Satellitengestützte Dienste für die maritime Wirtschaft

MARSAT
Satellite services and geospatial infrastructures for maritime industry

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Maritime Industry

Relevance in Germany:
70 Mrd € turnover
400,000 jobs

Topics:
- Safe Navigation
- Route optimization
- Coastal engineering
- Coastal zone management
- Environmental Impact Studies
...
Challenge

- Maritime industry aims to get more effective (costs, time and risks)
- Industry 4.0 concepts are becoming more and more relevant
  - Access digital data and operational information flows for decision making and management

- Satellite sensors, data and derived information are significantly increasing over the last years and in future – Era of Earth Observation –
- Value added information are relevant to the maritime industry but require integration into user’s workflows.
About MARSAT

• Aims to develop innovative solutions to bring satellite big data and value adds to the maritime market to increase efficiency and safety of navigation

• 2.5 year R&D project co-funded by the German government

• Teaming of 4 SME’s and 1 research organisation
MARSAT’s partner & network

- Maritime solution providers & integrators

- EO satellite data & service providers
About MARSAT

- Applications & Economical suitability
  - Integration into user environments
  - Information access, harmonization
  - Distributed IT and data platforms

- Range of relevant space **EO products and services**
  - EO data and product access
    - Value adding processes: Automation and cost reductions
MARSAT approach

EO-Ressourcen

Value adding processes

Supplementary data e.g. AIS, models, 3rd party services

Application Integration

Interfaces

Distributed IT infrastructures & data

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Use Case
Identification of floating objects
Data and information flow

Satellite data → Receiving stations → Archives → EOMAP processor and workflow system → 3rd parties

Copernicus Marine
WaveWatch III
DLR Neustrelitz

Product geodatabase

API

Automatic
Manual

User’s application / models → User

Viewer

Recording Value Adding Storage Access Application
Identification of floating objects
Simulation of potential drift based on wind and current data...
Identification of floating objects

... about 10,000 iterations...
Identification of floating objects

Identification of the likelihood of the occurrence 3 weeks after the recording

Source: Esa, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, U.S. Army Corps of Engineers, AeroGRID, IGN, and the GIS User Community
Search for the actual position using optical and radar imagery

Identification of floating objects
Use Case
Navigation in higher latitudes
Bringing most recent information on ice coverage to ships in higher latitude to support voyage planning and tactical navigation.

International Code for Ships Operating in Polar Waters (Polar code) 2017 forced to have up to date ice information on board.

**Challenge**
- Limited bandwidth
- Requirement to have ready-to-use information
Navigation in higher latitudes: Ice

AIS signal
request position
Luxspace

DNPS
EOMAP
request satellite data

ESA, NASA

Commercial providers
Models

TRENZ
ICE PAD

Download of selected data
Operational request of metadata

Icon by freepic
Navigation in higher latitudes: Ice
Use Case
Satellite Derived Bathymetry for bENCs
Improving bathymetric data for poorly surveyed areas
ENC update
ChartPlotter, 7Cs Satellite Derived Bathymetry: 10m grid
Satellite Derived Bathymetry for bENCs
Use Case
Innovative seastate data
Innovative seastate data

- High resolution nearshore hindcast information on wave and wind using satellite data (optical and radar) in combination with seastate models

→ ‘Measured’ information on wave (and wind) statistics for coastal areas worldwide → Rapid site characterization and data source to improve local hydrodynamic models
Innovative seastate data

Time Series

Coastal seastate statistics
Summary

MARSAT

- developed new ways to make use of modern satellite capabilities in the maritime industry
- created new information to support maritime industry
- Integrated information and data flows in user’s workflows/applications
Get engaged and be part of it, visit https://marsat-project.org

Next MARSAT user workshop
6th Sept. 2018 2pm, SMM show, Hamburg, DE