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Sciences

A web-based tool for participatory vulnerability assessment of forest ecosystem services

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Background

The problem we try to solve

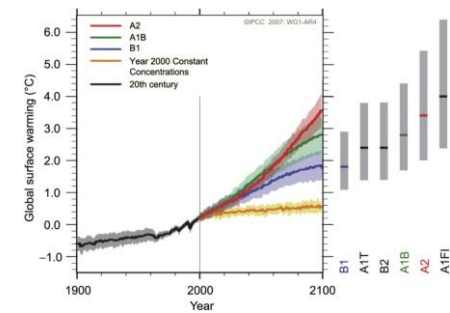
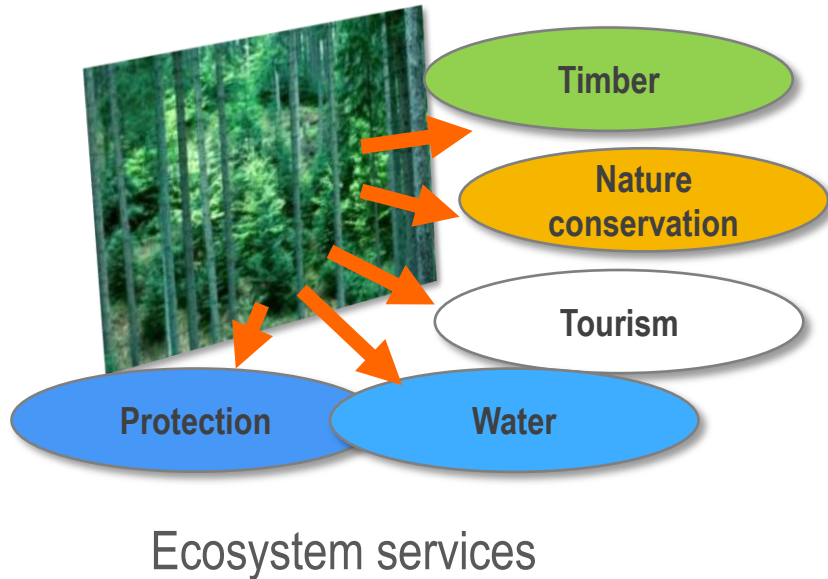
Vulnerability assessment tool

The approach and demonstration of a prototype

Conclusions

Some lessons learned

Background



Climate change and adaptation needs



Stakeholder involvement

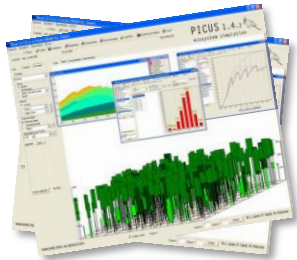
- Provide a tool for transparent vulnerability assessment of forest management and related ecosystem services
- Provide information for specific forest and stand types
- Interactive exploration of how preferences affect the assessment of vulnerabilities

The challenge...



Multiple dimensions

Spatial and temporal dimension, management alternatives, climate scenarios



Simulation models

Models for forest development produce heaps of data



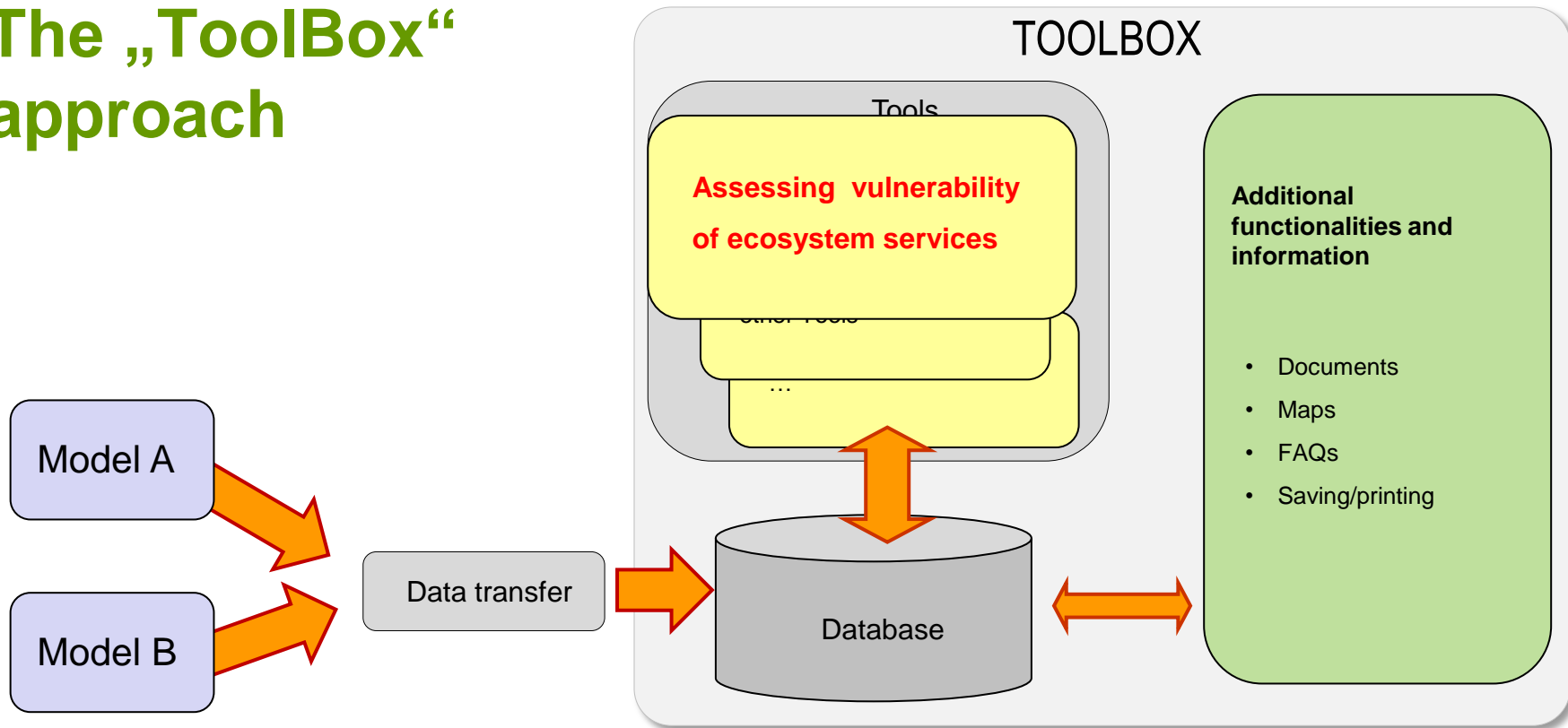
Aggregation and transfer to meaningful indicators

Relevant information for the provisioning of ecosystem services



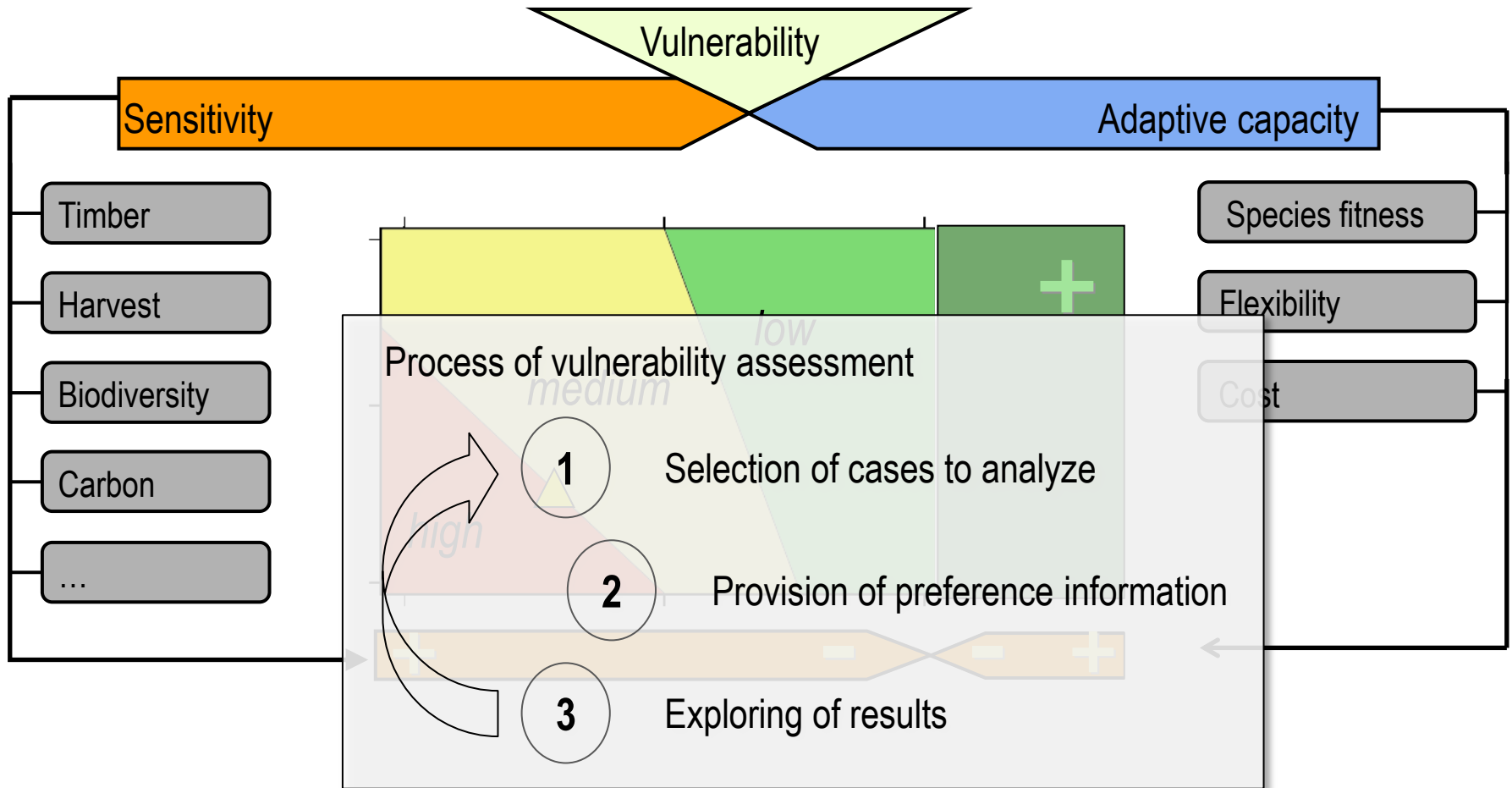
Linking tools and models

The „ToolBox“ approach



- Separation of models and the use of modelling results
- Utilizing web technologies

Vulnerability assessment



Toolbox demo

The screenshot displays the AFM Toolbox Home interface. On the left, there is a login section titled "LOGIN TO THE" with a form for "Your email here" and "Your password here", and a "Login now!" button. The main dashboard features a navigation bar with four tabs: "HOME Dashboard", "SELECT CASES No Cases selected!", "DEFINE PREFERENCES Preference "" selected!", and "ANALYZE RESULTS Do some Multi- and Single Case Analysis!". Below the navigation bar, the "WELCOME TO THE AFM-VULNERABILITY ASSESSMENT TOOL" section is active, showing an "INTRODUCTION" sub-section. The introduction text includes: "What is this all about? Some Intro-Content here... Estrum quis estinci tibus. To quam, sum, ut eumquas volore litaquid modi ium voluptatum quia qui velique et dis mod eaquibe rorntae volecat eserfercis voles nisi apides aditate nobis eatio. Nequi qui dellandunt assum quisquam quibus endi volore natuor? Ximpero escipsa ndictio odipsan disqwas minulparum rerumen dissini bero mod earchictur, que pratur sum utet voluptatem consedis id modi bearchi claecto iunt ut et occulli cilluptae nonse perum et pa si rem et deribus ex et assit aciusti to ipit as essundant dolupiendus. Xersperem re magnhi liquatis et ma di aspriet eosam fuga. Nempu voluptas nulla qui quidign atiusda cus ut ma quiderio vellaborero eosandae eium, acceptatiat volestios volest et quasi rerundi tatur, volupta nimi, sinvel idi rem sum fugia volupti omnis voluptat." A "VIEW TUTORIAL" button with a magnifying glass icon is also present. Below the introduction, a "PROCESS STATUS MONITOR" section shows three numbered items: 1. "Your Case Selection: No Cases selected! [further Info under development]", 2. "Your Preference Pattern: Preference "" selected! [further Info under development]", and 3. "Your Analysis [further Info under development]".

1 Case selection

Select by attributes

Explore the selection

The screenshot displays the AFM Toolbox software interface, showing the 'SELECT CASES' step. The interface is divided into several panels:

- HOME Dashboard:** Shows the current step 'SELECT CASES' with 91 cases selected. It includes navigation tabs for 'HOME', 'SELECT CASES', 'DEFINE PREFERENCES', and 'ANALYZE RESULTS'.
- GEOSPACE-LOCALIZATION:** A map view showing the selected cases in a geographical context.
- Filtering Options:** A list of filters to refine the selection:
 - Climatechange:** Filter by Climate Scenario.
 - Location and current climate:** Filter by countries, Filter by current climate, and links to 'Close all panels' and 'Open all panels'.
 - Site type:** Filter by soiltype, soiltexture, waterinfluence, watersupply, nutrientsupply, stoniness, and WHC. Includes 'Close all panels' and 'Open all panels'.
 - Stand type:** Filter by dominant species. Includes a text input field for species names and a checked checkbox for 'hungarian oak (Quercus frainetto)'.
- LISTVIEW OF CASES:** A scatter plot showing 'ANNUAL PRECIPITATION (mm)' on the y-axis (ranging from 560.0 to 620.0) and 'MEAN ANNUAL TEMPERATURE (C)' on the x-axis (ranging from 9.0 to 10.5). The plot displays several green data points representing the selected cases.

2 Preference information

The user can express preference at various levels:

Ecosystem services

Indicators

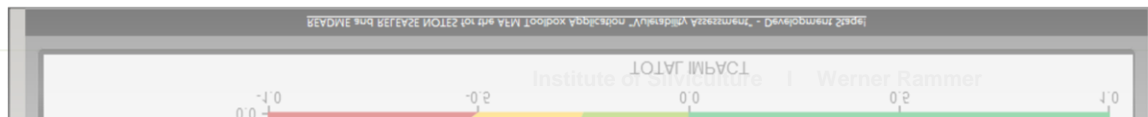
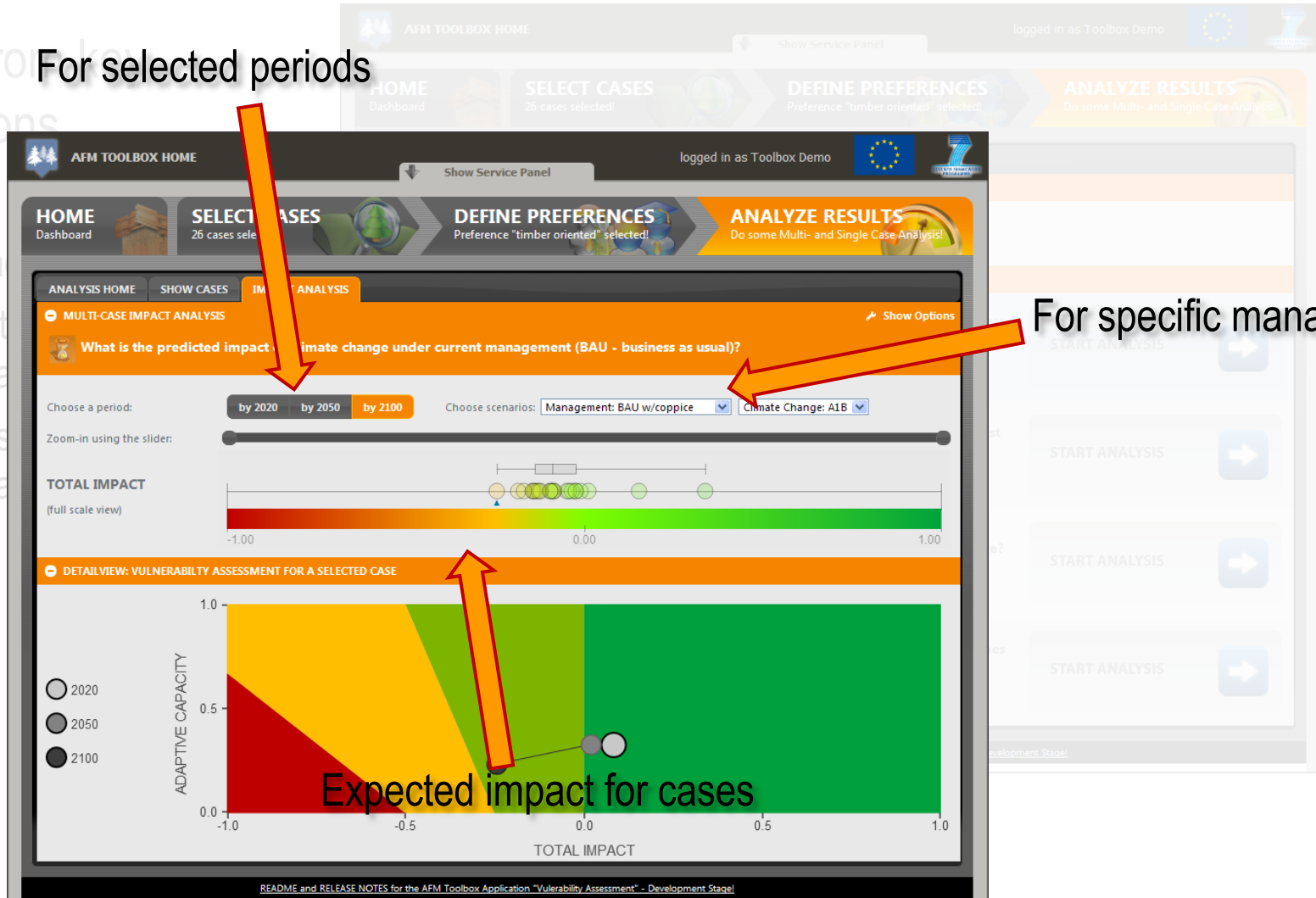
Thresholds

3 Analysis of results

For selected periods

For specific management

Expected impact for cases



Participatory approach to VA

Work in a group

Interactive elicitation of preferences of a group of stakeholders

Providing a “productive and informative” decision making environment

Key information

Prerequisite for regional climate change impact assessments and adaptation planning

Distribution of preferences

Users see the distribution of preferences in the group



AFM TOOLBOX HOME logged in as Toolbox Demo

HOME Dashboard **SELECT CASES** 26 cases selected! **DEFINE PREFERENCES** Preference "timber oriented" selected! **ANALYZE RESULTS** Do some Multi- and Single-Criteria

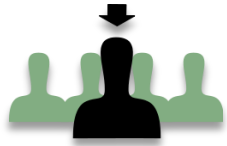
PREFERENCE EDITOR **GROUP PREFERENCES**

Explore current group preferences

Category	Preference Range (Visualized)
Timber Production	High preference for timber production (range shifted towards higher values)
Standing volume	Medium preference for standing volume (range centered in the middle)
Annual increment	Low preference for annual increment (range shifted towards lower values)
Harvested volume	Low preference for harvested volume (range shifted towards lower values)
Carbon	High preference for carbon (range shifted towards higher values)
Biodiversity	Medium preference for biodiversity (range centered in the middle)
Protection	High preference for protection (range shifted towards higher values)

README and RELEASE NOTES for the AFM Toolbox Application "Vulnerability Assessment" - Development Stage

Problem areas



Hard to target the right users

Foresters? Forest planning? Politicians? Especially difficult within EU projects



Hard to handle complexity
in knowledge transfer processes...



Hard to make software

multi-project timeframe allows continuous development



<http://www.wabo.boku.ac.at>

Thank you!

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