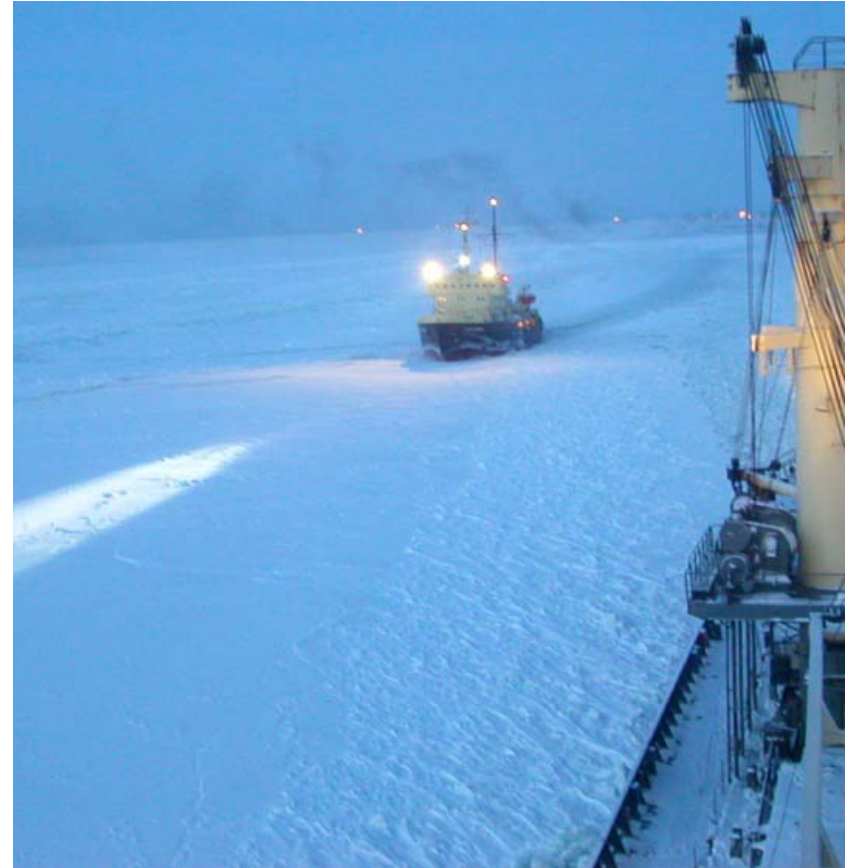




# **Joint AARI – Transas project for ice charts development and usage in Transas ECDIS**

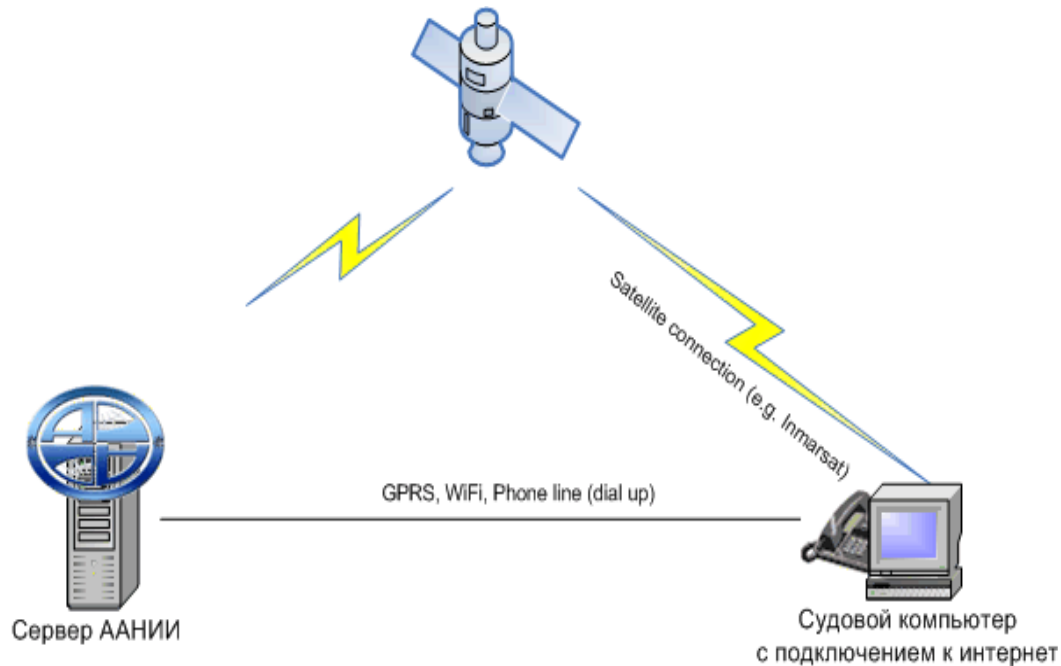
# GOALS

- Efficient receiving of ice information and combining it , with ENC data and ship position from GPS;
- Increase safety of navigation;
- Reduce voyage time when navigating in ice;
- Help to make right decision and select the fastest and safest route;



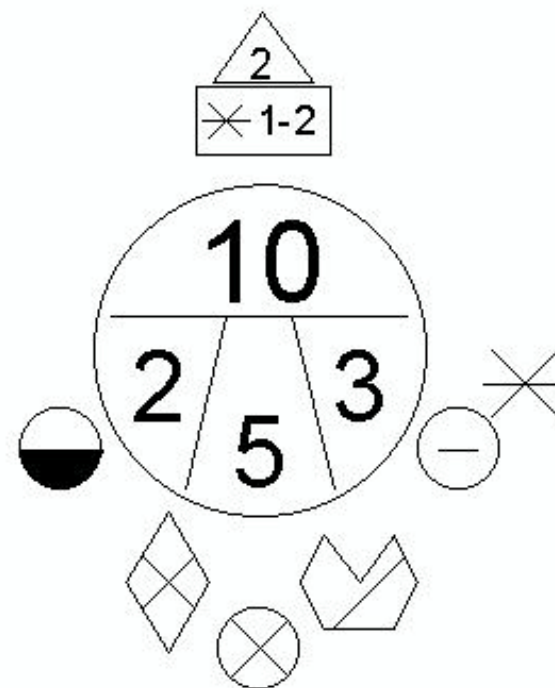
# DATA DELIVERY

- The required ice data are located on the AARI servers;
- A standard ship borne communication unit is used:
  - DHS Connector software – notifies about new data available;
  - DHS Terminal software – downloads data from AARI servers;



# First stage of the project

- Ice Objects Catalogue version 4.0. was taken as a base
- Additional Objects and attributes were added
- Ice edge and form were encoded in ice chart in accordance with Russian national nomenclature



## Second stage

### Preparation of the coloring scheme for symbolizing ice coverage areas

**Two new attributes were added for defining ice areas colors:**

SYMINS – similar to IHO S-57 attribute for defining color in international symbology

SMINSR – attribute defining color for Russian national symbology

#### **Symbology**

The presentation rules are made in pseudo IHO S-52 Presentation library lookup tables.

```
"SEAICE","ICEACT92ICEAPC?,?,?IA_SFA?/?/?/?IA_SFB?/?/?/?A_SFC?/?/?/?","SY(ICEBEL03);SY(ICENMB10)
```

One object can be symbolized up to ten simple symbols comprising one composite symbol.

# Data structure removed fields

- **ATTV [Vector Record Attribute field] – no attribute for special objects in ice charts**
- **SG3D [3-D Coordinate (Sounding array) field] – no spot soundings**
- **FOID [Feature Object Identifier field] – no links between different feature objects**
- **NATF [Feature Record National Attribute field] – no attributes/characters in national language**
- **FFPT [Feature Record to Feature Object Pointer field] - no links between different feature objects**

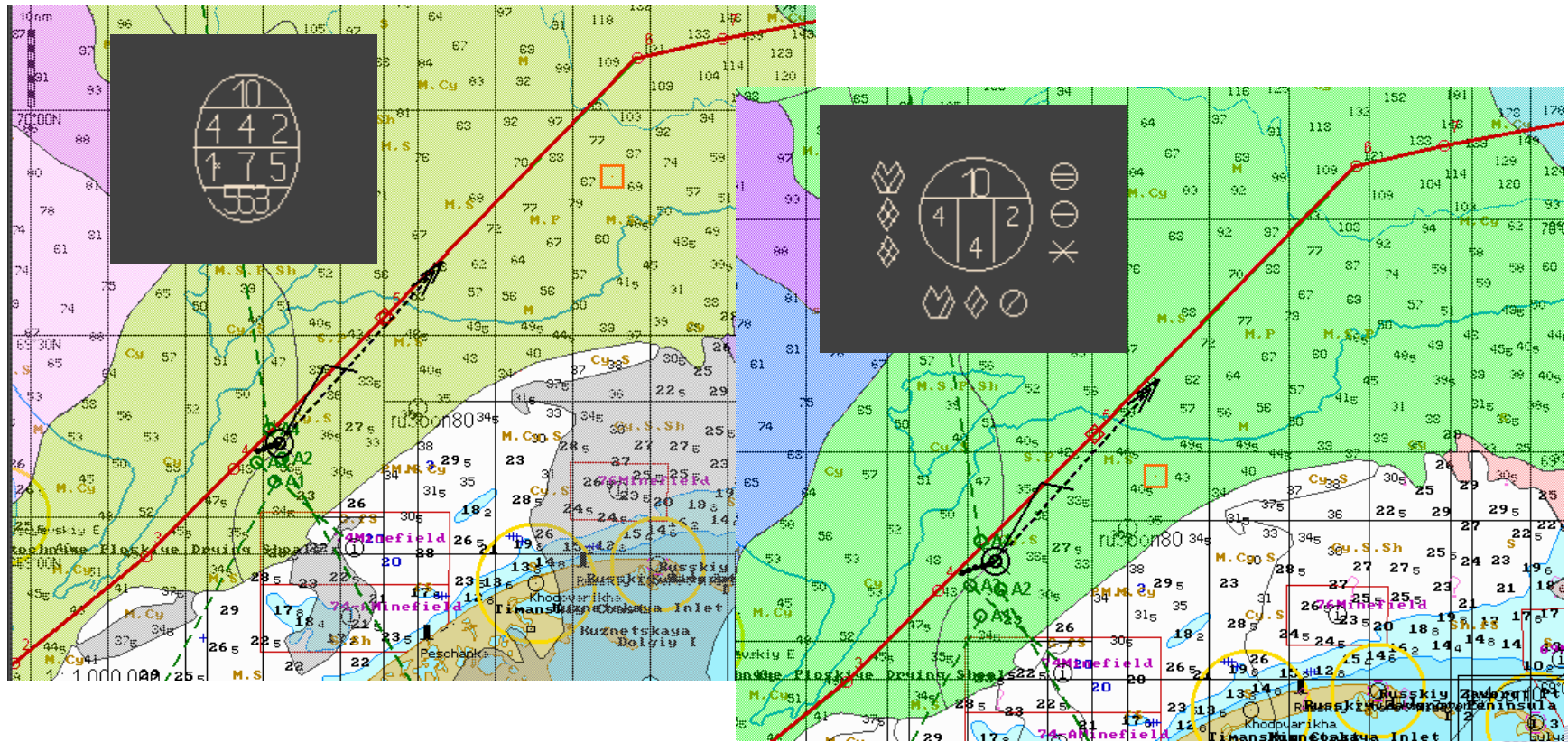
# Structure of a chart header

PRSP [Product specification]	100 (ice charts)
PROF [Application profile identification]	<ul style="list-style-type: none"><li>• 100 (current ice chart)</li><li>• 101 (forecast ice chart)</li></ul>
INTU [Intended usage]	<ul style="list-style-type: none"><li>• 100 (general current ice chart)</li><li>• 101 (detailed current ice chart)</li><li>• 102 (spatial current ice chart)</li><li>• 103 (forecast ice concentration)</li><li>• 104 (forecast ice hummocking)</li><li>• 105 (forecast ice compression)</li></ul>



# S-57 Ice charts

S-57 ice charts are displayed in ECDIS-MFD in conformity with Russian and International display regulations

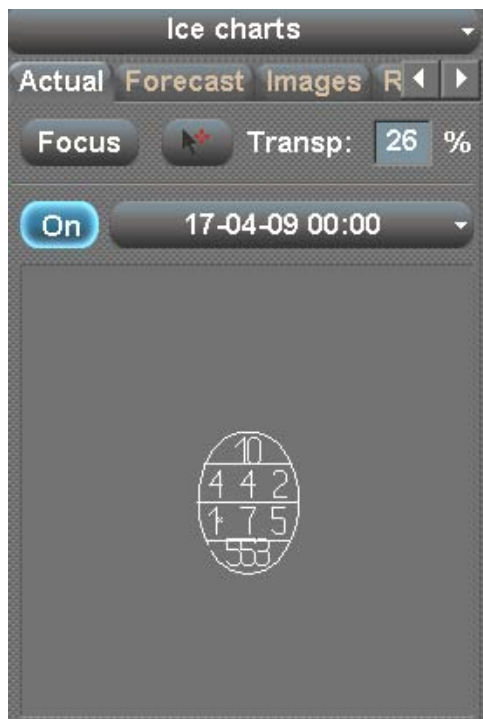




# Ice data management

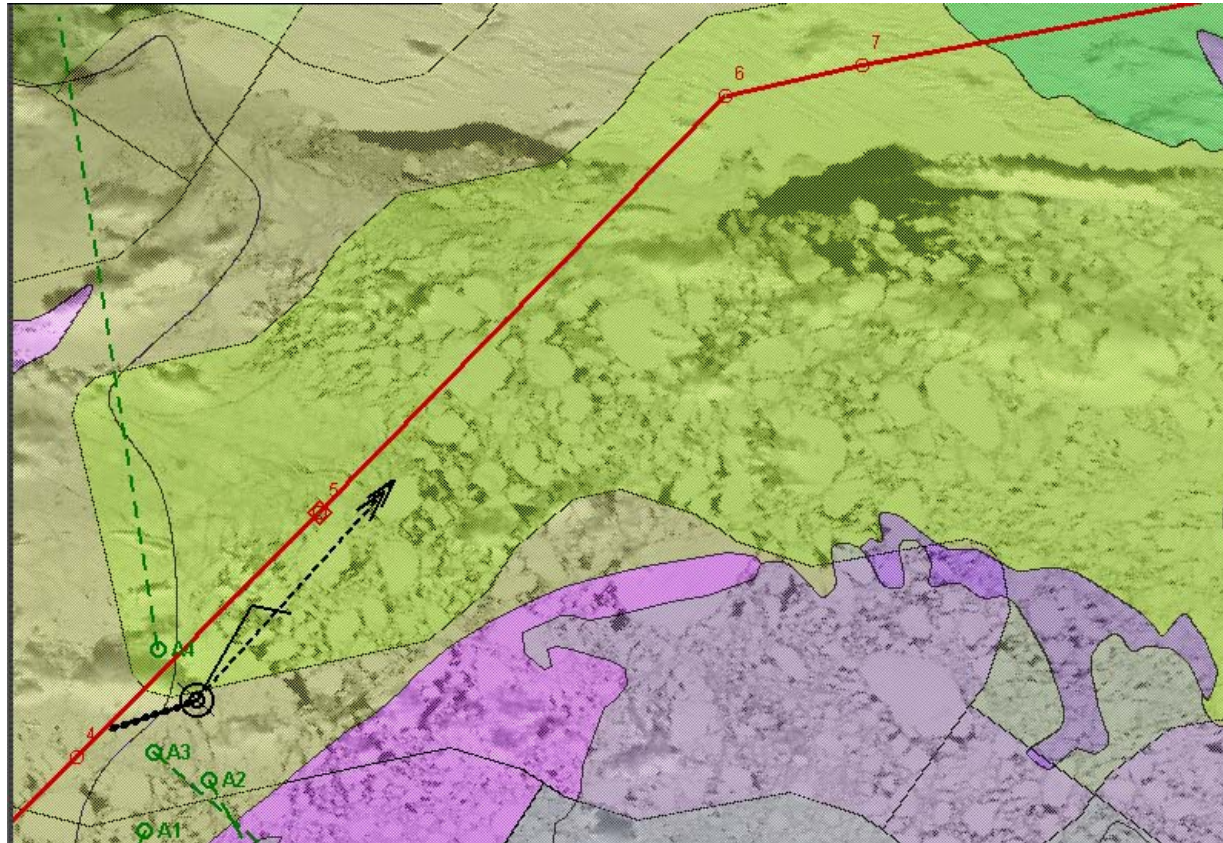
## Main info panel consists of 4 pages

- Actual Ice Charts;
- Forecast Ice Charts;
- Raster Satellite Images;
- Recommended routes;



# Ice charts in ECDIS

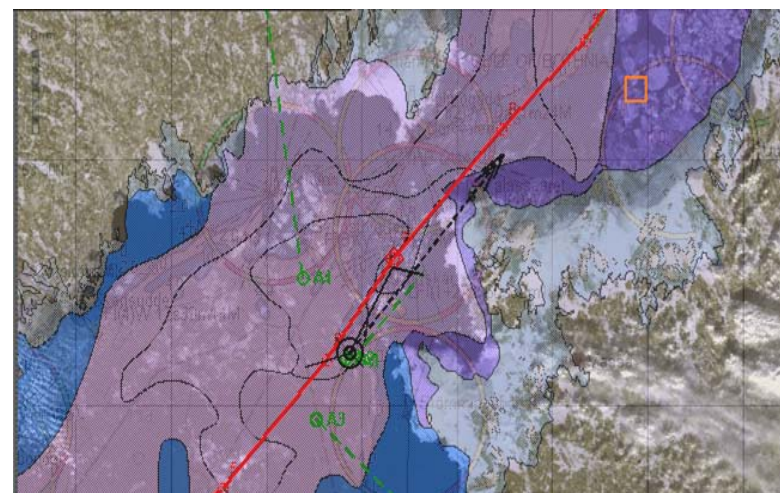
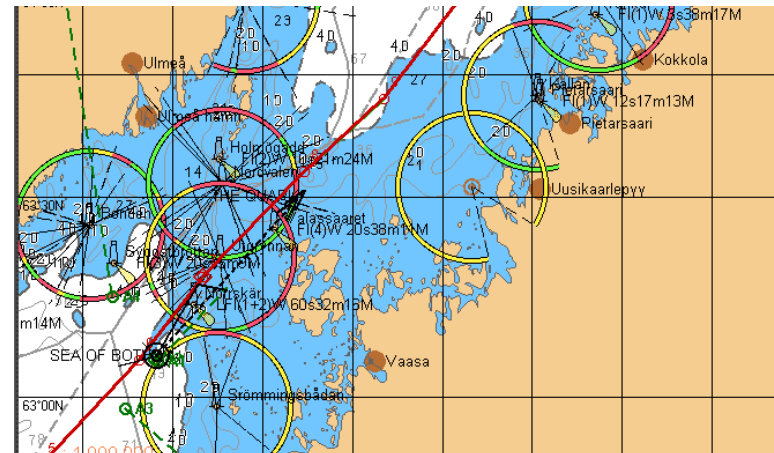
- Provides an operator with the combined navigational and meteorological information;
- Allows simultaneous display of up to 6 different semi-transparent layers:
  - NOAA images;
  - RadarSat images;
  - EOS images;
  - Actual S-57 ice chart;
  - Forecast S-57 chart;
  - Recommended route;





# Development tasks to complete

- Develop a common standard for ice objects/attributes and presentation rules;
- Register standard at WMO/IHO as S-10x;
- Define distribution and encryption means: S-63, data media, updating methods;
- Define national zones of responsibility for ice charts production
- Transas or other service provider could collect the charts from national providers and deliver to ECDIS





**THANK YOU**