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UPDATE 29.5.2019
PA SHIP

Steering Group Meeting

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EU STRATEGY FOR THE BALTIC SEA REGION
FLAGSHIP

Interreg
Baltic Sea Region

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1. Status since the last PA Ship SC meeting

- Latest, most important activities

2. Which plans do you have

- for ensuring the dissemination of the results conveying the results to the policy level?
- for a possible continuation of the Flagship in the pipeline?

3. Any challenges?

4. Any changes in expected final results?

5. What kind of assistance and support you would like have from the PACs and the Steering Committee?

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ECOPRODIGI: What

- **Main Objective**
  To increase eco-efficiency in the Baltic Sea Region maritime industry through digitalisation

  To increase the institutional capacity of shipping companies, shipyards, suppliers and ports to improve the eco-efficiency of their current operations as well as to create and implement new digital solutions in the future

- **Project duration:** October 2017 – October 2020

- **Project budget**: 4,2M€

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ECOPRODIGI: How

Case 1: Digital Performance Monitoring

Case 2: Optimising Cargo Stowage

Case 3: Optimising Shipyard Processes

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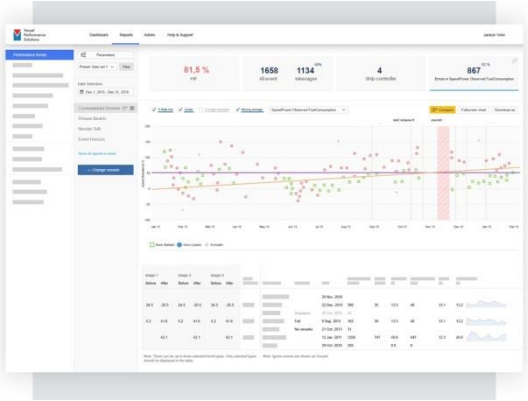
1. Status since the last PA Ship SC meeting: Case 1

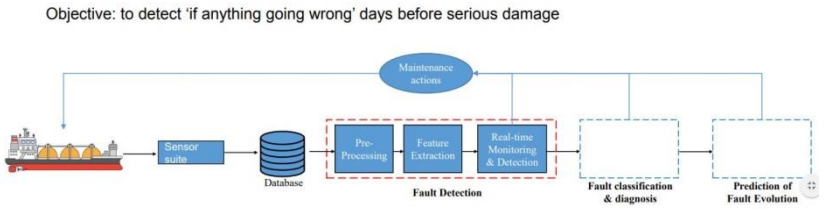
Case 1a: Digital Performance Monitoring / Island Ferries

- Fuel consumption and emissions **to be reduced 5-20%** per route due to data driven vessel operations
- Results obtained from pilot Autumn 2018 to be validated Spring – Autumn 2019

Solutions in progress:

- Digital data capture from engine and bridge systems via sensors, flowmeters, canbus / modbus etc.
- Data logging via IOT device (up to 50 channels) + use of AIS, DMA data sources
- Connectivity via 4G and storage in Azure Cloud





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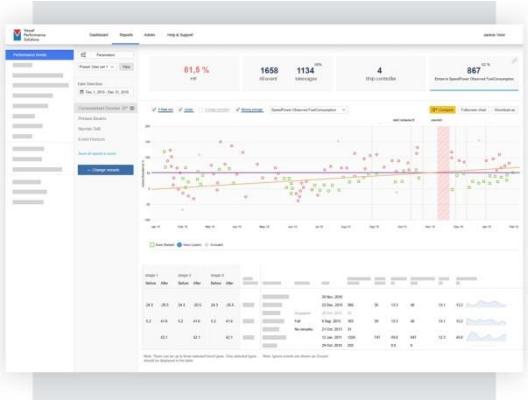
1. Status since the last PA Ship SC meeting: Case 1

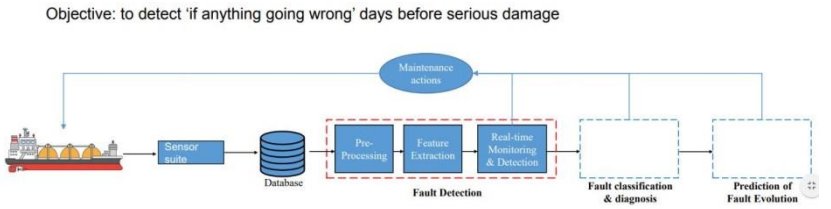
Case 1b: Digital Performance Monitoring / J.Lauritzen

- **Fuel consumption and emissions to be reduced 3-6%** due to data driven operation and maintenance of vessels and equipment

Solutions in progress:

- Digital data capture from engine and bridge systems via sensors, flowmeters, modbus etc.
- Data logging via IOT device (up to 500 channels)
- Connectivity via 4G / Satellite and storage in Azure cloud
- "Performance on board" visualizations / reports
- AI models enabling pro active diagnostics of engine break downs
- AI models for hull and propeller performance based on Autolog, AIS and Hindcast data





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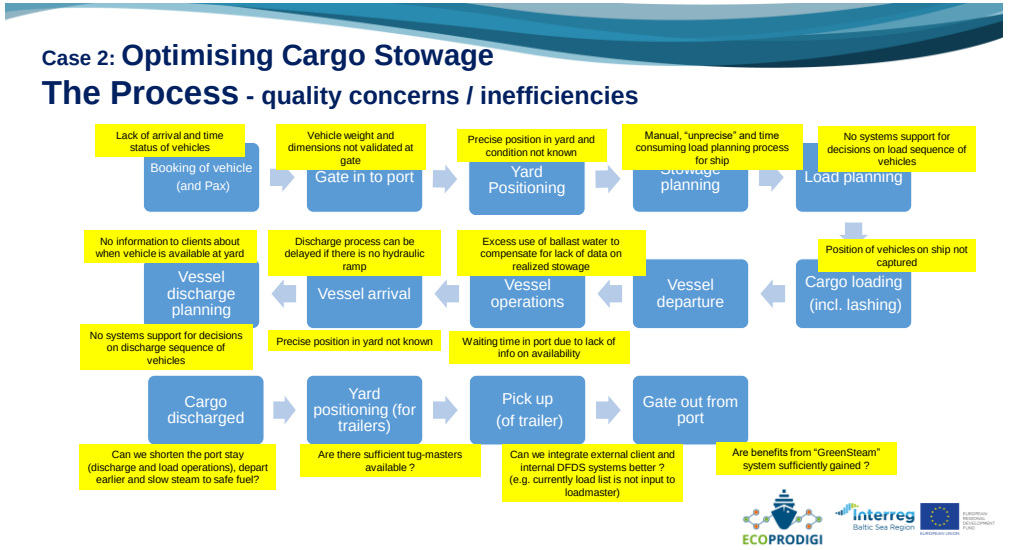
1. Status since the last PA Ship SC meeting: Case 2

Integrated Logistics & Cargo Stowage

- **Fuel consumption and emissions to be reduced 5-10%** per route and service benefits to be achieved for RoRo clients
- 5-10% efficiencies gained at terminals for load / discharge processes

Solutions in progress

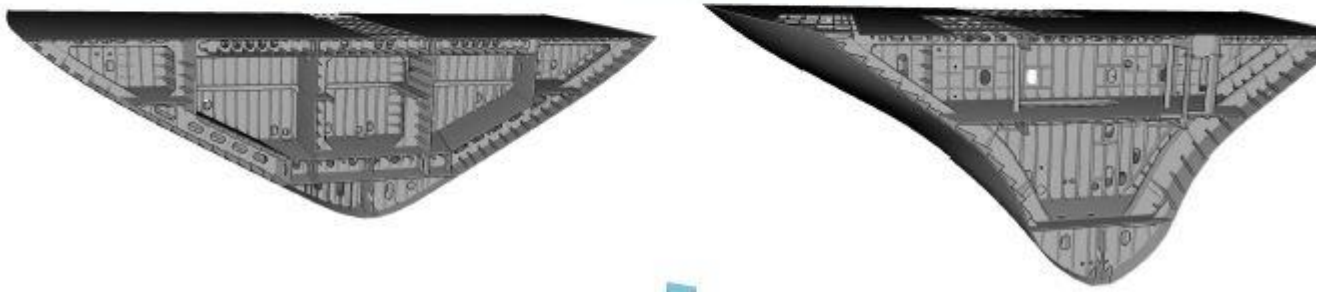
- Benchmarking of solutions for digital data capture for cargo units (dimensions, weight, positions, damage) at terminals / onboard ship via cameras, drones, track units etc.
- Development of shared 2D / 3D data models for cargo units, vessel etc. and closer data integration across IT applications and functions (commercial, terminal, vessel etc.) to improve precision of stowage and eliminate inefficiencies
- Enhanced AI models for optimising stowage, ballast and trim of vessels to save fuel
- AI model to predict ETD for cargo units (app. 70% accuracy +-1h)
- 2D /3D Simulation models /logic and visualisations (digital twins) to enable efficiency gains for loading / discharge operations



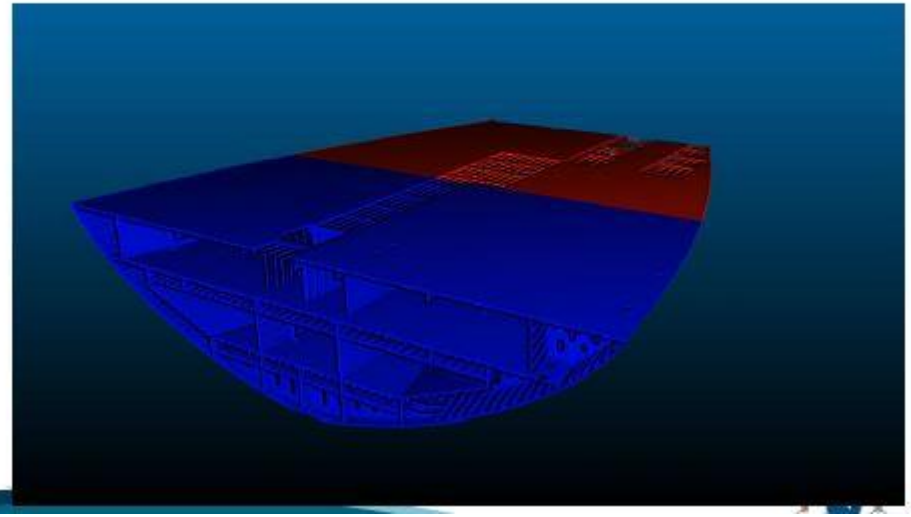
1. Status since the last PA Ship SC meeting: Case 3 – Optimising Shipyard Processes

Hackathon on 3D-scanning usage

- Two blocks, 1A & 2C. Being produced in Klaipeda
- Shipped to Turku for assembly, welding, onto ship
- Geometrical fit in assembly onto ship is critical, adjustments are costly
- 100-180 control points are measured to make sure, 3-5 hours with total station. (1-3 blocks per week measured currently)



The 1A and 2C blocks



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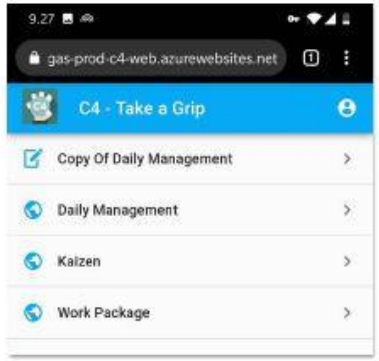
1. Status since the last PA Ship SC meeting: Case 3 – Optimising Shipyard Processes

Case MAC – Background and current state analysis

- MAC (Marine Airconditioning Center) was selected for a Pilot Case
- Target
  - Map inefficiencies in processes, identify improvement possibilities and test those in practice
- Carinafour started with a very detail current state analyses, where current tools, processes and human behaviors was evaluated
- Carinafour identified the bottlenecks within supply chain and started development projects:
  - Production planning
  - Work planning
  - Material logistics
  - Daily Management

1. Status since the last PA Ship SC meeting: Case 3 – Optimising Shipyard Processes

C4 - CALS & TaG



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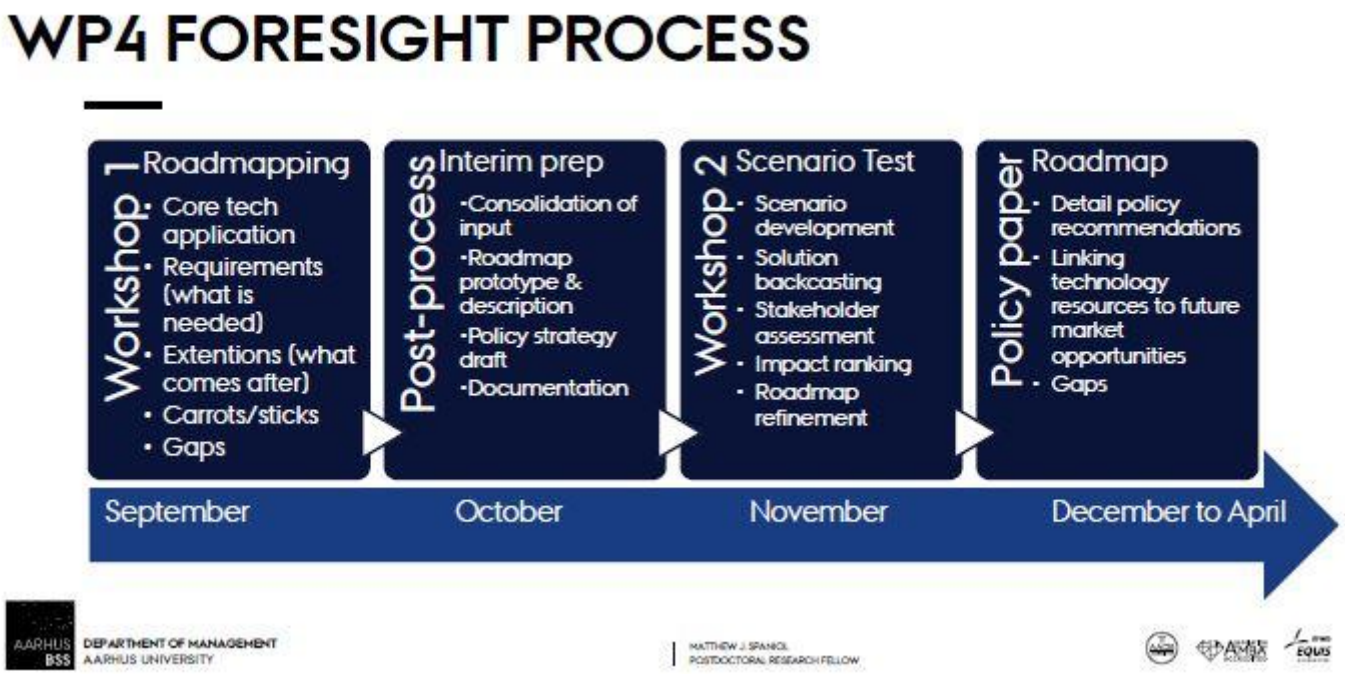
1. Status since the last PA Ship SC meeting: Work Package 4

WP4: Improving Seedbed for eco-efficient digital solutions



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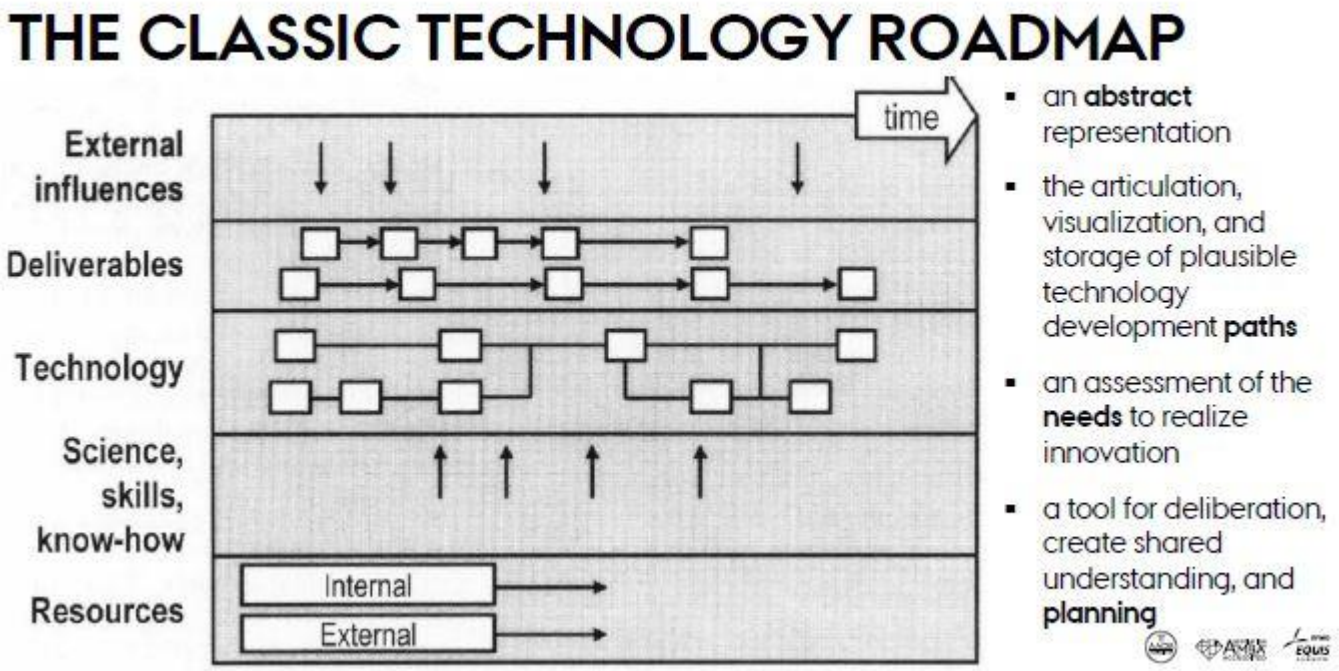
WP4: Improving Seedbed for eco-efficient digital solutions



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WP4: Improving Seedbed for eco-efficient digital solutions

- **CASE 1: VESSEL PERFORMANCE**

Example:

-Standardized ship data formats

- **CASE 2: CARGO STOWAGE**

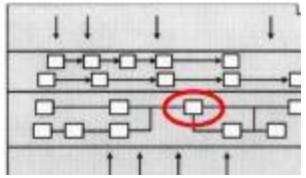
Example:

Tracking cargo from port entry to exit.
(cargo planner's dream)

- **CASE 3: SHIPBUILDING**

Example:

-Digital twin delivery at same time as physical twin



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1. Status since the last PA Ship SC meeting: Work Package 4

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1. Status since the last PA Ship SC meeting: Work Package 5

Policy seminar
21.5.2019

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1. Status since the last PA Ship SC meeting: Work Package 5

Today's Agenda

9.30 – 9.45 **Welcome to the seminar & introduction to ECOPRODIGI project**

- ***Milla Harju***, *ECOPRODIGI Project Manager, Pan-European Institute at the University of Turku*

9.45 – 10.30 **Keynote: *Protection of the seas and sustainable maritime logistics in Finland's maritime policy***

- ***Eero Hokkanen***, *Senior Specialist, Ministry of Transport and Communication, Climate and Environment Unit*

10.30 – 10.45 **Break for stretching and networking**

10.45 – 11.30 **ECOPRODIGI industry case 3: Optimising industry processes at shipyards – objectives and preliminary results**

- **Project representatives ,** *Chalmers University of Technology & Meyer Turku*

11.30 – 12.30 **Lunch (at own cost)**

12.30 – 13.15 **Keynote: *Digitalisation - way to remove the inefficiencies in shipping***

- ***Tero Hottinen***, *Director, Emerging Digital Business, Cargotec Corporation*

13.15 – 13.30 **Break for coffee and tea**

13.30 – 14.45 **Panel discussion: Public and private sector actions in the digitalisation of maritime industry – who should steer the transformation?**

Introduction & moderation:

- ***Valdemar Ehlers***, *Technical Director, Danish Maritime*
- ***Emilia Tuominen***, *ECOPRODIGI Communication Manager, Centrum Balticum*

Panellists:

- ***Ari Viitanen***, *Chairman of the Board, Carinafour*
- ***Anssi Lappalainen***, *R&D Project Manager, Ship Intelligence, Kongsberg Maritime Finland Oy*
- ***Johanna Salokannel***, *Project Manager, Sea Traffic Management Validation*
- ***Johannes Hyrynen***, *Vice President, Digital Engineering, VTT Technical Research Centre of Finland Ltd.*
- ***Vilja Klemola***, *Senior Specialist, Ministry of the Environment*

14.45 – 15.00 **Summing up & next steps of ECOPRODIGI**

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1. Status since the last PA Ship SC meeting: Work Package 5

2. Plans:

To ensure the dissemination of the results conveying the results to the policy level

A possible continuation of the Flagship in the pipeline

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3. Any challenges?

- Communication between partners
  - Addressed several times
- Unclear work plan
  - Review of scope and plan with the partner
- Reporting…
  - Time & effort!

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4. Any changes in expected final results?

Outputs:

1. **Synthesis of eco-inefficiency and technology outlook**
   Expected in October 2019 from UTU/PEI
2. **Yard eco-efficiency through 3D-scanning technology**
   In progress with WBE, Meyer Turku, Chalmers
3. **Digitalisation roadmap for increasing eco-efficiency**
   Preparations under way with Danish Maritime
4. **Training programme for shipping companies and ports**
   Work under progress @ USN & Chalmers
5. **Training programme for shipyard ecosystems**
   Work under progress @ Machine Technology Centre
6. **Agenda for increasing digitalisation and eco-efficiency**
   Preparations under way @ UTU

….therefore, not at the moment!

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5. What kind of assistance and support you would like to have from the PACs and the Steering Committee?

- Communication
- Access to networks
- Consultation

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THANK YOU !

Questions?

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