Breeding place for sports innovation and business creation

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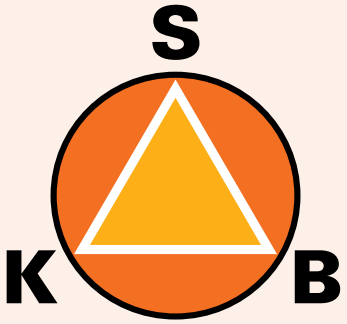
What is a FieldLab?

A FieldLab for sports innovation is a research and development location in a real-life urban setting where citizens engage in sports and play activities. For example in a playground, a sports field or in the public space. A FieldLab initiates and stimulates cooperation between sports, business as well as knowledge, health and government institutes.

In a golden triangle they work together on development, validation, realisation and introduction of new products, services, interventions and facilities. Scientist and students do research and gather data. Start-ups can try out new ideas. Businesses can install new product prototypes or production models to have them tested by end-users as part of regular sports activities. A FieldLab therefore is an instrument for sports innovation and a breeding place that facilitates business creation. At the same time, cities create attractive spaces that contribute to health and well-being, their citizens will have new playgrounds to meet and have fun.



Sports (S), business (B) as well as knowledge (K), health and government institutes together can create golden triangles.

> *ProFit has been the start of an exciting journey that I hope will bring about a new road for sport and exercise innovation.*
>
> *Cees van Bladel, project leader ProFit on behalf of Sports and Technology*

Public private partnership

The concept originates from Eindhoven (Netherlands). In 2008 the first facility of this kind was realised on municipality sports grounds in a cooperative structure between public and private parties. From new playground equipment for children to exercise programs for the elderly; from the monitoring of playing young people to a model to support sports clubs; and from the development of LED lighting for sports facilities to testing of multifunctional sports surfaces. In the past years a range of new products, services, facilities and interventions have been developed and tested in practice in the FieldLab in Eindhoven.

ProFit, a European project

With Eindhoven as example we can now find FieldLabs in Delft (Netherlands), Kortrijk (Belgium), Sheffield (UK) and a mini-FieldLab in Newtownabbey near Belfast (Ulster). This is the result of the European project ProFit that was running from 2011 to 2015 and was funded by the European Union, under the Interreg IVB North West Europe program.

Through innovation competitions the ProFit project has also yielded new ideas, prototypes and products. A supportive research program has provided better understanding of the FieldLab concept and scientific rigour to the development and operation of the FieldLabs and the innovative concepts and products. Participating universities have been Sheffield Hallam University, University of Ulster, Eindhoven University of Technology, Delft University of Technology and Howest, University College West Flanders.

International network

For this research and for future research and tests a number of methods have been developed and tools for monitoring and analysis are installed. Within the ProFit project two PhD candidates performed their scientific work.

In the five participating cities cooperation between municipalities, universities and companies created new links or enhanced existing contacts. At the same time a valuable international network for sports, play and movement innovation has been established. Through the ProFit project more students became interested in sports, play and movement innovation and more awareness for these matters by media and a broader audience has been created.

Also in the future the five FieldLabs intend to work together. Besides the exchange of knowledge and experience, this provides the opportunity to do research on larger and international scale. For companies this international platform offers opportunities for the exchange of knowledge and testing on the one hand and for market introduction on the other hand.

MORE MOVEMENT
more business!

The FieldLab site in Eindhoven is located on a former soccer pitch. It consists of one grass pitch, four different artificial turf pitches of recreational size and a range of playground equipment, both interactive and adapted for special target groups like elderly. The testing site is surrounded by a 400 meters, two lane athletics track and an asphalt track. Activities like school sports, children's parties and corporate outings take place on these multifunctional sports grounds.

EINDH

The FieldLab in Eindhoven is located in the middle of sports grounds in the northern part of the city. The sports grounds are surrounded by a rather densely populated area, which makes is a highly visited location. Also schools and a police academy are nearby. The accommodation of the FieldLab itself is run by the commercial company Op Noord that organises events and activities for school, company and other groups.

Within a broad range of visitors and users the focus of the FieldLab is on youngsters (approx. aged 14-21 year) and young seniors aged 55-65 year. The mission is to support innovations that improve the quality of recreational sports or make recreational sports more attractive for the target groups mentioned above. Companies and design students can count on support in testing and monitoring as well as access to the large network of the FieldLab Eindhoven.

OVEN

Developing and testing new prototypes

Since the start in 2008 several new products and services have been developed and tested and start-up projects and companies have been supported. LED Expert, a local engineering company, came up with a dynamic system of LED floodlights for sports grounds. Prototyping and testing of energy use and user friendliness in practice took place at FieldLab Eindhoven. The company AAA-Lux was created to market the products, also for large parking and industrial areas. By now is realises big projects like the Euro Hockey Nations Championships 2013 in Belgium and has clients like Schiphol Airport and others all around the world.

4D sports ground

With support from ProFit the first 4D sports ground in the world has been realised and is being tested in FieldLab Eindhoven. It consists of horizontal panels that rotate to create various surfaces; a soccer pitch with artificial turf, a multi-functional plastic floor, and a surface with solar panels or billboards. This technology creates 24/7 usage of sports grounds and can help sport clubs to generate additional income. The project is realised by the Sublean Group together with InnoSportNL, Greenfields, Descol, Delft University of Technology and vv Sliedrecht.

> *SmartGoals increases super-fast processing of information.*
>
> *Hans van Breukelen, former goalkeeper of PSV and the Dutch national soccer team and Director of Sports and Technology*

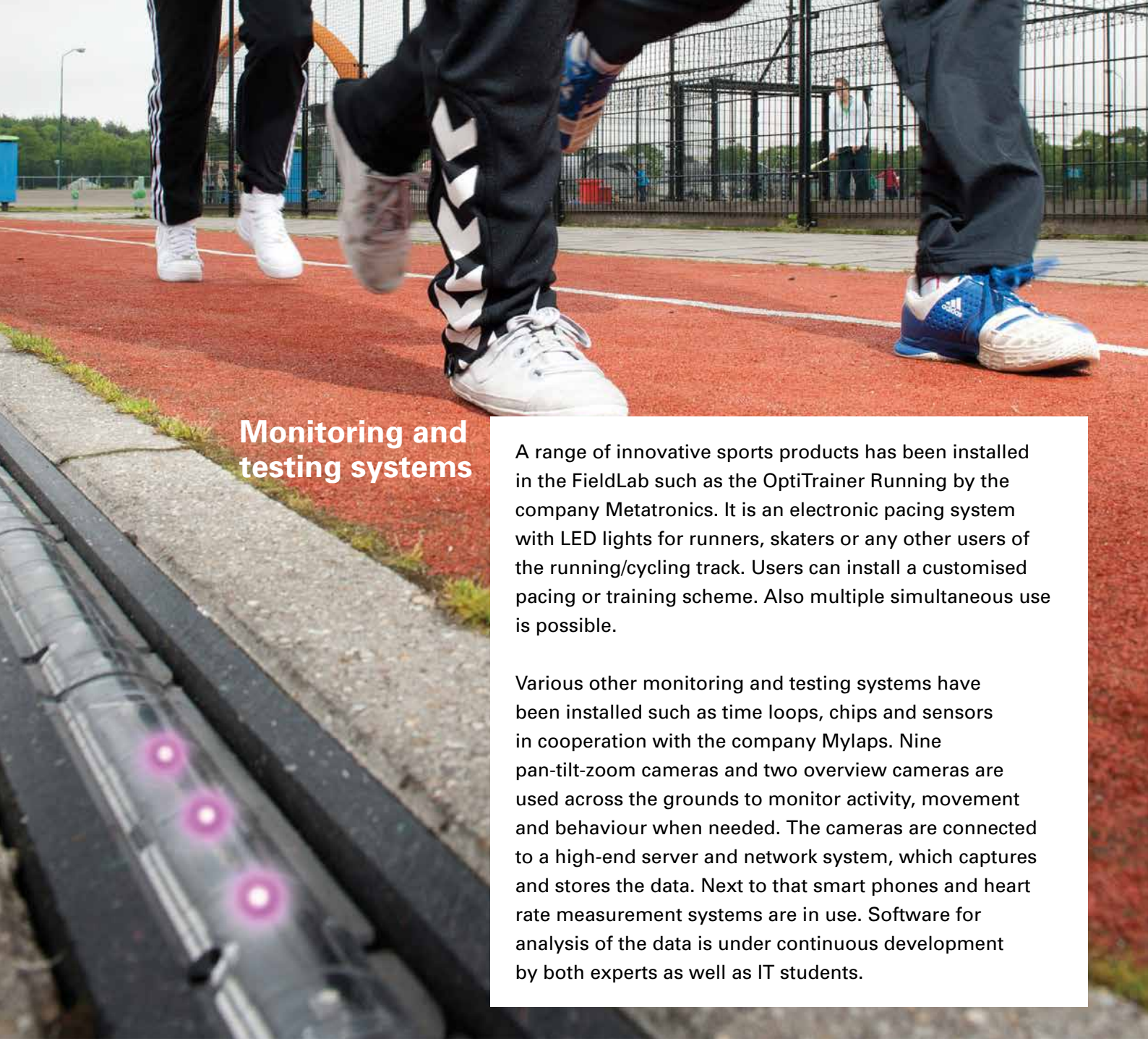
Another example is SmartGoals, a spin off from the University of Technology Eindhoven. It is a set of cones that light up to indicate where you have to score. After a score a new random SmartGoal will light up and that is the new target. The product is available for football, field hockey, fitness and physical education. SmartGoals was the winner of the Dutch Sport Innovation Award 2015.

New throw and catch sports game

YOU.FO, an idea by Bas Ruyssenaars is an innovative throw and catch sports game. In designing this game Ruyssenaars was inspired by frisbee, jai lai and martial arts. YOU.FO was winner of the ProFit Innovation Competition 2012 for the FieldLab Eindhoven and was extensively tested there. Since then the start-up has brought the product on the market in several countries.

The idea of YOU.FO started at home with a rubber ring and a broomstick. With the assistance of industrial designers and a professor in aerodynamics the concept gained more body. Students of HAN University of Applied Sciences tested the effects and the experiences within the target groups and gave insight into the market opportunities. With the money that came with the award we could do some extensive testing at the FieldLab in Eindhoven, in an environment with a good innovation climate and good partners to cooperate with. They have the knowledge and experience to help us to introduce such a product to our target groups. Also students provided us with new product ideas.

Bas Ruyssenaars, owner of the startup YOU.FO



Monitoring and testing systems

A range of innovative sports products has been installed in the FieldLab such as the OptiTrainer Running by the company Metatronics. It is an electronic pacing system with LED lights for runners, skaters or any other users of the running/cycling track. Users can install a customised pacing or training scheme. Also multiple simultaneous use is possible.

Various other monitoring and testing systems have been installed such as time loops, chips and sensors in cooperation with the company Mylaps. Nine pan-tilt-zoom cameras and two overview cameras are used across the grounds to monitor activity, movement and behaviour when needed. The cameras are connected to a high-end server and network system, which captures and stores the data. Next to that smart phones and heart rate measurement systems are in use. Software for analysis of the data is under continuous development by both experts as well as IT students.

Do it yourself sport analysis

Accurate lap time registration through a chip on the bicycle.

Performance monitoring is a hot topic, not only in elite sports but also for people who participate in regular competitions and recreational sports. The FieldLab runs a program that is aimed at better use of data analyses for training supervision in the short and the long term.

The themes involved are: physiology and balancing capability, technique and locomotor refinement, tactics and perception, mentality and team composition, and injury prevention and rehabilitation. The focus is on the realisation of new resources for registration and feedback and the generation of new knowledge that supplies useful information for training guidance in the short and long term. In many cases, this analysis is materialised in the form of software in conjunction with a suitable user interface, to make 'do it yourself sport analysis' possible. The company Studio2 Communications has installed the software for this. The FieldLab is intentionally working with open systems and platforms to make it easy for any new developers or companies to participate.

CO-CREATING INNOVATION
in sports and play

In the city of Delft the FieldLab has been installed as part of the existing green playground Bomenwijk. This supervised playground is located in a neighbourhood with quite a number of young families, and with an elderly home and several schools nearby. With the placement of innovative equipment step by step the FieldLab has expanded as a way to update and upgrade the existing playground.

The playground has a canteen, with an outdoor terrace. From here staff - all volunteers - and parents have a full view on a grass play area for young children aged 1-4. Furthermore there is tiled play area for tricycles and other moving playground equipment and a grass play area for the older children aged 4-12. Room has been given for outdoor physical activities for the elderly as well.

DELFT

From Passive to Active

As a first step a Yalp Sona was installed, an interactive dance and sound arch. The second visible project was the outcome of a one week intensive workshop, set up by ProFit, in cooperation with the municipality of Delft and the faculty Industrial Design of Delft University of Technology. The theme was: create an idea for outdoor furniture, which supports interaction between elderly and children. The entry called From Passive to Active by Omar Ebadi, a young graduate student, was selected as the winning design and has been realized and placed in the FieldLab. It is a simple furniture line, mainly constructed out of scaffold wood. The design directs the gathering of people towards an object, from a passive presence to an active participation.

A playful way of learning

Through the ProFit Innovation Competition in 2012 for FieldLab Delft businesses and students were challenged to develop all season concepts to be used by both children aged 8-12 and elderly. The winning concept was Serious Gaming by the company Yalp, which also won the overall ProFit Innovation Competition 2012 award.

Serous Gaming - later renamed as Memo - consists of seven poles on a soft playground floor. The top part of the poles is sensitive to touch, and can respond to the players through a LED display. By touching one of the icons on the LED display on the central pole the children can select a game to play. This pole has speakers, to respond verbally to the choices the players make and to explain the game they have chosen. Some games are also supported by music coming from these speakers. Depending on the game and the rules the children move, or even run between the poles. A playful way to combine movement and learning. A first prototype was installed in the FieldLab Delft, tested by TU Delft mainly by means of observational research and later replaced by an improved prototype. By now Yalp is selling Memo as a product.

Observational research

For the observational research three cameras were placed as unobtrusively as possible on high poles in the playground. They can be controlled from inside the canteen. This allows the children to play undisturbed, whether the cameras are in use or not.

The presence of the FieldLab and the cameras is clearly marked at the entrance to the playground. When research is actually in progress, another notification sign is placed at the entrance to the observed area to warn parents and children that the cameras are on, and that children need to ask special permission from their parents to enter. In interactive kiosk gives some more information about the FieldLab and at the same time allows for the gathering of product evaluations in a spontaneous and playful manner through filmed comments from visitors.

Within ProFit we could bring together different stakeholders and we all benefitted from each other. Children as end-users got their voices heard and got better playground equipment developed for them. We as scientists got better understanding of how to communicate with children, how to design for them how to observe the play value. And companies got a lot of fresh ideas for new play types and new play equipment and actually some prototypes developed for them or with them. I think that is the future of product innovation: where all stakeholders participate and contribute from their own needs and their own perspective.

Mathieu Gielen, Assistant Professor Industrial Design at TU Delft

Block Me

> *For us the collaboration with students from TU Delft is very interesting. We can combine their creative input with our technical output. With exciting opportunities for new products as a result.*
>
> *Robin van Kampen,*
> *Technology Manager NyoyN*

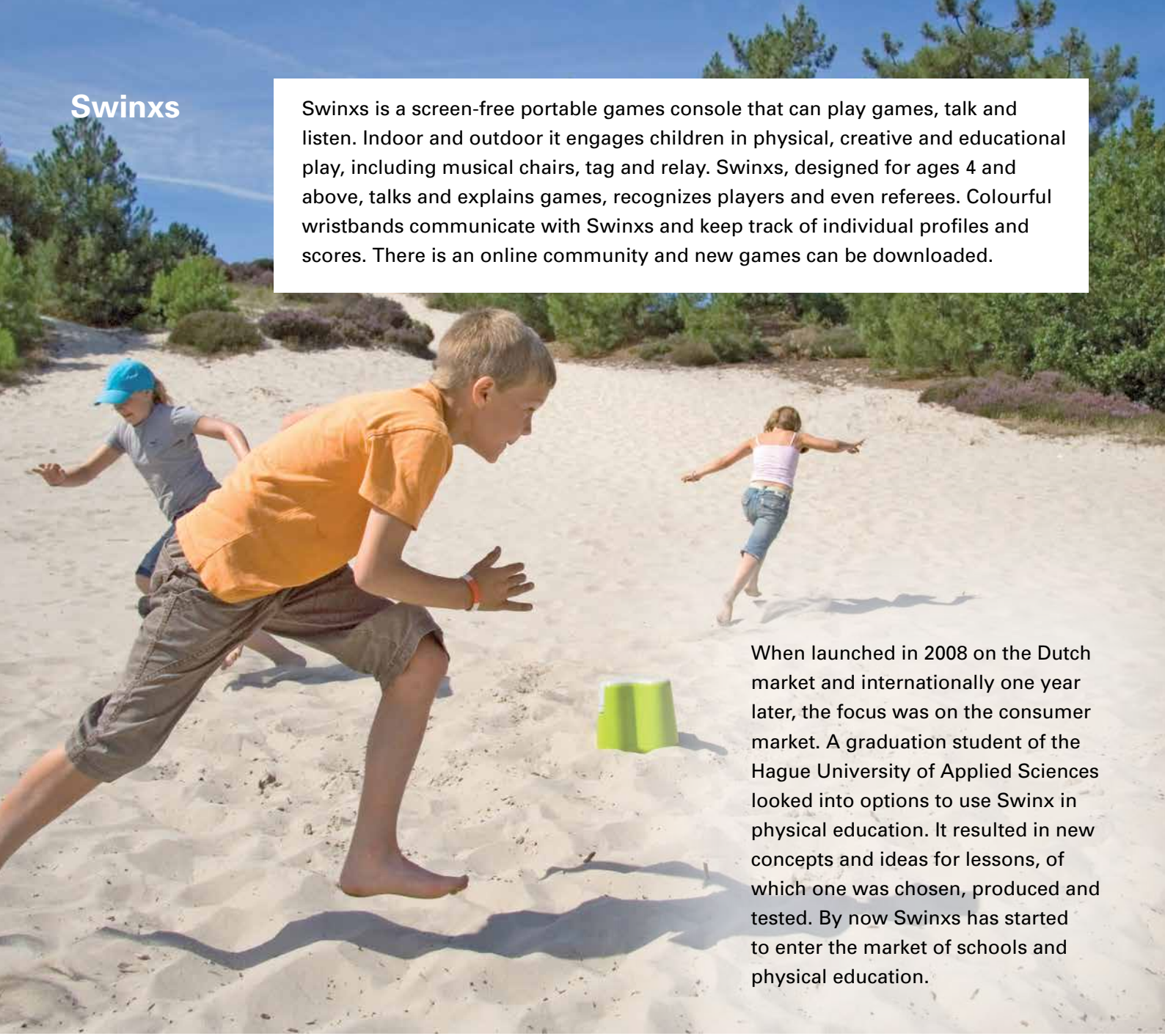
Develop an interactive product that would support rebellious play. This was the task that was given to Industrial Design students at TU Delft. One team came up with a toy that would allow 'builders' and 'destroyers', children with very different needs and behavioural patterns, to play together. They came up with Block Me, a set of twelve interactive building blocks designed for children aged 4-9.

Two of these blocks are interactive and mimic a creature with a personality. The blocks allow for interesting structures to be build that inherently are a bit unstable. The two Blocks-with-an-attitude destabilize the structure even more: when agitated by sound, like clapping your hands, they start to tremble. Once trembling, the players are confronted with a sudden choice: make more noise and watch the structure fall apart, or soothe the Blocks by caressing them and build even higher. This topic brings builders and destroyers together.

The students did research and tested the concept with children. The company NyoyN chose Block Me as an interesting concept, developed it into a working prototype and is looking into market possibilities for the near or distant future.

Swinxs

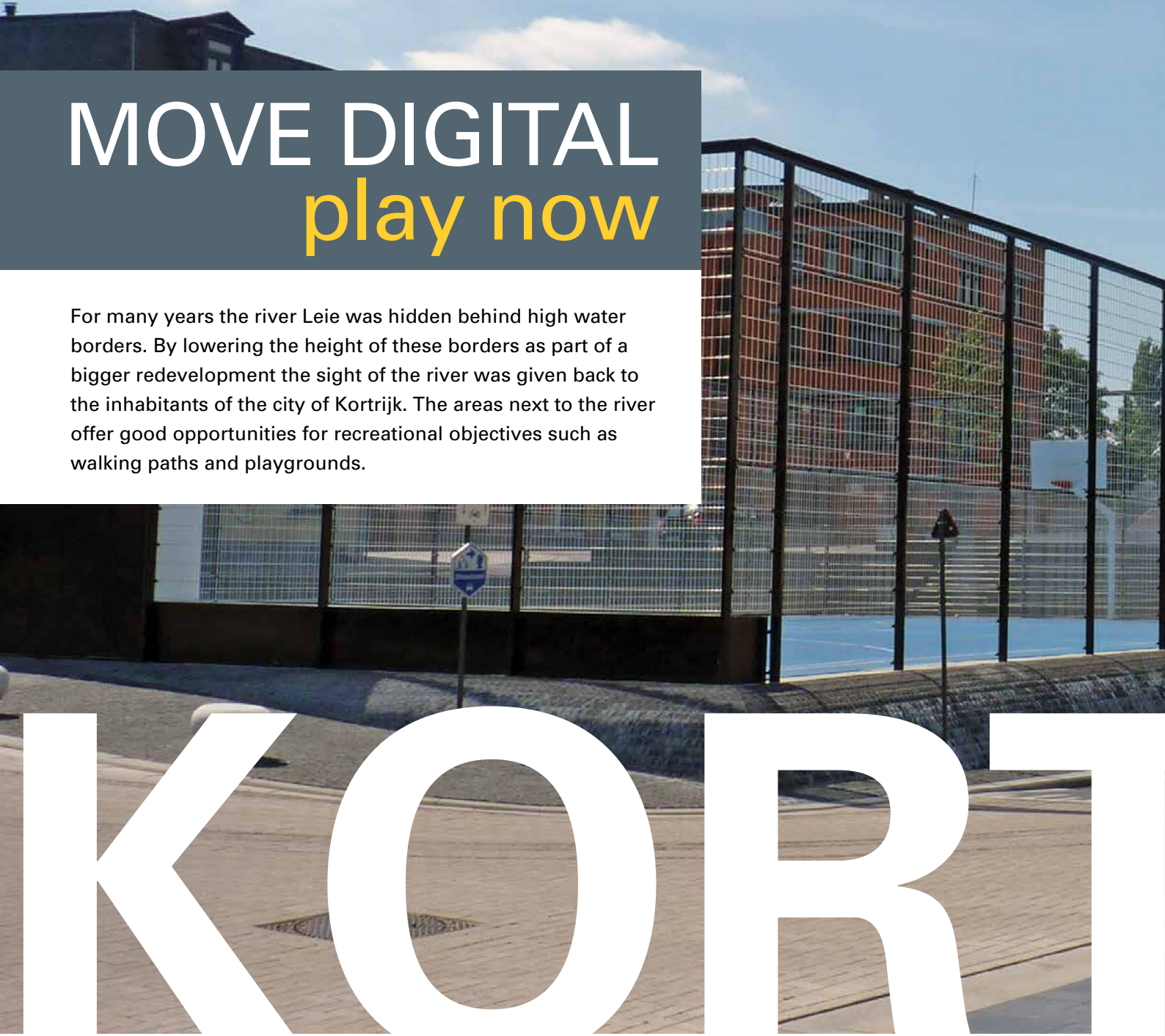
Swinxs is a screen-free portable games console that can play games, talk and listen. Indoor and outdoor it engages children in physical, creative and educational play, including musical chairs, tag and relay. Swinxs, designed for ages 4 and above, talks and explains games, recognizes players and even referees. Colourful wristbands communicate with Swinxs and keep track of individual profiles and scores. There is an online community and new games can be downloaded.



When launched in 2008 on the Dutch market and internationally one year later, the focus was on the consumer market. A graduation student of the Hague University of Applied Sciences looked into options to use Swinx in physical education. It resulted in new concepts and ideas for lessons, of which one was chosen, produced and tested. By now Swinxs has started to enter the market of schools and physical education.

MOVE DIGITAL
play now

For many years the river Leie was hidden behind high water borders. By lowering the height of these borders as part of a bigger redevelopment the sight of the river was given back to the inhabitants of the city of Kortrijk. The areas next to the river offer good opportunities for recreational objectives such as walking paths and playgrounds.



It is here that the four FieldLabs in Kortrijk are situated, in public spaces. Three in the open air, the fourth one inside a youth centre. The main target group are youngsters and students, aged 16-25.

One of the four FieldLabs is a basketball cage where mobile company products can be tested.

Kortrijk City has invested in the development of the FieldLabs while Howest, University College West Flanders has invested in systems to monitor and measure the impact of the innovative products installed. Industrial Product Design students have been involved in the design and development of products that promote physical activity.

Also Sport and Movement students with specialisation in Health & Fitness and Outdoor Activities contributed with their expertise. Digital Arts and Entertainment students took part in projects to create (inter)active games. Interesting student concepts got support to take steps for further development in close cooperation with industry.

Outdoor lab for interactive games

The Level, the square in front of the Howest building Digital Arts and Entertainment (DAE), has been redeveloped into an environment for true interactive gaming - by moving instead of just ‘pushing buttons’. Electricity and internet are available and in front of the building a LED screen is placed. Furthermore the square is provided with plug and play systems, which makes it easy for game designers to test their prototypes. This public outdoor lab will be used to test and experiment innovative ways to make people move through new interactive controllers and new games.

Students hang around The Level before, after or in between classes. The new interactive concepts make a connection with the world of gaming and stimulate students to be physically active during moments of waiting. The first game for The Level has been developed by Bazookas game studios.

Visual experiences in Tranzit

The new local youth centre Tranzit is located in a former building of the Belgium Railway organisation NMBS. It's a place where children, teenagers and youth from Kortrijk can meet, be creative and also be physically active. Tranzit offers information and a mix of activities such as urban sports, breakdance and streetdance, hip hop and streetart or graffiti.

Youngsters or their parents (waiting to pick them up) are stimulated to move by the interactive wall and floor developed by the Dutch company ICatch Media. The installations respond to the smallest gesture or movement, enabling persons of all ages and abilities to interact and generate immediate, real-time visual experiences. The interactive wall has the element of surprise, users become captivated and enticed to sweep away the first layer of the display to see the information, images or videos on the next layers. The interactive floor instantly turns into a digital playfield for soccer, tennis or ice hockey. For both the floor and the wall it is possible to use own images, backgrounds, logos or videos to create an unlimited number of customised interactive projections and unique effects.

> *We offer traditional sports and we must cherish that. But nowadays youngsters are interested in moving and being active in a different way. For us it was an eye-opener to work with students from Howest, young people with new ideas and different lines of thought. This cooperation helps us to find new ways to develop a policy for the future of sports, sports activities and infrastructure.*
>
> *Mia Maes, Director of Sports Department, Kortrijk*

Smart basketball

At the borders of the river the Leie a basketball cage is installed. Innovative concepts could increase its attractiveness and stimulate the frequency of use. As a first concept the 94Fifty smart sensor basketball has been tested in the cage.

Through sensors this basketball delivers information and feedback about your shooting and ball-handling skills in order to improve your game. Data are sent to nearby mobile device such as a phone or tablet. The 94Fifty app shows the results and gives options for different workouts at different levels.

> *It was very valuable for us as a company to get objective and quantitative results of user tests done by students of Howest.*
>
> *Toon Dyck (94Fifty)*

Twinkle Tiles in front of Texture museum

The Twinkle Tiles are the eye catcher on the square in front of Texture. This new museum, located in a former flax distribution centre, tells the story of the flax, lace and linen industry in West Flanders.

Next to the museum terrace colourful lit and interactive tiles invite the visitors to play and have fun. The Twinkle Tiles have been developed by the Dutch design company Vormdrift in cooperation with TNO. The FieldLab in Eindhoven and the company Spereco took part in the installation.

Swing where you want

A motivational LED graphics concept for the basketball cage by the company Magic Monkey won the first innovation competition that was held in Kortrijk as part of the FieldLab project. A first pilot concept was installed and tested but the project did not get a follow up.

The Fasset-swing was the winner of the second innovation competition. It is a swing that can be attached to any sturdy structure without any extra tools. This product has been designed by Crate, a design start-up founded by five Howest students Industrial Product Design as a Small Business Project.

The winners received a 10.000 euro voucher for the further development and optimisation of the concept into a prototype, in cooperation with ISIPlast, Binder, Allweb, Kunnig, and Kinderspel.

A first working prototype was installed and demonstrated at the opening of the FieldLabs in Kortrijk.

CREATE THE URBAN ACTIVE PARK of the future

SHEF

The FieldLab in Sheffield is located at Lowfield Park, an urban green open space with a 3G artifical turf pitch, adventurous play equipment for children, a community garden and an open grassed area with seating. Footpaths surround and intersect the space and are used for walking or running. The park also has a community building called the U-Mix Centre, used for various leisure, culture, and education activities.

FIELD

High proportion of young people

Lowfield is situated about one km from the city centre in the Sharrow area, known for its high proportion of young people, culturally diverse population and high concentration of disadvantaged families.

Lowfield Park underwent a significant regeneration in 2012, transforming it from an unsafe, low-quality and under-utilised green space that was left after a slum clearance into a multifunctional sport, play and community facility.

As part of this project the U-Mix Centre was built to provide activities such as dance, music, yoga, and various employability-related skills development sessions. This community centre is run under contract from the Sheffield City Council by FURD (Football Unites Racism Divides). This is a local social enterprise that works closely with the local charity Sheffield Futures in helping young people find education, employment and training to achieve a brighter future.

Partners of the FieldLab

Within the regeneration project also several improvements were made to the adjoining Lowfield Primary School such as a dance studio, an activity hall and a performing arts space.

The main partners of the FieldLab Sheffield are Sheffield Hallam University and Sheffield City Council. Besides FURD and Lowfield Primary School also the Mathews Medical Practice is included in the local stakeholders.

> *The ProFit project fits quite well with some of our objectives as a community organisation with regards to providing sporting and exercise opportunities for people who don't easily engage is such activities for cost reasons or cultural reasons. It helps us to address issues like child obesities and diabetes and encourage people to lead healthier lifestyles.*
>
> *Simon Hyacinth, Joint Coordinator Football Unites Racisme Divides (FURD)*

Alan Williams, Ernest Brewin, Leon Foster and Simon Hyacinth (FLTR)

Outdoor fitness equipment and running loop

The initial focus of Sheffield FieldLab has been on finding innovative ideas to encourage outdoor fitness and exercise in two target groups, primary school children, and the 50+.
By the end of summer 2013 innovative outdoor fitness equipment was bought and a novel timed running loop for the track surrounding the park was installed. Runners wear a RFID band for data registration and a large LED screen at the finish line displays their time. An automatically timed 50m sprint straight was also incorporated in the running loop.

Data are also collected for research purposes. FieldLab monitoring equipment and systems for all ProFit FieldLabs were developed by the Centre for Sports Engineering Research at Sheffield Hallam University. Therefore, the Sheffield FieldLab has been the primary development site for these systems, which were rolled out to the other FieldLabs after completion.
At the Lowfield Park six high-definition pan-tilt-zoom cameras have been mounted on the floodlight columns for the 3G pitch. These provide a 360° view of the park, and can be positioned to focus on any area specific to a research project. Smartphones have been adopted as sensors for monitoring user movement in the FieldLab, making use of the internal accelerometer and GPS sensor. Camera and phone sensor data is sent from the phones via a local wifi network to a database in a local server at the FieldLab.

Cone2020

The idea Cone2020 won the ProFit Innovation competition 2012 at the FieldLab Sheffield. This intelligent and interactive play device, developed by the Dutch company Spinnov can be seen as a high-tech version of the traditional plastic practice cone used in a wide array of sports and play activities. Cone2020 can be used in football training for individual or team use as a playful element to the practice of essential ball handling skills and other training exercises. Cone2020 can also be categorized as an 'exergame', a game play that is considered a physical exercise.

As a result of winning the award the developers of Cone2020 have been able to produce a next step prototype that underwent user testing at the FieldLab.

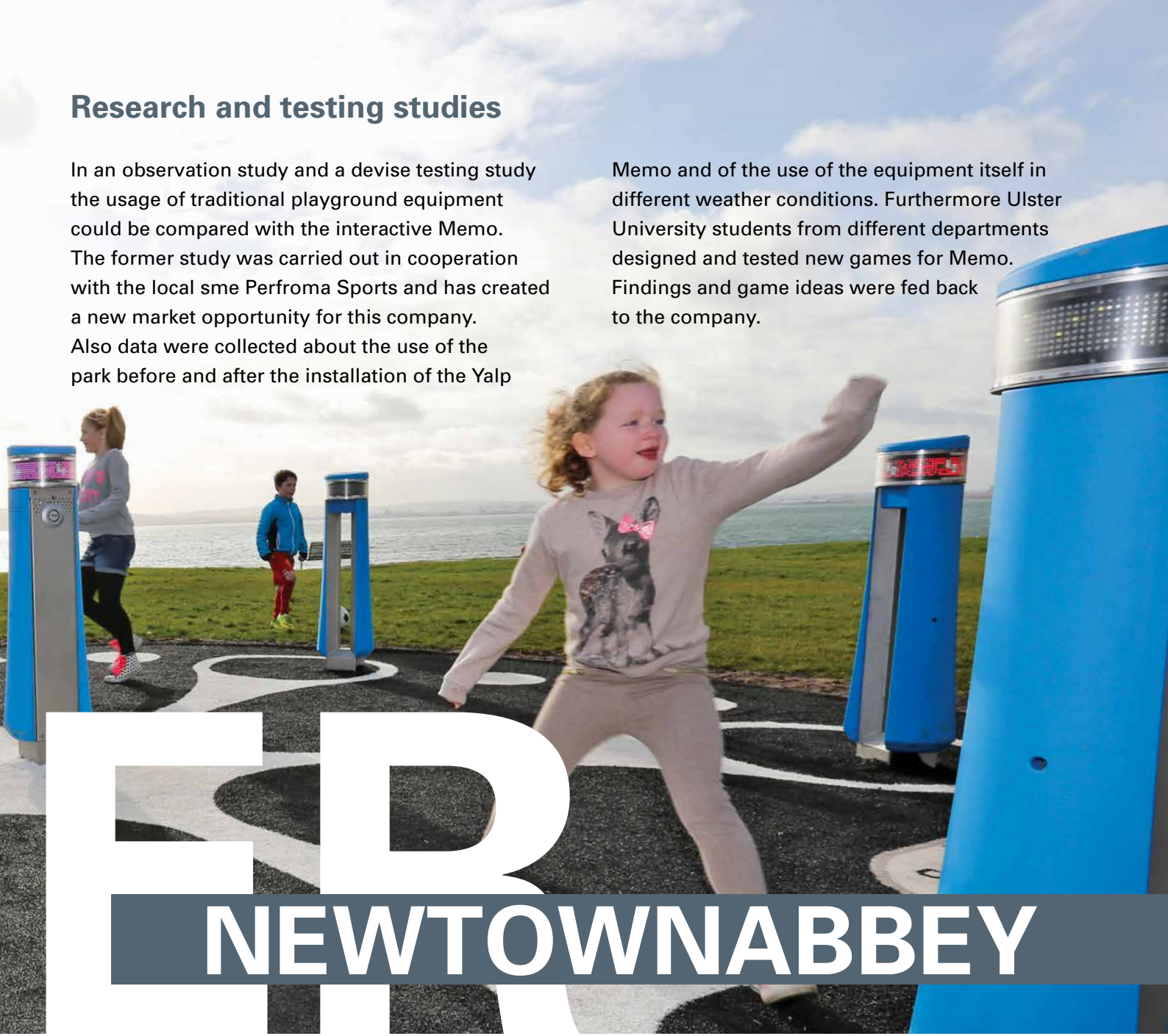
INNOVATING for health and wellbeing

Ulster University has a campus at Jordanstown in Newtownabbey, a major urban area on the outskirts of north Belfast that is separated from the city by the M2 motorway. Through the participation of the university in the ProFit project - in research and testing - a collaboration was developed with Newtownabbey Council which eventually led to the installation of a mini-FieldLab to include the Yalp Memo which won the international ProFit design competition.

The interactive equipment is located along the shores of Belfast Lough close to the university within the Jordanstown Loughshore Park next to an existing playground.
Furthermore the park has an open grass area, a caravan park, an area for small outdoor concerts and a walking path with outdoor gym equipment.

Research and testing studies

In an observation study and a devise testing study the usage of traditional playground equipment could be compared with the interactive Memo. The former study was carried out in cooperation with the local sme Perfroma Sports and has created a new market opportunity for this company. Also data were collected about the use of the park before and after the installation of the Yalp Memo and of the use of the equipment itself in different weather conditions. Furthermore Ulster University students from different departments designed and tested new games for Memo. Findings and game ideas were fed back to the company.



NEWTOWNABBEY

The new mini-FieldLab has already generated a number of enquiries as to what it is, what it does and how it works. Inspired by this several companies came to me with new ideas to combine our research and expertise with their abilities and expertise along with the needs of the community.

Kyle Ferguson, Director of the Centre for Sports Enterprise, Ulster University

Community engagement

Ulster University and Newtownabbey Council together carried out a needs analysis with regards to play equipment in the area. A number of user consultation events were held in public areas with local residents. Further engagement activities were held in local primary schools with children who were asked to provide their opinion in art form.

Additional drop in and draw sessions were held at existing leisure centres in the area, where children were asked to design their perfect adventure as input for a new theme park. More than hundred entries were received from children aged 4–14.

A professional artist was commissioned to review the entries and to summarise the ideas in art format. Consulting the children was done in cooperation with Fenne van Doorn, a PhD candidate within the ProFit project at TU Delft who used the data for her research.

Valley Park

As a follow up a new FieldLab will be realised within the Valley Park project in another part of the town. Valley Park is located next to the Valley Leisure Centre, a big multifunctional centre with a swimming pool, a play zone, fitness halls and zest soccer. Flowing through the park is a river and there is plenty of open space surrounded by meadowland and community woodland. There is a small play area for children age 3-12, a basketball court, football pitches and a synthetic hockey pitch. Additionally in a big project more than two acres of under-used space are being transformed into a state-of-the-art 3G sports pitch, a picturesque linear park and an adventure play area for which the children made their drawings. The focus of this new development is on social inclusion and building a community through the park.

> *The FieldLab in Delft, the FieldLab concept in general and TU Delft brought us some good ideas for the Valley Park development and especially the engagement of users in the design.*
>
> *Caroline Douglas, Newtownabbey Borough Council*

Park runs and devise testing

The new FieldLab will be part of this Vally Park development project with park runs and devise testing with specific user groups as well as the general population in order to design concepts to activate people using open space and mobile devises.

Part of the plan is also the establishment of a sports business cluster of companies who will become partners in the process, with expertise in mobile communication and architecture.

Monitoring

One of the main benefits of a FieldLab for its stakeholders is the provision of quantitative and qualitative data on user experiences with innovation relating to sport, exercise and play in a public space. These data are generated by the use of fixed and mobile monitoring systems that capture information on the users' movement within the space, and interaction with the objects and equipment (products) within it.

In order to facilitate this unique system for monitoring, data collection and analysis the FieldLabs in the participating cities have been equipped with ducting, cabling, small wireless sensors and special high-definition pan-tilt-zoom cameras that can track user movement while they are undertaking activity. Within the project also combinations of mobile devices have been tested and special software has been developed

MONITORING

Research

The research support programme within ProFit has investigated the needs of potential users in each FieldLab as a basis for creating inviting environments and products. PhD candidate Fenne van Doorn at Delft University of Technology used the method for contextmapping and investigated how users, and particularly children aged 8-12, can play an active role in research related activities in the design process.

Furthermore, co-design tools for supporting multi stakeholder communication in open innovation processes have been developed by PhD candidate Pelin Atasoy at Eindhoven University of Technology.

Both the monitoring aspects as well as the research of the two PhD candidates resulted in a number of scientific papers.

Leon Foster

& RESEARCH

Children as co-researchers

'Children as Co-Researchers in Design. Enabling users to gather, share and enrich contextual data'. With this thesis Fenne van Doorn got het PhD at the Delft University of Technology on March 30, 2016. She did her research as part of the ProFit project.

This dissertation investigates how users, and particularly children aged 8-12, can play an active role in research related activities in the design process. In participatory- and co-design, users participate increasingly early in the design process. When conducting user research in order to gain contextual knowledge about the lives, experiences and wishes of users, co-researchers can be of help in setting up, conducting research and analyzing the data.

Eleven case studies are conducted to investigate if and how children are able to perform as co-researchers. Children conducted interviews with other participants, and in doing so increased their knowledge about people close to them and about themselves. Besides gaining valuable insights from their participants, the co-researchers accessed and shared their own experiences. So while listening to others, the children got sensitised themselves. In other words, next to gathering more data, 'super-sources' are created when children become co-researchers. The research in this thesis has yielded: a theoretical model about involving children in design as researchers, descriptive case studies showing the set-up and conduction of co-research projects, a reflection on the added value of children as co-researchers and a list of guidelines for practitioners who want to use co-research.

Contextmapping

For products and services to fit in with their users' lives, designers need to understand those lives as well as they understand the technology that goes into the products. This 'context of use' contains the user's needs and preferences, his or her abilities and limitations, everyday routines and practices.

Part of this context is 'above water': people can tell about it, or it can be observed. But another part lies 'below water': tacit knowledge, and latent needs. Especially the latter are important, as they come into play in the future that we are designing.

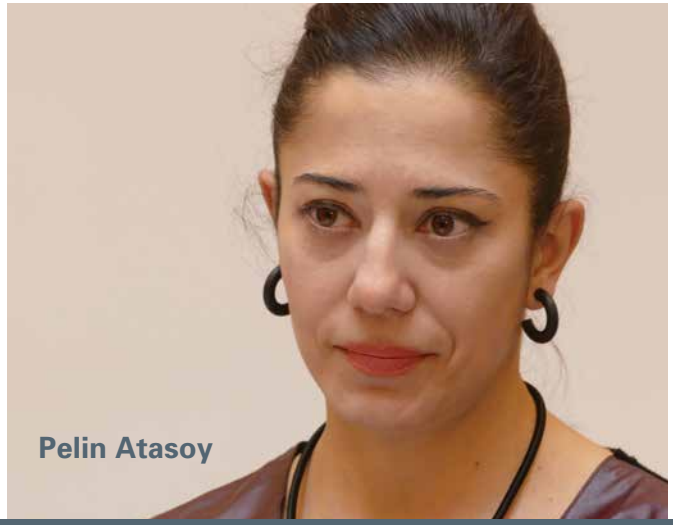
Contextmapping is a way to involve users as 'experts of their experience' in design processes. With techniques like workbooks, probes, and generative sessions, participants are facilitated to observe and reflect on the situation of use, and insights are developed that further drive the design.

PhD researcher Fenne van Doorn conducted contextmapping in the different FieldLabs. The outcomes of these studies were used by the companies that participated in the ProFit Innovation competition.

Fenne van Doorn

While listening to others, the children got sensitised themselves. In other words, next to gathering more data, 'super-sources' are created when children become co-researchers.

Value Design Method


Pelin Atasoy

VALUE

In networked innovation value creation is dependent on the interplay of the capabilities and resources of the partners. In such design projects, the unknowns and uncertainties about the stakeholder capabilities and expectations, as well as the complexity of the design situation, pose a challenge for the designers. Then how can we design product/service concepts by considering the relationships between different together with the user and business requirements? How can we support the designers to integrate stakeholder perspective into the design concept, at the early stages of the design process? The PhD research of Pelin Atasoy at Eindhoven University of Technology is focused on developing a design method to support the multi-stakeholder innovation initiation stage. The Value Design Method combines user experience design with business model design approach in a single process for both having a shared understanding among stakeholders, and also thinking of the stakeholder capabilities as a means to develop innovative design concepts. The method is being developed via an iterative process, with a research through design approach by using multi-stakeholder workshops as a research and observation context.

How can we support the designers to integrate stakeholder perspective into the design concept, at the early stages of the design process?

Value Design Canvas

Pelin Atasoy developed a tool prompt alongside the method as a means to apply the method and to investigate the dynamics of the multi-stakeholder collaboration process. The Value Design Canvas is a paper based tool which is designed to be used in multi-stakeholder workshops at the innovation initiation stage. It represents the process, inspires the discussion and structure the design discussion with easy facilitation. Several versions of the tool prompt were developed and applied in workshop contexts for diverse design problems with many stakeholders.

DESIGN

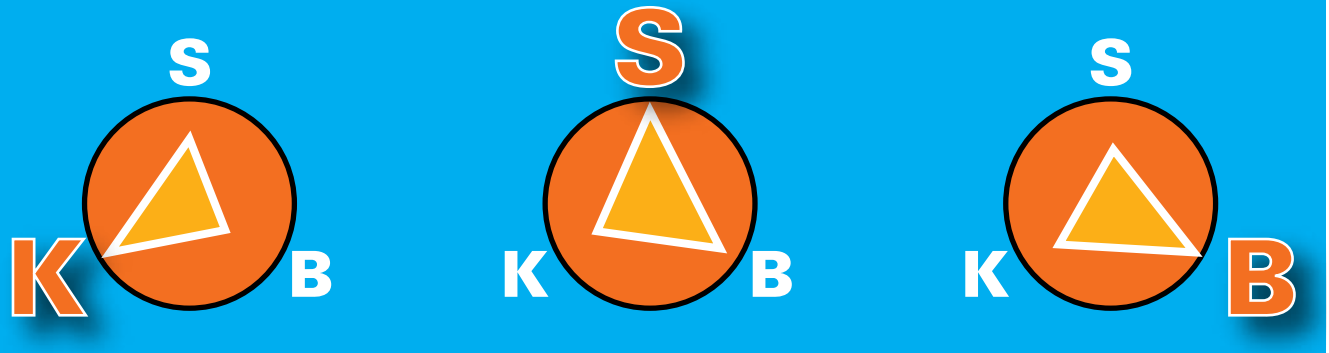
In the context of the ProFit Project, the Value Design Method was applied with the workshops at several stages through the project, both to define the requirements of the FieldLab services and to bring diverse stakeholders together to refine innovative product concepts together with designers. In the sessions complementary stakeholder groups composed of SME's, sports-movement experts and students were brought together. The groups developed product and service concepts based on the design briefs and explored the business model possibilities in these sessions.

The research output and the methodological tool is aimed to assist the FieldLab open innovation approach in the future by allowing diverse stakeholders to define a value proposition in a collaborative way.

HOW TO SETUP a FieldLab

There is no single blueprint for a FieldLab. Existing examples in Eindhoven, Delft, Kortrijk, Sheffield and Ulster (Newtownabbey) show a variety of possibilities and options. Kortrijk started more or less from scratch, in the other cases it was a matter of transformation from an existing situation and/or growing step by step. Each of the five FieldLabs has a unique focus, coming from the dynamics of the local collaboration, and the needs of the local citizens.

There are also cultural differences between countries, for example in the manner in which and to what extent universities and local government cooperate with business. Analysing the different dynamics and challenges coming from this variety enriches the Field Lab proposal. In short, the golden triangle is not always equilateral. For every FieldLab it can be different in shape, with a different centroid, and with a different business plan.



Valuable differences

These differences can become valuable through the international connections that have been established through the ProFit project. It offers companies the opportunity to test their products in different locations, with a different profile of users and to reach different markets.

Also there is a wide variety of services that can be provided by a FieldLab, from concept development to testing of prototypes and even reaching to a new markets.

What is important is then to communicate the possibilities with the stakeholder network, and achieve agreement on the services that will be provided.

Stakeholder and network analysis

A logical but very important first step is to clearly define the vision, using the Value Design Method that has been developed by Pelin Atasoy within the ProFit project – as the FieldLabs in Eindhoven, Delft, Kortrijk, Sheffield and Ulster (Newtownabbey) did under the title Vision2020. Participants from businesses, knowledge institutes, end user representatives and government worked together to define the value provided by each local FieldLab, the services that can be provided, and the challenges ahead. Closely related to this first step are a stakeholder and network analysis, for example through interviews, and setting up an innovation agenda.

As Pelin concludes from the Vision2020 workshops: 'It is important to involve stakeholders early in the process, not only to create a shared understanding, but also to spot the challenges ahead to act on. It is not easy to move from the abstract level to the concrete actions that should be taken. Although it may seem like everyone has an agreement in the early stages, the differences in understanding may be revealed when a specific product/service scenario is worked out. Therefore stakeholder dialogue should start early in the process, and carried out as one of the main activities of the FieldLab.

Building projects

Next comes the building of projects. Besides a congress, seminar or workshop an expert meeting on a specific theme, with participants from sports, business and knowledge, health and government institutions can be helpful to generate ideas and establish connections for projects.

Also student participation is an excellent tool to set up projects within the framework of a FieldLab. Students have a fresh look towards sports, games and exercise and can come up with whole new ideas. At the same time a FieldLab project offers students an opportunity to work on a real life case.

Competitions and challenges

Winning the ProFit award gave us a lot of extra energy to keep going with the development, which is sometimes quite a laborious process with a lot of challenges. Winning such an innovation award also contributes to a positive image in the market. Also the support to do the prototyping and testing with partners within

both for students and for businesses - are commonly used these days to draw attention, to mobilise energy, to create ideas and to get people engaging in physical activity. Competitions and challenges and also awards and prizes can be used to put the spotlight on sports innovations and gather best practices. To win such a prize can be a next step for a project.
The ProFit innovation competition in 2012 yielded quite a number of ideas, concepts and products.

At each FieldLab a jury of experts chose a winner. Winners received a 20.000 euro voucher for prototyping or further development and testing. Out of the four local winners Yalp was chosen as overall winner and was awarded an extra 20.000 euro voucher for prototyping, development, testing and international dissemination. Besides this innovation competition also workshops, summer courses and summer competitions were organised, mainly for students but whenever possible with participation of companies.

the FieldLab was very important to us, because it is precisely this phase that is so crucial. With this support we could move to an even higher professional standard. This has definitely increased the final quality of our concept.
Ben Admiraal, director of Yalp, producer and supplier of playgrounds and sports products

Students from different institutions at work at the FieldLab in Eindhoven.

Hackathon

The Fieldlab in Eindhoven organised a hackathon, in cooperation with the organisation MAD and Eindhoven University of Technology and supported and sponsored by several companies. Designers, artists, engineers, hackers, craftsmen, students and sportsmen joined this event to design, hack and build experimental and daring concepts for sports innovation. After 32 hours of hard work, ten teams pitched their concepts and prototypes to the jury. The overall winning team was RunRight with a combination of a shoe sensor and a wristband as a smart running assistant solution. The 1500 euro voucher was used for coaching and prototype development at the FieldLab. In addition they won a 1500 euro voucher and a wildcard for a Start-up Bootcamp. Four additional winners were each rewarded with a 500 euro voucher. The results of the hackathon were exhibited at the annual national sports innovation congress.

Sufficient resources

Building and starting projects is one, but setting up a solid FieldLab organisation is another thing. Covering the services that were selected as outcome of the vision and the innovation agenda and also maintaining the FieldLab operation requires flexibility for the product development. Different research, monitor or testing questions may require different approaches or project life cycles, which should be taken into account from the early stages of collaboration. Together with setting up the organisation choices and selections must be made for the accommodation and the facilities. Including monitoring technologies, measuring devices, IT-facilities such as a server etc. Of course the budget and the funding play an important role in this. Setting up and running a FieldLab requires an active, outreaching and never ending attitude to bring together sufficient resources.

Communication plan

Last but not least there should be a solid plan for communication and PR. Stakeholders, media, politicians and the general public expect a lab to come up with new things. Showing the innovations is important to create and keep enough support for continuity.

Hop, step and jump into the future

The ProFit project ended in March 2015 with a final conference called Triple Jump Event. Not only the partners in the project participated, but also individuals and representatives of (local) governments, (public and semi-public) organisations, knowledge institutions and companies from other cities that have been involved in establishing international cooperation in sports innovation within the European Union over the last years.

Since 2008 networks like the European Platform for Sport Innovation (EPSI) have been created (Hop). Through the ProFit project FieldLabs were set up and international cooperation was brought into practice (Step). The focus of the Triple Jump Event was on extending and expanding the ideas and contacts into the future (Jump). The contours of this next step are already visible: a program that reaches a bigger, critical mass by creating a transnational cluster of partners in different European countries. Together these Vital Cities, with a lively network of fans and observers, will stimulate enterprise innovations that make more people move more. This requires an interdisciplinary approach, combining behavioural sciences, health, design, high tech & engineering and business & economics. The existing network welcomes newcomers and is already expanding to other cities like Cologne (Germany), Leuven (Belgium) and Birmingham(UK).

To measure physical activity people now wear devices with sensors and have all kind of apps on their mobile phones. This gives us the opportunity to take the ideas of the FieldLabs into the general population. The city becomes the FieldLab. We now can collect big data and learn so much about participation levels, about the health of populations and about what interventions can be put in place to help these populations become more physical active, and thus more healthy.

Steve Haake, Director of the Centre for Sports Engineering Research at Sheffield Hallam University

HOP STEP JUMP

Partners

Lead partner

Sports and Technology

Cities

Stad Kortrijk

City of Delft

Eindhoven

Sheffield City Council

Universities

Sheffield Hallam University

howest De Hogeschool West-Vlaanderen

Ulster University

TU/e Technische Universiteit Eindhoven University of Technology

TU Delft Delft University of Technology

ProFit

ProFit is a European project, initiated bij Sports and Technology in Eindhoven, The Netherlands. With this project a total of close to six million Euro has been invested, mainly in infrastructure and systems for measuring, monitoring and testing. Half of this amount, almost three million Euro, has been provided by the Interreg IVB NWE program of the European Union.

www.fieldlabs.eu

Besides creating a European network of FieldLabs and supporting this with research the ProFit project has been aiming at dissemination of the concept and the outcome. The information is being spread through a website (www.fieldlabs.eu), an iPad-presentation, brochures and a mobile unit for showing concrete examples.

For more information about the FieldLabs, ProFit, or the European network for sport innovation see www.fieldlabs.eu, www.epsi.eu or www.sportsandtechnology.com or contact info@epsi.eu or info@sportsandtechnology.com.

epsi eu

Investing in Opportunities

This project has received European Regional Development Funding through INTERREG IVB.

NWE

INTERREG IVB

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