Innovating together

Raoul Tan
Port of Rotterdam International

DIGITAL
BUSINESS
SOLUTIONS
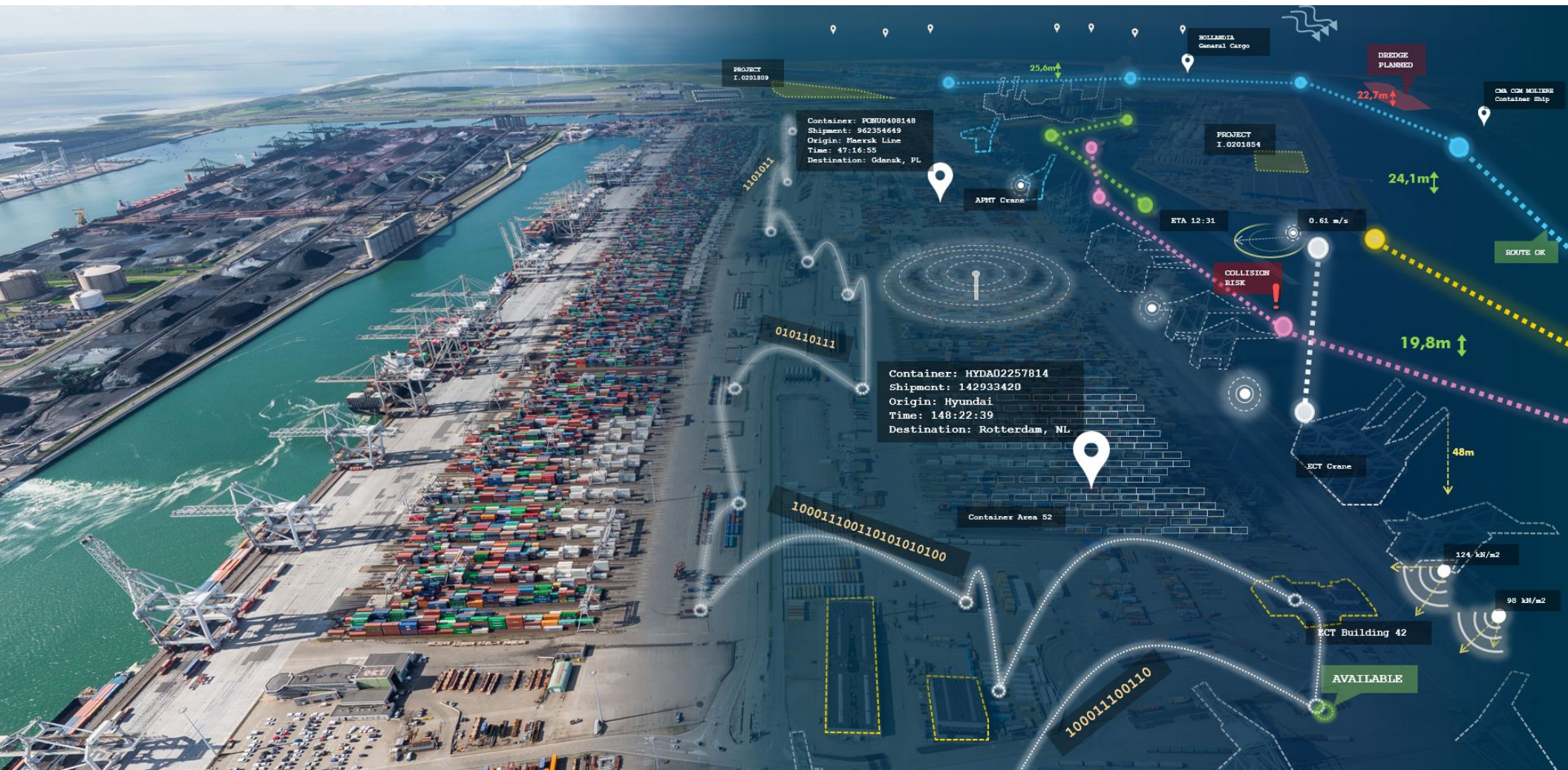
Accelerated by
Port of Rotterdam

Covered topics

- Digitalization journey and Port Forward vision by Port of Rotterdam

- Port Call Optimization – Pronto

- Interaction with audience

PROJECT
I.0201809

Container: PONU0408148
Shipment: 962354649
Origin: Maersk Line
Time: 47:16:55
Destination: Gdansk, PL

HOLLANDIA
General Cargo

DREDGE
PLANNED

CMA CGM MOLIERE
Container Ship

25,6m

22,7m

24,1m

PROJECT
I.0201854

APMT Crane

ETA 12:31

0.61 m/s

COLLISION
RISK

ROUTE OK

1101011

010110111

19,8m

Container: HYDA02257814
Shipment: 142933420
Origin: Hyundai
Time: 148:22:39
Destination: Rotterdam, NL

48m

ECT Crane

Container Area 52

124 kN/m2

10001110011010101010100

98 kN/m2

ECT Building 42

100011100110

AVAILABLE

**Awarded the world's best port
infrastructure six times in a row**

WORLD
ECONOMIC
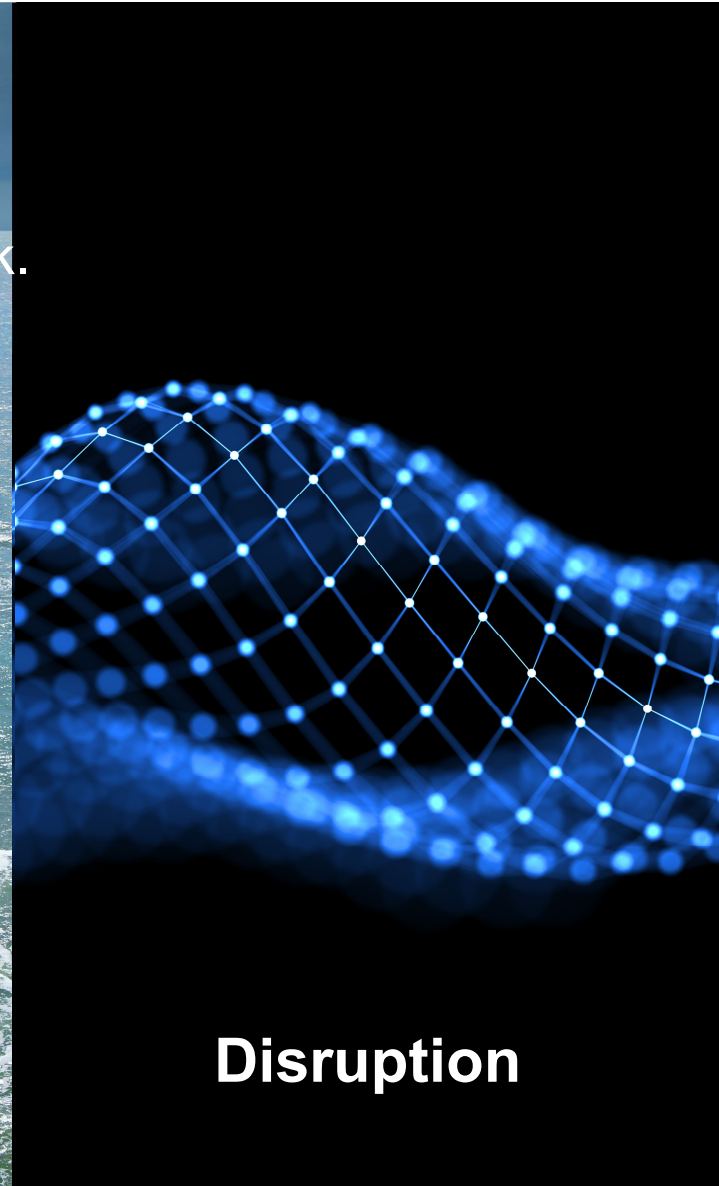FORUM

Port of
Rotterdam

Our world in transition
Faster than we think. With greater impact than we think.
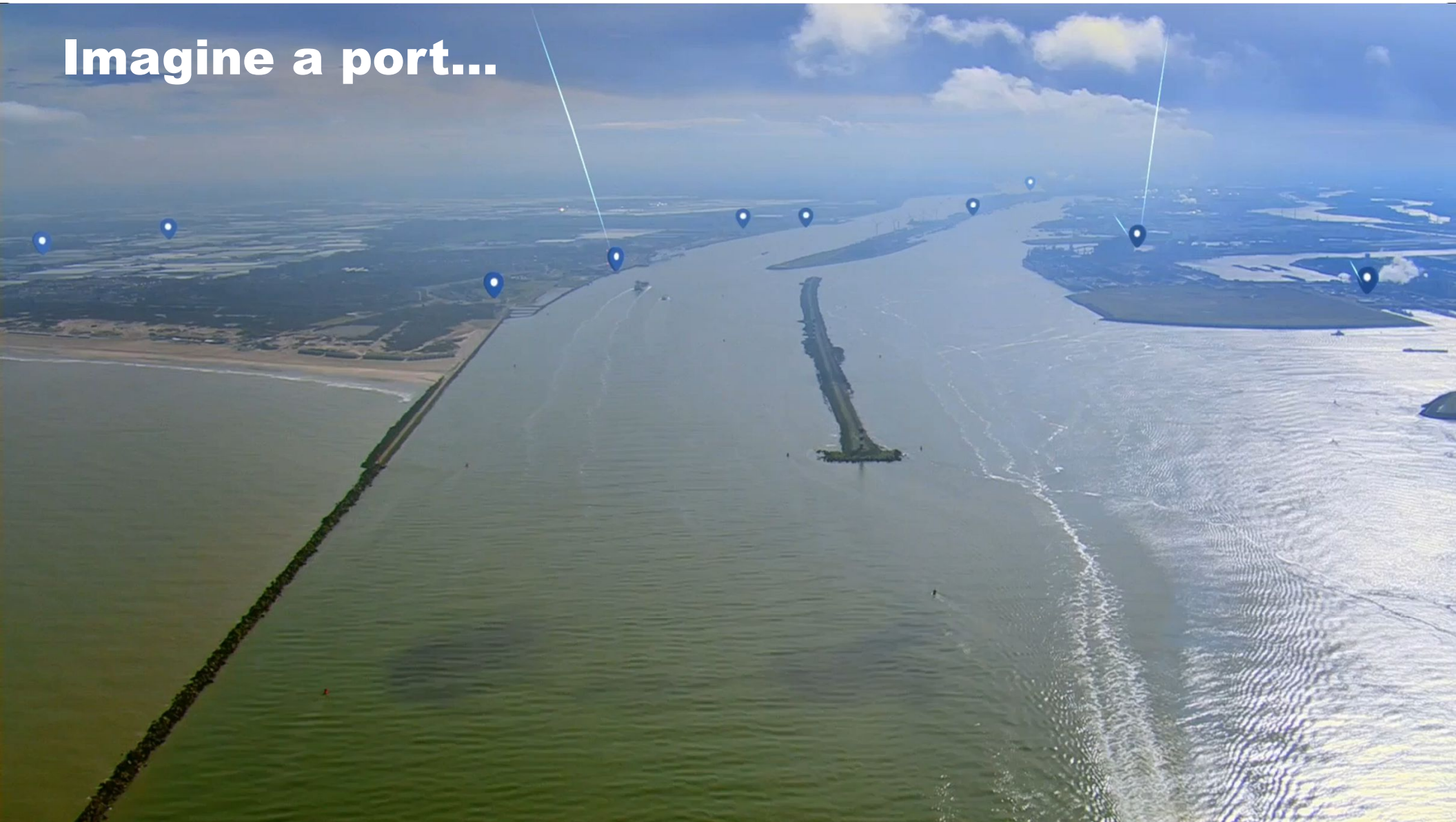
Digital Transformation

Disintermediation

Disruption

Imagine a port...

There is a lot to gain in logistics

30%

Of shipments is delayed

28

Parties involved per transaction

44%

of executives describe supply chain visibility as top priority

25%

of trucks on the road is empty

6

THINK **BIG**

START SMALL **ACT NOW**

Port of Rotterdam

Playtime is over

Source: initiative websites

'16 **PortXL**
Rotterdam
Netherlands

'19 **Katapult Ocean**
Oslo, Norway

'18 **ZeBox (CMA)**
Marseille, France

'19 **ENSO XL**
Athens, Greece

'18 **Pier 71**
Singapore

'19 **EPS by Techstars**
Singapore

'16 **PSA Unboxed**
Singapore

$ Funding Rounds

Number of Funding Rounds	6	Total Funding Amount	$1.3B

Flexport has raised a total of $1.3B in funding over 6 rounds. Their latest funding was raised on Feb 21, 2019 from a Venture - Series Unknown round.

📊 Which funding types raised the most money?   `pro` Show

📊 How much funding has this organization raised over time?   `pro` Show

Announced Date	Transaction Name	Number of Investors	Money Raised	Lead Investors
Feb 21, 2019	Venture Round - Flexport	6	$1B	SoftBank Vision Fund
Apr 27, 2018	Corporate Round - Flexport	7	$100M	S.F. Express
Sep 21, 2017	Series C - Flexport	6	$110M	DST Global
Sep 26, 2016	Series B - Flexport	11	$65M	Founders Fund
Aug 6, 2015	Series A - Flexport	18	$22.1M	Founders Fund
Apr 1, 2014	Series A - Flexport	41	$6.9M	Founders Fund

PortForward
Digital solutions by Port of Rotterdam

Challenges

THESE CHALLENGES WILL NOT BE SOLVED BY IT SUPPLIERS ALONE.

IN-DEPTH KNOWLEDGE OF PORT OPERATIONS AND DATA IS NECESSARY. WE COMBINE BOTH.

Solutions

WE STARTED BY LISTENING TO OUR CUSTOMERS.

WE BUILT POC'S AND RUN PILOTS IN CLOSE COOPERATION WITH PARTNERS.

SCRUM AGILE: EXPERIMENT, FAIL, LEARN, REPEAT.
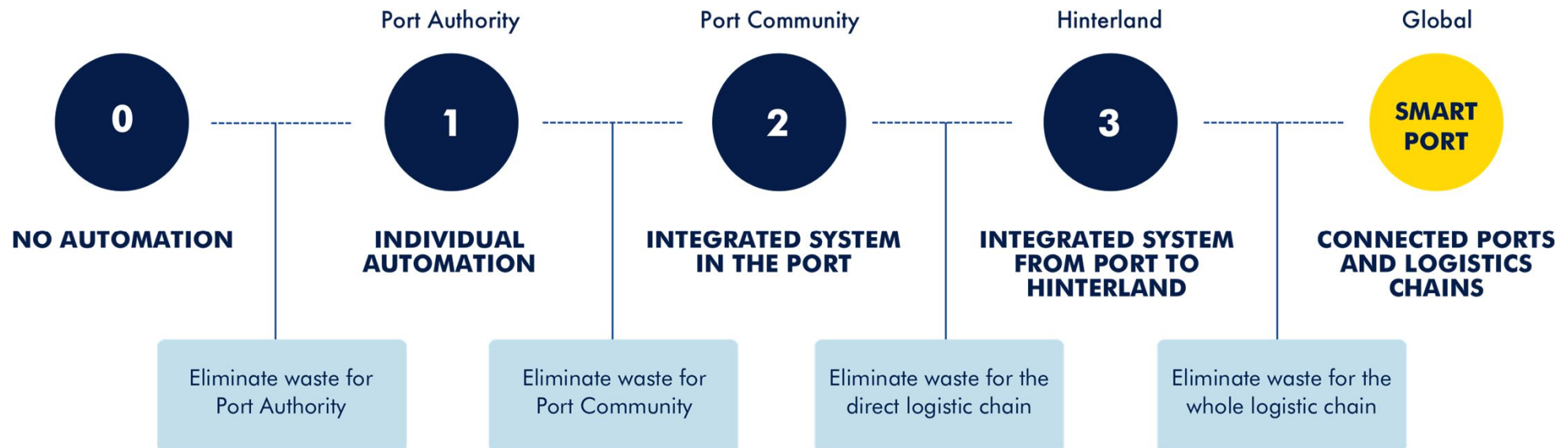
The result?

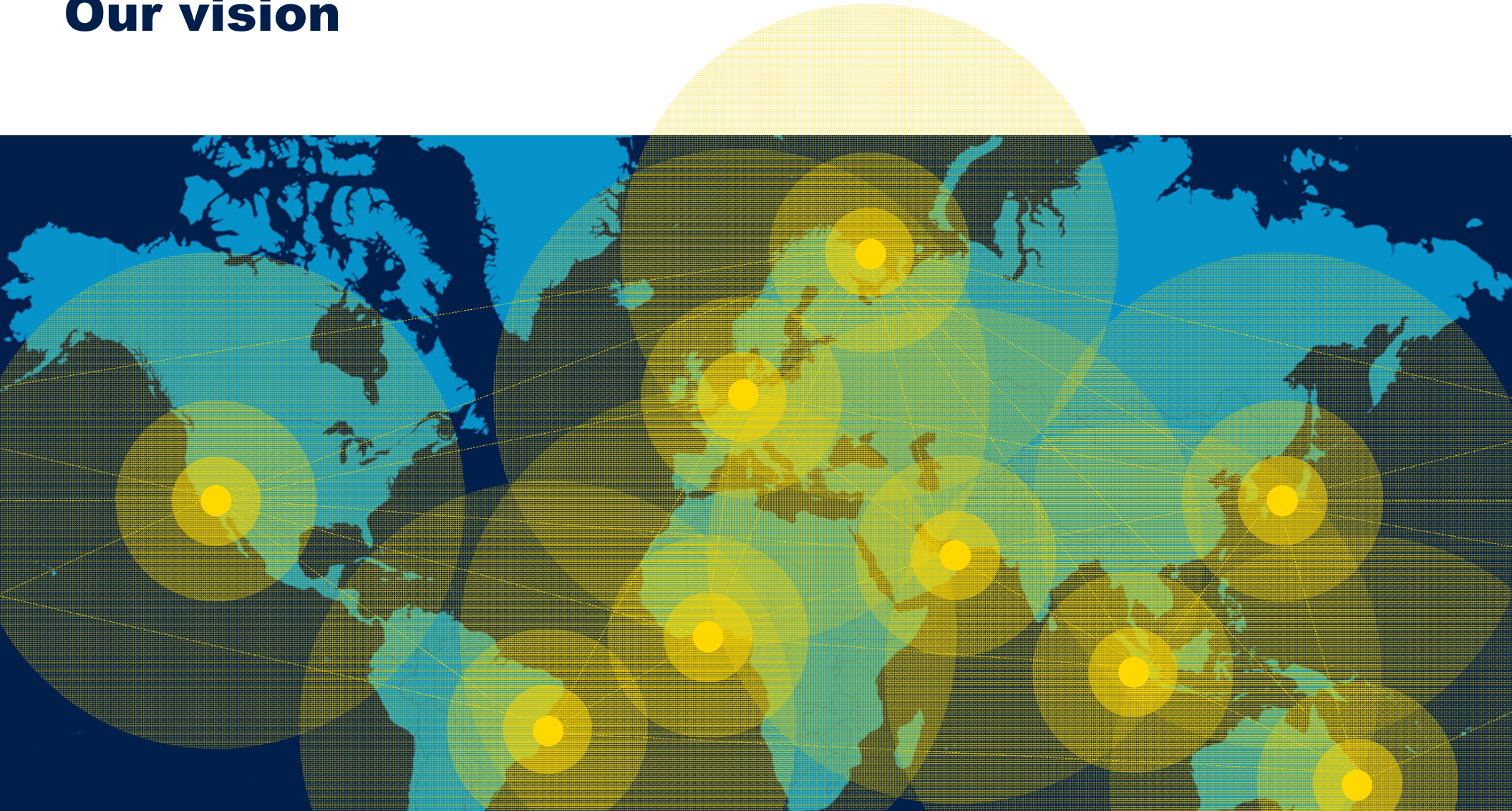Added value partner for our network.

Current phase: PORT FORWARD

- Connected to digital trends that impact global logistics and port sectors

- Added value partner for our network

- Delivering digital solutions, data services digital consultancy services and support

- Buiding a global network of smart, connected ports

Step by step towards a smart(er) port

Our vision

Connected ports

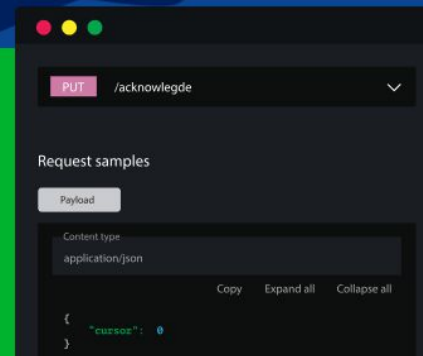| ONDERDEEL	PROTOTYPE	GEFASEERDE ONTWIKKELING		
WEBSITE STRUCTUUR	High level interactie ontwerp & prototype	Nieuwe navigatie & homepage tests	a.g.v. ...ersfeedback	
THEMA VIDEO'S	Content tests (redactie samenstellen, combineren verhalen, assets verzamelen, tone of voice)	1 Video	...eos	12 Vi...
LONGREAD TEMPLATES		Basic template met 3 speciale features	...ures ...e kaarte...	...res (n.t.b.)
ACHTERHUIS	Tests met de doelgroep MVP Begroten	3 ruimtes	Alle ruimtes	Tours van beroemde mensen
DIGITAAL DAGBOEK		Basic interface	Extra features of verhalen	Extra features of verhalen

PORT ASSETS

PORT CALL OPTIMISATION

PORT OPERATIONS

ONDERDEEL	GEFASEERDE ONTWIKKELING		
WEBSITE ST...	Nieuwe navigatie & homepage tests	1 weeks a.g.v. gebruikersfeedback	
THEMA VID...	1 Video	4 Videos	12 Videos
LONGREAD T...	Basic template met 3 speciale features	Extra features b.v. interactieve kaarten	Extra features (n.t.b.)
ACHTERHUIS	3 ruimtes	Alle ruimtes	Tours van beroemde mensen
DIGITAAL DAGBOEK	Basic interface	Extra features of verhalen	Extra features of verhalen

ANALYTICS
ORIENTATION
TRACKING
PLANNING
BOOKING

... interac... ...prototyp...
Content tests
& productie
samenstellen,
combineren

Tests met de
doelgroep
MVP Begroten

Today's reach of our solutions
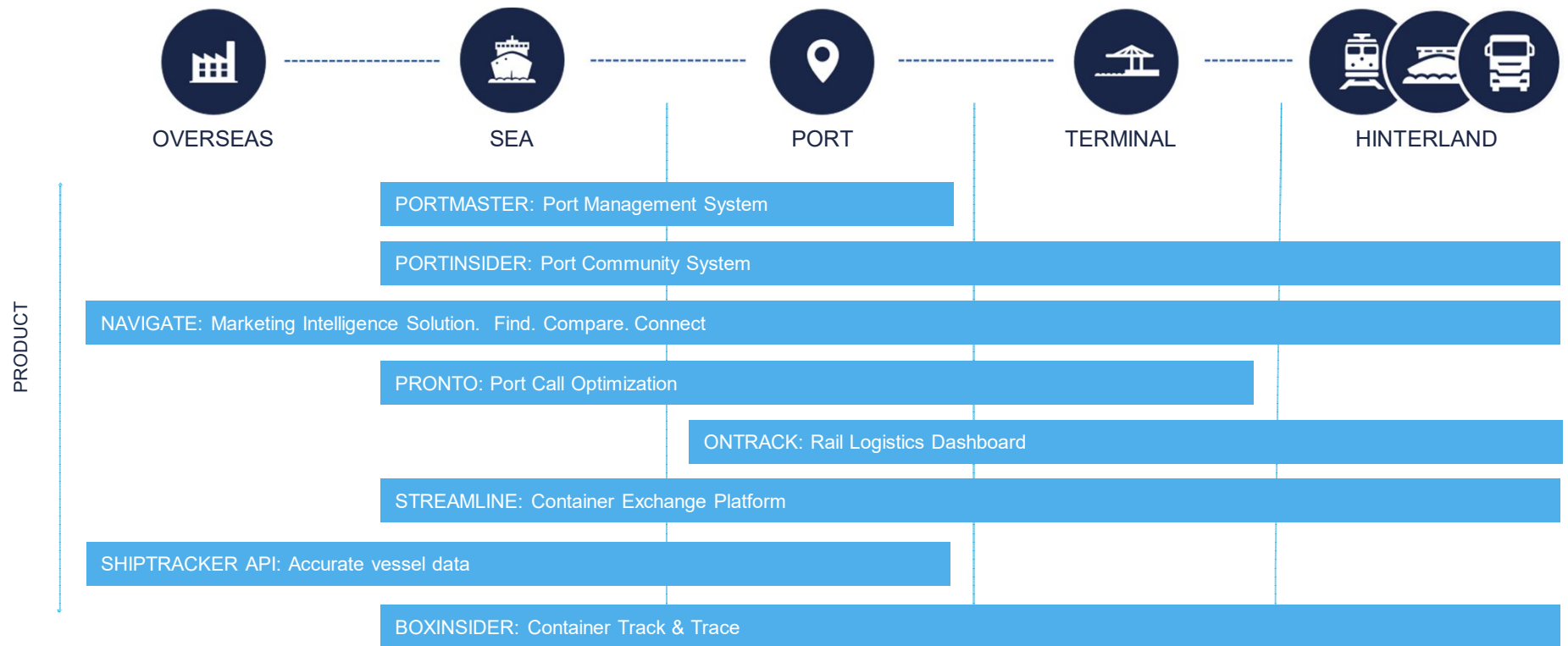
OVERSEAS	SEA	PORT	TERMINAL	HINTERLAND

PRODUCT

PORTMASTER: Port Management System

PORTINSIDER: Port Community System

NAVIGATE: Marketing Intelligence Solution. Find. Compare. Connect

PRONTO: Port Call Optimization

ONTRACK: Rail Logistics Dashboard

STREAMLINE: Container Exchange Platform

SHIPTRACKER API: Accurate vessel data

BOXINSIDER: Container Track & Trace

30% of all port calls have delays

Lack of timely and reliable data sharing is root cause

Data quality is not assured

Lack of common accepted communication standard for data exchange

Closed data culture among shipping industry

Outdated and inefficient means of communication still being used
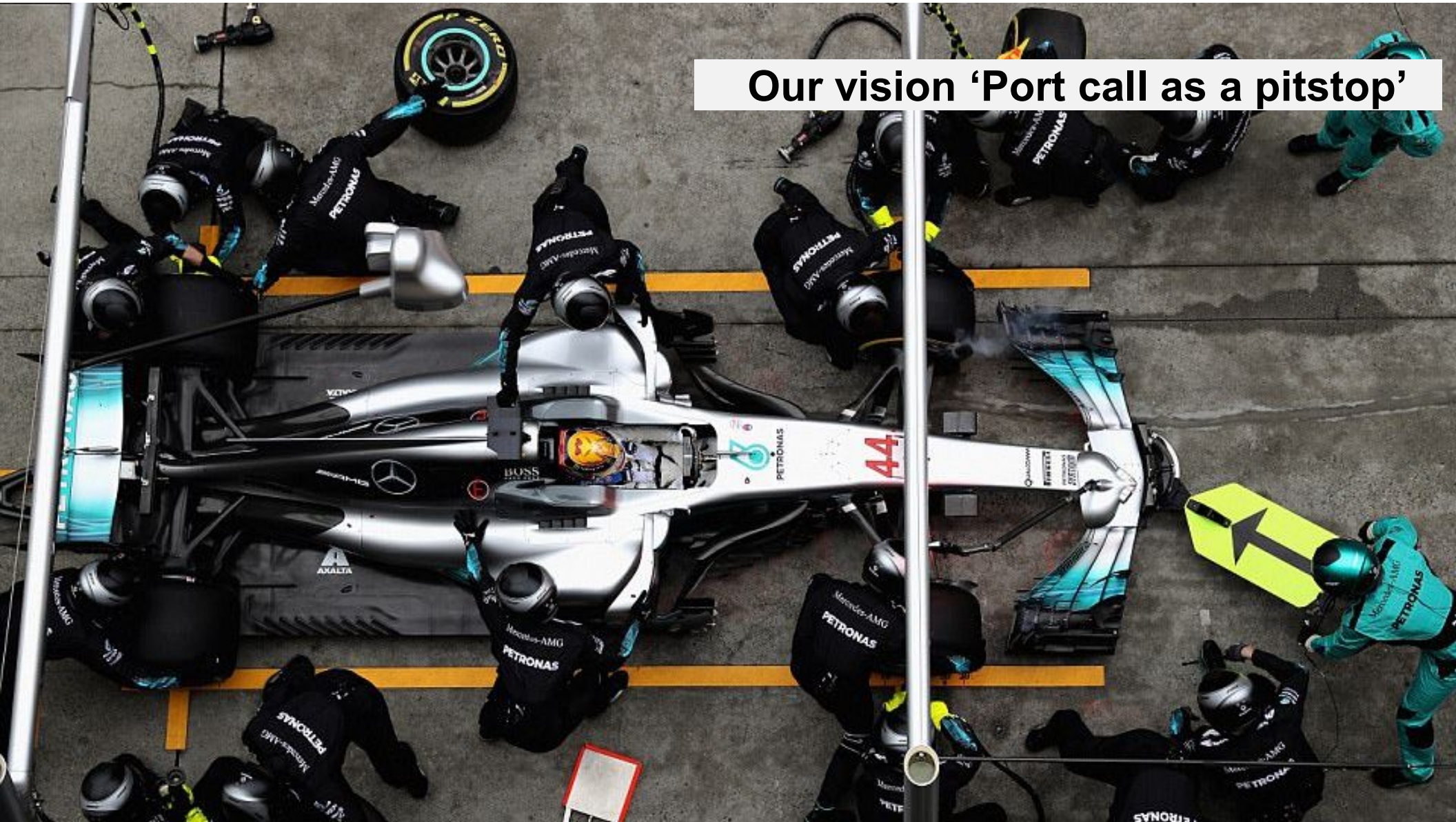
Imagine a perfect
port call...

DIGITAL
BUSINESS
SOLUTIONS

Accelerated by
Port of
Rotterdam

Our vision 'Port call as a pitstop'

Global industrial Taskforce to address standardization element

International standards to enable data exchange (2014)

International Taskforce Port Call Optimization

- Need for global standards to connect nautical information at sea to supply chain information at shore

- Establishment of International Taskforce Port Call Optimization, a neutral, global, industry initiative

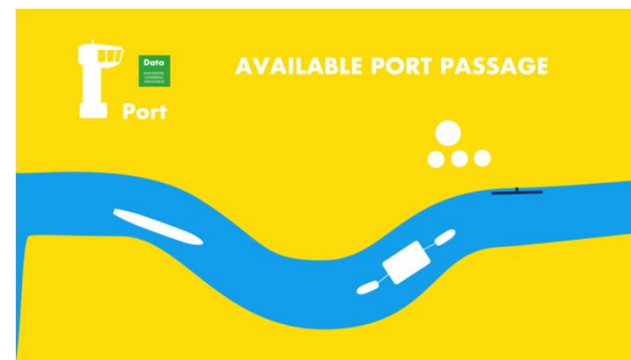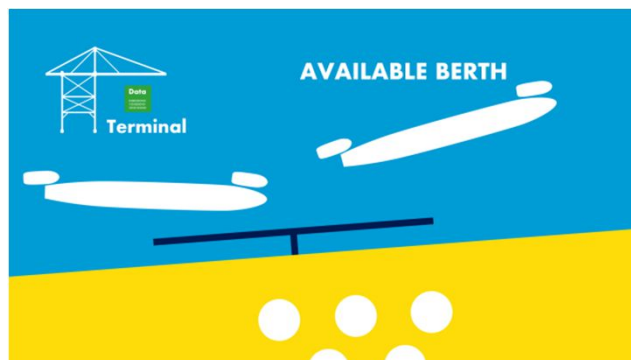- Initiated by Maersk Line and Shell, Port of Rotterdam independent chair

Port Call Optimization Standards

Minimum scope of standard definitions agreed (2015)

Masterdata (AVANTI)

SAFE BERTH

Terminal

SAFE PORT PASSAGE

Port

Event data (PRONTO)

AVAILABLE BERTH

Terminal

AVAILABLE PORT PASSAGE

Port

2017
Endorsed by:

IMO

Q1 2019
Official publication:

ADMIRALTY
The Mariner's Handbook
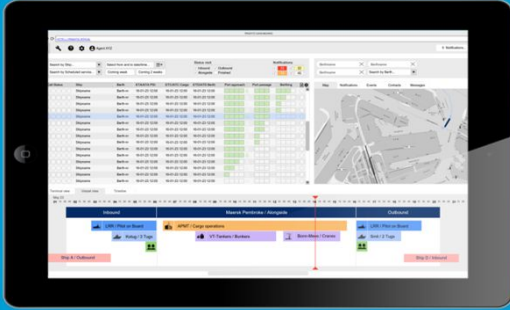
One view for all parties involved in a port call

Adapt planning to increase utilization

Service operations can also plan better and work more efficiently

More insights in port calls leads to higher safety level

Reduce port turn around time benefits all parties involved

Optimization within the port and from port to port

Pronto

5 — CAPTAIN, CARRIER & AGENT

4 — PORT AUTHORITY & NAUTICAL SERVICES

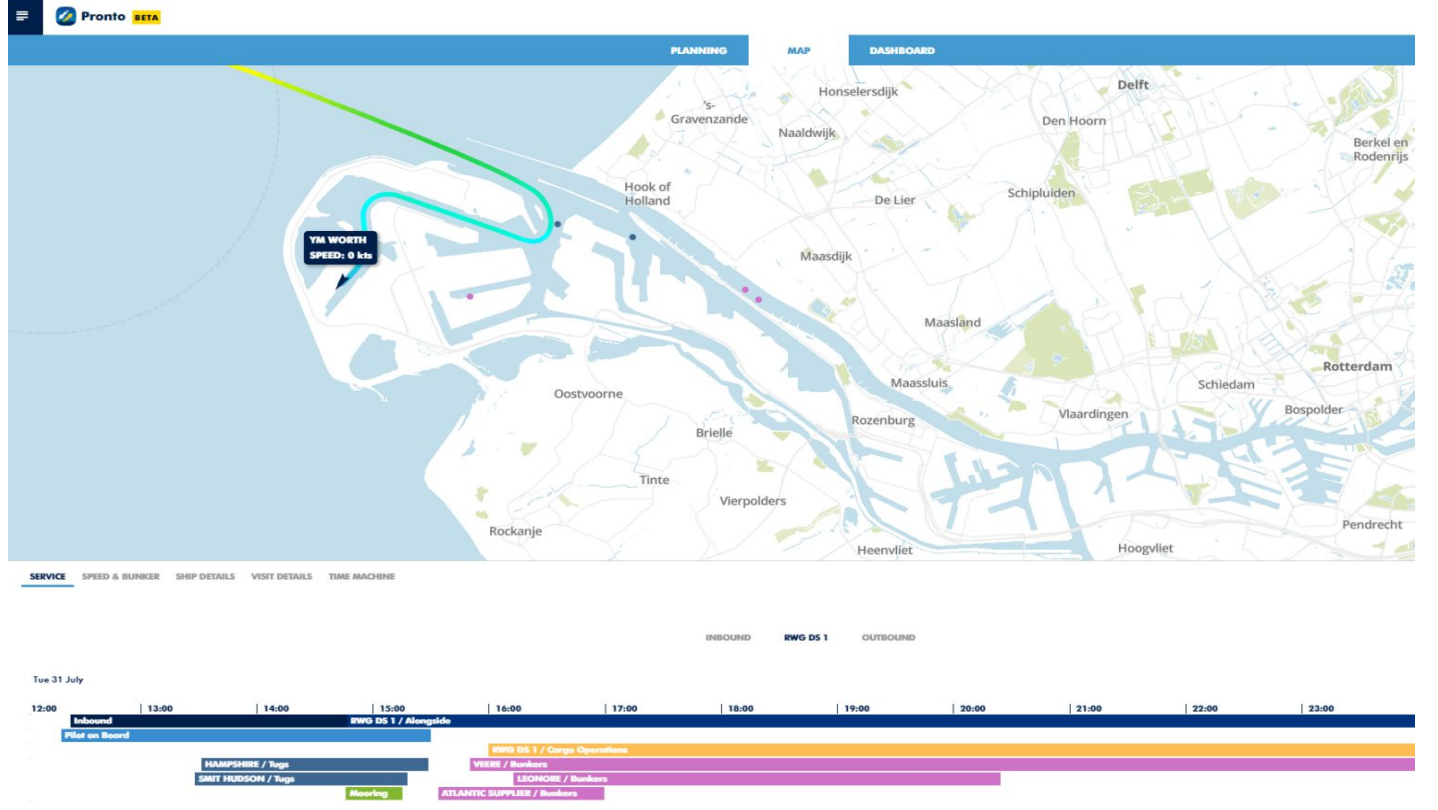3 — CARGO & VESSEL SERVICES

2 — AIS

1 — DIGITAL PORT LOCATIONS

MARIE MAERSK ETA: 20/06 🕙11:30 ❗

MSC AMY - ETD: 20/06 🕙12:15

BUNKER: VOLTERRA

TUG: FAIRPLAY IX

Pronto leads to significantly reduction of bunker consumption, CO2 and nitrous oxide emissions

Press release October 2018:

'Just-in-time' sailing saves hundreds of thousands of tonnes of CO2

Rotterdam, 18 October 2018 – If sea-going vessels were better informed about the availability of berths and adapted their speed accordingly, substantial savings could be made in terms of fuel and CO2 emissions. This conclusion is based on a study that was recently commissioned by the Port of Rotterdam Authority and research institute TNO.

Reduce idle time on departure

Use case 1: Idle time on departure – liquid bulk

KPI: decrease vessel idle time on departure
Zero measurement:	3.5 hrs
Target:	2.5 hrs
Result	**2.8 hrs**

=> **20%** reduction

New Port of Rotterdam app cuts waiting time by 20%, reduces CO2 emissions

The Port of Rotterdam Authority introduced the first version of its new digital application Pronto, which it claims can help the some 30,000 vessels calling the port every year to cut waiting time by an average of 20%.

The port said in a press release that the application enables more effective utilisation of capacity at its terminals, as well as the precise planning and coordination of a range of vessel services, including bunkering, servicing and maintenance and provisioning. In addition, Pronto directly contributes to the reduction of CO2 emissions in the port, it added.

Benefits realized – use case 2
Reduce delay on bunkering (refueling)

Use case 2: Delay on bunkering

KPI: decrease vessel delay due to bunker activity
Zero measurement: 19%
Target: 10%
Result   **0%**

=> **100%** reduction

FEBRUARY 25, 2019

Pronto Pilot: Bunker delays for container ships reduced in Rotterdam

The number of Maersk vessels experiencing delay at APM Terminals at Maasvlakte II as a consequence of bunker activities reduced significantly during a Pronto pilot. The involved parties explain how real-time insight into each other's scheduling helps prevent bottlenecks.

Some of our partners in the PCO program

Digitisation as opportunity

Port of Rotterdam

The future is now

Port of Rotterdam

PoR International - Business Lines

1 **Participations**

- Investments in green / brownfield ports overseas with local partners

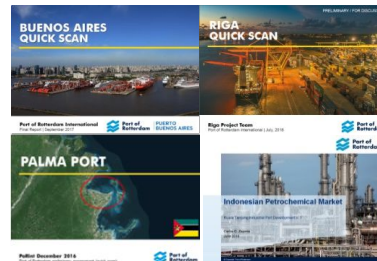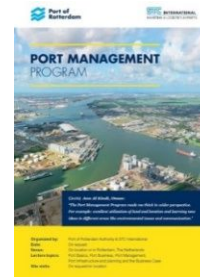**2** **Consultancy**

- Advisory services in port development and management to port authorities, governments, and private companies

3 **Education & Training**

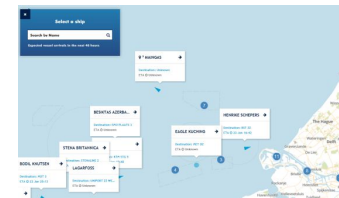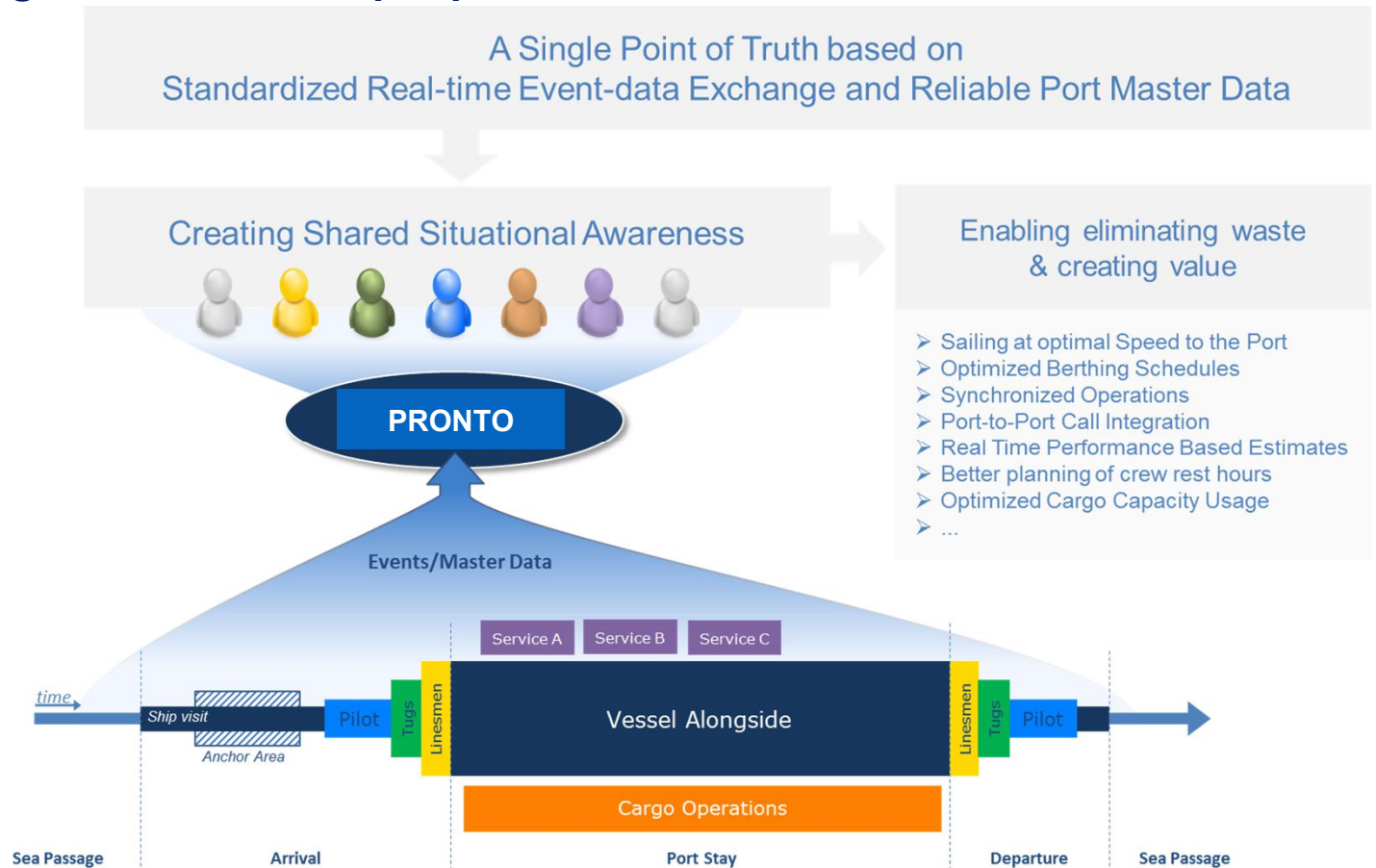- Tailored-made educational programmes for port authorities and relevant stakeholders

4 **Digital Business Services**

- Development, marketing and sales of digital business solutions and services to port authorities and operators

- **We advise ports on initial stages of development, development of capacity, streamline operations, and in some cases act as investor**

Port of Rotterdam

PRONTO facilitates data exchange based on standards to create a Single Point of Truth per portcall

A Single Point of Truth based on
Standardized Real-time Event-data Exchange and Reliable Port Master Data

Creating Shared Situational Awareness

PRONTO

Enabling eliminating waste & creating value

➢ Sailing at optimal Speed to the Port
➢ Optimized Berthing Schedules
➢ Synchronized Operations
➢ Port-to-Port Call Integration
➢ Real Time Performance Based Estimates
➢ Better planning of crew rest hours
➢ Optimized Cargo Capacity Usage
➢ ...

Events/Master Data

| Service A | Service B | Service C |

time

Ship visit
Anchor Area
Pilot
Tugs
Linesmen
Vessel Alongside
Linesmen
Tugs
Pilot

Cargo Operations

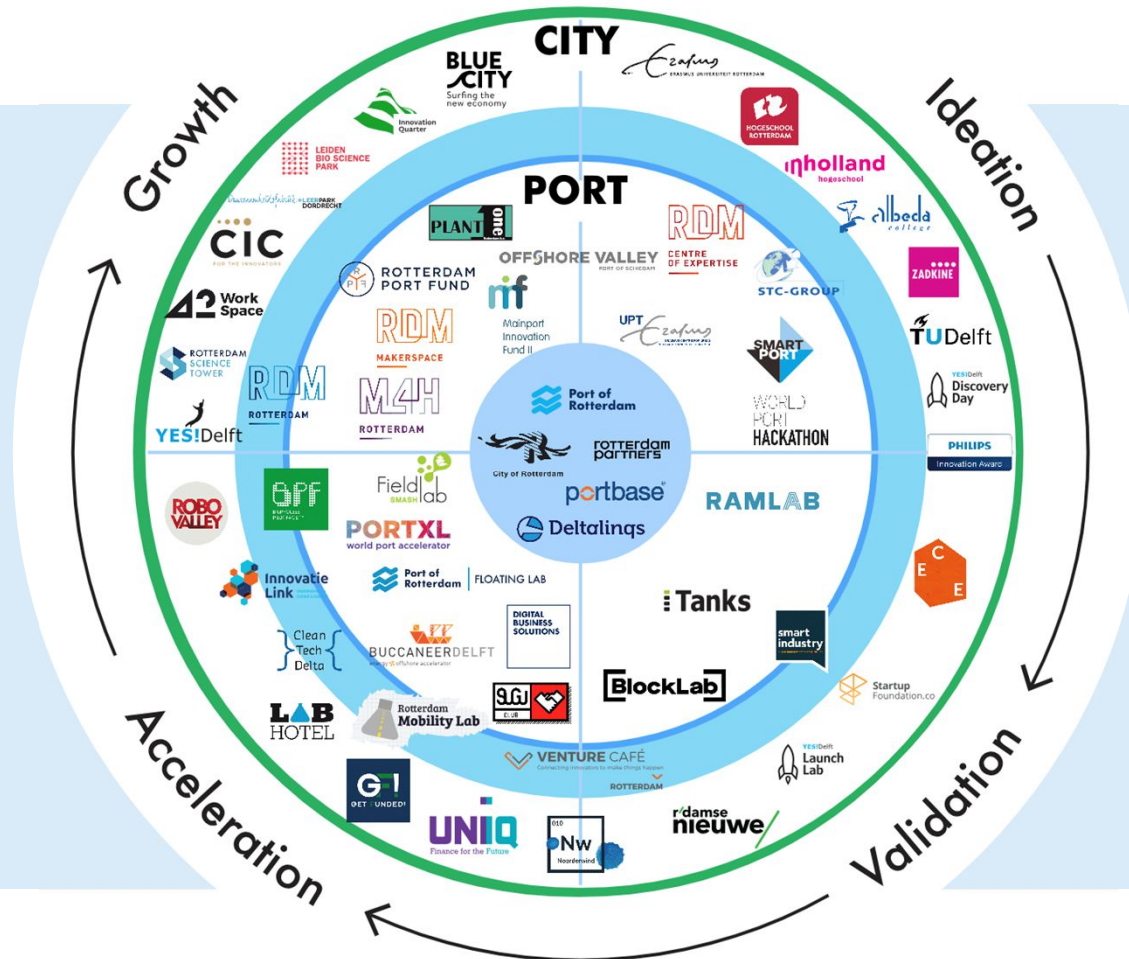Sea Passage | Arrival | Port Stay | Departure | Sea Passage

IoT platform in Rotterdam

- Preparation for connected ships of the future

- The platform collects and processes real-time water, weather and sensor data

- We are able to automate a lot of the decision making and focus on the excesses

Digital Twin:

- The maritime industry is preparing for autonomous shipping

- The port of Rotterdam will be ready in 2030

- All objects and their location in time will be fully digitised in a digital twin

Smartest port