

CO-OPERATION BETWEEN NORDIC MARITIME UNIVERSITIES AND DNV GL

17th WORKSHOP 2016

Hamburg University of Technology

21-22 January 2016



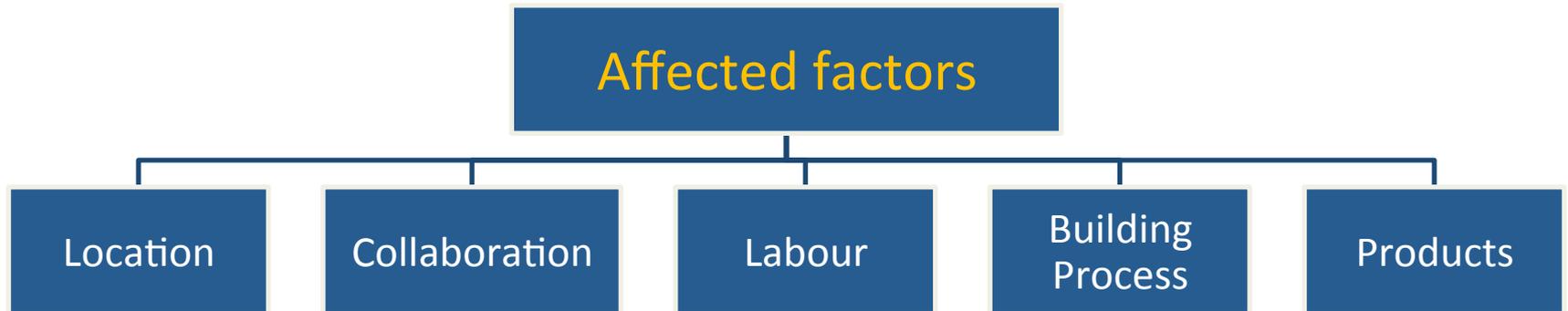
Analyze of the medium-sized shipyard condition for shipbuilding



Duong Nguyen Thua
Prof. Tadeusz Graczyk



Presentation plan





Business challenges

Economic crisis

Brent crude oil price, 1988-2015

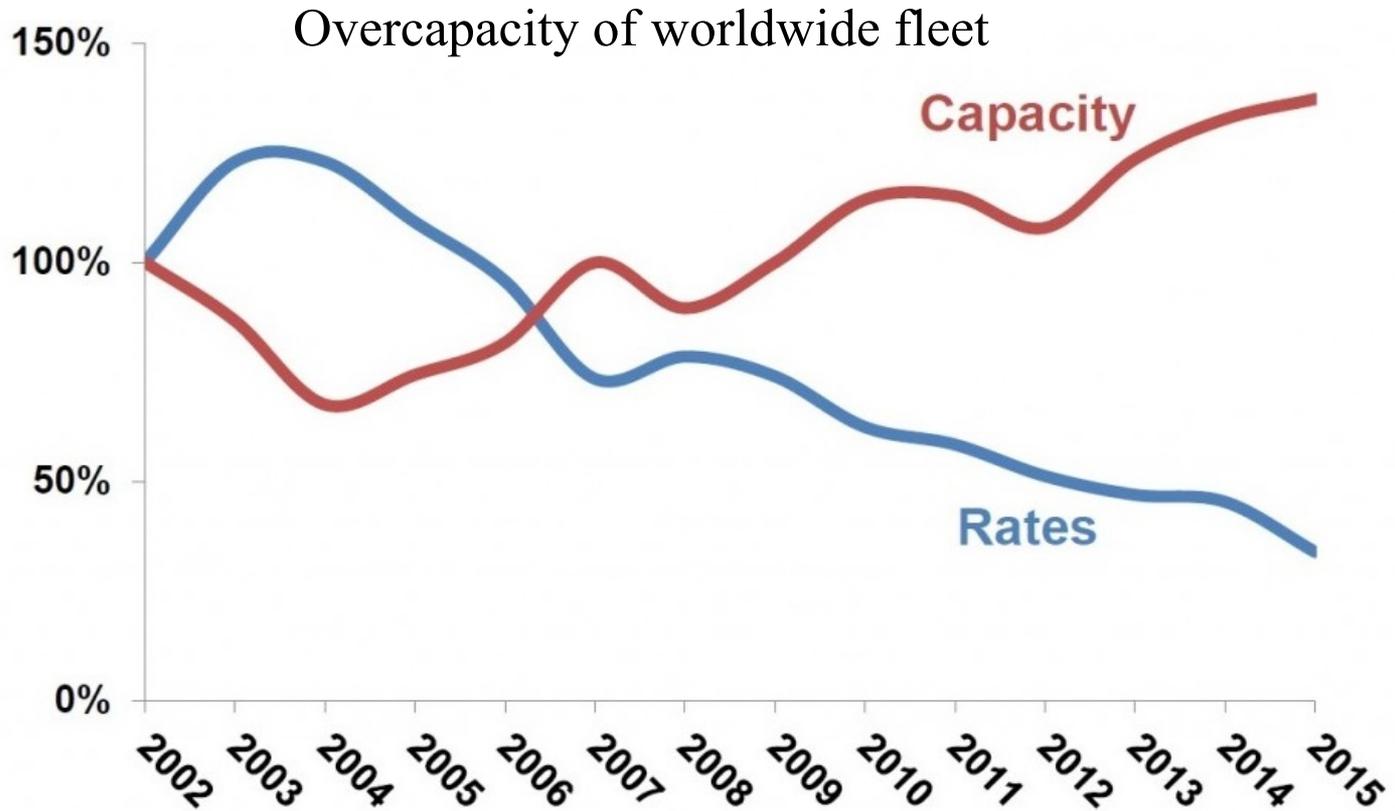


Source: Bloomberg



Business challenges

Economic crisis

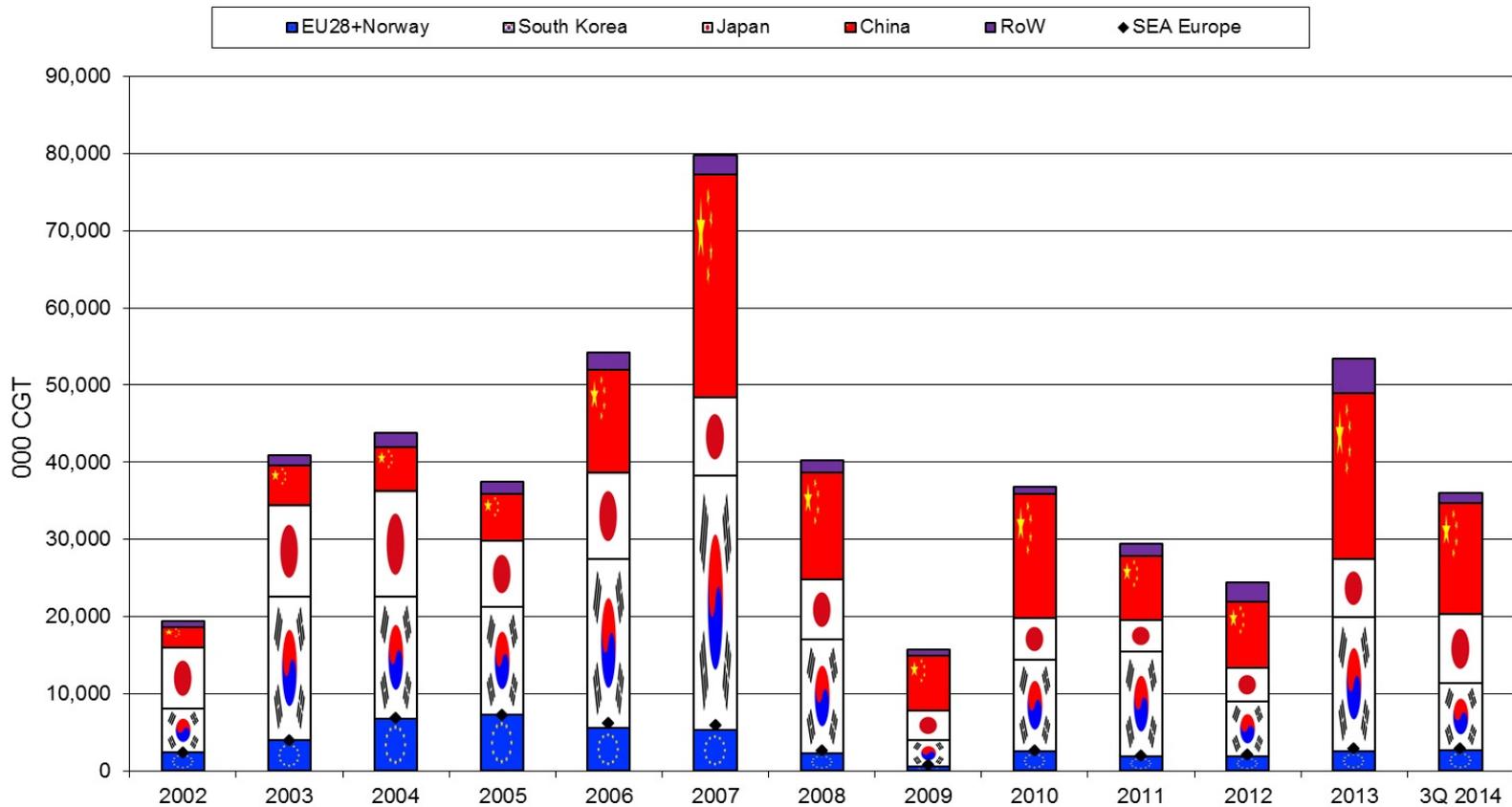




Business challenges

Competitors

New Orders by Main Shipbuilding Areas

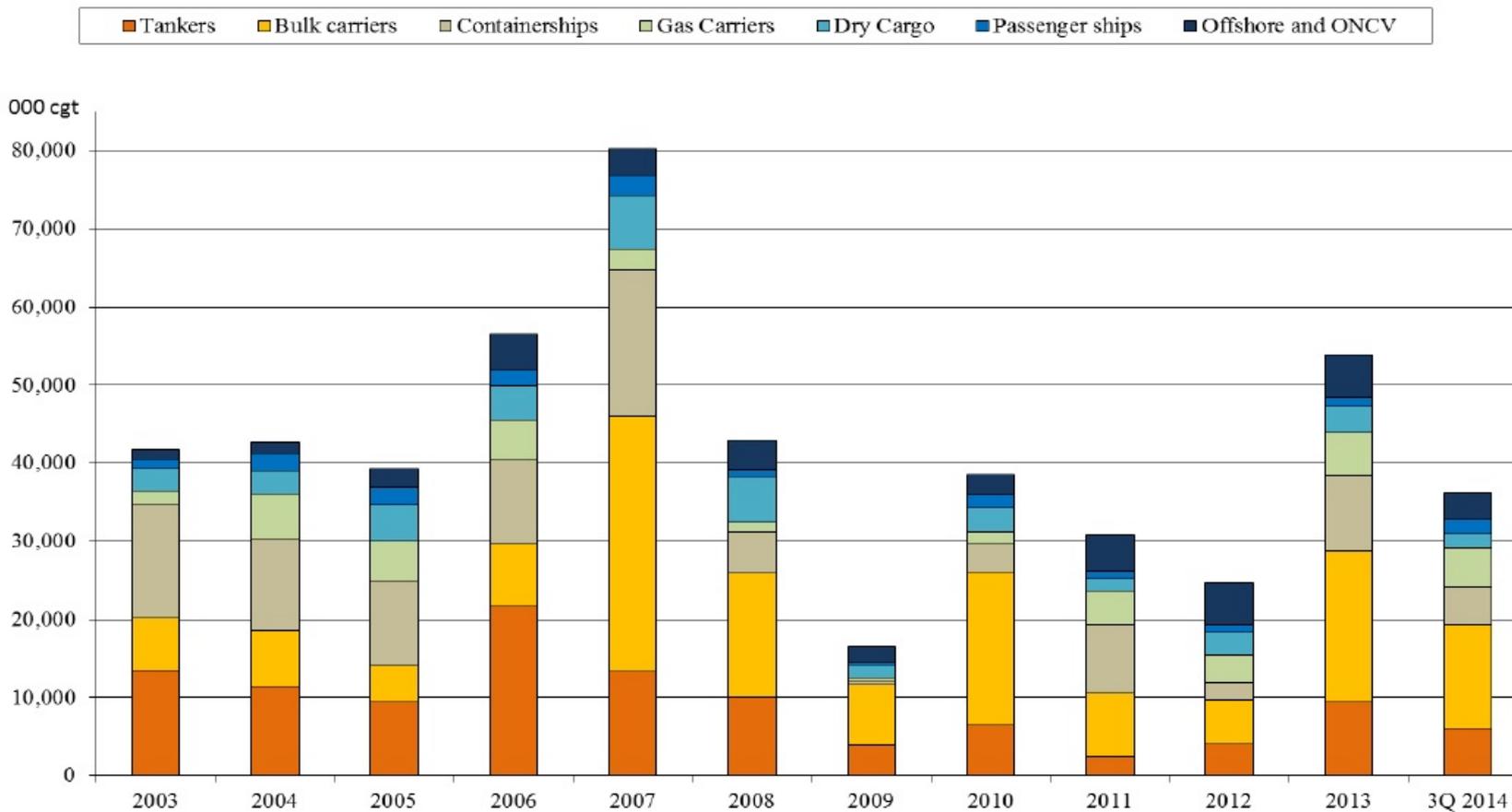




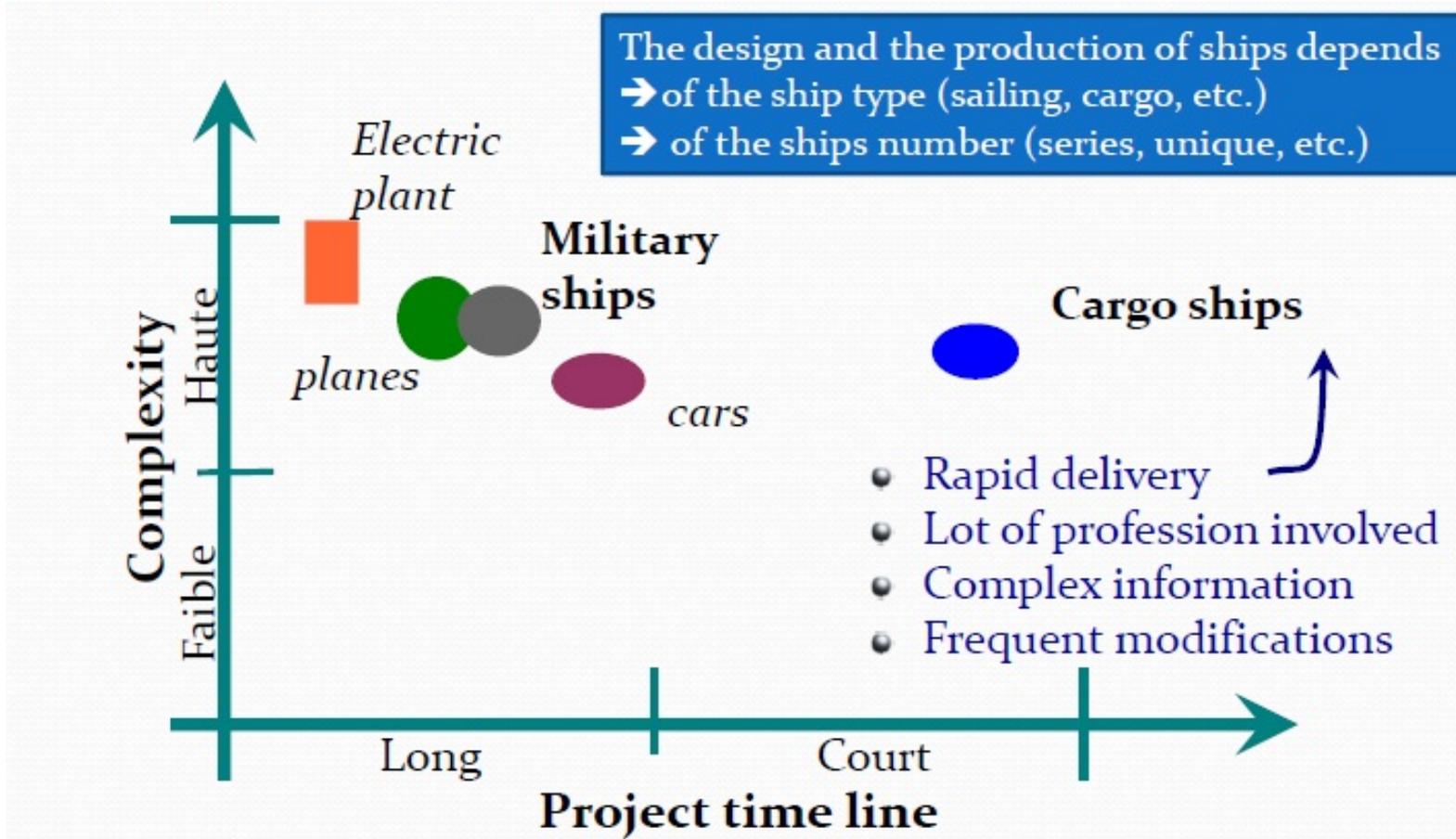
Business challenges

Competitors

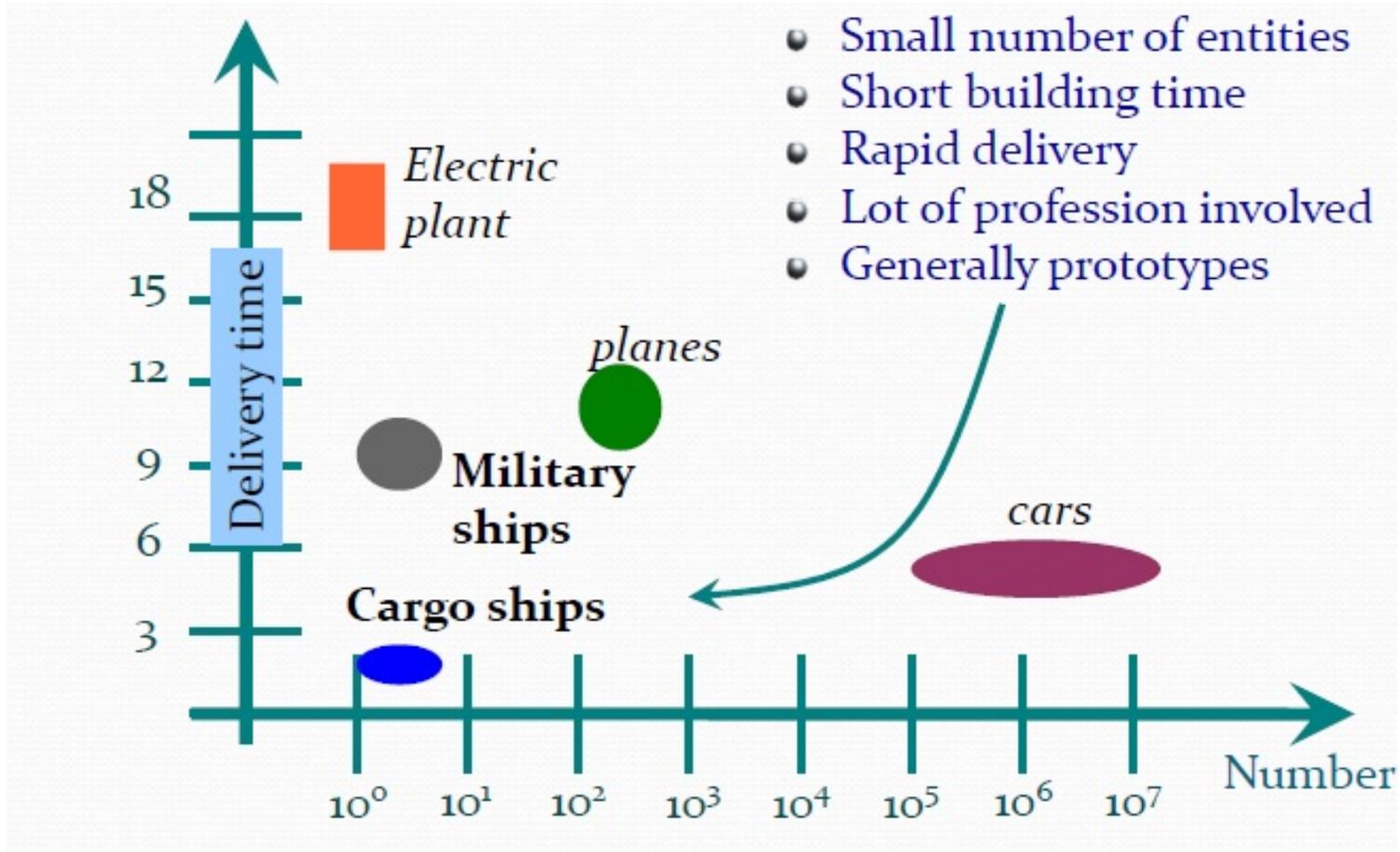
World New Orders by Ship Types



Technical challenges



Technical challenges





Conclusion

Strengths of EU shipyards

- Level of innovation
- Innovative SMEs (Small and medium-sized enterprises) and strong position of marine equipment industry
- Strong connections between shipyards and marine equipment suppliers
- Efficiency
- Specialization in niche markets



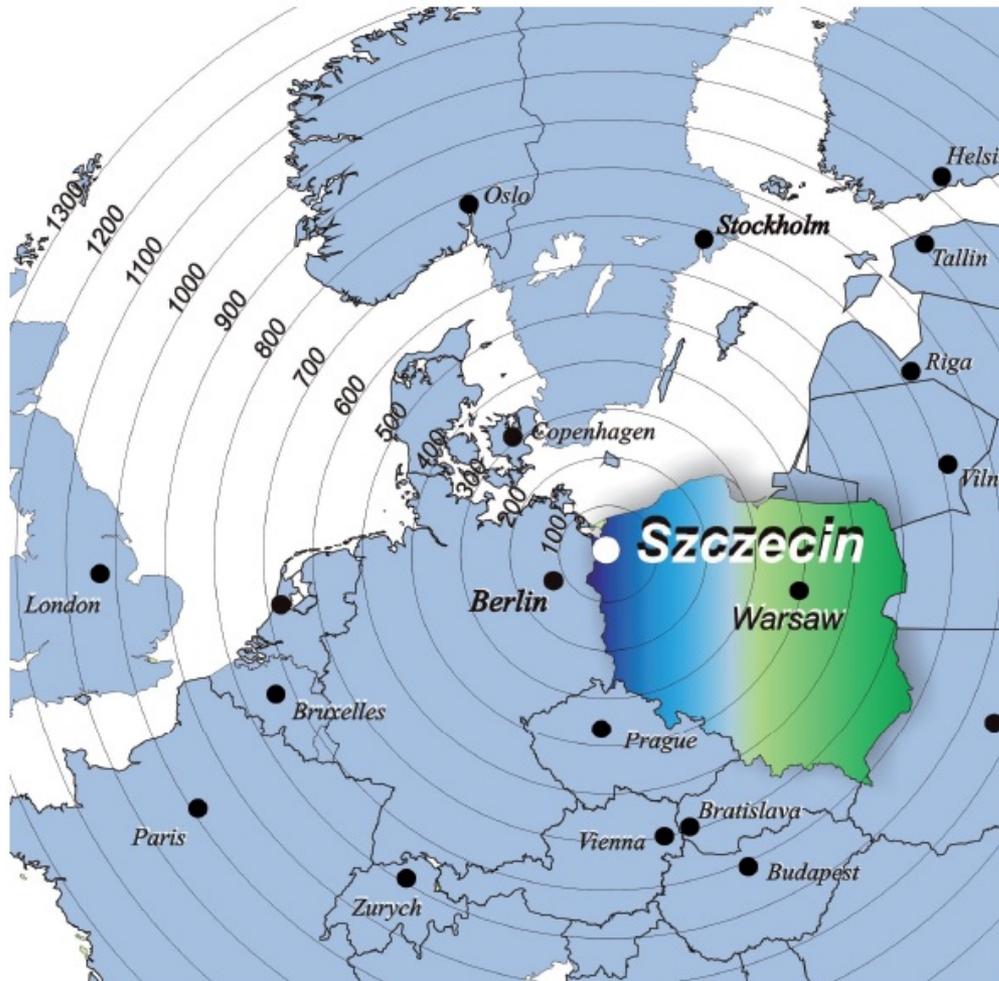
Conclusion

Weaknesses

- Cost levels (wage levels and steel prices)
- Access to skilled labour
- Access to finance
- Potential difficulties in knowledge protection
- Fragmented government responses

Affected factors

Location



DISTANCES

12 km
from the German border

65 km
from the Baltic Sea

127 km
from Berlin

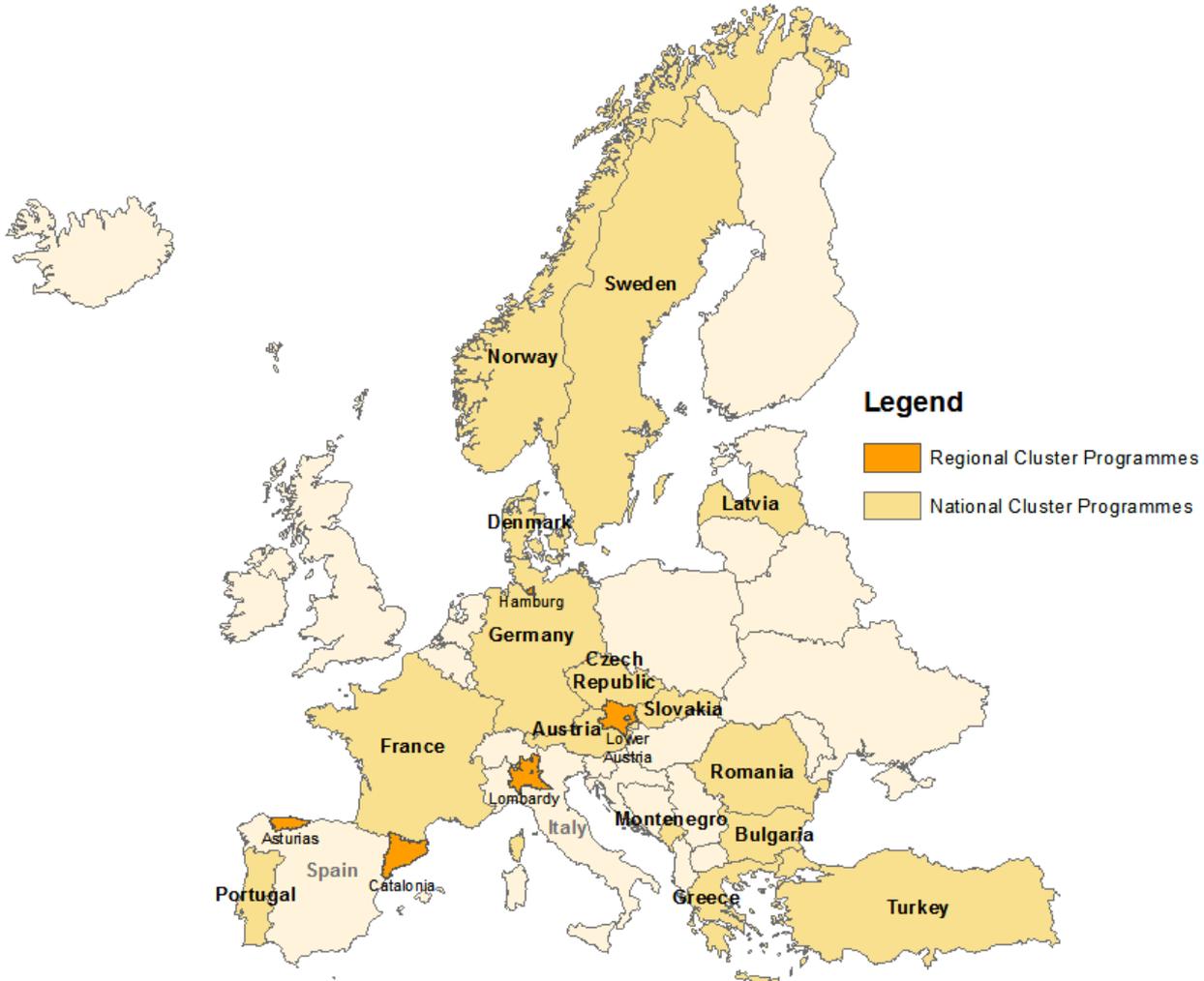
281 km
from Copenhagen

505 km
from Prague

450 km
from Warsaw

Affected factors

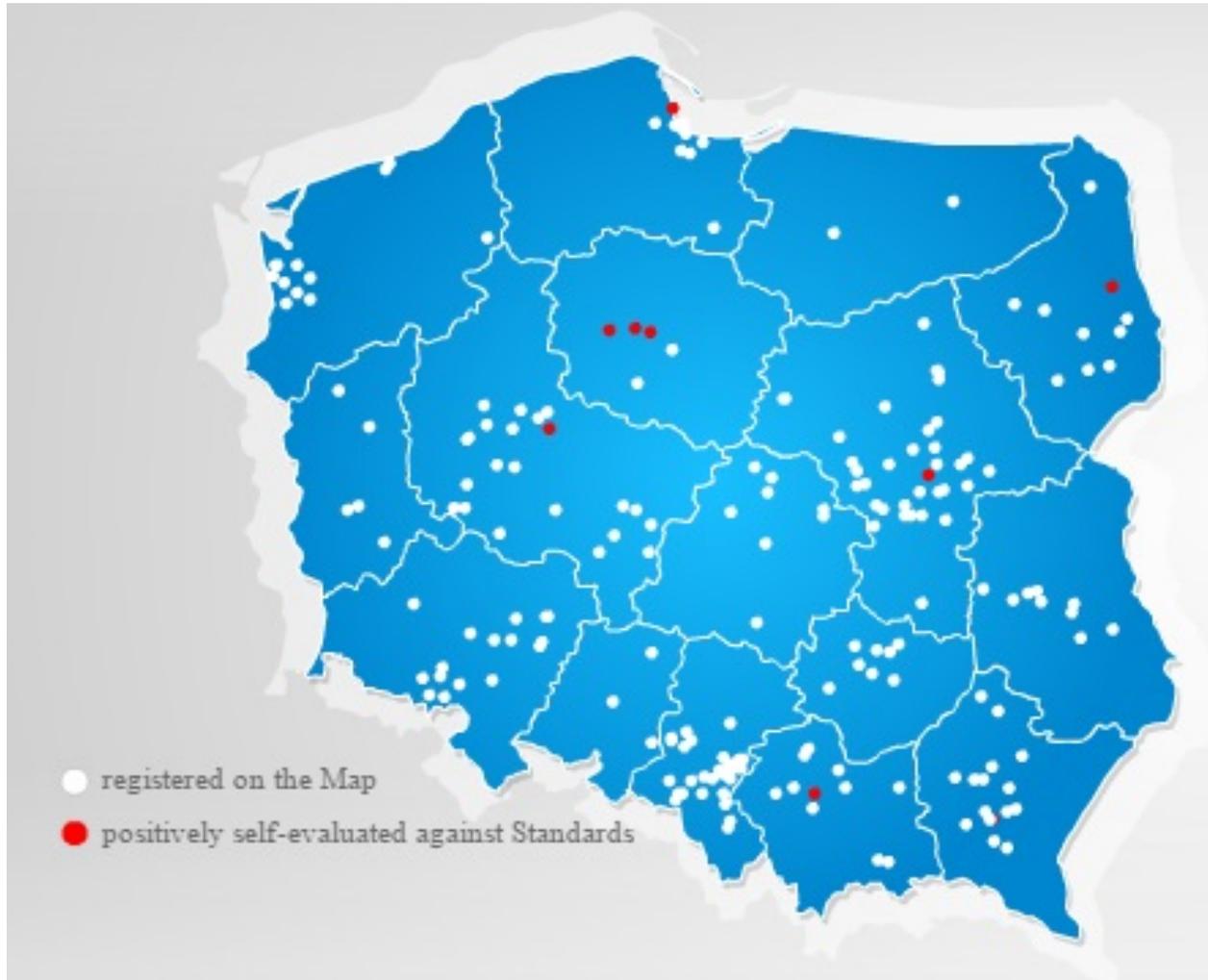
Collaboration - Cluster





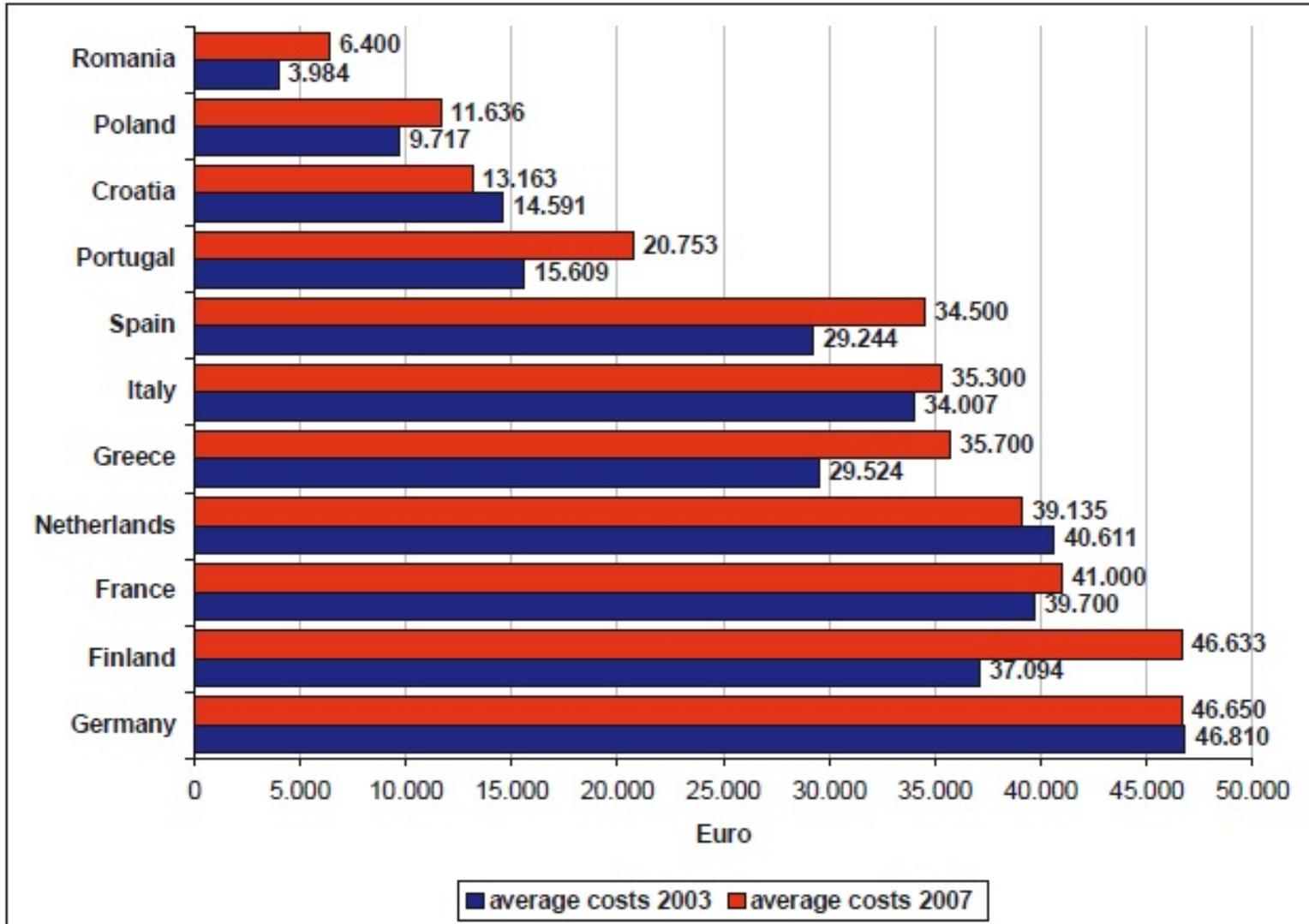
Affected factors

Polish Cluster



Labour resource

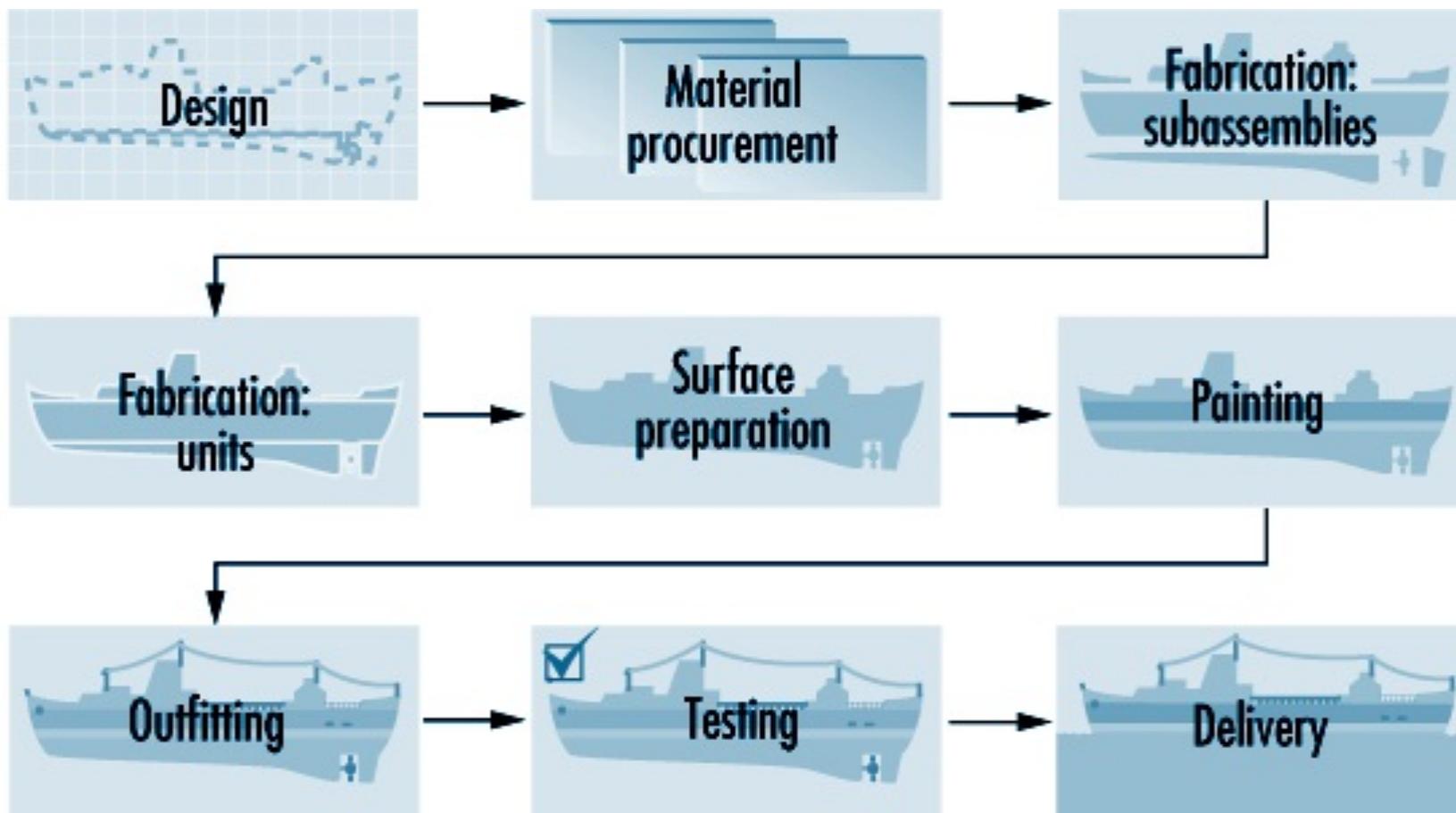
Labour cost





Affected factors

Shipbuilding process



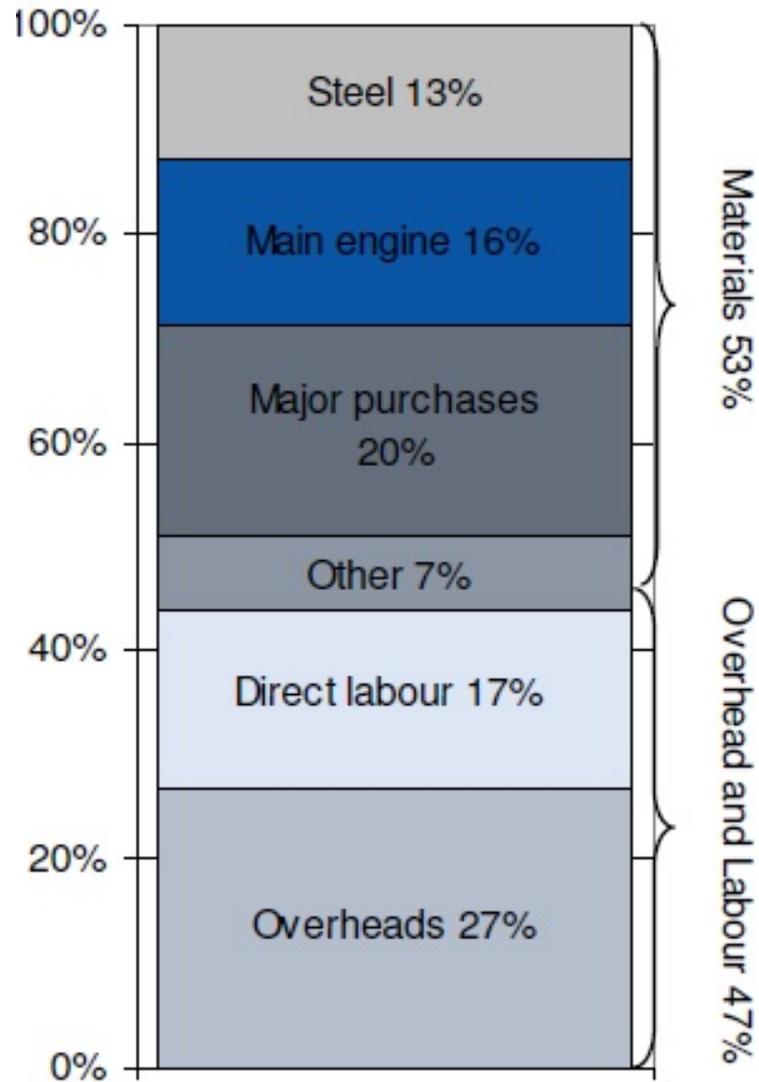


Affected factors

Shipbuilding process

Level	Description
1	Early 1960s – welded hulls, small cranes (<50 t), multiple open berths, Manual operating systems.
2	Late 1960s/ early 1970s, larger cranes (<250 t), some mechanization and pre-outfitting, numerical controlled metal cutting machines. Some computerized systems.
3	Late 1970s, large capacity cranes (>350 t). High degree of mechanization and use of computers. Block manufacturing shops.
4	Technology advances of the middle 1980s. Generally large docks, protected microclimate zones, High lifting capacity of Goliath cranes (>800 t)
5	1990s, with automation, integration of operating systems, use of CAD, CAM, CAPP.. Increased automation and robotics in welding, pipe shops.
6	2000 to present: large, renovated and some completely covered shipyards, large grand and ultra blocks to 3000 t, mainly robotics for welding and part assembly.

Shipbuilding process



Steel fabrication

Lofting



Steel fabrication

Lofting



Steel fabrication

Lofting



Steel fabrication

Lofting





Bending



Bending



Welding

Submerged arc welding (SAW)



Gas tungsten arc welding (GTAW)



Transportation



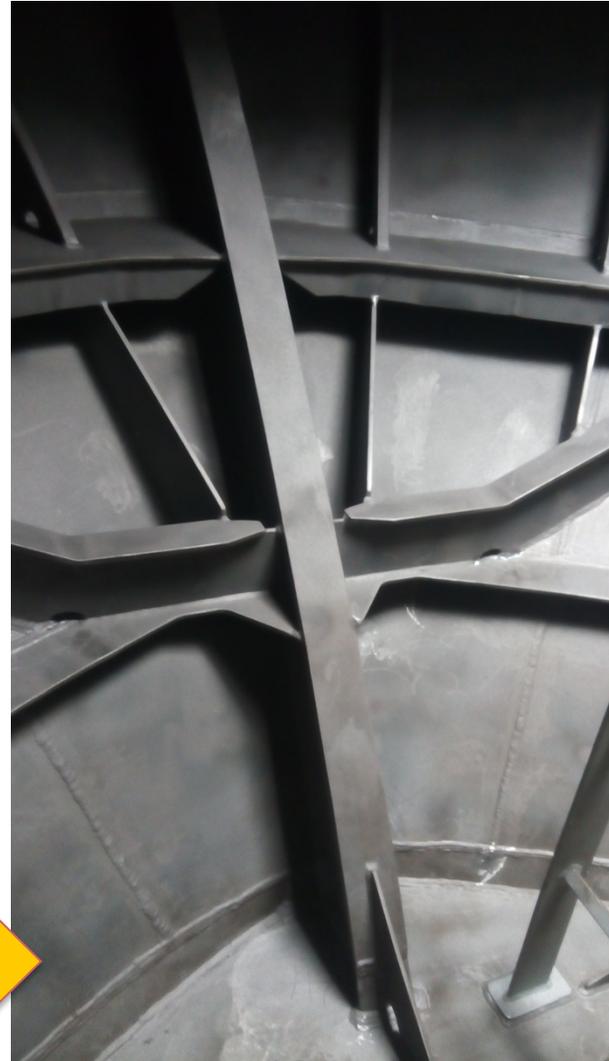
Erection



Painting



Blast cleaning →



Painting



Launching



Launching



Launching



Products

Service vessels



Products

Fishing vessels



Products

Ferry



Products

Icebreakers



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Thank you



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