

# Autonomous shipping

More than just a technical challenge

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# Overview

- Technical challenges
- Social challenges
- ELSA research
  - Regulation Issues
  - Traffic Management
  - Stakeholder Acceptance
- Outlook



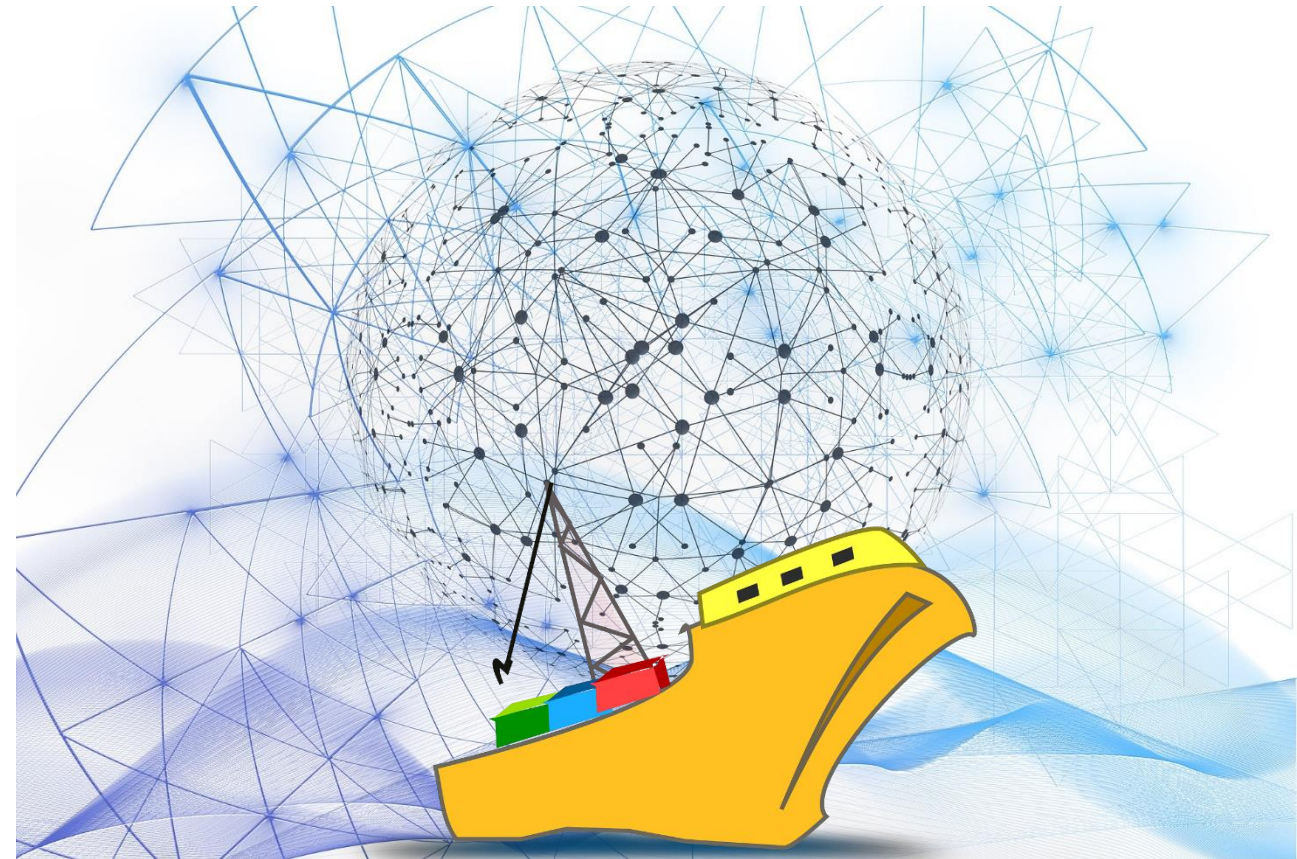
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# Technical challenges

- Does an autonomous ship sense the surrounding environment and traffic conditions as reliably as a crew?
- Can an autonomous navigation system make the same competent navigation decisions as an experienced captain?
- Are the autonomous ship's systems protected from cyberattacks?  
How do you protect unmanned ships from piracy?

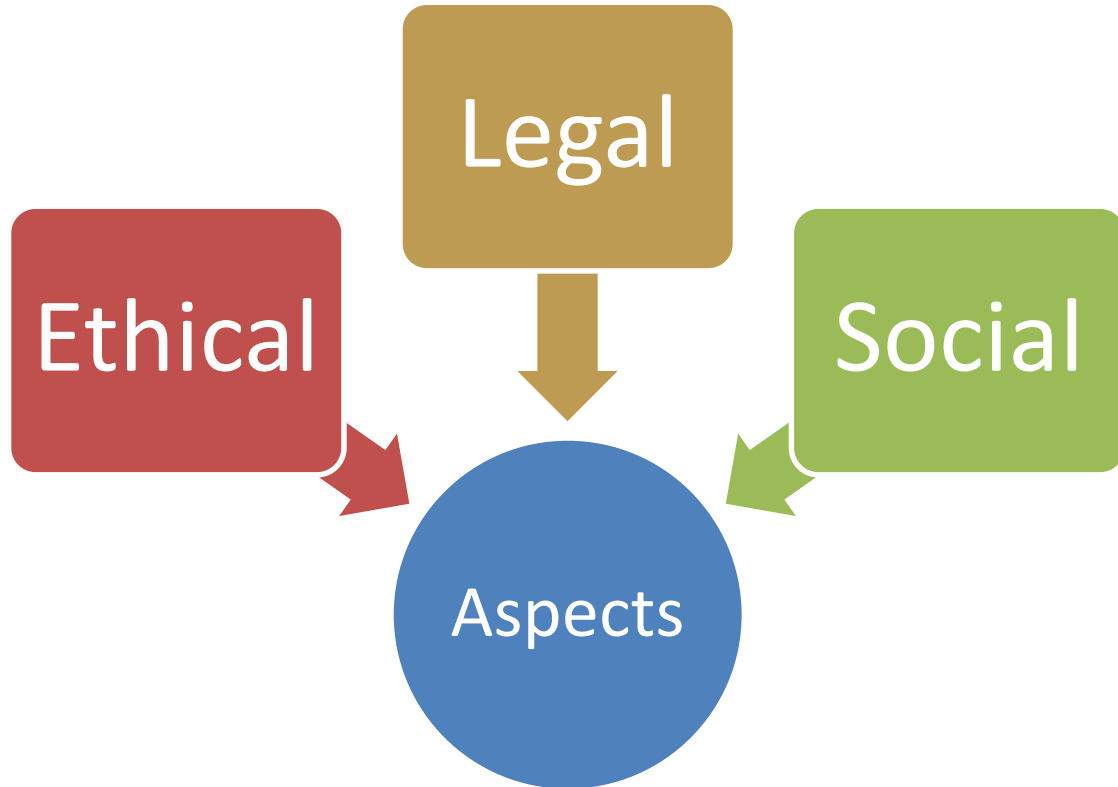


# Are there social challenges?

- Autonomous ships are not islands!
- We don't know all the challenges that we have to face
  - Some conflicts already exist
  - Others will only manifest with market introduction or market penetration.
  - Some are predictable.
  - Some are not predictable.
- Regulation of shipping
- Vessel traffic services
- Acceptance of technology change



# Monitor technology change through ELSA research



1. **Analyzing** and finding solutions to already **existing conflicts**
  - Regulatory conflicts
  - Stakeholder participation
2. **Identification of future conflicts** that will arise with technology implementation
3. **Raising the awareness of the scientific community** to the needs and concerns of users and the general public





# Regulating Autonomous Shipping

- **The current law is** essentially based on international law treaties drafted many decades ago and is therefore **outdated**.
- **The central legal problem** is not so much the autonomous navigation of ships, but rather the operation of **unmanned ships**.
- **The IMO is drafting a new legal regime** for autonomous and unmanned ships in the course of the coming years  
(entry into force planned for 2028)



# Vessel Traffic Management



Source: Fraunhofer FKIE / LEAS Project

- With the introduction of autonomous ships to the market, **traffic control is confronted with an unknown traffic scenario**, a mixed traffic of conventionally manned ships, remotely controlled ships and fully autonomously operating ships.
- What will traffic monitoring of the future have to look like in order to continue to **ensure the safety of shipping traffic** despite increased complexity?
- Does the existing **legal framework** of traffic monitoring and traffic management **need to be adapted**?



# Acceptance Research

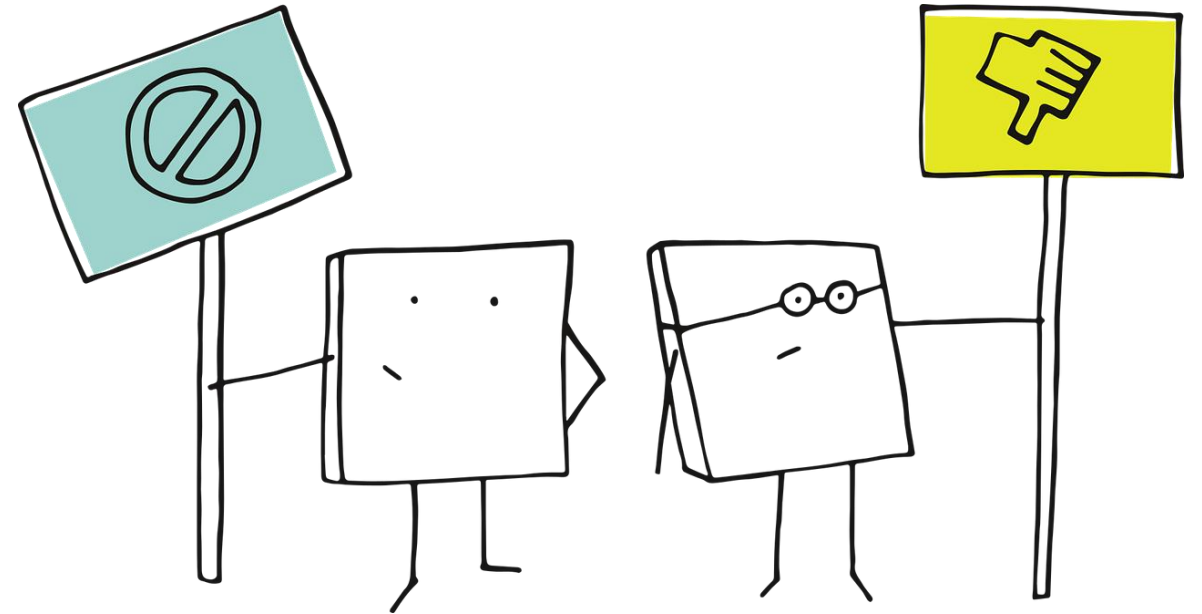
- Is it possible to implement a **new technology against the will** of the population, against the will of the users and, if necessary, also against the will of politics?

## Concerns:

- Fear of job loss
- Doubts about the **safety of autonomous shipping**

## Opportunities:

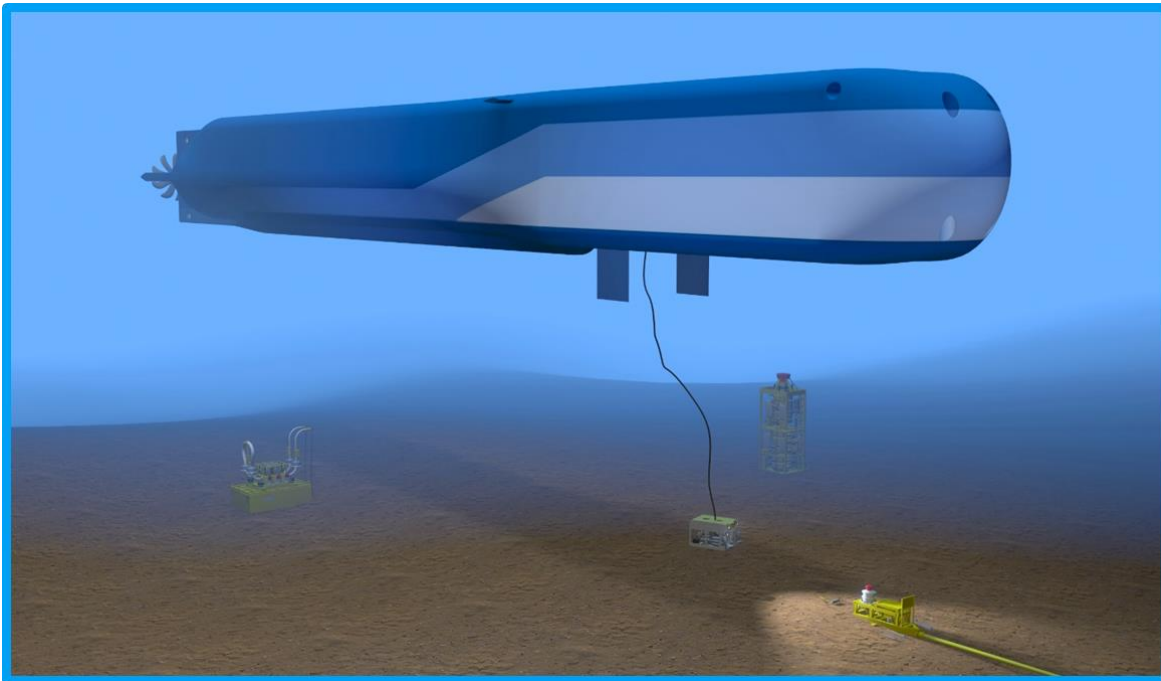
- Sustainable shipping
- Improvement of working conditions





## ...and this is only the beginning!

- Digitalisation and autonomisation are drivers of a transformation of the maritime economy.
  - Will the underwater world be commercialized?
- Is the profession of seafarer dying out, threatening a significant loss of maritime culture?



Source: tkMS / MUM Project



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Thank you for your attention!  
Have a nice day!



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