

ELECTRONIC CATCH RECORDING

onboard commercial fishing vessels for scientific and commercial use

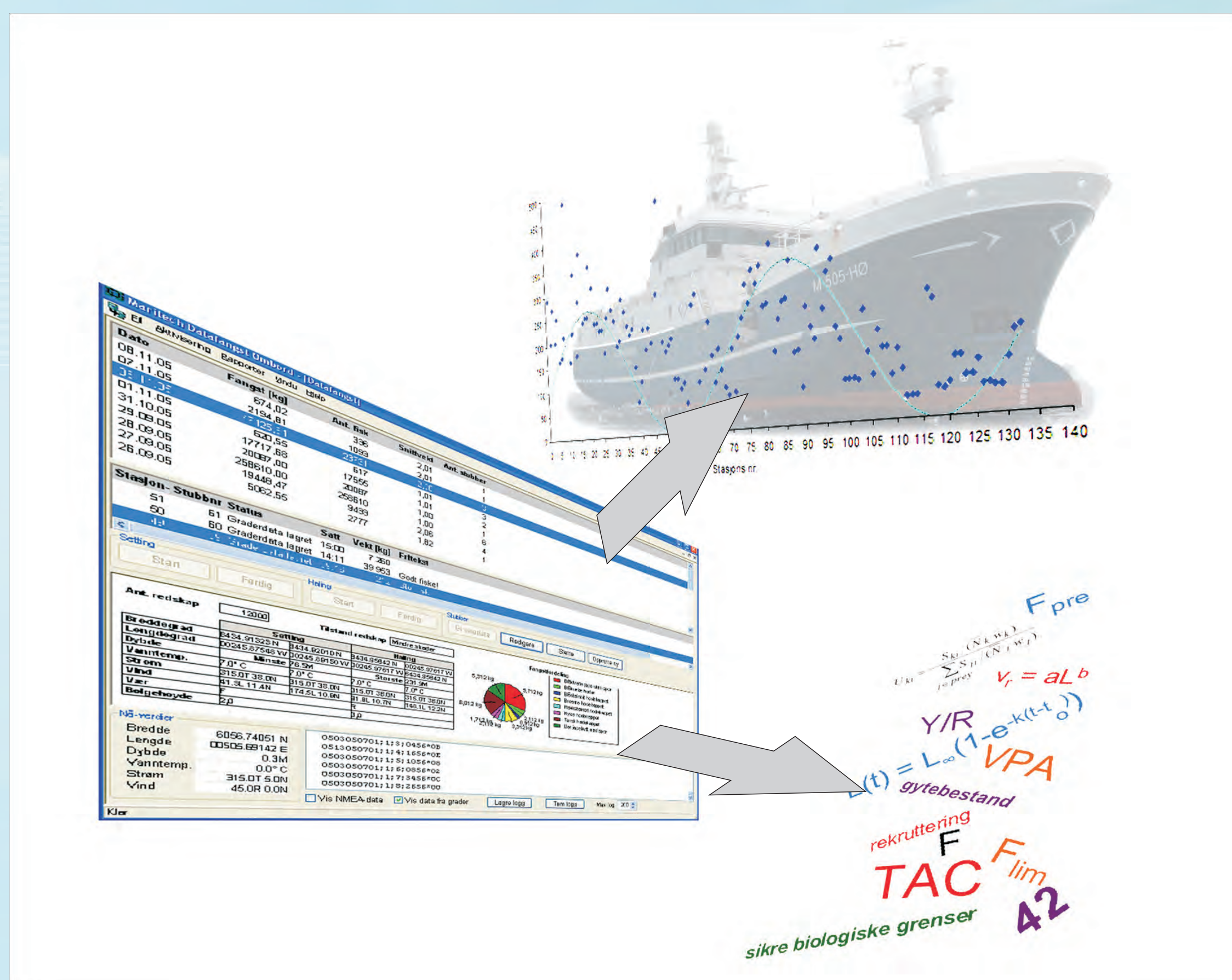


Background

Fish stock assessments and sound advice in most cases rely on representative samples of catches. Consequently, stock assessment and management of marine fish resources exploited by those fisheries are based on poor or scarce data. Presently, sampling at sea is often random in time and place, and not necessarily representative with respect to the fleet metier.

Biological sampling in distant waters is a challenge due to logistics and high costs. The use of electronic scales onboard commercial fishing vessels opens for a new approach in data collection.

In recent years electronic scales measuring individual fish weights on deck have been connected to GPS, to combine catch information with information of the fishing location, effort and individual recordings from the catch. Such data collection will meet the challenges of obtaining more representative fishery data in distant waters and provide a basis for continuous sampling throughout the fishing period contributing to increased data acquisition for use in fish stock assessments.



Goals

- Potential for combining and collecting data from automatic weight registrations (Grader) as well as other relevant data recording systems onboard fishing vessels by existing or new software (e.g. Datafangst).
- Simplified and prompt catch registration onboard fishing vessels (optimizing fishery),
- Potential for improved fishing performance.
- Data acquisition to science to improve basis for fishery advice.

State of the art

Graders and other electronic weight recording systems onboard fishing vessels often measure individual weights to separate catch into weight groups. The recorded weights are the discarded or at best used to summarise the daily catch in simple reports.

A new software "Datafangst" is developed to retrieve, store and exploit such data. The program receives data from several data sources onboard fishing vessels (GPS, echo sounder, trawl data), and combines and store them automatically with the individual weight and species recordings. The software will typically be operated the captain. The traditional logbook procedure could with advantage be handled by this software.

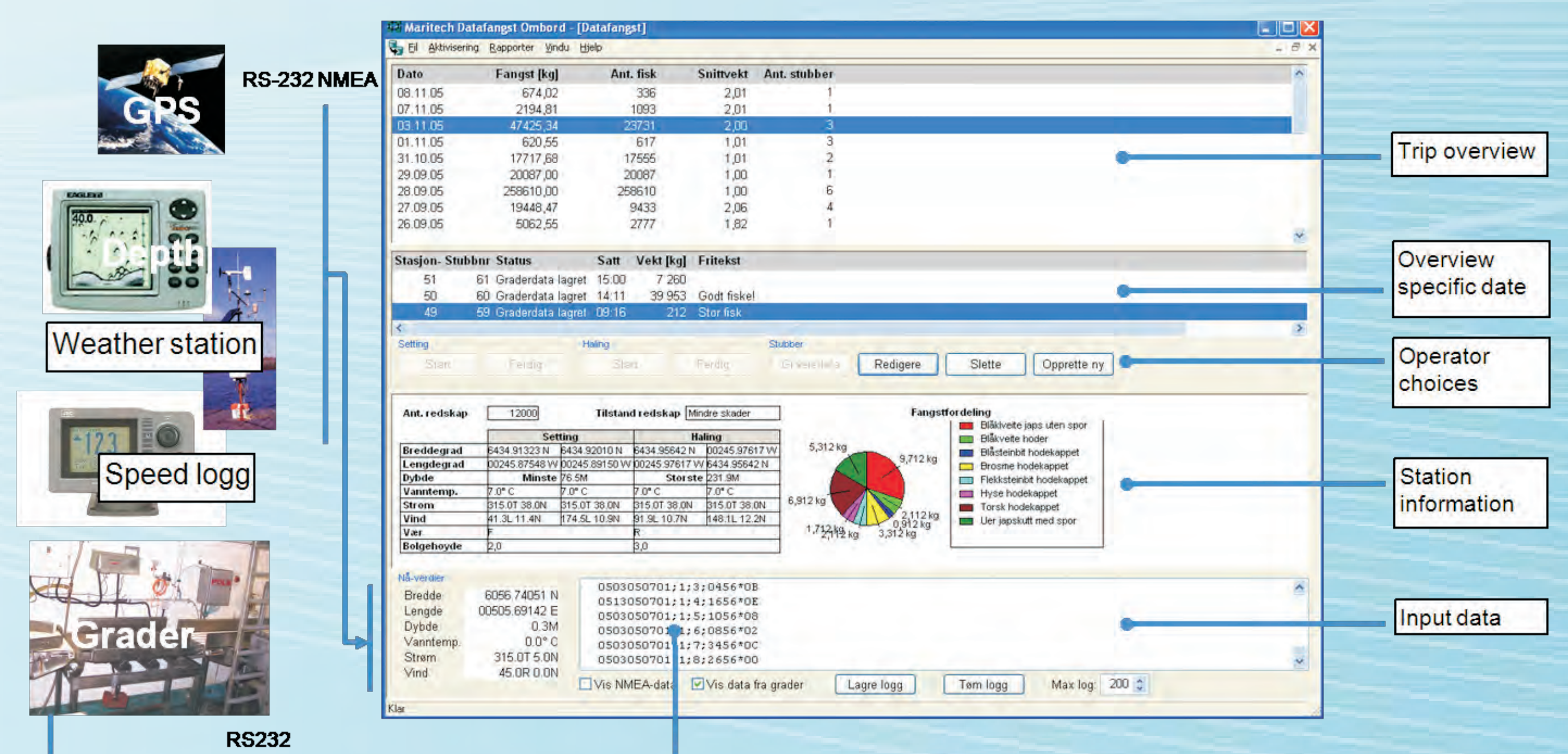
A basic platform of the program is now constructed, but to reach the full potential of the program there is a need for additional modules for generating reports as well as data export. The program is developed to take care of interests of both the fishing industry and for scientific purposes. It has been constructed to comply with established sampling routines, making it easy to export data to science. The fishing industry can benefit from several possibilities with this approach; traceability of products, catch history to improve fishing pattern and for planning purposes. "Datafangst" is presently installed in two fishing vessels operating in the North Atlantic; "Leinebris", a Norwegian longliner and "Sisimiut", a Greenland trawler.

Potential use in research and fisheries advice

Scientific observers are usually required for sampling of detailed catch information from fishing vessels. There are fisheries where observer requirements are hard to fulfill, such as distant high sea fisheries and in waters with no obligation for observers. These fisheries are especially candidates for implementation of the present grader software.

The weight records obtained from graders can with a minor additional effort in length sampling provide the basic information on size distribution of catches as input to stock assessment. An advantage of this system is the low cost of manpower associated with data collection (software installation and data retrieval) and the unbiased sampling by the device (all catches are recorded).

With additional information on data from the fishing operation such as GPS data, echo sounder data and effort data, this constitutes a sample input to CPUE analyses for stock assessment and for generic research on spatial distribution of fishable resources.



Outline of user interface in DATAFANGST and an illustration of data flow.

Future perspectives

Electronic catch registrations will have several gains for the fishermen:

- Data allow quick documentation of previous fishing operations - improving fishing pattern
- Traceability of fish products with respect to origin/way of fishery; meeting market criteria of sustainability
- Fishing plant can accommodate to exact catch composition; this will achieve a better prize for the catch.
- Possibilities for a closer cooperation between fishing industry and science which in turn will contribute to a better utilisation and exploitation of marine resources.

Electronic catch registrations will have several scientific gains:

- Continuous data collection from the entire fishery (not only parts of it)
- Possibilities of obtaining extensive fisheries data from fishing operations in distant waters; e.g. East Greenland, Barents Sea where participation of scientific observers during fishing is extremely expensive due to long lasting trips.
- Possibilities of obtaining data from fisheries where port samples are not accessible due to onboard processing.
- Data are sampled automatically which means that the personal/subjective factor is eliminated and bias is reduced.

Exclusive possibilities for the suggested data:

- Dividing historical catches into possible new size-groups (and thereby also earnings).
- Through better description of the precision grading-equipment more optimal separation weights might be determined (for instance dependent on swell height) to meet the request from buyers and increase the value of the catch.
- Allows analyses of how catch composition affects fisheries; Information which is fundamental in planning of fishing operations.