MEDITERRANEAN Ports and Shipping 2023

Grand Hyatt Athens, Greece 28 to 30 March 2023

“Efficiency through simulation and Predictive Analysis of port operations”

Session 5: Implementation of Smart Port Initiatives Through Technology in Improving Service Delivery

Despina Solomou, People & Customer Success Manager of DSP

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DSP in numbers and our core business

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Port congestion, turbulence, high demand for the logistic supply chain

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CSP Valencia

Part 01

Who We Are

DSP in numbers and our core business

International Group
www.dsp.team

Head Office Switzerland

Founded in 1986

Office the Netherlands

Founded in 2021

Office India

Founded in 2020

Office US

Founded in 2022

Key figures

DSP in numbers

37 Years in the shipping and port industry

350+ Projects completed worldwide

20+ Navis Certified consultants

45+ Industry Experts

24/7 Global help desk and support services

10+ Languages

+40% DSP Product Installations in 2022

In 2023, DSP will obtain the ISO 27001-2013 certification to grant Information security, cybersecurity, and privacy protection to its customers

Our core business

TOS CONSULTING

DSP team supports the Terminal Operations in all the phases of the Terminal Operating System implementation, maintenance and support.

BUSINESS INTELLIGENCE

Product: DATAVIEW

DATAVIEW is the Business Intelligence for your terminal showing you any data everywhere in one view.

DIGITAL TWIN

Product: GEMINI

GEMINI is our Digital Twin solution. GEMINI is a platform, bespoke on the characteristics of every single terminal organization, able to mirror decisions, strategies and show workers practice during real operations.

TOS Consulting

TOS Implementation

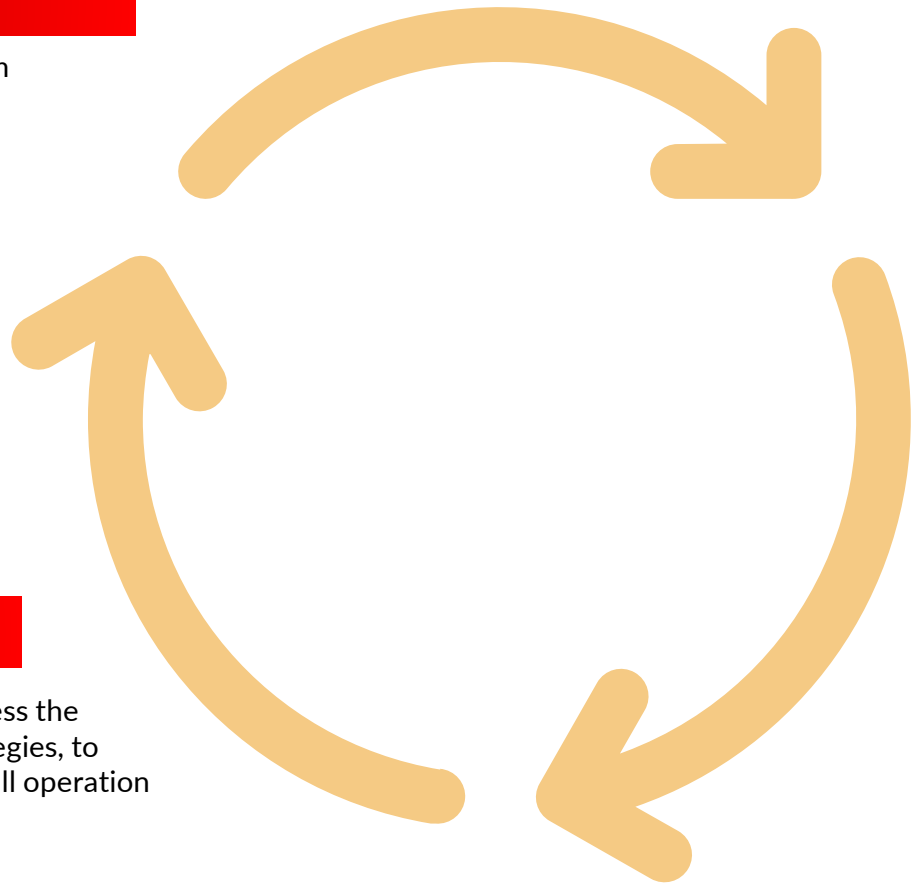
360° assistance in Terminal Operating System implementation, upgrade and support.

- Project Management
- Analysis
- Configuration
- Data Migration
- Customization
- Integration
- EDI
- Reporting
- Testing
- Training
- Go Live Support
- Post Go Live Assistance
- Help Desk

Analysis and Design

Assist maritime and logistics businesses to assess the current status of internal procedures and strategies, to design new solutions and to enhance the overall operation of the company:

- Business Process Mapping
- Implementation Blueprints and SOP
- Revenue and ROI Analysis
- Tender preparation
- Simulation



Optimization

To understand the product features and how to set algorithms and processes to maximize your investment and performance:

- Emulation and “What if” Scenario
- Planning and Execution Strategies
- TOS Tuning
- Change Management
- KPI measurement

Automation & Digitalization

DSP is your technology accelerator on digitalization and automation transition:

- Process automation architecture and integration
- Equipment automation integration design
- Custom Agile Software Development

Part 02

Context Insight and Challenges

Port congestion, turbulence, high demand of logistics supply chain.

New perspectives

Logistic: an unexpected journey

Manage the impossible

MARCH, 2021

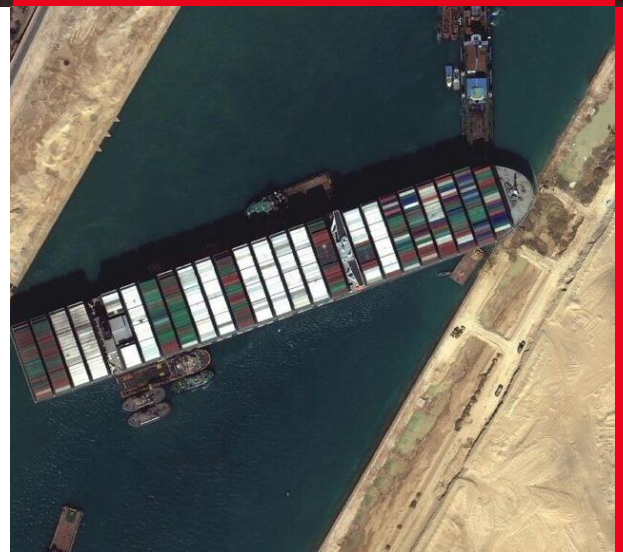
Ever Given container ship blocks SUEZ Canal traffic.

APRIL, 2022

Containers pile up at CHINESE ports as lockdown blocks trucks.

2020 onwards

Delivery Services See Historic Rise in Demand During Pandemic and still lasts



OCTOBER, 2021

Record-breaking 100 Ships anchored, waiting at LOS ANGELES and LONG BEACH Ports.

Change Direction

Concretely Innovate

Know your problem, learn the technology, tailor your solution

Understand

Acknowledge your issue
Define your objective
Set Expectations

Access Technology and
Innovate with the right tools

Data and Visibility

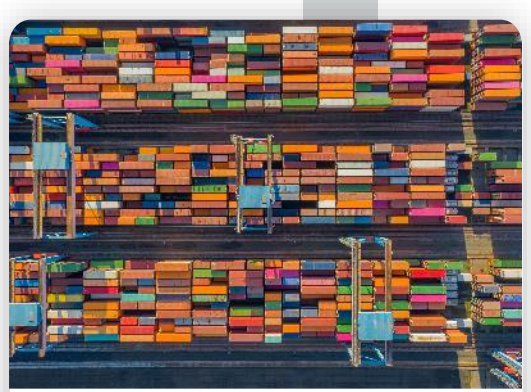
Internet of Things
Open communication Layer
Networking (radio, 5G)
Blockchain

From Data to Information

Digital Twin and Artificial Intelligence

Digital Model to **mirror, simulate, emulate the reality**

Artificial Intelligence to apply to the model and to reality to enhance decisions criteria



Automation

Process automation

Remote Drive

Autonomous drive

Part 03

GEMINI

Digital Intelligence Solutions platform for container terminals

Empower operations and drive overall efficiency

Gemini Solutions

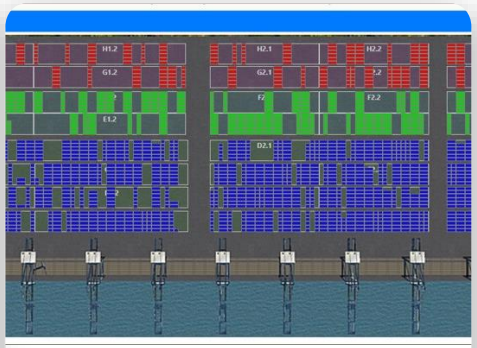
GEMINI combines operational, tactical and strategic optimization through operational databases (TOS), predictive analysis, simulation, scenario management, emulation, virtual commissioning.

Predictive Analysis

Operations and Technical Services Optimization

Future and «What if» scenario to identify ways to improve performance and increase profit on a daily basis

Simulation



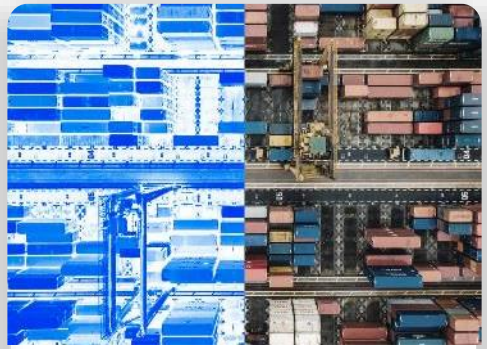
Concept Design

Evaluation of how a structured change affects the business scenario.

Design of Greenfields

Transition to Automation

Emulation



Operations Empowerment

Validate, tune and improve planning and operations strategy.

Testing of operations platform (ECS, TOS, GOS, OCR)

Automated Testing

3D View

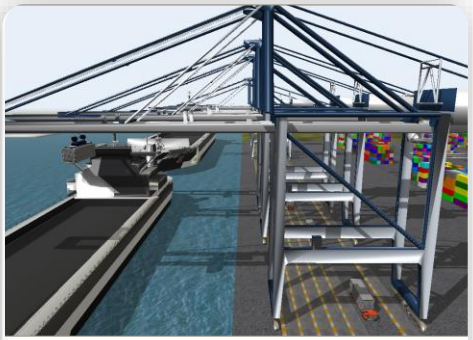
Live Augmented Reality

Visualization of live operations with IOT data.

Virtual Terminal Tour

Alternative to TVCC for remote control

Virtual Commissioning

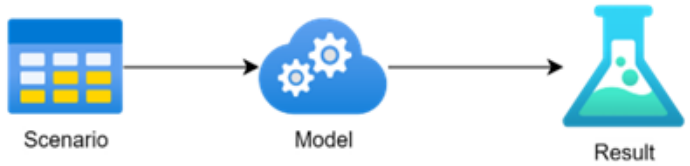


Engineering Services Optimization

Crane Control Systems testing and commissioning

Powered by:
controLab

Gemini Data flow



Other data
- HR
- Maintenance
- Port community
- etc

TOS Data
- Data input
- Planning

Datawarehouse
- Data collection
- Translation
- Filters

GEMINI Web UI
- Visualize & identify
- User changes (what-if scenarios)

GEMINI model
- Simulation model
- Historical data
- Process flow

Result
- Gemini UI

Part 04

GEMINI
Use case

CSP Valencia Terminal

CSP Valencia terminal

Strategically located in the Mediterranean, the terminal enjoys a hub position in the **main maritime routes connecting Spain and Europe** with other continents.

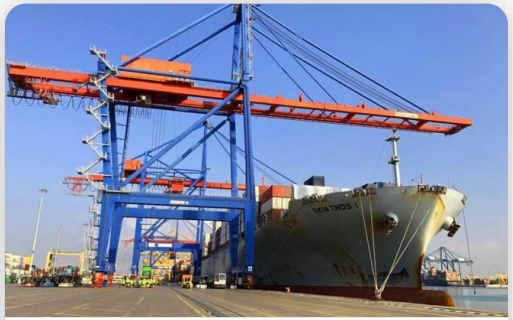
Its 2.3-km berthing line and 145-hectare yard, as well as a port railway terminal with direct connections to Madrid, Zaragoza and Bilbao and an **automatic gate system** for local cargo flows explain why CSPV is the benchmarking terminal in the Mediterranean.

Valencia terminal has a capacity of more than **4.5 M TEU**, operated by **21 STS** and **65 RTGs**.

"We're working hard to learn side by side with DSP, how to get the most advantage of using their Digital Twin solution. We see a lot of potential on it and DSP is supporting us to adapt it to our local needs".
Ignacio Huet, IT Director

Challenges and Objectives

Why going for digital intelligence from the terminal operator point of view?



Berthing process

Increase berth occupancy and facilitate transshipment connection.
Optimize STS assignment (crane split) and working plan.
Declare reliable ETDs

Resource Assignment

Optimization of yard resource (RTG, TT, RS) assignment per shift in relation to volume forecast, yard moves impact time

Gate

Optimize appointment window and predict gate transaction volume.
Reduce turnaround time and make truckers happy.

Equipment Maintenance

Predictive maintenance to plan intervention and increase mean time between failure and overall crane availability.

Solution: Predictive Analysis

WHAT IF SCENARIO

Berthing process

- Support Berth Planner decisions with suggestion of Efficient Crane Splits and Work Plan
- Impact of sudden change of a vessel crane working plan to the whole terminal operations
- Monitor and alarm on ETDs

Resource Assignment

- Support Shift Manager to deploy available resources
- Predict and optimise resources required for the next shifts
- Monitor Peaks and unproductive time

Gate

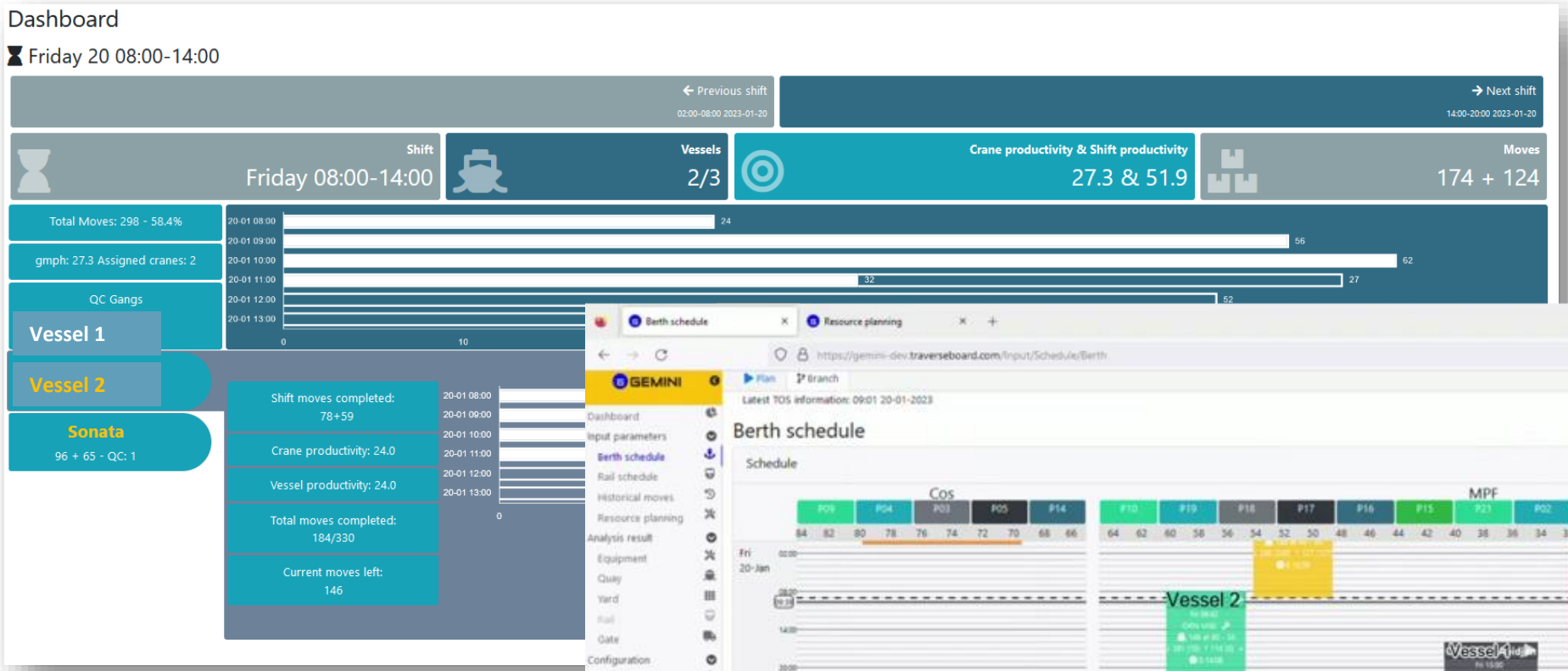
- Predict gate transactions volume
- Truck flow, peaks and operational impact estimation
- Suggestion on dynamic Truck appointments strategy

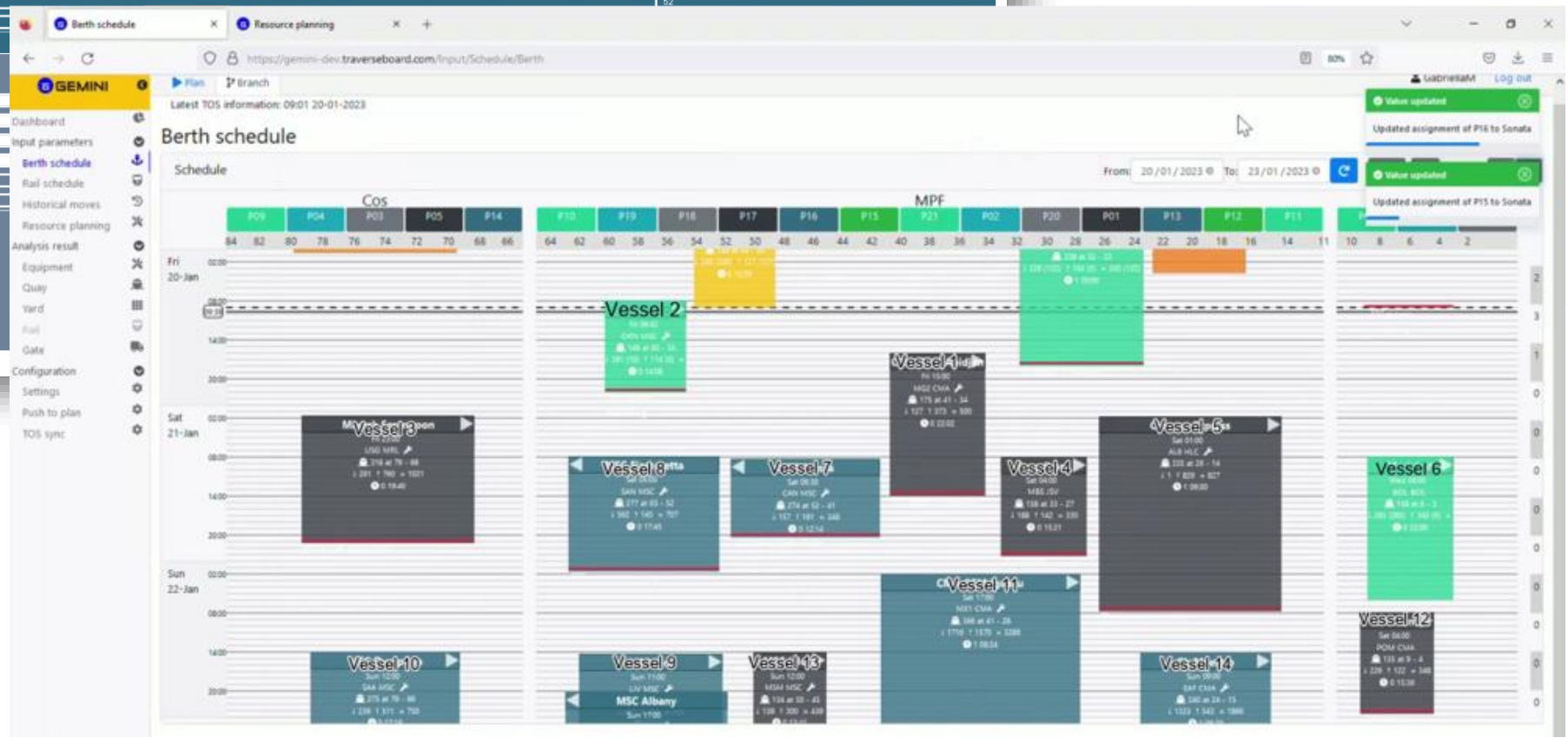
Equipment Maintenance

- Schedule Planned Maintenance based on future equipment utilisation, actual worked moves (MMBF)
- Forecast of non-operational windows Anticipate put at disposal for planned maintenance

Dashboard - STS assignments and yard resources

Past, present, and future KPIs

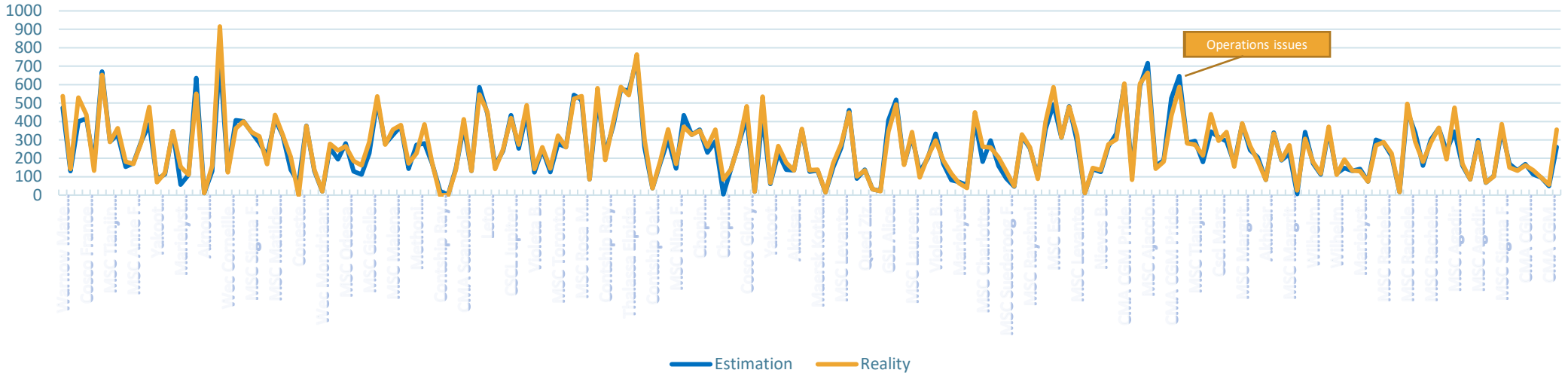




Simulation vs Reality

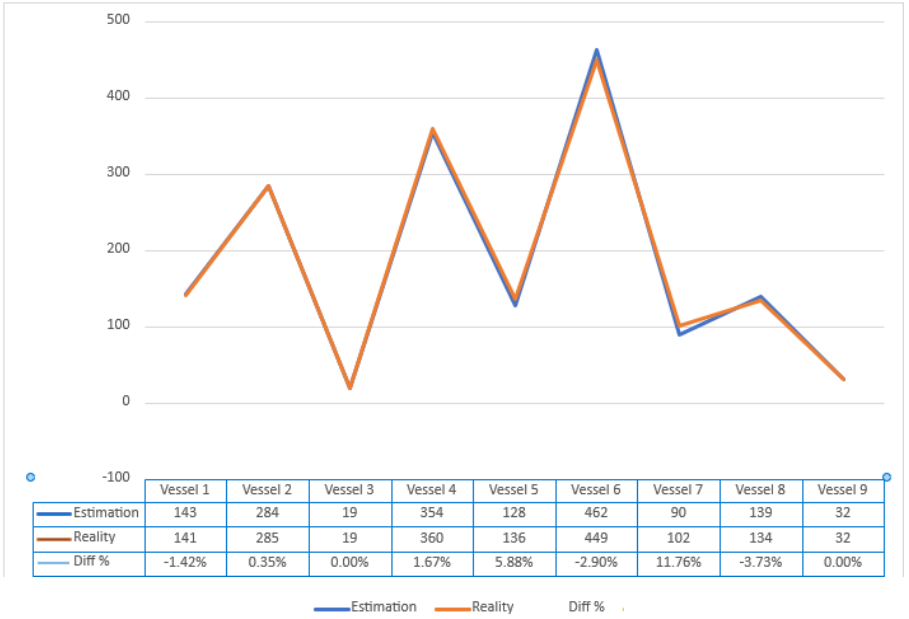
Moves by shift by vessel

Estimation 3 shifts in advance

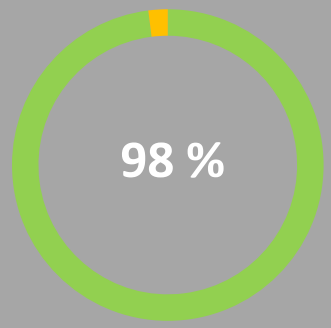


Moves by shift by vessel

Estimation 1 shift in advance



	Vessel 1	Vessel 2	Vessel 3	Vessel 4	Vessel 5	Vessel 6	Vessel 7	Vessel 8	Vessel 9
Estimation	143	284	19	354	128	462	90	139	32
Reality	141	285	19	360	136	449	102	134	32
Diff %	-1.42%	0.35%	0.00%	1.67%	5.88%	-2.90%	11.76%	-3.73%	0.00%



2 % average variation from reality

18 hours look ahead

100 to 300 ms to run a scenario

Learn
Innovate
Together

Change Perspective

Thank you

Join us at our booth n.10

www.dsp.team