & smart business

This special session was introduced by Prof. Marcel Olde Rikkert, professor of Geriatrics at Radboudumc, and addressed the innovations that aim to stop decreasing brain function in old age. Teun Aalbers of the Radboudumc Alzheimer Centre showed how app-projects such as 'The Brain Aging Monitor' and 'Rating your Lifestyle' can support participants in choosing a healthy lifestyle. Clever use is made of game-technology to promote a change of behaviour. In 2010, Aalbers began his PhD trajectory at the Radboudumc with 'A Healthy brain with the Brain Aging Monitor'. For this project, he developed the website www.brainagingmonitor.nl to motivate participants to live healthier lifestyles, and in doing so, to stay physically and cognitively fit for longer. This project was followed by 'Rating your Lifestyle', in cooperation with paid football organisations to promote a healthier lifestyle amongst the sport's supporters. Aalbers remarks: "With innovative e-Health interventions and online/mobile applications there are many more possibilities for the improvement of health care".

Prof. Guillén Fernández, Director of the Donders Institute for Brain, Cognition & Behaviour

Prof. Guillén Fernández, Director of the Donders Institute for Brain, Cognition & Behaviour of Radboud University, conducts interdisciplinary research into the interaction between fear, memory, and genetics. In his lecture, he discussed the functioning of the brain in relation

to fear. Evolution taught us the most effective reaction in threatening situations in order to survive. Memories of emotional events help us to anticipate future dangers in similar situations. Neuroscience shows us how the brain reacts to certain threats. With vulnerable individuals this response could lead to problems such as depression or anxiety. With an understanding of the workings of the brain's mechanism, neuroscience can develop targeted interventions to protect the brain under stress. Through detailed research of stress reactions in the brain, Prof. Guillén Fernández hopes to contribute to a better treatment of stress-related problems. Fernández applies fMRI, a technique using magnetic resonance to visualise fluctuations in brain activity. Based on these results, it is possible to determine which areas of the brain respond to certain stimuli or which may be linked. Two hormones, cortisol and noradrenaline, play an important role in stress reactions. Medication can influence their functioning.

Dr. Ric van Tol, Director of Global R&D of Mead Johnson Nutrition, used research results to show that from a prenatal stage, the composition of our diet has important effects on our long-term health. Specific shortcomings of nutrients in early life have negative effects on cellular functions and connections in the brain. Research is therefore increasingly aimed at the so-called 'programming' effect of food on the development of the brain.





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Merijn Klarenbeek, CEO of MindAffect

Dialogue software enriches communication

Digital technology can help people with a disability to communicate. Those who have trouble speaking can use it to enable conversation. As a spinoff of Radboud University, MindAffect has developed dialogue software for different target groups. With this software, the company aims to blur the boundaries between digital, automatic, and regular voice communication. We discussed this in interview with CEO Merijn Klarenbeek.

By: Tefke van Dijk

MindAffect was formally founded in 2012, after existing for quite some time as a spinoff of Radboud University. Research conducted by Prof. Peter Desain resulted in technology for a new form of digital communication: the Chat-by-Click. He received the Healthcare Innovation Award (Nationale Zorgvernieuingsprijs) for this in 2012. This technology enables users to have a conversation by clicking on a screen. This allows for an entirely verbal conversation, with just a few clicks.

Merijn Klarenbeek researched the options for practical application as part of his Industrial Engineering and Management studies at the University of Twente. MindAffect and its researchers were granted a valorisation subsidy and used this for further research, development and business planning. Klarenbeek: "There are now five of us at MindAffect: myself as the General Director, a Technical Director, a Content Specialist, and two programmers. We still cooperate with the university."

Tree structure with predefined sentences

At the end of 2013, the subsidy period was at an end and the company had to move forward using its own resources. "We develop dialogue software that enriches communication," says Klarenbeek. "Our software can be applied to various target groups. ALS patients, for instance, can communicate by using our app cChats." He picks up his tablet and shows how it works. After choosing a category, we have a conversation with predefined structured answers. A friendly female voice pronounces the selected sentences. Six sentences later we conclude that we are going for a walk outside. Klarenbeek: "The programme works with a tree structure of available sentences. This may seem limited, but behind each dialogue lie thousands of predefined phrases. The advantage is that you can communicate at a fast pace, and the system is error-free."

Besides cChats there is also cPlays, to encourage contact between children with multiple disabilities. This app was developed in cooperation with the Sint Maartenskliniek, and enables children to have group conversations with it. Research shows that their communication increases. "First, a boy only responded to questions," says Klarenbeek. "After a while he started asking questions himself, even without the app."

Digital buddy for ill children

MindAffect is currently working on the app Ask Alfred, together with the German group A.J. Kwak Stiftung in Goch, the Donders Centre for Cognition, and Radboudumc. The avatar of Alfred Jodokus Kwak makes this app a buddy for ill children, telling them what is happening and providing a welcome distraction. Klarenbeek: "The technological possibilities are endless, both within healthcare and beyond. We are thinking about moving to e-coaching aimed at job application training for older children following special-needs education."

They have plenty of ambition for the future. Klarenbeek: "Our dialogue software is also very well suited for e-coaching and e-consultancy. We can translate cChats into English, German and Spanish. Organisations can buy separate dialogues, enter their own phrases using an online editor, and put everything in a customised environment with their own avatar. Or what about a Brain Computer Interface, where you don't need to use your hands or eyes to control the app, but do so directly with your brain. It can all be done! We have the technology and knowledge to make it possible."

www.mindaffect.nl

Presentation of the Aia Thesis Awards at ICT Network Nijmegen - MeetINN 11

Career prospects for Radboud Computer Science students

In the ICT sector, technological innovations happen fast and arising problems are complex. This increasingly requires a flexible employment of highly skilled ICT professionals. Developers, programmers and account managers with an education in computer sciences and commercial skills are much sought after. Students who have followed a specialised ICT education and have business skills and experience can look forward to a bright future. Businesses are always looking for the best people to realise their most powerful innovations.

There is a lot already happening, but schools and companies must be able to find each other, in order to make a better match between the demand and supply of ICT experts. This was the recommendation made at MeetINN 11, the meeting organised by ICT Network Nijmegen on April 29 at the Radboud University Gymnasium. It also became clear that companies who are leading in innovation have close contact with teachers and students from well before they graduate. The Aia Thesis Awards for ICT students at Radboud University are an interesting demonstration of this fact. At the end of the meeting on April 29, two young talents from Nijmegen were presented with the award.

Lotte de Bruijn,
*Director of
Nederland
ICT*



Ambition: the Netherlands as digital delta of Europe

This MeetINN kicked off with an outline of the current situation in the ICT sector. This was led by Director Lotte de Bruijn of branch organisation Nederland ICT, representing 550 companies, 60 of which are located in the Nijmegen

area. She expects that "Dutch ICT companies have a lot of growth potential and will be able to expand their international interests in the future. Our competitive advantages result from digital infrastructure, superior knowledge infrastructure and education, as well as the quick adaptation of new technologies by the Dutch population." De Bruijn expresses

her doubt about cuts in ICT, causing the Netherlands to lose ground in digital progress. She illustrates this with the Digital Evolution Index, which measures at which point the digital economies of the most important countries are currently situated. "The Netherlands were always at the forefront, and although we are still in the top ten, our digital achievements are dropping sharply compared to other countries. Yet it is our ambition for the Netherlands to be the first digital economy of Europe in 2020. We aim to be leading in the development and application of digital technologies, which will attract start-ups and international businesses. The arrival of Google and Netflix bases here prove our appealing business climate."

The perfect ICT employee does not exist!

**Researcher
ir. Robbin te Velde
of bureau
Dialogic in
Utrecht.**

Researcher ir. Robbin te Velde of Dialogic in Utrecht presented the conclusions of his research on ICT professionals in the labour market. His research shows the differences be-



tween specific job functions, education levels and regions in the Netherlands. In comparison to the number of graduates, there is a strong demand for higher professional graduates, while there is a lower demand for those who have followed a vocational education. Those with a university qualification have only a small share. Technological developments such as Cloud Computing, Big Data, Cyber Security, and of course developments in the market will influence the demand for new ICT professionals in the next five years. This demand is expected to grow by 18%. At present, many ICT professionals are working without an education in ICT, but in the future employers will demand proper training. Currently the largest demand is for developers, 90% of those at higher professional and scientific level. The need for developers is strongest with ICT suppliers. ICT users need people who have business knowledge such as business analysts and enterprise architects. There is also a growing demand for account managers. The skills taught in ICT courses do not sufficiently meet the requirements of these professions. Concerning the regional differences: regional demand for ICT professionals is in line with the acknowledged separation between industry and services. The need for services is dominant in the north-west and central Netherlands, where there is a large shortage of ICT workers.

'Excellent' RU computer science studies

Dr. Elena Marchiori, Director of Computer Science and Information Technology at Radboud University, presented information on the qualifications Computer Science, Cybersecurity and Artificial Intelligence. The Computer Science studies were labelled 'excellent' in the Guide for Higher Education 2014. Radboud University as a whole was named the best general university of the Netherlands. Computer Science performs well on such points as small-scale activities, infor-

mal contact between students and teachers, the quality of the research institute, social impact, and university facilities. This has resulted in a large influx of first-year students. To improve the connections between students and their future employers, students organise the yearly Beta Business Fair. Computer Science student organisation Thalia is very active. As an example of a company-oriented element of the studies, Elena Marchiori mentions the practical assignment GiPHouse, a virtual software company run by students, carrying out projects with teachers as supervisors and companies as clients. In 2015-2016 the general topic is 'Velo-city 2017'. This is run in connection with the international conference on ICT and cycling mobility in Nijmegen, in cooperation with other bike-friendly cities and regions all over the world.

Aia Thesis Awards

The presentation of the Aia Thesis Awards was a festive ending of MeetINN 11. ICT company Aia Software, a part of the American company Kofax since March 2015, awards prizes every year to a bachelor and master student in Nijmegen. Aia, founded 27 years ago by former students of Radboud University, is now a global player in the field of software for customer communication. Over a year ago, Aia received a good ranking in the Magic Quadrant of the American research agency Gartner. In his introduction, Leon Phillich of VP Product Development recalled an ICT Network convention in the Nijmegen city hall in February 2014. In the presence of Gartner representatives and alderman Bert Jeene the ranking of three leading ICT companies in Nijmegen was highlighted: Aia, GX and Planon. This boosted their exposure in the US. During the awards ceremony, Leon Phillich referred to the numerous connections with Radboud University. The bachelor prize was awarded to Ben Brücker for his thesis 'Government intervention on consumer crypto hardware'. After comparing complex encryption algorithms, Ben Brücker



From left to right: Computer Science student Ben Brücker and supervising professor Prof. Dr. Bart Jacobs as the thesis award and flowers were presented by Leon Phillich, VP Product Development at Aia Software.



Right: Laurens van de Wiel received the award for his master thesis. On the left: Prof. Dr. Tom Heskes as supervising professor.



Dr. Elena Marchiori, Director of the studies Computer Science and Information Technology at Radboud University

concluded that for years the NSA has been attempting to influence software security, in order to make it 'government friendly', or accessible to the NSA. According to the jury, the thesis was of special social relevance, and executed with a great deal of perseverance, according to supervisor Prof. Bart Jacobs. Laurens van de Wiel received the award for his master thesis 'Differentiating Shigella from E. coli using hierarchic feature selection on MALDI-ToF MS data'. This research has made it possible to distinguish between the dangerous Shigella bacteria (which among other things causes dysentery) and the E. coli bacteria. In developing countries the Shigella bacteria costs 2 million lives each year, and therefore needs to be identified quickly, cheaply and accurately. This method allows a mass-spectrogram to be made from a sample. The jury lauded the social impact of the subject choice, just as the care with which van de Wiel executed the research, with Prof. Dr. Tom Heskes as supervising professor.



InnovationBootcamp 2015

The kick-off of IJSLab at Novio Tech Campus, during InnovationBootcamp 2015. From left to right: John Schalken (SMB Life Sciences), Pedro Hermkens (HAN), Jan-Willem Dijk (Radboud University), Karin Visser (ROC de Leijgraaf), Jan van Boekel (ROC Rijk IJssel), Eveline van Hoppe (IJSLab), Chiel van Dijen (Kadans Science Partner), Janneke Hoekstra (HAN) and Rikus Wolbers (Novio Tech Campus).

On April 2, InnovationBootcamp 2015 took place at the Novio Tech Campus in Nijmegen, as part of Gelderland Valoriseert! Rikus Wolbers (Director of Novio Tech Campus) and Prof. Stan Gielen (dean of Radboud University Faculty of Science) welcomed the visitors.

EVENT



Prof. Dr. Stan Gielen

Economic importance spinoffs

Prof. Stan Gielen described the development of spinoff companies of the Faculty of Science at Radboud University. At the moment, there are 66 active beta spinoffs, 22 of which in the field of the Life Sciences & Chemistry, 17 in ICT, eight in Materials Science, six in the environmental sciences, and 13 in other sectors. From initial estimates on their economic impact, it can be concluded that these spinoffs currently employ 1,780 people and have a joint annual revenue of €187 million. Most of these companies were founded over 10 years ago and the majority contribute directly to the local economy. Stan Gielen: "Science is a necessary base for the start of new economic activities that are unique to our region and cannot be copied easily. Another important factor is that we give our students a thorough educational grounding in entrepreneurship."

Next, he introduced three young speakers; students who have all taken the first steps towards founding their own company. Robert van de Ven followed a course at Radboud University with the practical module 'Student Company', which introduces students to entrepreneurship and teaches them how to set up their own business. He pitched his company Silvertones and an invention of his: a splitter for electrical guitar effects. Karel Raets followed the course 'Panorama Science' at RU, which introduces students to the social aspects and applicability of science. He presented his company AeroChem, which is developing a detector for ultra-fine dust particulates. The third speaker to 'pitch' was HAN Civil Engineering student Bob Boonzaaijer. He introduced his company AutoTight, which develops alternative seals for motor cooling. All three pitches received a subsidy cheque from Gelderland Valoriseert!

iLabs, COCs and SME support centre Top Sectors Energy/Chemistry

Prof. Floris Rutjes of Radboud University gave an update on iLabs (Innovation Labs) and COCs (Centre for Open Chemical Innovation) within the chemistry top sector. iLabs are incubators with facilities for life sciences and chemistry start-ups, situated close to universities and business R&D locations. COCs offer companies an opportunity to expand their production capacity whilst in the growth stage, thus allowing them to strengthen their market position. Currently there are ten iLabs in the Netherlands, six of which are operational and four are being built. iLab Nijmegen has two locations, the first in Mercator III at the Radboud Campus and since last year, a second at the Novio



Prof. Dr. Floris Rutjes

Tech Campus. In the Netherlands, five COCIs are operational, plus two other prospect locations. (see map)

Floris Rutjes outlined the close collaboration between the iLABs and COCI locations. iLABs and COCIs are regionally connected to locations for chemistry & life sciences, but Rutjes also highlighted a trend of crossovers to other top sectors. Links are being created to institutes of higher professional education (HBO). The ambition for 2015 is to connect innovation and education more and more by linking iLAB/COCIs to CoEs (Centers of Expertise at HBO level) and CiVs (Centers for Innovative Workmanship at MBO level). According to Rutjes, value can be increased by connecting these local centres. He mentions IJ5Lab as a successful example: a public and private cooperation between ROC RijnIJssel and ROC de Leijgraaf plus the HAN, Radboud University and a number of other businesses. Another new aspect is the introduction of a national coordinator and an SME support centre Top Sector Energy/Chemistry, which is to contribute to interaction with SMEs, connected to the iLABs and COCIs.

LOCATIONS

iLABs

1. Nijmegen (Mercator III en NTC)
2. Eindhoven
3. Amsterdam
4. Delft (part of Biotech Campus)
5. Zwolle (part of Green PAC)
6. Wageningen
7. Utrecht (i.o.)
8. Groningen (i.o.)
9. Enschede (i.o.)
10. Leiden (i.o.)

COCI-locations

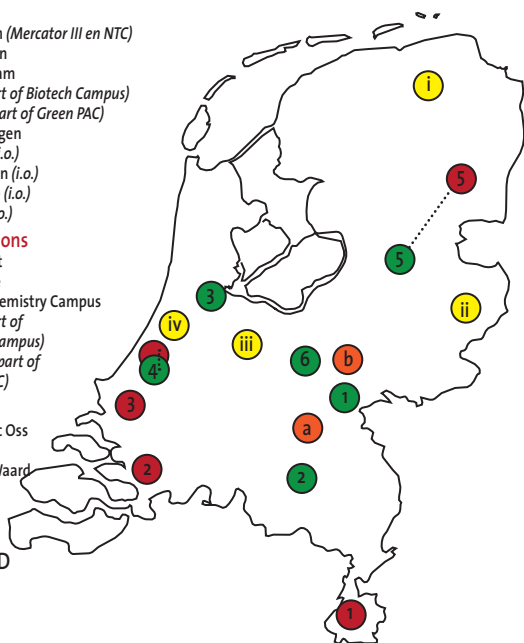
1. Chemelot
2. Plant one
3. Green Chemistry Campus
4. Delft (part of Biotech Campus)
5. Emmen (part of Green PAC)

Prospects

- a. Pivot Parc Oss (COCI)
- b. Kleefse Waard Arnhem (COCI)

LEGEND

- iLAB
- COCI
- iLABs i.o.
- COCI prospects
- tandem



Radboud Nanomedicine Alliance

Prof. Wilhelm Huck gave a presentation on the Radboud Nanomedicine Alliance, a cooperation between Radboud University, Radboudumc and businesses. The first research topics will be the observation of the extracellular matrix (ECM) of the cell in its environment at a nanometric scale, and the targeting



Prof. Dr. Wilhelm Huck

of mitochondrial diseases. Radboud Nanomedicine Alliance aims to expand over the coming years, and they are in contact with potential industrial partners and other parties. ChemConnection is now an industrial partner; nanomedicine drug delivery will be developed for mitochondrial diseases through collaborative work.

During the Innovation Bootcamp 2015, pitches were also given by Khondrion, EmulTech and GATT Technologies, overseen by the SMB Life Sciences. Besides the plenary programme there were workshops and an exhibition floor with companies such as Radboud Research Facilities, Rijksdienst voor Ondernemend Nederland (RVO), Health Valley, RedMed Tech Ventures and INTERREG. Visitors could then listen to an inspiring lecture held by Jan van der Greef, professor of Analytical BioSciences at Leiden University, principal scientist at TNO, and an acclaimed wildlife photographer involved with many research institutes as an innovative entrepreneur.

Kick-off IJ5Lab

The kick-off of IJ5Lab was introduced by its director Eveline Hoppe, at its location at the Novio Tech Campus. The goal of IJ5Lab is to improve the sharing of knowledge between educational facilities and the professional field, and to increase the innovative strength of the region. After all, the top sectors advocate that companies not only cooperate with universities but also with higher professional and vocational schools. Students can use IJ5Lab to do practice-orientated research in a corporate environment, and subsequently prepare themselves for a corporate career. Entrepreneurs can bring their investigations into knowledge and skills in the fields of chemistry, biotechnology and the life sciences. IJ5Lab also offers training for those working there, as well as support for sourcing trainees, graduates and employees. Eveline van Hoppe emphasises that the development and delivery of courses, projects and research commissioned by entrepreneurs contributes to the improvement of education as a whole. A fruitful exchange all round.



Eveline van Hoppe

Rockstart launches new accelerator for Digital Health startups at Novio Tech Campus

Rockstart launched its first accelerator programme for Digital Health startups on May 20 of this year, a programme organised at the Novio Tech Campus in Nijmegen. From day one, startups will collaborate directly with patients, health care professionals and other parties from the Netherlands and abroad. These startups focus on the improvement of health and health care, and are assisted by a broad international network of mentors, investors and health care institutes.



Maarten den Braber, Program Director of Digital Health at Rockstart

Since its launch in 2012, Rockstart has helped 58 startups to quickly grow through six successful accelerator programmes, four of which were in the field of Web & Mobile, and two concerning Smart Energy. The basis for the new programme is the successful method for guiding startups that Rockstart is famous for, and is further tailored to the specific needs of startups in the area of digital health.

Gateway to Europe

The Digital Health programme is aimed at supporting international startups with the development, testing and implementation of new digital services and products, thus furthering the development of innovative hardware and software for health care. Rockstart Accelerator Digital Health is located at the Novio Tech Campus and works together with several partners within Health Valley for the support of startups, for example SMB Life Sciences. For these startups, the Netherlands acts as a gateway to prominent research centres and health care institutes in Europe.

Prevention, connection & communication

This 6-month program, kicking off in September 2015, is primarily geared towards startups working in the areas of prevention, connecting patients, and supplying tools and platforms for communication. The programme's integration with the existing healthcare system and its focus on validation are unique in

Europe. To make sure that startups are developing relevant products, from day one the programme will directly engage startups with patients, professionals and other parties concerned for whom they are developing their product or service. In this way, they will be better able to predict how patients and professionals would interact with their technology and how they can add the most value.

Support and investment

Rockstart Accelerator Digital Health has been developed in collaboration with partners in health care, investors and an international group of mentors consisting of more than fifty professionals, specialists and successful entrepreneurs. The programme is led by Maarten den Braber, digital health strategist and co-founder of Quantified Self Europe, supported by colleagues such as Rune Thiehl and Don Ritzen, co-founders of Rockstart. These startups, selected from all over the world, are offered an investment of €20,000 as well as office space, workshops from experts and a stage at (inter)national events combined with intensive mentor support. All of this, in exchange for an 8% equity interest in their startup. This investment will allow them to focus entirely on the building and developing of their product or service until Demo Day. On Demo Day, the startups will present themselves at a public event, attended by investors in health care and technology, partners and the media.

Ecosystem for Digital Health

Rockstart Accelerator Digital Health has a strong international focus. This means that startups are assisted in identifying their international opportunities, after which access to these markets is also facilitated. Rockstart Accelerator Digital Health is located at the Novio Tech Campus in Nijmegen, situated in the heart of Health Valley. This region is known as one of the most abundant ecosystems for innovation and health care with direct access to over 700 companies and health care institutes. Rockstart Accelerator Digital Health cooperates with partners such as Radboudumc, SMB Life Sciences, Kadans Science Partner, the Province of Gelderland, Noaber Ventures, Arbo Unie, PPM Oost, Health Valley, the Municipality of Nijmegen and Rabobank. Hekkelman Advocaten & Notarissen is the programme's legal partner.

Apply now!

Applications for Rockstart Accelerator Digital Health are now open. More information about the application procedure and programme can be found at:

www.rockstart.com/accelerator/digitalhealth

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Mobile operating room is a quality alternative

Over the past few years, Modderkolk has built mobile operating rooms at ten different locations. (photo Rob van Liefeland)

The mobile operating room is on the up. And rightly so, says Oscar Arenz, the Account Manager of Industry & Healthcare Solutions based at Installation company Modderkolk. This company has already been executing project validation and maintenance of these ORs for years.

PRESENTATION



Arenz finds that more and more organisations are discovering the mobile operating room as a qualitatively better alternative to the 'logistic antics' that hospitals previously underwent when converting an operating room or department. "No hassle with dust screens and other high-risk inconvenience measures in the operating department, but doing re-building as if you're not even building at all. This is possible thanks to the use of a mobile, plug-and-play OR unit on location, where you have the luxury of space. This guarantees the continuity of care, without having to run unnecessary risks."

'No hassle with dust screens and other high-risk inconvenience measures, but a plug-and-play unit at a location where you have the luxury of space.'



Modderkolk specialises in the testing and inspection of operating rooms, medical spaces and cleanrooms.

Close cooperation

The mobile operating rooms discussed by Arenz are supplied by Vanguard Healthcare Solutions, a company working in close cooperation with Modderkolk. They have taken care of the complete logistics and installation, all according to Dutch law and regulations. This requires a collaborative partnership with Modderkolk, who are responsible for setting the air treatment, the validation of the operating rooms and maintenance of the units. Arenz sees a clear reason why Modderkolk was chosen: "Many parties can either do settings or validation: we can do both. We are able to fully validate ORs as well as solve the complex technical issues."

'Temporary ORs are an increasingly popular choice during renovations.'

RELIABLE MULTIDISCIPLINARY PARTNER FOR HOSPITALS

Over the past few years, hospitals have become far more efficient. Considering the growing demand for healthcare, this trend will continue. Health institutions are required to do more and more with the same budget, providing higher quality for lower costs. This has vastly increased need for a multidisciplinary approach to maintenance. It makes quite a difference if an operating room is out of order due to maintenance or inspection for just one day, instead of five.

All inspections in one go

Modderkolk can completely inspect or validate an operating room in just a day. They not only take care of the inspection and testing of the electrical system and power supply, but also do an air treatment performance validation and inspection, the mechanical engineering inspection, the microbiological inspection and the inspection for

gasses. All in one go. They work with one contact person to ensure complete coordination.

Maintenance and building

Modderkolk mainly does maintenance, validation and inspection work for hospitals, but can also build installations. The business could be contracted to do an electrical inspection or to test fire doors.

Advantages of Modderkolk:

- Greater availability of treatment rooms and operating rooms
- Multidisciplinary approach to maintenance activities, including stock management
- The best standards in quality and security, guaranteed by certificates.

www.modderkolk.nl

Even in the tropics

Over the past few years, Modderkolk has built around ten mobile operating rooms at different locations in cooperation with Vanguard. These are not only in the Netherlands, but also in Belgium and even on Bonaire. The Bonaire project was especially unique because of the tropical climate: "A standard climate control system does not suffice in such a situation. We solved this by expanding the existing air treatment system with a preparatory installation, and carefully calibrated the settings of the two systems."

Advice and information

Modderkolk advises hospitals and clinics about the possibilities for mobile operating rooms. Is this relevant to your organisation? Please contact Oscar Arenz at **+31 (0)24 - 648 64 00** or oarenz@modderkolk.nl.

Business Climate Monitor 2014: entrepreneurs enthusiastic about campus locations in Nijmegen

Conclusions at the two-yearly municipal Business Climate Monitor were positive: things are looking good with the accessibility of the Nijmegen campus locations at Radboud University, Radboudumc, Hogeschool Arnhem Nijmegen, and Novio Tech Campus at NXP. All locations can be easily reached by car, bus, bike, or train. Nijmegen and its surrounding area in particular have become far more accessible by car. With the introduction of the new city bridge the Oversteek and the connecting S100 route, delays for cars in and around Nijmegen have been reduced, as well as the traffic volume on the Waalbrug and the city streets.

At walking distance from the research and business complexes are Nijmegen Heyendaal Station and the new Nijmegen Goffert Station, opened by Mayor Bruls on December 15 2014. This is the fifth train station in Nijmegen, and it has made the Novio Tech Campus as well as businesses on the adjoining Winkelsteeg business park much more accessible. During rush hour, there are now four Sprinter trains between Wijchen and Nijmegen. The volume is set to increase: by the end of 2016 there will also be four Sprinters per hour between Wijchen and Arnhem on weekdays. Nijmegen Goffert station is at the heart of the new Public Transport Hub with transfers to buses and (OV) bike. It is expected that the total numbers of commuters will increase to 3,000 or 4,000 per day.

From campus to campus

In and around Nijmegen, cycling highways are rapidly expanding. There are continuous, well-maintained bike routes running right through the city, connecting residential and regional areas to important urban destinations. Cycle highways are car-free and

RIKUS WOLBERS, DIRECTOR OF NOVIO TECH CAMPUS:

"Novio Tech Campus, adjoining NXP and the FiftyTwoDegree building, is being developed into a quality location for entrepreneurs in the field of the Life Sciences, Health & High Tech. It is our ambition to create 1,200 new jobs in the next few years. An important source of business are the Nijmegen research institutes Radboud University, Radboudumc and the Hogeschool Arnhem Nijmegen (HAN). Exchanges between the Heyendaal and Novio Tech campuses have increased, and will continue to do so in the future. More and more people will commute between the two locations, for meetings, work, or the use of facilities. The new Nijmegen Goffert Station is a true asset for our location and we are delighted with the plans for a cycle highway that will connect both campuses."

The new Nijmegen Goffert Station





Heyendaal Station

as direct as possible; they offer the cyclist extra quality thanks to good traffic flow (right of way, fewer delays, green traffic lights), flat paving, and other appealing characteristics such as clean air and a safe environment. The municipalities in the Arnhem-Nijmegen region hope to promote (electric) cycling amongst commuters. More than 40km have already been put down, and a route past the Goffert and Neerbosh intersection is now being built. Another path, past the Muntmeesterlaan and De Goffert, will soon be extended from campus to campus. Thanks to the presence of prominent knowledge and healthcare institutes and the excellent accessibility, Nijmegen is now an attractive business location for innovative companies.

HEIN VAN DER PASCH, DIRECTOR OF MERCATOR INCUBATOR NIJMEGEN:

"The Business Climate Monitor has brought back positive feedback from the entrepreneurs at Heyendaal/Mercator Science Park. Next to accessibility and the buildings themselves, it mainly addresses the availability of KNOWLEDGE. Many businesses are attracted to that. In our leading research, excellent clinical healthcare and the related research facilities of knowledge institutes, we have found the basis for numerous inventions and innovations. What's more, we are producing top talent; students and young researchers are given a thorough background for positions in companies and elsewhere in society. Businesses founded by (ex) students and researchers are a special aspect of the growing 'societal impact' of university research. These spin-off companies create innovative products and services, as well as new jobs."

Entrepreneurs enthusiastic about business climate

Every two years, the municipality uses the Business Climate Monitor to gauge the opinion of entrepreneurs on a range of different factors: the entrepreneurial climate, the business environment, accommodation, and the municipal services and licensing procedures. In 2014, an extensive census was carried out amongst 13,000 businesses and institutions. One of the things the research focussed on was the geographical advantage of knowledge clusters Heyendaal/Mercator Science Park and the Novio Tech Campus. In 2014, entrepreneurs gave Heyendaal a score of 7.6 for its business environment, and a 7.8 for accommodation. Business park De Winkelsteeg adjoins the Novio Tech Campus and was awarded an environment score of 6.6, though the introduction of the new Nijmegen Goffert Station has greatly improved the accessibility of the business park. Accommodation at Winkelsteeg scored a 7.6. Both knowledge hot-spots gave the business climate in Nijmegen a score of 6.8. The average score that entrepreneurs gave to the Nijmegen business climate was 6.5. The business environment achieved a good score of 6.9; entrepreneurs gave their own accommodation a 7.4. Positive developments are to be found in the assessment of accessibility of the city (from 6.3 in 2012 to 6.9 in 2014). Entrepreneurs believe that the stimulation of innovation and knowledge exchange between companies and institutions should have top priority for the municipal economic policy. Excellent mobility and infrastructure are its basis. For the development of the economy in Gelderland, the council has given high policy priority to the accessibility of urban areas, business parks and top sectors. According to the province, this requires combined measures when it comes to roads, cycling and public transport. The mobility policy of the Municipality of Nijmegen meets these requirements, with an eye being kept open for improvements.

Photography: Radboud University /
Marjolien van Diejen a.o.

Radboud University on its way to Velo-city 2017:

Involve knowledge workers in sustainable mobility

Arnhem-Nijmegen will be hosting the prestigious event Velo-city 2017. This international conference is planned for June of that year, with a large number of activities aimed at experts on cycling mobility and sustainability. Not only the government are involved in the preparations, but also experts from the industry, Radboud University and Hogeschool Arnhem-Nijmegen. During the ICT-Network Nijmegen event held on February 5 at FiftyTwoDegrees, close to the new Nijmegen Goffert Station, it became clear that ICT experts and other knowledge workers can make a considerable contribution to solving safety issues on traffic junctions and sustainable mobility.

The year 2015 will be a big one for cycling enthusiasts. In his New Year's speech, the President of the Executive Board Prof. Gerard Meijer of Radboud University announced a pilot for renting Radboud bikes to international students. He reinforced this news by climbing the stairs to the auditorium carrying such a bike. Shortly after, it was announced that the Giro d'Italia is coming to the region in 2016, and that Arnhem-Nijmegen will be organising the 2017 international cycling conference Velo-city for 1500 visitors from all over the world, from June 13 to 16, with as its theme 'The Freedom of Cycling'. Velo-city is an annual event: it took place in Nantes in 2015, in Taipei in 2016, and before that in Adelaide, Vienna, Vancouver and Seville. Radboud University, especially the School of Management, is actively involved in preparations for Velo-city 2017. At the ICT Network Meeting, traffic engineer and urban planner Dr. Karel Martens announced the arrival of the American professor Prof. Dr. Kevin Krizek at Radboud University. "In the USA, he researched topics such as the role of the bike in commuting. In Nijmegen, he gives workshops, and he will of course be carrying out more research as well as gaining cycling knowledge and experience. The Netherlands are a fantastic breeding ground for him. Krizek will be exploring cycling expertise and spreading this information to other countries. And he would like to contribute to Velo-city 2017".

Creative and sustainable

Smart mobility, traffic safety and sustainability are crucial topics for businesses and research institutions in the region, as has be-

come evident from the widespread involvement in Velo-city 2017. Apart from the government, the university and colleges a number of businesses are also involved: Alliander, Arcadis, NXP, Royal HaskoningDHV, and the young company VANMOOF, which designs and produces innovative city bikes using ICT tools. VANMOOF was founded in 2009 by brothers Taco and Ties Carlier. This is a well-known name for pop concerts in the Goffertpark, begun in Lochem at the end of the 1960s by Joost Carlier. This mixture of events, music, sport and ICT tools appears to be a successful formula for ICT companies such as Championship/Mylaps, the Nijmegen Zevenheuvelenloop, Music Meeting and

Doornroosje. En route to Velo-city 2017 the experts at ICT Network Nijmegen emphasised the combination of technology, creativity and sustainability, with opportunities for businesses and ICT workers. The new Nijmegen Goffert Station, a hub for bike, car, bus and train, fits the bigger picture. It improves access to the Novio Tech Campus and connections to Heyendaal Station near the campus of the Radboud University. Reindert Augustijn, Head of Mobility for the region Arnhem-Nijmegen and the Province of Gelderland, did not deny that he was proud of this coming event. "Velo-city 2017 ties in with other sustainable mobility projects that have already been realised in Arnhem-Nijmegen. ICT experts can soon con-

**Ir. Reindert Augustijn,
Head of
Mobility for
Arnhem-
Nijmegen/
Province of
Gelderland**



tribute their innovative ideas and use Velo-city 2017 as their platform. This is a unique opportunity for research, innovations and companies that put this region on the international map.”

Smart parking regulations

Next was an invention by Karel Martens, Urban Planner at Radboud University and developer of ParkAgent, an ICT tool with an innovative parking model that can simulate the behaviour of many individual drivers simultaneously. This model predicts the effects of parking regulations and new locations. This can be of great use to the government, project developers and car park operators, as shown by the first results from experiments in Tilburg, Antwerp and Tel Aviv. For further development and up-scaling, new participants and financiers are needed. More examples of the role of ICT in sustainable mobility are given by Erik Jaspers, CTO of the Nijmegen-based and globally active ICT company Planon Software. He spoke about ‘Smart Cities’ and the role of ICT in sustainable solutions for problems connected to the fast-growing populations of large cities. How to keep it manageable and liveable? According to Jaspers, the answer can be found in separating the urban infrastructure. “In the ‘smart city’ of the future we will not only have to share the physical space with many others, but we will also have to take into account the virtual environment, understand mobility behaviour and predict these factors with the help of sensors and other ICT tools: Urban Informatics”. As an example, Jaspers mentions the Copenhagen-wheel, an electrical bike with a rear wheel full of smart technology.

Opportunities for entrepreneurs

Entrepreneur John van Beek of the Nijmegen ICT company IQuality felt there were too few



Dr. Karel Martens, Traffic Engineer, Urban Planner at Radboud University

innovative contributions to sustainability and user-friendliness: “Many inventions are at most a step towards another invention, as we see with cars or trains. Users are rarely taken into account. Successful developments should contribute to Corporate Social Responsibility based on a corporate vision, and bear in mind the user as a stakeholder.” ICT is the binding factor and makes sustainability visible and appealing, as demonstrated in the final presentations.

Radboud Computer Science student Job Scheepers of student organisation Thalia demonstrated the possibilities of LeapMotion for use with hand and finger movement. LeapMotion is a device where two infra-red cameras register movements and convert them into 3D. New applications, suitable for existing systems, are being developed and many can already be found in the LeapMotion App Store. There are ample opportunities for

this technology in education, gaming, robotics and healthcare. Students and recent graduates of the Computer Science department of Radboud University who are active in the ICT Network Nijmegen, are also considering founding new ICT businesses. The knowledge and experience gained during their studies will be a great help.

Students with ICT experience

This is confirmed by Prof. Marko van Eekelen from the Radboud University Institute for Computer & Information Sciences, Digital Security section, and the Open Universiteit Nederland. He sees an increase of the number of Computer Science students and the number of courses with practical ICT applications, for example, the practicum GipHouse:

“Here students work on projects for actual clients, just as they would in a ‘software house’. GipHouse has been in existence for 20 years, and in that time a lot has changed. One very special constant is that it is entirely run by students, including the management, acquisition and evaluation. As a teacher, I mainly work in the background as a safety-net for problems, and I am in the foreground only to give a theoretical framework. GipHouse always receives positive evaluations because of its unique formula. Considering the growing number of Computer Science students (over 80 first year students in 2013 and 2014) GipHouse expects to be able to take on extra projects with companies in 2016. ICT security aspects are given a lot of attention. There are also plans for highlighting ‘entrepreneurship’, in order to better prepare young ICT workers for the coming professional practice. Velo-city 2017 offers even more interesting opportunities. In any event, we expect to be the best Dutch university education in Computer Science in the future, as we were in 2013 and 2014,” says Prof. Van Eekelen.



Prof. Kevin Krizek, Traffic Engineer, Cycling professor at Radboud University



Do you have questions or would you like to make an appointment? Please contact Eva Rotte, Intellectual property & ICT lawyer: e.rotte@hekkelman.nl - T. 024 382 83 84

The art of collaboration

Finding collaborative partners. Sharing knowledge. Signing contracts. It may sound easy, but it's often not that simple for startups to take these steps. Not only can it be difficult to find the right partner, but you may be afraid to lose control over your own intellectual property. This fear can be a stumbling block in contract negotiations. However, collaboration often has the advantage of speeding up the time from the drawing board to the market, thus improving competitiveness. Below are some considerations, when introducing a collaborative partner.

In the last issue of Mercator NovioTech Magazine, I explained when protection of your invention may be advisable. Another step in the development process is the possibility of bringing in a partner. Not only to finance desired protection, but also for more financial or operational power for marketing the product. Small businesses do not always have the means or network to do so. A larger corporation could be able to fit production and marketing in with its existing organisation. On the other hand, new concepts and techniques initiated by start-ups are a way for larger corporations to stay up-to-date.

Insufficient use of shared knowledge and skill

A KMPG study done last year (with the telling title 'Corporates & Startups: Hip, but not happening') shows that large Dutch corporations and startups do see the relevance of cooperation to realise necessary innovations, but they don't succeed in getting enough out of it. Most of the time, collaboration is limited to sharing distribution channels and markets, with insufficient use of shared knowledge and skill. The startups surveyed mainly prefer to focus on their own missions, and independence within the cooperation is highly regarded. This tells us that collaborative processes are not yet assimilated into the core of the business strategy.

Of course, it is the choice of each emerging business to remain as independent as they wish. It is possible, for example, to give a collaborative partner permission to perform only certain actions, such as licensing. Keeping the licensee at a distance could naturally also be a disadvantage. A second possible method of collaboration is more intensive. The partner is part of your business, and is therefore included in the decision-making process on strategies or operational issues. Examples of this are joint ventures, shareholding and franchise formulas. This may require

some getting used to, but can also ensure that you gain access to certain experience that raises the startup to a higher level.

Motivation and goals

In my field of work, I notice that startups spend a lot of time and energy finding creative forms of collaboration - creativity is in their DNA, after all. However, the motivation and goals for a collaboration are often insufficiently discussed. For reasons of proof, it is preferable to put agreements down in writing. A proper contract will always save a lengthy discussion on the content of agreements. It is also advisable to have a third, neutral view on all agreements. During the negotiations, all parties are primarily interested in the things they are good at, and will try to convince the others of this. The investor will be more focussed on the finances of the startup, the technician on the functionality of the invention. The supplementary clauses may seem less interesting, but the very value of a contract is for some part, if not most, determined by those details. Responsibilities, intellectual property, costs and liabilities are all aspects people would rather not discuss while the atmosphere is still good. However, they are necessary for a successful cooperation. It is also very important to look forward to the finish-line right from the beginning: under which circumstances could you separate, and what happens with the knowledge and skills you built up together? How would you deal with disputes? Who has the final decision, should that ever be necessary in the future? A good collaboration starts by carefully mapping out the end, however illogical that may sound.

www.hekkelman.nl

The secret of graphene is worth its weight in gold

The possibilities of graphene are enormous. The material is strong, transparent, flexible and conductive, making it highly suitable for microchips, sensors, and touch screens. For producing graphene you need to invest heavily, but it is an investment very likely to bring good returns. So where does one go for a nice layer of graphene? To Applied Nanolayers in Nijmegen.

By Tefke van Dijk

Just like the secrets of graphene, a world of wonders is hiding behind the plain façade of Applied Nanolayers: from a gigantic hall full of devices for the microchip industry, enough to fill two NXP factories, to machines for making graphene by Dr. Richard van Rijn and his colleagues. "We are still in the start-up phase: in six months to a years we expect to be in full production."

Graphene; many will have heard of it since Andre Geim (affiliated with Radboud University) and Konstantin Novoselov received the Nobel Prize in Physics for their research into its properties. They went on to develop a method for producing the carbon material. They are said to have made the discovery during a Friday afternoon drink, using sticky tape to carefully pry loose a single layer of carbon atoms from a bit of graphite from a humble pencil.

Strongest material, fastest semiconductor

Van Rijn does not quite understand the fuss about the layer of carbon. "Physicists discover new materials on a regular basis, but it very rarely gets so much media attention." Graphene has turned out to be a promising material, notably in the semiconductor industry. "Graphene is indeed very special," says Van Rijn. "It is much more resistant to breaking than steel, and as far as I know it's one of the strongest materials on earth. On top of that, it is also one of the fastest semiconductors, about a hundred times faster than silicon."

In short: with the right technique for producing graphene, you have struck gold. The material has immense potential. It is used as a strong and flexible membrane, as well as in microchips, sensors and in biotechnological applications. "This is only the beginning. When you combine graphene with other materials and exploit their useful properties, you can make wonderful things. Equipment that is both transparent and flexible, for example."

No fancy website needed

Applied Nanolayers has found a way to produce a virtually perfect layer of graphene. How they do it, Van Rijn will not say. It is too competitively sensitive. We are allowed to take a look in the secret room where they have three machines for production, process development and research. "We are currently working on automating the production process, so that we will be able to offer the same quality graphene for a reasonable price." Globally, the demand for graphene is high. This is a small world, as large organisations are already finding their way to Nijmegen. Graphene is presently an important research topic at Radboud

University. For four years, ANL employee Dr. Evgenia Kuganova conducted her doctoral research there and still maintains contact with the researchers. "For now, we don't need a fancy website; people who want graphene know where they have to go." And that is Nijmegen. Why did the business settle here? "We are from Leiden, Delft, England, Luxembourg and Kazakhstan. Nijmegen is ideal because of the long-standing presence of Philips Semiconductors and NXP. This has resulted in a lot of expertise within the Nijmegen area, which is important for the development of our technology. It's perfect, and I don't see us leaving any time soon."

www.appliednanolayers.com



Dr. Richard van Rijn

VARI-STEPP: patent for a 'low threshold' innovation

The VARI-STEPP is a water-retaining doorsill suitable for hospitals, care homes, healthcare centres, kitchens, airports and train stations. Leon Damen, Managing Director of VARI-STEPP, is not only the inventor of the product but also manages the production process and sales in the Netherlands and abroad. Trademarks and patents firm Arnold + Siedsma took care of the patent establishment and trademark registration.

PRESENTATION

Leon Damen began his new venture from his existing building management consultancy firm Damn Interim Building. "Three years ago, I wrote the specifications for a renovation project at an anthroposophic healthcare centre, and I was responsible for the realisation of the project. The healthcare centre decided on in-house management of the patient hoists, but it was my task to buy them in. I 'tested the ropes' with various suppliers myself, in order to be able to judge the quality of the hoist. When moved, the wheels always hit the door-sill, forming an obstacle. Apart from inconveniencing for the patient, this also results in ergonomic stress for the carer and it causes wear in the rolling equipment. I asked the builder to look for a structural solution to this problem. I gave him a general description of a possible flexible doorsill. After three weeks of research he informed me that such a thing did not exist."

This switched on a light bulb above Damen's head, and he started working out his idea: a doorsill that was water-retaining yet flexible,

for environments where rolling equipment such as medical trolleys, kitchen trolleys, containers, hoists, care beds, and wheelchairs are used. Enter VARI-STEPP. "For my first design I went to a patent firm in Eindhoven, but in the end I chose Arnold + Siedsma in Nijmegen. The meeting with patent attorney Bart Jacobs immediately felt right, and we duly started the patent process. After three years of designing, selecting materials, prototyping and lab tests, a patent was finally established for the VARI-STEPP. The product is now available on the Dutch market and we are ready to promote the VARI-STEPP abroad."

Leon Damen continues: "In 2013, we were able to do a test in the Jeroen Bosch Hospital in Den Bosch. This was done in a transportation aisle for waste containers of 200 to 300 kg, were brought in by freight lifts. Under no circumstance was cleaning water allowed to get into the lifts; 2.5 cm high wooden sills had been put in to prevent this. However, in no time they were damaged beyond repair. As a test, we installed a VARI-STEPP and after a week we received a phone call to ask if we

could replace the other doorsills. We calculated that development projects in the Dutch healthcare sector alone could account for 10,000 meters of VARI-STEPP a year. Add to that replacements for renovation projects, improvement of wheelchair access in public buildings and adjustments to private homes, for instance."

Key to the invention

Bart Jacobs: "Research showed that there are flexible doorsills on the market, but they are made of a thinner and more fragile material. This made it difficult to protect the principle of flexibility in the patent application for the VARI-STEPP. The water-retaining aspect is in itself not part of the conclusion; in the product description you only indicate why the sill is suited as a water barrier. Key was to the invention were the caps fitted to either end of the doorsill, making it watertight and preventing bacterial growth. The caps themselves are not flexible, allowing them to be attached and sealed to the doorframe. The wedge-shaped caps taper down gradually, allowing wheels

THE PRODUCT VARI-STEPP

The VARI-STEPP is a patented solution for a longstanding problem in wet areas such as showers and kitchens, where rolling equipment is used. In order to contain run-off water from showers or cleaning, an elevation of the floor is required. For rolling equipment, doorsills are annoying obstacles. The VARI-STEPP consists of an EPDM profile that is compressible from the top. When wheels travel across the rubber VARI-STEPP, it will 'dent' to floor level and return to its original shape. The product is water retaining, so it is very suitable for wet areas and spaces with high demands on hygiene. At both ends of the profile, caps are inserted and glued tight. The EPDM profiles are extruded in lengths of six metres at a Dutch company, and another injection moulding company produces the caps. These two semi-manufactured products go to the company Storax in Zwijndrecht, which cuts the profiles to the required doorsill width, glues the caps and takes care of the distribution in the Netherlands and Belgium. The VARI-STEPP can be used for renovations and development projects.

www.vari-stepp.com





From left to right: VARI-STEPP Director Leon Damen, Ir. Bart Jacobs and Drs. Petri van Someren, both patent attorneys at Arnold + Siedsma.

that come to close to the doorframe to slide a little inward. This prevents material wear and leaves the silicone seal intact. The product has been changed a few times during the development process, and until you receive the novelty report, you cannot be sure what you will get patent protection for in the end. In such a case, it is wise to record the date of every new development. That is why we submitted several applications, including each new change every time. In the final PCT application, all of those developments have been summarised."

Patent attorney Petri van Someren: "After you have filed the first patent application in a particular country, you have the so-called priority right. Follow-up applications filed within one year retain the date of this first application. After that, you have one year to decide in which other countries you wish to apply for a patent. This priority year really gives the inventor/entrepreneur the opportunity to defer the decision for another country by a year. You could, for instance, investigate the commercial feasibility in another country, and find out whether there are any suitable business partners. In this priority year it is also possible to add new elements to your invention. At the end of the priority year, you may choose for a single PCT application, allowing you to start a patent application in 130 countries at once. After filing the PCT application you have another year and a half on top of the priority year to decide in which of the PCT member states

you really want to file the patent application. In that way, the final decision and related costs can be deferred."

On a trade mission with Alexander and Maxima

Bart Jacobs: "We always aim to give advice in line with the business situation. There are various moments in the patent application process where payments have to be made. A patent is usually an up-front investment, but by taking the right route you can make sure that the costs are moved back or - if desired - pulled forward. We always ask our clients this question: how will you be recouping this investment? In certain cases, I may advise not to apply for a patent, or we may help someone by putting them in contact with other parties. The fact that Leon Damen is both an inventor and entrepreneur, made the prospect of actually selling his invention much more likely."

With his employment history, Leon Damen has an excellent network and is moreover a partner of Health Valley. "I recently visited fairs in London and Düsseldorf. The Task Force Health Care then tipped me off to the trade mission aimed at the health market by King Willem-Alexander, Queen Maxima and Minister Koenders of Denmark. I immediately enquired if I could attend, and was invited to take part. Up to 2020, Denmark is going to invest no less than €6 billion in developments and renovations of hospitals. That makes it an extremely interesting market for VARI-STEPP. It

has therefore become an absolute priority to launch an international campaign."

Bart Jacobs agrees: "At a certain point, the PCT application splits into national or regional patent applications. Were you to opt for a European or American application, it would cost about €10,000 to carry out the procedure. Were you to choose for more countries separately, then the costs will rise accordingly. With a European application you will have European coverage, for a while. Entrepreneurs prefer global protection, but that is hardly financially realistic. You should ask yourself whether it makes sense to apply for a patent in a country where you may not be able to choose to market in the future. It is important to advise an entrepreneur on these choices as best as possible."

Leon Damen: "Obtaining proper advice from the very start of the development process is essential. Arnold + Siedsma immediately drew up a confidentiality agreement, allowing me to start negotiations with suppliers and potential partners without the risk of forgery. They also took care of the European trademark registration; for any legal issues Arnold + Siedsma have their own legal department. VARI-STEPP has now successfully been introduced in the Netherlands. At the moment, we are primarily focussing on marketing opportunities in other countries. A PCT application affords protection, but is most importantly a convincing marketing tool."

www.arnold-siedsma.nl



BBB career fair: science students in high demand

On May 20, The BètaBedrijvenBeurs Foundation organised its yearly BBB Career Fair. As in previous years, students came to examine the possibilities of a future business career in science. Many potential employers were present to advise students on finding a suitable job or internship. Prof. Stan Gielen, Dean of the Faculty of Science at Radboud University Nijmegen, opened the event, which took place in the Huygens building on the RU campus.

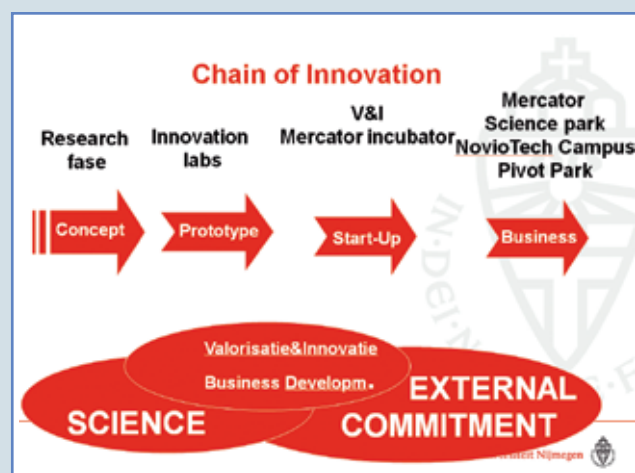


Prof. Stan Gielen opens the BBB Career Fair

Faculty of Science leading in research projects

In his presentation, the dean showed how the number of students at his faculty has grown in the past few years; from 2000 in 2011, to 2800 in 2015. Gielen used a graph to illustrate the Science Faculty budget, which is at €100 million for 2015. There has been a moderate increase from the main funding source - the government - to about €50 million. Other sources from contract research, the Netherlands Organisation for Scientific Research (NWO) and EU subsidies have shown a substantial rise, to equal €50 million. The intake statistics of the Faculty of Science have gone up considerably: from 482 in 2012 to 682 in 2014. Expansion plans are therefore needed, to create room for the increasing number of employees and students. Stan Gielen

emphasised that in the Netherlands, the Faculty of Science is leading in the amount of external research projects. In addition, of all universities the RU has the largest number of Spinoza Prize laureates. An important element of this success is the attention paid to the labour market in the Bachelor's and Master's programmes, where science students gain more insight in their career opportunities and connections with the industry. To conclude, Prof. Gielen spoke about a properly functioning chain of innovation, where contacts between science and the industry are essential, and where many innovations are marketed through university spinoff businesses. That more than 60 science spin-offs have been a success, is remarkable. Their joint revenue is estimated to be €187 million, with about 1780 employees. They represent important participants in the Nijmegen Chain of Innovation.



Avivia: a pragmatic pharmaceutical product developer

Avivia is an innovation laboratory that works for pharmaceutical companies, reformulating existing pharmaceutical products to better adapt them to the needs of the patient. Avivia has recently opened a second office on the Novio Tech Campus, facilitated by SMB Life Sciences. The roots of the company are in Nijmegen: founder Hans Platteeuw studied chemistry here, and he and his three partners are also former employees of Synthron. Platteeuw believes the connection with Radboud University and the central location in Health Valley are important as well.

In 2005, Hans Platteeuw founded his company Avivia, initially as a consultancy firm but in later years as a pharmaceutical product developer. Avivia has the know-how to turn an API (Active Pharmaceutical Ingredient) into the end product. "There is a high demand for this type of research into product innovation, both for large pharmaceuticals and university spinoffs. In 2013, it was announced that Synthron would be reorganising and moving their generic R&D activities from Nijmegen to countries such as Spain and the Czech Republic. I thought it a pity that the existing knowledge and experience would disintegrate like this, so I contacted a few former colleagues. They were open to a partnership with Avivia, and we were able to take over some equipment. Until that time we had always worked with contract labs, but now we have our own internal facilities to carry out research."

Pouchitis

Avivia improves existing pharmaceutical products by reformulating the drug compounds. "We are for instance involved in a project at KU Leuven, developing a treatment for pouchitis. If the large intestine needs to be surgically removed in a case of severe colitis, part of the small intestine can be used to create a reservoir that will take over the function of the rectum, a so-called pouch. This eliminates the need for a stoma and the patient remains continent. These patients have a history of infections, and our antibiotics can prevent such an infection of the pouch. Many patients, however, stop the treatment after 1 or 2 weeks because of the side-effects. We have changed the pharmaceutical for-

mula based on the same active substance, to ensure it remains effective but with fewer side-effects. We put a pH-dependent coating around the active substance, so that it is released locally inside the pouch. It's a form of modified-release targeted drug delivery. In our lab, we experimented with this coating in relation to its pH value. Our client did not wish to develop the substance on their own, as it did not fit in with their core activities. We have now taken over this research, and will be bringing an improved version to the patient under a new brand name. At the moment, we are preparing production of a clinical batch under cGMP that will be tested in the Leuven clinic."

Pharmaceuticals contract Avivia for product improvement, but the company is also actively looking for potentially interesting projects at specialist conferences and meetings of patient associations. "When we see an opportunity for improvement, we will make a proposal to the clinicians in question, or look for funding ourselves. The developers at Avivia have worked on a total of more than 60 patents, and the amount of in-house patents is ever increasing. We don't use technicalities as a starting point, but see if improvements are possible from the viewpoint of the end-user and then search for a suitable technique to realise it. This pragmatic approach is much appreciated by our clients." Thanks to a high backlog and its fast growth Avivia expects they will soon need two to three times more space on the Novio Tech Campus.

www.avivia.nl



Hans Platteeuw (left) and Hans van der Steen in the Sotax dissolution equipment lab. In order to market a generic product, human subject research has to be carried out, in order to prove that after release of the active substance the same plasma profile is achieved as with the original product. Avivia has Bio-Diss and Flow-Through cell equipment for dissolution tests. These, as well as other equipment, are used to simulate the dissolution rate of tablets, powders and capsules in the human body, in order to make biorelevant release models. According to Hans Platteeuw, this combination of specialist equipment and extensive practical experience is unique in the Netherlands.



Kadans Science Partner

Your partner in housing knowledge-intensive businesses and organisations

Chiel van Dijen MRE, Deputy Director at Kadans Science Partner

PRESENTATION

"Let's be very clear about the fact that housing knowledge businesses and organisations is very difficult," begins Chiel van Dijen. He is Deputy Director at Kadans Science Partner, and is responsible for the realisation of Kadans' ambitions. "Many parties are involved in this kind of process, and there are a number of forces that influence the decision of whether a business or organisation should move to a new location. Of course, we have to take into account basic criteria such as rent, the term of the lease or the look of the rooms and building. These criteria, however, are secondary concerns for starting businesses that care much more about access to venture capital and funding, subsidy options, the presence of similar businesses, and contact with knowledge institutes in the area."

Kadans: overall partner for the housing process

With its up-to-date knowledge and experience, Kadans Science Partner focuses on the investment, rental and maintenance of specific corporate buildings. The buildings often offer a combina-

tion of laboratories, cleanrooms, technology halls, pilot plants and office space. Chiel van Dijen: "We rent these facilities to R&D departments of larger companies, knowledge institutes and knowledge-intensive businesses in the innovation (top) sectors such as agri-food, the life sciences, health, medical technology, the bio-based industry and high tech." Kadans always offers entrepreneurs the possibility to integrate specific requests in layout, furnishings or equipment in their buildings. This creates a custom-made housing solution that suits the developmental process of the business.

Smartware

Apart from housing - the hardware, so to speak - Kadans Science Partner offers every possibility of continuing growth in a building with an incubator function. This way startups, in many cases spinoffs of businesses and knowledge organisations, are offered a complete package of services; specific and often unique workspaces, facilities, coaching, advice, financing, and access to a val-

uable network. Van Dijen continues: "We call this the 'smartware'. Combined with the physical need for housing, it forms an integral, often flexible location solution." As a manager and facilitator that provides continuous flexible leases, Kadans Science Partner is always engaged with their tenants. This enables Kadans to give direction to the changing housing needs of an organisation. Thanks to this setup, many businesses stay with Kadans for a long time. Kadans currently houses 45 businesses that employ about 500 people.

Development of Kadans Science Partner

In its 14-year history, Kadans Science Partner has come a long way. Under the wings of Wageningen UR and PPM Oost in 2001, the enterprise Biopartner Center Wageningen was founded. In 2010 it was taken over and renamed by Kadans Science Partner. Since then, Kadans has successfully expanded outside of Wageningen. Today, Kadans' focus lies with businesses and organisations in the life sciences industry (including medical technology), health, the bio-based industry, agri-food and high tech. These businesses all have a clear connection with knowledge institutes, and are built upon a scientific foundation. Since its establishment, connections with the life sciences and agri-food industries have prevailed, but through the years Kadans has developed itself into a company that serves various (top) sectors. Kadans is now active in four regions in the Netherlands. In Wageningen, for instance, Kadans manages four buildings, and a fifth is being built in the centre of the Wageningen Campus. Kadans also has state-of-the-art housing in the field of animal facilities on the Landerd Campus. With the Pastoe Factory in Utrecht, Kadans owns a housing location for the University of the Arts and many entrepreneurs in the creative industry. On the Novio Tech Campus in Nijmegen, Kadans is currently developing a second building, Building A. "Seen from the campus perspective, this building is the perfect addition to the first building (M) on campus. In Building A, there will be room for starting entrepreneurs who do not (yet) need the laboratories or cleanroom facilities of Building M, but who do want to be part of the network on the Novio Tech Campus," explains Chiel van Dijen.

Vision and ambition

He is very clear about their vision: "It is our ambition to become the housing partner in all university cities, with a strong focus on one top sector, for all businesses related to that knowledge centre. As the number of users in our buildings grows, Kadans will be able to function more as a 'connector' between the networks of



all these users. In this way, an enormous knowledge network will be created, consisting of knowledge organisations and businesses from startups to large corporations."

One thing is clear: together with all partners, Kadans is working hard to realise this ambition. "In the end, it's not just Kadans and the companies housed that will benefit, but the entire enterprise that is the Netherlands," concludes an ambitious Van Dijen.

For more information:

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NOVIO TECH CAMPUS

Knowledge is the engine driving the Dutch economy. While the manufacture of products is being moved to less expensive countries, there are opportunities for the Netherlands to distinguish themselves by turning research into economic activities. This requires pooling knowledge and entrepreneurial skills. To promote the exchange of knowledge not only between universities and businesses, but also from business to business, science parks have been developed. The idea is that practice and theory will mutually influence each other, leading to new products and economic growth. Universities and their medical centres in particular have invested in this concept by initiating so-called valorisation programmes. Clustering also promotes synergy between businesses, as they can more easily communicate, compete and collaborate. A good example of such clustering of businesses, facilities and services, complete with a link to the knowledge organisations on dif-

ferent levels, is the Novio Tech Campus. The development of this science park was made possible thanks to wide-ranging social and political support. According to Van Dijen, this was one of the conditions for Kadans to invest in such a location. Political participation really is a key success factor, together with connections to the knowledge institute, the cooperation with regional development companies and the expertise of the campus organisation.

Since October 2013, Kadans has been successfully managing Building M on the Novio Tech Campus. Around 25 businesses and organisations have by now been fully accommodated with office space, laboratories, or cleanrooms. When facilitating, Kadans cooperates closely with the campus organisation and SMB Life Sciences. SMB Life Sciences stimulates starting entrepreneurs by offering premium facilities as well as support, through funded coaching and supervision.

MeetingPoint International Knowledge Workers visit Music Meeting 2015

After three years, it's a tradition; the Expat Platform Nijmegen organises a MeetingPoint for International Knowledge Workers on the final day of Music Meeting, this year on May 25. Since 2007, Nijmegen has seen frequent networking events for academics at Nijmegen-based businesses such as NXP, Synthon, Heinz, Mead Johnson, Smit Transformatoren and Royal HaskoningDHV, as well as knowledge institutes such as Radboud University, Radboudumc, Hogeschool Arnhem-Nijmegen and the Max Planck Institute.



Deputy of the Province of Gelderland Dr. Michiel Scheffer meets international knowledge workers, at the Meeting Point for Expats during Music Meeting 2015.

Music Meeting and Expat Platform, in their thirty-first and seventeenth years respectively, have crossed paths before in their contributions to Nijmegen as hospitable academic city. The annual Music Meeting creates an appealing atmosphere, always featuring a surprising programme of world music and a wide variety of styles and genres: brass-house, gospel, salsa, impro jazz, funk, afropop and fusion. Music Meeting also offers its visitors a festival fair, countless acoustic sessions, workshops, masterclasses, interviews and good food from cuisines across different continents.

International talent indispensable

The Expat Platform represents both Nijmegen as a city as well as the largest employers of international knowledge workers in the fields of research, education and business. The 75 guests were given a warm welcome by employees of the Municipality of Nijmegen and Bureau Routine, at restaurant La Raccolta on the

festival grounds in Park Brakkenstein. Expat Platform board member Hein van der Pasch welcomed those present and introduced as a special guest Dr. Michiel Scheffer, recently appointed Deputy of the Province of Gelderland. He was able to say from experience abroad how important it is to quickly find your way in the maze of authorities, procedures and facilities, that can both simplify and complicate the process of feeling at home in your new surroundings.

"Activities such as this Meeting Point make sure that you know where to find each like-minded colleagues. In the future, it will be even more important that the authorities are accessible and available for people who come to work here and apply their talents for our economic development. Businesses and knowledge organisations often cooperate with international partners, and could not do so without the talent and expertise of employees from abroad," says Deputy Michiel Scheffer.



Novolanguage Gelderland is startup of the year

The Nijmegen-based company NovoLanguage was elected Gelderland Start Up of the year last spring. NovoLanguage is a spinoff company of Radboud University in the field of language and speech technology, and is located on the campus in Building 1 of the Mercator Technology & Science Park Nijmegen. The company develops software and premium products for language courses, and closely cooperates with the university Centre for Language and Speech Technology (CLST) and Radboud in'to Languages. NovoLanguage was founded two years ago, has been growing internationally and currently has twelve employees. The Start Up prize was awarded during the Nacht van de Gelderse Economie in the Honig buildings in Nijmegen. NovoLanguage CEO Martijn Enter received the trophy from the King's Commissioner of Gelderland Clemens Cornielje, and was given a cheque worth €10,000 by Rabobank Rijk van Nijmegen.

www.novolanguage.com



*Clemens Cornielje hands the trophy to Martijn Enter
(Photo: Province of Gelderland, Jaap Zoet)*

HCM-Medical



Hightech Contract Manufacturing-Medical (HCM-Medical) has set up a medical production facility in Nijmegen, complete with laboratories and cleanrooms where medical implants are produced. HCM-Medical develops products and implements technologies with its clients, which include cardiovascular, urological, dermatological, and orthopaedic applications. These applications have a biological origin, and form a solution for complex problems. Repairing damaged tissue, for example, caused by trauma, infections or tumour-medical procedures. HCM-Medical was founded by Henriëtte Valster and Christian van Munster, biochemists with extensive experience in the pharmaceutical, medical device & tissue processing industry.

www.hcm-medical.com

Henriëtte Valster and Christian van Munster

RU-Spinoff Deskbookers selected by Rockstart

The Nijmegen startup Deskbookers offers an online platform where entrepreneurs and employees can find, book and pay for flexible workspaces. The founders of Deskbookers are Jeroen Arts and Frank Derks, former students of the Nijmegen School of Management at Radboud University. Deskbookers has recently been selected by Rockstart for its Web-Mobile Accelerator Programme. During the programme, ten promising international startups receive 150 days of coaching towards an inter-

national 'big break'. Deskbookers achieved a large increase of revenue in the past year and has an impressive client database, with companies such as PostNL, T-Mobile and Randstad. Over 600 locations are already offering their flexible workspaces on Deskbookers.

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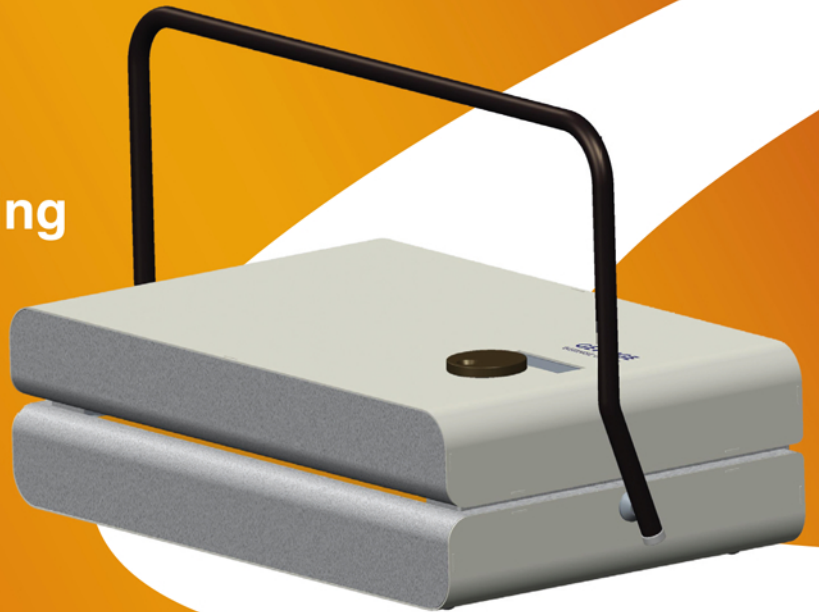
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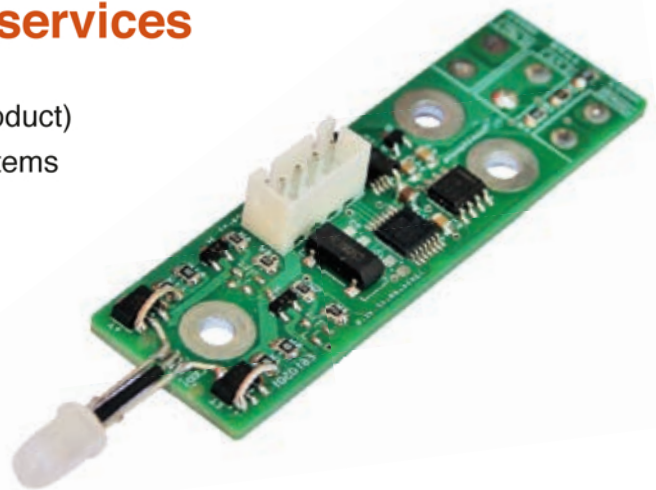
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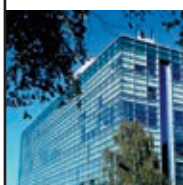
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The Mercator Technology & Science Park offers a range of interesting accommodation options. Based on the wide range of requirements for knowledge-based companies, there is room for start-ups, growing companies and larger businesses.

This means that office space can be rented in units ranging from 25 m2 to several floors at a time. The principle of 'easy-in, easy-out' is reflected in shorter leases specifically for starters in a full-service office environment. Mercator offers more than simply office space in its concept. The facilities for young companies, their mutual collaboration and the links to the university make Mercator so much more than just a park with the traditional multi-tenant office block.

The Mercator Technology & Science Park has a unique location at the edge of the university campus, in an area shared with large R&D orientated companies. Moreover, the presence of prominent research based institutions makes it a handy meeting point for young talent. Research and enterprise go hand in hand, resulting in many economic innovations and external contacts.

BV Campus matches your accommodation needs with the possibilities at the Mercator Technology & Science Park, or elsewhere on the grounds of Radboud University. Would you like to receive more information? Please contact us on +31 (0) 24 361 16 53.

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