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# Digital Twin Concepts and Global Use Cases

Brian Keenum,  
Industry Practice Lead, Ports and Rail- Esri Professional Services

High Level Training on Digital Twin applications in Port  
ecosystems, Venice 28<sup>th</sup> Jan 2025

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# What is a Digital Twin?

**A Virtual Representation of Real-World Entities and Processes,  
Synchronized at a Specified Frequency and Fidelity**

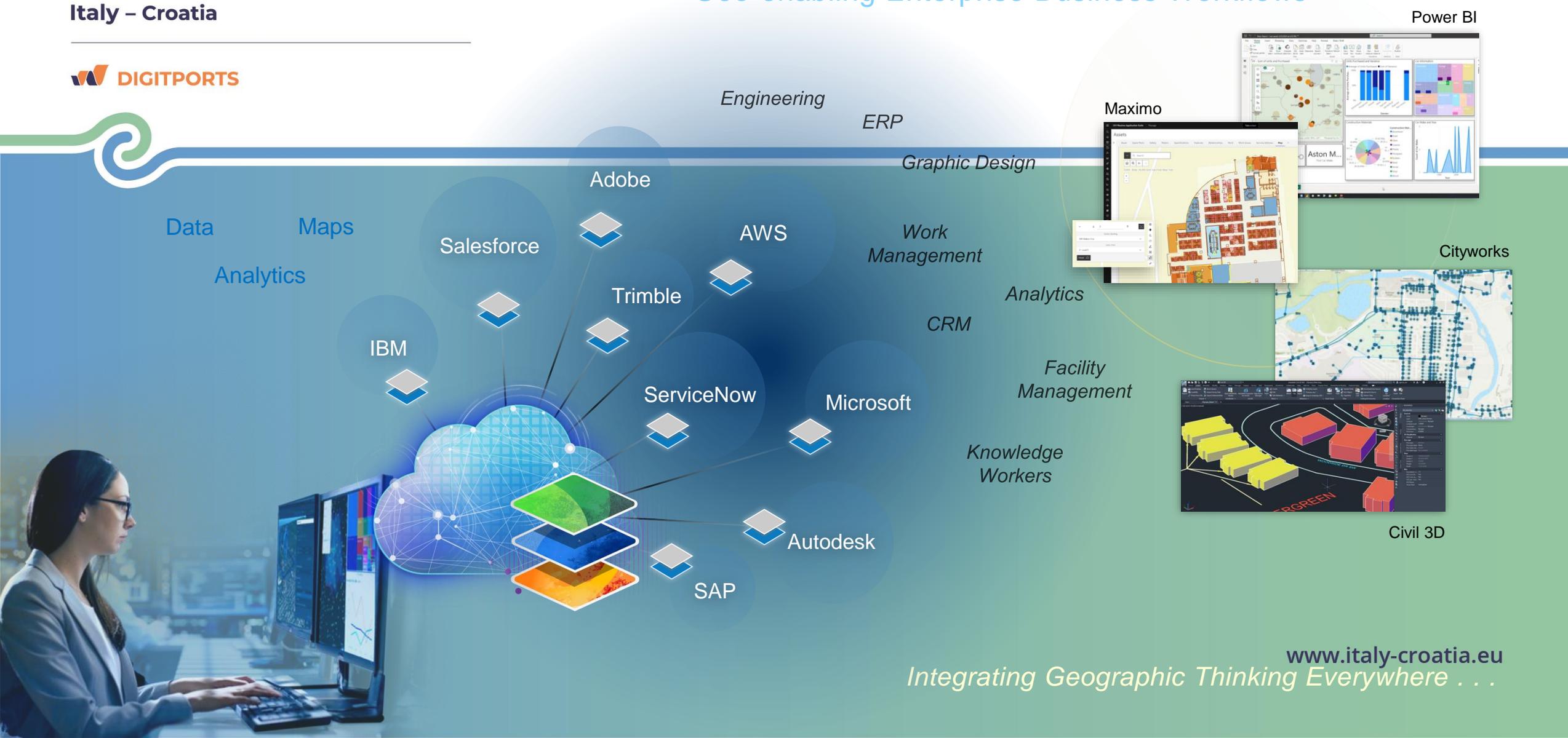


- *Transform businesses by accelerating holistic understanding, optimal decision-making, and effective action.*
- *Use real-time and historical data to represent the past, present and simulate predicted futures.*
- *Are motivated by outcomes, tailored to use cases, powered by integration, built on data, guided by domain knowledge, and implemented in IT/OT systems.*



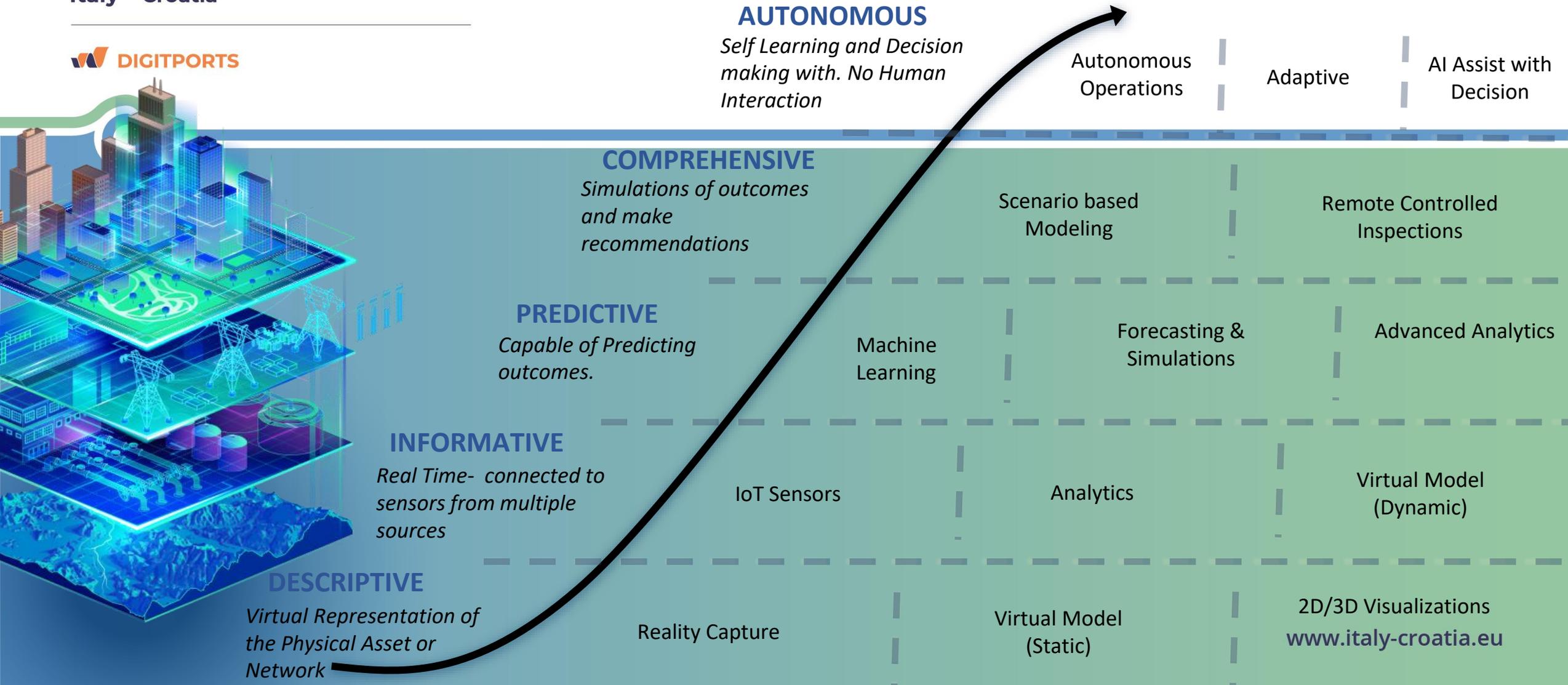
# GIS Integrates with Other Systems

## Geo-enabling Enterprise Business Workflows





# Digital Twin Maturity



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# Use Cases

## Operational Overview





### Current Inbound Vessels

TOTAL VESSELS DUE - CURRENT

3

AVERAGE TIME AWAITING BERTH

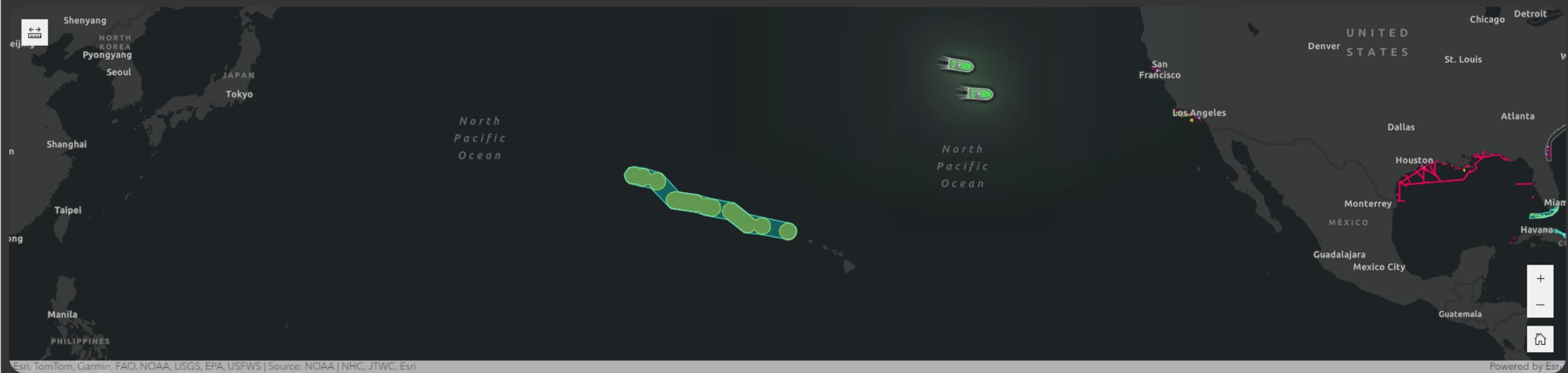
0.0 Days

VESSELS WITHIN 20NM

0

VESSELS WITHIN 40NM

0



Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS | Source: NOAA | NHC, JTWC, Esri

Powered by Esri

VESSELS AT BERTH - CURRENT

10

AVERAGE TIME AT BERTH

38.1 Hours

TOTAL PLANNED VESSELS

50

TOTAL PLANNED CONTAINERS

221,133

QUEUE TIME

27 Minutes

AVERAGE

TERMINAL TIME

40 Minutes

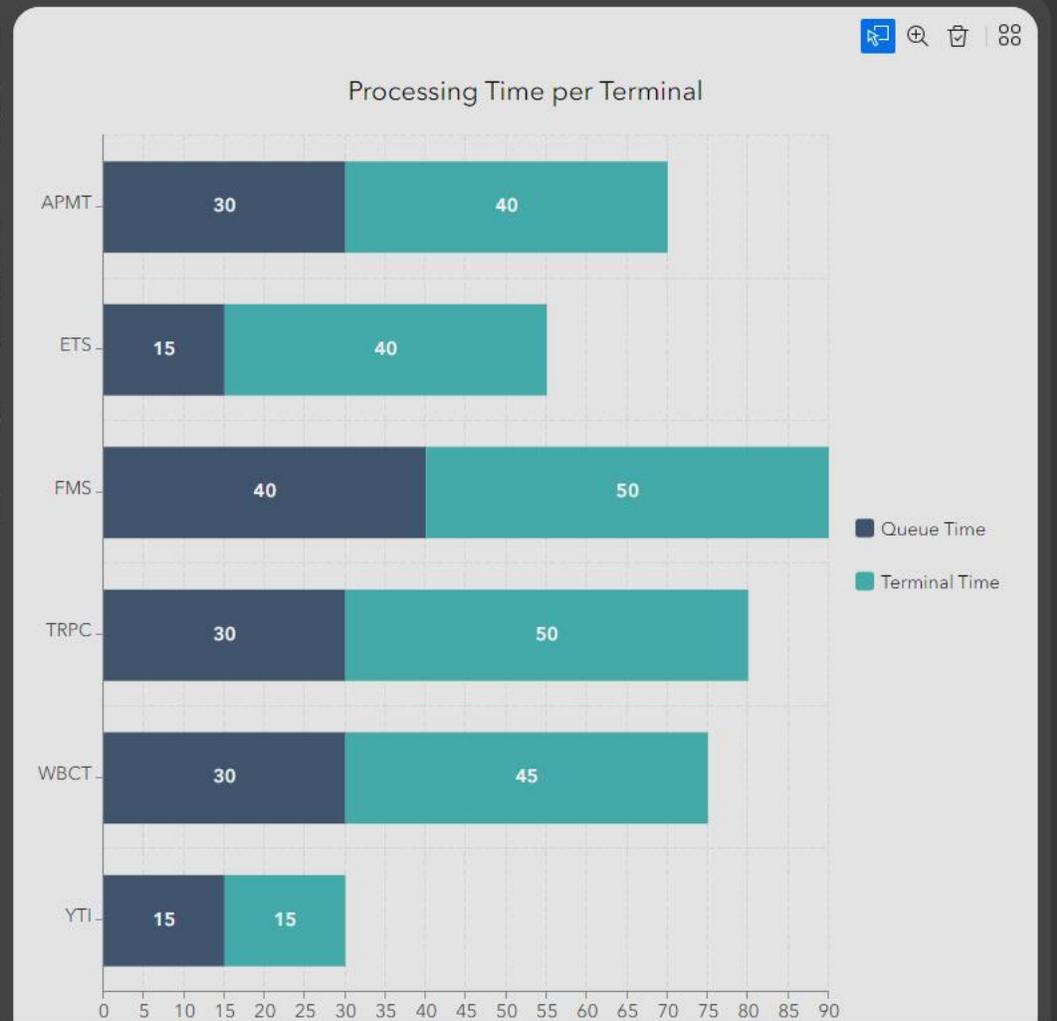
AVERAGE

TOTAL TURN TIME

67 Minutes

AVERAGE

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# Use Cases

Bathymetry



# Meeting with Brian Keenum

2025-01-14 15:03 UTC

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# Use Cases

## Asset Inspection



# Pile Inspection 2

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# Use Cases

## Lease Management



# Lease Management

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# Use Cases

## Holistic Visualization



# 3d Twin

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# Use Cases

## External Communications



# StoryMap Final

2025-01-14 21:35 UTC

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Thank you!



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## Contacts

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