MareFrame

WP3: Data Management

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no. 613571

Objectives of WP3

MareFrame

From the Description of Work:

- **Establish the data that will be generated by case studies and model runs, and what data case studies will demand.**
- **Define and set up a database system to serve the needs of other WPs, specifically WP5**
- **Write data extraction routines for models and other existing systems to populate the database.**

...which lead to the MareFrame DataBase toolkit.

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MFDB

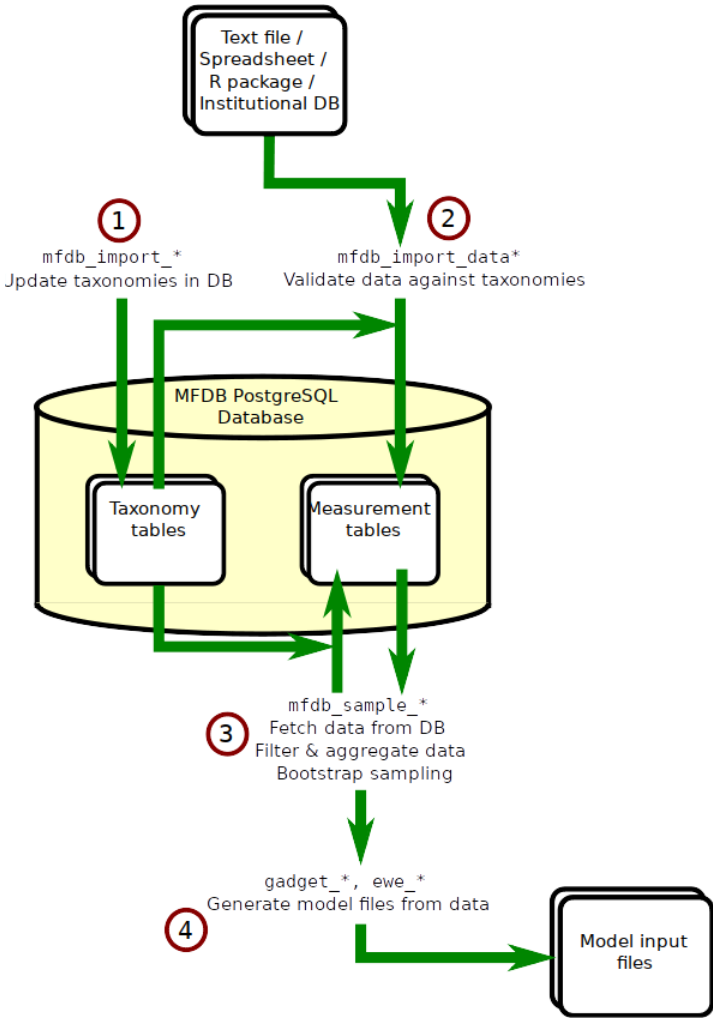
- **R package, or toolbox, to help you manage a database on your own computer and generate model data within R.**
- **Has functions for…**

– **Automatic set-up and configuration of a PostgreSQL database**

– **Ingest data from files/APIs**

– **Transform/aggregate data, including bootstrap sampling**

– **Create input files for ecosystem modelling tools, notably GADGET and RPath**



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MFDB

- **Now up to version 6.0:**
- **Focus on making a generic tool for the future, rather than being wedded to MareFrame**
- **Enhancements to discard support developed as part of MINOUW twinning**

- **Used my the majority of case studies, in particular:**
- Icelandic CS: All likelihood components in Gadget model
- South Western Waters CS: Anchovy Gadget model
- Baltic CS: Cod/Herring/Sprat Gadget models for all the likelihood components
- Strait of Sicily CS: Hake, White Shrimp and Horse Mackerel model
- North Sea CS: Survey Data in small gadget models, survey data for Orange/Red models
- Black Sea CS: Turbot gadget model

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Other WP3 Outputs

- **MFDBAtlantis: Tools to ingest Atlantis data into MFDB**
  - **Thus allowing Atlantis to be used as an operating model for GADGET**
- **MFDB Server: A server hosted by UI for sharing of model data.**
  - **MFDB can import / export data, or query the server directly**
- **Contributions to RGadget:**
  - **Code to manipulate GADGET configurations and formulae**

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Main Challenges

- **Dependencies: RPath was only available late into the project**
  - **Can't add support for something that doesn't exist**
  - **Delays for model development**
  - **Resulted in a delayed D3.3, which needed to demonstrate support for RPath/EwE**

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Legacy – What now?

All code is open source, and will continue to be available from the github website.

A core part of the GADGET toolchain:

- **RGadget & MFDB togther can now handle all stages of model development within R, allowing for models that are**
- ...quick to reconfigure
- ...reproducible
- ...updatable with future data

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Legacy – What now?

Will continue to be a useful tool for MareFrame partners:

- MRI: "We used gadget + rgadget + mfdb to develop two harvest control rules (for tusk and ling in Icelandic waters) and mfdb was fundamental for rapid model development and uncertainty estimation."

- SLU: "mfdb will continue to be the companion of further developments of the Baltic gadget model after MareFrame."

- CISC: "I'm using it every time I need to include new information in the anchovy model"

- NRC: "I suspect that in the future I will use it for Scientific interogation of the North Sea Survey data."

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Publications

- **Source code available for all R packages on Github site:**
  - **https://github.com/mareframe/mfdb**
  - **https://github.com/mareframe/mfdbatlantis**
- **Documentation for all R packages published online:**
  - **https://mareframe.github.io**

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