



UNMANNED MARITIME SYSTEMS: THE FUTURE?

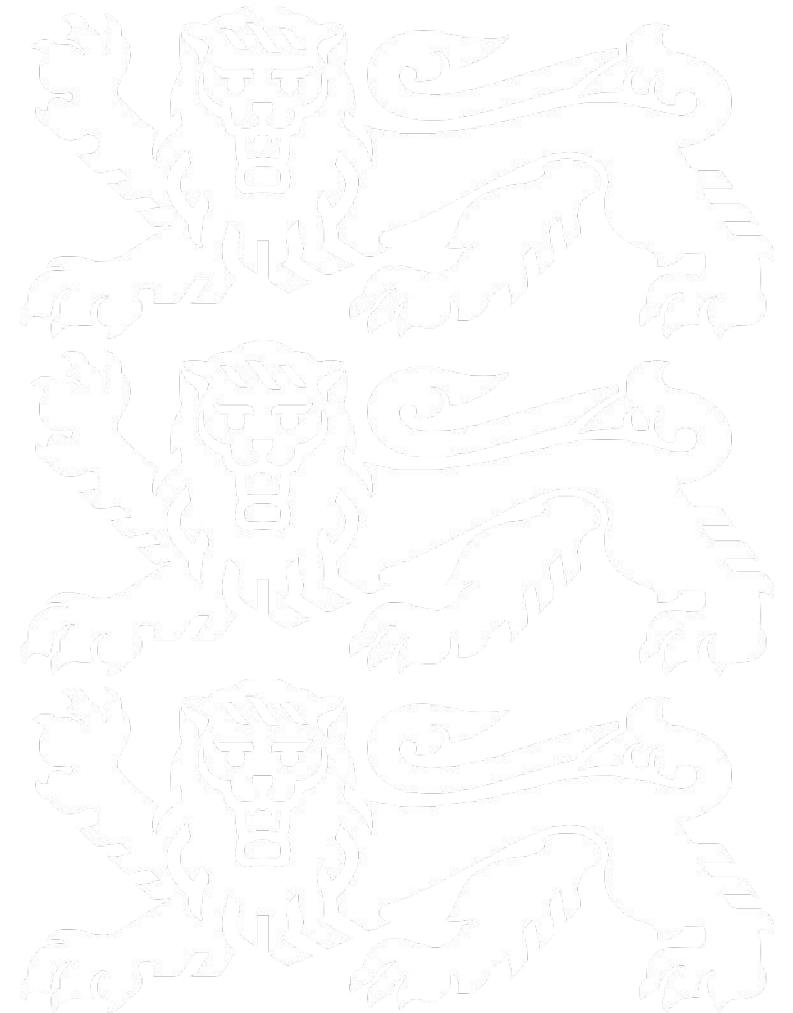
CDRE (OF-6) Ivo VÄRK, CHON, EST N

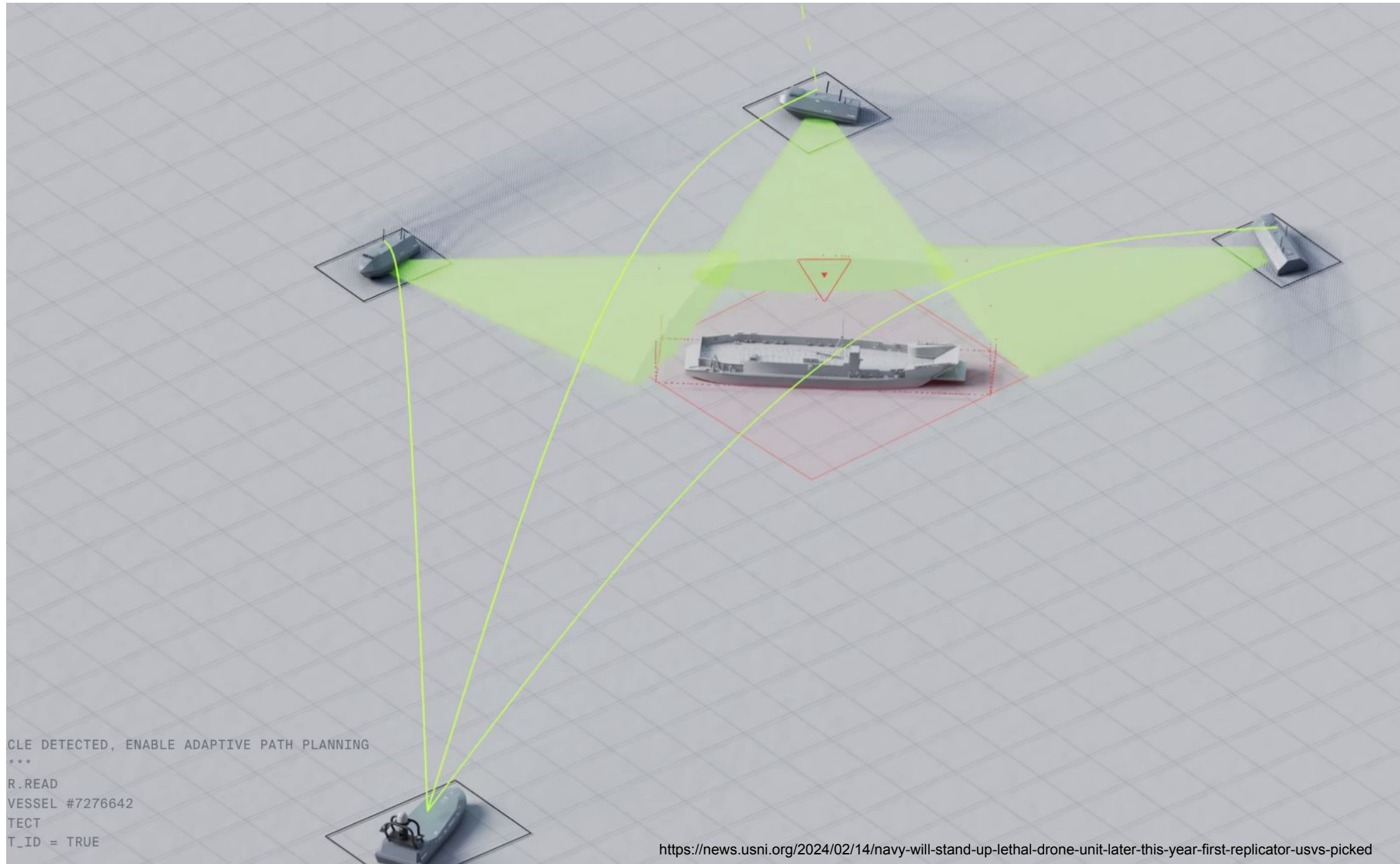
NAVY TECH 2025

Helsinki, FEB 2025

AGENDA

- **Balancing the Scales:**
 - Manned vs. Unmanned in a Small Navy
- **Unmanned Systems in CSW:**
 - Navigating Risks and Opportunities
- **Managing Expectations:**
 - Wishful Thinking vs. Reality



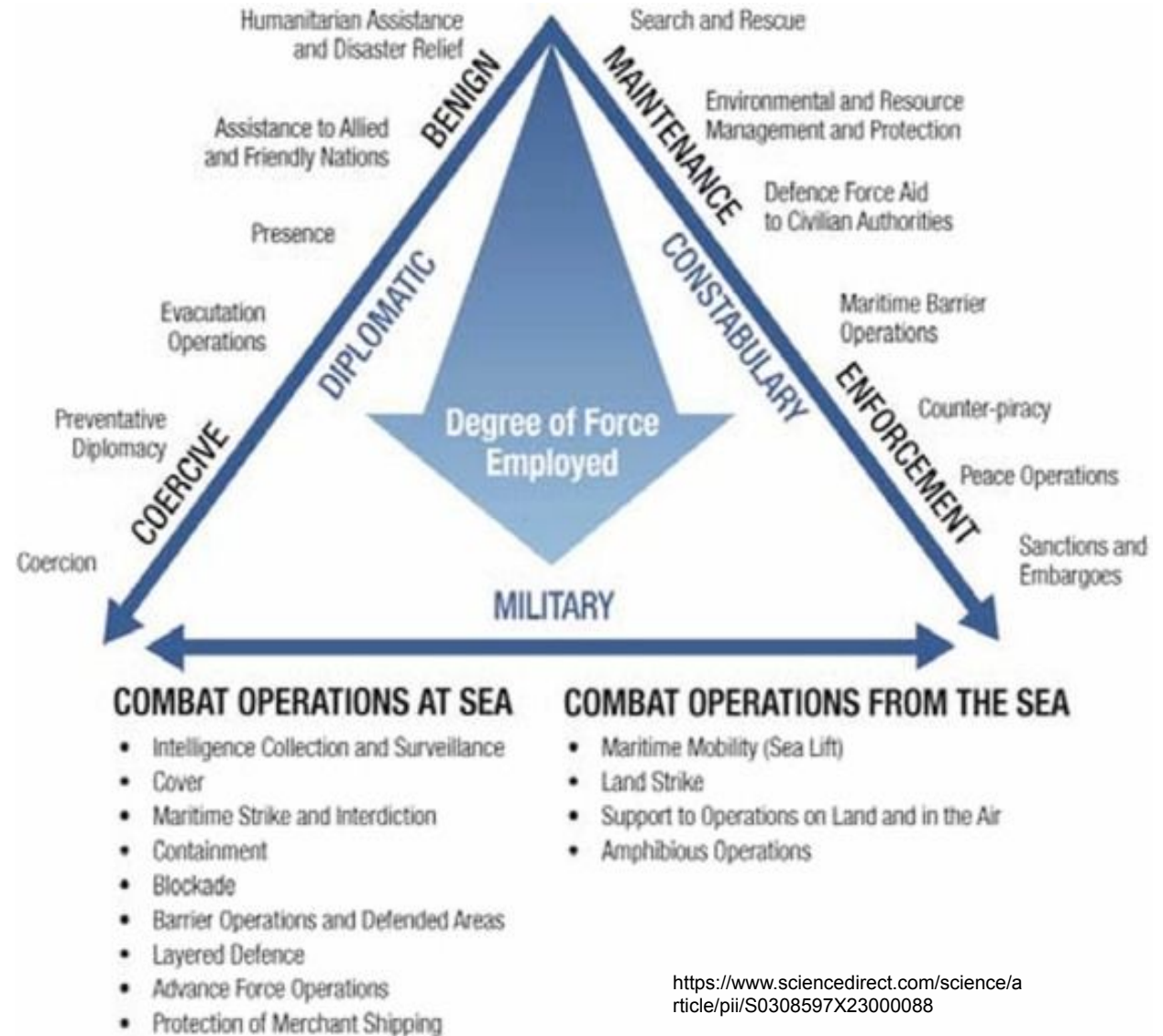


Balancing the Scales

- Warfighting
- Constabulary Tasks
- Future Fleet Design

„The issue, however, is that whilst military functions can arguably be completed just as well by autonomous systems at lower cost and with less risk, the same is not true in other areas of the span of maritime tasks. This means that USVs are unlikely to prove the “magic bullet”, that has been claimed [...] If, however, budgetary pressures and the current focus on peer competition remain, then the ability of navies to conduct peacetime operations will be eroded as they begin to embrace autonomous technology. This, in turn, will undermine the flexibility of navies, something that is an essential attribute of their value as a tool of statecraft.“

Richard Dunley, Uncrewed naval vessels and the span of maritime tasks, Marine Policy, Volume 149, 2023



<https://www.sciencedirect.com/science/article/pii/S0308597X23000088>

Unmanned Systems in CSW

- Risk
- Opportunities

<https://www.io-warnemuende.de/files/forschung/mediathek/iowtopo/iowtopo2.jpg>

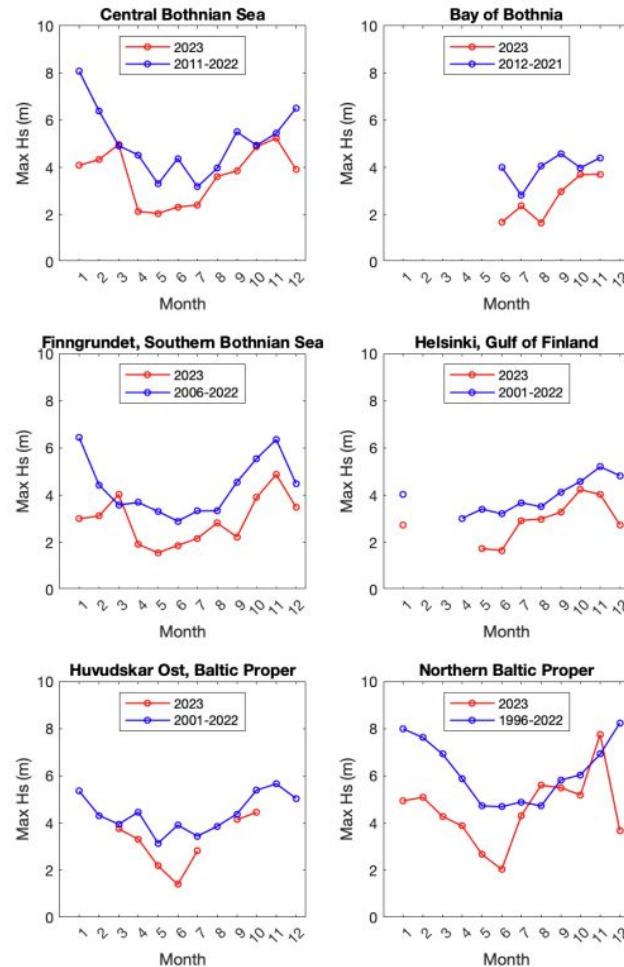
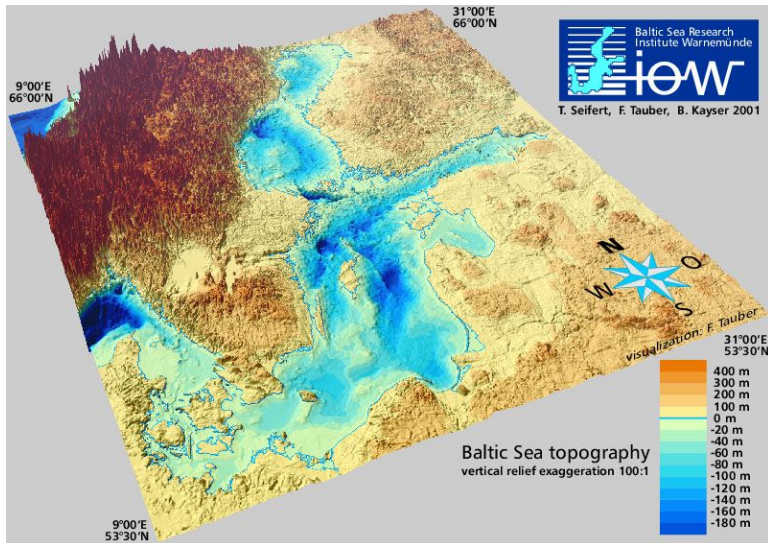
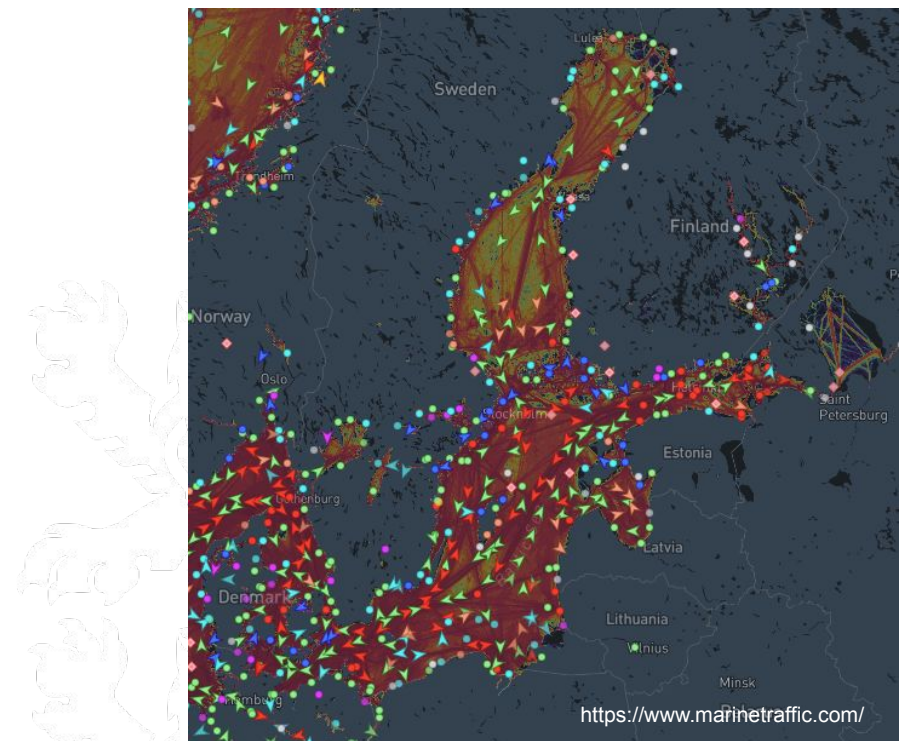
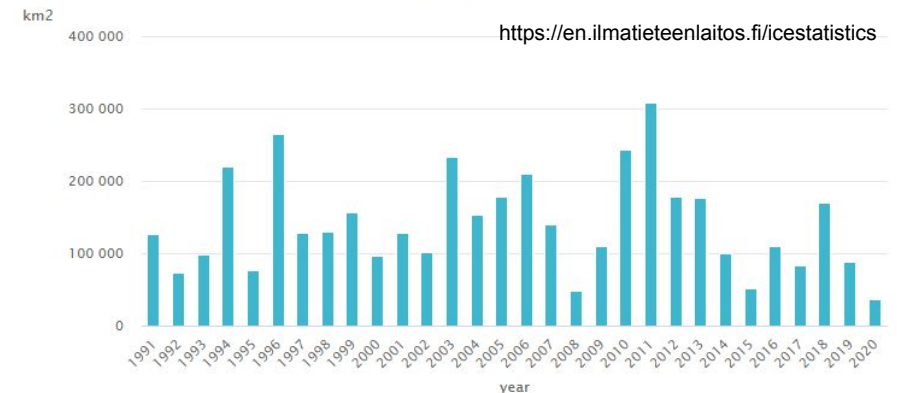


Figure 4. The monthly maxima of significant wave heights in the Gulf of Bothnia, the Gulf of Finland and the Northern Baltic Proper. Data gaps occur in some of the months.



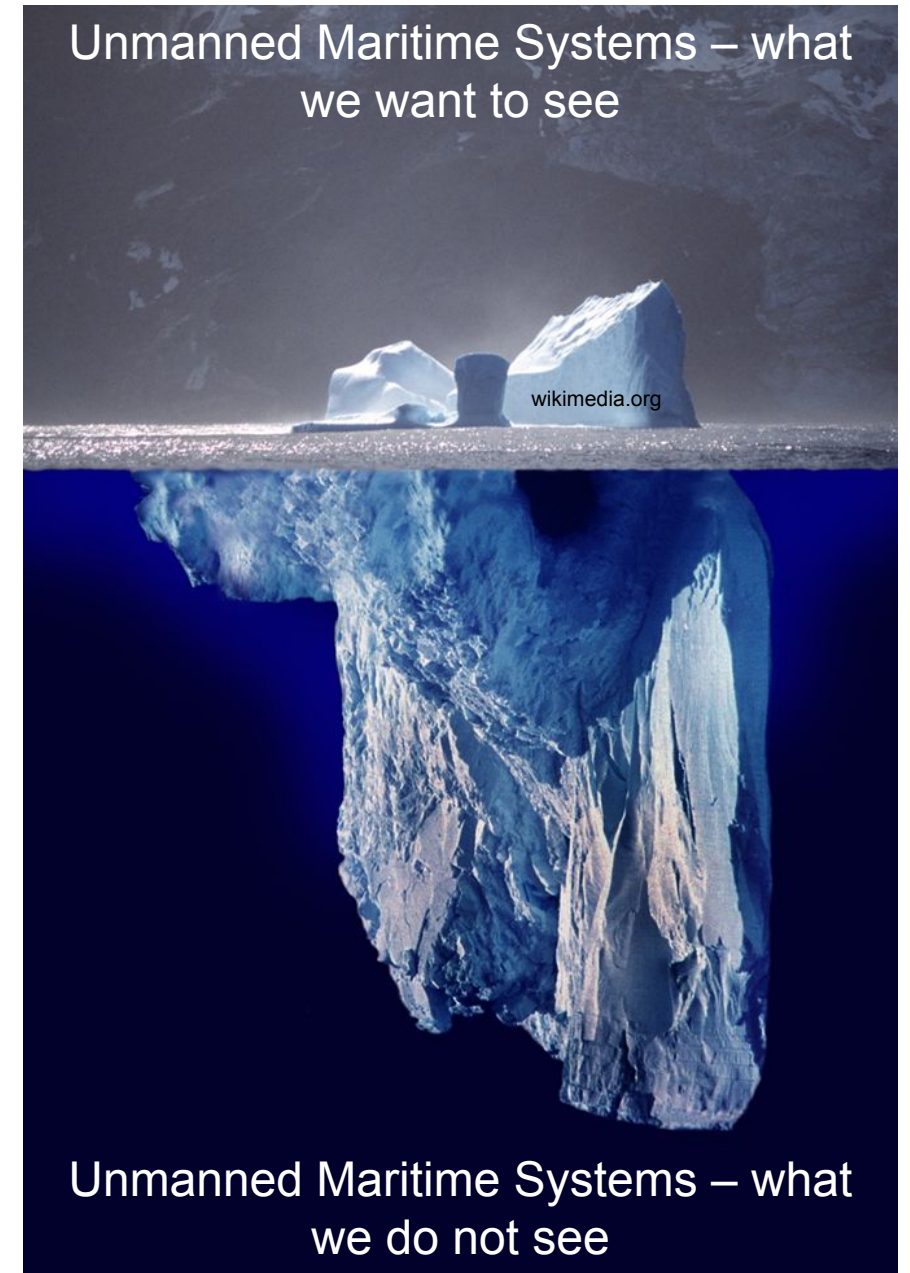
The maximum ice extent in the Baltic Sea

1991-2020



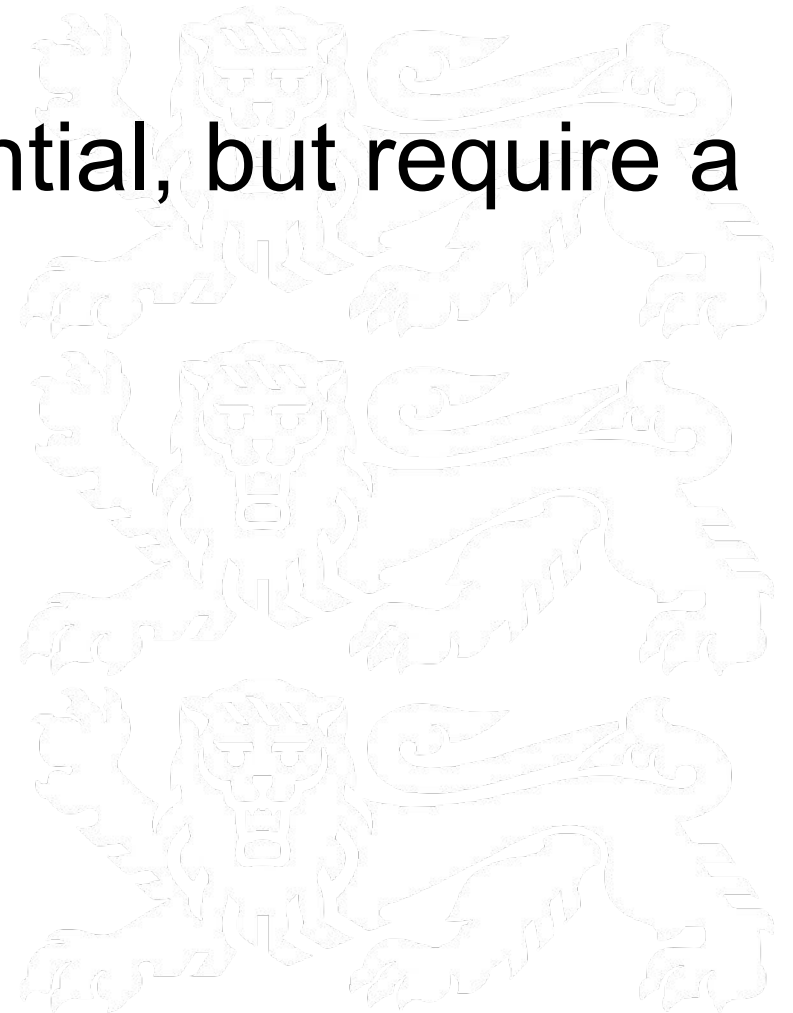
Managing Expectations

- Hype vs. Reality
- The Hidden Ecosystem
 - Data Infrastructure
 - AI and Machine Learning
 - Cybersecurity
 - Logistics and Support
 - Mannig Considerations
 - Cost-benefit Analysis



Conclusions

- Unmanned systems: there is potential, but require a holistic approach
 - Enemy has a vote!
 - Operational environment
- Supporting ecosystem required
 - Defence industrial base



Remote-Control Speedboat Uncrewed Surface Vessel (USV) - Comparison

The commands available included

- System test
- Engine start, engine stop
- Set Rudder position
- Turn on a light, to enable the boat to be tracked at night
- Detonate the warhead, to prevent capture of the boat if it missed its target

Spool of wire
Control signals
20km long

17 Metres

1915 - Fernlenkboote
Imperial German Navy



2.5 Metres (App.)



30 Knots

Estimated Length: 5.5 Metres

Possible Radio
Control

Petrol Engine

700kg Explosive

Reported Open-Source Information

- It is based on the capacity to target from afar.
- In built-in explosive and camera allow a lethal targeting capacity, although limited.
- The remote human control could be taken in when closer to the target.
- Possible cost reported \$250.000.

Sources

Defese Express (UKR), BBC, H I Sutton, USNI,
Standing Well Back, Navy Recognition, Modelling News
Mikr Mir, Wikipedia

Dr. Giangiuseppe Pili

2023 - Uncrewed Surface Vessel
Ukrainian Navy



Cameras

Possible
Light

Detonators