item

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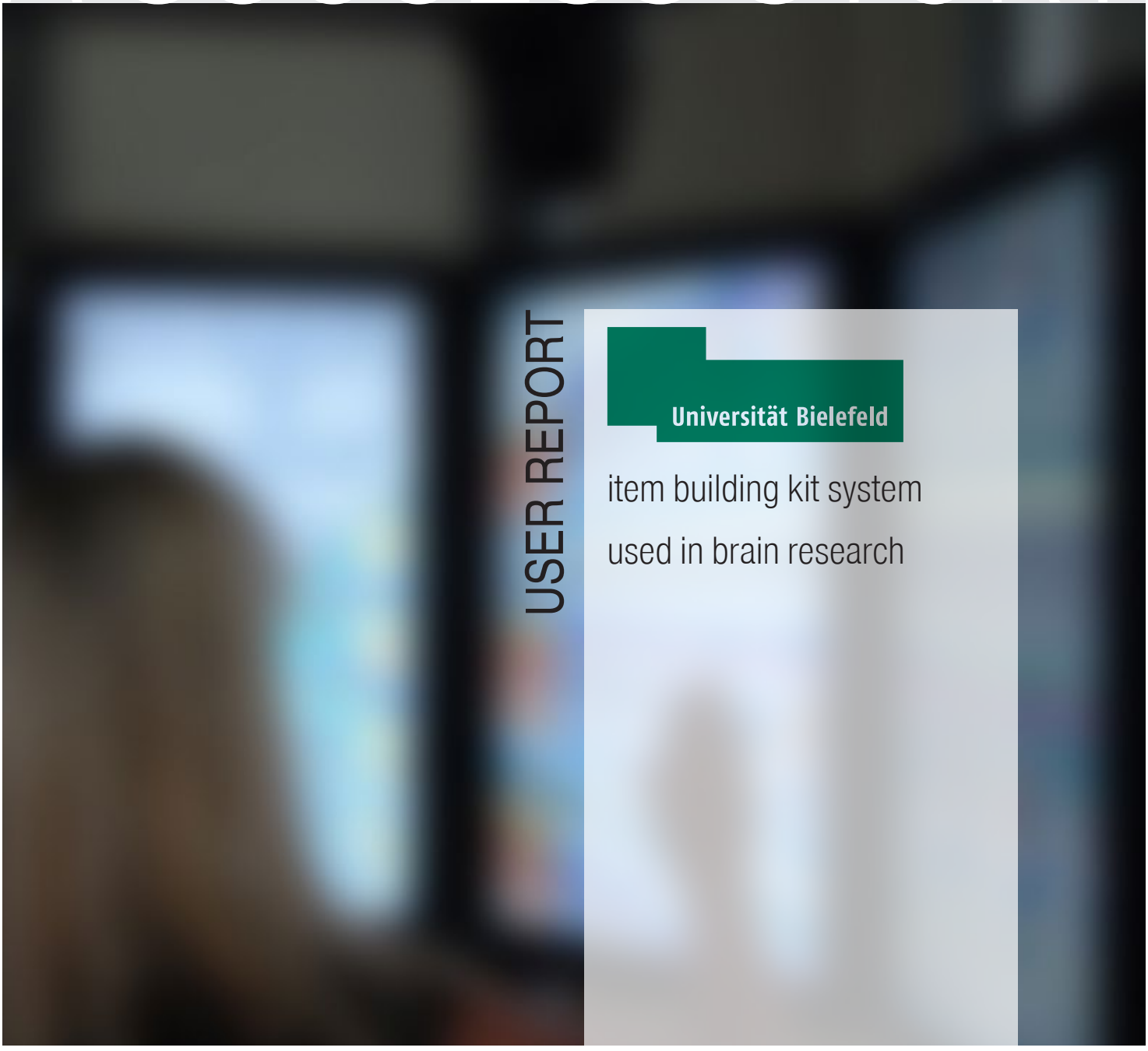
A SUCCESS STORY



USER REPORT

Universität Bielefeld

item building kit system
used in brain research

A study participant on a virtual shopping trip

item building kit system used in brain research

A new approach to rehabilitation in the treatment of brain function disorders is being developed at Bielefeld University. The OCTAVIS system uses a ring of eight flatscreen monitors to run a rehabilitation program based on a 360° virtual supermarket. Participants in clinical studies and patients embark on a virtual trip to the shops, using the program to train healthy regions of the brain or reactivate damaged regions. The frame that supports the monitors is made from Line 8 profiles from item.

Paul Müller works at the Bielefeld University workshop and has already had very good experience of working with the item MB Building Kit System on a number of other projects. Because he knows that the building kit system makes it easy to turn ideas into reality in next to no time, it was a "no-brainer" – OCTAVIS would also be built using the elegant aluminium system. Paul met up with the regional head of sales from item and together they went through the drawings that set out what the technicians and psychologists required.

CE certification – with item on hand

The first prototype was built at the workshop in Bielefeld with the support of the item project engineering team. Once it had been proven fit for purpose, three more systems were also built from item profiles at the Humboldt University in Berlin, but these had to meet an additional requirement – satisfying the stringent demands placed on medical devices. The planners therefore decided to use closed, rounded profiles from Line 8. Closed on two sides, these elements are available in a range of different external angles and are ideal for building protective hoods, frames, tables and structures for medical technology, particularly because the closed surfaces leave no place for dirt to hide

Universität Bielefeld

Users:
Bielefeld University, Faculty of Technology, Computer Graphics & Geometry Processing group

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and are therefore extremely easy to clean. All that was missing was a galvanic divider for patient safety – and that need was also swiftly met. In the final design, electrical cables were concealed and all the edges rounded to ensure the entire system was clean and safe. The three OCTAVIS systems in Berlin secured the relevant CE certification and were then ready for use in healthcare centres.

New treatment for brain function disorders

Each year in Germany, some 250,000 people suffer a stroke. Patients are often left with neurological damage that can affect their spatial orientation, motor function and perception. Fortunately, our brains are highly adaptable, which means that healthy regions of the brain can take over tasks from damaged areas – if they are trained to do so.

Thanks to OCTAVIS and the item components that make up the system, this brain training can now, for the first time, be provided cheaply and efficiently. The structure is light, requires little maintenance and is just as intuitive as the virtual shopping that is carried out inside it. Data gathered during the testing phase demonstrates an exceptionally beneficial effect for patients. The processes that our brains have to execute when completing the seemingly simple task of shopping are actually quite complex – extracting a shopping list from our memory, taking care of visual and spatial orientation, learning the shortest route to the products and controlling body movement at the same time. Brain researchers are well aware that this combination of tasks is very demanding for our brains.

The training centre for the brain – a converted office chair and a ring of eight monitors create a 360° virtual supermarket.

„Thanks to item, OCTAVIS is also cost effective and requires little maintenance.“

Computer games train the brain

During its first two years, this interdisciplinary project represented a major technical challenge. For some time, virtual reality has been recognised as a useful tool for creating dynamic and interactive scenarios that enable scientists to diagnose specific brain function disorders – and treat them with simulations that closely replicate real-life experiences. However, stroke victims are usually older people who have little or no experience of using computer games. Handing them a games console controller is not the right approach.

OCTAVIS is built using Line 8 elements from item.

In OCTAVIS, the patient sits on a converted office chair inside a ring of eight monitors that display a 360° panoramic view of a virtual supermarket. He or she uses a joystick to control how the chair rotates and buys products by tapping them on the touchscreen monitors. Brain training with OCTAVIS does not require any previous experience with computers – and that was confirmed by a 94-year-old test subject, who had never before worked with a computer.

Securing European funding

As one of the winners of the HighTech.NRW competition, the medical and technological project is being financed as part of the NRW Ziel 2 programme supported by the European Regional Development Fund. It is also part of the "Cognitive Interaction Technology" (CITEC) cluster for

OCTAVIS is making a good impression at the clinic for neurology in Bethel.

excellence of Bielefeld University, which is a network that offers an ideal framework for this interdisciplinary project. The idea for this innovative medical product came from Professor York Winter, who currently works for the Humboldt University in Berlin. Professor Martina Piefke and Professor Mario Botsch have been running the "CITmed-logo Cognitive Interaction Technology for Medicine" project at Bielefeld University since 2009, with Prof. Piefke responsible for the psychological side and Prof. Botsch in charge of technical elements.

As part of a major multi-centred clinical study involving the clinics for psychiatry, neurology and epilepsy in Bielefeld/Bethel and the Marcus-Klinik for neuro-rehabilitation in Bad Driburg, five OCTAVIS systems are to undergo further testing until the end of 2013. Control groups comprising healthy study participants will undergo training at Bielefeld University. Eight postgraduates and numerous Bachelor and Master students are involved. item is very pleased that it can supply the ideal components for this sophisticated technology and treatment.

item and CITmed – innovation for people

LINKS

Further information on Bielefeld University:
www.uni-bielefeld.de

Product information on Line 8 can be requested from item:
www.item24.de

Further information about the CITmed project can be found on Prof. Mario Botsch's website:
http://graphics.uni-bielefeld.de/research/citmed/citmed-de.php

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item Industrietechnik GmbH from Solingen, Germany, develops and supplies the MB Building Kit System, a system which enables customised solutions for all aspects of industrial factory equipment engineering. The Building Kit System is based on aluminium profiles, carefully coordinated fasteners and versatile functional elements.