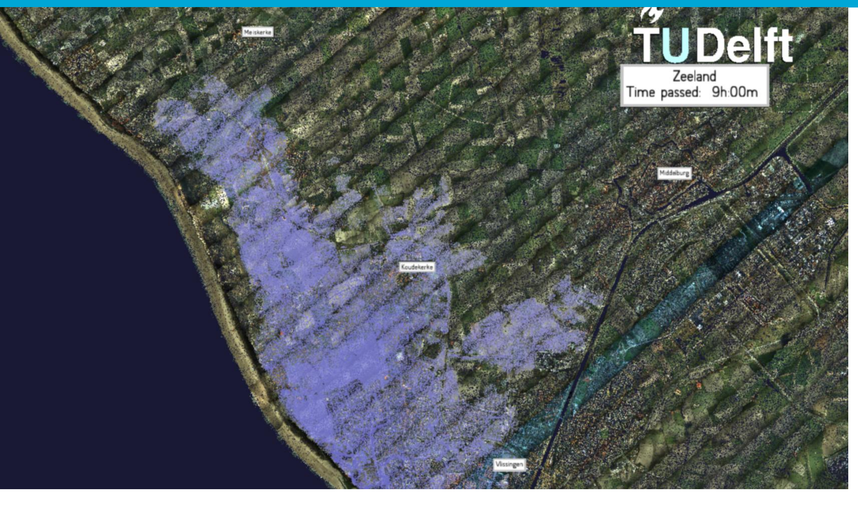
# Interactive Simulation and Visualization of Flooding Scenarios

**Christian Kehl, Gerwin de Haan**
Computer Graphics and Visualization Group, Delft University of Technology







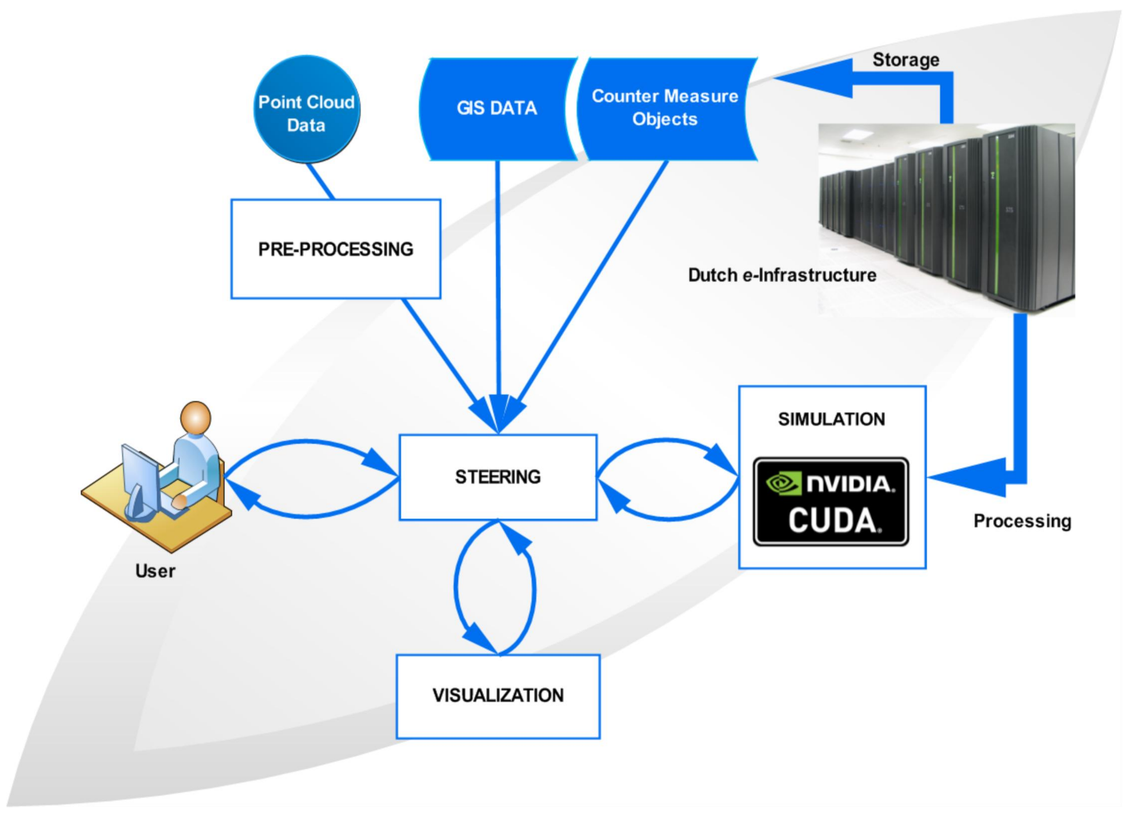



## Project Motivation

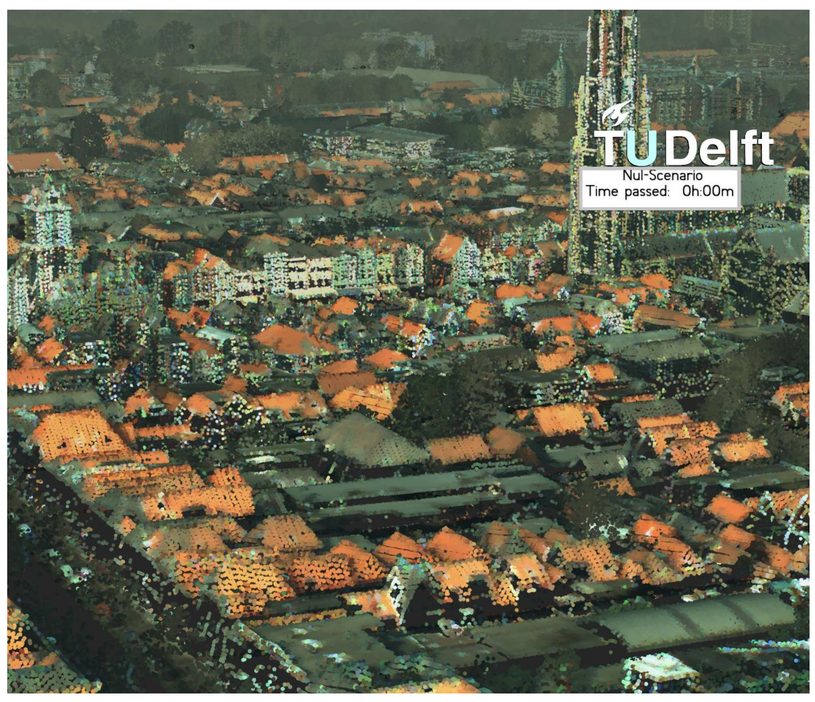
Coastal regions worldwide are under increasing threat from flooding. This can be simulated with CFD to enable flood protection discussions. Interactive Computational Steering of such simulations is required in a scenario-driven communication. Our project goal is to provide interactive algorithms and tools to support flooding aware decision making for policy makers, water experts and the general public.

## Real-time 3D Visualization of Massive LiDAR Point Cloud

- point cloud model “AHN2” of the Netherlands: >8TB
- continuous Level-of-Detail visibility
- feature-adaptive samples
- point cloud compression





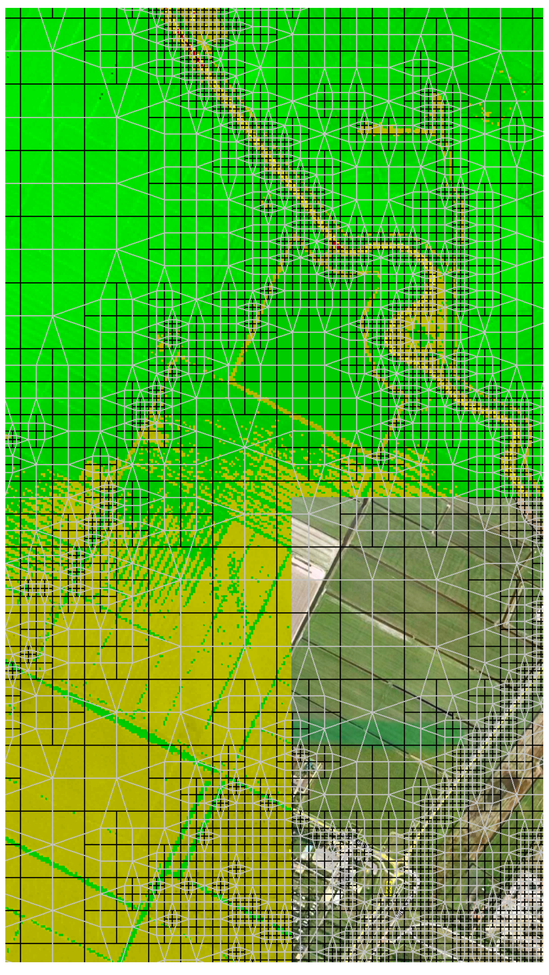

## Interactive and Adaptive Flooding Simulation

Challenge:

- large scales
- complex CFD models

Approach:

- massive parallelism on Hetereogenous Architecture with CUDA
- Simulation on Subgrids
- user-adaptive accuracy



## Multi-Scenario, Comparative Simulation Visualization

Demands:

- counter-measure integration
- multiple flooding scenarios in parallel

Challenge:

- meaningful comparative visualization
- in-situ simulation modifications
- computational steering with VRmeer and OpenSceneGraph

This work is supported by the Dutch research program of „Knowledge for Climate“ and embedded in the water innovation project „3Di“.
Project Website – graphics.tudelft.nl/Projects/FloodVis
3Di Watermanagement – www.3di.nu

Knowledge for Climate

TU Delft Delft University of Technology

3Di Water Management