

A Web-based Geographical Information System for the Ocean Energy Sector

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Structure of this presentation

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Fraunhofer Institute for Wind Energy and Energy System Technology IWES

Founded in 2009 from

- Institute for Solar Energy Technology ISET, Kassel, Germany
- Fraunhofer-Center for Wind Energy and Marine Technology CWMT, Bremerhaven, Germany

Fields of research:

- Wind energy from material development to grid optimization
- Energy system technologies for all renewables

Annual budget: approx. 30 million €, approx. 400 employees

Marine energy group: <http://www.iwes.fraunhofer.de/en.html>

- Resource, market and feasibility studies
- Control and operating control
- Combined use of offshore facilities
- Model tests, field tests and demonstration projects

The “OES Web-GIS“ project

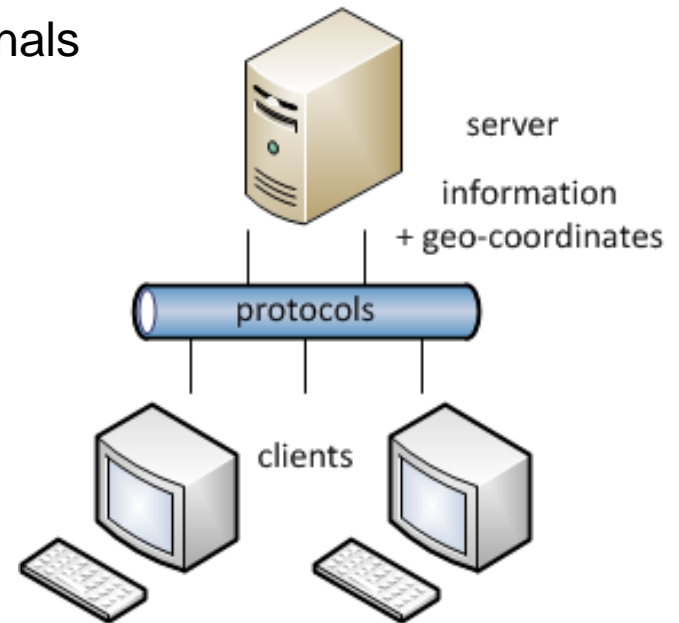


<http://www.ocean-energy-systems.org>

Aim: Raising positive awareness for and providing detailed information on marine energy resources and the development of related projects in an easy to use and visually striking way.

Target audience: The broad public, non-professionals

Solution: A web-based
Geographical Information System (web-GIS)



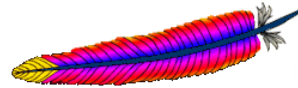
Structure of the Web-GIS

Based on open source software:

- Ubuntu Linux server with
- Apache web server
- QGIS server
- QGIS client
- QGIS desktop GIS
- PostgreSQL / PostGIS geo-DB



<http://www.ubuntu.com/>



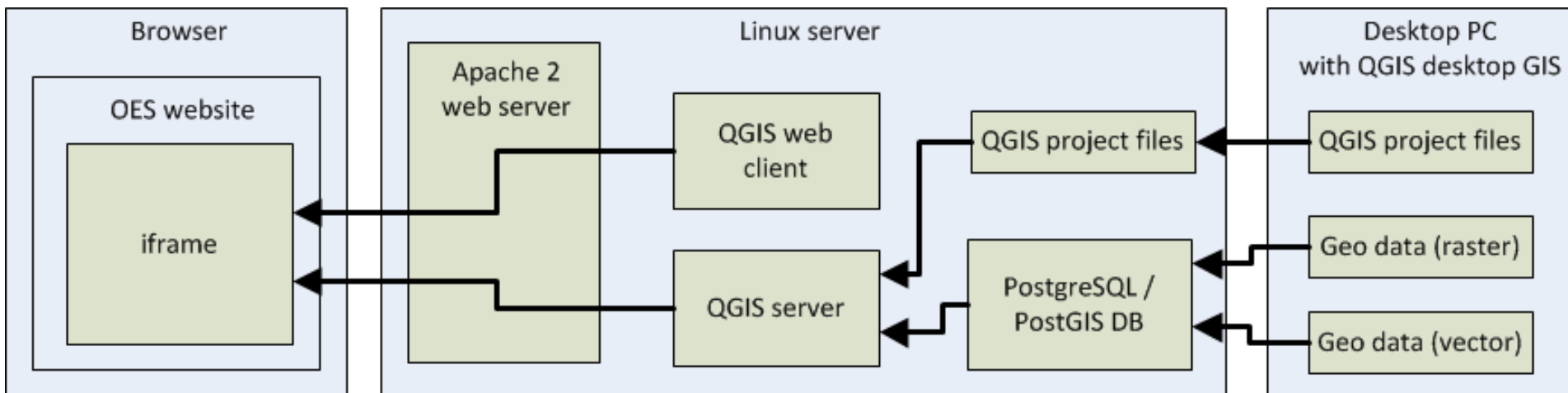
<http://httpd.apache.org/>



<http://www.qgis.org/>



<http://www.postgresql.org/>



Features of the Web-GIS

Layers of information provided:

- Marine energy projects (pre-commercial and commercial)
- Test centers for marine energy converters (open sea only)
- Marine energy resources (waves, tidal & currents, salinity, thermal)
- Bathymetry
- Distance to coast
- Exclusive economic zones (EEZs)
- Marine protected areas
- Relevant infrastructure (ports, populated places)
- Population density

Visualization only, no downloading for desktop GIS use!

Features of the Web-GIS

Features from end user perspective:

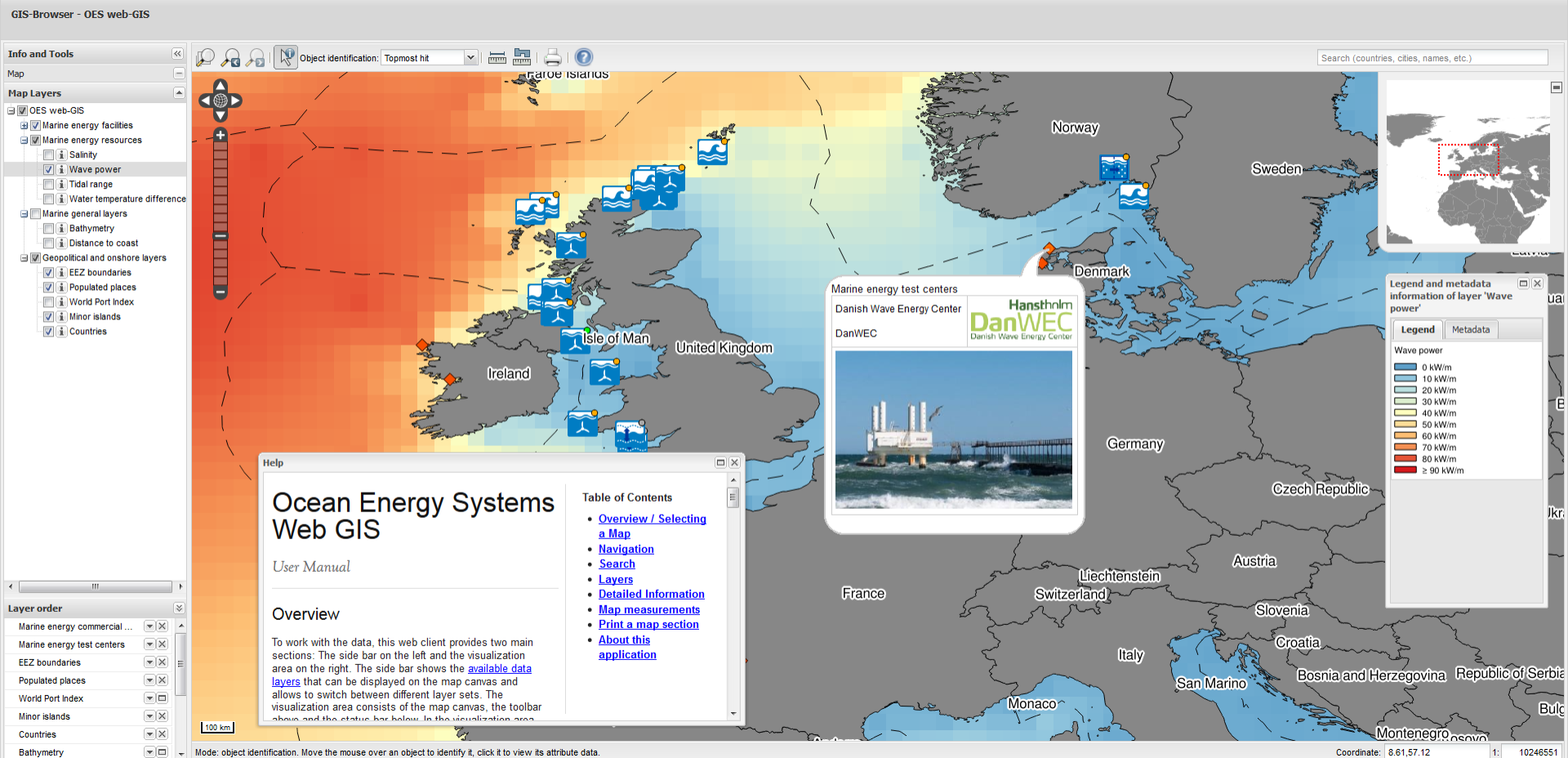
- Simple zoom, pan and point & click behavior
- Show / hide layers, change layer order and transparency
- Search for projects, test facilities, countries and populated places
- Measure distances and areas
- Print

Features from operator perspective:

- Well established open source software
- Simple editing / layouting of the data to be displayed with a related desktop GIS solution
- Easy integration of a GIS data base
- Easy integration of external data through common geo-data standards

Web-GIS demonstration

<http://www.ocean-energy-systems.org/>



http://www.ocean-energy-systems.org/ocean_energy_in_the_world/gis_map/

Future development

Many public (geo-)DBs and web-GIS applications for MRE projects and facilities:

- National Renewable Energy Lab (NREL):
[Marine and Hydrokinetic Technology Database](#)
[Hydrodynamic Testing Facilities Database](#)
[Marine Hydrokinetic Atlas](#)
- Pacific Northwest National Laboratory (PNNL): [Tethys Map Viewer](#)
- European Marine Energy Centre (EMEC):
[Tidal developer data base](#) and [wave developer data base](#)
- IT Power: [Marine Database](#)
- 4COffshore: [Tidal Projects data base](#)
- Open Ocean: [Marine Renewable Energy World Map](#)
- ...

Collaboration could be beneficial for all involved parties to avoid double efforts, achieve high data quality and receive more and positive attention by stakeholders and the general public.

**Thank you for your
attention!**

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