



**DELIVERABLE REPORT**

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DISSEMINATION LEVEL: RESTRICTED  
TITLE: TEST SUITE FOR THE SOFTWARE-DEMONSTRATOR

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AUTHOR(S): DR. HERZ / DR. KLEIN / DR. MAYER (SIEMENS AG)  
REVIEWED BY: DR. KLEIN, LÉON VAN BERLO (TNO), M. VALMORISCO (INCODE)  
APPROVED BY: ANS VAN DOORMAAL (TNO)

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# Executive Summary

Modern software packages for pedestrian flow simulations allow to apply virtual evacuation scenarios for buildings, which are still in the planning phase. This helps to identify and prevent potential bottlenecks and critical regions in building designs. As in particular the safety requirements for public buildings are very high, pedestrian flow simulations have become a widely used design evaluation tool in public transport systems and large infrastructure facilities [1],[2],[3].

There are two major types of approaches that are used in pedestrian flow simulators: Microscopic models and macroscopic models. The so-called microscopic models resolve single pedestrians. This corresponds to atomistic models in which the single particles are resolved. Thus, the microscopic models are often used to investigate the local fine scale behaviour of pedestrian flows. Furthermore, the microscopic models can be distinguished into force models [4], discrete-choice models [5], and agent-based models [6]. On the other hand, the macroscopic models are based on continuous densities and flow fields. This corresponds to continuum mechanical approaches. Hence, macroscopic models are often used to study large scale behaviour and typically use network-based models [7] or fluid dynamics models [8].

As pedestrian flow simulations can affect the design of safety relevant aspects of public buildings, it is crucial to include software tests systematically in the development process of pedestrian flow software. This includes the comparison of the simulation results with real measurements as well as the application of software tests such as unit tests and integration tests. Furthermore, to ease comparison between different pedestrian flow simulators, it is important to define a public available set of software tests, which can be applied to different simulators. Exactly such public available software test scenarios are defined by association RiMEA e.V. [9]. These tests are henceforth referred to as RiMEA tests. Another set of public available software tests are developed in the master thesis of C. Rogsch [10] and are henceforth referred to as Rogsch tests.

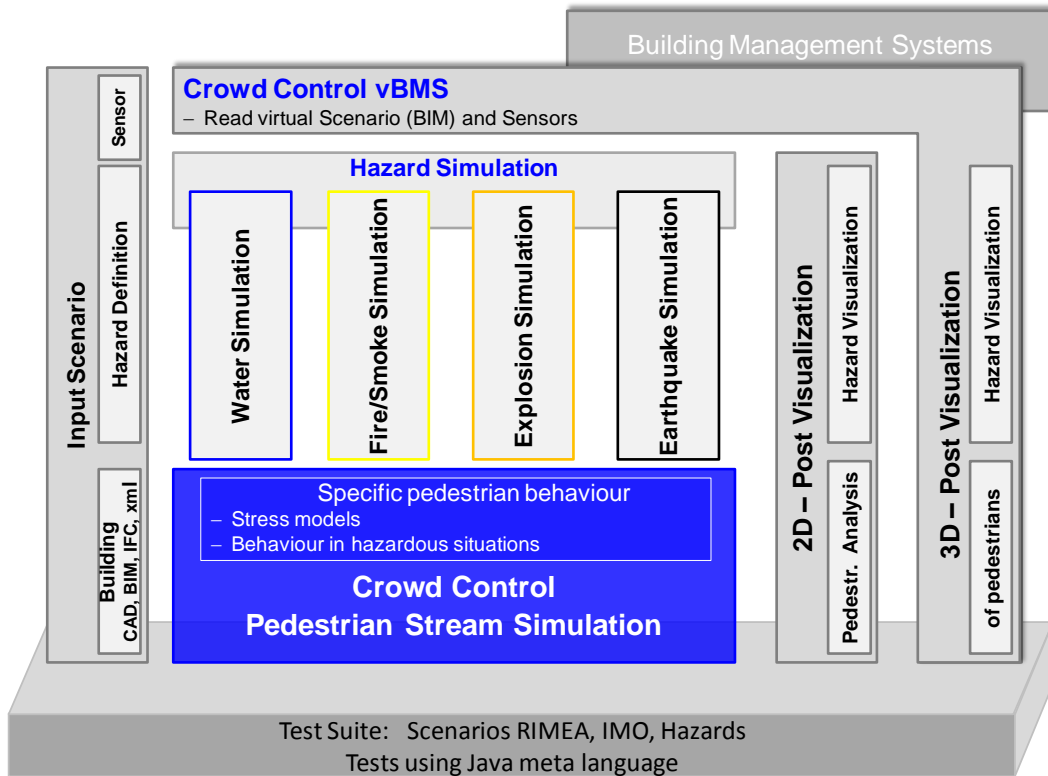


Figure 1: Crowd Control Test Suite as basis for the simulation software development



Figure 2: 3D Visualization of the environmental simulation of the Ribbon show case building

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## PROJECT PARTICIPANTS:

TNO – NEDERLANDSE ORGANISATIE VOOR TOEGEPAST NATUURWETENSCHAPPELIJK ONDERZOEK (NL)  
ARCADIS NEDERLAND BV (NL)  
FRAUNHOFER-INSTITUT EMI (DE)  
INSTITUTO CONSULTIVO PARA EL DESARROLLO SL (ES)  
JA JOUBERT ARCHITECTURE (NL)  
NORTH BY NORTH WEST ARCHITECTES SARL (FR)  
SCHÜßLER-PLAN INGENIEURGESELLSCHAFT MBH (DE)  
SIEMENS AG (DE)  
UNIRESEARCH BV (NL)

## Disclaimer

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