



Istanbul, 4-6 July 2023

“Lessons learned implementing digital innovations”

Revolutionizing Ports and Terminals: An Overview of Current Trends and Innovations in Infrastructure Performance

Thursday, July 6, 2023 - 9am to 11am



Marco Fehmer, DSP
Chief Executive Officer



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DSP in numbers and our core business

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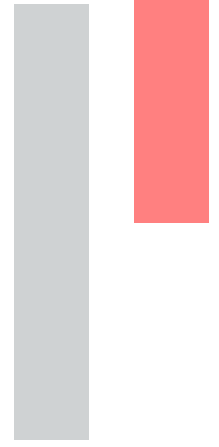
GEMINI

Digital Intelligence Solutions

04.

Use Case

CSP Valencia



Part 01

Who We Are

DSP in numbers and our core business

www.dsp.team

Change Perspective



Founded in 1986 - Switzerland



Founded in 2021 - the Netherlands



Founded in 2020 - India



Founded in 2022 - USA

37

Years in the shipping and port industry

45+

Industry Experts

10+

Languages

350+

Projects completed worldwide

+40%

DSP Product Installations in 2022

24/7

Global help desk and support services



In 2023, DSP will obtain the ISO 27001-2013 certification to grant cybersecurity and information 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.



Part 02

Lessons learned

The backstage of innovation

Concretely Innovate

Know your problem, learn the technology, design your solution



Understand

Acknowledge your issue
Define your objective
Set Expectations

Access Technology and
Innovate with the right tools



Data Strategy

From Data to Information

Internet of Things
Data Lakes
Networking (radio, 5G)
Blockchain

Standardisation



Automation

Process automation

Remote Drive

Autonomous drive



Digital Intelligence

Added Value Application

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

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

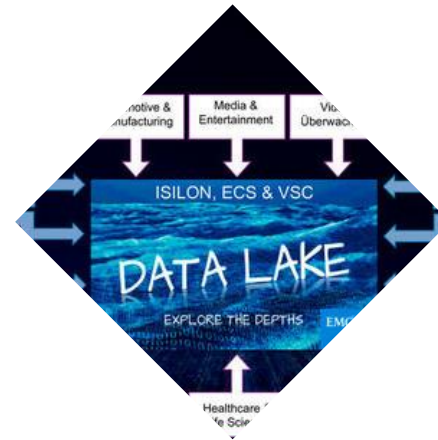
Lessons Learned

Manageable obstacles on the road to innovation



Preparation

- Internal Decision Process can take too long
- Lack of internal specific knowledge
- Lack of resources
- Expectations to be set and approved at the beginning



Strategy

- Ideal desired architecture cannot be achieved immediately, you need controlled comprise
- Roll out in multiple site shall not stop local evolution, some rework shall be expected



Project plan

- Each project, specially involving automation should be phased
- Deliver visible concrete results in short term is key-success factor for future adoption



Control

- Integration of solutions is never plug&play
- Data and model validation/tuning is mandatory
- Testing is crucial, specially Live Equipment Testing

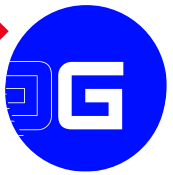
Part 03



Digital intelligence platform for container terminals

Empower daily operations and drive overall efficiency





Gemini Solution

GEMINI combines operational, tactical and strategic optimization all in one platform!

Gemini is a visionary cloud or on-premise application platform bespoke on the characteristics of every single terminal organization, able to mirror decisions, strategies and show workers practice during real time operation.

Predictive Analytics



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

Emulated Testing



Operations Empowerment

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

Automated Testing

TOS Major upgrades and tuning

3D View



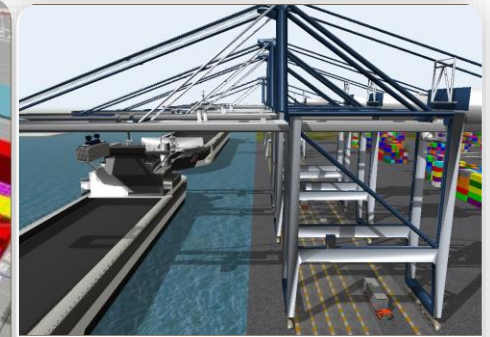
Live Augmented Reality

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:
controlLab



Predictive Analytics: Challenges and Objectives

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

Short Term

Long Term



Berthing process

Increase berth occupancy and facilitate transshipment connection.

Optimize STS assignment (crane split) and working plan.

Declare reliable ETDs

-
Long term vessel schedule

Volume Budget and

Performance Forecast



Resource Assignment

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

Resource utilisation and cost for budget forecast



Gate and Rail

Optimize truck appointment windows and predict gate transaction volume.

Plan optimal train and shunting operations in full respect of agreements with MTO

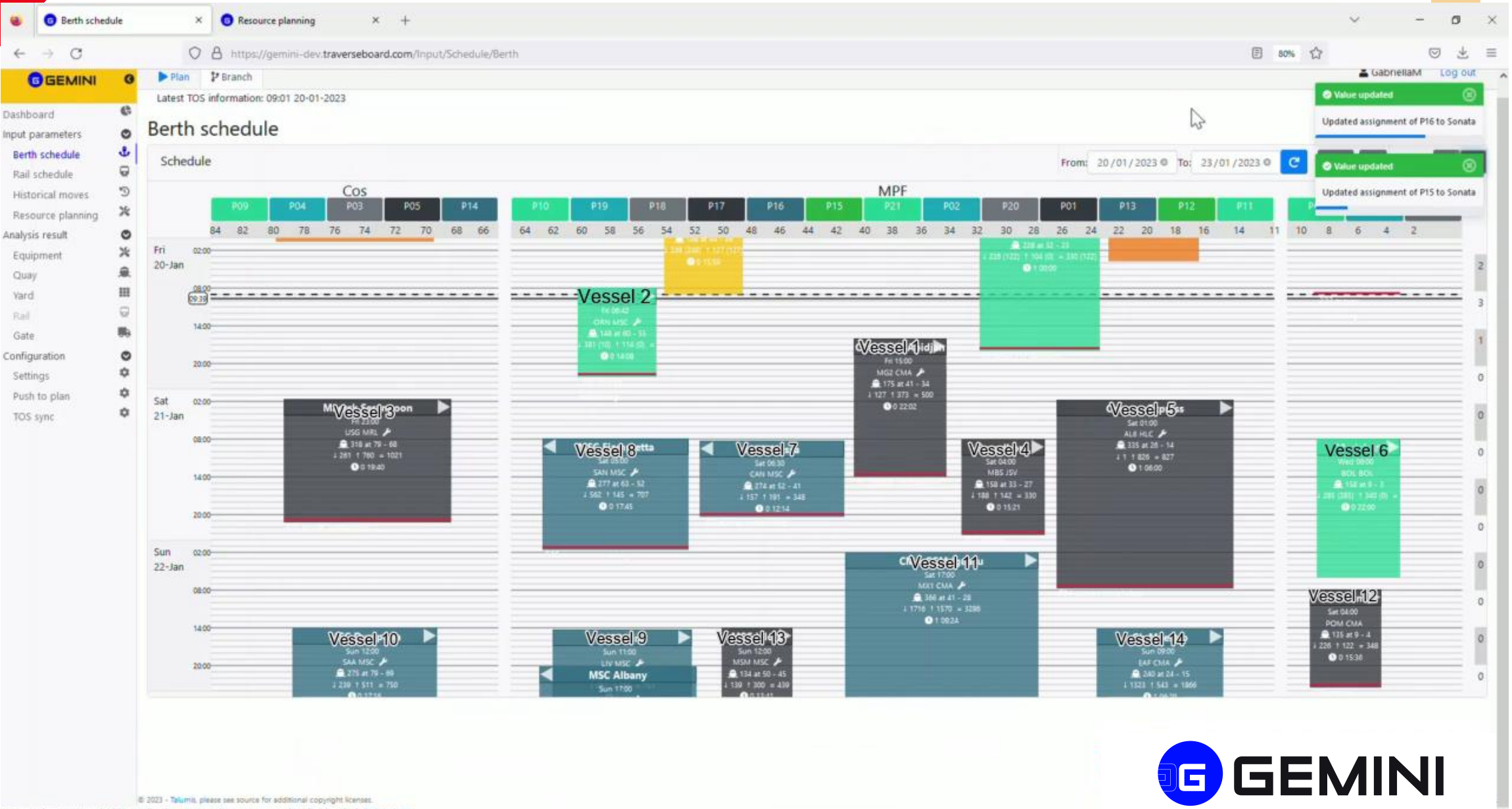
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Long term forecast for agreement with port community stakeholders



Equipment Maintenance

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

Cost budget prediction based on working hours forecast and average cost





Dashboard

KPIS and prediction

Dashboard

🕒 Friday 20 08:00-14:00

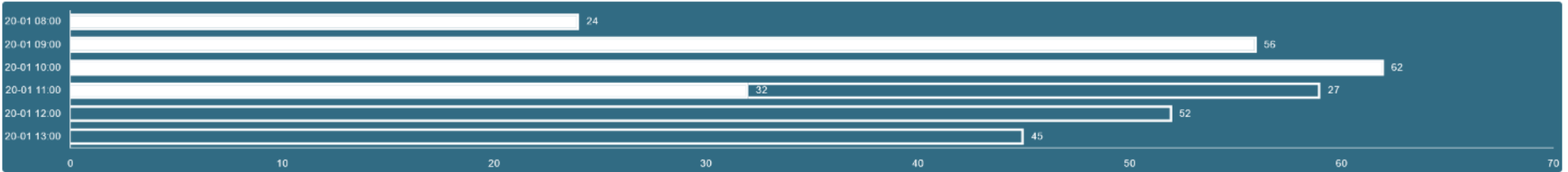
← Previous shift 02:00-08:00 2023-01-20 → Next shift 14:00-20:00 2023-01-20

Shift: Friday 08:00-14:00 Vessels: 2/3 Crane productivity & Shift productivity: 27.3 & 51.9 Moves: 174 + 124

Total Moves: 298 - 58.4%

gmph: 27.3 Assigned cranes: 2

QC Gangs: 3



Vessel 1
78 + 59 - QC: 1

Vessel 2
96 + 65 - QC: 1

Vessel 1

Shift moves completed: 78+59

Crane productivity: 24.0

Vessel productivity: 24.0

Total moves completed: 184/330

Current moves left: 146

Time	Productivity
20-01 08:00	15
20-01 09:00	28
20-01 10:00	22
20-01 11:00	13
20-01 12:00	25
20-01 13:00	23

P01
78 + 59 = 137



How to implement GEMINI predictive analysis

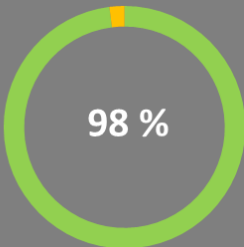
Project Roadmap and best practice

1. Know your challenge, define your objectives, set expectations
2. Collect Data
 - a) Historical data
 - b) Live Data
3. Create the predictive model
4. Validate the predictive model
5. Run what if scenario and support decisions
6. Continuous Improvement

6 months

Today GEMINI is plug&play with N4, CATOS and Master Terminal
Additional TOS or DataSource are welcome

The Model is based on standard elements but shall be tailored on your operations process



98 %

2 % average variation from reality
18 hours look ahead

100 to 300 ms to run a scenario

A rich set of Standard features is delivered together with the product but additional features can be added as:

- Roadmap items
- customisation

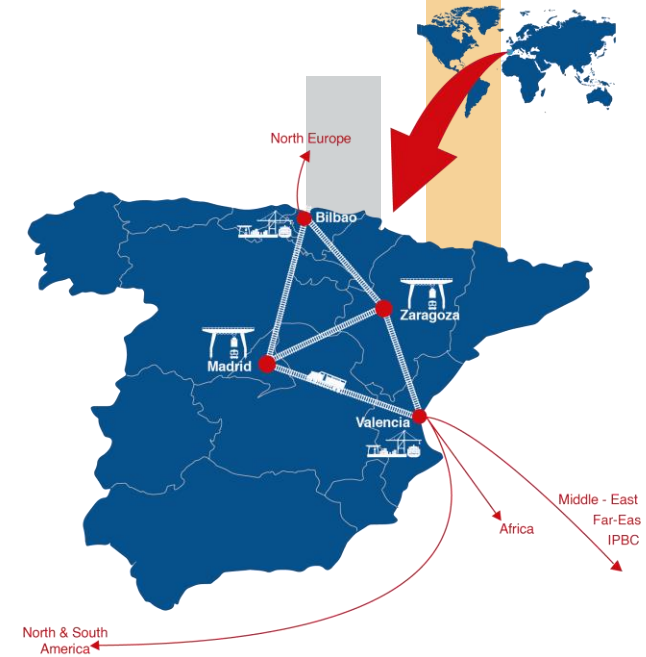


Part 04

GEMINI Use case

CSP Valencia Terminal





CSP Spain
The Ports for **ALL**

“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



Information

➤ Information input:

- ❑ Historical: Productivity, Move Patterns
- ❑ Real Time: Completed & Pending Moves, Plans...
- ❑ User Experience: Configuration



➤ Information output:

- ❑ Workload & Productivity: High accuracy between estimation vs reality
- ❑ Resources: Recommendation for the required resources and create instant “what if” scenarios
- ❑ Planning: Current version + new features to focus on identifying bottlenecks

Usage and Future

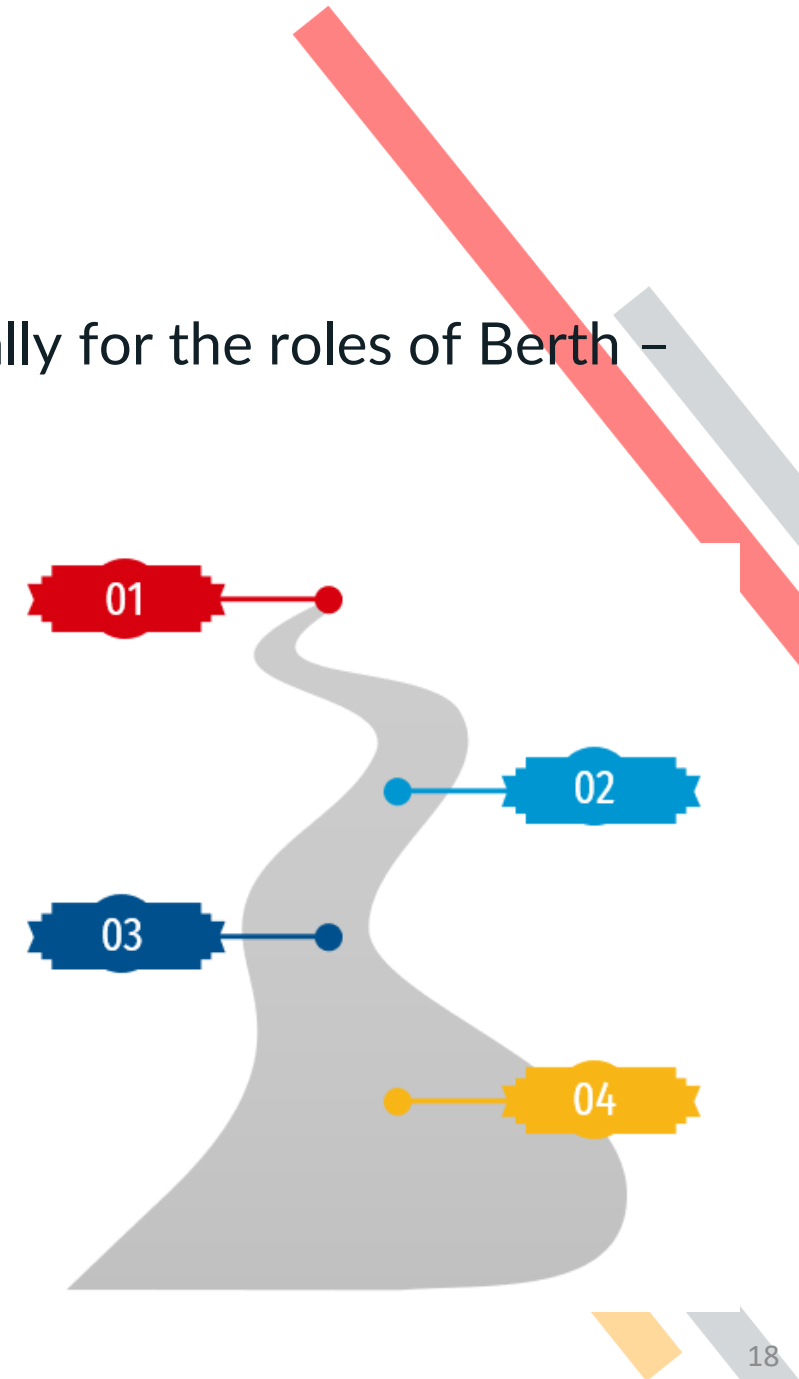
➤ How to use it:

Useful tool for the Operations department and more specifically for the roles of Berth – Labour Planner and Shift Manager

- Reliable prediction on productivity rates
- Assist in Operations Planning and Labour Resources decisions
- Real time KPIs
- Shift Handover tool
- Prevent potential bottlenecks

➤ Where are we in the roadmap:

- Features already developed and proved their value
- Features under development: Global Vessel Planning
- Features on the roadmap to further improve the application:
 - Focus on Yard Planning strategies and simulation in the yard
 - Machine Learning
 - Connection with our CMMS (*Computerized Maintenance Management System*)
- More users more ideas





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Come and meet us
Thank you

www.dsp.team

