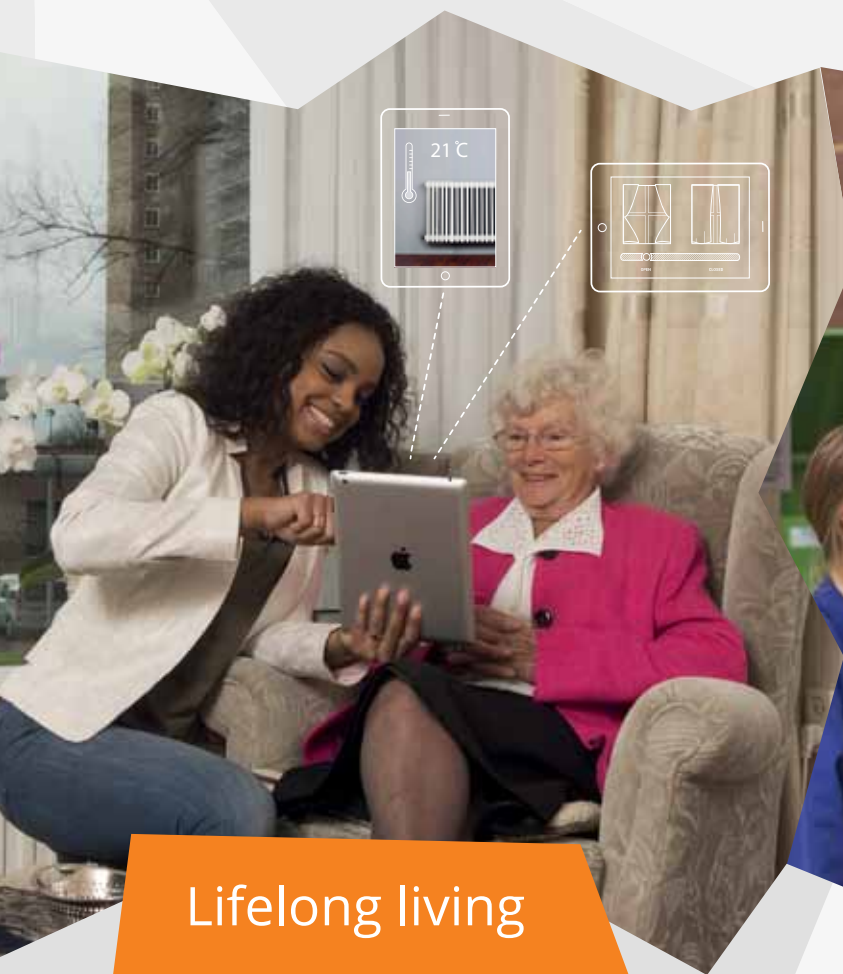


iAge project

E-inclusion in ageing Europe



Lifelong living



Labour Market



HanzeResearch
University of Applied Sciences

Colofon

This is a publication commissioned by the Hanze University of Applied Sciences Groningen
© October 2014

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iAge

In the Interreg IVB project iAge: e-inclusion in ageing Europe, ten regions in six countries around the North Sea work together to improve the regional development of areas in decline, affected by an ageing population.

By 2030 the number of people of 65 years and older is expected to rise by more than fifty percent. This affects the sustainability of our communities, especially in areas in decline. At the same time, today's seniors are healthier and more mobile, qualified and ICT skilled. They also have more purchasing power than any generation before them. Their needs and expectations are diverse, but all aspire to a high quality of life with high quality services. The North Sea Region can benefit from this potential and develop dynamic and successful communities.

Hanze UAS Groningen

Hanze University of Applied Sciences in Groningen is strongly involved in the iAge project. It participates with its Centres of Applied Research and Innovation, Entrepreneurship, Labour Market, Area Development and the Quantified Self Institute. Professors, lecturers and students of the Hanze University have an active role in multidisciplinary research and development, to achieve the iAge goals.

iAge develops new approaches to service delivery and economic development through joint development of ICT innovation. iAge promotes the use of ICT to prevent people from exclusion, improve employment opportunities, quality of life and social participation. Transnational activities and joint analyses create positive achievements towards the EU 2020 objectives of innovation and employment.

iAge objectives

- Increase active participation and productivity of the elderly in relation to the labour market;
- Increase and promote the use and accessibility of ICT in relation to lifelong living;
- Implement transnational strategies, demonstration pilots and concrete actions;
- Communicate the iAge project and its outcomes to other ageing communities in and beyond the North Sea region.



iAge partners

There are eighteen partners from six countries in the North Sea Region.

The Netherlands

- Province of Drenthe (LB)
 - STAMM-CMO
 - Hanze Institute of Technology
 - Municipality of Aa en Hunze
- Zorg Innovatie Forum
 - CMO Groningen
 - Foundation Oosterlengte
- Hanze University of Applied Sciences Groningen
- Municipality of Hardenberg

Scotland

- University of Abertay Dundee

Norway

- Knutepunkt Sorlandet
 - University of Agder

Germany

- Wirtschaftsakademie Schleswig-Holstein

Belgium

- Provincie Oost-Vlaanderen
 - ERSV Oost-Vlaanderen
- Intercommunale Leiedal
 - Mentor VZW

Denmark

- University College of Lillebaelt

provincie Drenthe





Lifelong living: Sustainable community

How can elderly people be motivated to make choices about their living environment that will help them to stay healthy and independent for longer? Research shows that many people choose to ignore possible housing problems and health risks that can come with age. At the same time, they want to create a nice living environment for themselves and are willing to spend time and money to achieve this. We aim to use individual preferences when adapting housing solutions to stimulate elderly people on their specific path in 'lifelong living'. The basic assumption is that there is no 'one size fits all' solution. The goal is to match possible solutions to different target groups. From Hanze UAS point of view, the use of ICT in and around the house should focus on health and sustainability. The pilot aims to link these benefits.

“The biggest asset of the iAge project is the exchange of context-bound knowledge with such different parties”

Many areas in the North of the Netherlands, where the Hanze University of Applied Sciences is based, are known as regions with population decline. Lecturer and researcher Hieke van der Kloet and her supervisor Sabine Meier, outline the influence of demographical change on area development.

Sabine Meier is professor for Demographic Change at the Research Centre for Area Development. She does research on the influence of demographical change on regional development or, in other words, on the built environment. In cooperation with professor for Real Estate Martin Stijnenbosch, Meier supervises Hieke van der Kloet, who is studying the suitability of certain housing concepts for lifelong living. “In regions with population decline, demographic developments lead to obsolescence. What kind of houses should be built to make sure that seniors can live independently for longer?”

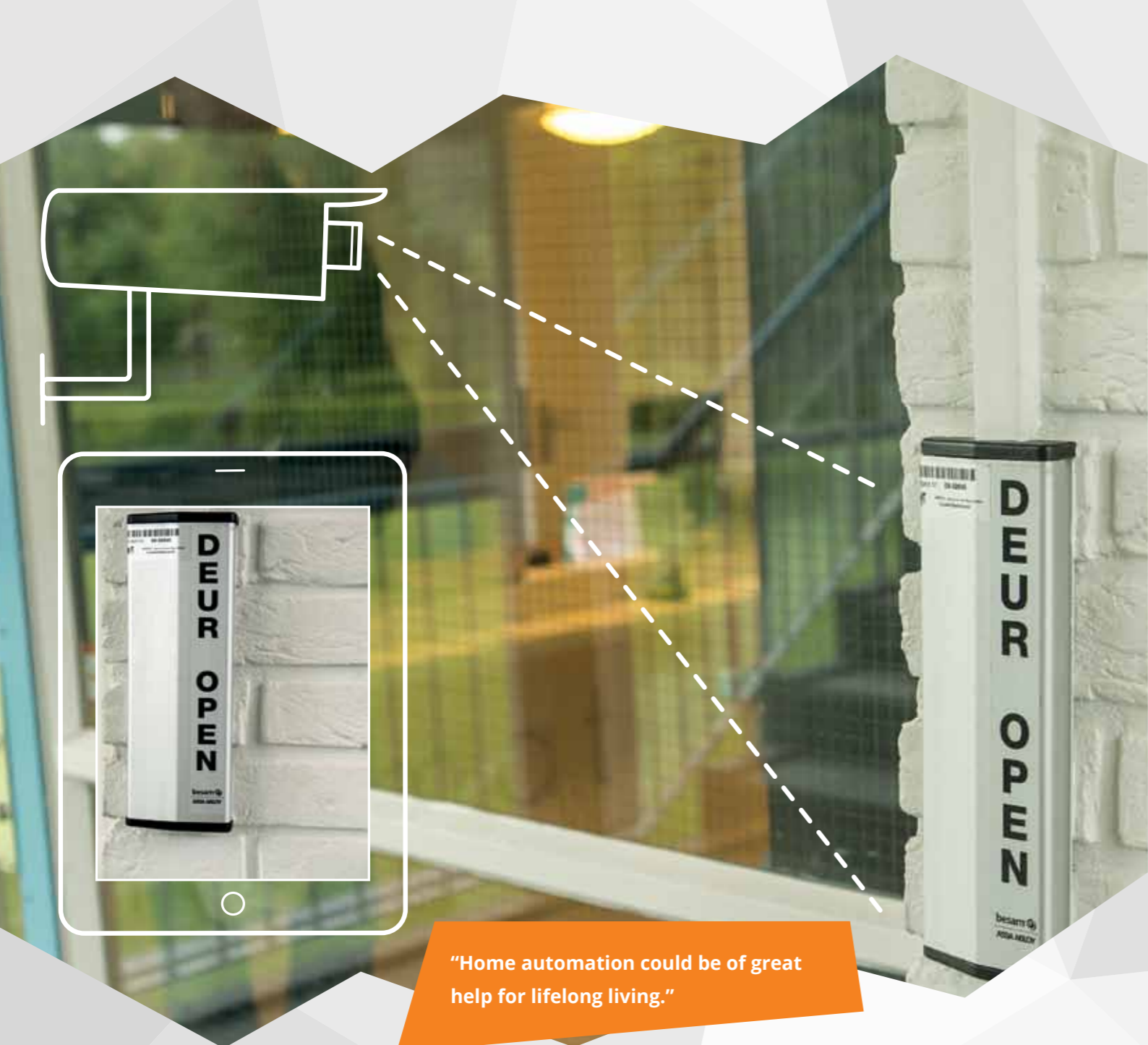
Although the demographic change is not as big in The Netherlands as it is in Germany, Scotland and Norway, a number of Groningen municipalities are known to be shrinking regions. Delfzijl, Eemsmond, Appingedam and Loppersum (the so-called DEAL-municipalities), De Marne and East Groningen, are so-called top ‘krimpregio’s’ - areas which need special attention.” Within these regions, municipalities are currently developing policy on a regional level in order to arrange the terms of care and housing for elderly people. Other northern regions such as North East Friesland, Emmen and some border areas in Drenthe are also regions of concern.

Meier’s knowledge and Van der Kloet’s research form the basis of the Lifelong Living-part of iAge, literally. “We are concerned with facility management and things related to the environment itself, for example vacancy and conversion. In cooperation with the professors for Real Estate we decide whether to demolish or convert a building in order to create new housing concepts for the elderly.”

Meier is very positive about the iAge project. “Its biggest asset is the exchange of context-bound knowledge with so many different parties with expertise in such fields as labour market, entrepreneurship, real estate, psychology and ICT. It is a European project, so we can learn from the different local contexts and creative solutions abroad. iAge has broadened the horizon of the lecturers, researchers and students working at the Hanze University.” Being able to see how other countries deal with these issues makes this project worthwhile, she says. The three year time span is also an advantage. “It enables you to build a working relationship with your partners and find each other for following international projects.”



“iAge broadens the horizon of the lecturers, researchers and students working at Hanze University.”



Home automation for lifelong living

Lifelong living raises the question of how seniors in regions in decline can remain healthy and live independently in their own homes for as long as possible. Student/researcher Betty Oppewal wondered what caregivers think is needed, in terms of house adaptations and technology, to achieve this. So she asked them.

“The demographic composition of regions in decline is changing”, Oppewal says. “The number of elderly people is growing. The simple fact that they need more care than younger people is putting increased pressure in local governments’ budgets. This at a time when municipalities need to make cutbacks. Assisting seniors to live independently in their own homes for as long as possible, could be a solution. Home automation applications could be of great help .”

To find out about the adjustments needed, Oppewal interviewed twenty caregivers from different home care institutions in the southwest of Friesland. People working with seniors who need specific care. “They have responsibilities and know exactly what the obstacles are.”

Generally speaking, caregivers are not very common with ‘domestic’ technology. “If you help a little and get them started, they can activate personal alarm systems and automated doors. But that’s it, usually. When the caregivers start thinking more about the domotica applications they already encounter in their work, they mention lifting elevators and stair lifts, adjustable beds, intercom and automatic lighting.”

“Caregivers see certain applications as a means to reduce some of the burdens; like a medication reminder or remote controlled curtains”, Oppewal continues. “But they are critical, too. Seniors must remain active, they say. As long as they can close the curtains themselves, they should do so.” And the use of smart phones and monitors meets with a lot of resistance. Caregivers regard them as imposed, cost reducing gadgets instead of practical tools, she discovered. “But when I explained the possibilities to them, they became enthusiastic. One district nurse, who cycled 25 kilometers to a client several times a day, sometimes only to heat a cup of milk, realized that having contact via a monitor would reduce her visits to the necessary.”

Self-sustainability, self-control, safety and privacy of the client are named as the main advantages of technological applications. Unfamiliarity with the possibilities, possible resistance, inability of the user and finances are mentioned as drawbacks. Oppewal is optimistic about the future. “We think seniors are incapable with regards to handling domotica. But everybody knows at least one senior who e-mails and skypes. And this number will increase.”

Does ICT contribute to independent living?

Hieke van der Kloet is lecturer/researcher at the School of Real Estate Management. In the context of iAge, she is dealing with the question of whether ICT can contribute to independent living. As researcher, she is involved in five pilot studies being carried out by students.

The diversity of the students' input is what Van der Kloet appreciates most in the iAge project. "Students of the schools of Real Estate, ICT, Architecture and Physiotherapy are engaged in this research. They look at subjects like obsolescence and demographic change from different perspectives. That's refreshing."

She is interested in the housing types of the future; concepts like the 'kangaroo' or informal care house where elderly people live with their children. Most of these houses already exist, but need modification. "People over fifty mention climbing stairs as the first problem to be expected as they grow older. So, obvious modifications to existing houses are a stair lift and a second handrail."

ICT solutions can play a role in independent living, Van der Kloet expects. But do people want them? And so, the research question of one of the pilot studies was whether people over 50 are open to technology as a means to staying in their houses longer. "Ninety percent of them prove willing to use technology to achieve that. Generally, people over 65 have a resistance towards computers."

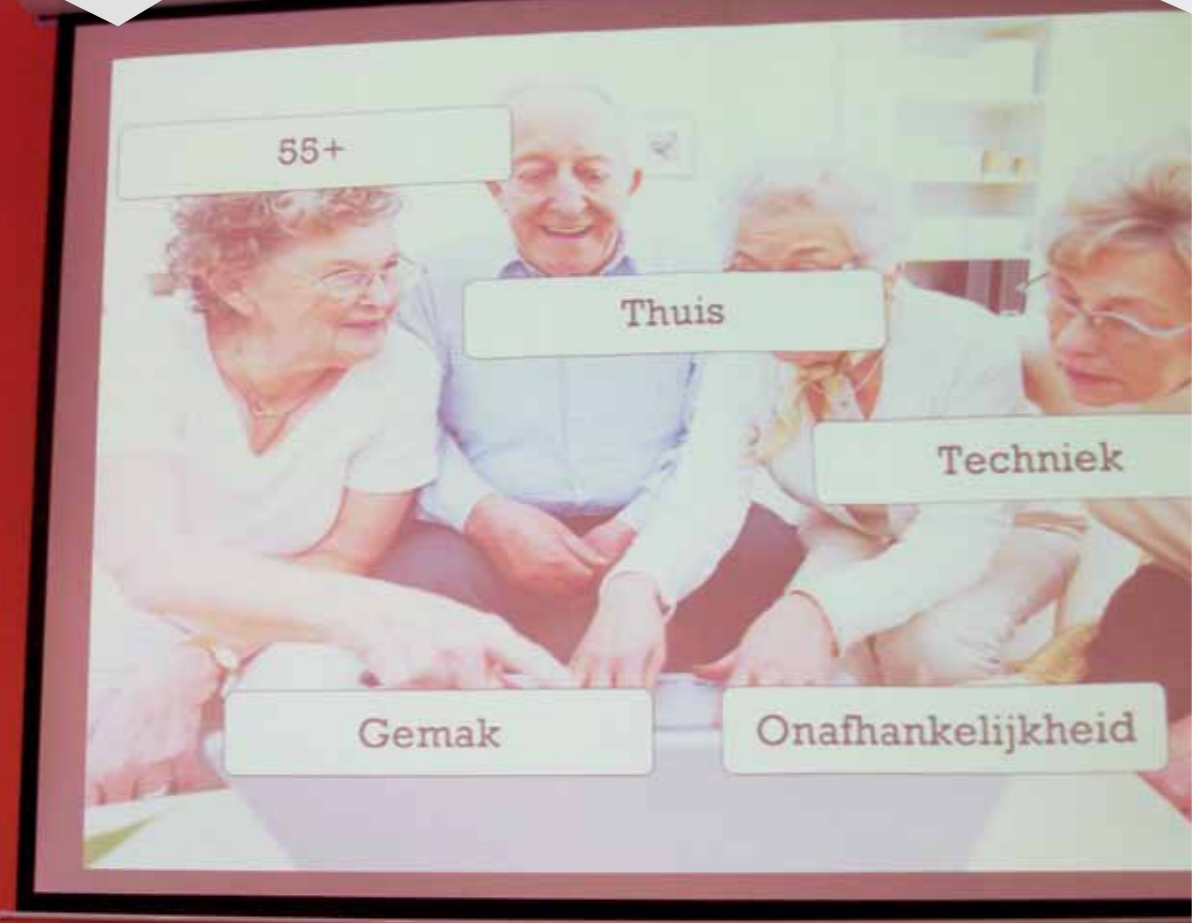
One of the promising, ICT-oriented outcomes of the research is a platform integrating and controlling ICT applications in a house. It runs on a credit card sized single-board computer called the Raspberry Pi and is presently being worked out by graduating ICT student Hielke Fellingner.

The pilot study 'Living the Future', carried out by six students of the School of Real Estate Management, is closer to her own field of research. The students asked 42 people over 65 which auxiliaries and house modifications helped them live independently before they moved to a nursing home. "75 percent of the respondents had had their houses modified. Strikingly, none of them regarded ICT as a means to living independently for longer."

Not deterred by the aversion for technology amongst people over 65, Van der Kloet is thinking ahead. "The self steering car could be an answer to demographic change. It would allow us to go shopping independently and stay in our houses and living communities to a high age."



"ICT is none regarded as a means to independent living."



“Technology can make older people’s lives just easier.”

HALP enables older people to live independently longer

In 2030, the number of people over 65 will be fifty percent greater than today. The impact on health care, labour market and the sustainability of communities will be extensive. To enable older people to live independently longer, six students of Hanze’s schools of ICT and Physical Therapy developed the prototype of a platform controlling ICT applications in a house. They named it Home Automation Living Platform (HALP).

One of the shortcomings of current home automation is the absence of a central platform to connect with. Devices cannot interact with and relay data to clients and medical practitioners. Bringing an open hardware platform and open source software into the clients house results in a powerful piece of hardware, capable of providing access to and from different sensors.

“With HALP, we developed a product which makes the life of older people easier”, ICT student Marco Vellinga says. “It is a modular system controlling different types of ICT auxiliaries. For example, HALP can make doors close at a certain time. It can also control sensors signaling people who have fallen.” Originally, Vellinga expected independent living to be specifically related to health. He was surprised to see that technology can make older people’s lives just easier as well. “Practical solutions like sensors and cameras make sure they do not need to be afraid they cannot live in their houses anymore.”

HALP runs on a credit card sized single-board computer, the Raspberry Pi. “Older people can be supported with ICT in different ways. They can have their curtains opened automatically in the morning, or have caregivers observe them.”

To make the support easily accessible, Fellingner wants to develop a device which integrates ICT applications. Older people can choose the applications they want to use in their houses. With the device they can turn them on and off. Of course, privacy will be warranted. “They must be able to determine who is watching them themselves.”

Usually, devices produced by a certain manufacturer cannot be used by everyone. For this reason, Fellingner wants to make HALP accessible to different suppliers. “Then it can be used by as many people as possible.” The device was originally intended to enable older people to live independently longer. But more target groups can profit from HALP. “It can be used by physically limited people and residents of nursing homes, too.”

We must ensure older people become familiar with technology

Commissioned by lecturer/researcher Hieke van der Kloet, Real Estate student Peter Veltkamp examined the attitude of a few dozen people over 50 towards practical, architectural and technological modifications in their houses aimed at living independently longer.

The objective of Veltkamp's graduation research, called 'A Careless future', was the development of a checklist. "This research must lead to a list by means of which houses can be assessed as whether or not appropriate for different types of people over 50, depending on their way of life."

The main research question was with which conditions a checklist should comply to be useable for those who classify houses. Veltkamp started with target group segmentation. He divided his respondents into categories, such as single or not, dependent of care or not, and younger or older than 70. He then interviewed a few dozen people to find out what they think about home modification and if and how they have already modified their houses.

Being a Real Estate student, he focused on architectural and practical modifications. "Adjustment like a broadened stairs and basic auxiliaries like a heightened toilet, banisters and a stair lift." But with iAge in mind, Veltkamp also included questions about technology. "I asked their opinion about using an iPad to talk with their physician or to remind them to take their medication." Some outcomes were foreseeable. For example, being asked whether or not they regard their houses as life-cycle proof, respondents living in houses with stairs said no. And mostly due to unfamiliarity with computers, people over 70 are hesitant towards technology. But Veltkamp came across unexpected issues, too. "No two persons are alike. The level of education and age is a differentiating factor. Lower schooled people say they will just go to a nursing home and have themselves taken care of, when the time comes. The higher schooled say they would rather find their own solutions to age-related problems. And people between 50 and 60 claim they will completely modify their houses, technology included, whereas people over 80 say they do not want any of that modernity."

The results led Veltkamp to the following recommendation. "It is great to have people living in their own houses as long as possible. Considering the developments in the labour market and health care, it is even necessary. But we must ensure older people become familiar with technology, first. Most importantly, we need to know who these people are, what they need and what they want."





If houses are improved preventively, home automation is less necessary

In the Netherlands, laws and regulations concerning care for elderly people are becoming more and more strict. If a person falls within the first three classifications of healthcare as described under the Dutch Social Support Act, he or she cannot be placed in a nursing home anymore. Since this is the case for the majority of older people in our country, this calls for measures to ensure that they can live in their own homes as long as possible.

Kaspar van Huppelschoten and Wilbert Steenhuis, students of the School of Architecture, Civil Engineering and Construction, conducted a graduation research into the life-cycle durability of Dutch social housing. Commissioned by housing cooperative Lefier, they examined the architectural characteristics of a soon to be renovated district in Nieuw-Buinen, a small town in the municipality of Borger-Odoorn in Drenthe.

The doorframes of the early post-war houses needed to be wider, they saw, and the bathrooms were not accessible for wheelchairs. Moreover, the halls and stairs were too narrow for the installation of a chairlift. Taking these architectural constraints into account, Van Huppelschoten and Steenhuis came up with the concept of convertible façades. Steenhuis: "We made up three types of façades. The standard module is the façade as it is now. It can stay in place if the inhabitants have no physical limitations. The 'care' module has a wheelchair accessible bathroom and makes the ground floor habitable for one person. And the 'transport' module is custom made for one or more physically disabled people." Depending on the inhabitants needs, the modules can be hooked on to and removed from the ground floor easily.

The duo also looked at the life-cycle durability of the district as a whole. The presence of a multifunctional health care centre could offer possibilities for splitting the district, Van Huppelschoten suggests. "Houses within a radius of 300 meters from this centre can be qualified as homes for intensive care by including an alarm system." But there are more features a life-long durable district should have. "Sidewalks must have a certain width and parking bays need to be close to the houses."

Van Huppelschoten and Steenhuis restricted themselves to the architectural possibilities. They did not include home automation solutions. Nevertheless, their research led to an assumption in this area. Steenhuis: "If you work preventively on improving a house in terms of lifelong livability then home automation is less necessary."



Labour Market: Sustainable employability

Gradual Retirement

Economic (e-)inclusion of older workers is problematic in western societies in general, and in the Netherlands in particular. Approximately 2% of hired workers is over fifty in the Netherlands, whereas that number hovers around 10% in other countries. Given the current low regarding the job market for older workers in the Netherlands, this pilot explores the opportunities for two alternative strategies to increase the e-inclusion of older citizens. Improving opportunities for gradual retirement can help lengthen careers by allowing for a gradual reduction of productive work rather than a full stop.

Self-tracking devices

This part of the project focuses on increasing e-inclusion of older citizens by stimulating self-employment and awareness using self-tracking devices - so called mHealth applications. Older workers get the opportunity to use and test self-tracking devices that measure and give feedback on the workers' lifestyle. In the project, the Professorships New Business & ICT, Labour Market Participation, the Quantified Self Institute and SME Estafette, cooperate intensively.

ICT tools are considered helpful in supporting sustainable employability

Whereas in most European countries ten percent of hired workers are over 50, in the Netherlands the number hovers around 2%. Dr. Franz Josef Gellert, senior lecturer at the International Business School, tried to find out what is needed to increase the percentage.

Although older workers are usually stereotyped as being less productive and less capable than younger workers, people over 50 possess a lot of knowledge and expertise which can be used in companies, society and communities. Gellert conducted a research into the wishes, desires and wants to further develop gradual retirement schemes as scenarios for both the employers' and employees' mutual benefit. His target group consisted of employees of small and middle-sized companies in the fields of production, health, services and governmental organizations. Students of the International Business School collected data through questionnaires and interviews.

Quantitative and qualitative results show that workers between 50 and 67 prefer to retire gradually by applied flexible working schemes, reducing the workload and the weekly hours. Gradual retirement stands for more than a phased reduction of working time. It also includes adaptive modification of job content. ICT tools are considered helpful tools in supporting sustainable employability. They can make older workers less vulnerable at work places, make them stay employable and can also be used as a means to stay in contact with peers, friends and local institutions after retirement.

Gellert concluded that scenarios considering reduced working hours, knowledge transfer, flexible time schedules and ICT training need to be developed to improve transition to retirement and to ensure societal inclusion after retirement.

Marten Dubbelboer is one of the students involved in Gellerts research. Dubbelboer, a third year student of International Business and Management, went to the iAge midterm conference on Healthy Ageing in Norway. With other Hanze-students he gave a presentation on their research into older workers and ICT. "Older workers have a lot of experience, but they start to feel insecure when they cannot keep up with ICT developments in their work. That is a pity, because they tend to be more productive than younger workers. It was very interesting to discuss this matter with our international partners of the iAge project. I've learned from this project that working with teams consisting of young and older people is very valuable. They can learn a lot from each other. The thing is that they learn to explain to each other what they mean and what they need."



"Older workers can feel insecure but they tend to be more productive."



“Sensor technology provides a vulnerable group of employees with a means to master their health and lifestyle.”

In control again by the use of sensor technology

The working population is getting older. Employees are forced to work longer. The aim of research with sensors, so-called self-tracking devices, is to increase older workers' employability by giving them information about their physical condition and functioning.

Louis Polstra is professor Labour Participation at Hanze University. He became involved in the iAge project because of his expertise in young, incapacitated employees with behavioral problems like autism and ADHD. “Usually, these people are unable to assess their level of stress. That means they do not know when it is time to take a rest or do some breathing exercises. But if their heartbeat, blood pressure and respiration are being measured with sensors, they can be informed to take action in time. That is, before the measurements reach the danger zone. Research literature shows that if we equip experimental subjects with sensors, the results are promising. Feedback about one's physical condition appears to lead to changes in behavior.”

When Polstra discussed his idea with the professor for New Business and ICT, Hugo Velthuisen, another option for the application of sensors became apparent. iAge deals with a specific target group: people over 50 who are working. Polstra joined the project and focused on older workers, with the aim to decrease their risk of dropout. “The idea is similar. How can we keep vulnerable groups of employees working by providing them with information about their physical condition and functioning.”

From his own experience, Polstra knows the importance of having access to facts at certain times in your life. “You can only have an honest, objective conversation and make a decision if you have the facts. And when you provide people with facts about their physical condition and functioning, they can show themselves and other people what they can and cannot do and are able to change their behavior.”

To him, the use of sensor technology by older workers is nothing less than an instrument of emancipation. “We know that feedback can lead to changes in behavior. By giving them objective feedback about their physical condition and functioning and coaching them, you provide a vulnerable group of employees with a means to master their health and lifestyle. They're in control again.”

A first step towards testing the effectiveness of self-tracking devices

In his pilot study at MTW lecturer/researcher Hilbrand Oldenhuis tries to find out if and how older workers can be stimulated to change their lifestyle in order to stay vital and work longer. Twelve employees of the company were equipped with sensors giving feedback on one aspect of their physical functioning. Oldenhuis sees many opportunities for a follow-up study.

Hilbrand Oldenhuis, Lecturer Applied Psychology and Senior Researcher at the professorship Labour Participation, is not a technician. He is interested in sensor technology as a possible means to increase sustainable labour participation. But being a social psychologist by origin, Oldenhuis is especially keen on finding out if and how older workers can be stimulated to change their behavior in a way that makes them employable better and longer.

His pilot study at MTW is a first step towards testing the effectiveness of self-tracking devices. It uncovered practical and methodological issues that you have to take into account, before starting a large-scale research. "Some devices didn't work properly. Then, employees started asking for another device because one of their colleagues had recommended it. Maybe the freedom to choose their own sensor should have better been a bounded freedom. The employees choose the area of their health they want to map and we offer them a limited amount of devices available for that area."

Still, Oldenhuis sees autonomy as an essential element of this type of research. You should not impose a sleep measuring sensor upon someone who wants to get more physical exercise, he knows. "People take their own targets as a starting point and you have to connect to those targets. Psychological theories show that autonomy is a premise for behavioral change."

Can we already say that self-tracking devices do change behavior? No, says Oldenhuis. "But I see many opportunities. If personalized and related to personal choices and goals, feedback can stimulate people to effectively change their behavior." He does not expect self-tracking devices to be the answer to all problems concerning ageing and obsolescence. "Coaching will always be needed to make the feedback they give personally meaningful to the employees using them."

Oldenhuis has plenty of ideas for larger-scale follow-up studies. He sees younger, incapacitated workers as an interesting target group, for example. Eventually, he wants to design a toolkit that specifies what to do and how in which context. "Then we can test self-tracking devices in different companies, organizations and target groups."



"Autonomy is a premise for behavioral change."



“Employers are more aware of the importance of contributing to their employees’ vitality.”

Awareness is the first step to behavioral change

Network organization Quantified Self Institute (QSI), founded in September 2012, is the world’s only multidisciplinary research group focusing on personalized health and self-tracking. QSI’s Research Director Martijn de Groot strongly believes in sensor technology’s contribution to vitality, sustainable labour participation and healthy ageing.

In March 2014 a three-month pilot study with self-tracking devices was launched at MTW. The Quantified Self Institute works closely with researcher Hilbrand Oldenhuis. They advise on the use of the devices. Which types of sensors are available and how useful are they to the respective employees? And QSI does more. De Groot: “We ask each employee for his or her personal grounds and objectives. Why do they want to increase their vitality, in other words: what’s in it for them? Then we choose an appropriate device together.”

Vitality is synonymous to extra quality of life. And for many people over fifty work is an important way to remaining vital. It is a pastime that makes sense and increases their happiness. More and more employers see the importance of contributing to their employees’ vitality, De Groot says. “Work is no longer seen as a way to drain your battery, but as a vehicle to ageing in a healthy way. That’s a positive development.”

The Research Director of QSI has an advisory role in iAge and guides the project’s research on biofeedback, or self-tracking. In Oldenhuis’ pilot study he has focused on ‘the big five for healthy life’: daily physical activity, food and nutrition, sleep, stress and social interaction. “These are the factors of which we know that if people score well on them, chances are pretty good that they live and age in a healthy way.” The sensors given to twelve work coaches at MTW measure certain aspects of activity, sleep, stress, relaxation and social interaction. The employees wear these, coached by service provider Estafette, and get feedback about their physical functioning and condition.”

Sustainable labour participation is a complex matter. Trying to determine how MTW’s employees experience conscious thinking about their vitality and getting objective data retrieved by sensor technology, De Groot came across several complex questions. Matters of data aggregation, privacy, legal aspects, validity, cost and user-friendliness. It’s too early to draw conclusions yet. But he thinks this pilot study holds a promise for the future. “Self-tracking devices give you an insight into your lifestyle. And awareness is the first step to behavioral change.”

The numbers tell the tale

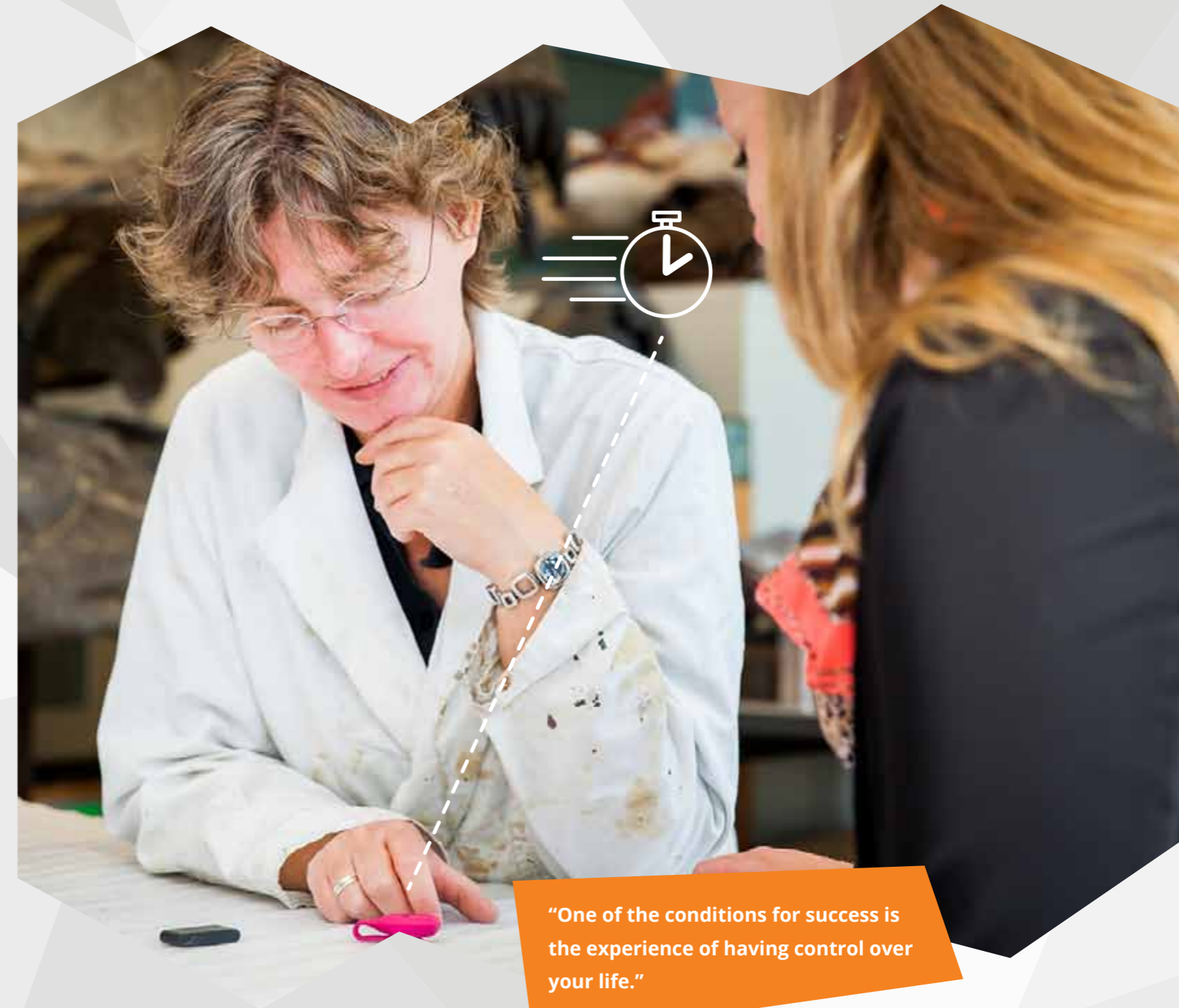
In March 2014 lecturer/researcher Hilbrand Oldenhuis started a pilot study on sustainable labour participation of older workers at MTW in Groningen. Twelve employees of the company were equipped with self-tracking devices to give them insight into their physical functioning. Deputy director Willy Warnar was one of them and got a pedometer.

MTW offers vocational rehabilitation to people with a distance to the labour market due to psychological disorders. The company celebrates its 25th anniversary this year and produces plastic replicas of museum objects, bronze casts for visual artists and artificial rats to perform surgery on for Microsurgery students.

MTW's deputy director Warnar had been talking with Louis Polstra, professor of Labour Participation at Hanze University, about the use of sensor technology for some years. MTW is a foundation and has no funds for sensors. But Warnar believed in their benefits from the start. Unsurprisingly, she was happy to hear that Oldenhuis wanted to do a pilot of his research at MTW. "Our company is a perfect breeding ground for this kind of research."

Along with eleven employees Warnar participated in the pilot study. If you want your employees to do something you should try it out first, is her motto. Besides, she is almost 60 and has gained a few kilos in the past years. "I am in the target group." She chose a pedometer for a self-tracking device. And six weeks after the pilot's launch she is positive about its effects. "I've noticed that I'm very keen on making the necessary 10.000 steps a day, since I've been wearing this wristband. I eat less than I used to and I take my bike instead of my car more often. The pedometer stimulates my awareness and my wish to change bad habits."

Warnar has always known that the numbers tell the tale. She would be happy to see Oldenhuis' research implemented in her company on a larger scale. "One of the conditions for success is the experience of having control over your life, I use to say to the people who work here. A self-tracking device gives you that control, I have noticed. It gives insight into your physical functioning and makes you take responsibility for the things you want." A better recommendation for self-tracking devices as a means to realize sustainable labour participation is hard to find.



"One of the conditions for success is the experience of having control over your life."



“Autonomy is the key word.”

Sustainable employability and vitality are themes for the future

Hilbrand Oldenhuis' pilot study at MTW measures the effects of sensor technology on health related behaviour. People using self-tracking devices need to be coached, he claims. In his research Estafette carries out the coaching.

Estafette is specialized in the development of vitality. The young company assists organizations willing to improve their employees' physical functioning and well-being. One of its products is The Great Vitality Show, a theatre play which acquaints employees with the theme of vitality and makes them think more about it. Estafette gives workshops and develops game formats too.

When the managing director and founder Cees Frankruijter came across Hanze University's Quantified Self Institute (QSI), he became interested in their work and contacted them. QSI's Research Director Martijn de Groot introduced Estafette in to the iAge project. Frankruijter: “Healthy ageing, sustainable employability and vitality development are overlapping concepts. Most projects dealing with those concepts fail because they focus on the supply-side. Employers try to force their employees into vitality improving courses. They forget that if you force someone to do something, he will be reluctant to do it.” Estafette has another approach. Autonomy is the key word, Frankruijter knows. “Vitality development is a part of the personal privacy domain. Therefore, employees must be able to decide whether they participate in a course or not.”

Frankruijter is the human factor in Hilbrand Oldenhuis' pilot study. He coaches the employees of MTW participating in the project, asking them for their personal goals, giving feedback and creating insight. The employees appreciate the conversations they have with him, he has noticed. “They like talking about their vitality issues with someone from outside their company. Of course, I make sure that privacy is guaranteed. I want them to feel free and say what they want about the vitality theme.”

As a coach, Frankruijter acts in the background. After all, the pilot study is supposed to measure the effects of sensor technology, not his coaching results. And so far the effects are positive. Not only MTW's employees become aware of their vitality related actions, needs and goals. “I wear a pedometer myself and when I haven't made my daily 10,000 steps, I go out for a walk after dinner instead of watching TV.”

The managing director of Estafette perceives an increasing interest in sustainable employability and vitality. More and more companies present themselves as organizations supporting their employees' vitality. “Sustainable employability and vitality are themes for the future,” he therefore concludes.

ICT is more a means than an end in itself

Professor New Business & ICT Hugo Velthuijsen introduced the Hanze University as partner to the iAge project following the successful InterregIVB application by the Province of Drenthe. Velthuijsen, who sees himself as the project's substantive conscience, has overall responsibility for the integration of ICT within Hanze's contributions to iAge.

Velthuijsen is very satisfied with what iAge has brought about so far. "In the fields of lifelong living and the labour market our centres of applied research have found topics they can build on in the coming years. We started from scratch and encountered issues that linked us internally. That goes for the University as well as its partners. We pool our knowledge and make connections, develop further and make results accessible to others in our own region and internationally.

For Velthuijsen, the essence of the project lies in its focus on health instead of care. After all, there is an abundance of projects dealing with living and care already and, generally, speaking about care implies speaking about the final stage of life. "But our approach in iAge deals with health, fitness and life-course sustainability. We looked at life as a whole and tried to think of ways to improve, support and prevent (or at least postpone) physical limitations and care. It was a new approach."

The smart phone is an obvious starting point for independent living, Velthuijsen says. It can be used to switch on the TV and the central heating. And most of us have one. "Then, think of all the other technology you already have that can be used for health related matters. Apart from a TV, everyone has a computer, internet and audio equipment. If you need to purchase particular equipment or software due to physical limitations, this can be integrated in the devices you already have. In this sense, ICT has been more a means than an end in itself.

We should develop along with the stages of our lives in a natural way, is the point Velthuijsen wants to make. "iAge is not about people in need of care. It is about people over fifty. They must prepare, adapt and stay fit."

Regarding the labour market element of iAge, Velthuijsen is sure the ageing workforce will benefit from self-tracking devices in the future. "Hilbrand Oldenhuis' research pilot into self-tracking devices was only the first step in a very promising direction."



"The focus is on health instead of care."



International Results

The partners in iAge exchanged experiences and expertise within each workpackage and between them. They implemented the iAge check, added knowledge to wikiAge, participated in meetings and conferences organized by each partner and all contributed to the transnational exchange and dissemination of results. Some of the specific results of Hanze University are shown on the next pages.

iAge partners visit International Health Battle at Hanze University

During the iAge partner meeting in Groningen the International Health Battle took place at Hanze University of Applied Sciences Groningen, The Netherlands. Students from the iAge project Universities of Scotland, Norway, Denmark, The Netherlands, Belgium and Germany attended the competition. Delegates from the iAge partnership also witnessed the three-minute pitches.

Thirteen student teams, consisting of students from all over Europe, worked in multidisciplinary teams on issues related to Healthy Ageing. They competed for a place in the finals. In just one day they solved cases on issues related to health and lifelong living.

The winning team from Arnhem came up with an interesting idea on how to develop a "Medication App" for Rijnstate Hospital. Basically the idea is to develop a tablet application somewhat similar to facebook. Patients give permission to their doctors to view their profiles. The app also helps patients to remember when to take their medication and allows them to contact their doctors in a direct way. According to the jury "the students did their research, approached the case with user-centered design and really kept the target group in mind."

Other groups worked on cases dealing with helping people with dementia to continue living at home, a checklist system especially created for hospital dismissal, and ways to make patients feel happier so they actually feel better.

One of the SMEs who provided a case was Innovia Curis. Innovia Curis developed a mobile application to reduce the number of human errors in the preparation and administration of medication. The task of the students was to develop a key idea for a marketing communication strategy to launch this mobile patient-safety app.

Their idea did not make it to the finals but the students were so enthusiastic, that even after the Health Battle they continued working on it. They also stayed in contact with the student from the University of Agder, Norway, who participated during the Battle.

Their communication strategy worked, the app has been launched in two hospitals. A good example of a successful international cooperation by SMEs and partner universities!





An application with the potential to support patient's care

In November 2013, start-up company Innovia Curis and students of Hanze and iAge partner Universities participated in the International Health Battle. Their case did not win the contest, but was promising enough for further development. Recently, the alpha version of the application for reducing human errors in medication distribution has been presented in two hospitals.

Innovia Curis is a consultancy company providing solutions for the pharmaceutical world. It develops process solutions and products aimed at facilitating the preparation, administration and distribution of medication. Owner and Hanze-alumni Jan Coerts works a lot with students. Three of them helped him develop an application for smart phone and tablet after the International Health Battle in 2013. The application is designed to reduce the number of human errors in medication distribution and consists of a server, a printer, two mobile phones and software. "It's a total solution for the pharmaceutical world and can be used in any hospital or healthcare centre, because it works by itself and only needs Wi-Fi."

The alpha version of the application was presented in the Martini Hospital and the University Medical Center Groningen (UMCG) in May. Three students of the Master of International Communications from the United Kingdom, Belgium and Russia wrote a communication plan. They strongly believe in the product. Carolien: "To be able to explain and communicate it to others, you must understand a product and believe in it. Once I knew this application could drastically reduce the number of human errors in medication distribution, I realized how innovative and important it is." Emily: "It's quite refreshing to be part of something that has the potential to change patient care."

People should know that despite all the technological development in pharmaceuticals, medication errors still occur. They must be convinced that the application will make the lives of doctors, nurses, pharmacists and their patients easier. "We focus on the professional community first," Carolien says. "I'm sure a broader audience will be reached later. But that will take some time." Emily agrees. "There are many hurdles to take when dealing with hospitals.. Even if you believe in your product, it will take a lot of time to convince people. But once the product is in use in a few hospitals, it will have a domino effect."

Oksana thinks it is a question of image. "Hospitals using this application will be regarded as socially responsible organizations, not only dwelling on business goals, but on innovation, sustainability and the future as well."

Course on usability and accessibility

Students, who were involved in research of home automation at the iAge project, could participate in a program about usability and accessibility at the University of Abertay Dundee, Scotland and University of Agder, Norway. Rob Willems and Jos Bos lecturers from Hanze University and experts in usability and accessibility accompanied them.

In the introduction of the program the students learnt a lot about how people see things around and what people will focus on. Allan Milne, a vision impaired software engineer, held an inspiring talk. He knows a lot about technology and how to make it work for people who are impaired in every possible way. This is the key factor for usability.

In the workshop about co designing a quite challenging and stressful assignment was provided. The experience of some impairment yourselves really gives you the idea of the difficulty people with impairments have to cope with. This information is essential for designing products for iAge.

In the game presentation event, students of the University of Abertay, presented their game concepts to the public and developers of leading game studios.

The course in Norway was hosted by the University of Agder. The director of the Centre for eHealth and health care technology introduced the course. Lectures were given on different subjects that relate to usability and user experience. In Norway the focus was the human perception and how it deteriorates over time.

The course involved testing systems in the usability lab of the University of Agder. They made a system that allowed a General Practitioner (GP) to contact a patient at home using a video conference call with a tablet. The GP could instruct the patient to take some simple health tests like attach blood saturation meter, a blood pressure meter and a peak flow-measuring device.

Results of the test cases were discussed with students from Iceland, Norway and Germany. Both groups had different things to say about the usability and accessibility of the lab. This experience was taken in account when conducting the usability and accessibility experiment for the iAge project.

As a transnational result the University of Abertay and Hanze University developed a checklist and guidance for testing the usability and accessibility of developed IT products.



“Experience of impairment gives you an idea of the difficulties people with impairments have to cope with.”



Fit 4 Sustainable Employability (F4SE)

As a follow up of the Interreg IVB iAge project, several partners were interested in participating in the Fit 4 Sustainable Employability program. F4SE aims increased labour productivity and employability. It stimulates (vulnerable) workers through lifestyle awareness via mHealth devices and personalized coaching. The support system combines sensor technology for biofeedback with advice about and counselling in change behaviour and self-management. The partners of F4SE recognise that innovation is needed within four dimensions: Behaviour Change, Organisational Change, Business Innovation, Technological Innovation.

The F4SE proposal is an improvement over current practice because it engages employees into self-management of adequate fitness for their job. Self-management implies self-motivation and is expected to be more effective than typical externally motivated interventions. Moreover, the use of sensor devices and an IT system enables 24/7 feedback and support, making the FIT4SE proposal a much more immediate and responsive approach than regular fitness programmes. The use of sensor devices has been shown to have an effect on behaviour of individuals, most notably within the Quantified Self movement. However, these cases involve typically very motivated users with specific goals and ambitions to understand and possibly change their behaviour. Furthermore, these devices have become available only fairly recently and have seen already a number of new product releases. This making it hard to establish scientifically that effects are sustained over a longer period of time. Could it be the device, or any particular feature of the device that caused the changing behaviour?

The basic approach and system allow for a large variation of interventions. Users may indicate interest in working towards very diverse goals. Interventions are conceivable that deal with physical as well as with mental fitness, creating biofeedback loops involving, e.g., physical activity, food and drink intake, mental training, stress, sleep and relaxation. The same basic infrastructure may be effective in all these areas. Moreover, different jobs may require different fitness levels. The thresholds of minimal performance in any given job can be defined and set as targets for an individual holding that job. The basic system would be the same for, e.g., both blue collar and white-collar employees.

The chosen approach is practice-based, developing the solution in situ. By taking an applied research approach, all factors (personal, organisational, commercial, financial, technical) can be taken into consideration, thereby developing a solution that would be realistic and implementable in the real world. Involved iAge partners are University of Abertay (Scotland), Intercommunale Leiedal, Mentor (Belgium) and Sentiso (Germany).

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About the Professorships, QSI and Estafette

Professorships Labour Participation, New Business & ICT, Demographic Change

The professorships Labour Participation, New Business & ICT and Demographic Change combine research and education at the Hanze University of Applied Sciences Groningen.

By cooperating on the intersection of these different disciplines, new areas of expertise arise. These areas need to be broadened and deepened. There is also a need to develop more practical and relevant knowledge for business and education purposes.

By exploring technical possibilities for sustainable employability and sustainable communities, new insights can be enhanced.

Professor Louis Polstra, Hugo Velthuisen and Sabine Meier work together with private parties, lecturers and students in pursuit of these goals.

Quantified Self Institute

QSI is a multi-disciplinary research group active in the emerging field of apps and wearable technologies. The Quantified Self Institute was founded in 2012 by the Hanze University of Applied Sciences (Groningen, the Netherlands) in collaboration with QS Labs LLC (San Francisco, USA) as a research network and project organization.

The QSI studies the availability, usability, validity and effectiveness of devices and apps. The ultimate question is: do these tools help us to stay healthier? The ultimate goal: finding out by what means and to what extent self-tracking is useful for personal health. QS focusses on the Big Five for Healthy Life (physical activity, food, sleep, stress & relaxation and social interaction).



Estafette

Estafette is a specialist in the field of reducing disability and the associated organizational changes. Estafette focusses on organizations that have ambitions to professionalize their approach and has expertise on change methodologies and legislation.

Features Hanze University of Applied Sciences

- Hanze University of Applied Sciences Groningen focuses on finding solutions to various current issues in collaboration with (external) partners.
- Applied research and innovation are integrated into the education programs. It plays an important role in linking education with the professional practice.
- Hanze University of Applied Sciences focusses on the strategic themes Energy, Healthy Ageing with key focus areas on Entrepreneurship and Excellence.

Facts

- Largest university of applied sciences in the north of the Netherlands 26.233 students, 2.947 employees, 70 education programs.
- Best university of applied sciences in the north of the Netherlands (Elsevier 2014, 2013)

Cooperation businesses and institutions

- 60 Centre's of Applied Research and Innovation
- 50 Professorships

Market focus in education and research

Healthy Ageing, Energy, Entrepreneurship & Excellence

Source: hanzegroningen.eu/annualreport

