



OPTimising FORest management decisions for a low-carbon, climate resilient future in Europe

From science to practice: Decision Support Systems for forest managers

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6th Edition of the Forest Innovation Workshop

and OptFor-EU Mid-Term Conference

INFORM-PRIORITIZE-COLLABORATE: Building a Sustainable Forest Future

through Regional Cooperation and Innovation



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Different interests and preferences in forest management planning

protection



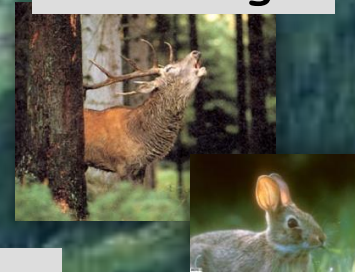
timber



adaptation



hunting



biodiversity



water resources

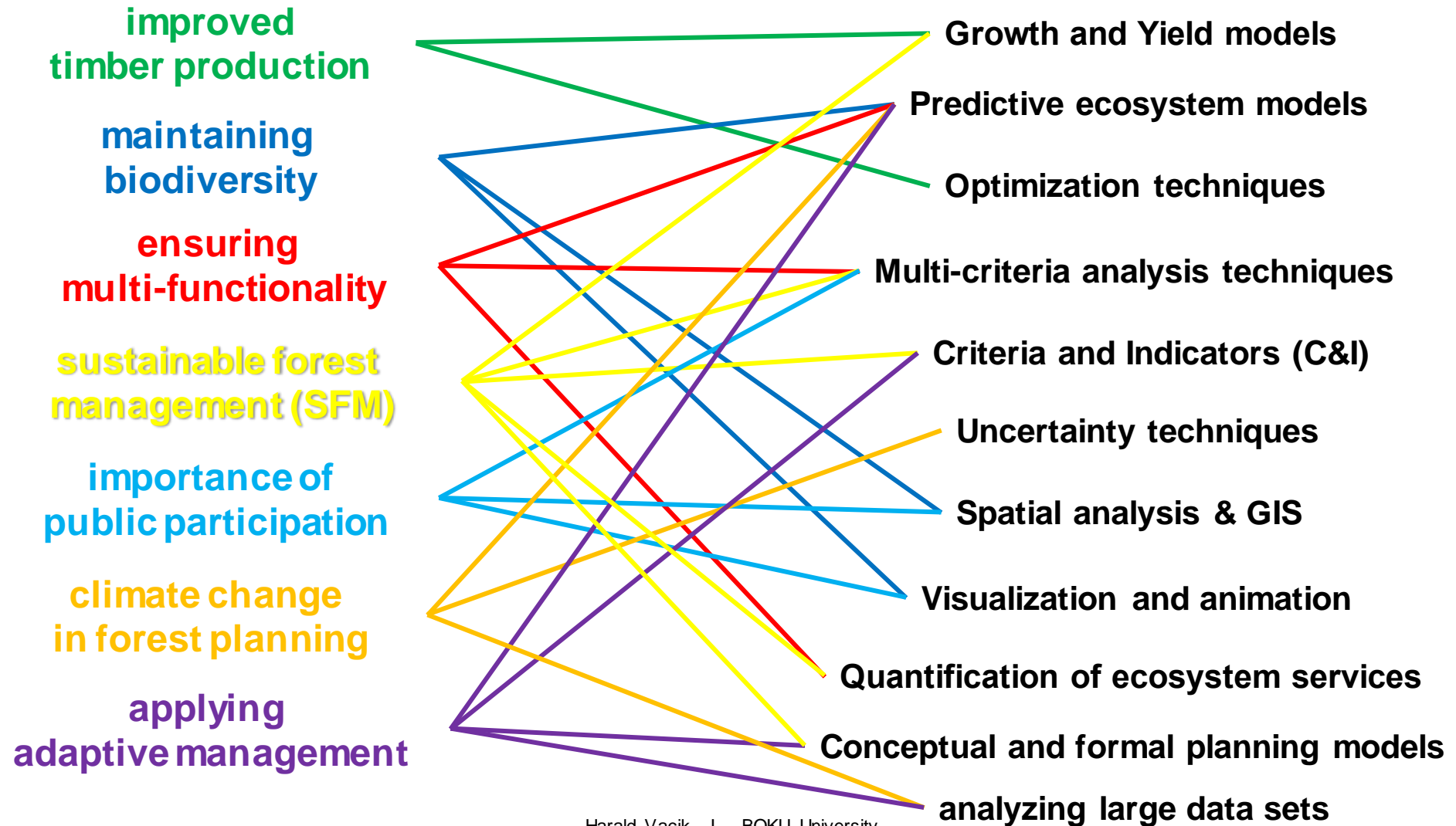


tourism



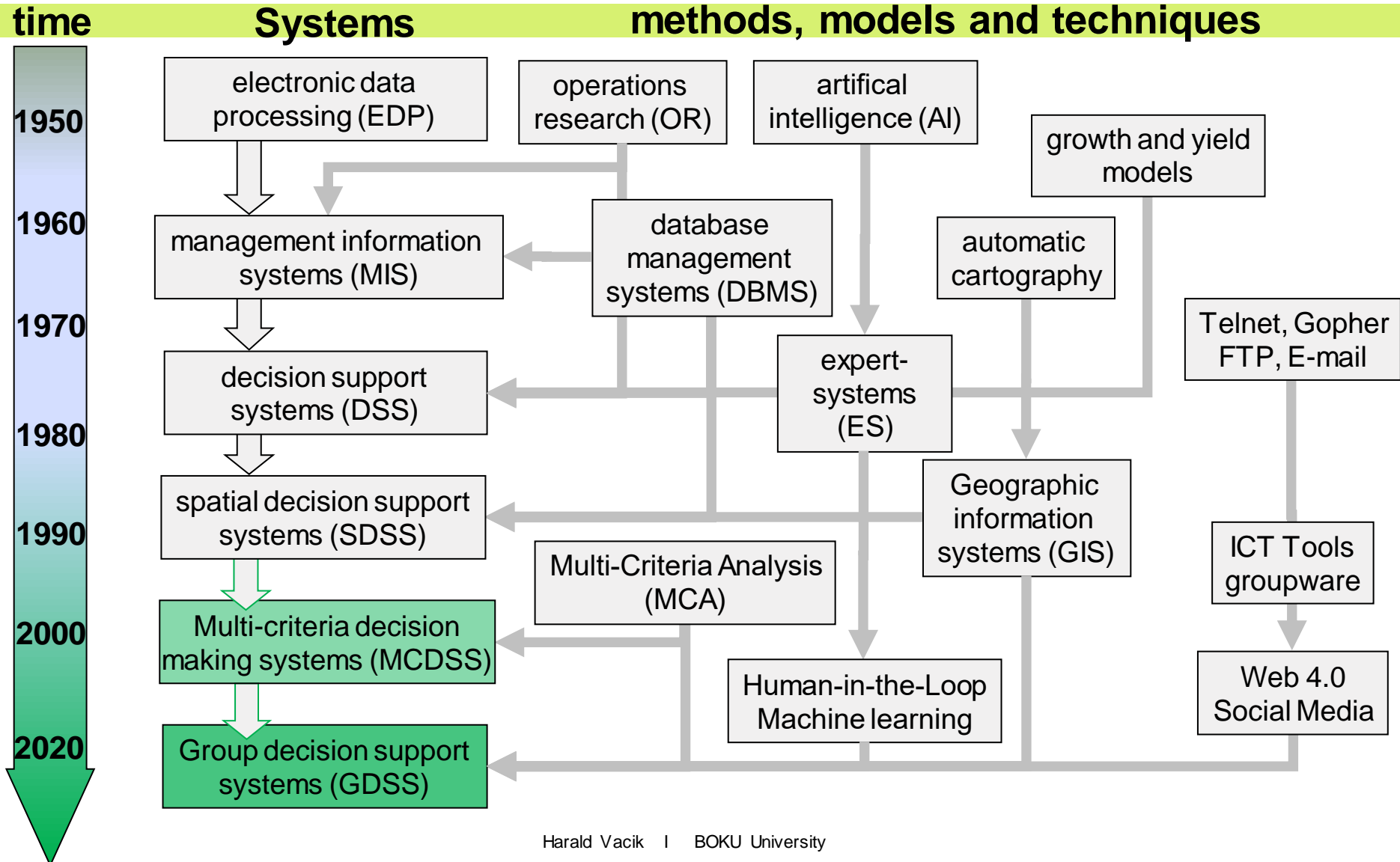
Demands stimulate decision support

providing ecosystem services under climate change

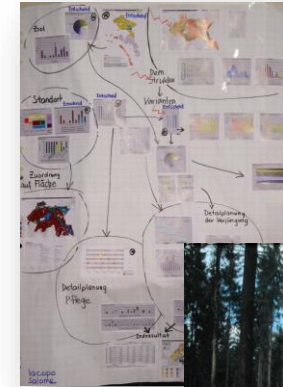
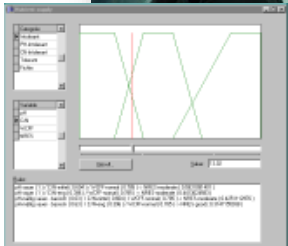
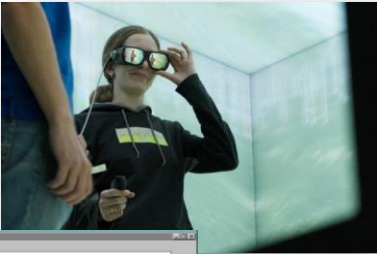
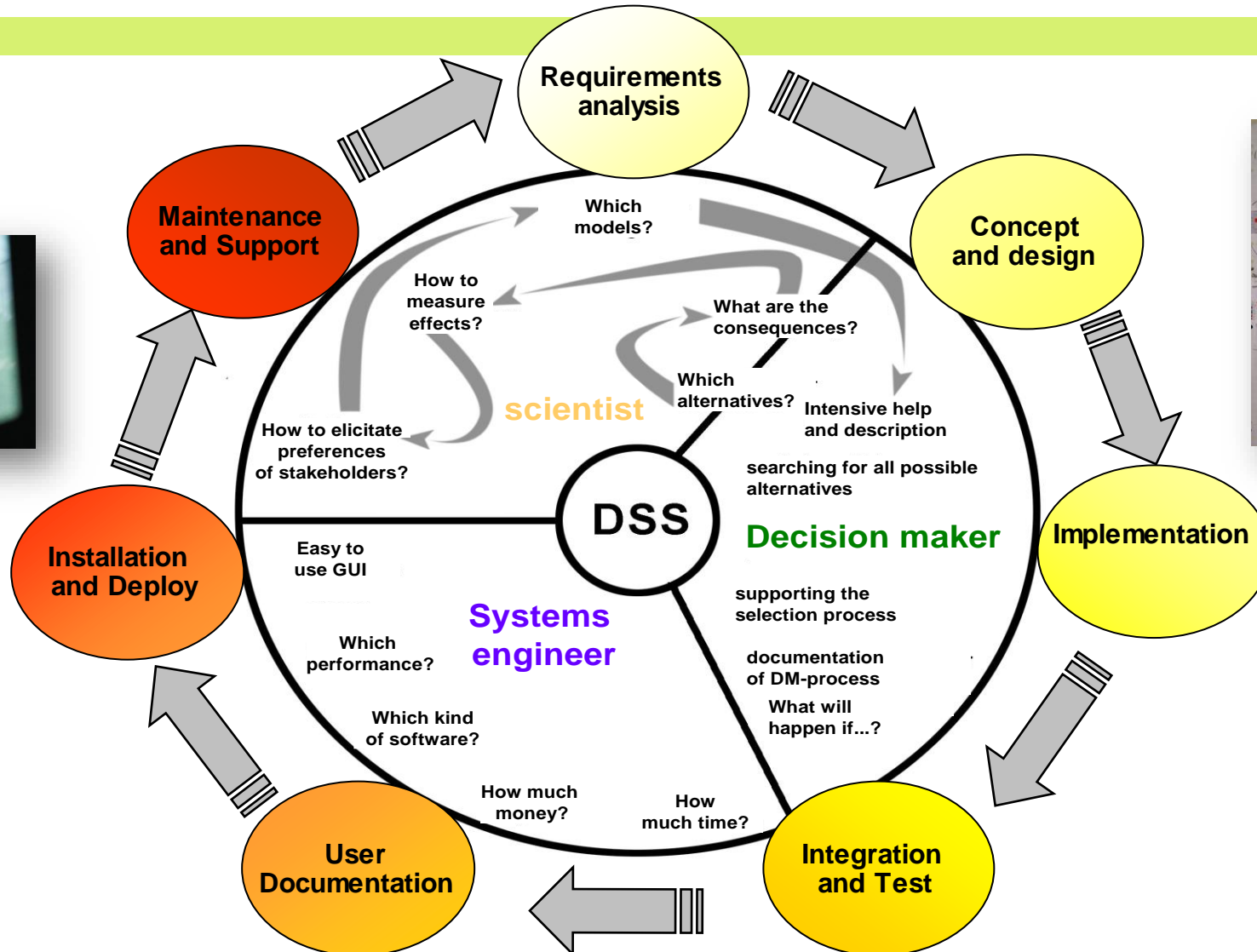


Technology and methods improve

a historical perspective...

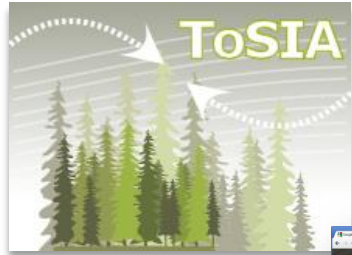


DSS development and design



Simplicity versus complexity

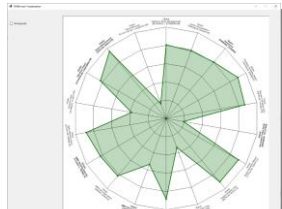
User interaction becomes challenging



Balancing factors
Play, Meaning and Reality
becomes challenging



AFM Tool Box

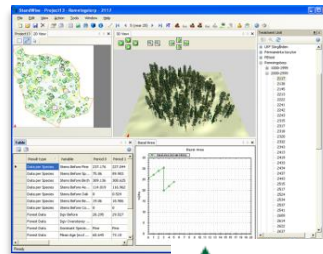


Easy way to determine the basal area

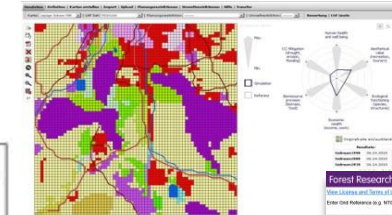


- > Built-in sensors that simplify taking measurements
- > Measurements easily taken through the user interface

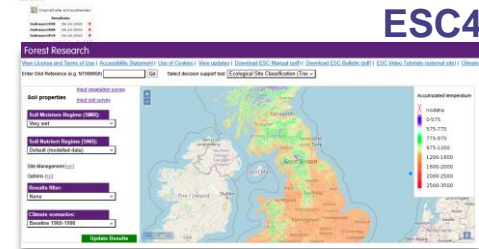
Rosset, 2012



Harteveld (2009)



GISGAME



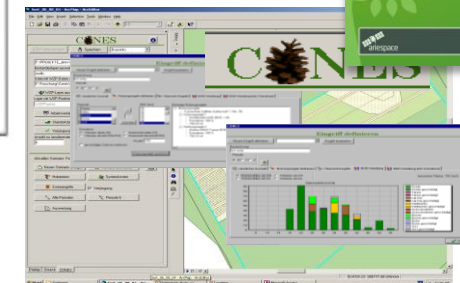
ESC4



ClimChalp

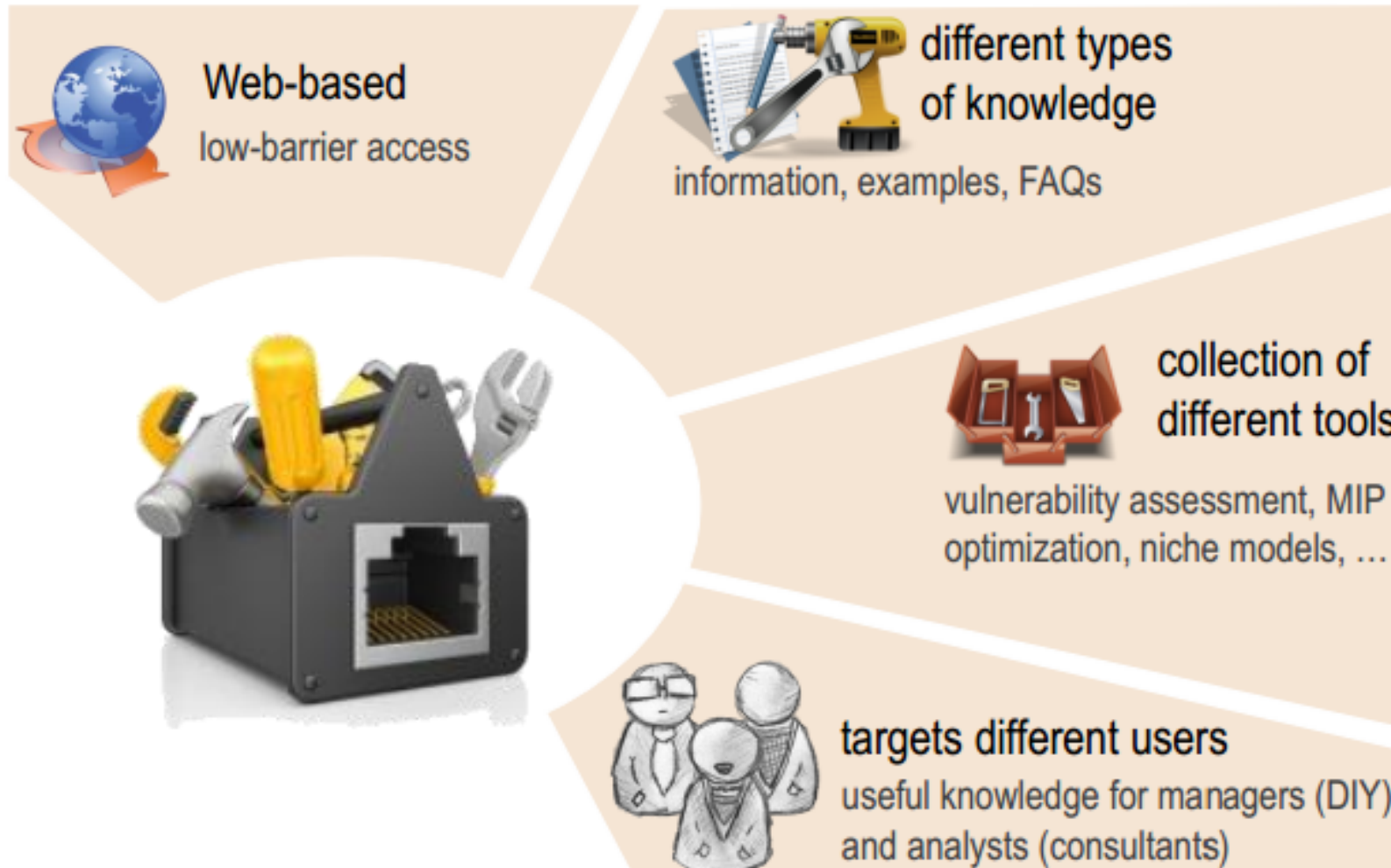


LANDSUPPORT S-DSS PLATFORM



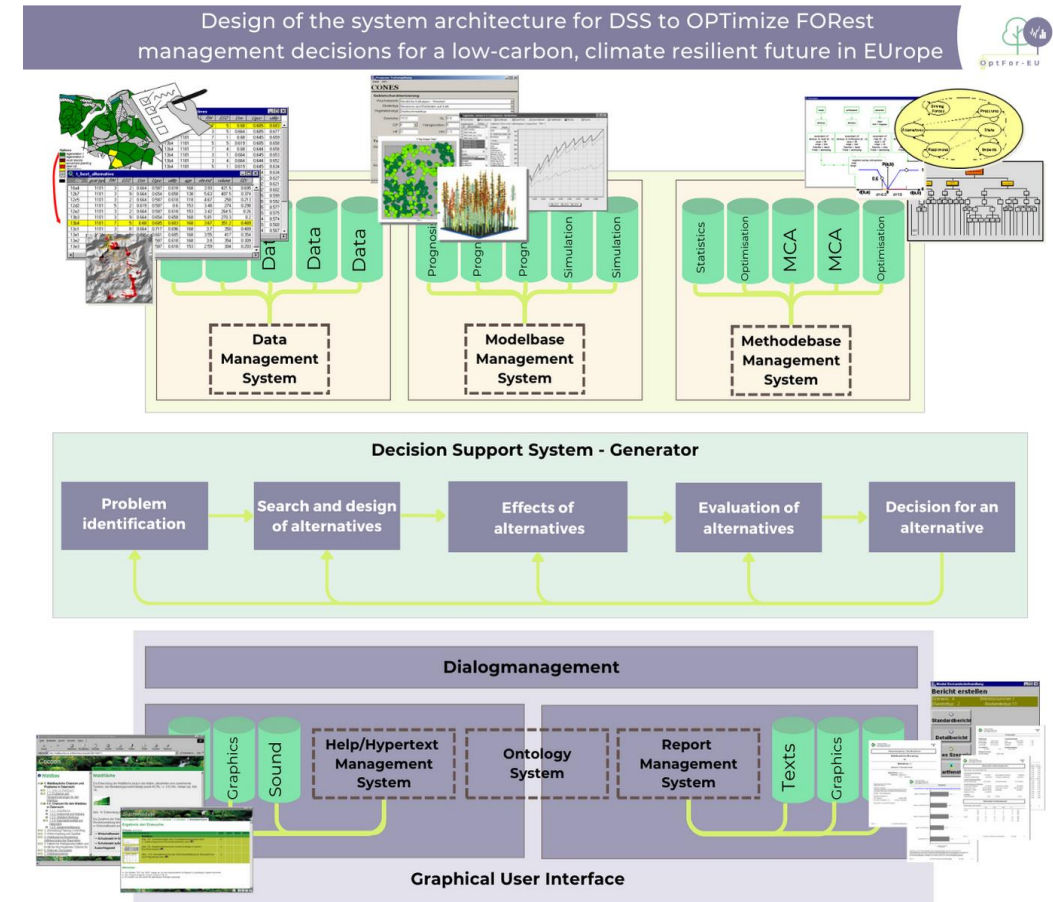
CONES

The ToolBox approach

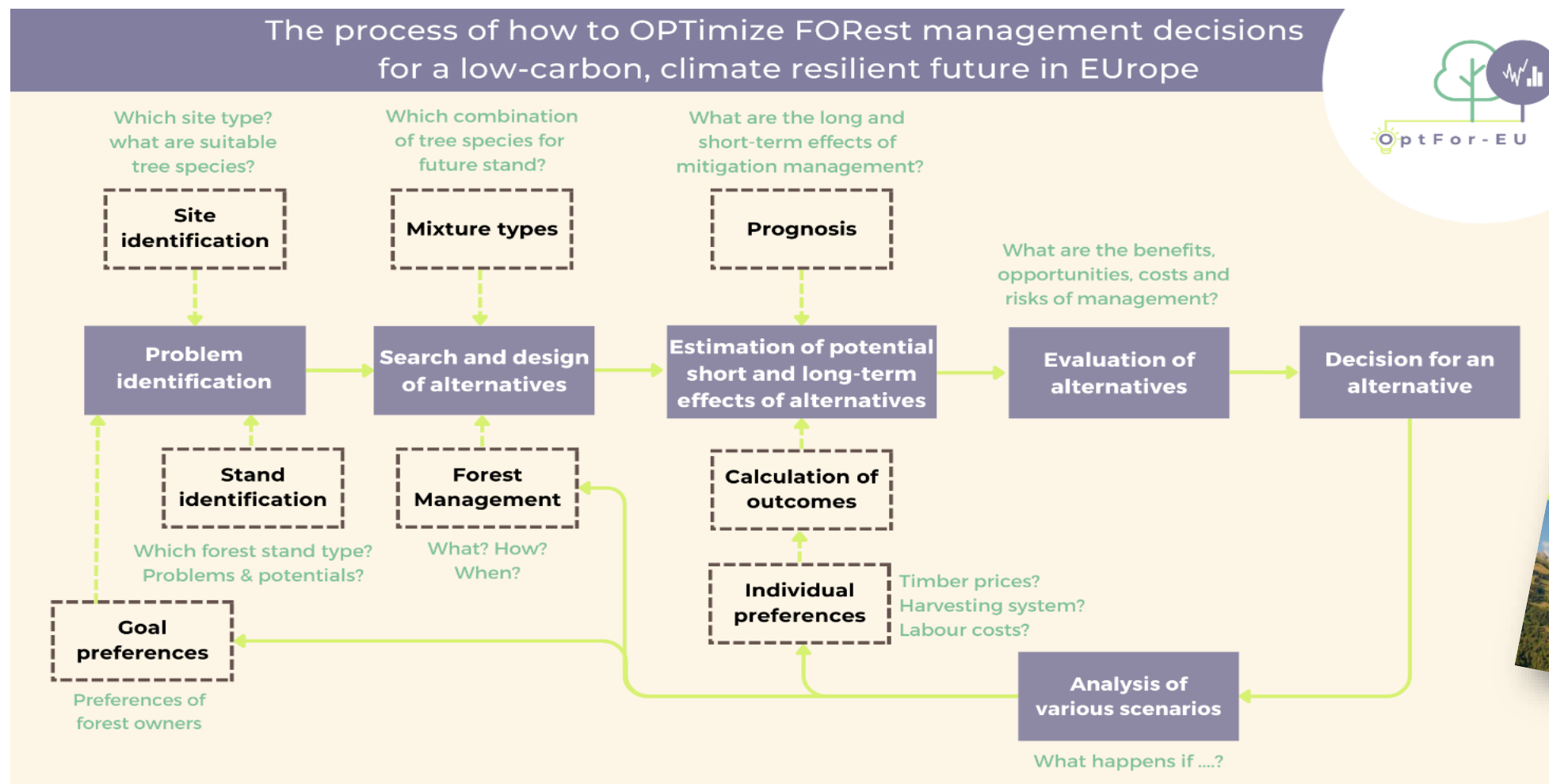


Design of OptFor-EU DSS (i)

- ❑ **OptFor-EU - ToolBox website**
„providing access to the DSS components for the user via a content management system“
- ❑ **OptFor-EU – DataClient**
„Supporting the transfer of model output data to the „DataBase“ for further analysis“
- ❑ **OptForEU – DataBase**
„proving access to model output and metadata for the DSS components „Explorer“ and „Evaluator“
- ❑ **OptFor-EU – Explorer**
„exploring current situation regarding a selected Essential Forest Mitigation Indicator at stand level / FMU level“
- ❑ **OptFor-EU – Evaluator**
„identifying best management strategy considering multiple objectives for the FMU“
- ❑ **OptFor-EU – ChatBot**
„finding information and learning more about specific terms, definitions or concepts in the OptFor-EU context“



Design of OptFor-EU DSS (ii)



OptFor-EU DSS



DynaApp

localhost:4200/frontend

OptFor-EU

OptForEU, One product Many solutions

Decision support system for forest management

Evaluator

Comparator

Explorer

Toolbox

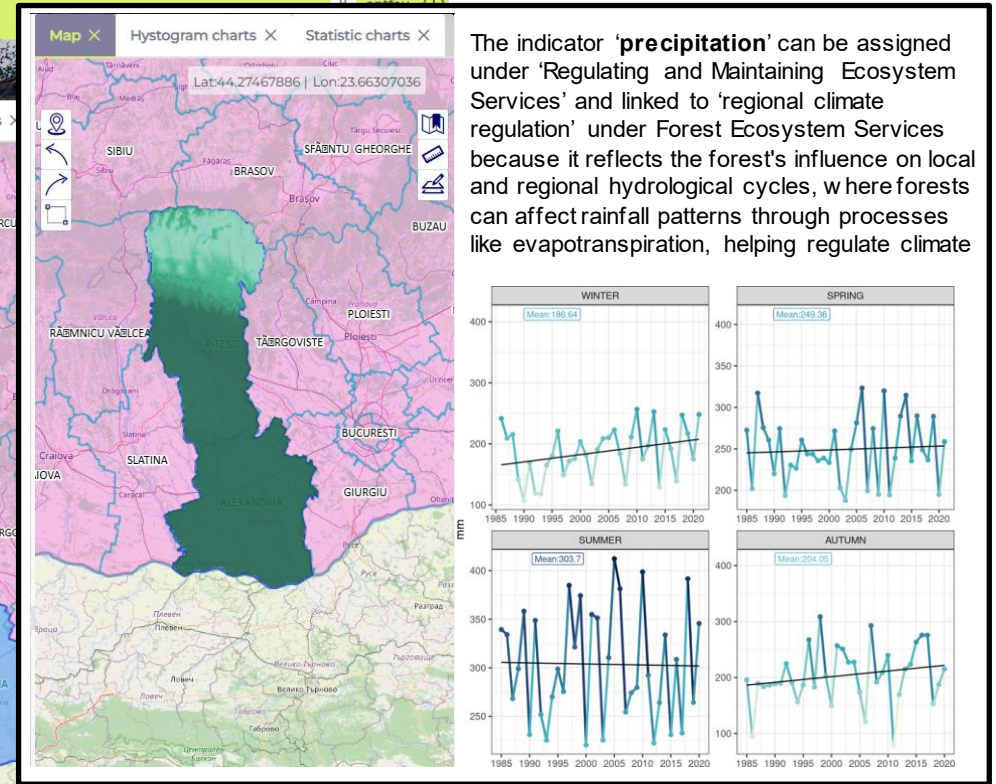
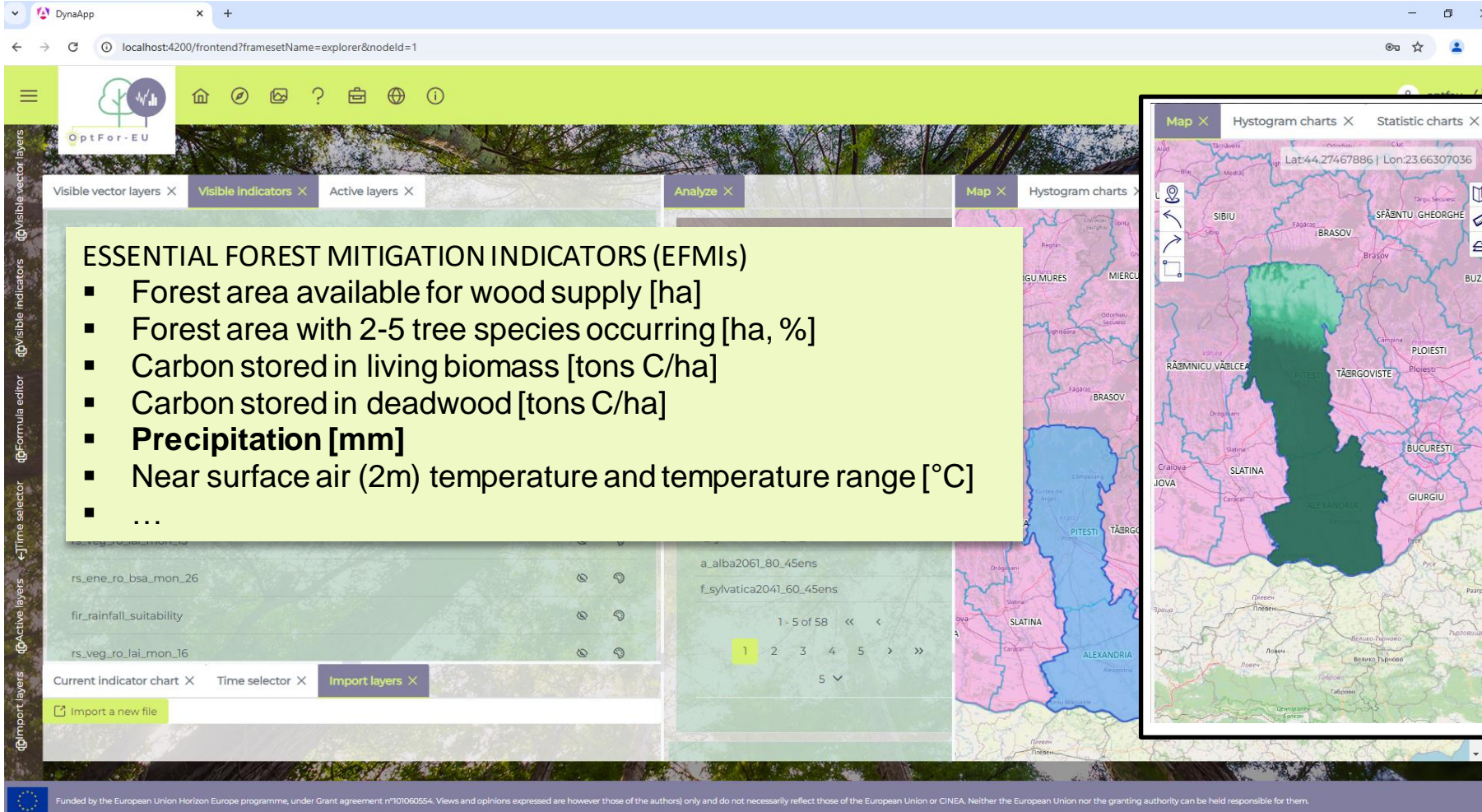
Forest Wiki

Suggestions

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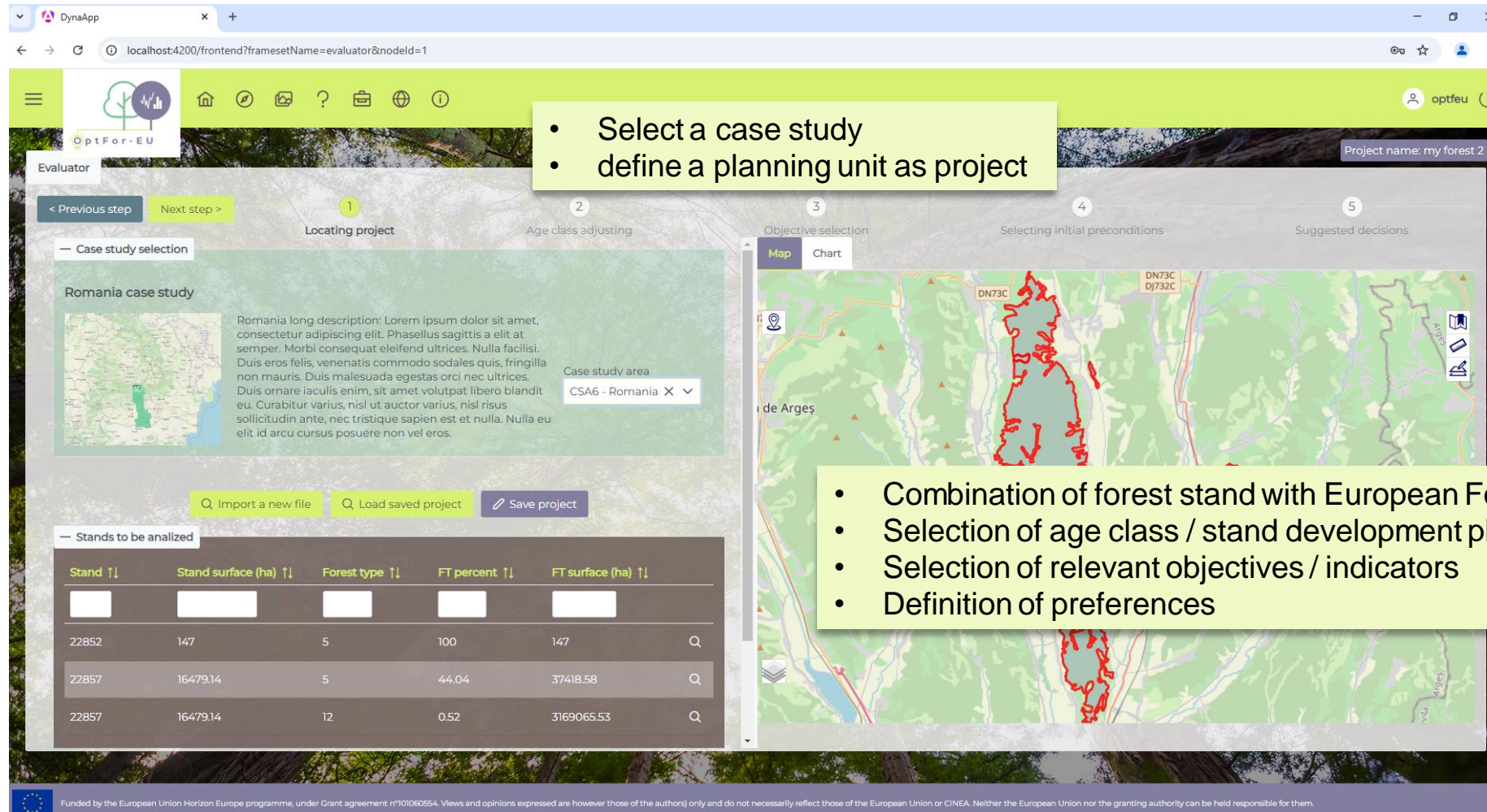
OptFor-EU DSS - Explorer



The indicator '**precipitation**' can be assigned under 'Regulating and Maintaining Ecosystem Services' and linked to 'regional climate regulation' under Forest Ecosystem Services because it reflects the forest's influence on local and regional hydrological cycles, where forests can affect rainfall patterns through processes like evapotranspiration, helping regulate climate



OptFor-EU DSS – Evaluator (i)



The screenshot shows the 'Evaluator' interface of the OptFor-EU DSS. It features a navigation bar with icons for home, search, help, and settings. The main content area is divided into five steps: 1. Locating project, 2. Age class adjusting, 3. Objective selection, 4. Selecting initial preconditions, and 5. Suggested decisions. The 'Locating project' step is active, showing a map of Romania with a red outline indicating the 'Case study area' (CSA6 - Romania). Below the map, there is a table titled 'Stands to be analyzed' with columns for Stand ID, Stand surface (ha), Forest type, FT percent, and FT surface (ha). The table contains three rows of data. A sidebar on the right shows a map view of the selected area with labels for 'DN73C' and 'D732C'. The interface also includes buttons for 'Import a new file', 'Load saved project', and 'Save project'.

- Select a case study
- define a planning unit as project

- Combination of forest stand with European Forest Types
- Selection of age class / stand development phase
- Selection of relevant objectives / indicators
- Definition of preferences

OptFor-EU DSS – Evaluator (ii)

DynaApp
localhost:4200/frontend?framesetName=evaluator&nodel=1

Opt For - EU

Evaluator

< Previous step Next step >

1 Locating project 2 Age class adjusting 3 Objective selection 4 Selecting initial precond

Floodplain forest

- FM0 = No management
- FM2 = BAU (Business as usual, Shelterwood)
- FM7 = BAU + 20% thinning intensity
- FM8 = BAU - 20% thinning intensity
- FM3 = Continuous cover (Single tree harvesting)


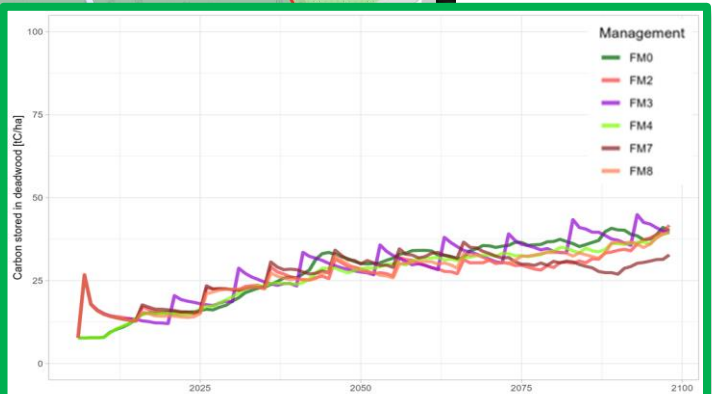
Stand level ages

Stand ID	Stand surface (ha)	Age class	Area (ha)	Volume (m³)	Age range	Search	Edit
22852	147	5	100	147	41-60	Q	✎
22857	16479.14	5	44.04	37418.58	61-80	Q	✎
22857	16479.14	12	0.52	3169065.53		Q	✎
22858	63.57	7	100	63.57		Q	✎
22857	16479.14	7	55.44	29724.28		Q	✎

41-60 X v

- 0-20
- 21-40
- 41-60
- 61-80
- 81-100
- 101-120

1 - 5 of 6 << < 1 2 > >> 5 v

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Preliminary Conclusions



- ❑ **Simple access** for users via web and **easy to use** tools increases commitment
- ❑ Limited **data investigation for the application** improves usability
- ❑ **Visualization** is very important...
- ❑ ...but difficult to communicate **complex results**
- ❑ **ToolBox approach** allows to address different demands
- ❑ Decision makers use **multiple tools tailored** towards a particular purpose
- ❑ Careful **selection of methods** and tools is required
- ❑ **Sustaining updates of tools** after project life time will be challenging





Thank you

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<https://optforeu.eu>



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