

# Visualization for Climate Change Adaptation in SUDPLAN

## Project Goals

The main idea of the **SUDPLAN** project is to develop an easy-to-use web-based planning, prediction, decision support and training tool for the use in an urban context, based on a what-if scenario execution environment, which will help to assure population's health, comfort, safety and life quality as well as sustainability of investments in utilities and infrastructures within a changing climate.

**SUDPLAN** aims at a new and visionary capacity to link existing environmental simulation models, information and sensor infrastructures, SDI's and climatic scenario databases, providing visualization of long term forecasts of environmental factors for urban subsystems such as building and architecture, traffic and transport, landscape planning and local water runoff.

End-users shall be enabled to evaluate risk hazards of e.g. river flooding, storm water local runoff, elevated air pollution levels for planned or existing urban areas subject to a changing climate.



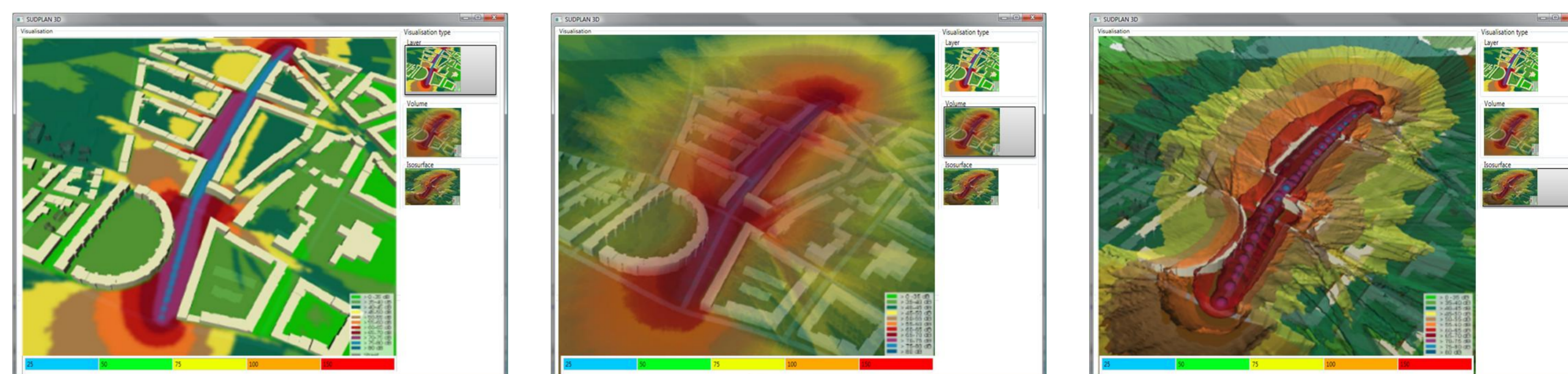
## System Concept

The core product is a highly interactive, highly 3D/4D graphics-based decision support environment in the form of a scenario management system, which explores existing resources, in particular the 3D landscape and 3D models of phenomena. In this system, users are capable to define, manage, execute and explore different decisions and to simulate decision scenarios. Users are supported in the visualization, comparison and documentation of different decisions, and can use the system for training.

The product will contain the following major components:

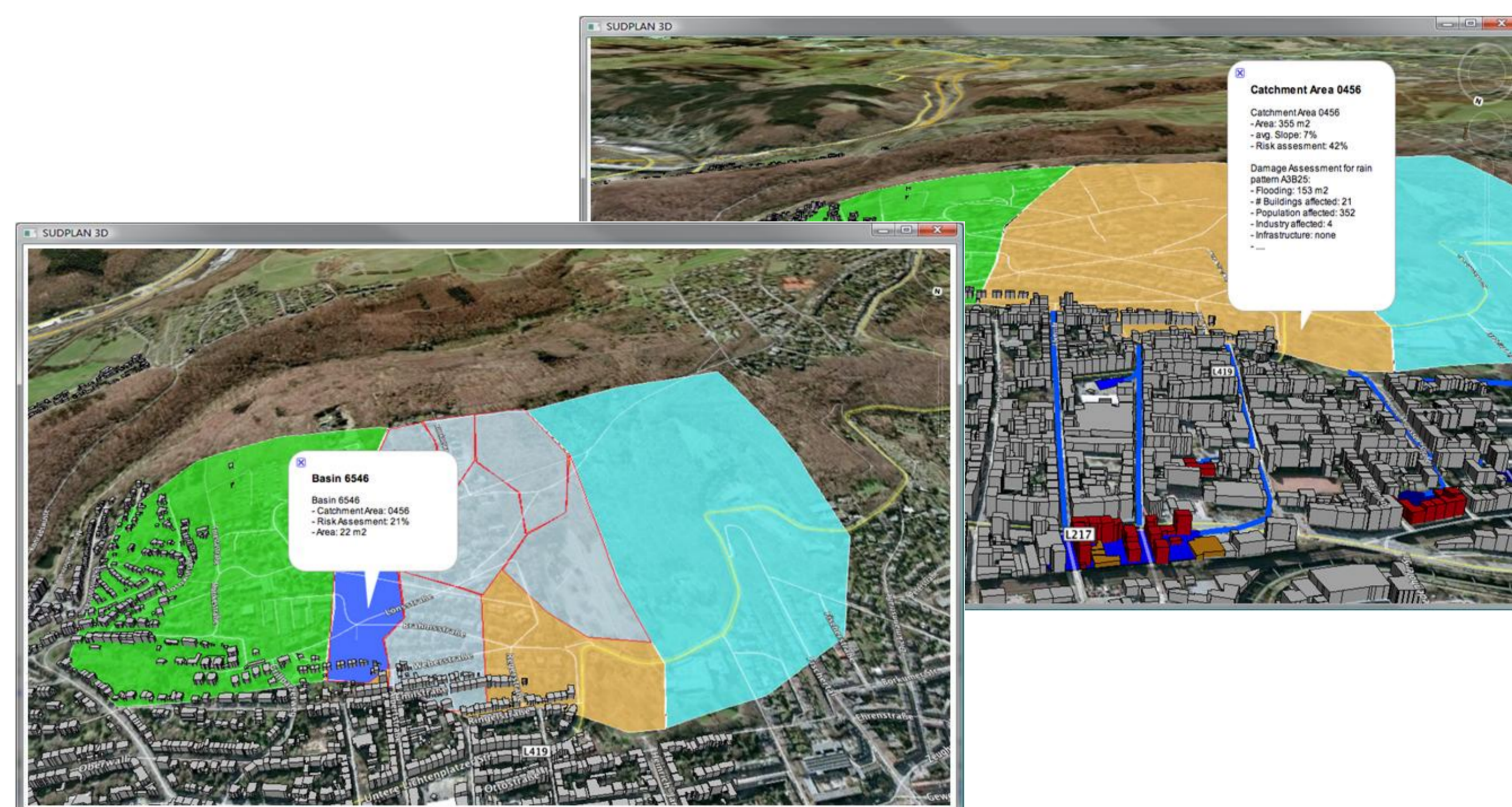
- an "orchestrator" component, which allows to define different what-if decision scenarios, their data and sensor sources, the models involved and the work flow associated with the scenario
- an "executor" component, which allows to execute (i.e. compute) different decisions (while the user waits, or in the background), to compare and document results
- a geo visualization component which links with existing SDI infrastructures (i.e. the existing spatial city information)
- an advanced 3D / 4D visualization component for the visualization and animation of 3D results and predictions, in particular using the 3D landscape
- a scenario and persistence manager which keeps an inventory of scenarios, data sources and results which supports results evaluation and reporting
- an access-controlled layer to existing services (including models), data sources, catalogues and sensors.

## Visualization



Different visualization possibilities of a 3D noise pollution data set

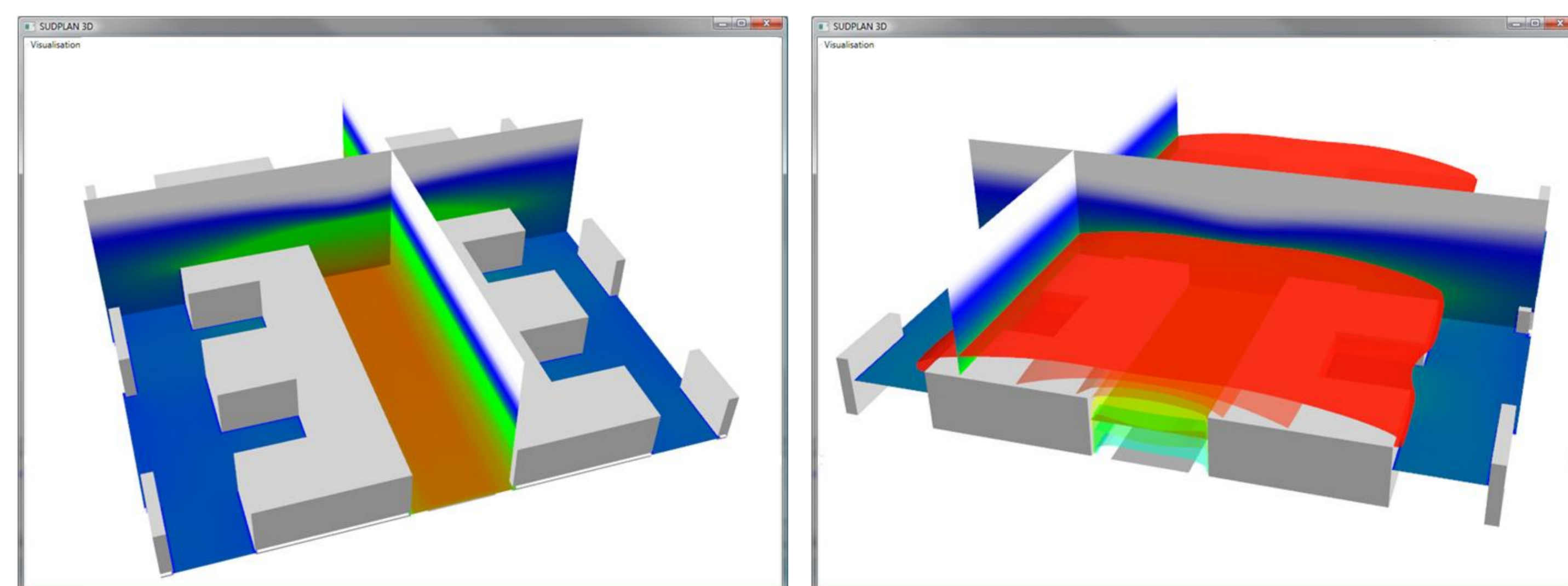
Besides functionalities like resource discovery (data, models, etc.), integration support for data sources, sensors and models, support for model parameter adjustment, scenario management and repository support, the system will provide different options for the post processing of results and advanced visualization capabilities.



Basin and catchment area information including area of flooding and affected buildings.

The system will include:

- 2D/3D and 4D (animation) visualization of results
- Comparative visualization for different scenarios
- Visualization of results embedded in surface and city models
- Advanced Information Visualization techniques
- Support for visual data exploration and analysis



Cutting planes and iso-surfaces through a 3D air pollution data set