

An abstract digital illustration featuring several 3D wireframe geometric shapes, including cubes and rectangular prisms, some of which are stacked or floating. The shapes are rendered in a light blue color with a fine grid pattern on their surfaces. They are set against a dark blue background with a glowing green grid and vertical lines, creating a futuristic, digital atmosphere. The shapes appear to be floating above a dark, reflective surface.

TrAM – Transport: Advanced and Modular

Funded by the European Union's Horizon2020 Research and innovation programme

Challenges that require new solutions



New transport solutions according to new climate goals



Cities and other densely populated areas have an ever-increasing demand for public communication.



Expansion of the existing infrastructure is often challenging and expensive.



The world's first zero-emission fast ferry

TEAM

A zero emission fast going passenger vessel developed through advanced modular production.

- 25% lower production costs
- 70% lower engineering costs



ZeroCat™ 120 – All battery - electric operation



Ampere operating since 2015:
E39 crossing Sognefjorden
Lavik-Oppedal since 2015
34 times x 5,7 km per day
70000 km per year, equals 8 times the length of equator

ZeroCat™ operating from jan. 2020:
Halhjem- Våge

24 times daily x **12,5 km** per crossing
=> 100000 km per year

Kommandøren:

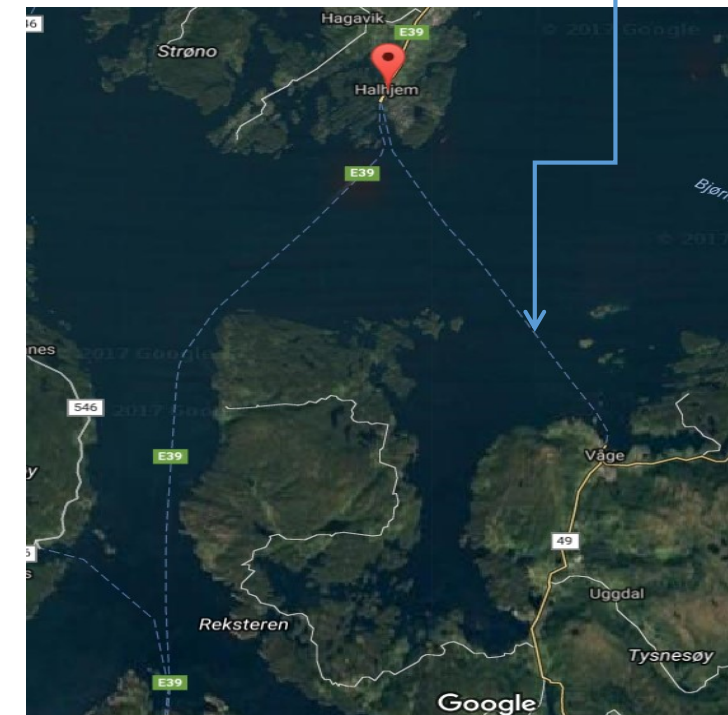
Route length ~2,2 x Ampere (12500 m)

Speed (13 knots) ~1,15 x Ampere

Carrying load: ~1,2 x Ampere

Total capacity :

$2,2 * 1,15 * 1,2 \sim 3 \text{ x Ampere}$



The real challenge for the future is to solve the energy problem for smaller and faster vessels.

- Can the battery packages fit in?
- Will the sizes of the electric controls fit smaller vessels?



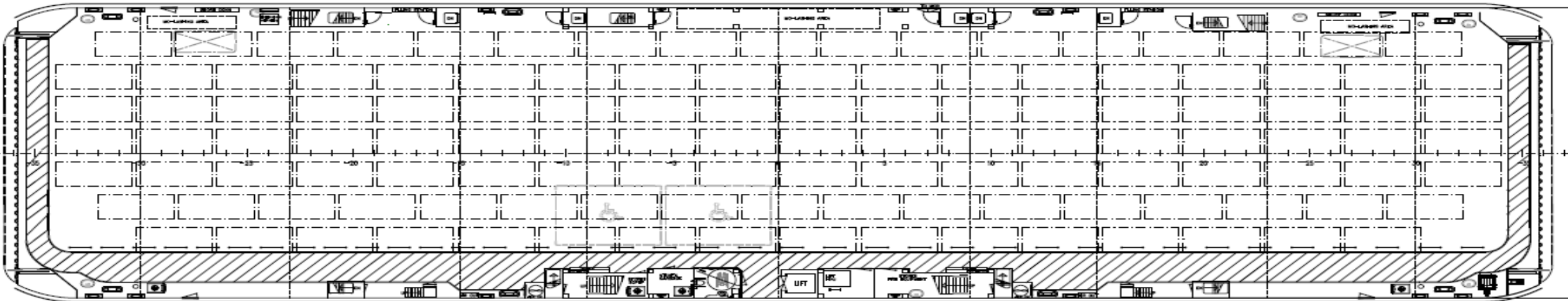
Comparable sizes:

27m Fast ferry compared to MF Kommandøren

Length : 87/ 27 approx 1: 3,2

Area: (1800m² /250 m²) approx 1:7

Volume: approx 1:15





KOLUMBUS



Aim: A **Zero Emission** public transport system by 2024 following the success of the number of car ferries already being «electrified» in Norway

FEATURES

14

PARTNERS

16

MEUR TOTAL BUDGET

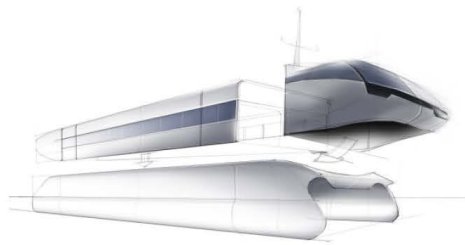
4

YEARS, 2018-2022

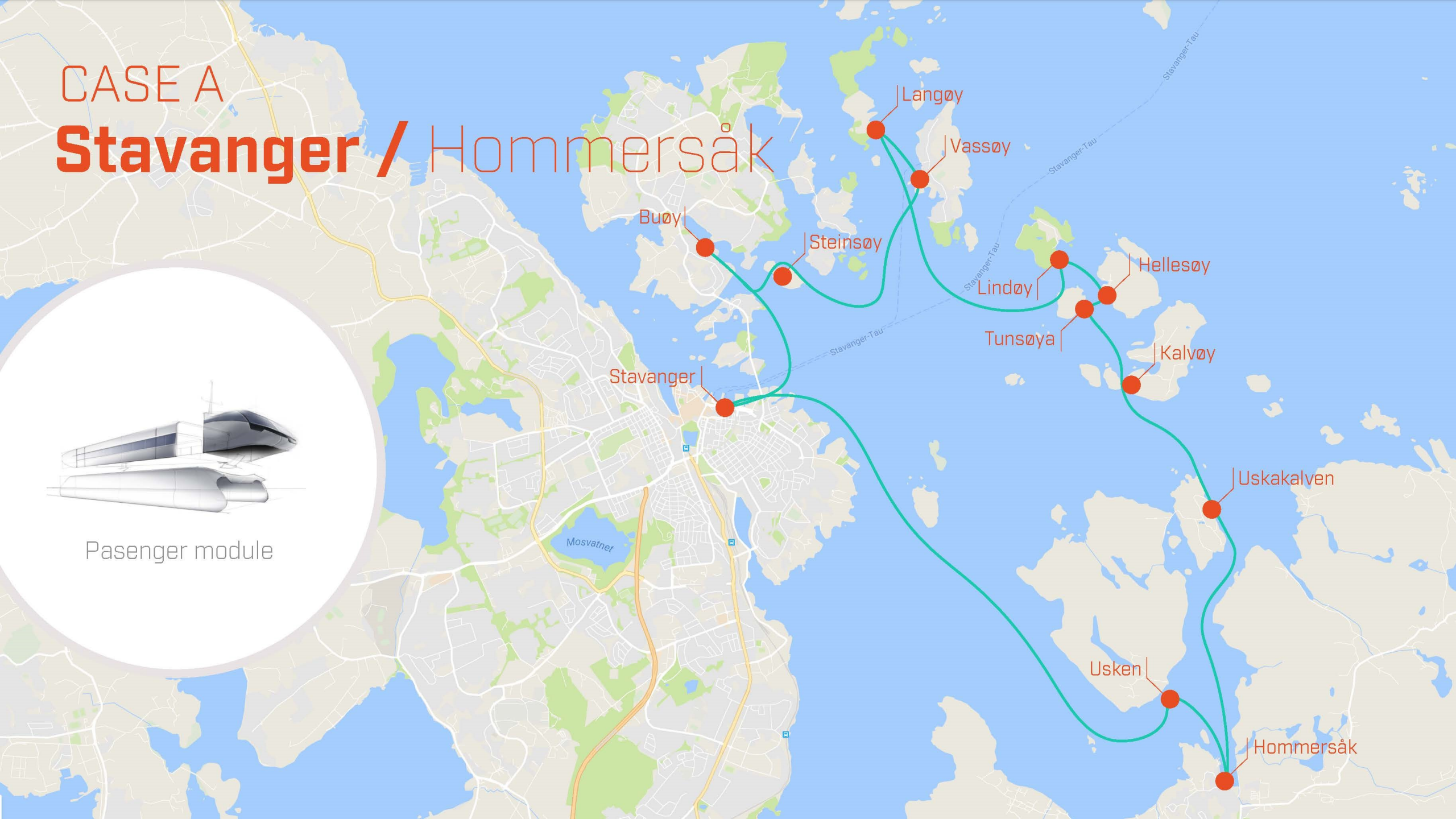


CASE A

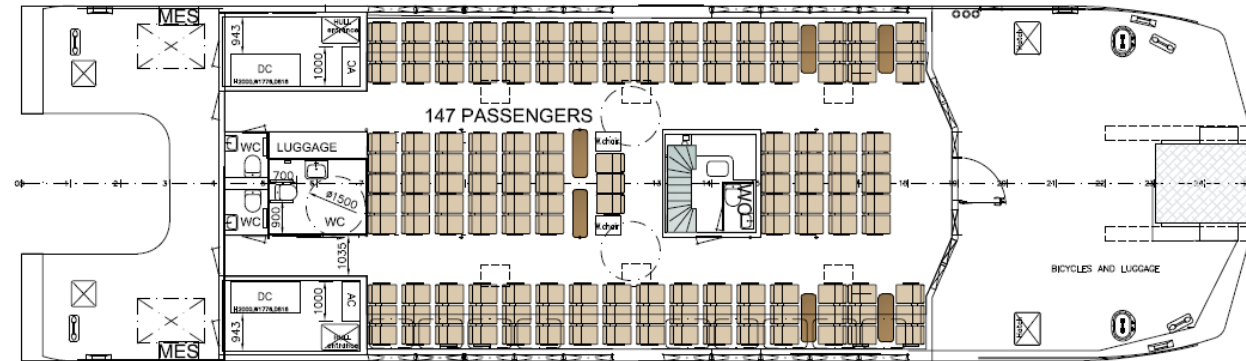
Stavanger / Hommersåk



Pasenger module



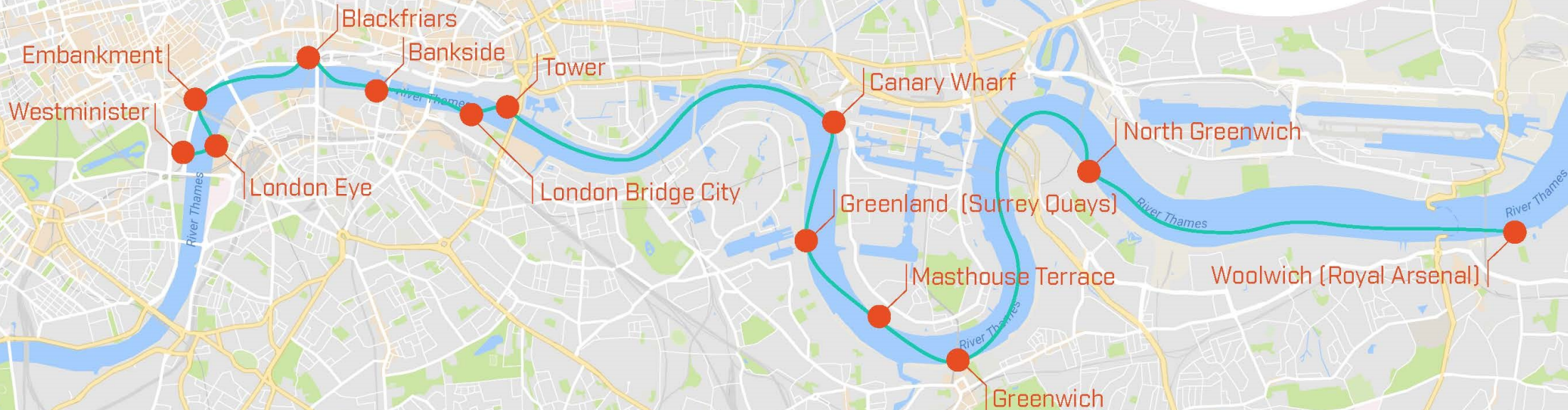
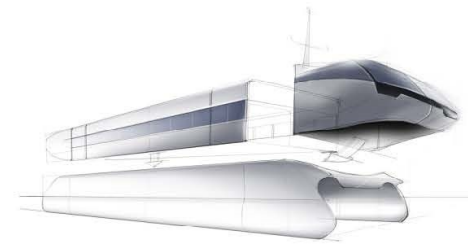
Stavanger demonstrator



- Minimum speed in operation = 23 kn
- Passengers = 147 (+20 bikes)
- All-electric operation

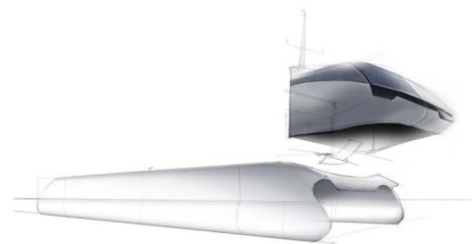
CASE C

London / River Thames

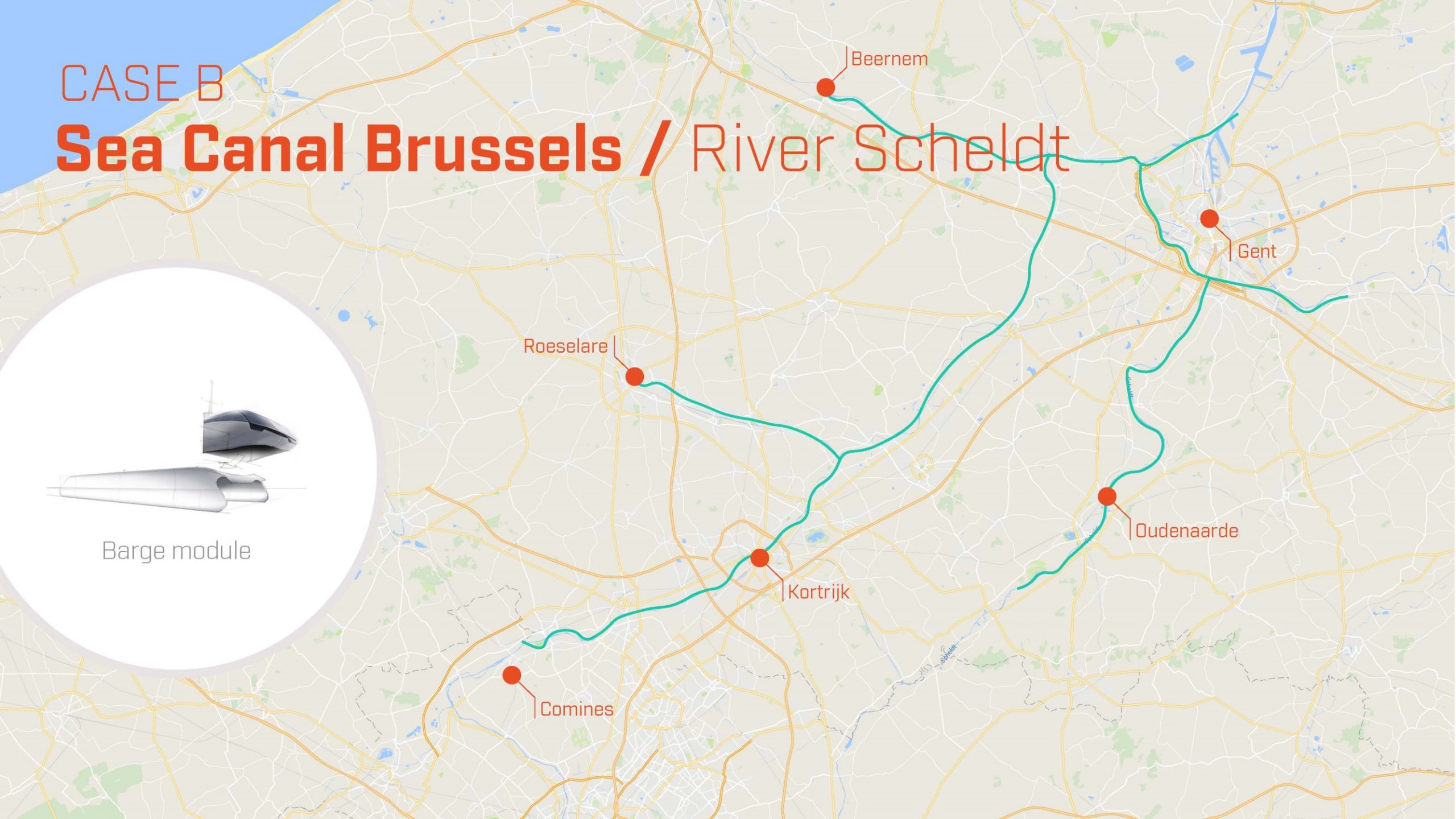


CASE B

Sea Canal Brussels / River Scheldt

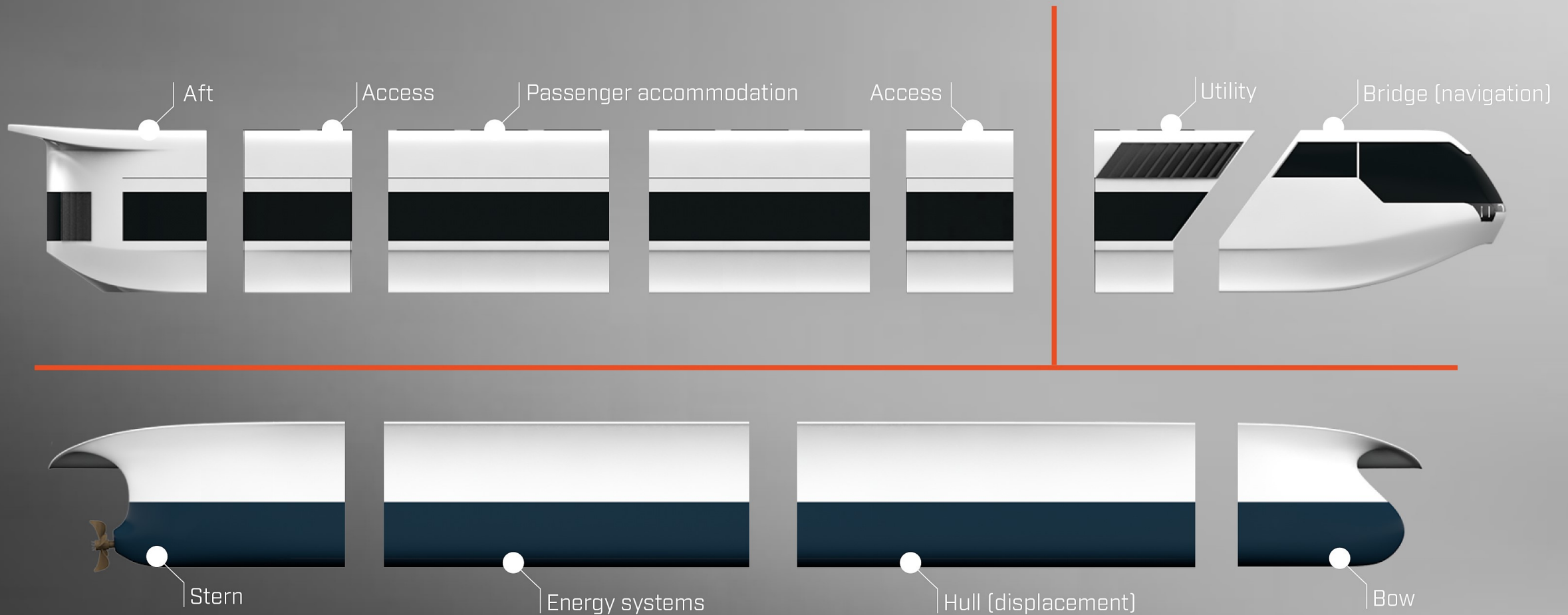


Barge module



Modularity Concept-Main Modules

Modularity



Modular assembly kit evolution

Comparison Automotive

Unicum



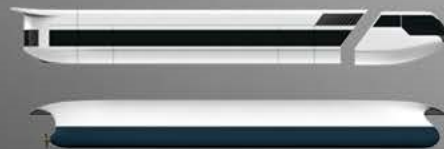
No synergies
- Only one vessel design



Platform strategy



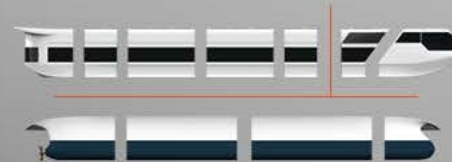
Synergies with platforms
- Implemented on multiple vessels



Modular strategy



Synergies platforms & modules
- Implemented on multiple vessels



Assembly kit strategy



Synergies platforms, modules & equipment
- Implemented on all vessels



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