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***Giornata di studio sulle Soluzioni per la Sostenibilita'
Energetica ed Ambientale delle aree portuali:
Azione Pilota per il porto di Trieste***

Trieste, 9 marzo 2018





The ANIE System represents the following industrial Sectors: Power Production (including Renewable Energy Sources), Power Transmission and Distribution, Electrified Transports, Lift and Escalators, Lighting, Cables and Wire, Components and Devices for Electrical Installation, Household Appliances and Catering Equipment, Electronic Components, Automation and Instrumentation, Security and Building Automation.

ANIE industry in figures for 2016:

- 1.300 member companies
- 74 B€ turnover
- 468.000 employees
- 80% in export
- 4% R&D investments

An environmental issue

Emissions from vessels during port stay

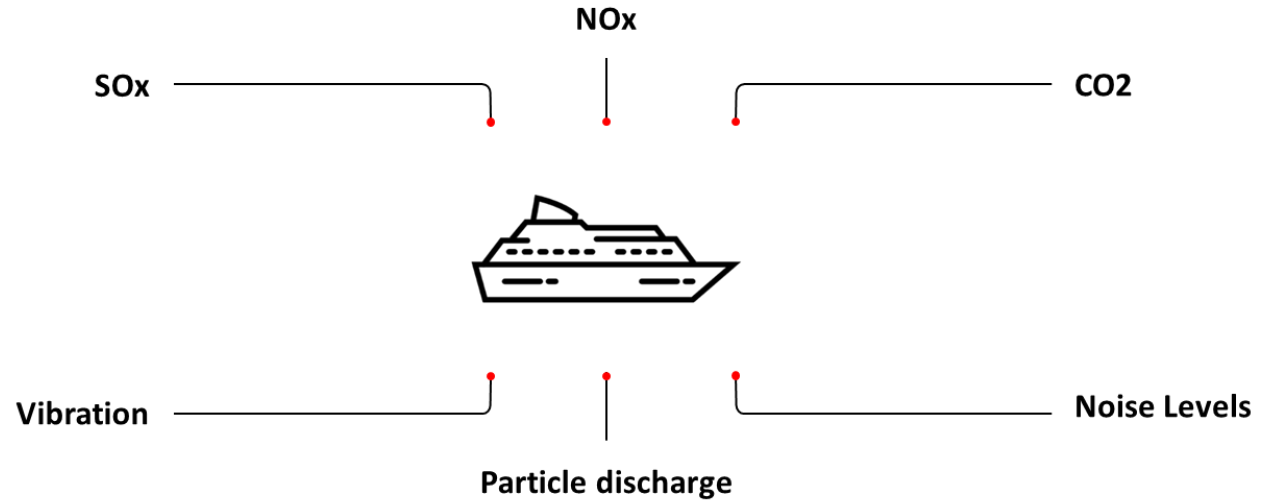
Facts

Auxiliary engines run by ships in port produce a large quantity of pollutants:

- SOx – Sulphur Oxide Emissions
- NOx – Nitrogen Oxide Emissions
- CO2 – Carbon Dioxide Emissions
- Particle discharge

Auxiliary engines run by ships in port significantly increase:

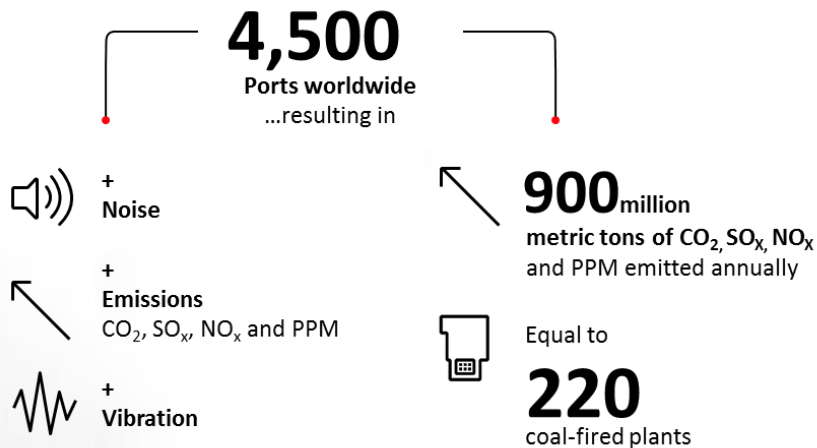
- Noise levels
- Vibration



An environmental issue

Emissions from vessels during port stay

More than
100,000
Vessels dock at



Benefits

With shore-to-ship power solutions



1 Cruise ship connected to the grid in the port



Could annually save

CO₂
emissions

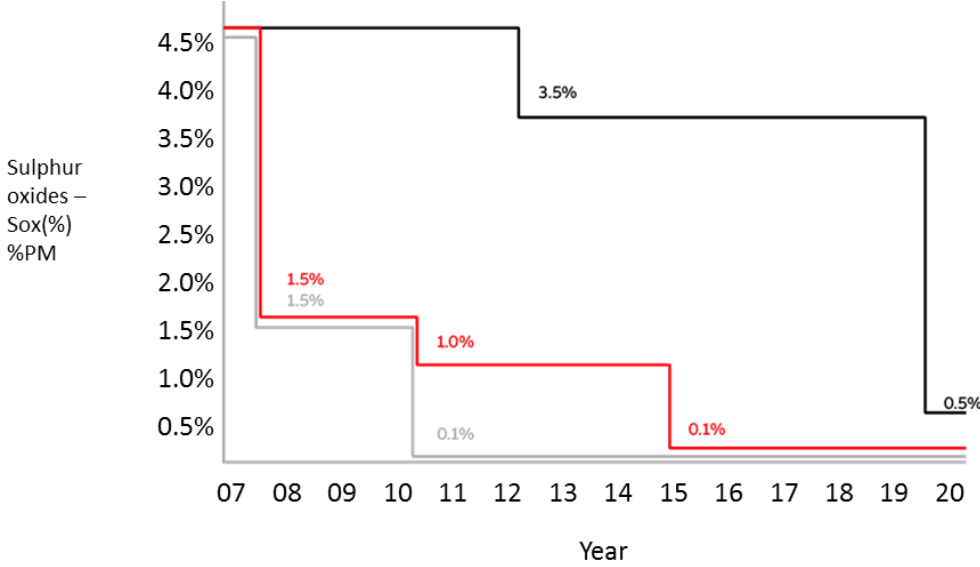


Equivalent to about

2,500
Cars

An environmental issue

Emissions from vessels during port stay



- Global Sulphur Limit (International Maritime Organization)
- Sulphur Emission Control Areas (SECA)
- EU Regulations (during vessel port stay)



<p>1 Air quality</p>	<p>2 Energy Consumption</p>	<p>3 Noise</p>	<p>4 Relationship with local community</p>
<p>5 Garbage / Port waste</p>	<p>6 Ship waste</p>	<p>7 Port development (land related)</p>	<p>8 Water quality</p>
<p>9 Dust</p>	<p>10 Dredging: operations</p>	<p>Top-10 environmental priorities of European ports for 2016</p>	

Shore-to-ship power

The only solution to cut ALL port emissions

- Shore-to-ship power is the only solution to cut all port emissions, noise and vibrations from ships
- Shore-to-ship power is a globally standardized solution already implemented in hundreds of ships and berths. Global interoperability is guaranteed by available International Standards.
- Alternative solutions are only partially capable to lower ship emissions at berths, (LNG, scrubber, catalytic reducer), however they do not affect noise and vibration.
- Most new built ships are equipped with provision for Shore-to-ship power as well as green field ports.
- Shore-to-ship power is already mandatory in US West Coast and developing in Asian countries. The European Union adopted the “Alternative Fuels Infrastructure Deployment” Directive, which has now to be implemented into National policies



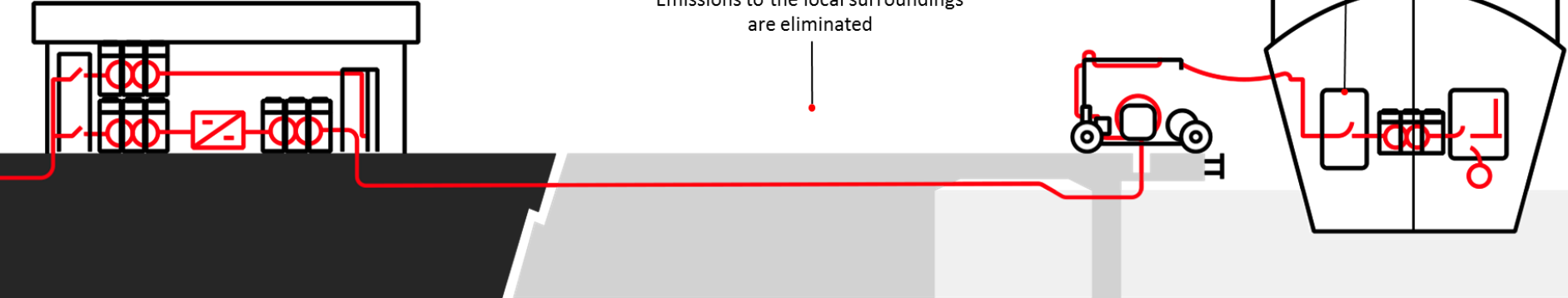
Shore-to-ship power

What does a shore-to-ship power supply do?

The ship's power load is transferred to the shore side power supply without disruption to onboard services

Ships can shut down their engines while berthed and plug into an onshore power source

Emissions to the local surroundings are eliminated



Main incoming station

Power cables

Shore-side substation

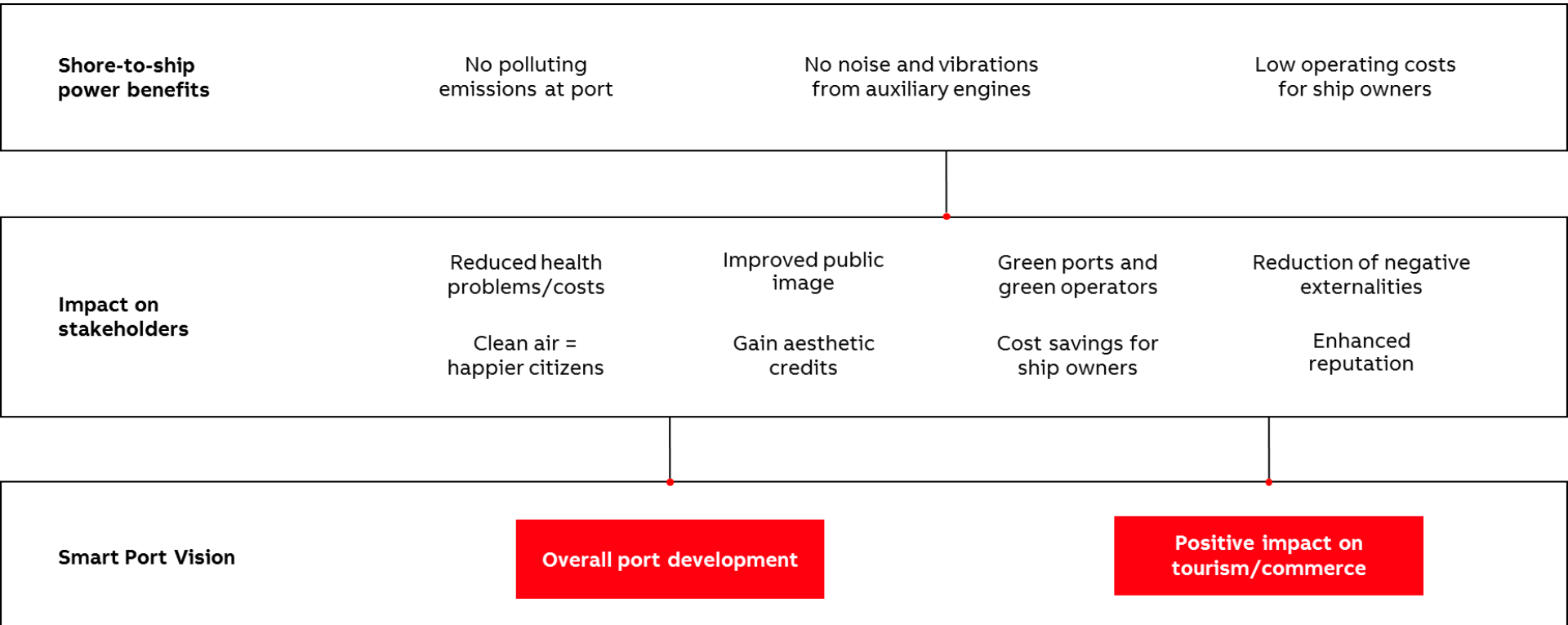
Berth terminal

On-board installation

Shore-to-ship power



Economical and environmental benefits



Smart Ports Solutions

Ports complexity drives efficiency and sustainability



Renewables integration

Shore-to-ship power

Electric cranes

Distribution substations, grid reliability, power quality

Power transformers, HV equipment, T&D Substations

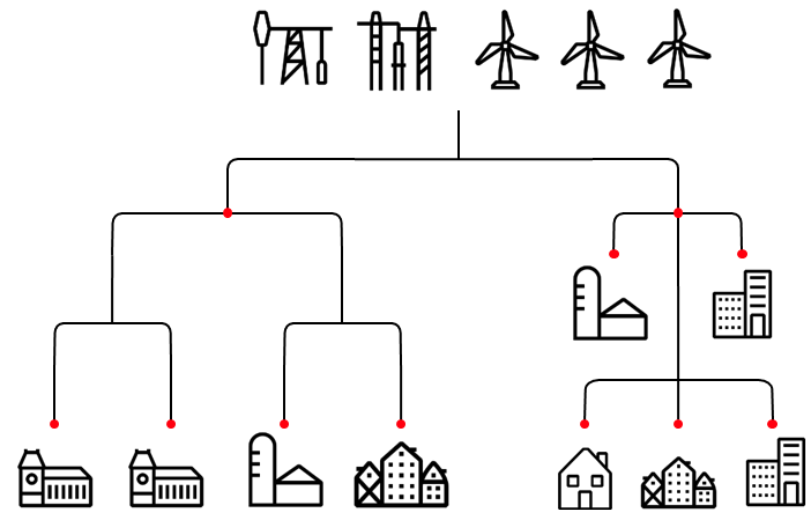
Terminal automation, eBop

Electric vehicles

Smart grids and cities

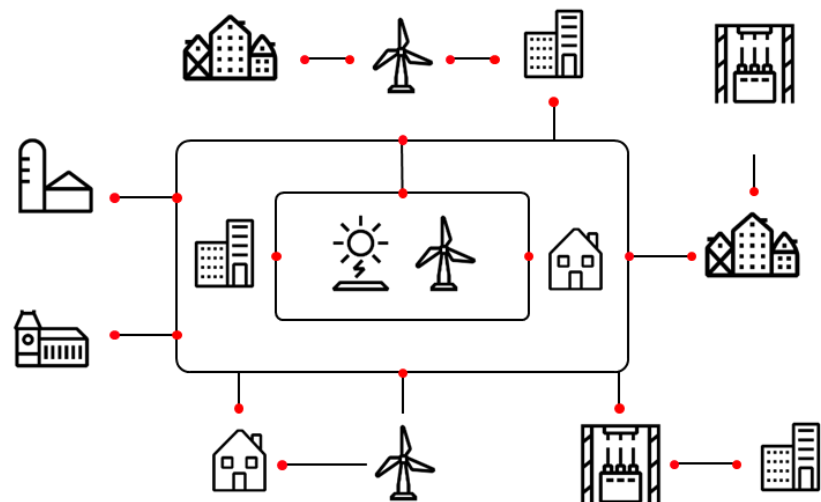
A Smart Port requires a Smart Grid

From a traditional grid



- Centralized power generation
- One-directional power flow
- Generation follows load
- Top-down operations planning
- Operation based on historical experience

To a smart grid



- Centralized and distributed generation
- Multi-directional power flow
- Intermittent renewable generation
- Consumption integrated in system operation
- Operation based on real-time data

Why Should Ports become Smart?

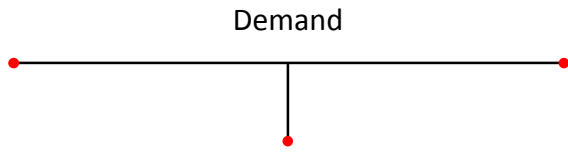
New consumers are entering ports



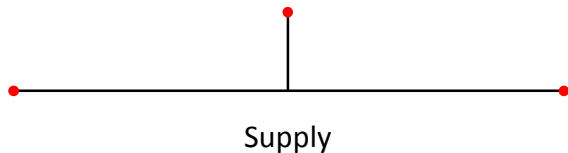
E-mobility market (E-vehicles and E-buses) is growing extremely fast



Shore-to-ship power, hybrid and fully electrical ferries are now a reality



**State-of-the-art
Port Electrification solutions**



Integration of renewables is launching ports into a new green era



Producing electricity on-shore is more efficient than on-board generation

Electrical vehicles

Smart Ports accelerate greener transportation

- Fast charging modular solutions up to 450 KW
- Flash Charging



- Fast charging
- Ultra fast charging (DC)



Some examples of S2SP & SP installations



Gothenburg, Sweden



Ystad, Sweden



Vancouver, Canada



Rotterdam, Netherlands



Fincantieri, Italy



Delimara, Malta

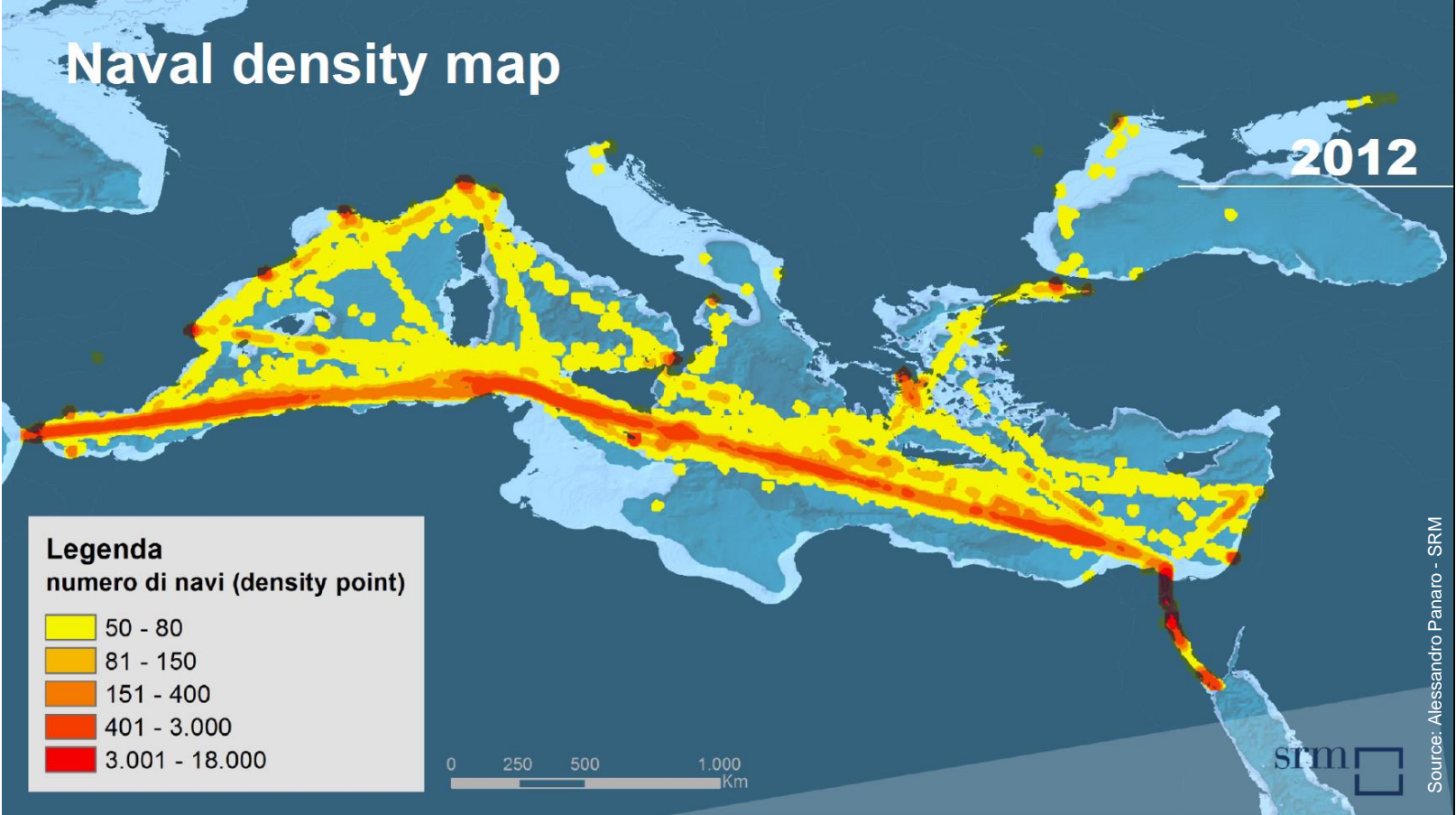


Dalian, China



Moin, Costa Rica

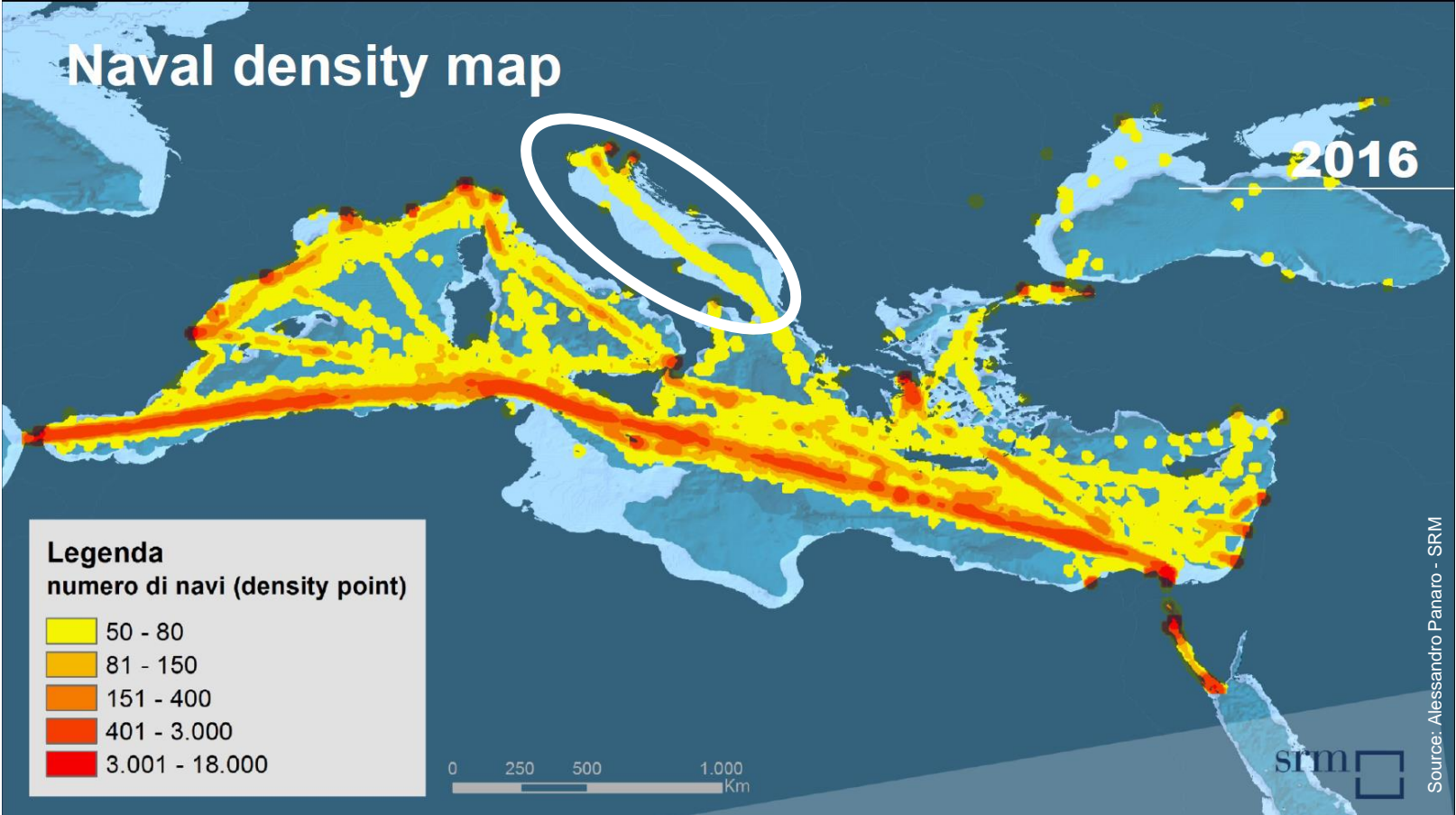
Smart Ports deployment opportunities



Source: Alessandro Panaro - SRM

2012

Smart Ports deployment opportunities



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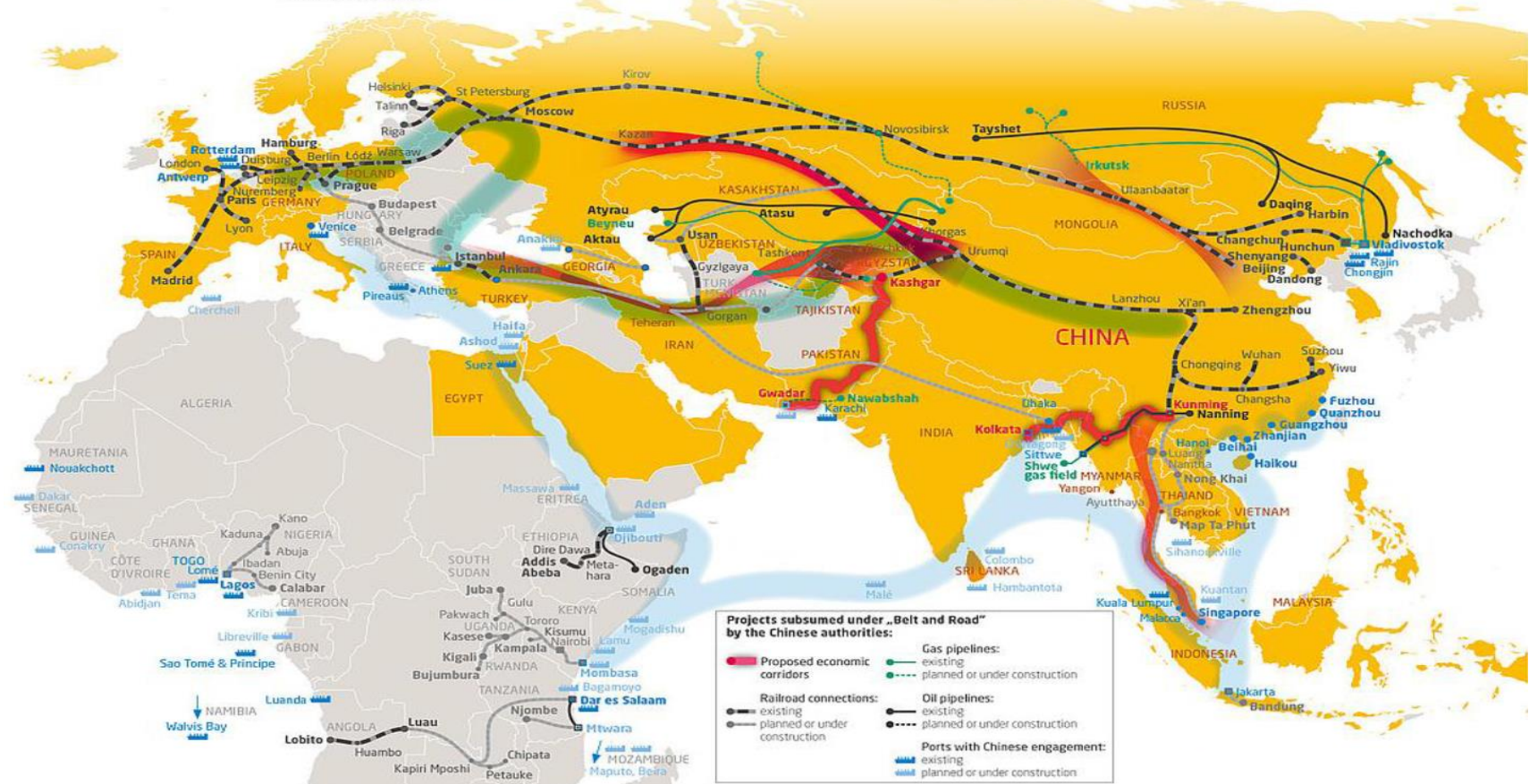
2012

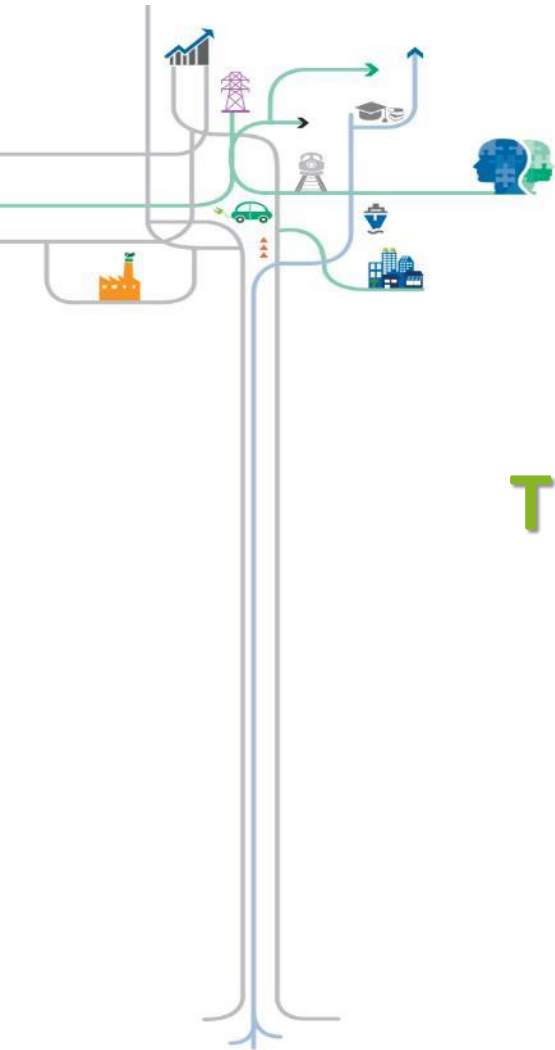
2016

Trieste: natural terminal of the new Silk Road

■ Silk Road Economic Belt
 ■ Maritime Silk Road of the 21st Century
 ■ AIIB member states

for China Studies





Thanks for your attention



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CONFININDUSTRIA