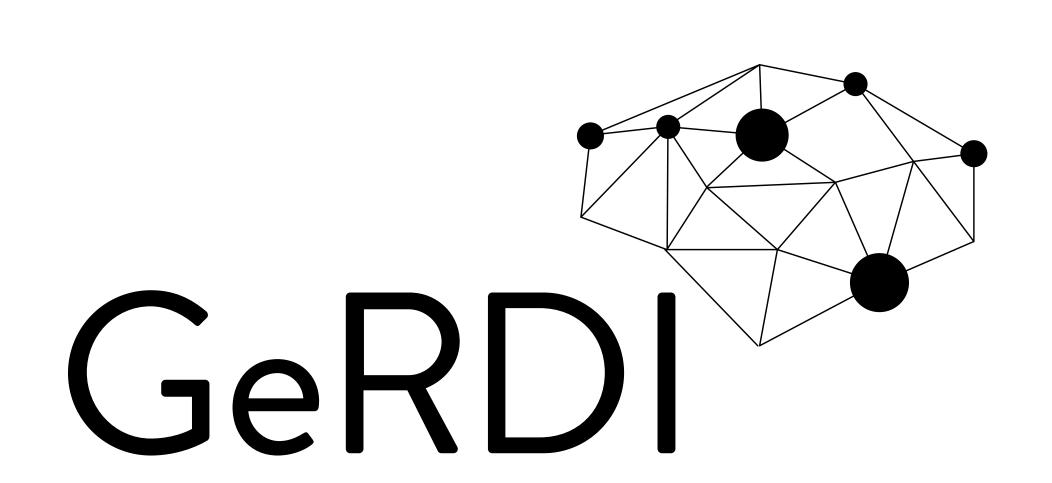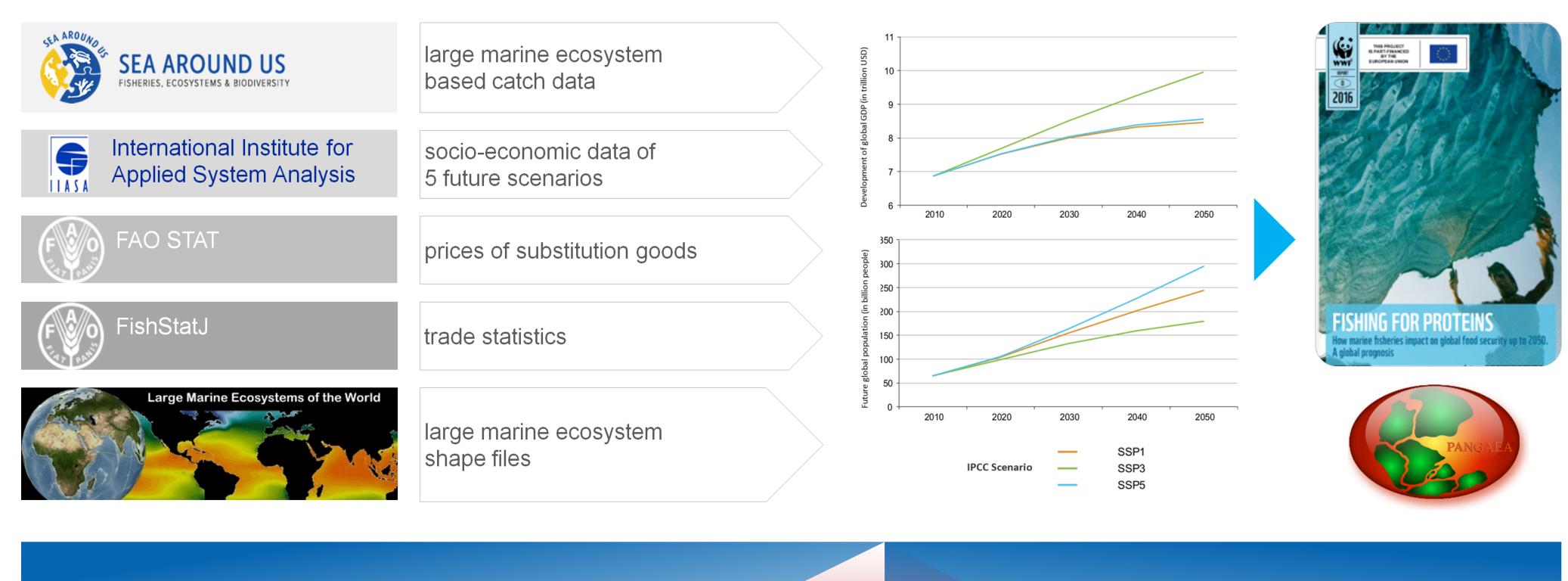# Integrated search and analysis of multidisciplinary marine data with GeRDI
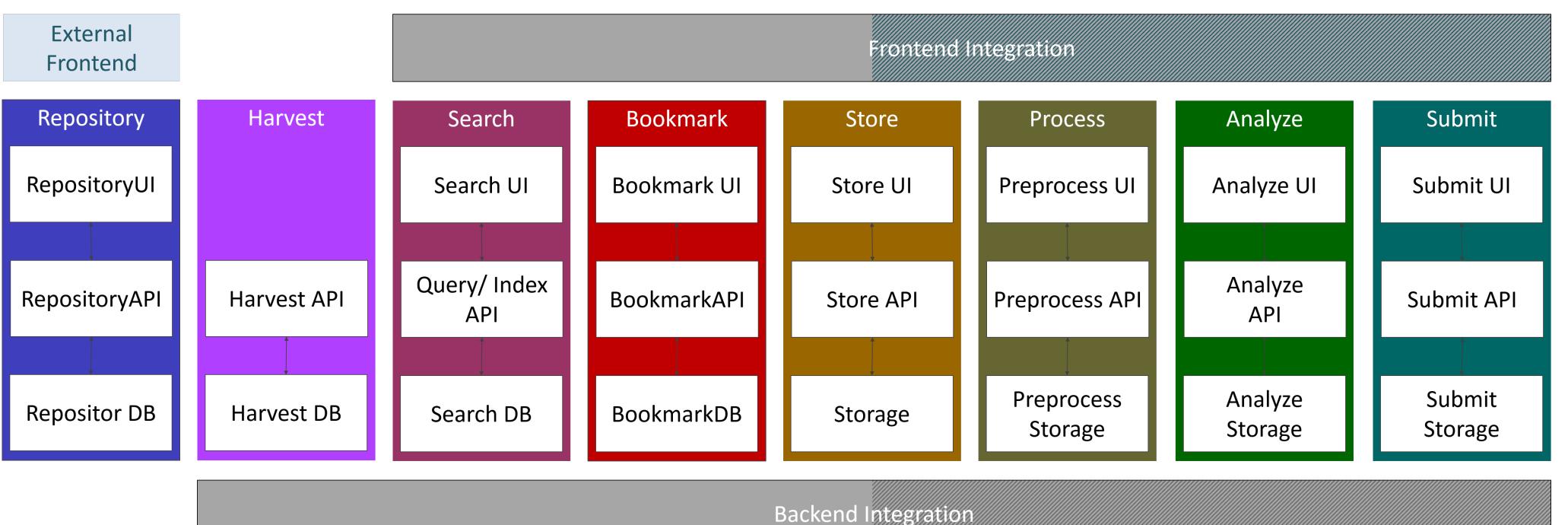
GeRDI

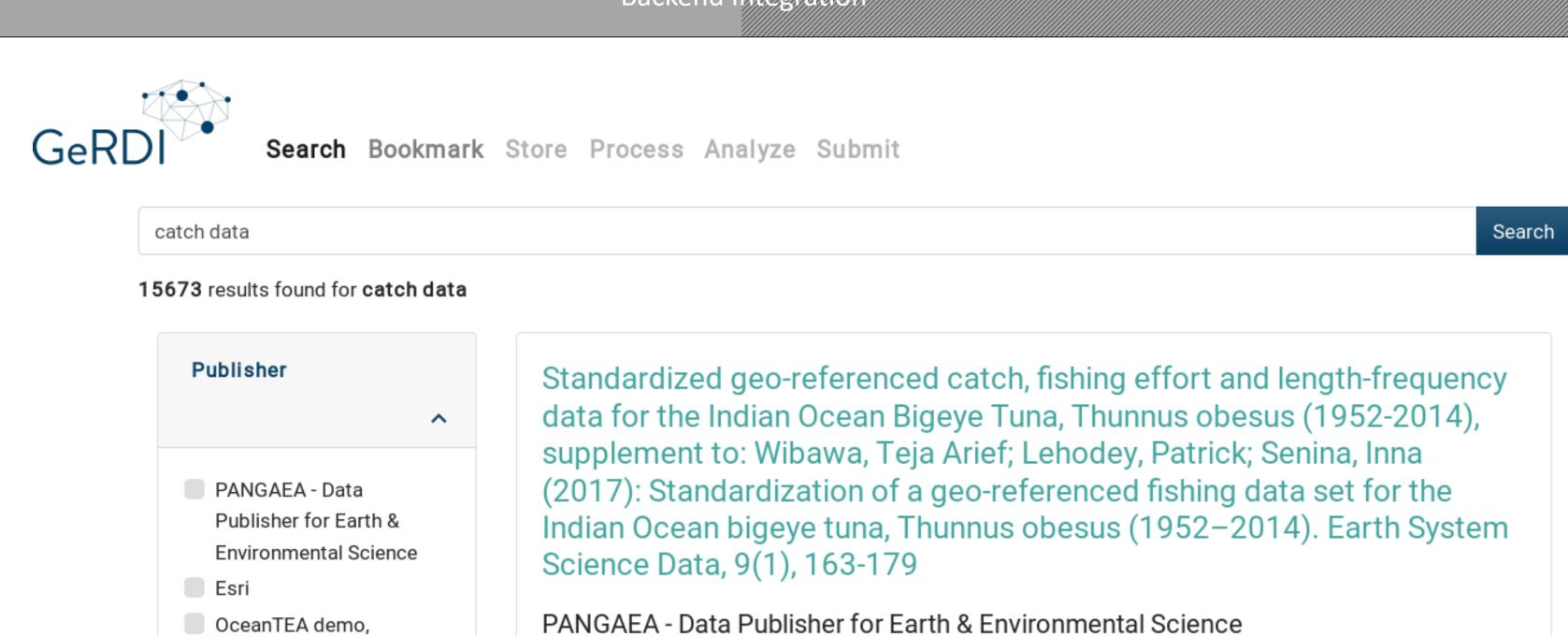**Ingo Thomsen, Wilhelm Hasselbring, Jörn Schmidt, Marting Quaas**

Fishing for Proteins

Multidisciplinary research usually requires data to be retrieved from multiple data repositories and then aggregated and analyzed. Below is the data flow of a WWF report that was used to answer an exemplary research question:

Source	Data
SEA AROUND US – FISHERIES, ECOSYSTEMS & BIODIVERSITY	large marine ecosystem based catch data
International Institute for Applied System Analysis	socio-economic data of 5 future scenarios
FAO STAT	prices of substitution goods
FishStatJ	trade statistics
Large Marine Ecosystems of the World	large marine ecosystem shape files

IPCC Scenario: SSP1, SSP3, SSP5

How marine fisheries impact on global food security up to 2050

Parameters for bioeconomic fishery models are statistically estimated using catch and price data from three main sources, combined with geospatial data. The model is finally based on scenarios for total expenditures and protein-rich food availability using GDP and population data derived from IIASA model output of the IPCC Shared Socioeconomic Pathways.

GeRDI offers...

Archived data was searched, filtered and accessed through the various UIs of the data repositories

core services

to find and access research data

The research data was locally processed and analyzed before submission

extended services

in the cloud to work with research data

External Frontend							
Repository	**Harvest**	**Search**	**Bookmark**	**Store**	**Process**	**Analyze**	**Submit**
RepositoryUI		Search UI	Bookmark UI	Store UI	Preprocess UI	Analyze UI	Submit UI
RepositoryAPI	Harvest API	Query/ Index API	BookmarkAPI	Store API	Preprocess API	Analyze API	Submit API
Repositor DB	Harvest DB	Search DB	BookmarkDB	Storage	Preprocess Storage	Analyze Storage	Submit Storage

Frontend Integration

Backend Integration

Devolping a **GE**neric **R**esearch **D**ata **I**nfrastructure

Driven by research questions from *various research communities*:

- Modular, microservice software architecture
- Services support aspects of research data lifecycle
- Metadata from existing repositories is harvested
- Core services to search, filter, bookmark and download/store
- Many workflows possible
- Process and analyze steps can be done locally
- Data can be stored to shared cloud space
- Repeatability can be achived e. g. with **jupyter**

GeRDI Search Bookmark Store Process Analyze Submit

catch data [Search]

15673 results found for catch data

Publisher

- PANGAEA - Data Publisher for Earth & Environmental Science
- Esri
- OceanTEA demo, Software Engineering,

Standardized geo-referenced catch, fishing effort and length-frequency data for the Indian Ocean Bigeye Tuna, Thunnus obesus (1952-2014), supplement to: Wibawa, Teja Arief; Lehodey, Patrick; Senina, Inna (2017): Standardization of a geo-referenced fishing data set for the Indian Ocean bigeye tuna, Thunnus obesus (1952–2014). Earth System Science Data, 9(1), 163-179

PANGAEA - Data Publisher for Earth & Environmental Science

gerdi-project.eu

Contact:

Jörn Schmidt, Martin Quass
Economics
{jschmidt, mquaas}@economics.uni-kiel.de

Ingo Thomsen, Wilhelm Hasselbring
Software Engineering
{int, wha}@informatik.uni-kiel.de

CAU
Kiel University
Christian-Albrechts-Universität zu Kiel