Single stock advice html visualizations were created through R markdown documents. Advantages of this method are:

- Rmd has the potential to become a model document through which to develop as many single stock html pages as needed. It allows to connect with the different data sources, but also to create content, tables or graphs in this same document.

- R is a more user friendly tool than others, so it could be used and maintained by more people. It is a flexible tool, with continuous updates and compatibility with other tools. (Something about space requirements?).

The information presented is the same as in the advice sheets. Improved accessibility to the information of the Advice sheets can be resumed as follows:

- Outlook of the document structure and accessibility to the different sections through the side menu.

- Links to available information on the stock in ICES databases (Latest advice, SID, SAG, TAF).

- All tables are downloadable as csv.

- Graphs from SAG are active and allow to identify single points and its value.

- Stock Status Table is presented in a simplified way, compared to that in the Advice sheets. Only the used option (Maximum sustainable yield, precautionary approach or management plan) is shown.

Following the request, we present options to visualize catch scenarios. The four stocks here presented show different ways of reporting catch scenarios:

- For hake, only next year´s scenarios are reported.

- For herring, two years are reported. We propose a visualization, one with the current year catch and the next two years SSB in the same graph.

- For blue ling, two years scenarios are provided, and for the second year, two options according to the scenario adopted on the advice year.

- For Norway lobster, a simple bar plot illustrates the scenarios.

**Data preparation:**

Prior to the development of the Html pages trough Rmd, the data have been retrieved from different sources and following different strategies:

- The text and tables populating the html come mostly from the same advice sheet word documents. A script to extract the information in this sheets is available. The more homogeneous the advice sheets are, the easier is the extraction of the information.

- The active graphs and the assessment summary are created through connection with the Stock assessment graphs, so this part is quite homogeneous and easy to collect.

- The most difficult parts because of their heterogeneity are the catch scenarios. An initial extraction can be automated, but as these come only from the advice sheets for the time being, it is necessary a clean up step, which at the time being is difficult to automate. A solution to this would be to include the information on this tables in some of the already existing ICES databases.

Draft versions of all code used to gather data, clean up and create html are available here:

<https://github.com/ices-tools-dev/VISA_tool>

**Comparison with other related institutions dissemination tools:**

Similar but not identical sites, devoted to publish assessment information are:

**- IMR:**

<https://shiny.marine.ie/speciesdash/>

Here they give info on species together with some weight-length from surveys. Downloadable.

<https://shiny.marine.ie/stockbook/>

Here they provide the assessments of the current year. Not downloadable. Quite complete but also complex.

Plain text and some graphs. They present the catch scenarios in separated graphs of F, SSB and Landings. Colours identify the relative position regarding reference points.

**- STECF** dashboard and others, provides direct download of data,

Only interactive graphs for Mediterranean Stock Assessments 2016, <https://stecf.jrc.ec.europa.eu/dd/medbs/ram> allows download of data and images.

FDI data call: provides query-able and downloadable data

<https://stecf.jrc.ec.europa.eu/dd/effort/graphs-quarter>

Created with <https://www.tableau.com/>. Easy to use and flexible, allows to create a variety of dashboards. Also used by EEA for data dissemination. Not open source software.

**- RAM legacy database**, free data download in xls or access format. The most explicative and interactive visualization is a time-series of kobe plots done with gapminder, but this works in Flash, so it is not updated anymore, and hence, not recommended its use.

<http://ramlegacy.org/gapminder-visualizations/>

For each region and stock, a series of graphs are provided

<http://ramlegacy.org/explore-the-database/regions/canada-east-coast/>

**-NOAA**, very complex and complete web, with lots of information

<https://www.fisheries.noaa.gov/>

Introductory pages are quite user friendly:

https://www.fisheries.noaa.gov/species/acadian-redfish

They have a fish description similar to the old popular advice documents.

But the species are not linked to their assessment, which is somewhere else:

<https://www.st.nmfs.noaa.gov/sisPortal/sisPortalMain.jsp>

Time-series are downloadable.

As far as I know, graphs only show up in Explorer, not working properly in Chrome.

In all, quite complete but still information is huge, and hence a bit sparse.

Other pages using similar tools to this one:

-Oceana <https://eu.oceana.org/en/catchy-data>

-Scott’s product for benchmarks, is demo, and audience are experts, but tools are the same.

REMARKS:

-All process is transparent and replicable.

- Word files used to extract most text and tables are not available, only pdfs are made public.

- Reliance on word files is tricky, only data coming from standardized fields in databases are fully replicable and easily updated.

-Some table contents will become easier to collect when TAF is fully running, but not the text.

- Options: create a user-friendly r-markdown template, in which to write the advice directly, setting better standards, connections to databases etc, and from that it should be possible to create the html. For archiving, that same html could be saved as pdf. Could be nice to give it a try for a few advice sheets.