

Improved Safety for disabled People

In order to help disabled people gain easier access, many buildings, e.g. sheltered workshops, as well as other venues are now accessible barrier-free. But how can such places be evacuated effectively if disabled people are involved? How can stakeholders be trained, evacuation plans be adjusted, and facilities be designed to make these sites safer? To answer these questions, the joint project "Safety for people with physical, mental or age-related disabilities" (SiME) has been funded in the context of the "Research Programme for Civil Security" by the German Federal Ministry of Education and Research (BMBF). The three-year project began in February 2016 and is coordinated by the Federal Institute for Materials Research and Testing (BAM). Other partners are Otto-von-Guericke University Magdeburg, Hochschule Niederrhein, Werkstatt Lebenshilfe, PTV Transport Consult GmbH, and Forschungszentrum Jülich.

The simulation of the process of evacuating a building enables the identification of bottlenecks or lack of assistance and the calculation of the evacuation time. For this purpose, parameters of the realistic movement of persons involved are needed, but such data are as yet only available for people with unrestricted mobility. In SiME, the team from JSC will execute parameter studies for mixed traffic, i.e. for people with and without disabilities, and also analyse the process of movement of disabled people, e.g. transfer from a wheelchair to an evacuation chair, during an evacuation process.



The intended parameter studies have two focuses:

1. Evacuation of disabled people from their daily environment like sheltered workshops or residences
2. Collective movement of people with and without disabilities in venues for large public events.

For the extraction of trajectories of individual participants methods for visual sensors developed during previous projects like Hermes and BaSiGo can be used. But people with a low height inside a dense gathering like persons using wheel chairs will often be occluded so that sensors have to be examined and new methods be developed to track also covered people. After sensor fusion the movement of every single person will be available for further analysis.

With the collected data, more reliable models could be developed to simulate the evacuation of sheltered workshops or homes for people with disabilities. A simulated forecast of the dynamic inside gatherings including people with limited mobility will be more realistic.

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