

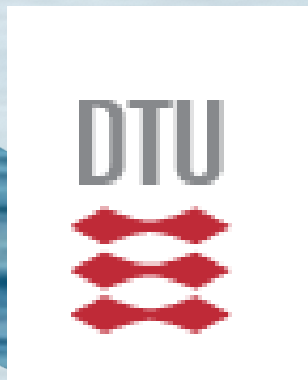


# OLAMUR

## Toward a micro-siting tool for multi-usage offshore sites

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BANOS event, Gothenburg, 15 Nov 2023

OLAMUR : Offshore Low-Trophic Aquaculture in  
Multi-use Scenario Realization in North and  
Baltic Seas





The OLAMUR project



OLAMUR is a project funded 2023-2026 under the EU HORIZON program aiming to demonstrate sustainable solutions for both the North and the Baltic Sea of multi-use in relation offshore wind farms, with focus on low-trophic aquaculture

The OLAMUR project



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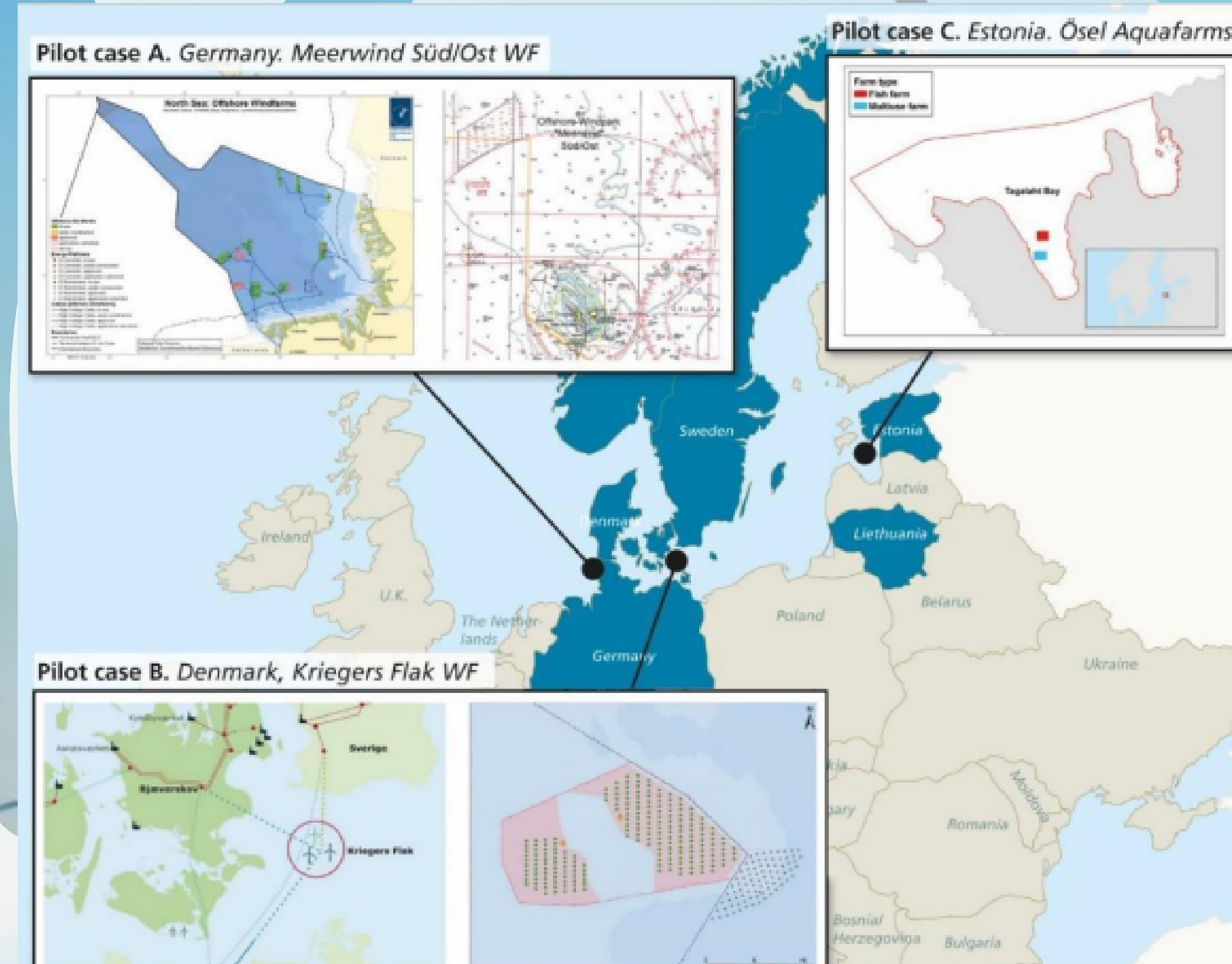
[Olamur.eu](https://www.olamur.eu)





# Micro-siting of multi-use within OWF sites (task 2.2)

- Demonstrate and map micro-siting scenarios within project OWF pilot sites with involvement of **stakeholders**
- Based on OWF layout, oceanographic conditions, productivity models, inter usage constraints consider **co-usage scenarios**
- The different options for co-use will be presented as **maps** used to involve stakeholders on limitations and solutions (2026)
- We plan to develop a **tool** to quantify co-usage from different perspectives



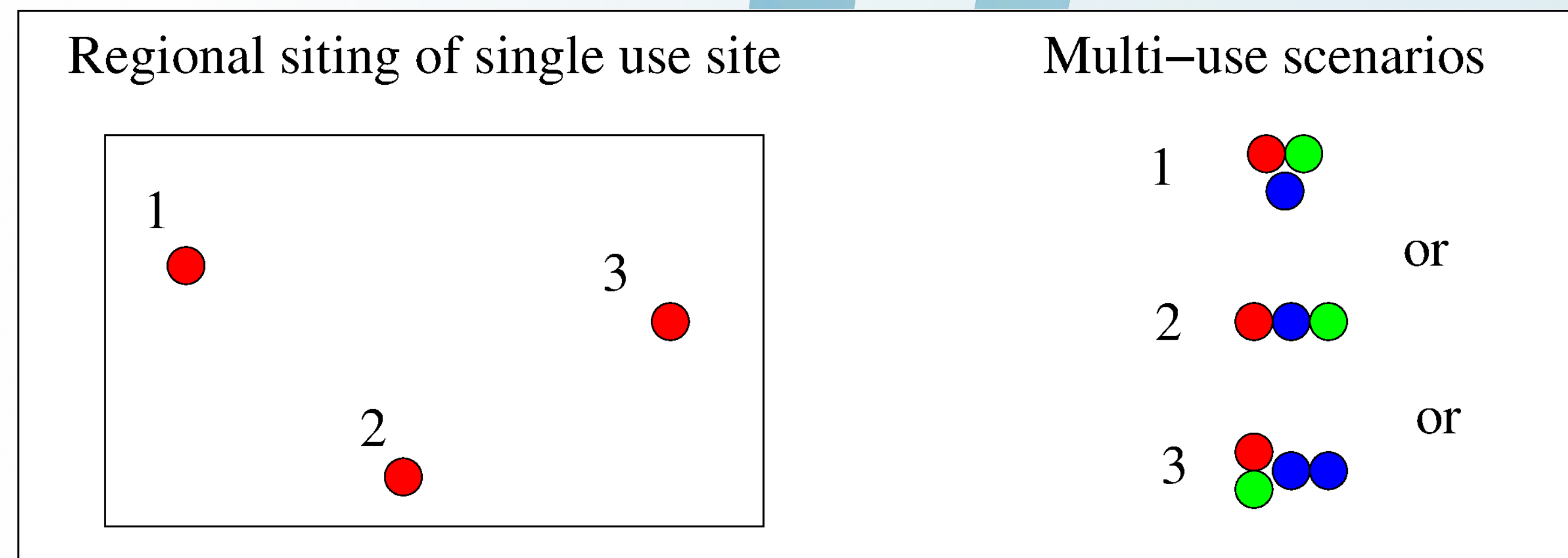




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## Micro-siting versus regional siting tool

- Few tools around for regional single use siting
- Regional siting very different from multi-use siting



- Challenge: need to quantify usage interactions !





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## Micro-siting versus regional siting tool

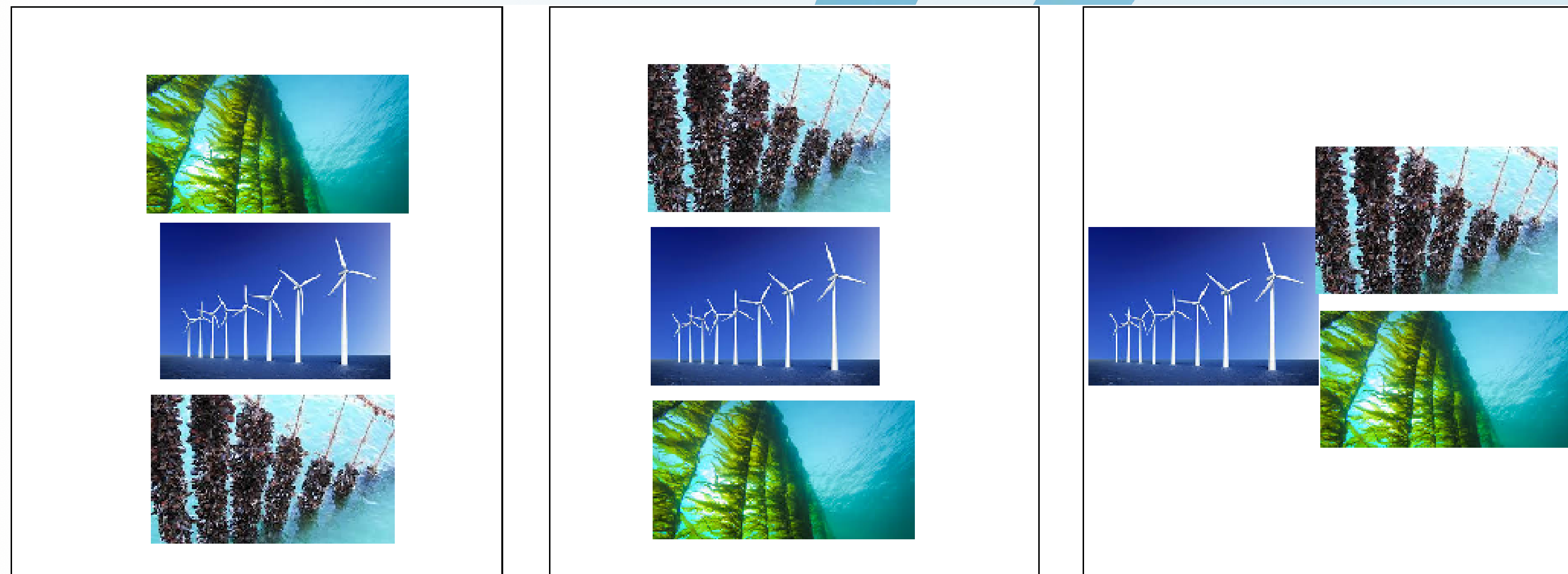
- Propriety tools available for OWF micro-siting (arrange turbines at a given location), e.g. **Vattenfall** (presented later)
- No well-developed tools for general micro-siting (mostly case studies)
- No plug-n-play solution for us: we need to develop tool from start
- We should get inspired from OWF micro-siting tool experiences







# New tool for micro-siting of multi-uses



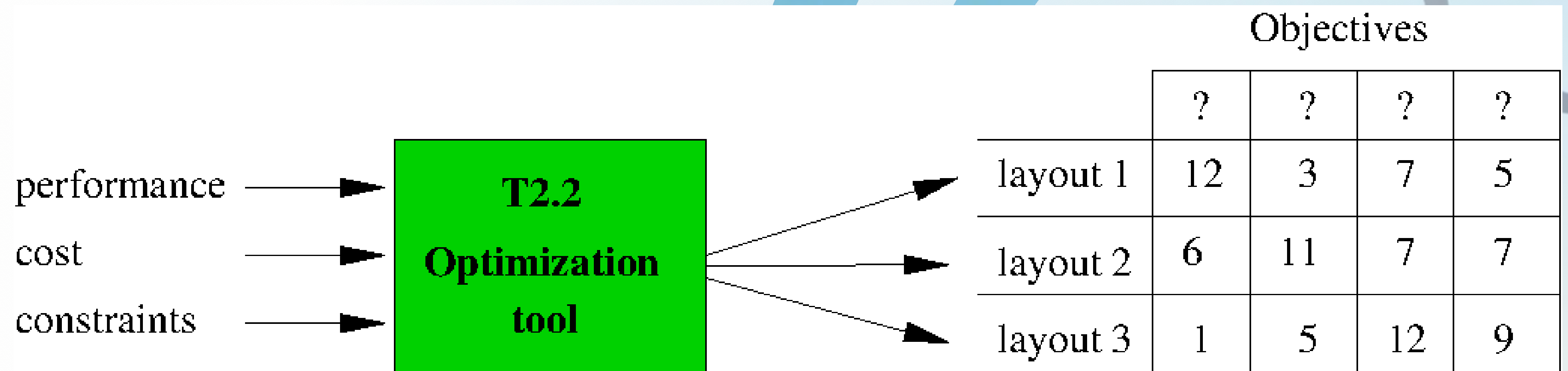
- Basic challenge: a spatial optimization problem → multi-usage layout
- Secondary challenge: high spatial resolution





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## What should the tool do ?



- Identify relevant objectives (stakeholder feedback!)
- **Scoring table** is discussion product for stakeholders
- Visualize layouts





## Mockup version of the micro-siting tool

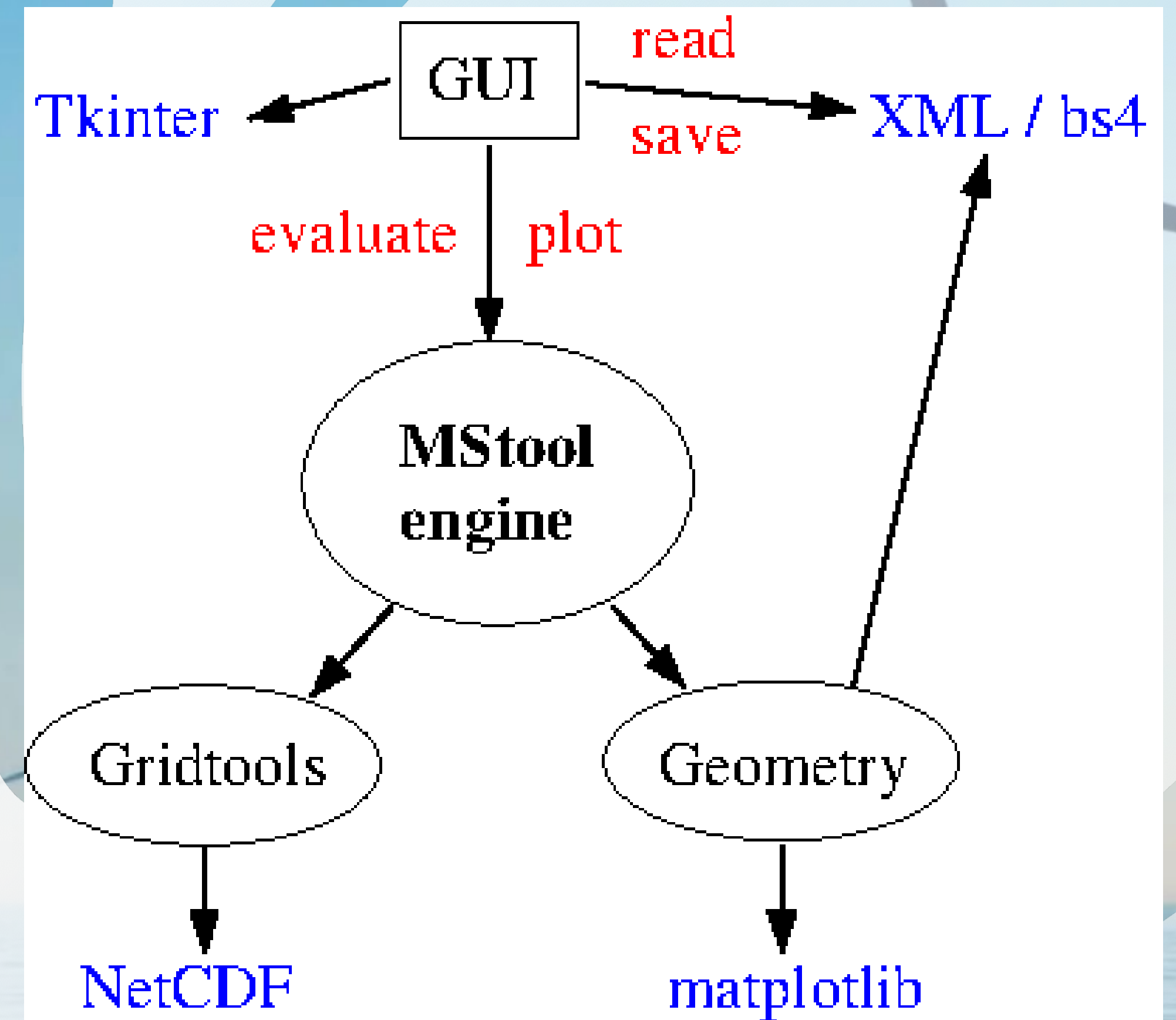
- Make tool discussions tangible!
- Clarify specific questions/data needs on OWF/LTA: interactions, constraints etc.
- Start with placeholder parametrization (e.g. productive value, cost); replaced by real data on LTA later generated in OLAMUR
- Graphical user interface (GUI) minimal features:
  - 1) Read** and edit a multi-usage site layout
  - 2) Save** site layout to a file format to be developed
  - 3) Plot** the multi-usage site layout
  - 4) Evaluate** a multi-usage site layout in relation to different objectives





- A representation of a multi-usage situation (MStool), based on **Python** classes
- An outline of an **XML** file format that describe a multi-usage situation
- A graphical user interface (GUI) based on Tkinter, has 4 buttons: **read**, **save**, **plot** and **evaluate**.

## Mockup version of the micro-siting tool

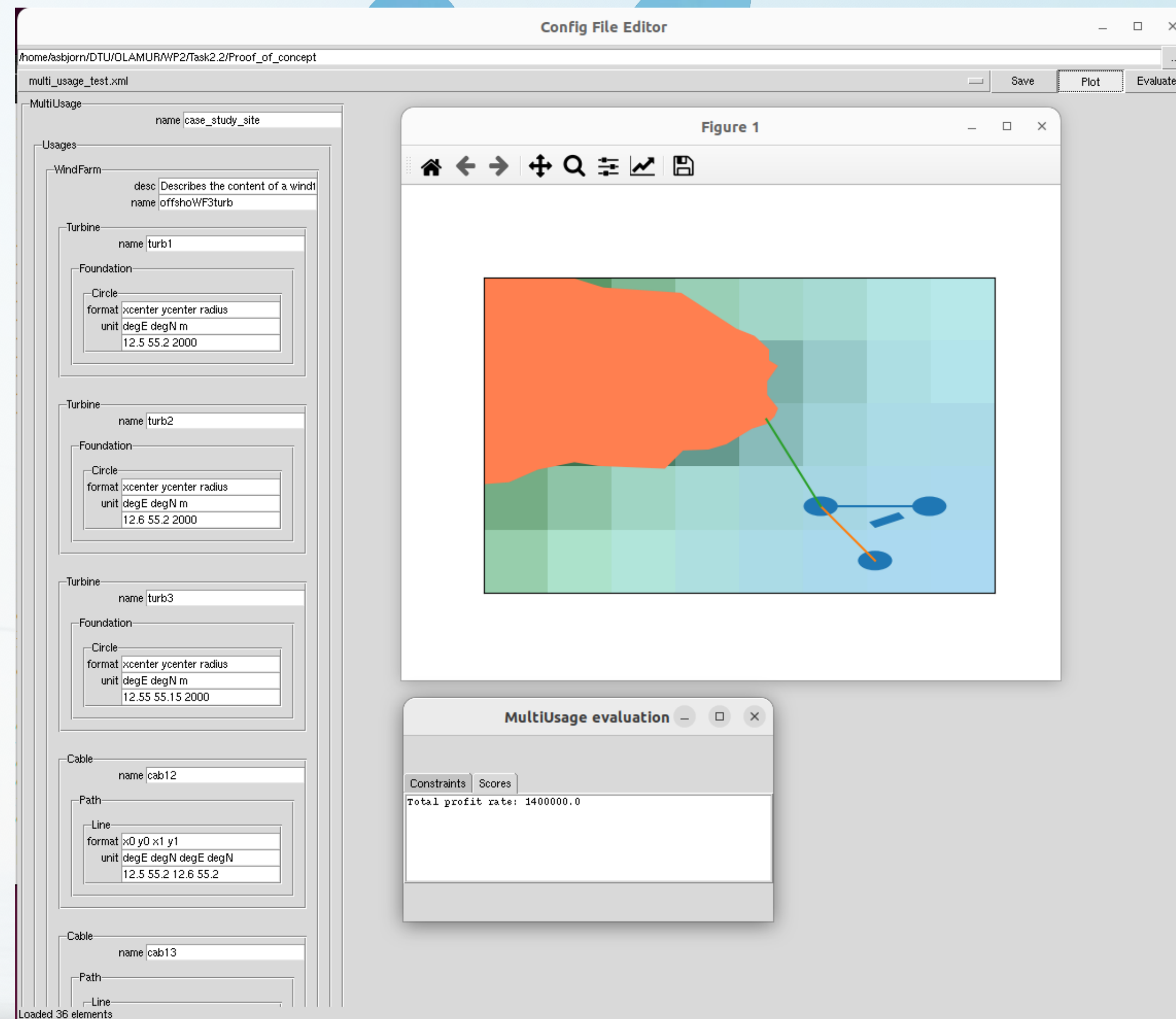






# Mockup micro-siting tool screenshot

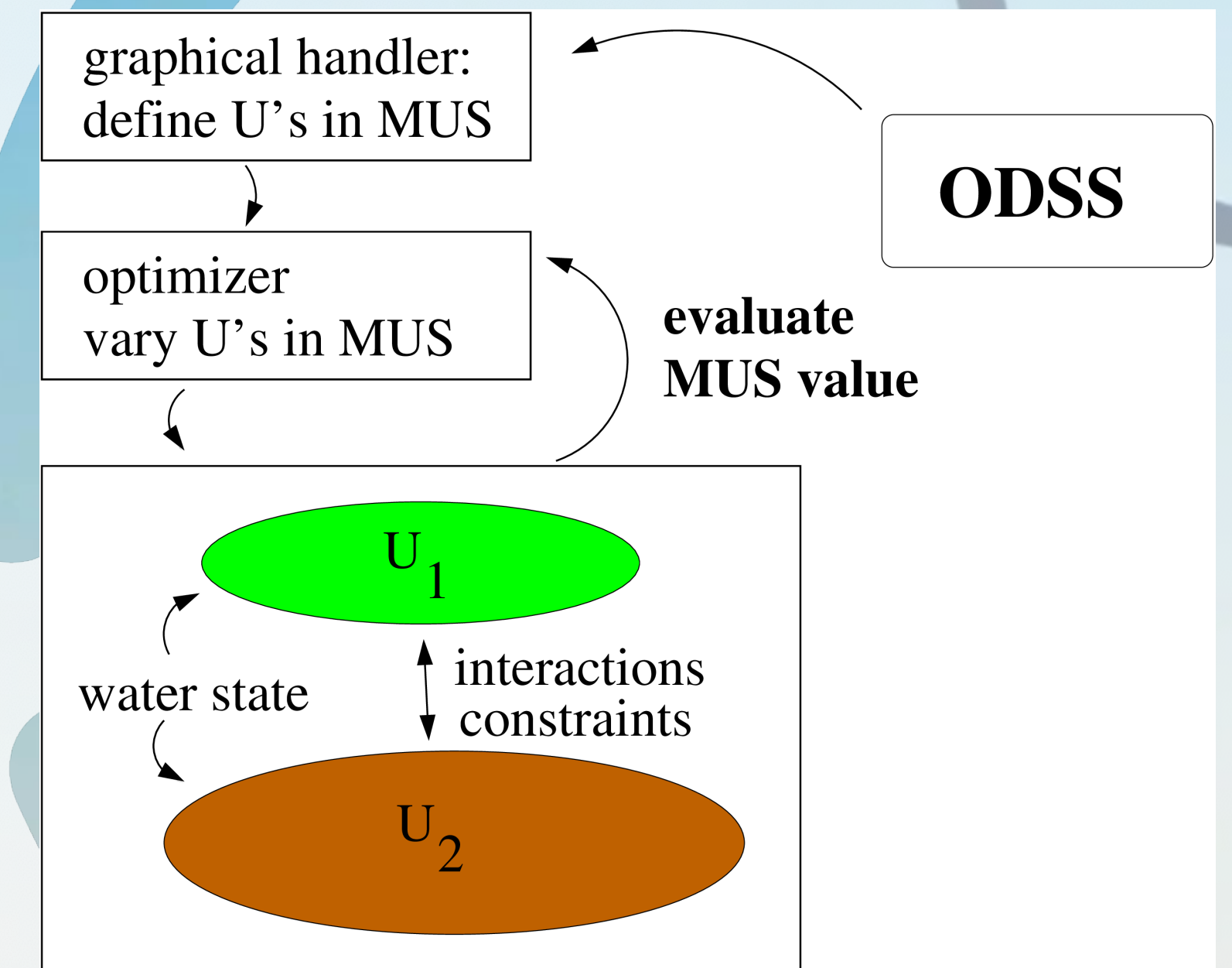
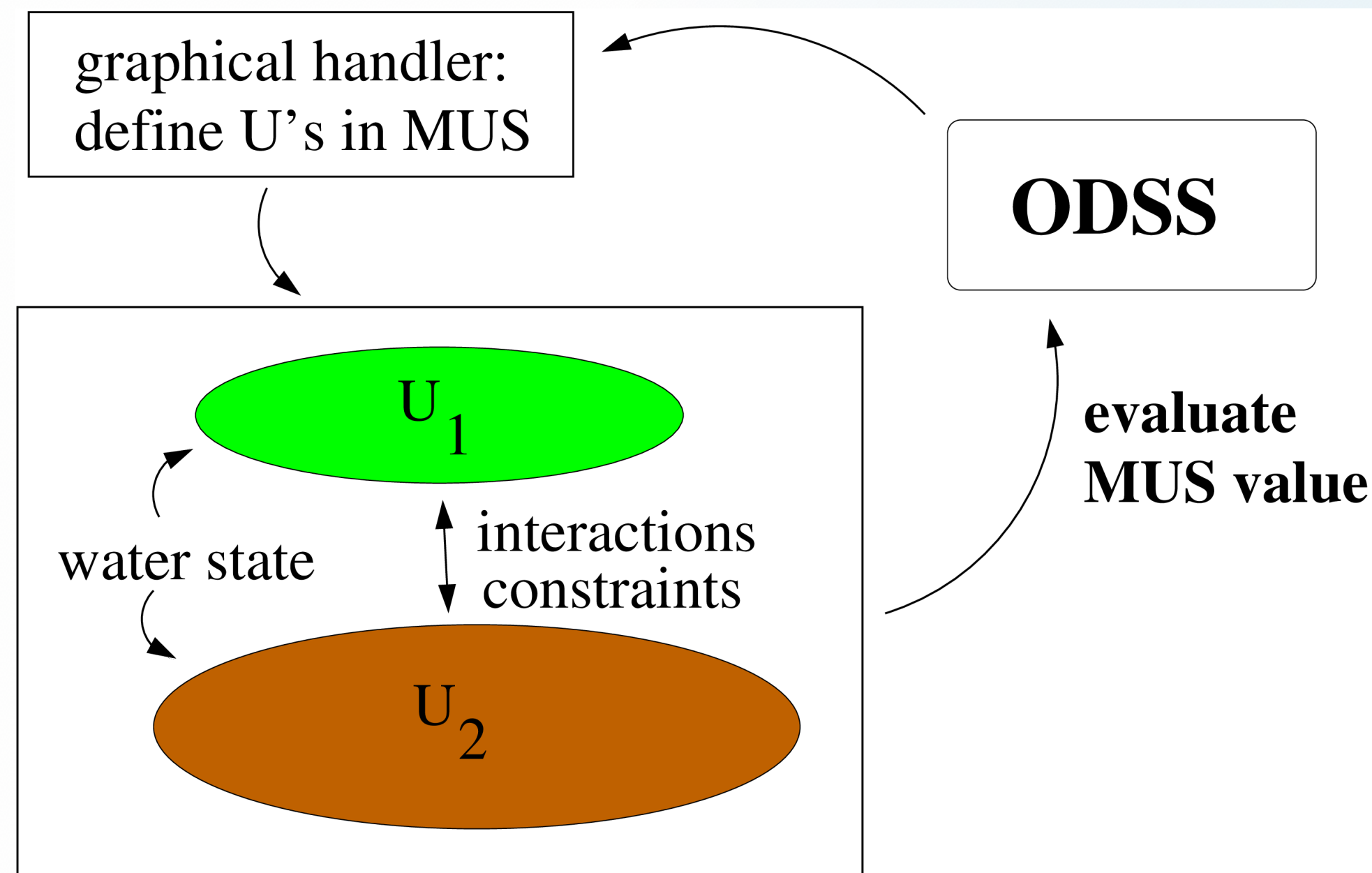
Test plot: multi-usage situation with 3 turbines and cables + 1 LTA farm near Kriegers Flak







# Integration with regional siting tool ODSS Step 1+2



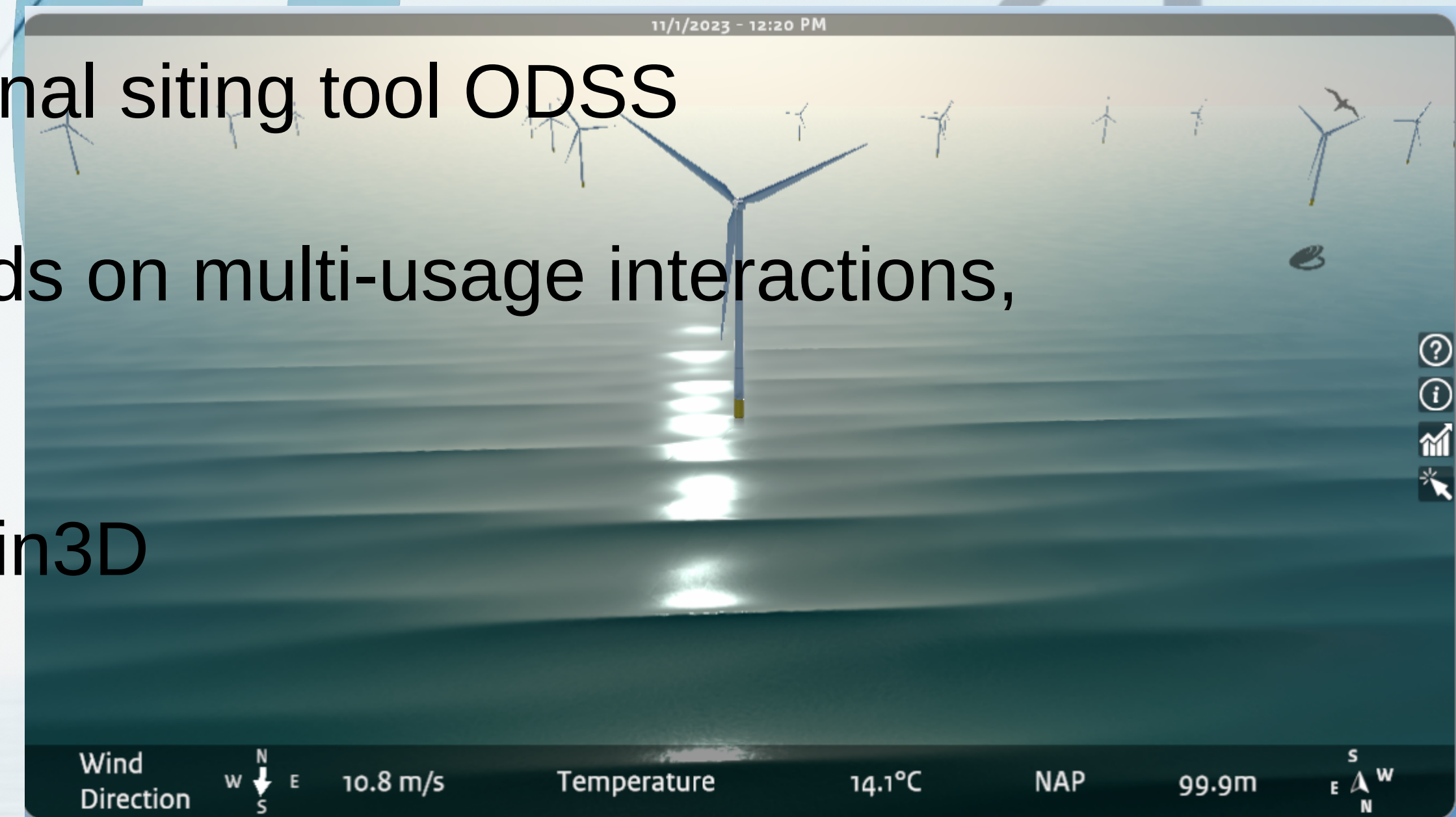
- Vision: users/stakeholder have just one planning digital access point
- Step 1: Interaction possible with current mockup version
- Step 2: Constrained optimization relatively easy to implement





## Outlook

- Hope for stakeholder feedback to prioritize our development focus
- Allows to test interaction with regional siting tool ODSS
- Clarify specific questions/data needs on multi-usage interactions, constraints etc.
- Explore 3D visualization: DigitalTwin3D







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**Thanks for your  
attention**



Contact Details:  
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Email:

