In the spotlight:
Rob Kooij

It's All About Interaction

It is not always easy to find funding for innovative ideas, so you have to develop a certain sensibility in this area, Rob Kooij from the department of Telecommunications (EEMCS) and Senior Scientist at TNO says. When he learned about the Flowers project, he jumped at the opportunity and over two years submitted several projects. We talked to him about two of them: Sense Your World and A MAZE.

Project Sense Your World

Sense Your World was the first 'flower' and even though the actual project is finished, Kooij is still involved in the spin off and exploring new possibilities for his concept. The appeal of the project is its apparent simplicity: telecommunication PhD students from all over the world take a video camera and a sensor node when they go home to visit. The sensor node is a high-tech item: sensor nodes are used to gather and distribute all types of information, for instance about temperature, motion, sound, vibration, etcetera.

They interview a parent or grandparent, someone from another generation, in their native language. They ask them questions about their own education and how they feel about the education of the next generation. These questions were submitted by Marleen Brummelink from OC Focus.

They then proceed to inquire how familiar their relative is with certain modern appliances, such as computers and cell phones. Finally, they show them the sensor node, ask them what they think it is and how much something like that would cost. The end product is a website on which you can click on a country and see its video, subtitled in English.

The purpose of the project was twofold. First, to make PhD students aware of consumers' different levels of familiarity with new technology and applications. The market for wireless sensor endpoints is expected to rise to 5.3 billion USD in 2010 for some 41 million appliances. For such a boom to occur, the applications have to be well-known and desirable to people. Secondly, to get students to realize that they are part of an global community here at the TU. Increasing students' understanding for each others' backgrounds may certainly bring them closer together.

Kooij is really enthusiastic about the results. To see someone interviewing their relatives and interacting with them almost formally, yet at the same time intimately, is quite special. The technical aspects of the project took longer than they had anticipated. 'It was exciting to get together with people from other disciplines to solve technical issues, such as the subtitling process. It was more work than we expected it to be, but it was fun to learn a new skill.'

Moreover, he sees endless possibilities to expand on the concept. At present, he is plugging the project to colleagues in the United States: 'Wouldn't it be great to have students from other countries submit their own clips? I would love to see the project grow. In that case, we might have to pick a different, more generic object, though. There are some 200 countries in the world, and it would be wonderful to have contributions from each one of them. You could perhaps do something like this under the flag of the UN, for instance within the framework of 2010, the International Year for the Rapprochement of Cultures...' Renate Klaassen has already contacted a documentary filmmaker to work on a compilation, and Kooij is thinking of approaching the HKU or Grafisch Lyceum in Rotterdam in order to take it all a step further.
Interview Uzbekistan

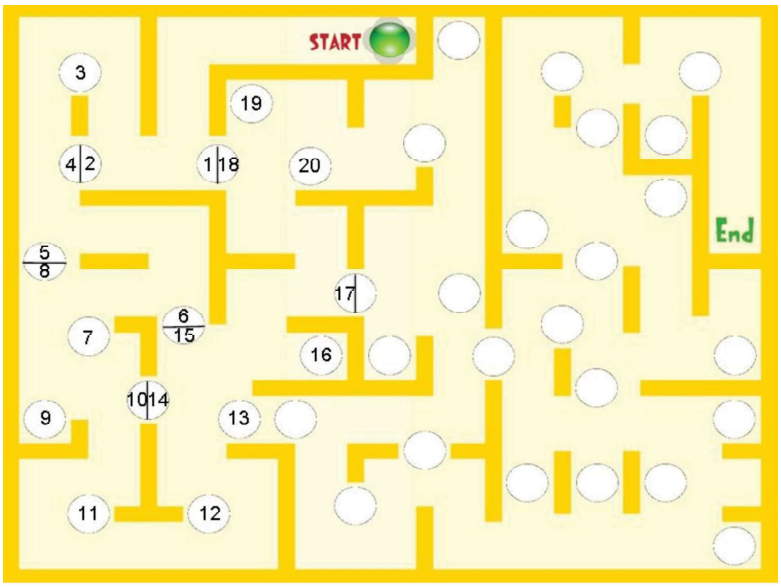
Sensor networks, i.e. networks consisting of connected sensor nodes, are used in many industrial and civilian application areas, including industrial process monitoring and control, machine health monitoring, environment and habitat monitoring, healthcare applications, home automation and traffic control.

http://www.nas.its.tudelft.nl/people/Rob/sense/syw.html

Project A MAZE

A MAZE is an interactive game, played by four people who have to work together to win. That is part of its charm: the purpose is the interaction and cooperation between the players; the competition comes from other teams.

It is based on the children's game of a maze or labyrinth in which you have to steer a little iron ball across a wooden maze by turning on the handles on the sides. The challenge lies in preventing the ball from falling in one of the holes in the maze. If that happens, you have to start over.



The game was adapted in such a way that four players each control one direction of the ball: left, right, up and down. They are each given a doctored cell phone that communicates with the computer via Bluetooth. Four SonyEricsson cell phones, running the HID protocol, are used as interfaces.

The game was tested at a DTC (Dispuut TeleCommunication) Event that was held on 20 November 2009. Around 20 people participated, both staff and students, from nine different countries: the Netherlands, India, China, Spain, Ethiopia, Serbia, South Africa, Iran and Macedonia. The game was played by 10 teams in all, so that every player played for at least two teams.

They decided to couple the fun with a small-scale study, so five of the teams were homogeneous, with all four participants coming from either the Netherlands, India or China, and five teams were heterogeneous, with participants coming from different countries. Three tentative conclusions were drawn. First of all, the performance of the homogeneous teams is better than that of the mixed teams, in the sense that their average score was higher and that the best team was homogeneous as well. Of course, this was a small-scale test and to put it in scientific terms: the difference in performance was not significant, as the two-sided t-test revealed a p-value of 0.33. The test was far too small to look for differences in leadership styles, the influence of language aside from culture, et cetera.

		Run									
Team	Type	1	2	3	4	5	6	7	8	mean	max
1	homogeneous (Dutch)	5	2	9	1	2	5	16	1	5,1	16
2	mixed	1	1	2	2	2	2	2	1	1,6	2
3	homogeneous (India)	2	2	2	5	5	3	5	1	3,1	5
4	homogeneous (Dutch)	2	3	5	2	1	1	9	10	4,1	10
5	mixed	2	5	2	3	2	1	2	1	2,3	5
6	mixed	3	1	3	1	2	2	3	2	2,1	3
7	homogeneous (China)	5	2	5	3	1	9	6	5	4,5	9
8	mixed	3	10	1	13	2	5	12	2	6,0	13
9	homogeneous (Dutch)	2	12	2	2	19	10	1	10	7,3	19
10	mixed	2	5	3	10	1	3	12	11	5,9	12

Even so, according to onlookers, there were marked differences in communication styles. Both the Indian and the Dutch team seemed to function without noticeable leadership. Every player had a clear sense of his own position as equal part of the team. Equality is an important feature of the Dutch culture, in which negotiation and compromise without dominance, the so-called 'poldermodel', are the natural way of doing things. Apparently, the strong democratic culture of India, with its many diverse cultural and religious groups, inspires a similar type of teamwork.

In the mixed teams, on the other hand, a natural leader emerged from the outset to run the team. They needed to talk more to map out their strategy and collaboration, for internal competition hampers good results. Even so, the Eastern European members of the mixed teams all displayed strong, self-reliant characteristics. Definitely food for thought – and sociologists!

Secondly, the data show a clear learning effect. All the teams had a chance to practice for two minutes. Each team then played eight runs, and the results of the second four runs were usually much better. Every one played for two teams, and the performance of their second round, so to speak, was better than that of the first round.

Finally, in spite of the learning curve, concentration was an issue for all teams, and their performance sometimes dropped in the final runs.

The first version of the game has been demonstrated at the Open Days of TU Delft and during the Science Days of the NEMO Science Museum in Amsterdam. All the enthusiasm of the participants has left Kooij brimming with new ideas. 'What if we designed a game that would work without prepared telephones? That could be played in public waiting rooms?' He is excited about the new technical possibilities and about bringing people from different disciplines together. It is all about interaction.

http://www.nas.its.tudelft.nl/people/Rob/amaze/

Lessons Learned

Tips:

If you run a similar project

- be sure to delegate the tasks you are not good at yourself
- be sure to make it a team effort
- work across departments, and even better, across faculties!

Tops:

- Students are appreciative when they get a responsible task within the project
- Engagement of my own department in the project created synergy
- Spending time on creating visibility for the project paid off!

Contact
Rob Kooij
R.E.Kooij@tudelft.nl
+31 (0)15 27 85393