

# Transparent Assessment Framework

Arni Magnusson  
Colin Millar

Webex with DFO  
17 March 2017

<http://taf.ices.dk>



Science for sustainable seas

# Aim



*To implement a framework to organize **data**, **methods**, and **results** used in ICES assessments, so they are easy to **find** and **rerun** later with new data.*

# ICES advisory process



1. **Work** within institutes  
*prepare data, prepare model, run model(s)*
2. **EG** meeting  
*finalize model run, write report + draft advice sheet*
3. **ADG** meeting  
*finalize advice sheet*
4. **ACOM** meeting  
*finalize advice*

## Current workflow

# Containers



- ▶ **Chapter** in report  
*data, results*
- ▶ **Stock annex** in report  
*data-methods, assmt-methods*
- ▶ **Data folder** on Sharepoint  
*data, assmt-methods, results*
- ▶ **Advice sheet** via Stock Assessment Graphs  
*results*
- ▶ **GitHub** EG repository  
*data, assmt-methods, results*

# Areas for improvement



- ▶ **Chapter** in report  
*hard to find reports, hard to copy tables from pdf*
- ▶ **Stock annex** in report  
*hard to find newest version, ambiguity, lack of detail*
- ▶ **Data folder** on Sharepoint  
*depends on stock assessor, can be missing, no guarantees*
- ▶ **Advice sheet** via Stock Assessment Graphs  
*pathway from assessment to SAG database could be streamlined*
- ▶ **GitHub** EG repository  
*not linked into the ICES system*

## New framework

# Objectives



The new framework should be:

- ▶ **Encapsulated:** entire pathway from input DBs to SAG in one system
- ▶ **Quality controlled:** data can be traced to sources, values are checked
- ▶ **Repeatable:** data preparation and assessment workflow is recorded and can be run
- ▶ **Transparent:** anyone can browse on the web
- ▶ **Cohesive:** make use of existing ICES infrastructure



## Objectives (cont.)



Make it easier to:

- ▶ **Find** data and results from a given assessment
- ▶ **Rerun** model with different data or assumptions
- ▶ Prepare and run an **update** assessment
- ▶ **Access** ICES data web services

⇒ Will save time for EGs, ADGs, and ACOM

## Objectives (cont.)



Help people to:

- ▶ See **changes** in model setup and data between years
- ▶ Use reproducible research to strengthen **institutional memory**
- ▶ Access data and results from all stocks for **big-picture research**

## System workflow

# Core workflow



get data  
=> model input files



run model executable  
=> model output files



extract results from model-specific output  
=> standard output files

# Preprocessing data



get data and preprocess  
=> data values



convert data to model-specific format  
=> model input files

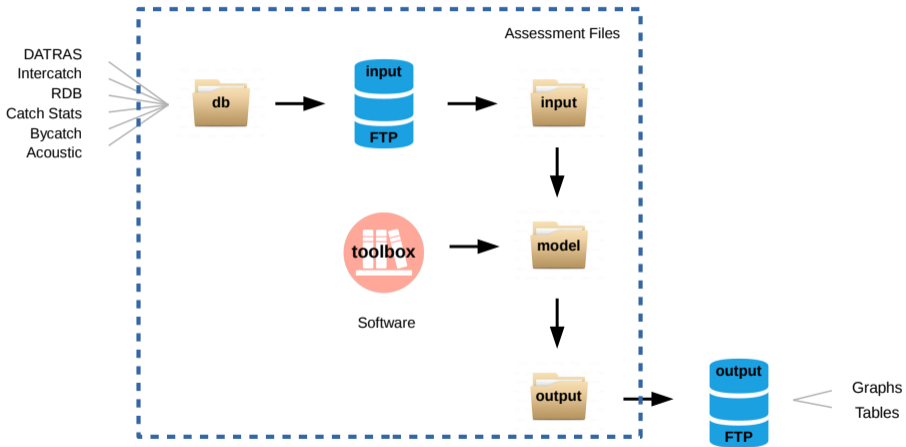


run model executable  
=> model output files



extract results from model-specific output  
=> standard output files

# Data archives for input and output



# R packages supporting TAF workflow



## Web services

- icesDatras** trawl survey database
- icesSAG** stock assessment graphs
- icesSLD** stock database
- icesVocab** reference codes

## Other

- icesAdvice** advisory methods
- icesTAF** support functions

# GitHub assessment repository



The screenshot shows the GitHub repository page for the Transparent Assessment Framework (TAF). The page title is "Transparent Assessment Framework (TAF)" and the subtitle is "Repositories of fully functional ICES stock assessments". The repository is located in Copenhagen, Denmark, and is managed by https://ices-taf.github.io/ and github@ices.dk.

The page displays a list of pinned repositories:

- doc**: Community documentation for the TAF project
- ftp**: Input files for TAF assessments
- wgef**: Working Group on Elasmobranch Fishes (Language: R)

Below the pinned repositories, there is a search bar and filters for Type (All) and Language (All). The main list of repositories includes:

- wgef**: Working Group on Elasmobranch Fishes (Language: R), Updated 4 minutes ago
- ices-taf.github.io**: (Language: HTML), Updated 10 days ago
- doc**: (Language: HTML), Updated 10 days ago

On the right side, there are sections for "Top languages" (R, HTML) and "People" (3), listing contributors: **arnima-github** (Arni Magnusson) and **colinmillar** (Colin Millar).



# North Sea spotted ray



A screenshot of a web browser displaying a GitHub repository page. The browser's address bar shows the URL 'https://github.com/ices-taf/wgef/tree/master/2015/rjm-347d'. The repository name is 'ices-taf / wgef'. The page shows a list of files under the branch 'wgef / 2015 / rjm-347d /'. The files listed are: 'arnims-github DLS plot' (Latest commit 3fb6ba5 15 minutes ago), 'clean.R' (Scripts start with a very short description of task, 10 days ago), 'db.R' (Scripts start with a very short description of task, 10 days ago), 'input.R' (Scripts start with a very short description of task, 10 days ago), 'model.R' (Scripts start with a very short description of task, 10 days ago), 'output.R' (Scripts start with a very short description of task, 10 days ago), 'plot.R' (DLS plot, 15 minutes ago), and 'run.R' (Scripts start with a very short description of task, 10 days ago). The 'db.R', 'input.R', and 'output.R' files are highlighted with a red box. On the left side of the page, there is a vertical list of tasks: 'Preprocess data', 'Convert to model format', 'Run analysis', and 'Extract results'. The 'db.R' file is associated with 'Preprocess data', 'input.R' with 'Convert to model format', 'model.R' with 'Run analysis', and 'output.R' with 'Extract results'. At the bottom of the page, there is a footer with copyright information and navigation links.

# Web user interface

(design outline)



Open [taf.ices.dk](http://taf.ices.dk) in a web browser

**Browse** (everything is open) or **log in** to modify/run assessments

- Stock mode

upload, edit, save, run

- Boss mode

HAWG	NWWG
<input checked="" type="radio"/> her-3a22	<input checked="" type="radio"/> cod-iceg
<input type="radio"/> her-47d3	<input checked="" type="radio"/> sai-faro
<input checked="" type="radio"/> her-67bc	<input checked="" type="radio"/> sai-icel
<input checked="" type="radio"/> her-irls	<input type="radio"/> smr-5614
<input type="radio"/> ...	<input type="radio"/> ...

Download any dataset into R using [read.csv](#)

# Key benefits



- ▶ High **quality** science: online, peer-reviewed, reproducible
- ▶ Improved **time efficiency** and **reduced workload** on EGs
- ▶ Much more **open and structured** than current workflow

# Follow ongoing development



**[taf.ices.dk](https://taf.ices.dk)**

Main landing page

**[ices-taf.github.io](https://ices-taf.github.io)**

Technical overview and design comments

**[github.com/ices-taf](https://github.com/ices-taf)**

Assessments (R scripts)

**[github.com/ices-tools-prod](https://github.com/ices-tools-prod)**

R packages

Thanks!



Questions?

[colin.millar@ices.dk](mailto:colin.millar@ices.dk)

[arni.magnusson@ices.dk](mailto:arni.magnusson@ices.dk)

<http://taf.ices.dk>