



Experience in North

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ESL SHIPPING TODAY

The leading carrier of dry bulk cargoes in the Baltic Sea region



1949
—
Founded

49
—
Vessels

16.5 MT
—
Cargo volume in 2017

464,000 DWT
—
Vessel capacity in 2018

160 M€*
—
ESL-AtoB@C pro forma combined
net sales in 2017

11 %
—
ESL-AtoB@C pro forma EBIT-%
in 2017

*Figures are not IFRS-compliant

INVESTING IN SUPERIOR COMPETITIVENESS

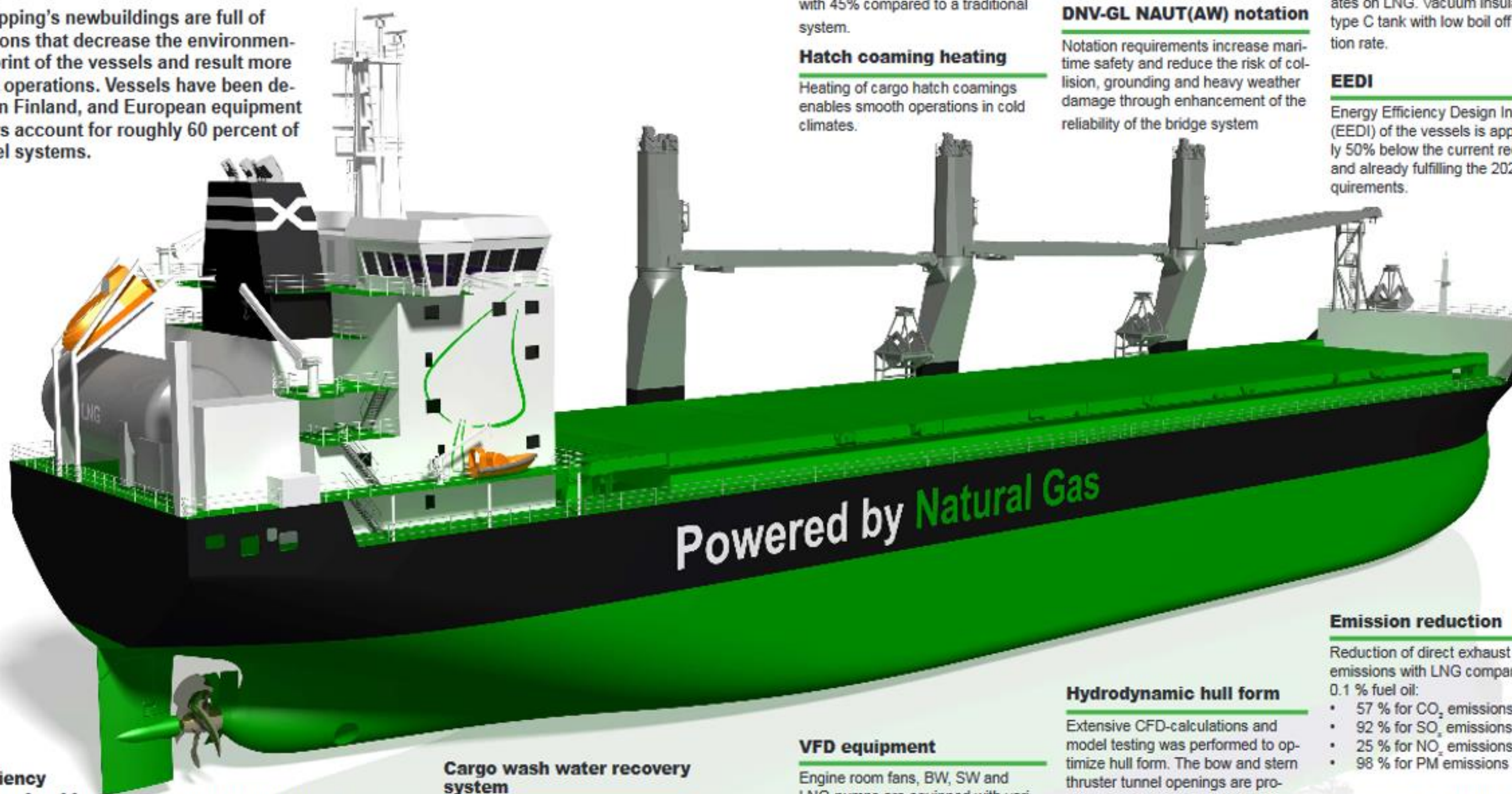
Environmentally friendly LNG-fuelled vessels



<p>The LNG vessels will improve profitability by lower operating costs</p>	<p>2 x 25,600 DWT — vessel carrying capacity, M/S Viikki & Haaga</p>	<p>Designed with Finnish Deltamarin 60% of vessel systems by European suppliers Built in China</p>
<p>60 M€ — Value of investment</p>	<p>Long-term agreement for raw material sea transport with SSAB</p>	<p>50 % — More than 50% lower CO2 emissions</p>

INNOVATIVE NEWBUILDINGS

ESL Shipping's newbuildings are full of innovations that decrease the environmental footprint of the vessels and result more efficient operations. Vessels have been designed in Finland, and European equipment suppliers account for roughly 60 percent of all vessel systems.



Thermal insulation & Heat recovery

Vessels have improved thermal insulation and are equipped with energy saving solution for air handling unit. Heat recovery wheel reduces cooling energy consumption with 30% and heating energy consumption with 45% compared to a traditional system.

Hatch coaming heating

Heating of cargo hatch coamings enables smooth operations in cold climates.

DNV GL Clean Design notation

The notation requires special features such as 5 ppm bilge water separator, biofouling management, ODP = 0 (Ozone depletion potential), GWP max 1300 (Global warming potential)

DNV-GL NAUT(AW) notation

Notation requirements increase maritime safety and reduce the risk of collision, grounding and heavy weather damage through enhancement of the reliability of the bridge system

Energy management system

The system enables crew to optimize energy consumption.

All LNG-powered

All engines and boiler burner operates on LNG. Vacuum insulated IMO type C tank with low boil off generation rate.

EEDI

Energy Efficiency Design Index (EEDI) of the vessels is approximately 50% below the current requirement and already fulfilling the 2025 requirements.

High efficiency propeller and rudder

Optimal hydrodynamic design with rudder bulb to optimize the water flow.

Exhaust gas heat recovery

Efficient exhaust gas heat recovery

Electrical motors

In general, electrical motors of 7.5 kW and above has an energy efficiency class of IE3.

Shore power

Vessel can perform operations

Cargo wash water recovery system

Vessel is able to re-use the washing water and discharge used washing water to port facilities.

Ballast water treatment systems

Capacity 2 x 1000 m³, UV-type,

VFD equipment

Engine room fans, BW, SW and LNG-pumps are equipped with variable frequency drive (VFD) to reduce the power consumption.

Hull coating

Hull is painted with low friction ice-resistant paint. No harmful antifouling paint is used. Frequent hull cleaning

Hydrodynamic hull form

Extensive CFD-calculations and model testing was performed to optimize hull form. The bow and stern thruster tunnel openings are provided with scallops and streamline grids. Special attention for monitoring of hull surface roughness was done during the building stage.

Stator fins

The vessel is equipped with four stator fins in order to optimize the flow to the propeller and to increase

Emission reduction

Reduction of direct exhaust emissions with LNG compared to 0.1 % fuel oil:

- 57 % for CO₂ emissions
- 92 % for SO_x emissions
- 25 % for NO_x emissions
- 98 % for PM emissions

Permanent magnet PTI/PTO shaft generator with VFD drive

Shaft generator enables flexible and efficient operation of propulsion and power generation at sea as well as extra power for ice conditions through power take in/power take out shaft

BOTHNIA BULK

An industrial partnership for more sustainable Baltic sea transports

A partnership between industrial customers, ports and shipping companies to increase the sustainability of the whole supply chain

The goal is to make the Baltic sea routes more eco-friendly

Partly funded by the EU

- ESL shipping's share approximately 5 M€

 Co-financed by the European Union
Connecting Europe Facility



ONLY ONE FINNISH COMPANY REGULARLY OPERATING IN THE ARCTIC



EXPERIENCE IN THE NORTH

Preparation

Risk analysis (route)
Contract IB & permission NSRA
Education
Storages, new building

Navigation

Equipment (compasses)
High latitude navigation
Ice navigators

Technical

Maiden voyage challenges
Practices
Communication (iridium)
Spare parts

Co-operation

Charterer
Authorities
Insurance company
Ice breakers, timing

Weather and ice condition

Weather routing
Fog
Ice

Human being

Education
Time zone
New challenges and experience

HOW WE MANAGED

Preparation

Different trading areas
Lot of differences
Predictable schedule

Navigation

Safely at home 😊

Technical

Storages and spare parts
No technical issues due to cold weather or ice

Co-operation

Working well in all trades

Weather and ice condition

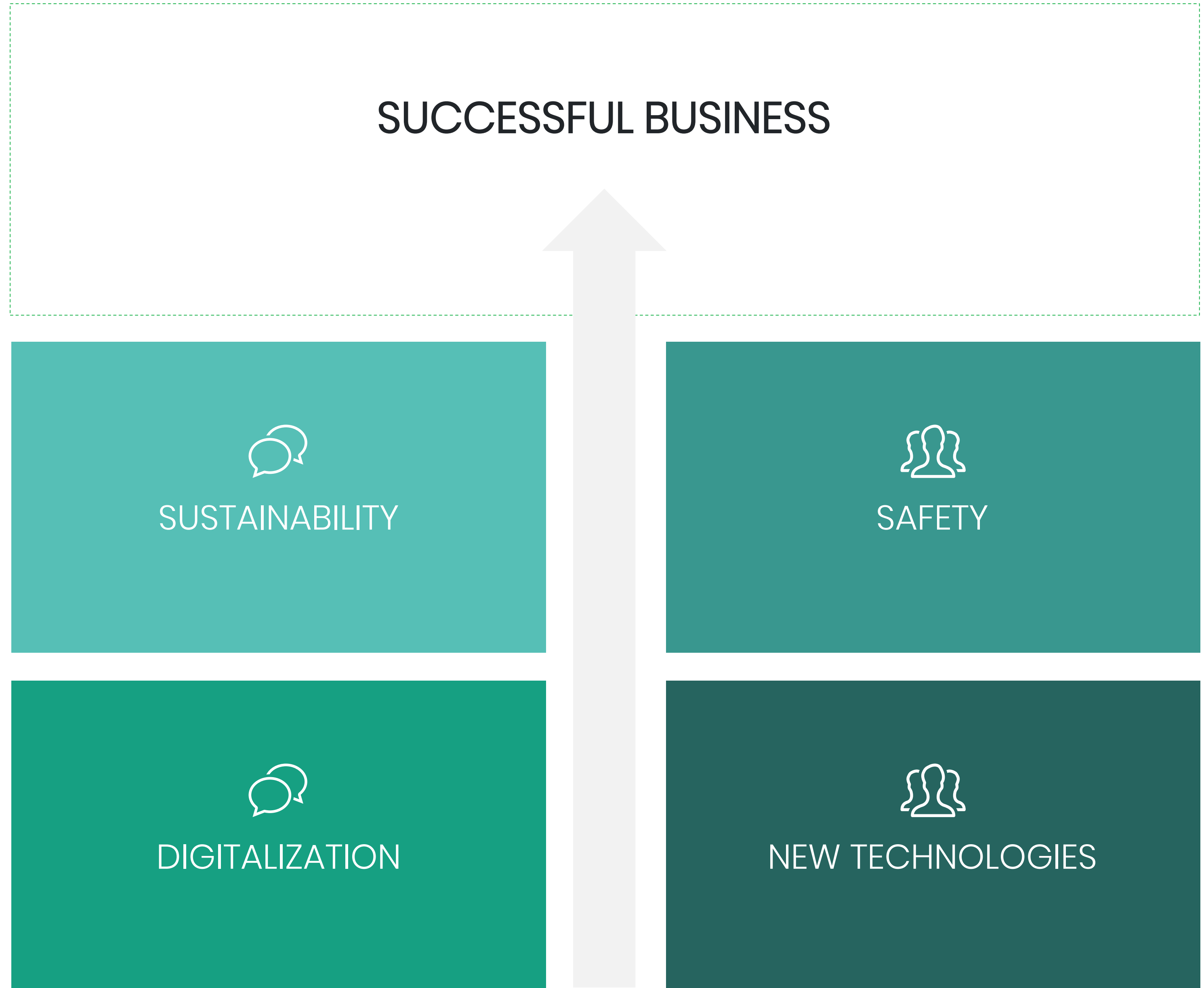
Variations depending on the trade
Different suppliers tested on weather routing

Human being

Winter time darkeness
Hard to communicate to home
Unexpected delays

THEMES

Vitally important to understand how shipping will be changed by:





THANK YOU