Start of project SmartDots platform

Start of SmartDots as a platform to facilitate events was a meeting between ICES, ILVO, DTU, IRM.

SmartDots software was initially a software developed by ILVO to mark dots in Otoliths images.
SmartDots as a platform

SmartDots is a platform for quality assurance of biological parameters as input for stock assessment (Julie Davies - 2018)

Events on biological parameters (e.g. age and maturity) allow users across countries to share knowledge and experience.
SmartDots

a) Do you know what are otoliths?

b) Why do we need an app to mark dots in an image?
SmartDots – What are otoliths?

Otolith is a calcium carbonate structure in the inner ear that can reveal growth rate and age of a fish.
SmartDots – Why do we need an app to mark dots?
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Weber–Fechner law

Laws relate to human perception, more specifically the relation between the actual change in a physical stimulus and the perceived change.
ICES – Stock assessment advice

ICES gives advice to the clients this advice should be transparent and reproducible.

What information is needed to do an informed advice e.g. Ages and maturity of the fish.
SmartDots components - WebInterface

Main objective
Link all the modules together

- Serves as a tool for national coordinators to:
  - Manage age readers expertise
  - Add age readers to the events
  - Set up new events (Exchange, Workshop, training or a demo)
  - Follow the progress of an event

Main public feature
- View published events
- Developed by ICES

http://smartdots.ices.dk/
SmartDots components - WebAPI

Main objective:
- Bridges the communication between the software and the database.

- Developed by ILVO/ICES
- Open source
- Developed in C#
- Implements the rules

http://smartdots.ices.dk/webapi/
SmartDots components - Software

Main objective
- Allows age readers to annotate an image without seeing the annotation of other readers.

- Developed by ILVO
- Open source (GPL v3.0)
- Microsoft WPF application
- Developed in C#
- Has a portable version

https://github.com/ices-eg/SmartDots/blob/master/README.md#getting-started
Main objective

- Generate a report with tables and figures for the stock assessor.
- Developed by DTU
- Maintained by ICES
- Open source (GitHub)
- R script

Figure 3.2d: Plot of average distance from the centre to the annuli (where annotations are not on the winter ring) for all readers and for each preparation separately. The boxes represent the median and interquartile range, whiskers represent the minimum and maximum values, and outliers are marked with individual points.
SmartDots - future

We are looking for the platform to accommodate:
- Otholits Shape analysis
- Zooplankton images
- Eggs and Larvae images

Supporting machine learning technics for helping events is an idea

- First event on maturity reading is coming in January
- Maturity reporting is still in development
- Governance group has been established
SmartDots – Any questions?

Try it yourself

Get a guest token here:
http://smartdots.ices.dk/webapi/GetGuestToken

Download the software here:
https://github.com/ices-eg/SmartDots/blob/master/README.md#getting-started

View list events:
http://smartdots.ices.dk/viewlistevents
Has anyone ever seen a bobsleigh competition?
Let's see the start of the Bobsleigh heat

• Bobsled or bobsleigh is a sport played during the Winter Olympic Games. It is played by riding on iced tracks with a sled.

• The crew has a pilot, a brakeman, and pushers. Athletes are selected based on their speed and strength, which are necessary to push the sleigh to a competitive speed at the start of the race.

• Pilots must have the skill, timing, and finesse to steer the sleigh along the path.
Bobsleigh - Winter Olympic Sport