Crowd safety via sensing app

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A smart phone app points people the way, assists event organisers in preventing emergency cases and turns its creators into technology entrepreneurs.

Paul Lukowicz is head of the embedded intelligence research group at the German Research Center for Artificial Intelligence in Kaiserslautern. His research focuses on questions such as how sensing electronic infrastructure can make a system react to the real world in an appropriate and intelligent way. Within the EU project Socionical, which ended at the beginning of 2013, Lukowicz and colleagues studied how electronic devices influence human social structures and collective behaviour. Here, Paul Lukowicz tells youris.com how the fertile environment of this project, which is part of a funding scheme focused on future and emerging technologies, so-called FET project, led to the development of a crowd sensing system and, unexpectedly, to a spin-off company.

Tell us about your experience of working in a FET project?

I think FET is a very interesting funding instrument. It is broad and encourages new fundamental ideas. It also has a strong emphasis on making projects demonstrate they work in the real world. This is a very good way of making sure that some applications, some spin-off companies emerge. The projects are often heterogeneous and interdisciplinary. In our project we had people from theoretical physics, social scientists and some companies. If the group of people works

together well, which was the case in our project, it is an extremely fertile environment for new ideas and for understanding how technology fits into the real world.

What did your research focus on?

A lot of people have intelligent devices that communicate not just with the people, but with each other and that try to perceive the situation in the world. The general vision of the project was to develop an understanding of how such complex systems of interconnected electronic devices and humans interact, and how this leads to an intelligent, useful behaviour. In an emergency situation, for example, you would like to evacuate people in such a way that not everybody goes to the same exit. You have to take into account not just the electronic, computer and the artificial intelligence aspect, but also human psychology. What are the social and human factors that influence the behaviour when interacting with the system?

What did it lead to?

We developed a smart phone app that was first used during a festival. It gave people who came to the festival information and also collected – with people's approval – sensor information to inform the organisers about how the crowd behaves. What is the density of the crowd? Where do people move? That is of interest to emergency people to prevent things like a mass panic. Over the time of the project, we developed an entire system that allows somebody who organises an event to quickly put together an app. And because many people install the app, it allows the emergency people to send messages to groups of people. A deployment in Amsterdam during the crowning ceremony of Prince Willem Alexander was very successful. We had about 70,000 people who used the app.

What surprised you in the process of becoming an entrepreneur?

It was something that was never planned. Rather, we gradually got into it. Our app was more and more appreciated. And, some day, I woke up and had a spin-off company.

Originally, we assumed that the emergency services have other means of extracting information. But it turned out that they have none. They have cameras; they have people, but nothing interactive as this collective information from many devices. So the system got further developed. It was publicised, we got more deployments and finally I had a student who simply said: "Ok, there is an idea. Let's make a company". Our group and the London School of Economics, who were involved in developing and running the app, decided with some external people to fund the company.

The other thing that was interesting for me is that there are a lot of formal mechanisms in EU-projects, which try to push exploitation plans. But what really made a difference were people. My PhD-student had the interest, personality and know-how to do it. For me it was, at a certain stage, also pretty obvious that there is something that has commercial potential. But I, myself, would never have had the time and the energy to put it through.

What is your role in the company and how does it influence your work?

My student Tobias Franke is now head of the spin-off company called SIS software. I am one of the partners and scientific advisors. My role is to drive the technological vision of the company. As a small technology start-up, you have to be at the forefront of technology. This is because

you have to be technologically better than others who may be already established. At the same time, you have to think about technology in terms of practical applications, of costs, of efforts. It does change your outlook on technology, on how you develop technology and find solutions.

What are the next steps?

We started with emergency management and events, but want to expand the concept to tourism and marketing, for example. From a business perspective it is interesting to actually build a system that allows us to quickly create customised apps for different customers and that is something we are trying to expand. This will really allow the business to be sustained.

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