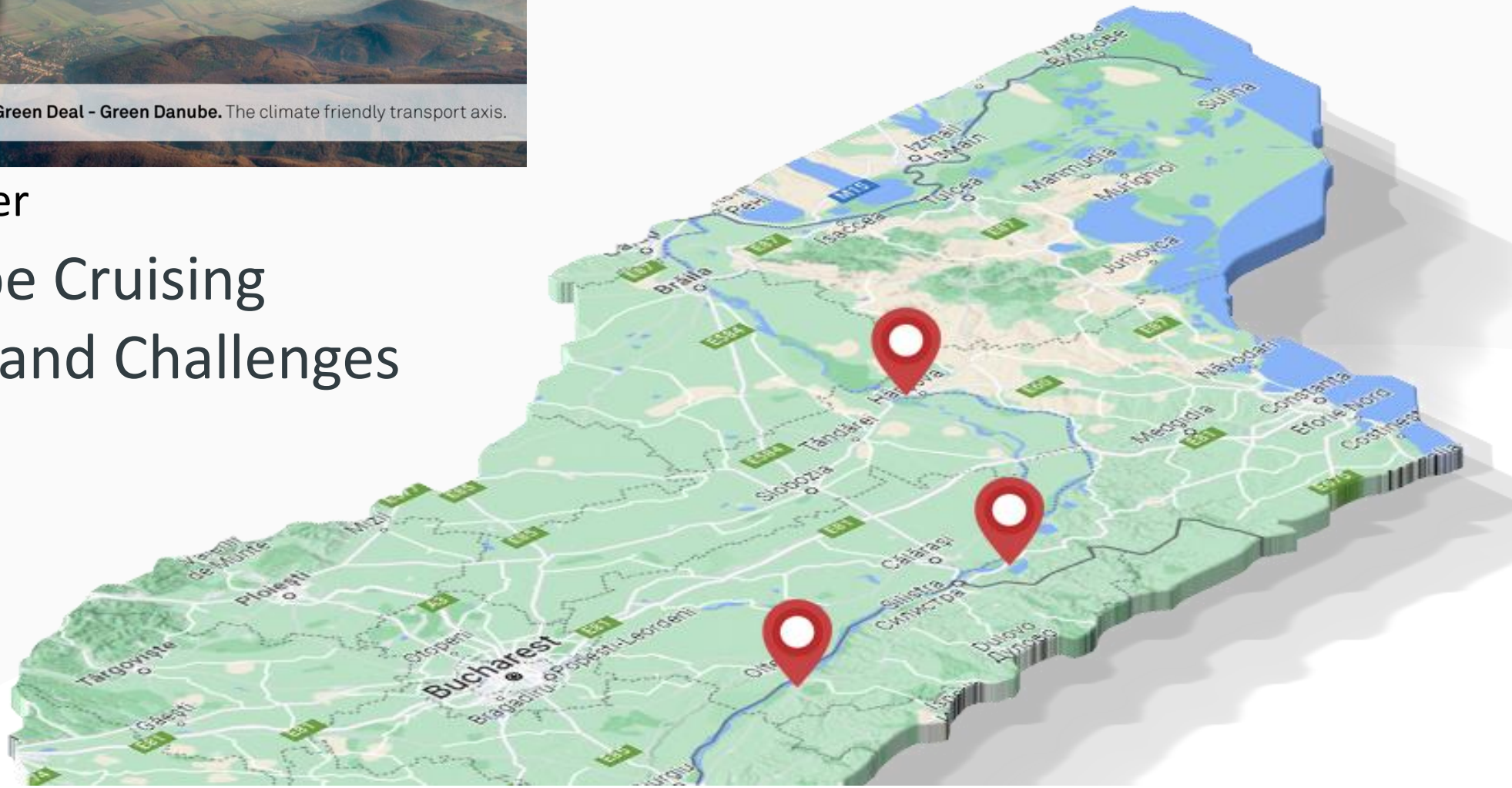
Linz, 13th of October

Lower Danube Cruising Perspectives and Challenges



Radu Comanici

- **Ongoing challenge for the crew to keep ships in safe condition**

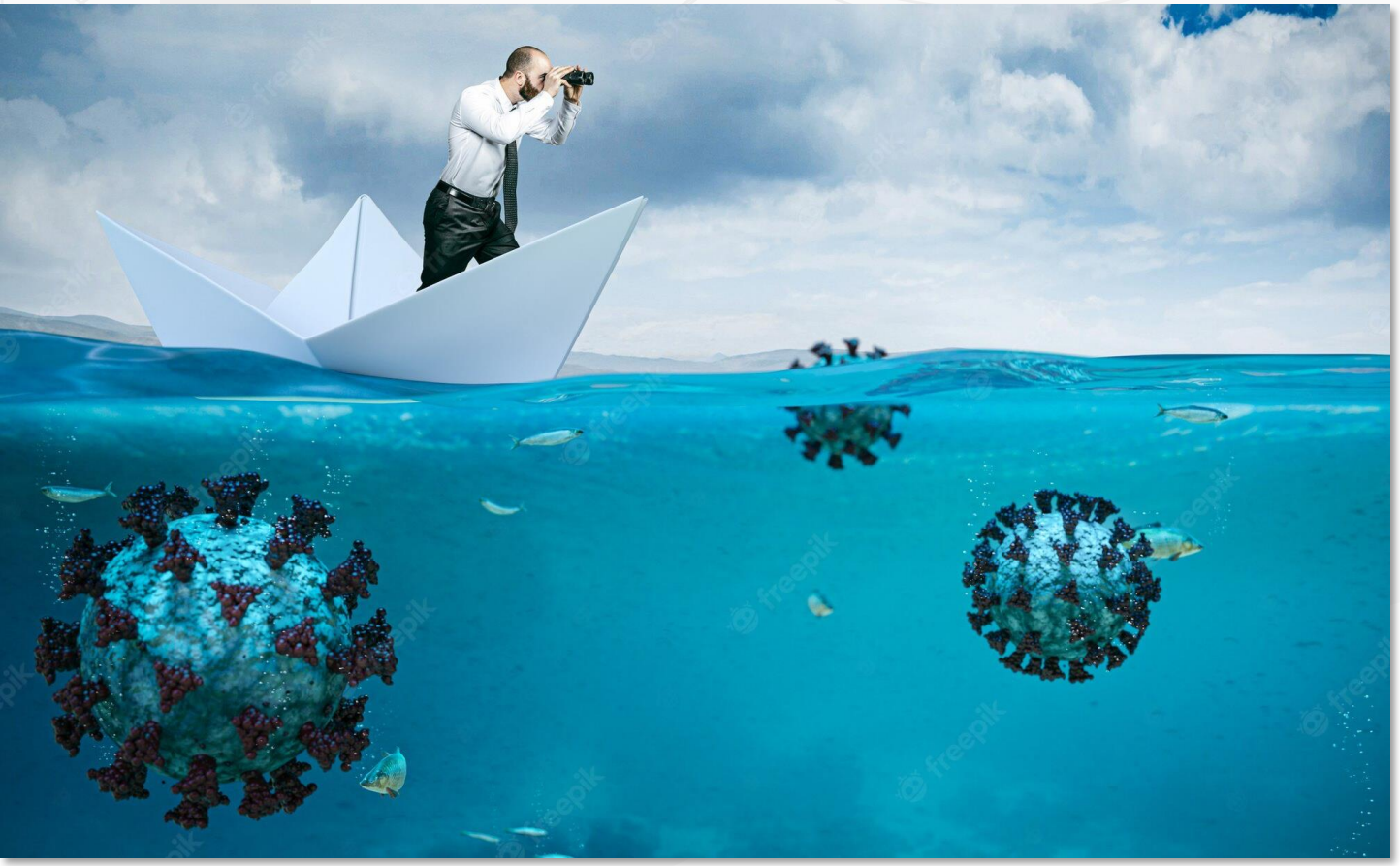
CHALLENGES

01. **Outbreak-Lockdown**

02. **Logistic blockage**

03. **Technical and safety surveillance**

04. **Social interaction Crew Connect Platform**



Looking ahead
Re-start

01. RCI Health concept

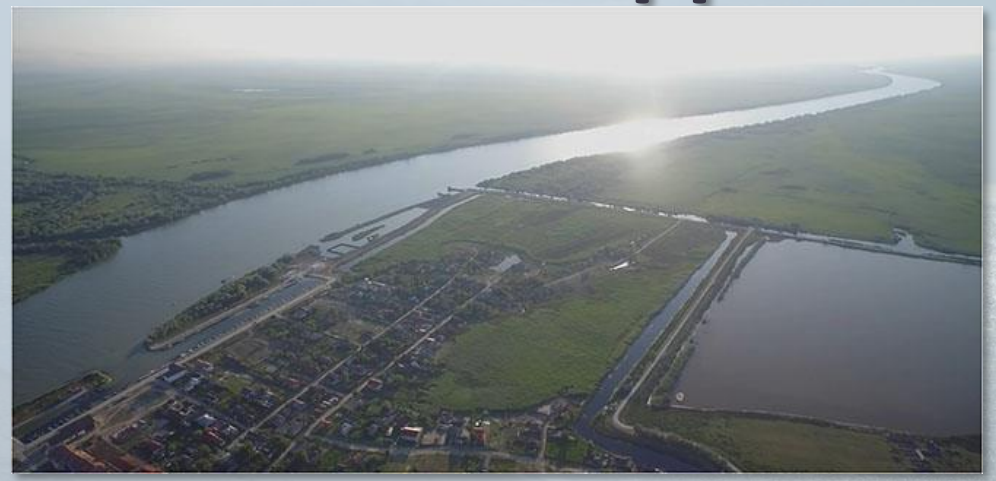
02. Health officer

03. Protocols and procedures

04. Erratic restrictions

- Passengers where happy and grateful to join the cruise

Opportunity and **Challenge**



Increasing Interest for Cruises to km 0 –mouth of Danube

The Destination Lower Danube and Danube Delta has shown higher preference compared to the cruises until Budapest.

During season 2022 highest cabin occupancy, for lower Danube and specially for cruises reaching the mouth of the Danube or the Danube Delta including expedition tours

Low water sailing Cruise destination paradox

EU passenger rights carrier obligation vs. EU fairway

2.5 m water depth recommendation

Port Facilities

- Shore side electricity
- Waste and grey water *discharge

* Fresh water supply

Harmonized Procedures

- Same river same rule principle
- Exchange information to increase efficiency

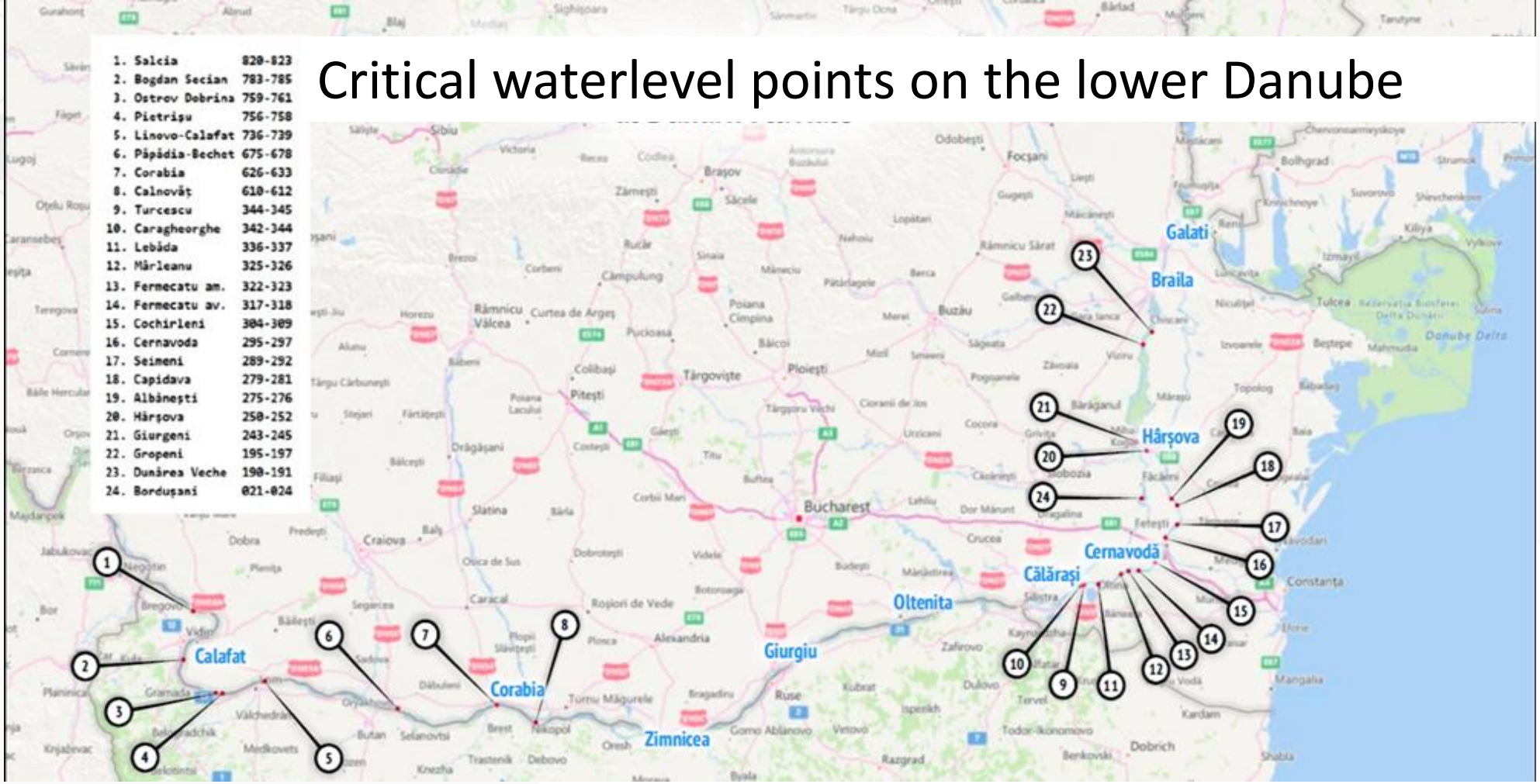
Formalities

- Reduced administrative barriers
- Improve IT systems available port services
- Available port services on demand incl. border control formalities

Challenge #1

Critical waterlevel points on the lower Danube

1. Salcia	820-823
2. Bogdan Secian	783-785
3. Ostrov Dobrina	759-761
4. Pietrişu	756-758
5. Linovo-Calafat	736-739
6. Păpădia-Bechet	675-678
7. Corabia	626-633
8. Calnovăţ	610-612
9. Turcescu	344-345
10. Caragheorghe	342-344
11. Lebăda	336-337
12. Mărleanu	325-326
13. Fermecatu am.	322-323
14. Fermecatu av.	317-318
15. Cochirleni	304-309
16. Cernavoda	295-297
17. Seimeni	289-292
18. Capidava	279-281
19. Albăneşti	275-276
20. Hârşova	250-252
21. Giurgeni	243-245
22. Gropeni	195-197
23. Dunărea Veche	190-191
24. Borduşani	021-024



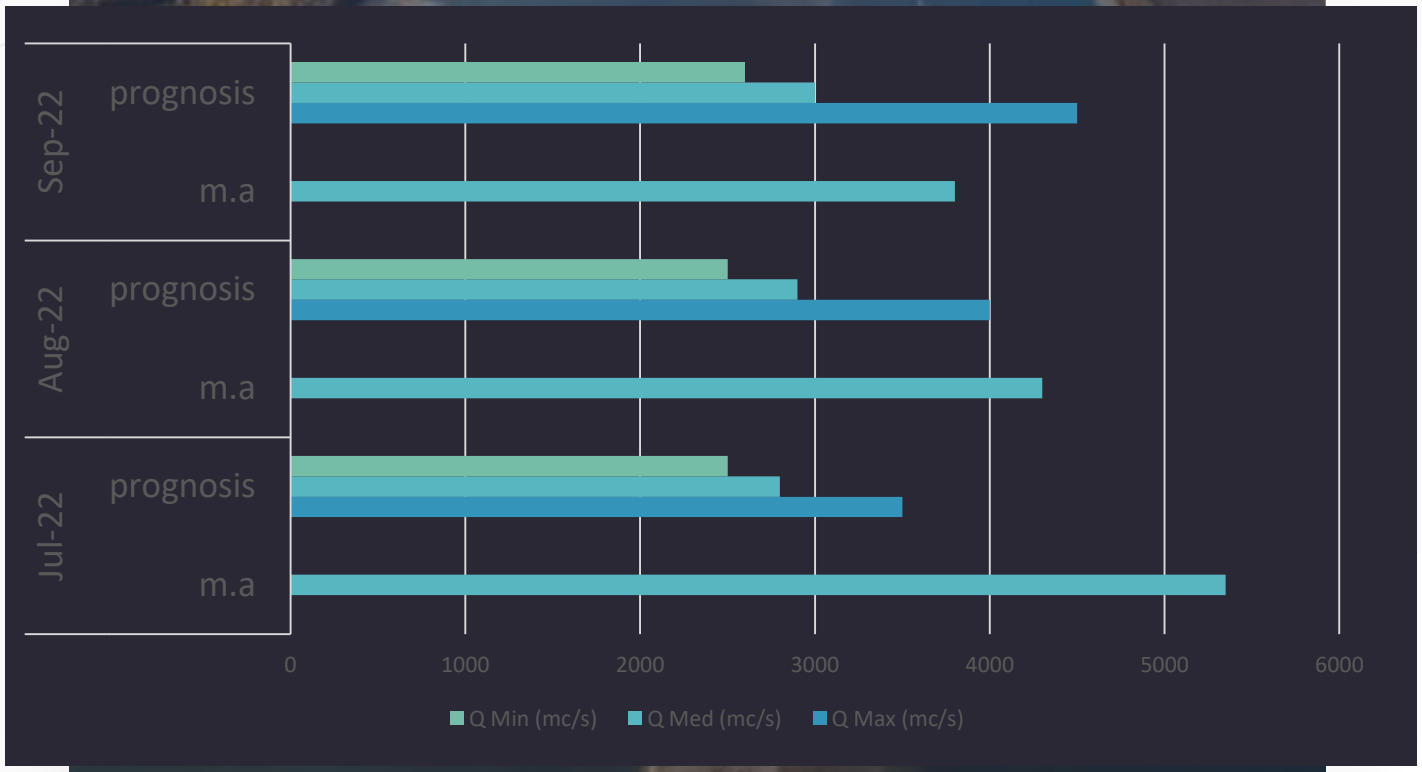
BOTTLENECKS

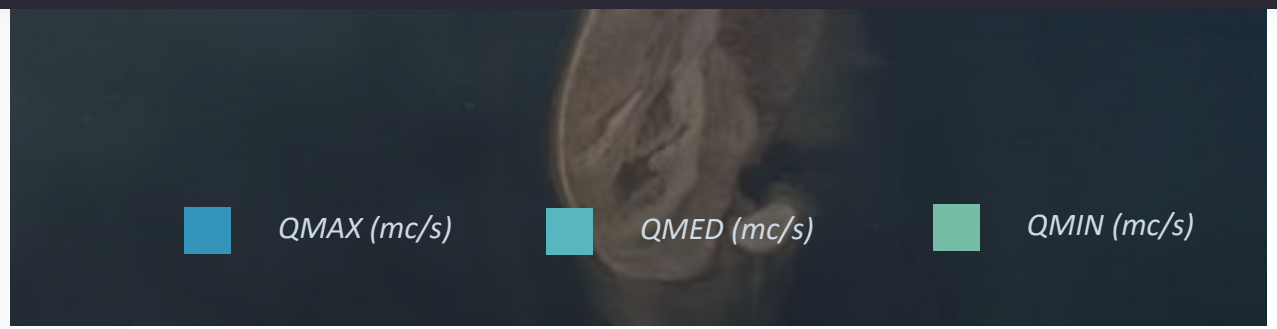
"The sailing challenge to the lower Danube during low water does not exist since last years, but for decades"

Main critical sectors on the lower Danube

DCR

Data Statistic Debit





65 days low water =Average period of time below the recommended safe level for navigation

quarter of our sailing season

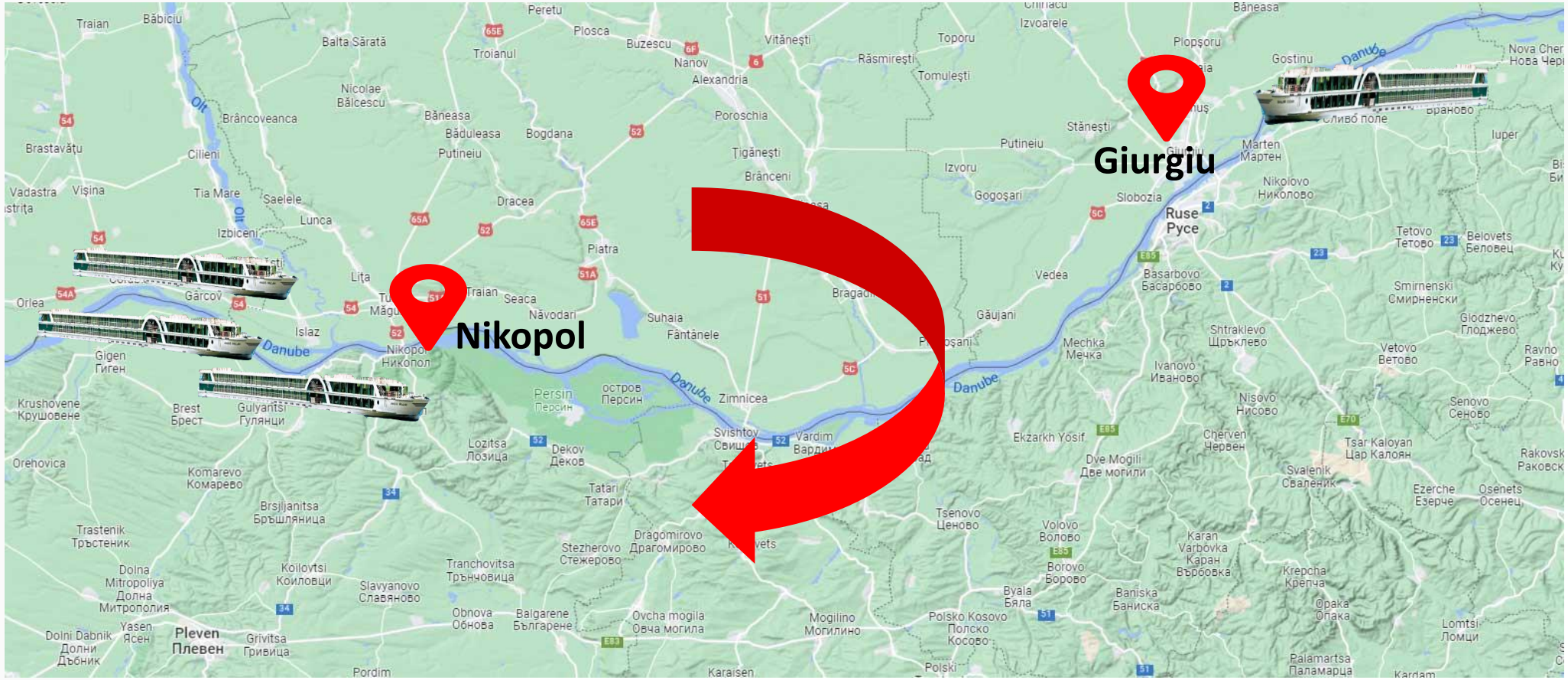
Difficult to make a realistic cruise planning

	Jul-22		Aug-22		Sep-22	
	m.a	prognosis	m.a	prognosis	m.a	prognosis
Q Max (mc/s)		3500		4000		4500
Q Med (mc/s)	5350	2800	4300	2900	3800	3000
Q Min (mc/s)		2500		2500		2600

DCR

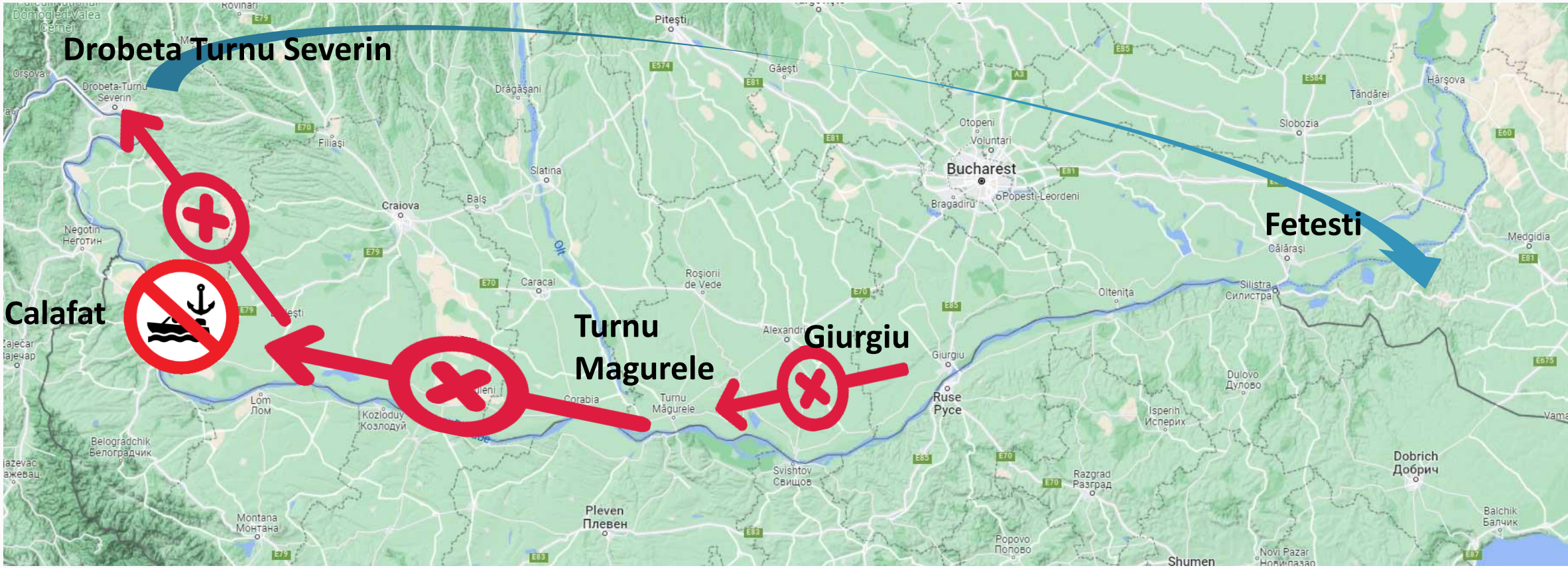
Challenge #2

Carrier under the barrier

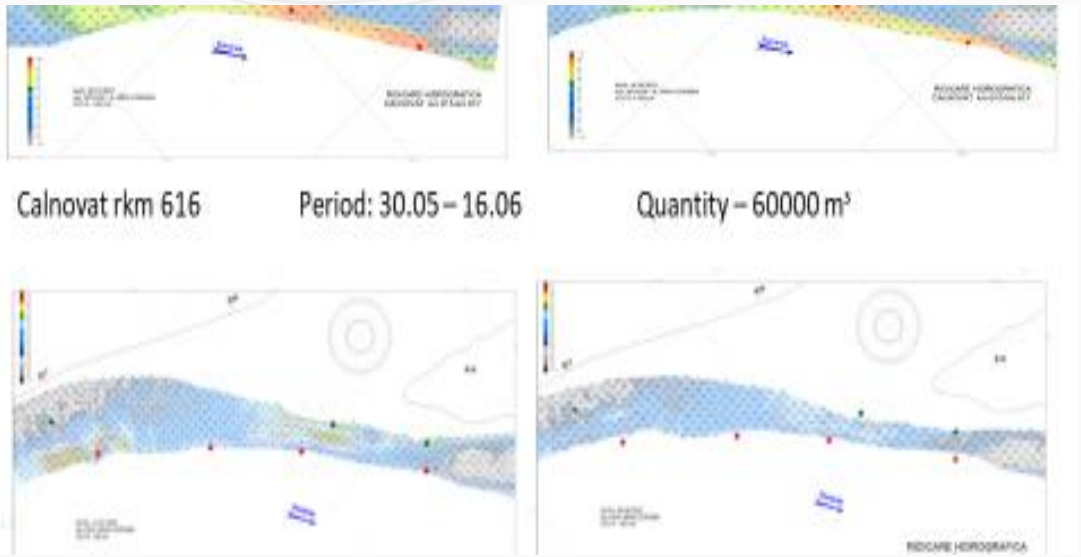


Challenge #2

Carrier under the barrier



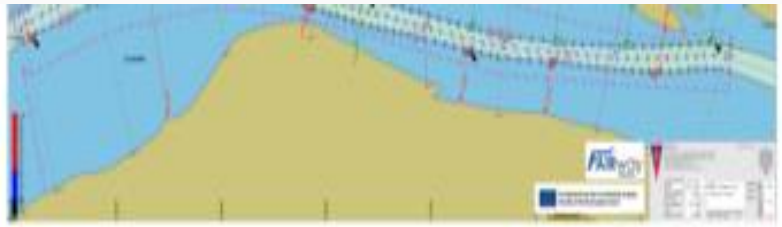
Water Level & Dredging



Following several governmental interventions the Romanian river administration was able to perform some dredge works in the Bulgarian sector and the critical low water area near km 616.

Low sector levels

Further various charts indicating the low sector but at our disposal by courtesy of the Lower Danube River Administration



Border formalities are sometimes time consuming and affecting schedule

Bureaucracy

Floating Restaurant

Berth allocation

Harbour area should be used only for docking and vessel related facilities

Floating, bars, restaurants and hotel can hinder or safe maneuvering

6 h
Border Formalities

2 h
Sailing

DCR

Challenge #3

Operational Shortcomings

Beyond the aspect and comfort facilities

Some of the docking solutions tolerated compromises

Applied solution to current challenges

SMART-DOCKING CONCEPT

Water Supply

Waste Collection

Safety Conditions

Internet & Power Supply

Extreme waterlevel conditions
vessel accomodation

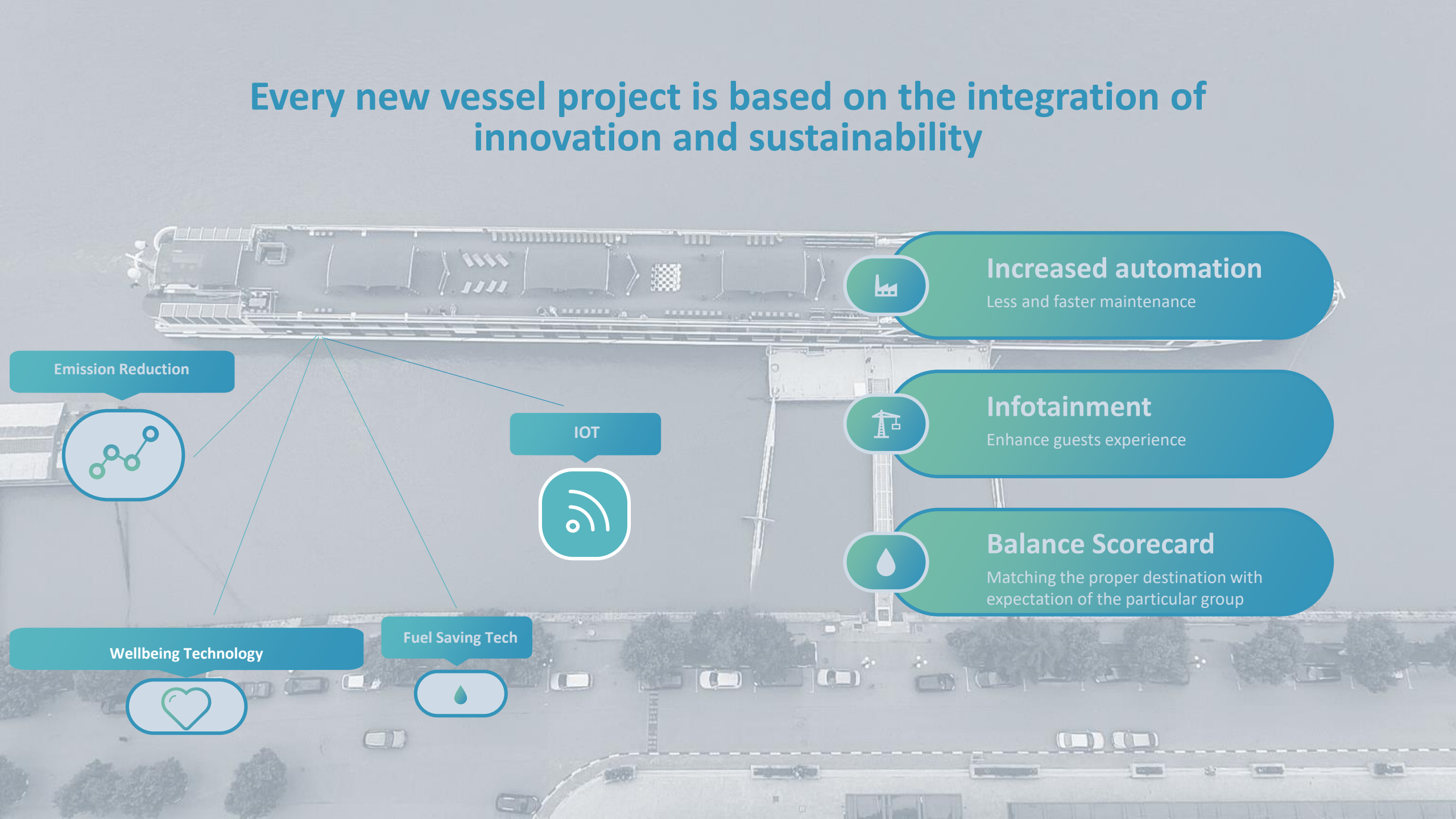
Facilities

SMART-DOCKING CONCEPT

Light masts illuminate harbor and the docking area by night.

24/7 Professional Video surveillance & monitoring

Every new vessel project is based on the integration of innovation and sustainability



Increased automation

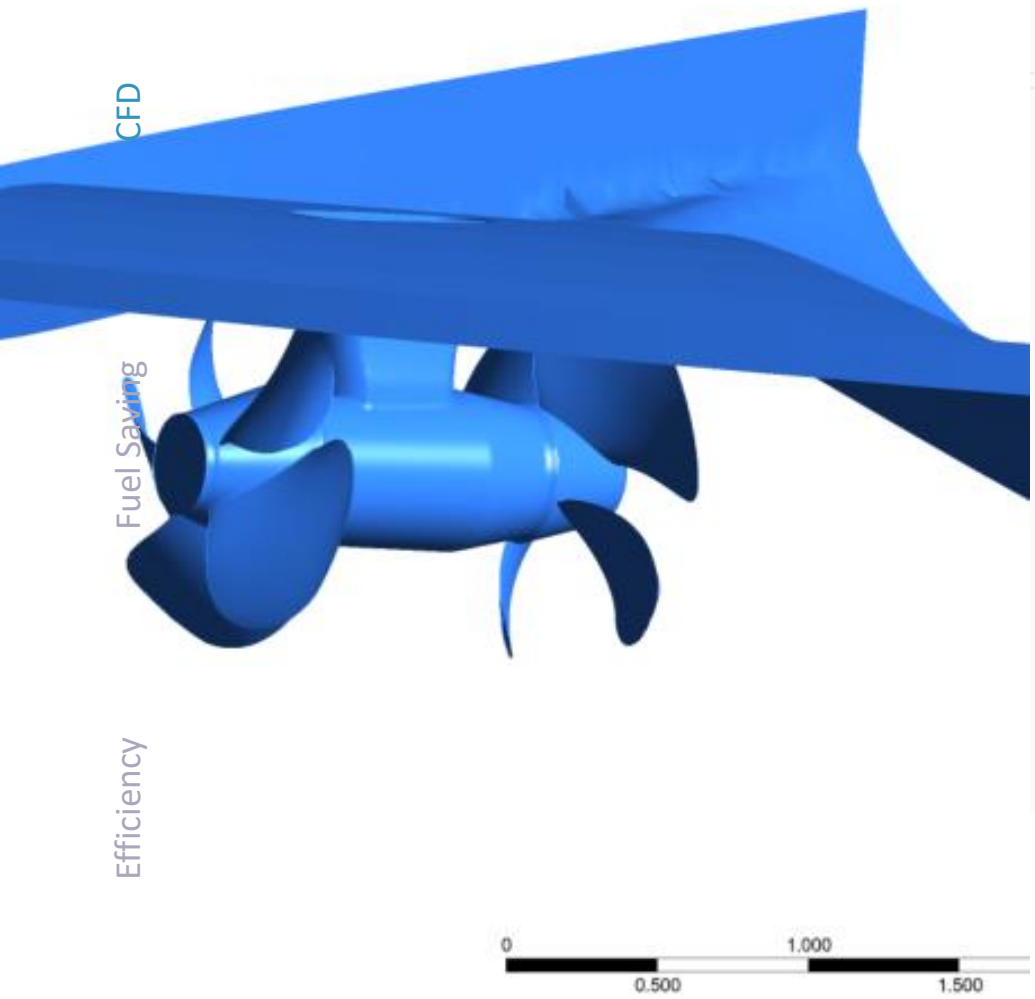
Less and faster maintenance

Infotainment

Enhance guests experience

Balance Scorecard

Matching the proper destination with expectation of the particular group



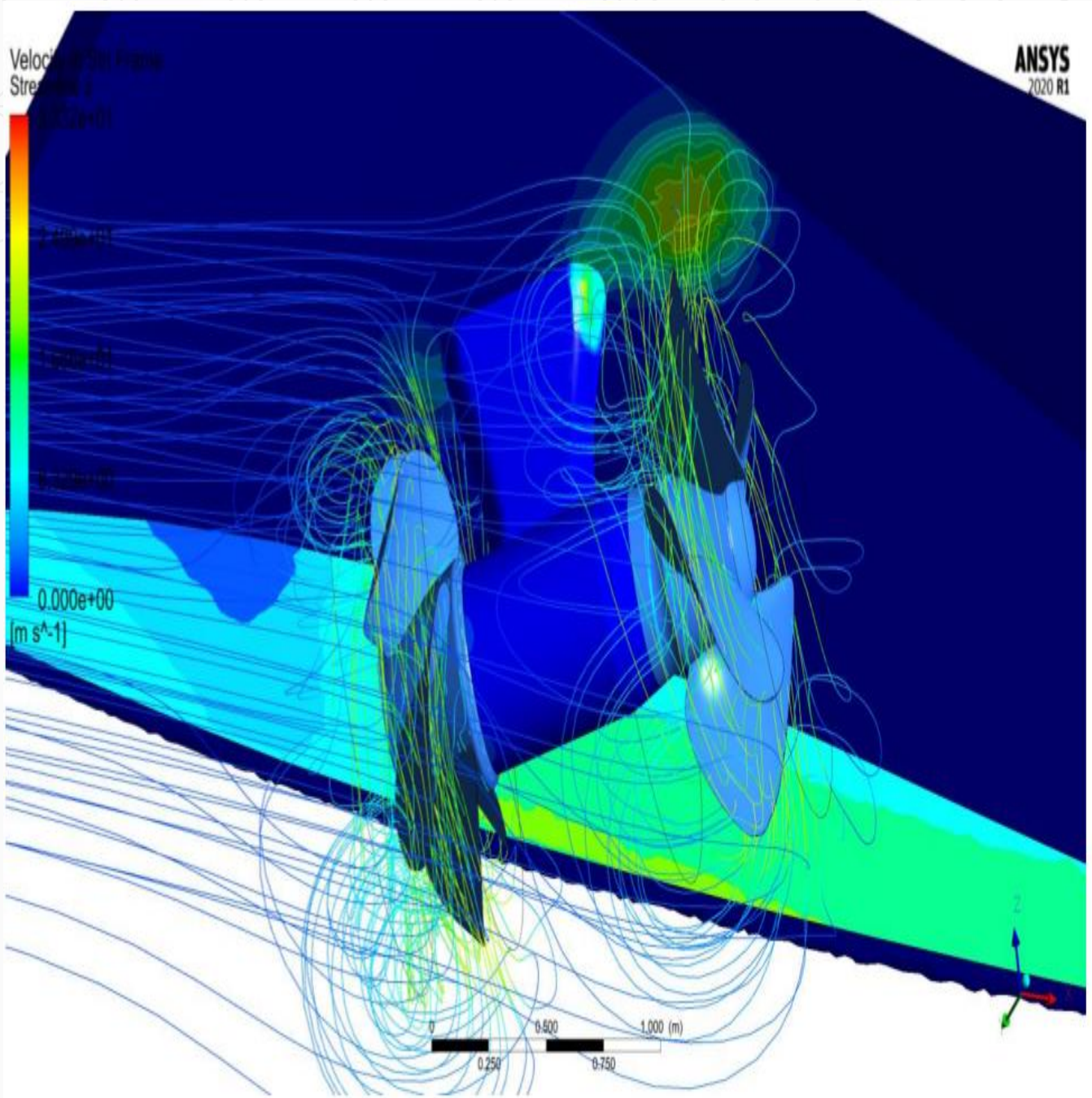
Amadeus
Cara /F CFD

Computational Fluid Dynamics

Related to passenger comfort and environmental noise impact of the vessel, each newbuilding is evaluated based on the FEM mathematical model, fire strike order, hydrodynamic analysis and CFD analysis under different sailing conditions.

+Efficiency

All water level conditions



Computational Fluid Dynamics

As a collateral result from the preliminary studies we had also computational result indicating the navigation condition in low water, leading to decreasing of propulsion efficiency and significant increasing of emissions to maintain the same schedule.

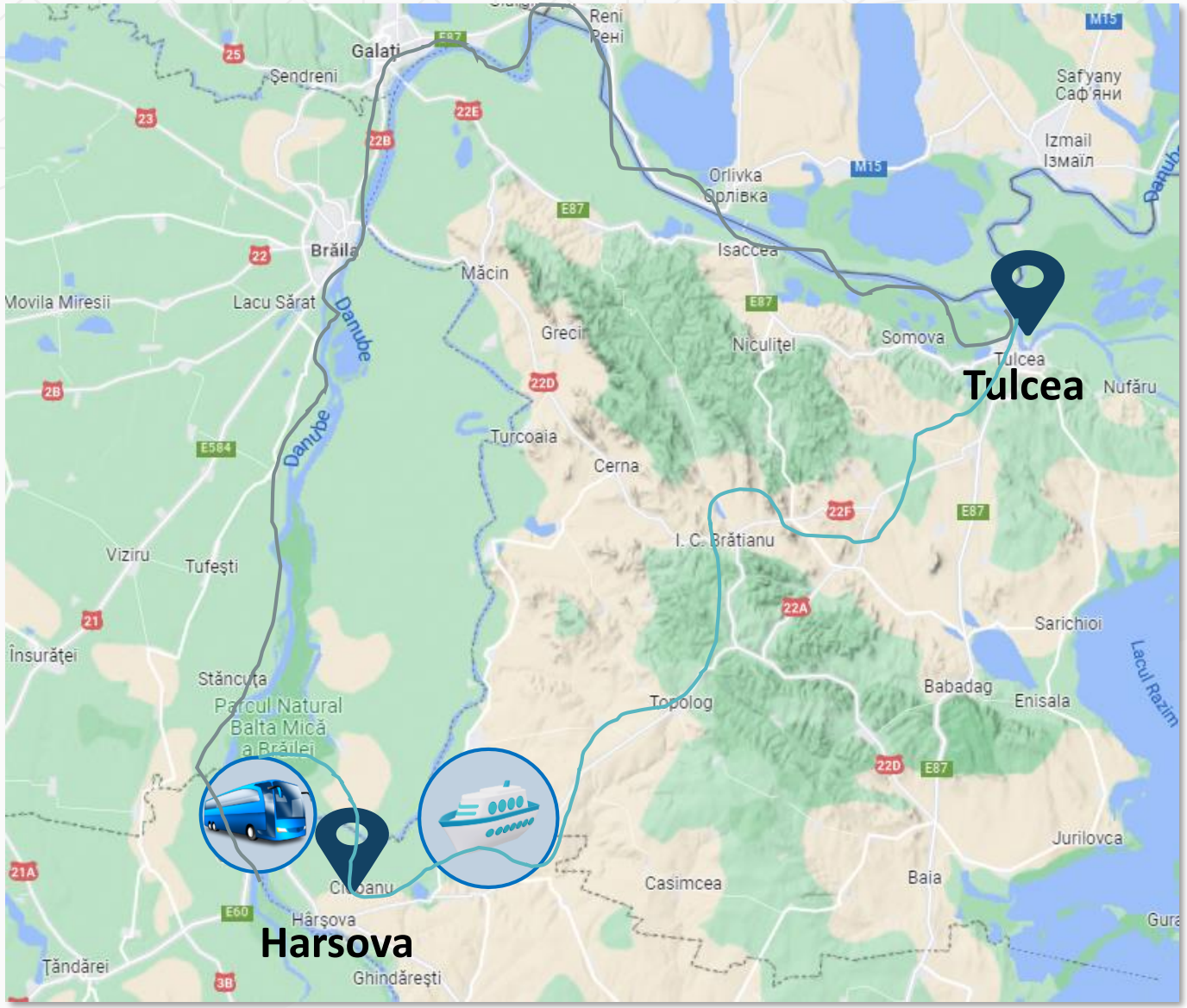
Balance Scorecard Principle

Integration with the cruise product

Perfect match to passenger Expectations

Proactive mind-set of our local provider With responsive attitude

DCR



CO2 emissions and fuel consumption are drastically reduced whilst the guest experience is enhanced.

Thank You

For your attention