AIS analysis of current Short Sea Shipping - learning outcomes from the SloEuro project and current studies

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SSPA Research.

- Coordinates industry and society in development projects, applies for funding and participates and leads research projects
- Financed by public funding in Europe and Sweden
- More than 70 European projects since 1997
- SSPA develops new methods, tools, applications and commercial services and builds competence
- World-wide network
- World-class hydrodynamic facilities:
Recent and ongoing studies using AIS data

- Comparison of ship speed after SECA – SloEuRo
- Green steaming – Mona Lisa 2.0
- STM (Sea Traffic Management)
- Ship collision analysis
- Mapping Swedish short sea shipping using AIS data – NÖKS
- AIS in maritime research – Current status and future potential (a literature review study) – NÖKS
AIS (Automatic identification system)

- Implemented: SOLAS 2002 – All ships over 300 gross tonnage must be equipped with AIS transponder

**Different types of data**

- Static data: ship name, destination, ship length and width, draft, tonnage, cargo type, ETA, origin, etc..
- Dynamic data: position, course and speed etc..

- VHF – every 2-10 seconds

- When collected and stored, AIS becomes BIG DATA

- SSPA AIS: Collected, stored and processed since 2008
SloEuRo – Cost effective short sea RoRo shipping to combine SECA compliance with slow steaming
Comparison of ship speed after SECA

Red = 10-1.5 knots faster
Orange = 0.5 - 1.5 knots faster
Yellow = very little difference
Light green = 0.5 - 1.5 knots slower
Green = 1.5 – 10 knots slower
Green Steaming
Collision forces against bridges

- Dimensioning of bridges based on Monte-Carlo simulation
- Example from BjörnaFjorden – Axel Andersson, Ph.D. student. Axel.andersson @sspa.se
Sjövägen skall utvecklas till att vara en attraktiv, grön, säker och bärkraftig länk för godsflöden i och mellan länderna Danmark, Sverige och Norge

Olika fartyg krävs för olika typer av godsflöden och tomflöden av till exempel containers. Marknad och behov skall styra fartygstyper – inte bara teknikutveckling.
Mapping Swedish short sea shipping using AIS data (ongoing)

• Purpose: To map national short sea shipping pattern

• Method
  – Identification of national port areas
  – AIS data analysis of traffic pattern between ports
  – Routing pattern, distances, frequency, type of ship and type of goods
Traffic to national ports to and from Port of Gothenburg (more than 20 runs/year)
Traffic to national ports to and from Port of Malmö (more than 20 runs/year)
Oil products tanker (mmsi 265581970)

Identified on 43 runs

Most frequently seen between Malmö-Göteborg, but also sailing to other national and international ports.

No frequent routing pattern.
Ro-ro cargo ship (mmsi 212204000)

Identified on 40 runs

International (west) - Halmstad – Malmö - Internationel (east).
Routing pattern can be identified.
Container ship (mmsi 212636000)
Container ship,

Identified on 35 runs

Helsingborg-Göteborg/Århus-Kiel-Köpenhamn. Routing pattern can be identified.
AIS in maritime research – Current status and future potential (a literature review study)

• Purpose:
  – To provide a structured overview and synthesis of how AIS is used in maritime research
Number of papers

- About 150 papers in roughly 90 scientific journals
Findings show the different Areas of application of AIS data
Conclusions:
AIS can be used differently to solve various different research and industrial problems from which various problem owners can benefit
Conclusion and future research

Future Research

• On small scale – further model development
• Implementations (from research papers to practice)
Conclusion and future research

(Our) suggestions on future research
• Trends in regional, national and worldwide shipping
• Economical analysis, e.g. analysis of how capacities of ships influence spot price
• Effects of policy implications
• AIS and hydrodynamics
Thank you for your attention!

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