4th International Conference
on Flood Defence

C. Hübner, A. Winterscheid, M. W. Ostrowski, P. Horchler,
S. Rosenzweig, V. Hüsing, E. Fuchs, G. Belger, M. Haase,
T. Hens, D. Kuch, K. Lippert, M. Thül

TECHNISCHE UNIVERSITÄT DARMSTADT

nofdp

nofdp IDSS - Flood Control Planning and Evaluation with an Information and Decision Support System

nofdp IDSS

Christoph Hübner

Outline

- Characteristics of Decision Support Systems
- IDSS Concept
- End-User Demands
- Interactive planning
- Highlights
- Management levels
- Conclusions

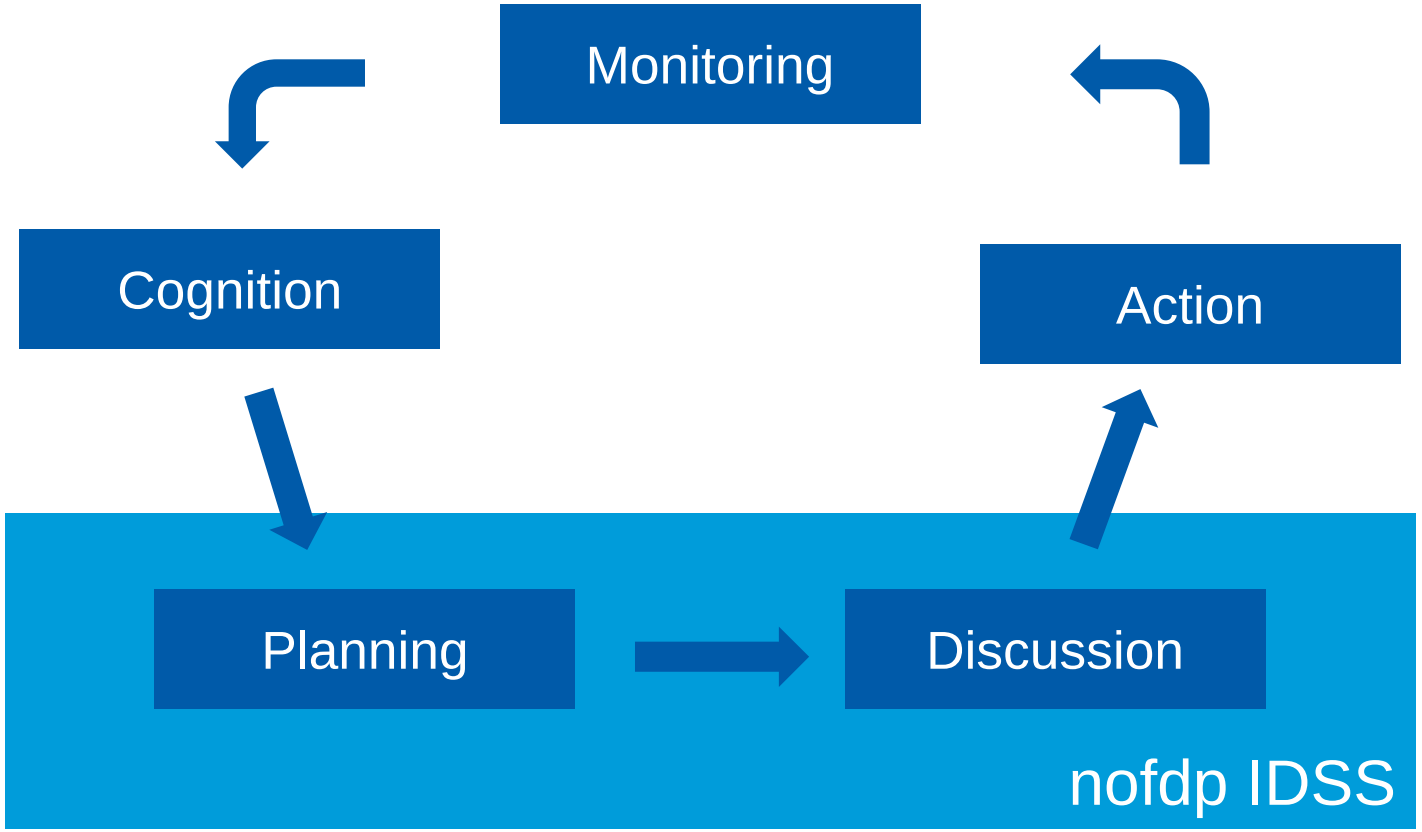
Decision Support

Characteristics of Decision Support Systems

- Support for decision makers in semi-structured and unstructured problems
- Support individuals and groups
- Support for interdependent or sequential decisions
- Support variety of decision processes and styles
- DSS should be adaptable and flexible
- DSS should be interactive and provide ease of use
- Ease of development by (modification to suit needs and changing environment) end users
- Model-, communication-, data-, document-, knowledge-driven

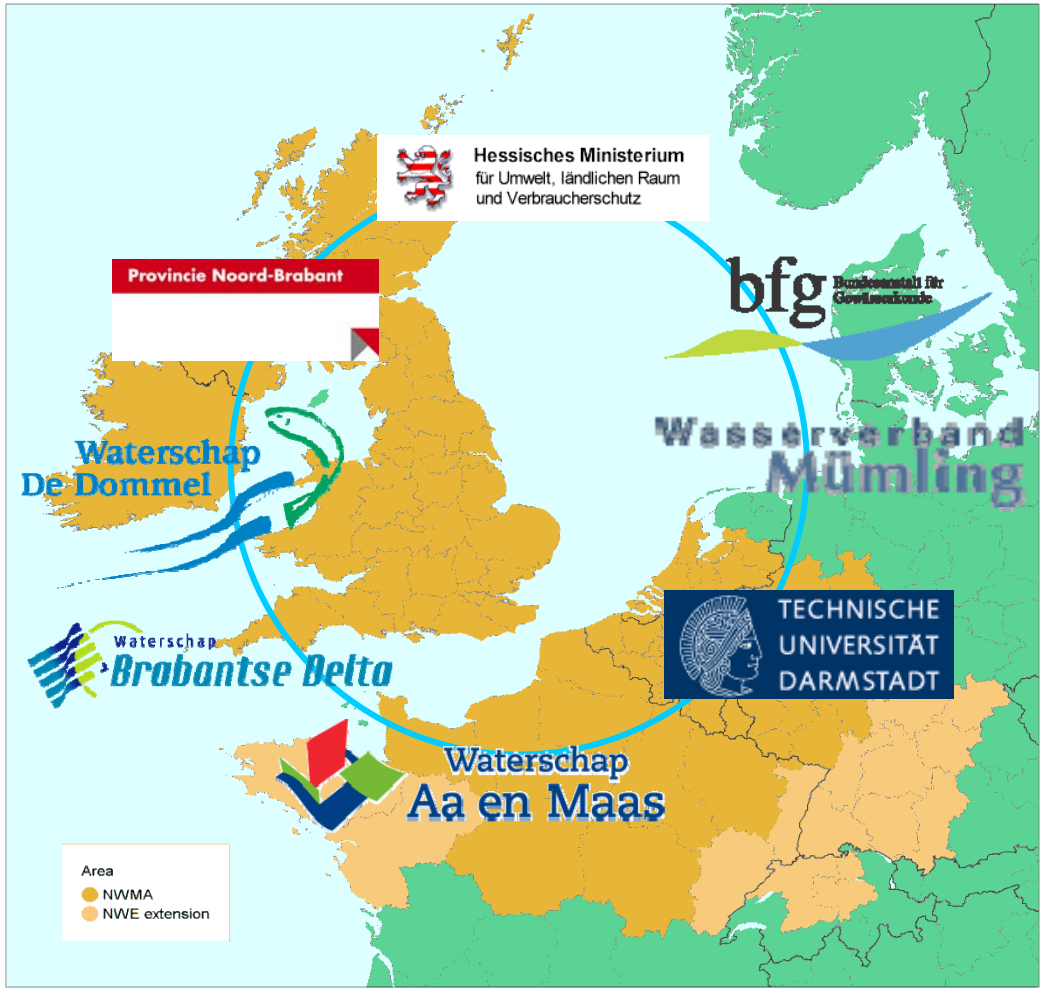
Decision Support

Decision Process



Simon (1960)

IDSS Concept Development



Implemented by:

BCE
BJÖRNSEN BERATENDE INGENIEURE

Design and Development of Graphical User Interface and Modules / Tools

Deltares
Enabling Delta Life

Implementation of **SOBEK** and OpenMI

Decision Support

IDSS requirements

- Reliable Results
- Simple and clear demonstration of results
- Not make decisions, but deliver information
- Multicriteria Evaluation
- Support discussions
- Maximum on transparency
- Model-, communication- and data-driven
- Standalone
- Free of charge

Objective

The overall objective of the project is to:

develop a computer based decision support system

that provides the information required,

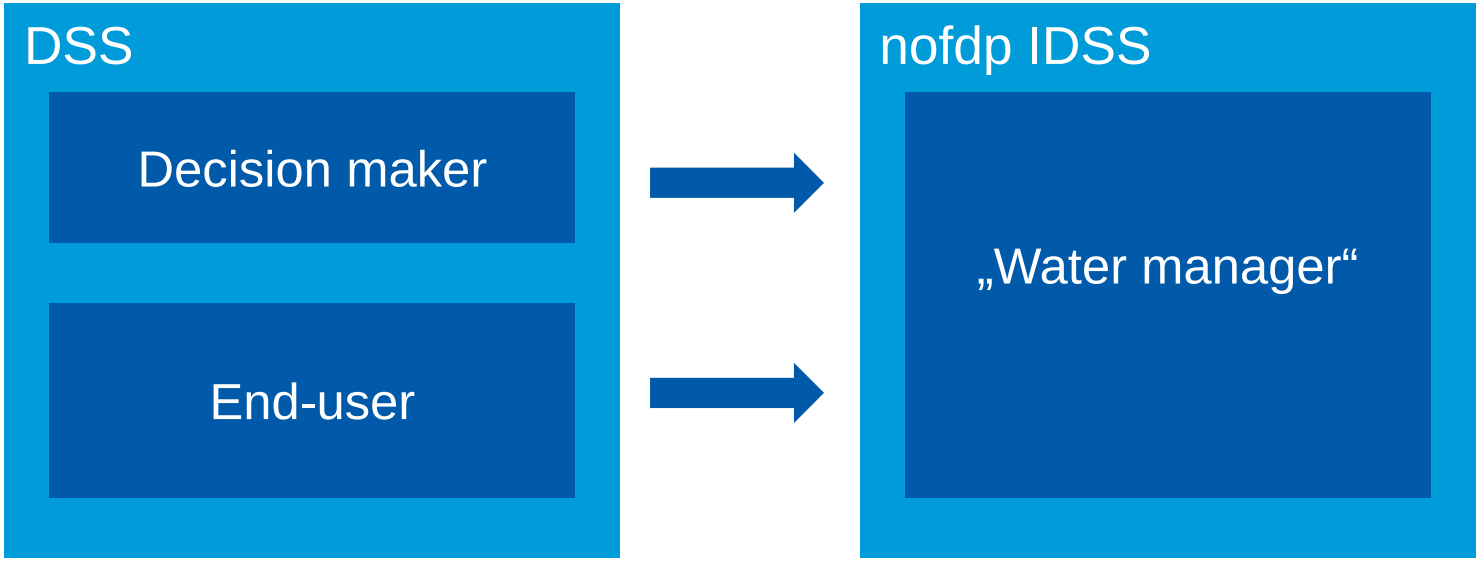
as well as suitable models and methods

to demonstrate the expected function

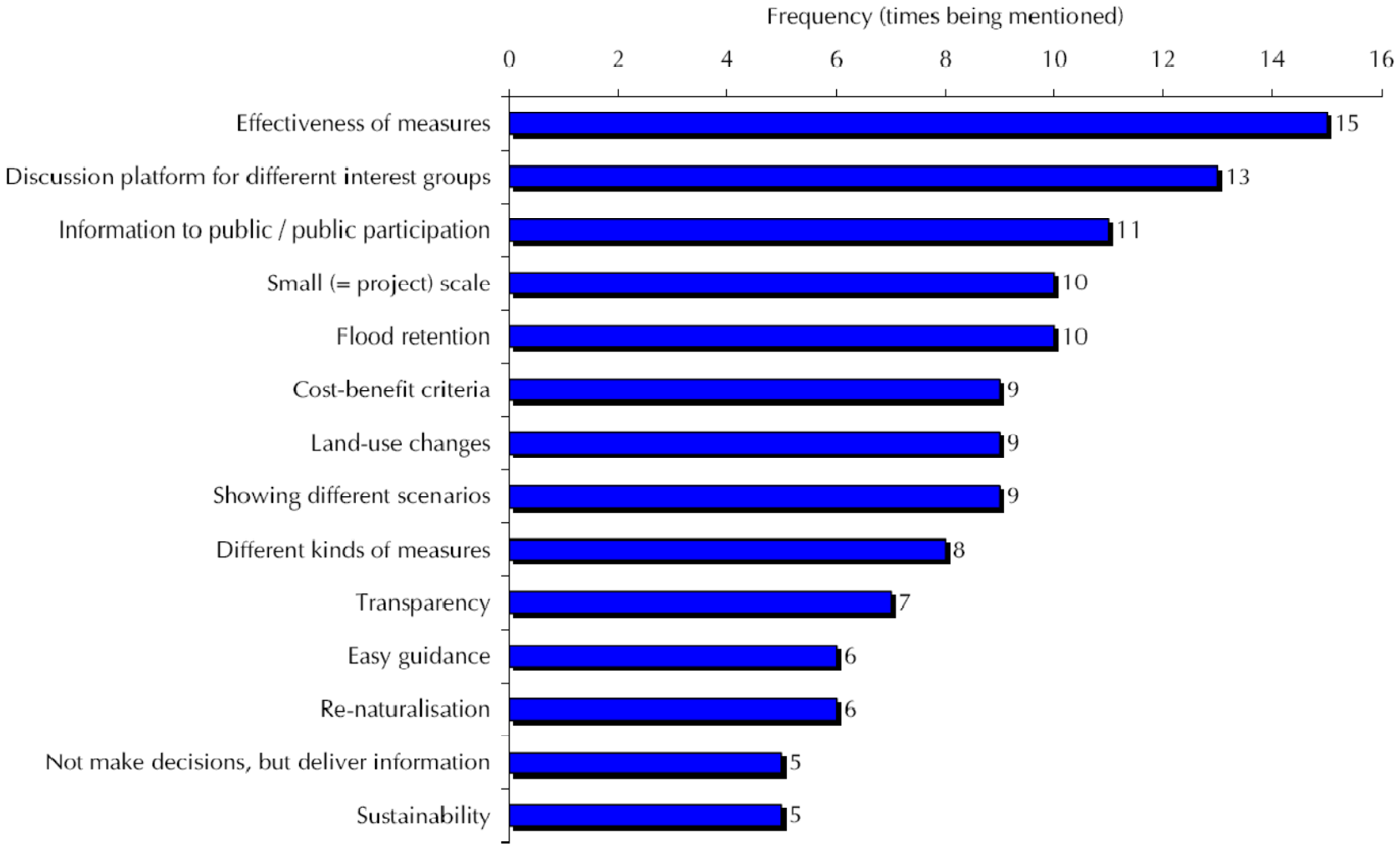
of flood prevention measures / projects

on different scales, in an integrated temporal and spatial context.

Stakeholder and user



End-user demands



nofdp IDSS:
The Five Headed Monster?

Measures

Category	Sub-category	Measure
Constructive Measures	Flood retention	Polder
		Retarding basin (controlled and uncontrolled)
		Excavation works within floodplains
		Lowering floodplains
	Hydraulic conveyance capacity	Bank recession and –fill up
		Change of bottom slope or level
		Obstacles and line-structures on floodplains
		Diversion flood discharge
		Weirs
	Activation of retention area	Relocation of dykes
		Earth walls in the valley
	Flood protection	Construction of dykes, increasing dyke height
		Mobile walls for local flood protection
Measures of nature conservancy and spatial planning	Flood retention	Ecological flooding of floodplains and polders
	Hydraulic conveyance capacity	Establishment of buffer strips with free vegetation succession on river banks
		Meandering of river course (controlled and uncontrolled)
	Activation of retention area	Adapted forest management
		Forest development on floodplains (controlled and uncontrolled)
		Adapted cultivation on floodplains
		Zoning plan modifications
	Flood protection	Urban land use planning -precautionary measures against flood damage

User Profiles and Tasks

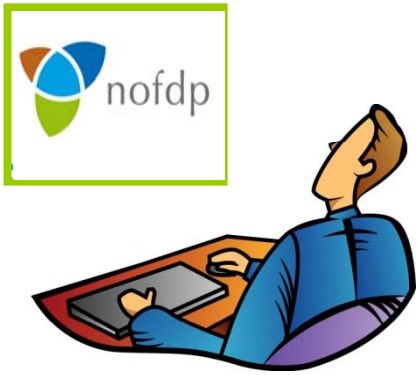
Project Setup and Analysis

Experienced user in processing of geodata and modeling (hydraulic and environmental)

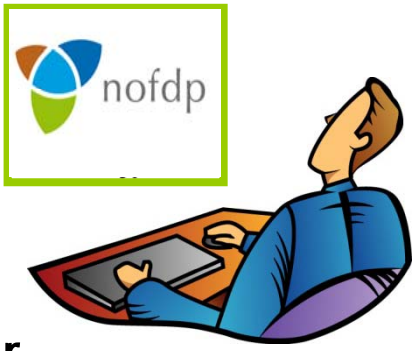
Interactive Planning, Evaluation and Communication

User with basic knowledge concerning GIS and modeling. Familiar with Office, Internet,…

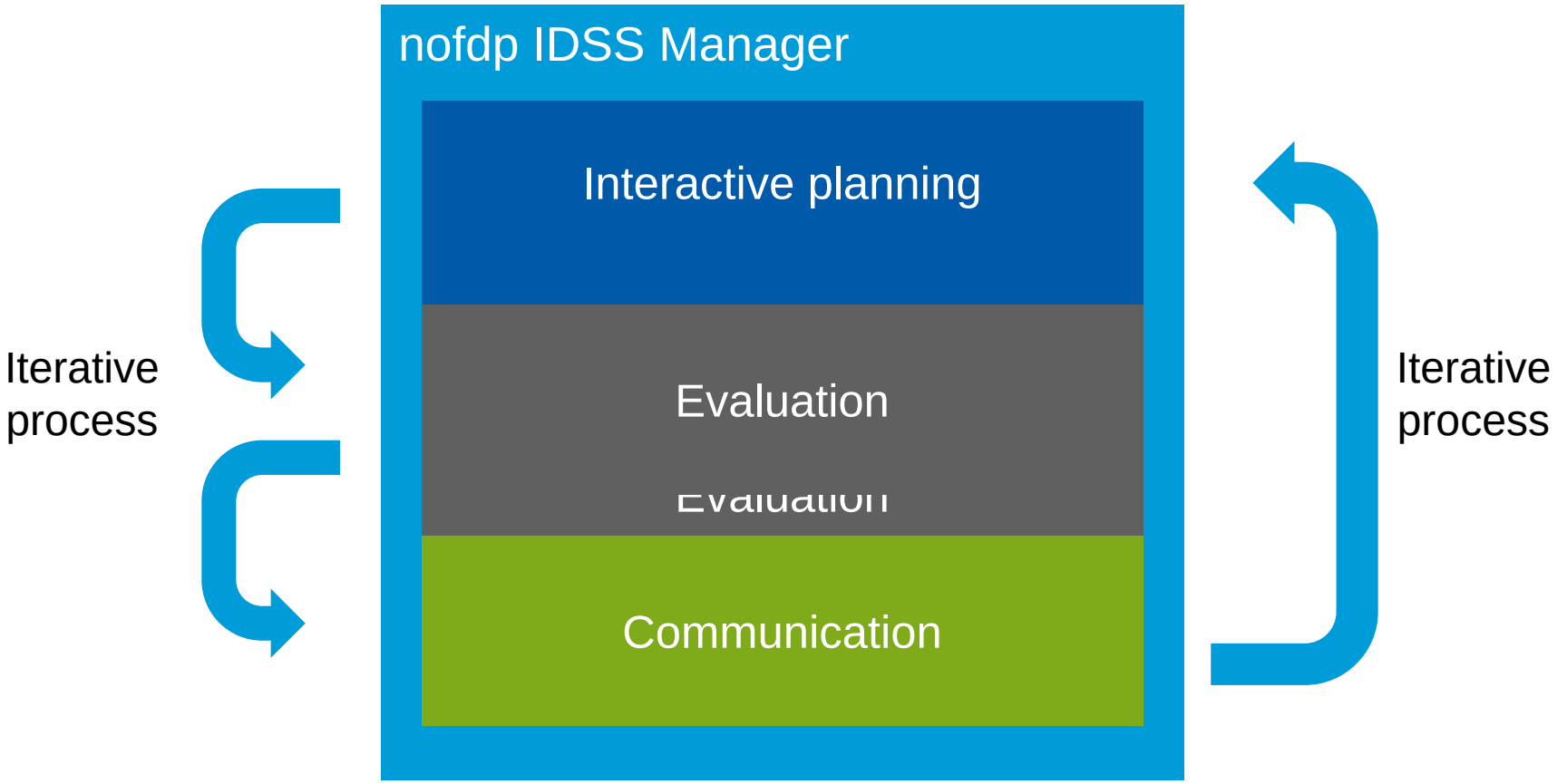
Expert



Planner
Project Manager

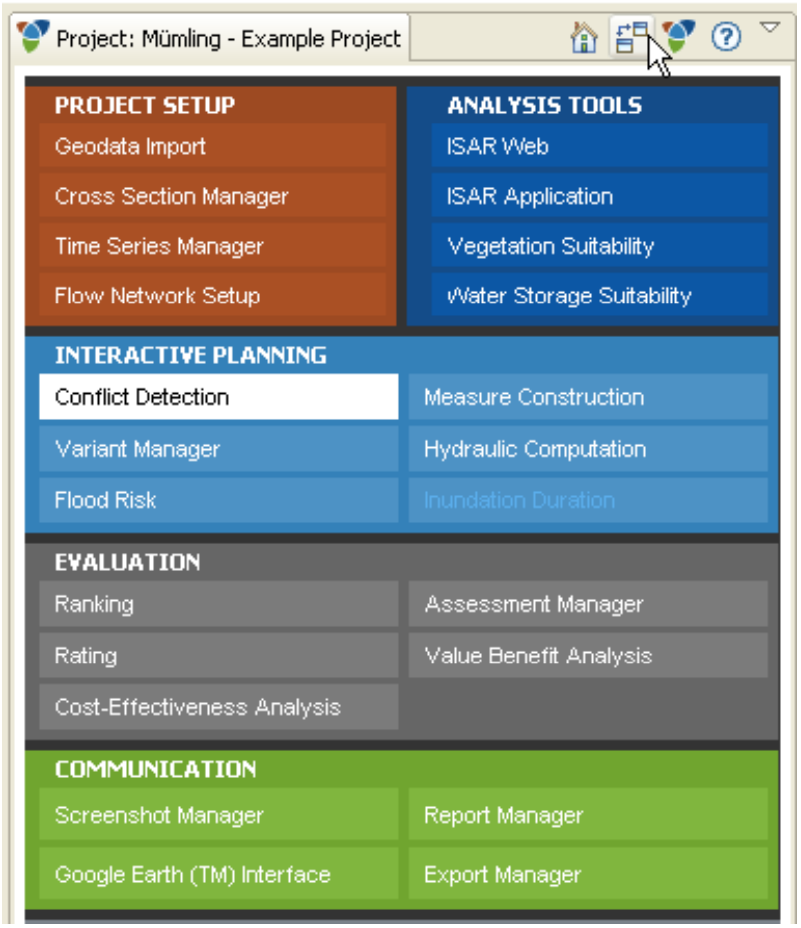


Interactive planning

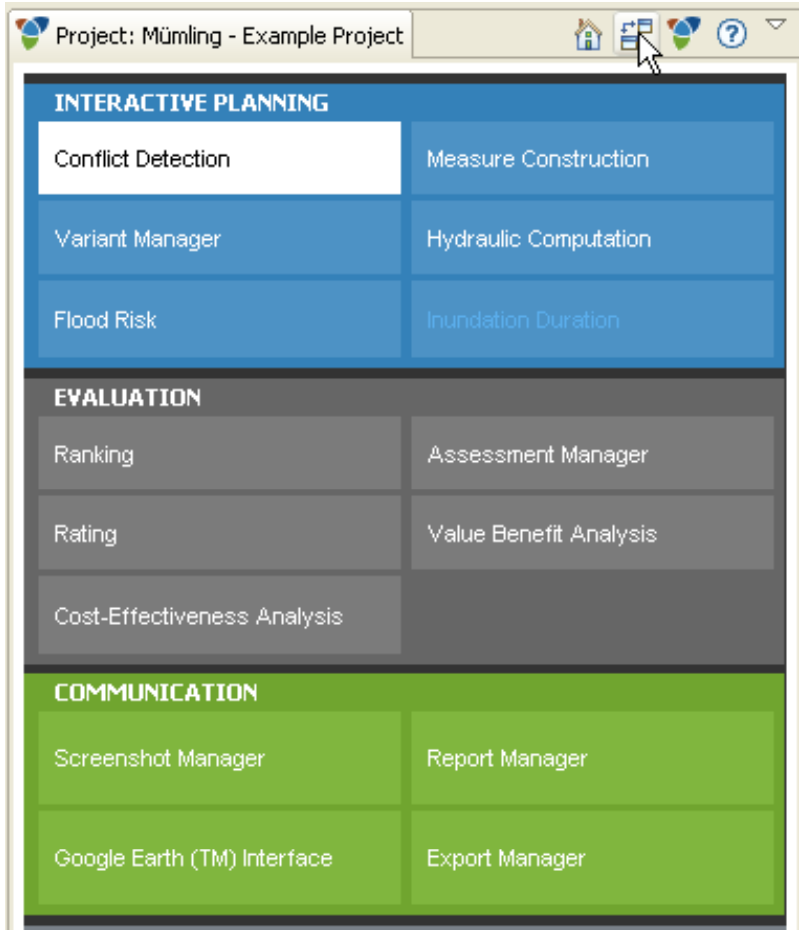


IDSS User Interface: Expert vs. Planner

„fat“ Expert



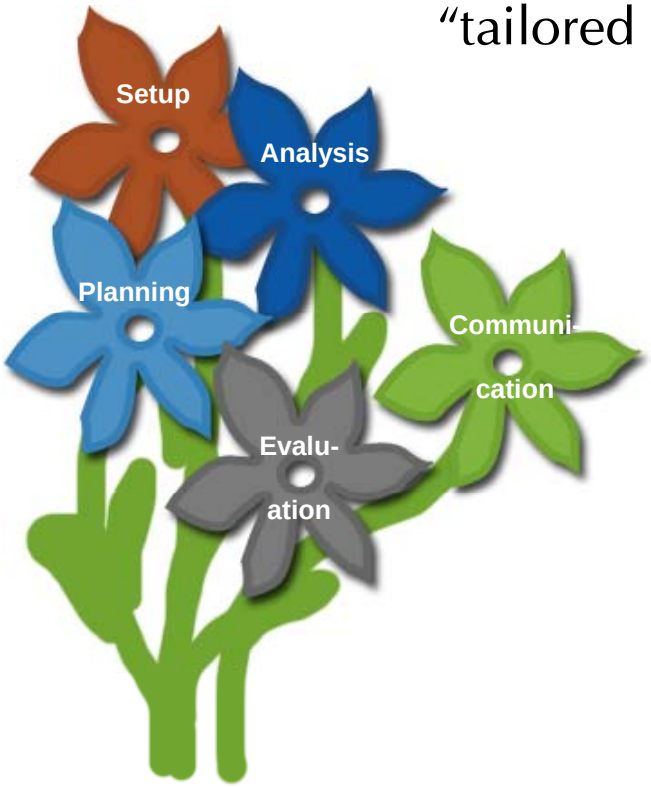
„thin“ Planner



How to Get Started

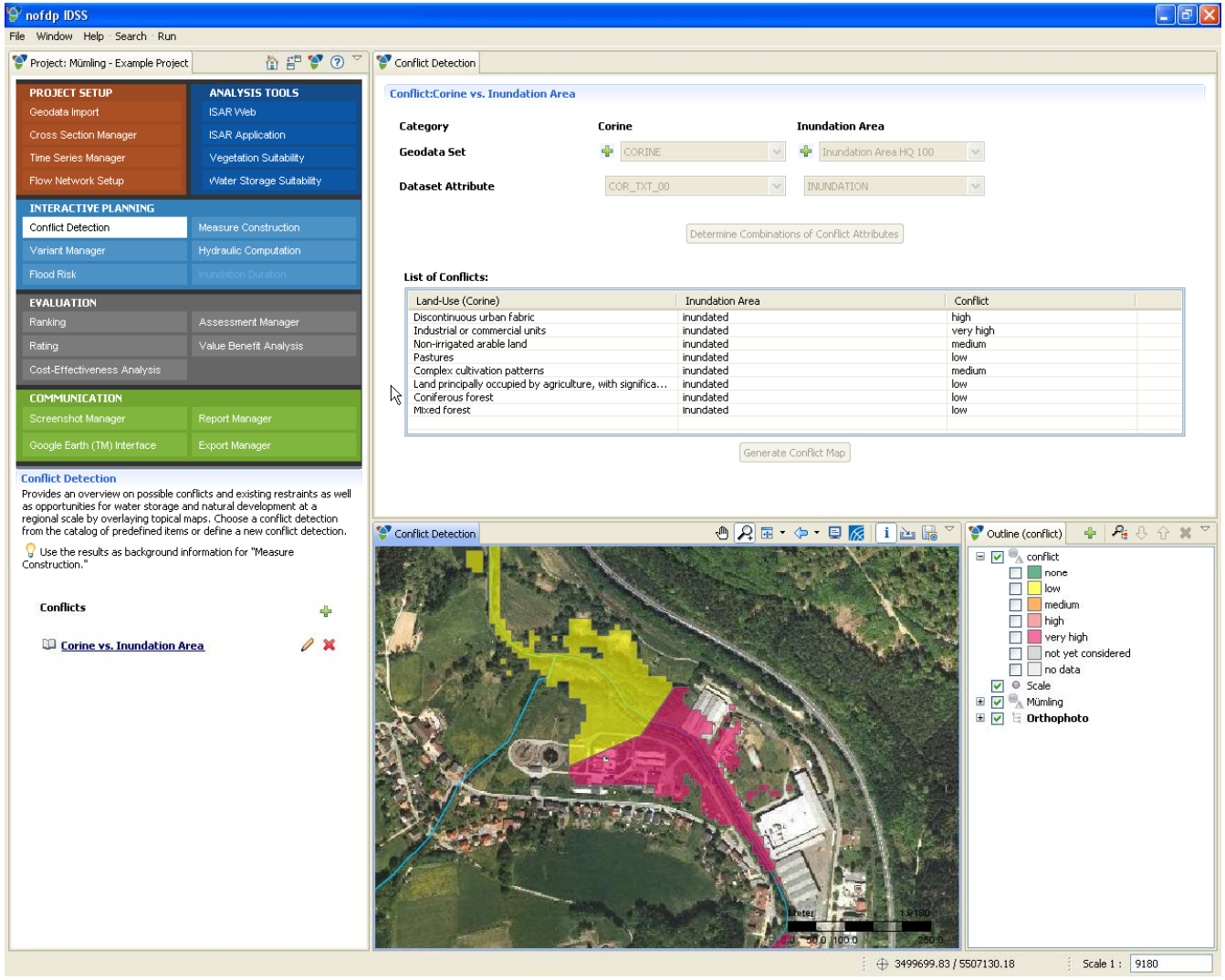
step by step
"workflow approach"

"tailored approach"

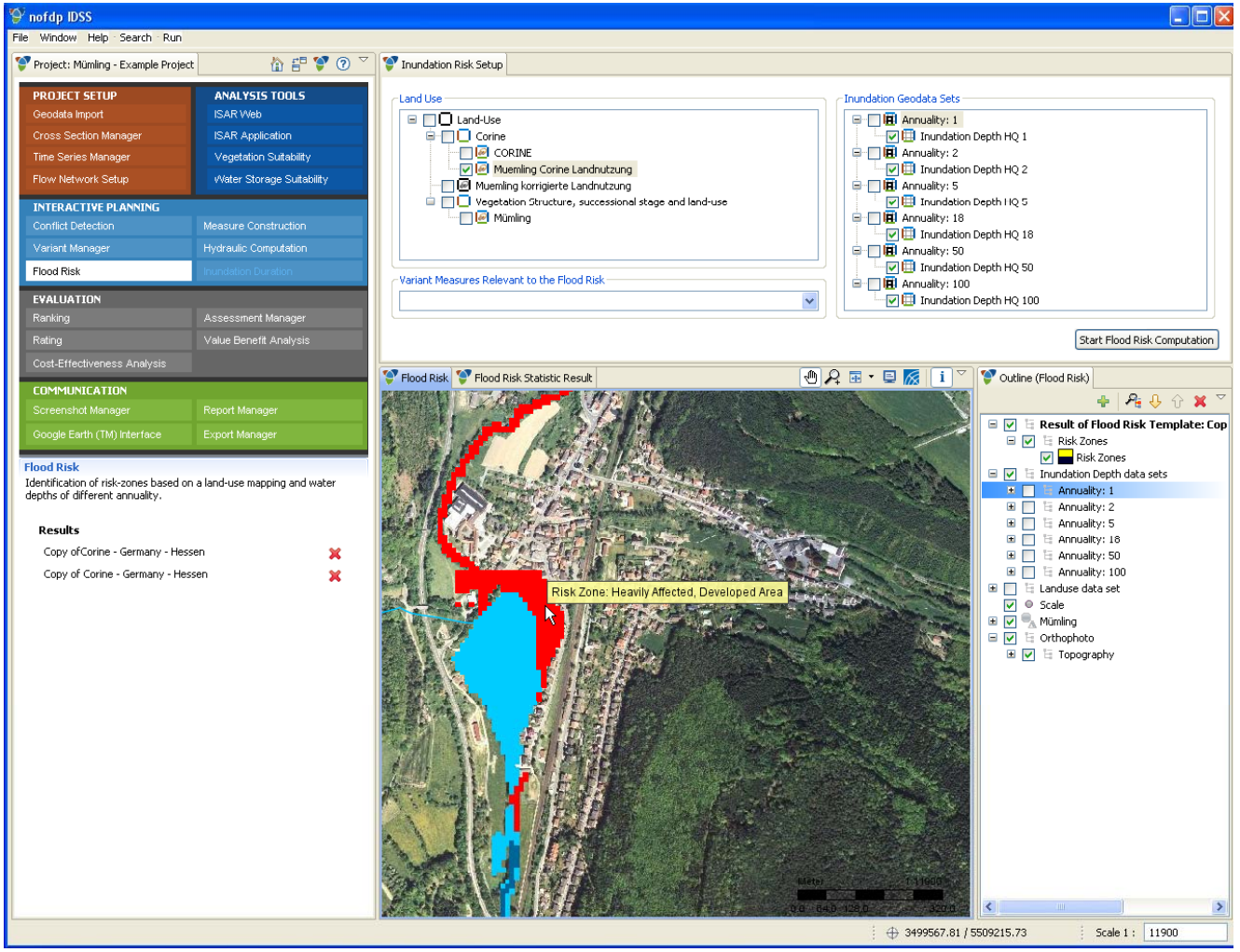


IDSS User Interface: Startscreen

IDSS User Interface: Navigation

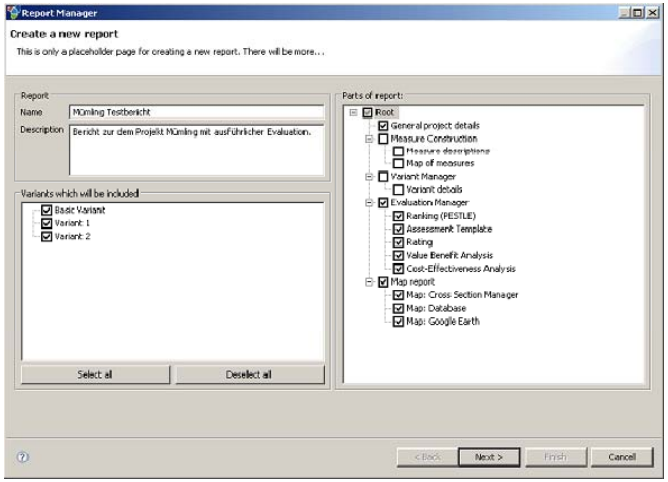


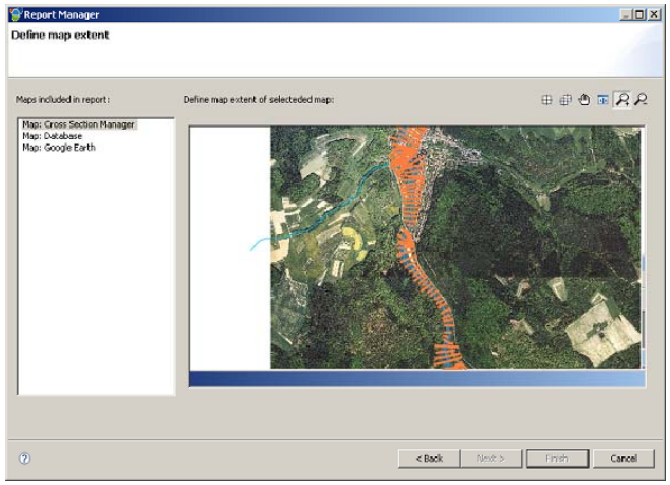
IDSS Module: Calculation of Flood Damage and Risk Mapping



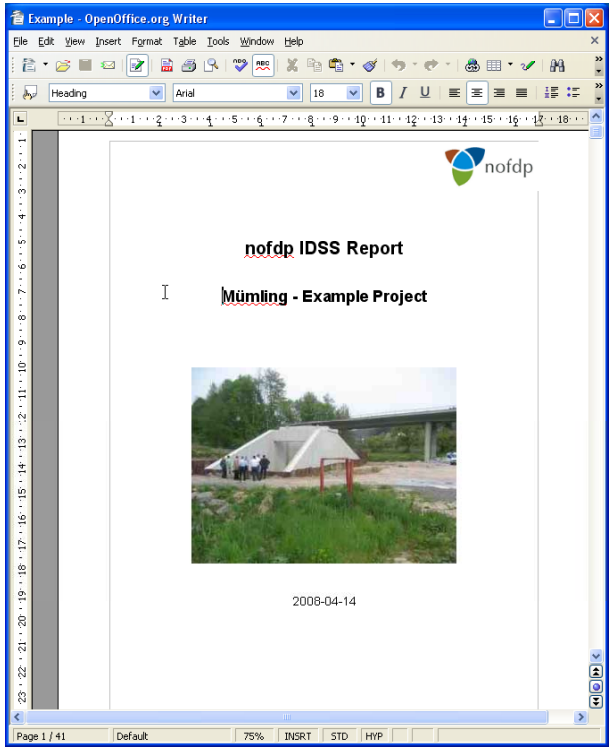
IDSS Module: Report Manager

User-specific, automatic creation of project reports

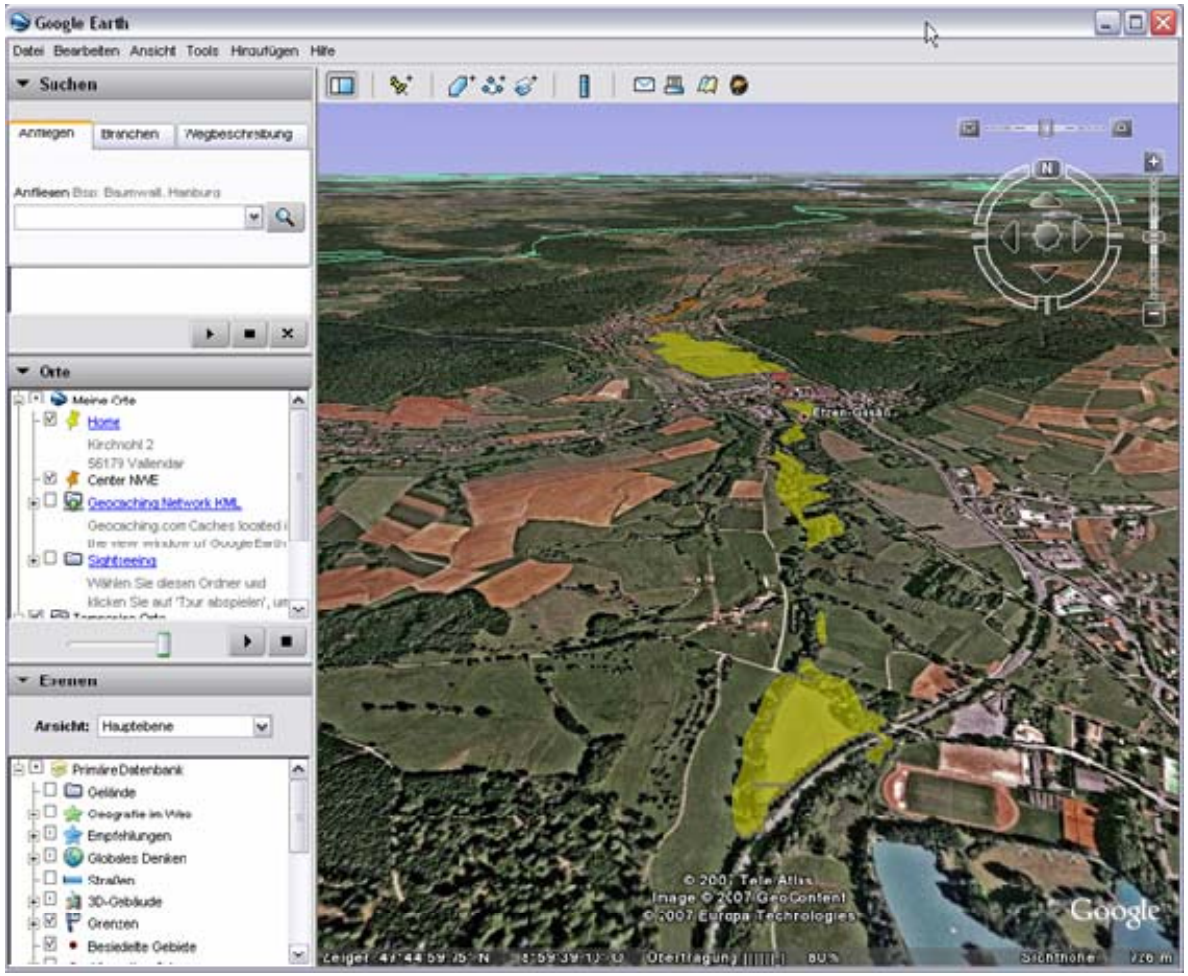




Output: OpenOffice and PDF-document



IDSS Modules:
Google Earth Export



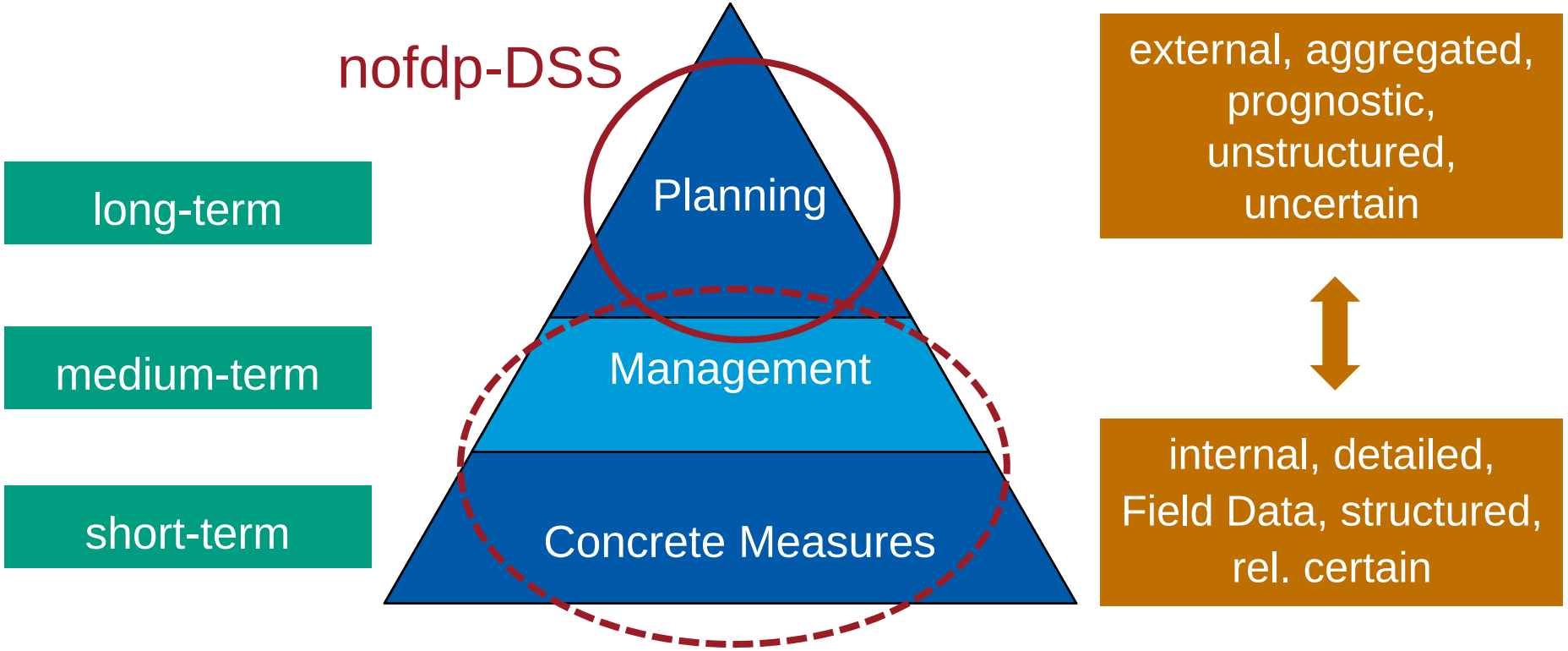
3D-Visualization of objects created by the nofdp IDSS

Management levels

Time horizon of decisions

Management levels

Characteristics of present information



Conclusions

- Decision Support for planning of flood control measures and variants
- The nofdp IDSS is transferable to other catchments, up to 50 km length
- Existing and therefore validated data can be used by the system
- Information and data can be prepared transparent
- Interactive planning and decision process is supported
- Planning variants can be evaluated and discussed
- Modular structured, for interdependent or sequential decisions
- Version 0.9 ready, English and German Version 1.0 in June available
- Free of charge and later Open Source


Fin
nofdp
IDSS
Thank you very much
for your attention
www.nofdp.net
www.riverscape.eu
www.ihwb.tu-darmstadt.de
Christoph Hübner