INF: 5261
Wonder - document.
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1. Who we are?

We are master students who follow the program in Interaction Design and Programming and Networking. We think that our academical and professional background will help us to work on our project, because we can use different perspectives and experiences. Victoria and Ewa have been working together on several HCI-related projects, while Kassu has experience in programming and software development.

2. Project of choice

Title: Fire alarm for hearing impaired people.

We are planning to create an application (or device) depending on the information we gather.

We have chosen that project because we would like to facilitate life of hearing impaired people.
As freshmen, we worked with the similar project and we got very interested in it, but our skills back then did not allow us to fulfill all our ideas. Now, as master students, we would like to use our experience and results from the past to create a more advanced application which can be used in real life.
Also, we believe that knowledge and skills learned during the present project would help us during the job search process.

3. Users
Our target group is hearing impaired people optionally including some which are both deaf and blind who wish to live life without a fear of being killed or injured in a fire, because they cannot hear the alarm. We assume that hearing disability may cause a lot of stress for people, because they may feel insecure while performing daily activities. This feeling of insecurity might limit their mobility.

We can imagine a student who sits in “stillerom” and studies for the exam; it’s the evening and there are not many people at IFI. All of the sudden, the fire alarm goes on. People evacuate, but our student in stillerom does not notice it; also no one notifies him. If he does not evacuate on time, he might get injured / die.

The application can help everyone. In case of fire there are lots of challenges to escape. Even in the case complex new buildings with modern fire safety systems, people can’t find an easy escape directions. For example, which side of the building is under fire.

4. Research questions:

- How the hearing impaired people perceive audio world?
- How does the deafness limit their daily activities?
- Does deafness affect their mobility?
- Would they trust an app / device in emergency situations?
- What kind of devices they use to increase their mobility? Do they use any?

5. Methods of research:
   - Survey among hearing impaired.
   - Survey on fire safety regulations, policies and know current progress towards digitizing
   - Interview
   - Prototyping and meeting with sample group - giving them a prototype for testing, not telling them what to do,
   - Interview / discussion with a specialist - doctor, app developer.
   - Testing and improvements
6. Digital solution highlights.
   - Digitizing floor plans in the building/Hotels. It will find out the wonders on how to transform paper based building plans into digital ones.
   - Develop a universal application that takes digital floor plans of any building in the form of file wifi or bluetooth in the case of offline. The prototype might be on one specific building and to scale it up to universal. We will see how far we can go in the one semester.
   - Upgrading fire alarm systems to enhance this services. We will try to match up with given literatures to set standards.
   - Capabilities to work both online and offline. The communications between the central alarm system and the mobile device is based on mobile data or wifi. Mobile data accesses in the buildings comprises specially between fire walls (mostly stairs). Also during an accident it is unlikely to have electricity to power up wifi devices. As an alternative solution, we are thinking of sending signal through the alarm sound and an equalizer filters certain ranges of the sound signal which could carry some bits that the application on the mobile could translate into exit strategy.

So far we have seen the following articles to be considered in our study. We will see some more while the development in progress.

Selected Articles:

Li, K., Baudish, P., Hincley, K: *Blindsight: eyes-free access to mobile phones*, ACM.

Müller, J., Jentsch, M., Kray, C., Krüger, A.: *Exploring factors that influence the combined use of mobile devices and public displays for pedestrian navigation* , 2008. ACM.

Plos, A., Buisine, S: *Universal design for mobile phones: a case study* , 2006. ACM.