

Autonomous Shuttle Ferry Ferry in Trondheim

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NTNU
 Kunnskap for en bedre verden



- Technologically feasible
- Scalable and reconfigurable system
- Low environmental footprint and cheaper than bridge
- A new tourist attraction for Trondheim City

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TRONDHEIM | 15



Hvis den førerløse ferja blir en realitet, skal den gå mellom Ravnkloa og Vestre kanalhavn i Trondheim. Illustrasjon: SVEIN AANOND AANONSEN, Institutt for Marin Teknikk, NTNU

Kan bli først i verden på førerløse passasjerferjer

Innen 2019 kan Trondheim få ei ferje som frakter folk fra a til b, helt uten innflytelse fra mennesker.

Hvis ferja blir en realitet, skal den gå mellom Ravnkloa og Vestre kanalhavn. Hele tre Institutt ved NTNU skal være med å lage teknologien som kan gjøre Trondheim til verdensledende innen nyskapingende persontransport.

«Norske er på vei»

Tips oss om det du er opptatt av i byen vår!
 Telefon 07200 – sms/mms med kodeord TIPS
tips@adresseavisen.no

Lillelederen
Trampe og Plaske

Trondheims første ferje med robotteknikk er på vei. Den skal gå mellom Ravnkloa og Vestre kanalhavn. Siste del av ferja er nå ferdig. Den skal gå mellom Ravnkloa og Vestre kanalhavn. Siste del av ferja er nå ferdig. Den skal gå mellom Ravnkloa og Vestre kanalhavn. Siste del av ferja er nå ferdig.

Abonner på Adresseavisen

Slik annonserer du

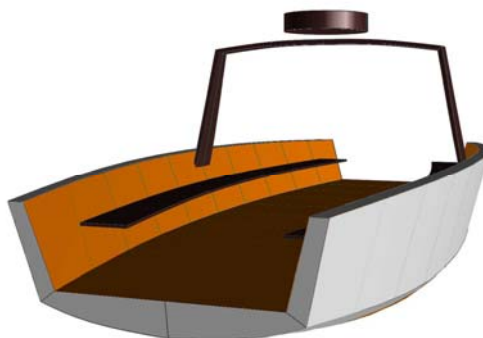


Kunnskap for en bedre verden

Department of Electronics Systems
Department of Engineering Cybernetics
Department of Marine Technology

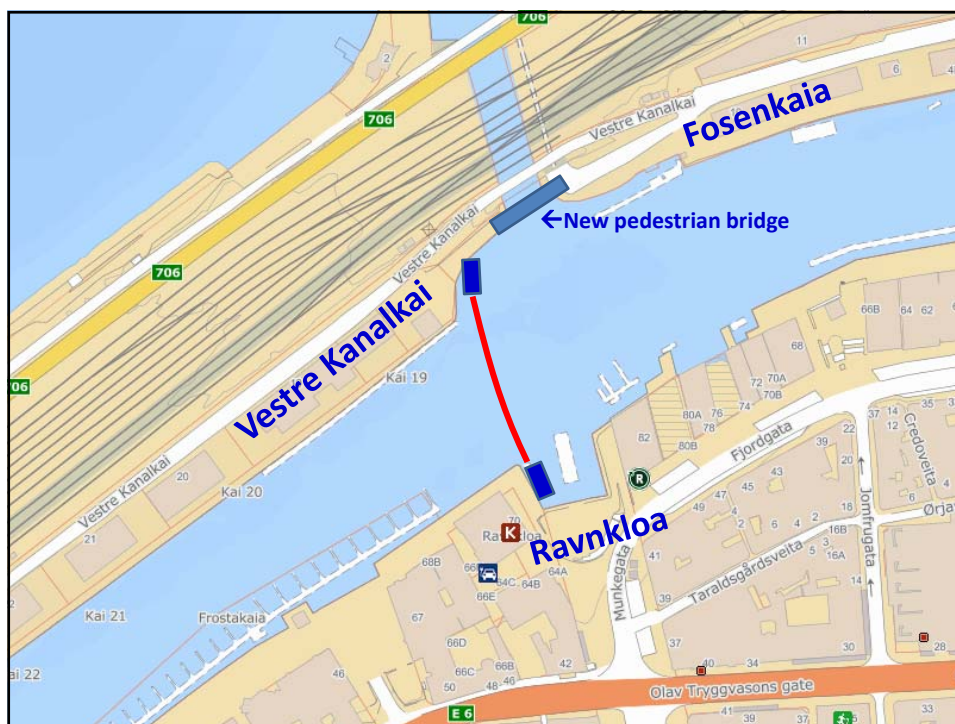


Centre for Autonomous Marine
Operations and Systems



Concept

- **"On-demand ferry"** - push the button for the ferry to come
- Traveling time: **1 minute** → low latency
- Passengers: **12 persons**
- **Electrical propulsion, Automatic charging** of batteries
- Navigation: **High-precision GNSS (cm accuracy)** plus backup system
- **Anti-collision system**





Time schedule

Phase 1 (2016): Concept study, student projects. Dynamic Positioning system to be tested onboard **ReVolt** from DNV-GL in Trondheim Harbour.

Phase 2 (2017/2018): Autonomous **pilot ferry** for concept testing and to study behaviour of the other boat traffic. **Webcamera and radar** to register boat traffic in the harbour.

Phase 3 (2018/2019): **Full scale ferry** certified for passengers.



The AUTOSEA project

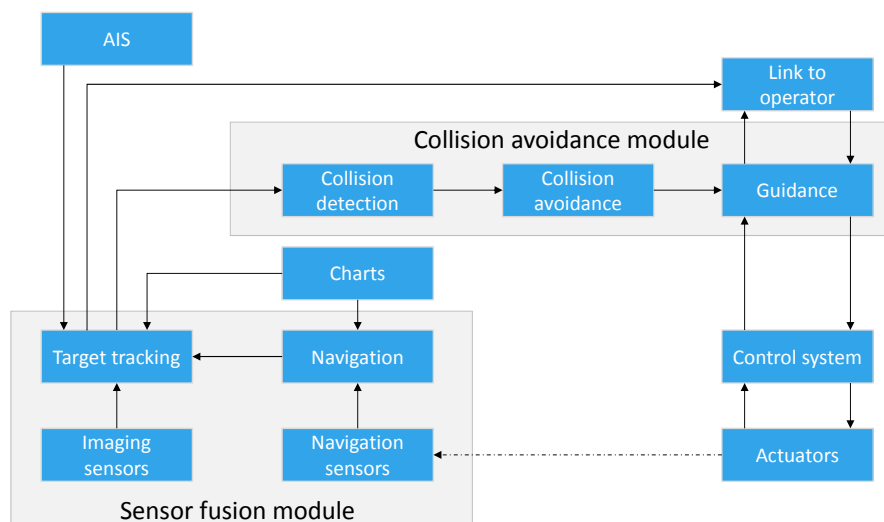
- Funded under the MAROFF programme of the Research Council of Norway.
- Budget 11MNOK, with contributions from DNV GL, Kongsberg Maritime and Maritime Robotics.
- Duration: August 2015-Spring 2019.
- Competence building project: The aim is to educate PhDs with expertise on maritime collision avoidance.
- The project funds 2 PhD candidates and one postdoctoral fellow. In addition, 2 PhD candidates and several MSc candidates are affiliated with the project.
- Project is owned by the Department of Engineering Cybernetics at NTNU.

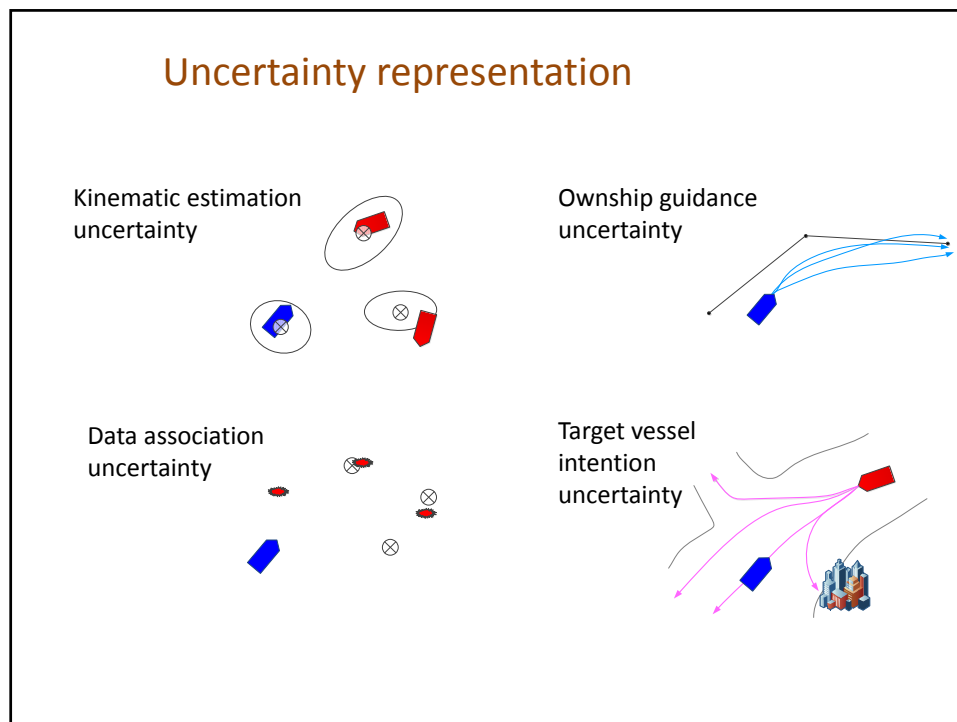


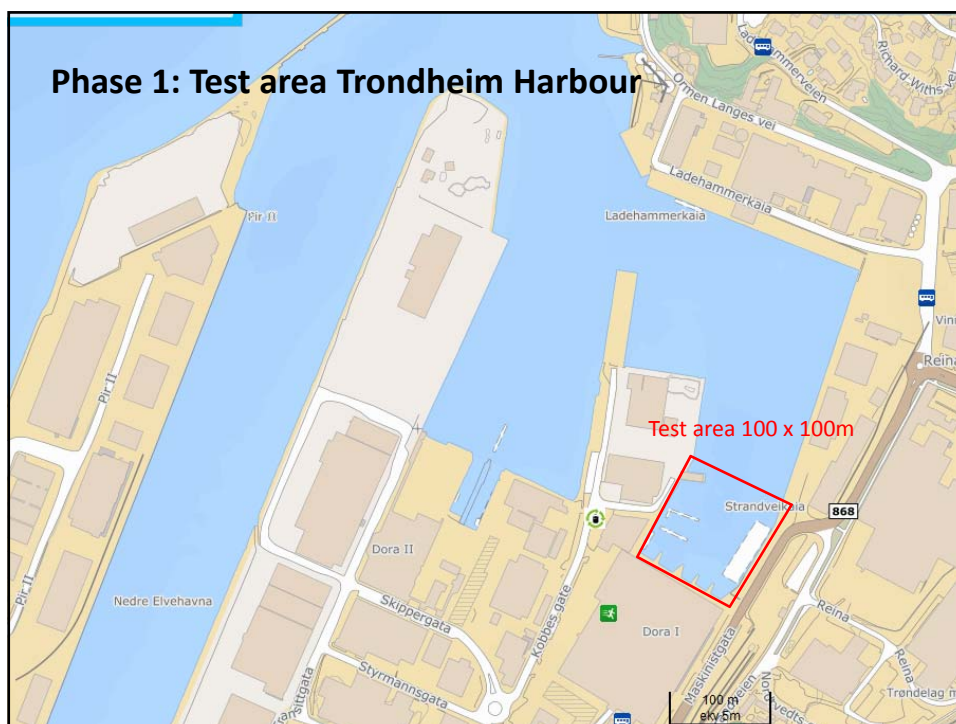
KONGSBERG

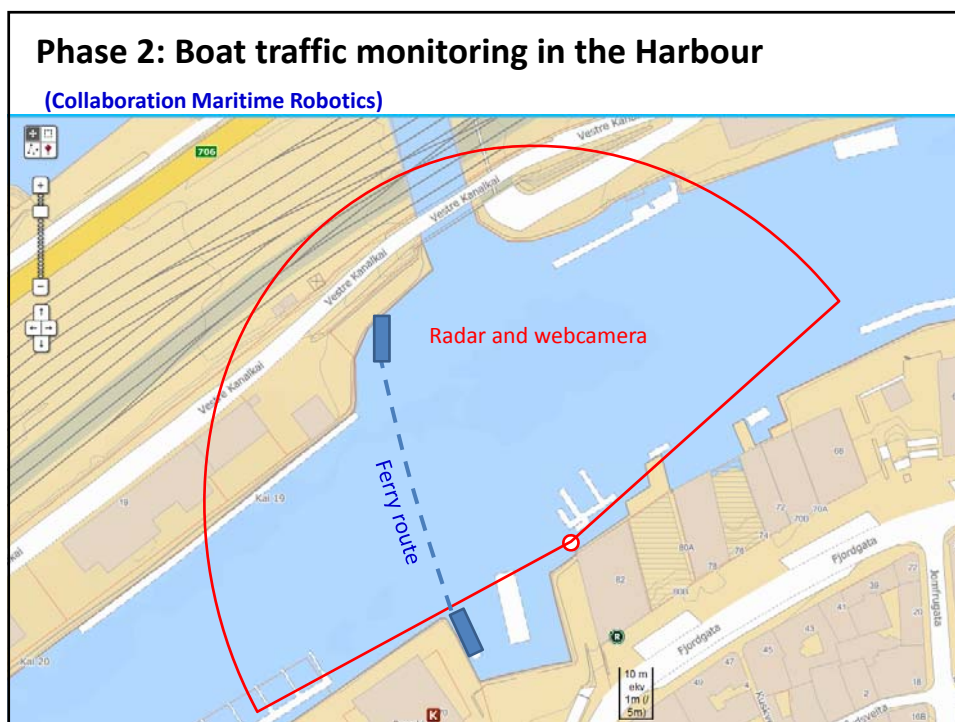


Focus areas of the AUTOSEA project

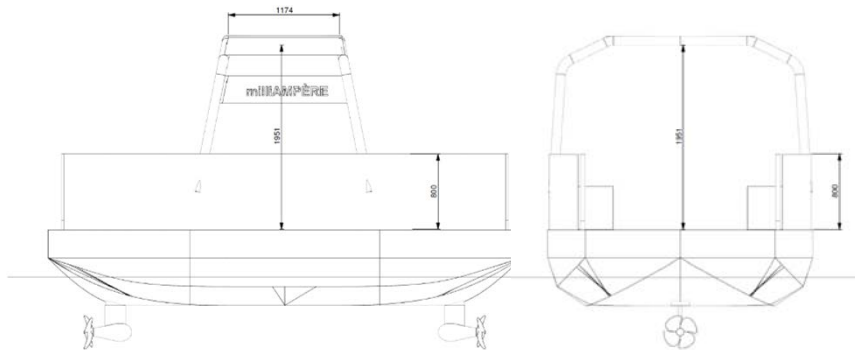






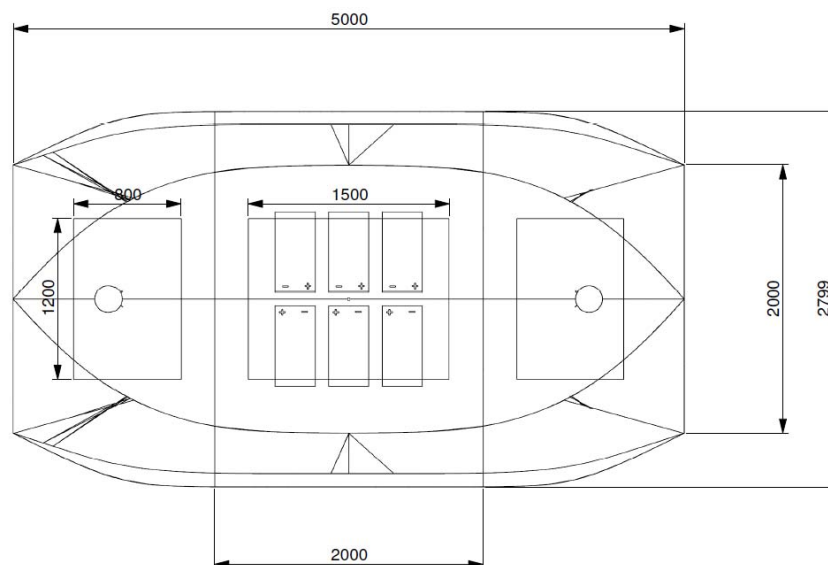


Phase 2: Pilot Ferry (development platfrm)



- Funded by NTNU and Amos
- Aluminum hull with scale 1:2 (5 meter long)
- Testing of propulsion system, batteries, and charging system
- Development of navigation system and automatic docking
- Testing of anti-collision sensors

Phase 2: Pilot Ferry (development platfrm)





Phase 3: Full Scale Ferry



- **Size: L: 8–10m x W: 3.5–4m**
- **12 passengers**
- **Automatic battery charging (induction or plug connector)**
- **Propulsion: 2 x 10kW azimuth thrusters**
- **RTK GNSS-compass + LIDAR system**
- **AIS and 2-way wireless communication including video**

Phase 3: Full Scale Ferry

Success criteria

Safety

- Risk assessment
- Automatic registration of passengers
- Robust anti-collision system
- Redundant navigasjons systems
- Monitoring and support from Harbour authorities

Reliability

- Easy to use
- Work all around the year
- Efficient transportation – low latency
- Robust design – low probability of errors
- Minimized need for maintenance

