Journey towards autonomous ships in the ship intelligence era

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Digitalisation – disruptive change

- Internet of Things
- Industry 4.0
- Big Data
Digitalisation in the marine market

The dawn of the Ship Intelligence era
Shipping trends - management

"Total awareness"

Asset management

Health management
Integrating ship and shore
Shipping trends – operation

Integrated part of supply chains
Shipping trends - business

Consolidation

New players and digital alliances
New players?

Investors

Digital market place

Asset management
Disruptive change
Autonomous ships
Unmanned trend in society

It is not IF, but WHEN…
Remote and autonomous operation

Remote

Autonomous
Safety

Safer than before

Fewer accidents

Human error factor

No piracy victims

Humans out of harms way

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Remote controlled ships - features

- More cargo
- Lower power demand
- No hotel systems
- No deck house
- Redundant machinery
Energy reduction

Lower weight: 700 – 1,000 ton

Wind resistance: ~1% saving

Reduced hotel load: 200 – 270 kW

Lower operating speed?
Cost structure

General cargo annual costs

- CAPEX: 27%
- Manning: 38%
- Insurance: 4%
- Stores: 7%
- Maintenance: 2%
- Management & Administration: 3%
- Lubricating Oils: 2%
- Fuel: 17%

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Cost - transport

20,000 dwt general cargo vessel

Transport cost (cost / ton * nm)

- Cost [cnt / ton * nm]
- Speed [kn]

Conventional
Unmanned

-22%
Development areas

- Remote control centres
- Remote controlled systems
- Health and safety management
- Communication
- Cyber security
- Operation optimisation
- Situational awareness systems
Example: positioning systems

Features:
- Various positioning systems
- Full redundancy

Key criteria:
- Integrity
- Security
- Accuracy
Rules and regulations
Legal aspects

Marine liability

Product liability
Autonomous ships will start with local applications!
Finnish Ecosystem for Autonomous Ships

Ecosystem for Autonomous Ships

Finland aims to operate world’s first autonomous ship system in 2025

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Redefining shipping!
“The best way to predict the future is to create the future.”