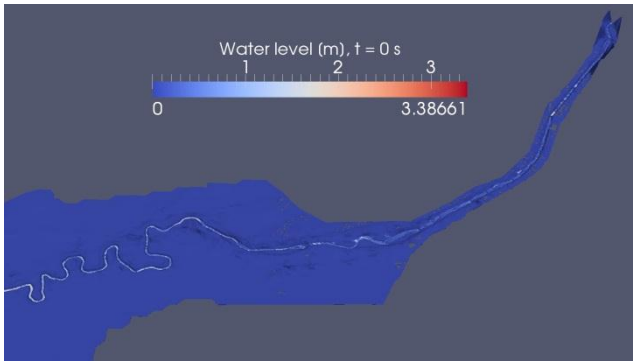
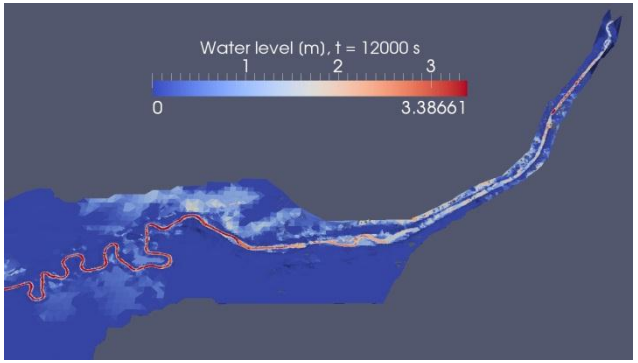
Interactive Flood Simulation

- flood events in alpine areas
  - quite frequent
  - strong impact on human welfare, agriculture, and industry
- Dornbirner Ache (Vorarlberg, Austria)
  - detailed GIS data
  - allow qualitative flood simulations
- derivation of computational model from these GIS data
- comparison of 2D and 3D simulation schemes
- interactive simulation

Project Characteristics

Modeling:	★★★☆☆
Mathematics:	★★☆☆☆
Programming:	★★★★★





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Task

- import GIS data to VA framework [2]
- generate computational grid from imported GIS data
- simulation runs with 2D shallow water and 3D fluid codes, OpenFOAM [3]
- comparison of the results obtained
- main task: Extend your approach for an interactive treatment, i.e. users can manipulate certain parameters (boundary conditions, geometry, etc.) during runtime and get immediate feedback

Supervisors

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References

[1] M. Jud, F. Schwertfirm, C. Rapp, D. Bierhance, M. Schilcher, M. Manhart: Coupling of GIS and Hydraulics using the example of the Dornbirnerach, ESRI User Conference 2011, San Diego, 13.07.2011
[2] http://www.mac.tum.de/wiki/index.php/Project_K2
[3] http://www.openfoam.com

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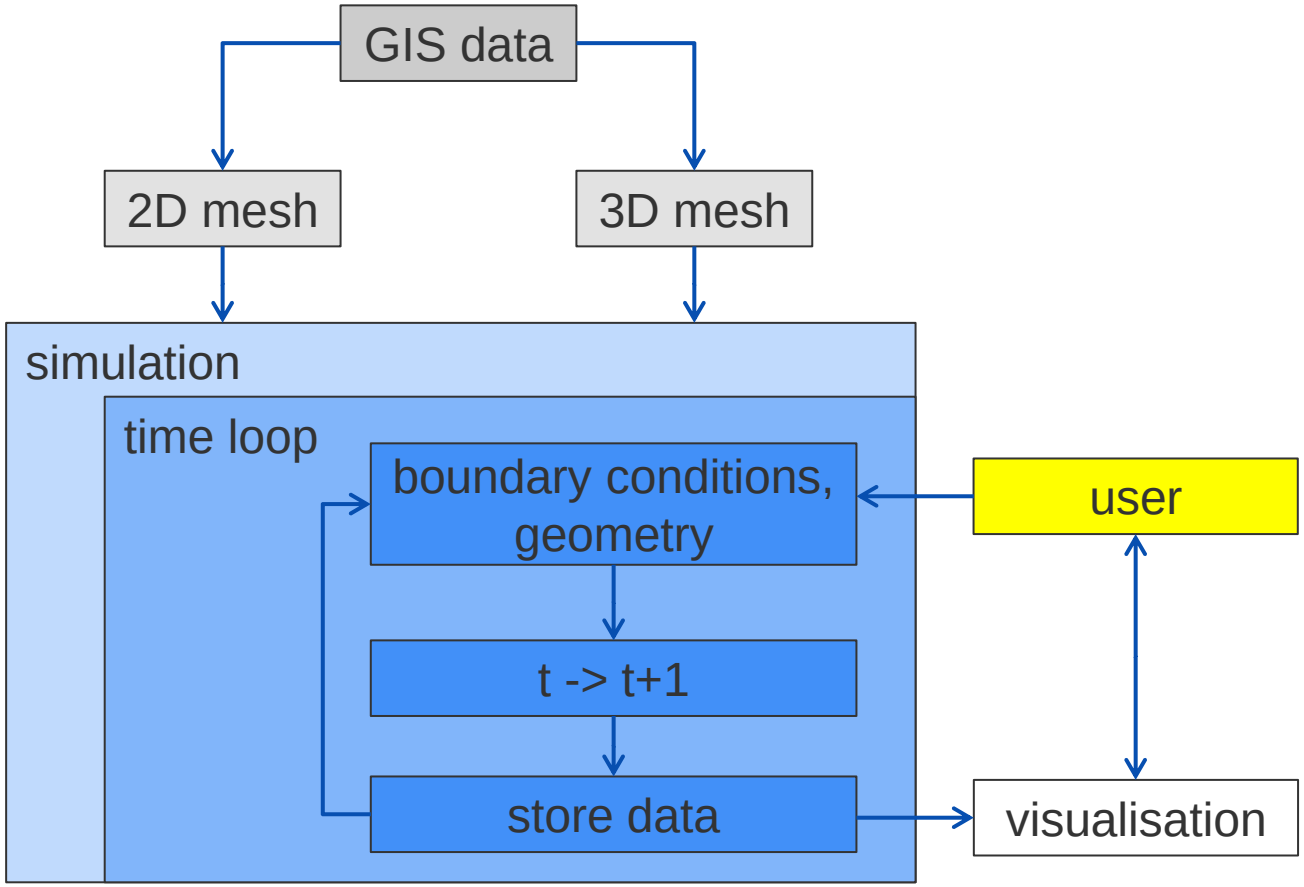

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