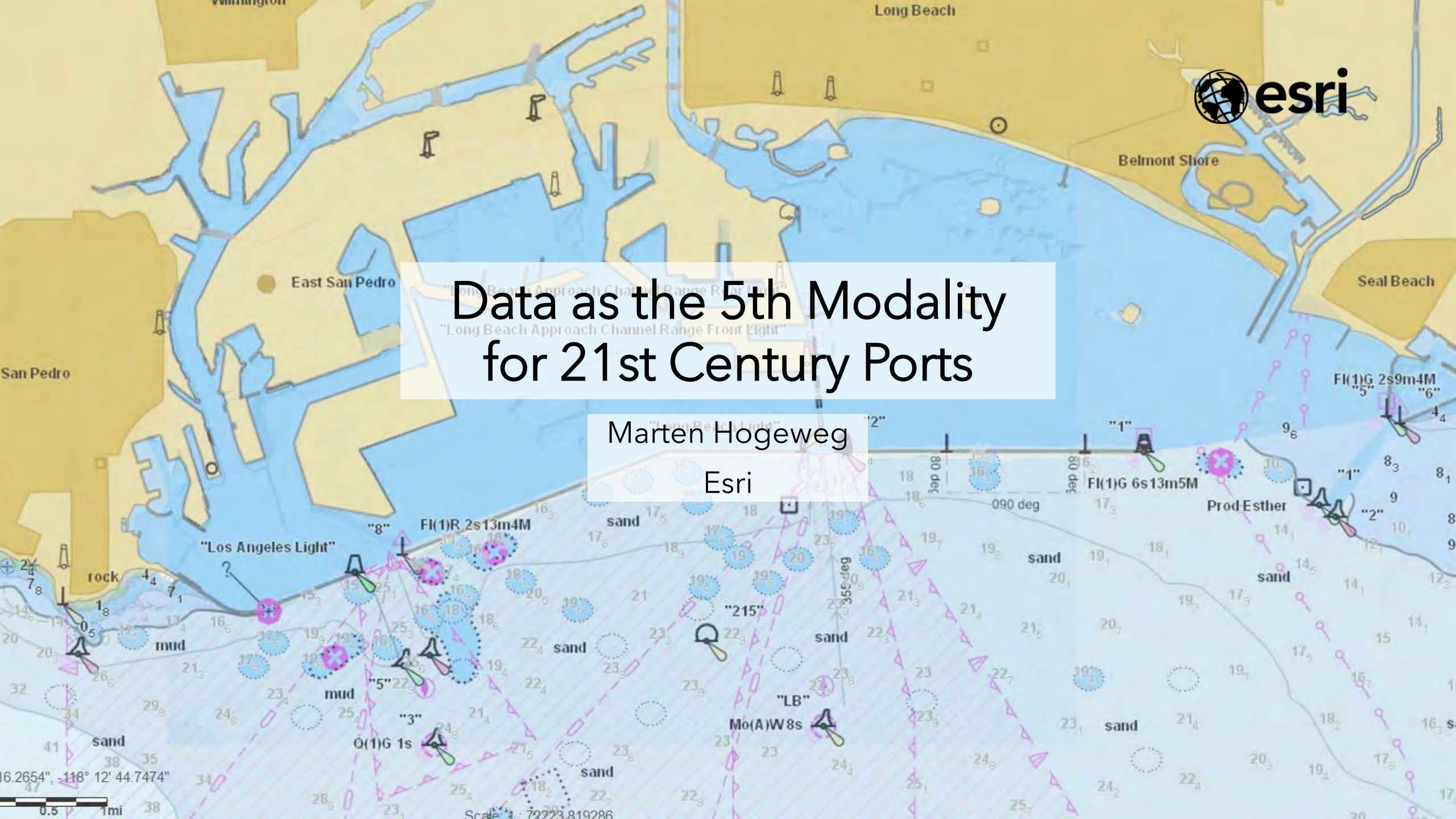




Data as the 5th Modality for 21st Century Ports

Marten Hogeweg
Esri



1

water



SHIP MOVEMENTS
1,000,000 PER YEAR
3,000 PER DAY

2

road



PERSONNEL EMPLOYED
30,000 PER YEAR
ROAD TRANSPORT

3

pipeline



RAW CRUDE OIL
215M BARRELS PER YEAR
(BOE) ROTTERDAM TO ANTWERP

4

rail



730,000 TRAIN CARS
2,000 PER DAY



Common Returns on Investment

Connect port systems and stakeholders from across the enterprise

- **Create Efficient Decisions from Common Data**
- **Communicate More Effectively**
- **Attract and Retain Business**
- **Improve Awareness Across the Enterprise**
- **Better Manage and Utilize Assets**



Location Strategy



Map where things are, show how they relate, determine what it all means, and evaluate what actions to take

Location Enablement

Discover, use, make, and share maps at work -- anywhere, anytime

Constituent Engagement

Facilitate and manage communication with stakeholders

Decision Support

Inform executives and management with maps and location intelligence

Field Mobility

Get authoritative information into and out of the field

Analytics

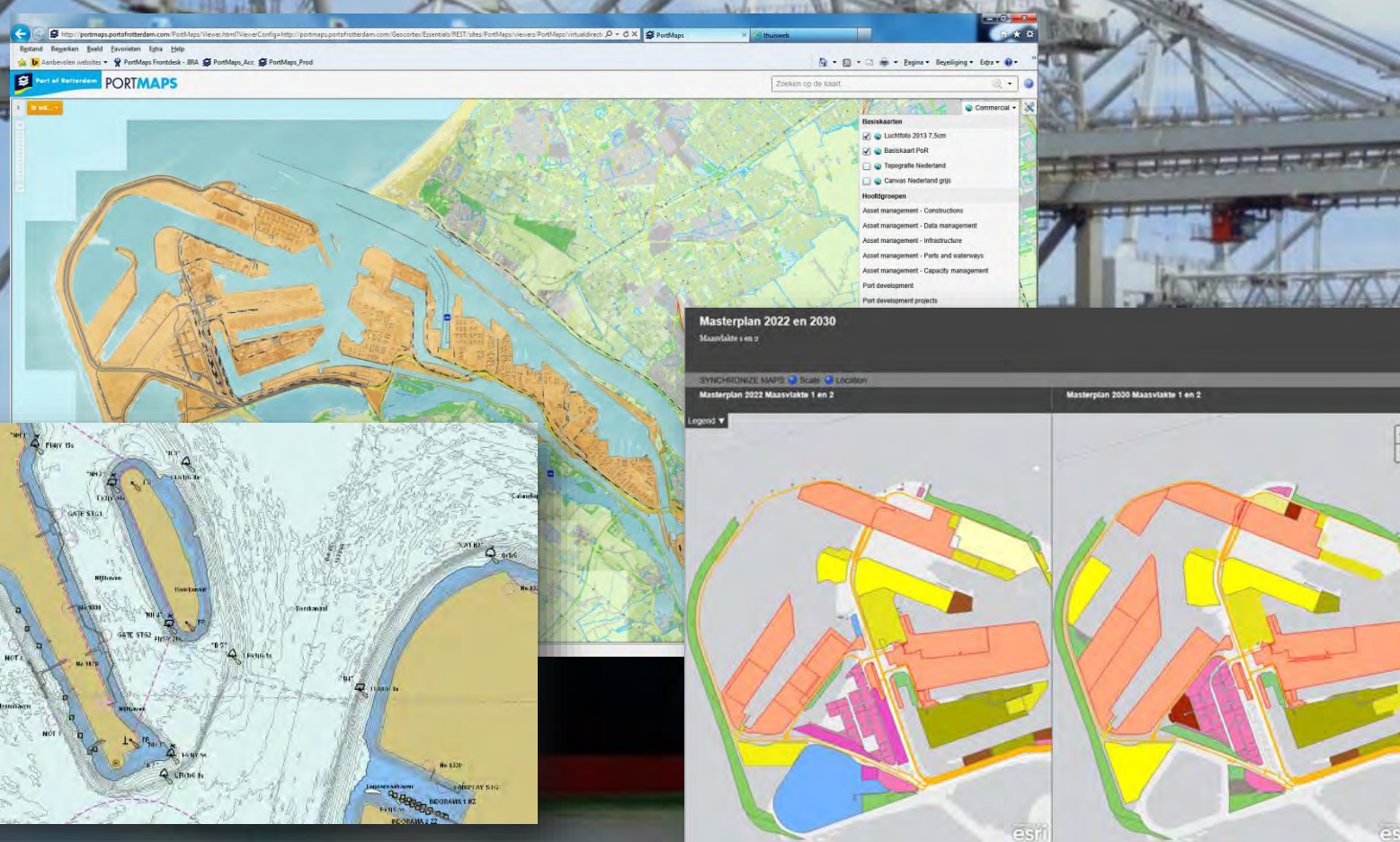
Describe, predict, and improve business performance

Location Data Management

Collect and organize location data about your assets and resources

Port of Rotterdam

Broad Implementation of the ArcGIS Platform



Asset Management

Modalities

Maritime

Geodesign

3D Port

Harbor Master



PortMaps Viewer



Galerij Asset Management



Galerij DHMR



Galerij POR-Online



Galerij Port Dev

Welkom op het PortMaps portaal van het Havenbedrijf Rotterdam. Het PortMaps platform stelt zich tot doel om alle geo-informatie gerelateerd aan de haven beschikbaar te stellen. Via het PortMaps portaal heeft u direct toegang tot de verschillende informatie producten en de PortMaps Viewer.

Heeft u vragen? Stuur een berichtje naar portmaps@portofrotterdam.com

Divisie Havenmeester

Informatieproducten voor Divisie Havenmeester

🔍



Asset Management

Asset Management

🔍



👁️ 207



👁️ 144



👁️ 116



👁️ 107



👁️ 100



👁️ 97



👁️ 42



👁️ 21



👁️ 16

👁️ 3.930



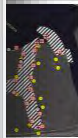
👁️ 132



👁️ 42



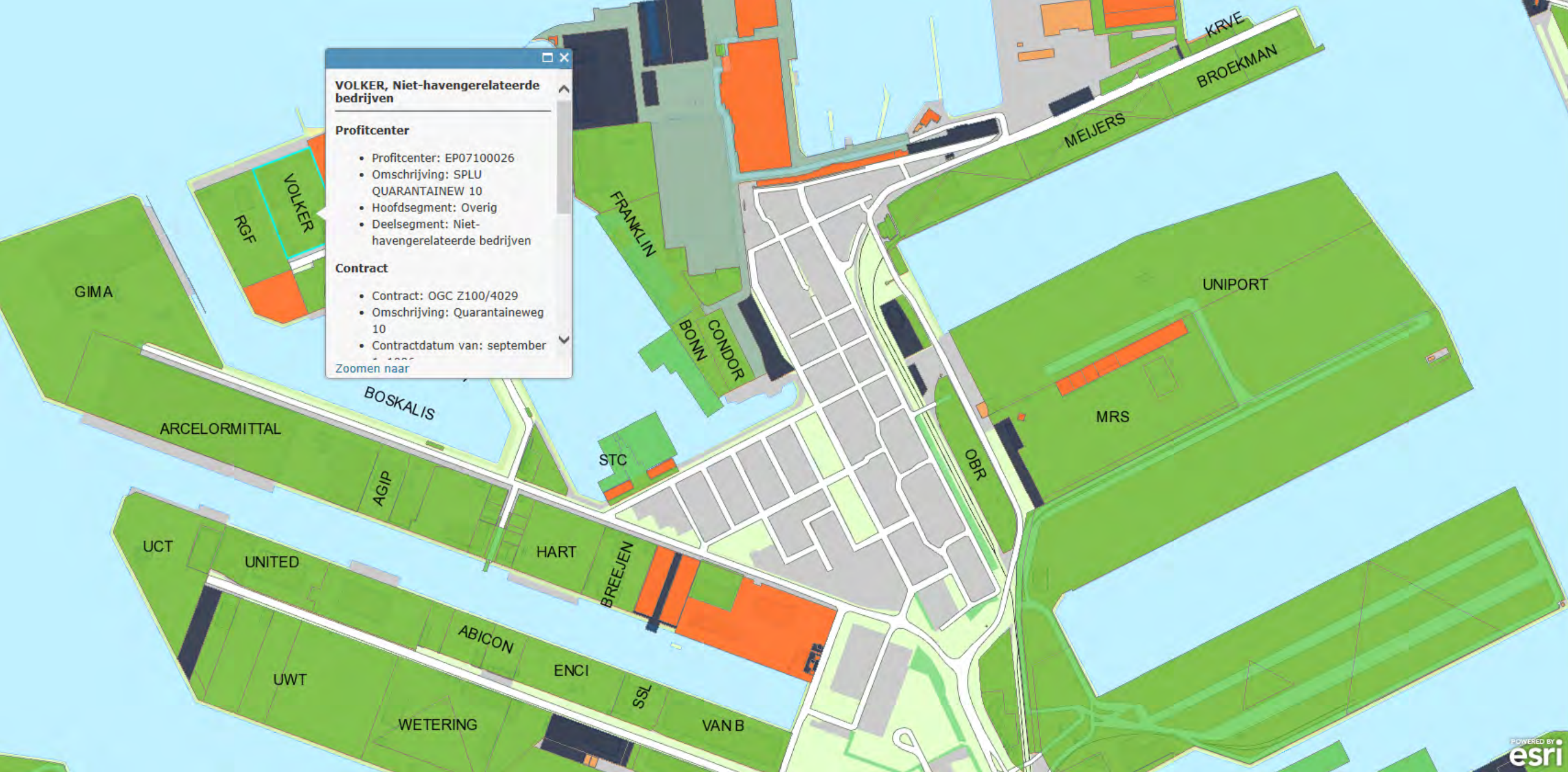
👁️ 5



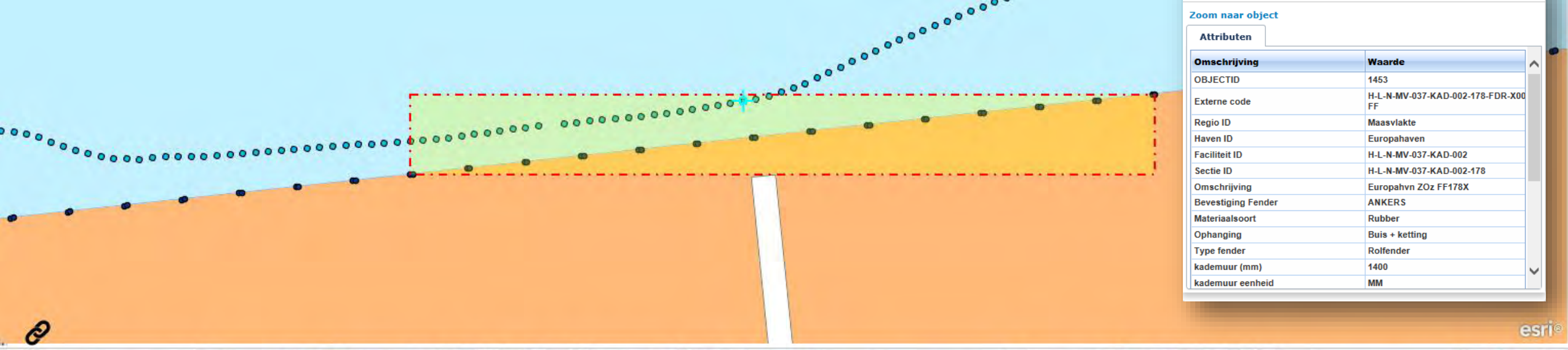
👁️ 1.048



👁️ 571

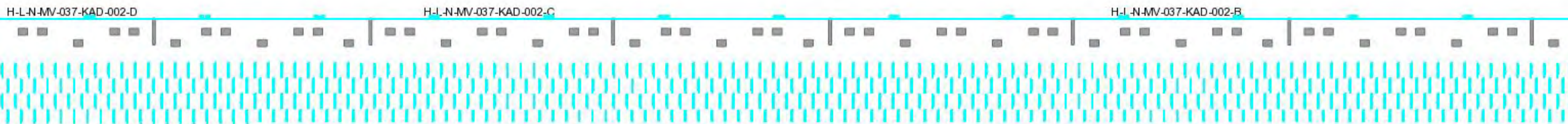


Information Products - Lease expirations



Open in [new window](#).

Close



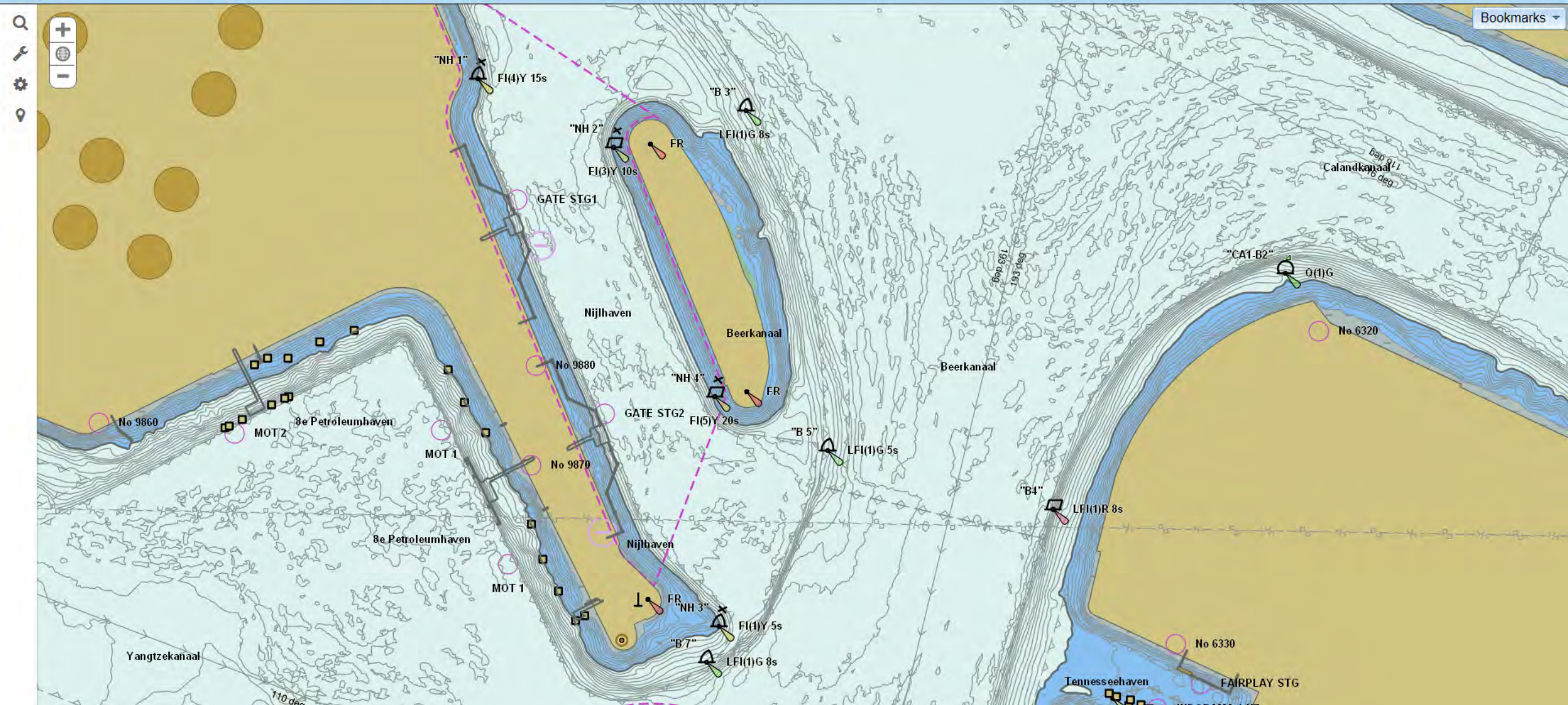
Quay Wall Modeling System



Bathymetry

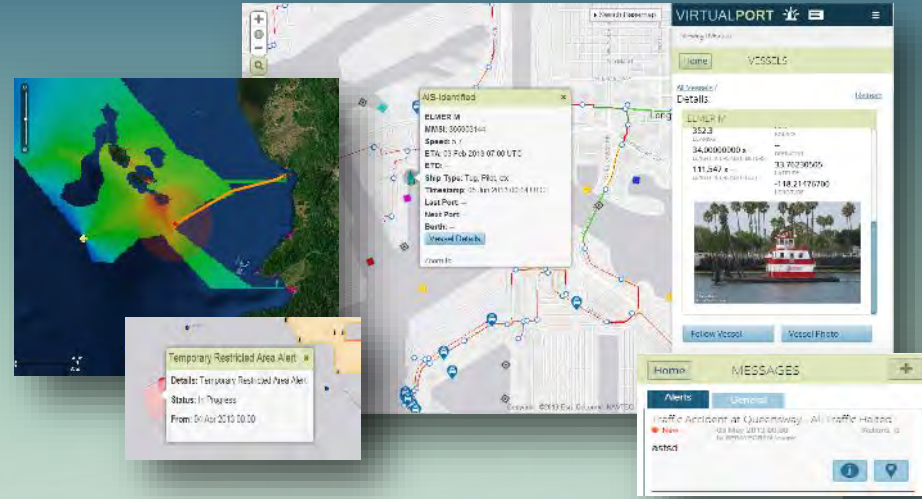


Rationalize Surveying and Dredging



Automated, Survey-driven Electronic Navigational Charts®

Analysis & Alerting



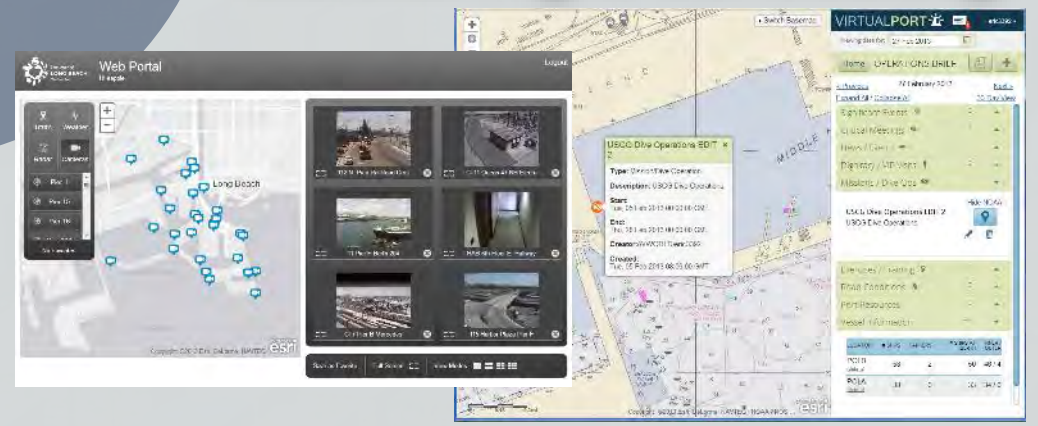
Visualization



Mobile Operations



Monitoring & Scheduling



POLB/ LBPD Maritime Joint Operations Brief

FOR OFFICIAL USE ONLY

MARSEC Level:	Level 1	Minimum appropriate security measures shall be maintained at all times.
---------------	---------	---

Significant Events (Past 24 Hours): 05/13/2013

Event 1: Ammonia Leak - Anaheim/Magnolia 05/13/2013 0449 hrs	LBFD and LBPD have closed Anaheim from Harbor to Cedar due to an Ammonia Leak. The exits to Anaheim EB from the 710 Fwy have also been closed. Port operations have not been affected.
Event 2: Trespass - 1200 Harbor Scenic - 05/12 0807	At 0653 hours, Platt Security requested LBHP for a male subject found trespassing in the Thums area off Harbor Scenic and Harbor Plaza. The male subject appeared mentally unstable and LBPD was requested. LBPD transported the subject to a mental health facility with no further incident.
Event 3:	N/A

Critical Meetings:	<ol style="list-style-type: none"> 1. Security Staff/ Project Meetings 0800-0900 hours. 2. Security Campus Sitting Study - Kickoff Meeting 1530-1630
---------------------------	--

News/ Events:	N/A
----------------------	-----

Dignitary/ VIP Visits:	N/A
-------------------------------	-----

Missions/ Dive Ops:	Missions: LBHP Officers continuing critical infrastructure checks throughout the port due to tensions with the United States and [redacted]
----------------------------	--

Exercises/ Training:	N/A
-----------------------------	-----

Road Conditions:	<ol style="list-style-type: none"> 1. On-going lane closures due to construction in the area of Pico/ Pier E. 2. The 47 Fwy: NB and SB Fwy will be reduced to one lane from January 3rd to July 31st, 2014 for Schuyler F. Heim Bridge replacement project. 3. Pico: single lane closures in each direction from the S. Pico NB 710 on-ramp to Ocean Beginning 05/13 at 1900 hours, for approximately a week and a half.
-------------------------	---

Example

POLB/ LBPD Maritime Joint Operations Brief

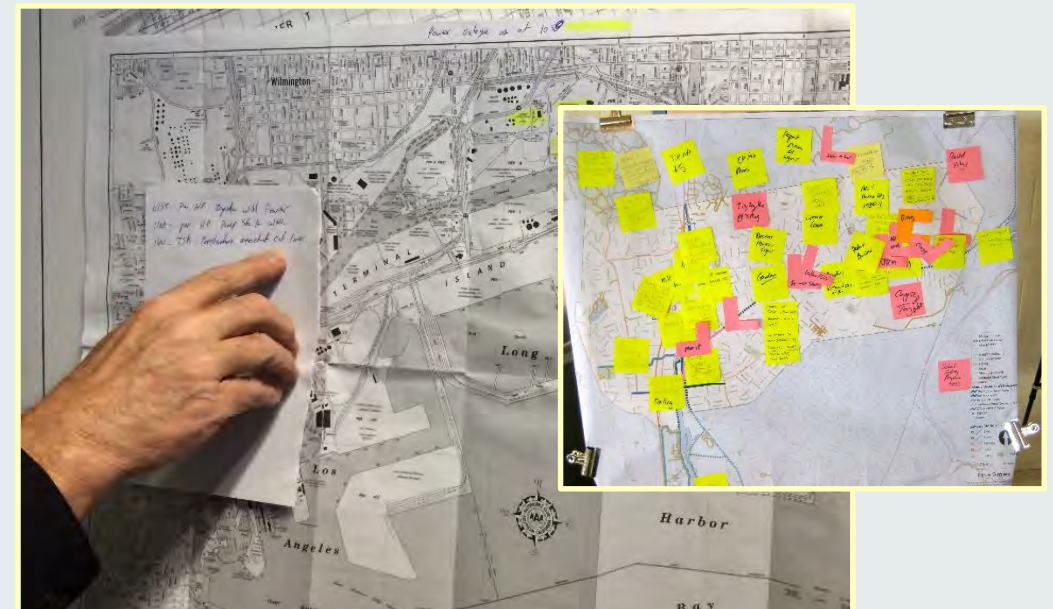
FOR OFFICIAL USE ONLY

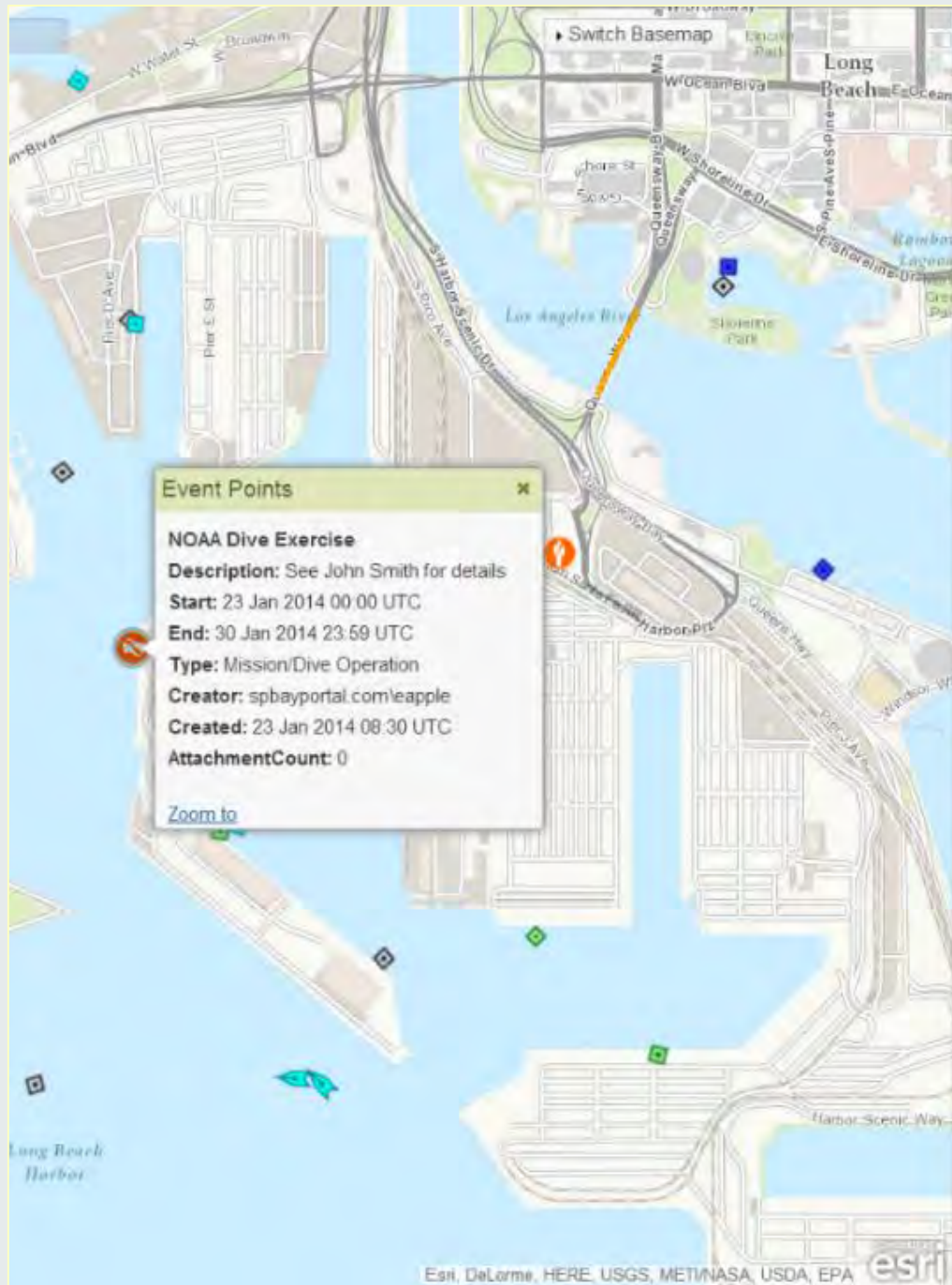
Vessel Information:	Location:	Total ships in port:	Tankers in port:	Ships at Anchor:	Inner/ Outer:
	POLB	10	2	4	4/0
	POLA	9	0	0	0/0

At Risk Reefer Containers:	29 "At Risk" Reefer Containers in Port: TTI (22), PCT (1), ITS (2), LBCT (4).
-----------------------------------	---

30 Day Outlook:

This Week:	5/14: Support Security Campus Sitting Study JCCC 1530-1630 5/15: CFQA Discussion 0830-1630 5/16: 2nd Quarter POTR Meeting Dates 1300-1400 hrs
Next 30 Days	5/21-5/23: Port Protector 2013





Event Points ✕

NOAA Dive Exercise

Description: See John Smith for details

Start: 23 Jan 2014 00:00 UTC

End: 30 Jan 2014 23:59 UTC

Type: Mission/Dive Operation

Creator: spbayportal.com/leapple

Created: 23 Jan 2014 08:30 UTC

AttachmentCount: 0

[Zoom to](#)

VIRTUALPORT

Viewing data for: 30 Jan 2014

Home

« Previous

Expand All / Collapse All

Significant Events

Critical Meetings

News / Events

Dignitary / Visits

Missions / Dive Ops

Exercises / Training

Road Conditions

Port Resources

Vessel Information

Daily Narrative

LOCATION	# SHIPS	TANKERS	# SHIPS
POLB (details)	25	3	
POLA (details)	31	0	

Viewing data for: Jan 2014

Su	Mo	Tu	We	Th	Fr	Sa
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1

Today Done

VIRTUALPORT

Viewing data for: 27 Feb 2014

Home OPERATIONS BRIEF

« Previous 27 February 2014 Next »

Expand All / Collapse All 30 Day View

Significant Events

Storm Watch February 2014

USCG advises: threat of thunderstorms, strong wind gusts, hail, clouds of lightning, steep / choppy waters Friday into Saturday. See attachments for briefs and POLB Maint. plans.

[i](#) [l](#)

EB GD Bridge Traffic Accident

At 0126 hours the Command Center saw via CCTV, a vehicle on top of the center divider on EB GD Bridge near the top of the bridge. LBHP, LBFD, and LBPD were advised and responded to the location. This was a single vehicle accident involving a bobtail. LBFD determined this accident to be a non-injury and departed the scene when the driver refused medical treatment. The #1 and #2 lanes were blocked until the tow truck cleared the vehicle at 0345 hrs. No major traffic delays in or out of port.

[i](#) [l](#)

Stalled Tractor Vehicle WB GD Bridge

At 0150 hrs there was an initial report of a non-injury traffic accident between two tractor trailers WB GD. LBHP and LBPD were out assisting with traffic control. After an investigation it was determined that this incident was only a stalled vehicle on the #1 lane of the WB GD Bridge. An Update PING was sent out to reflect the correct information and of title change. The tow truck cleared the roadway at 0345hrs. No major traffic delays in or out of the port.

[i](#) [l](#)

1480 Pier F Ave at Berth 204- Cooper T Smith

at 0310 hrs LBFD advised the Command Center that they were en-route to a fire alarm at Cooper T Smith at berth 204. All HP units were at the GD Bridge handling two incidents and were unable to break away. LBPD responded to assist with this call. The CC monitored the situation via CCTV. LBFD reset the alarm and cleared LBFD was called out a 2nd time and HP assisted on 2nd call out. On the 3rd call out to the location they advised that Cooper T Smith will have their fire alarm on "Test" until 12P.

[i](#) [l](#)



information

5

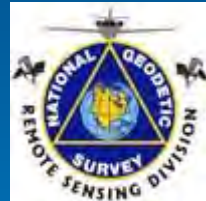
Enter Big Data

Volume
Velocity
Variety



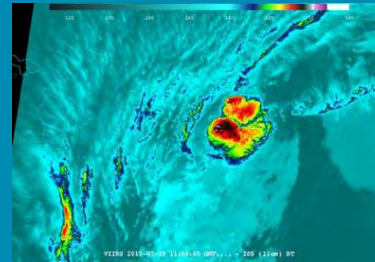
Integrate Remotely Sensed Data

Leveraging Government Open Data

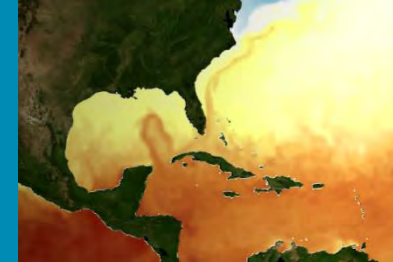


Intelligent Imagery

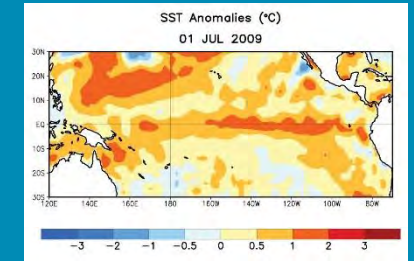
Tropical Storms



Sea Surface Temperature



SST Anomalies



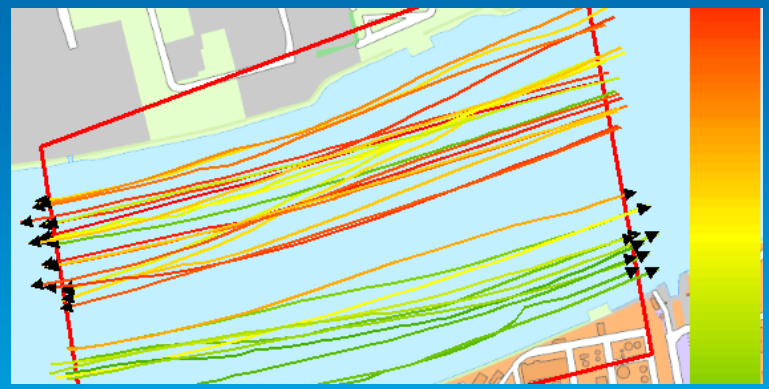
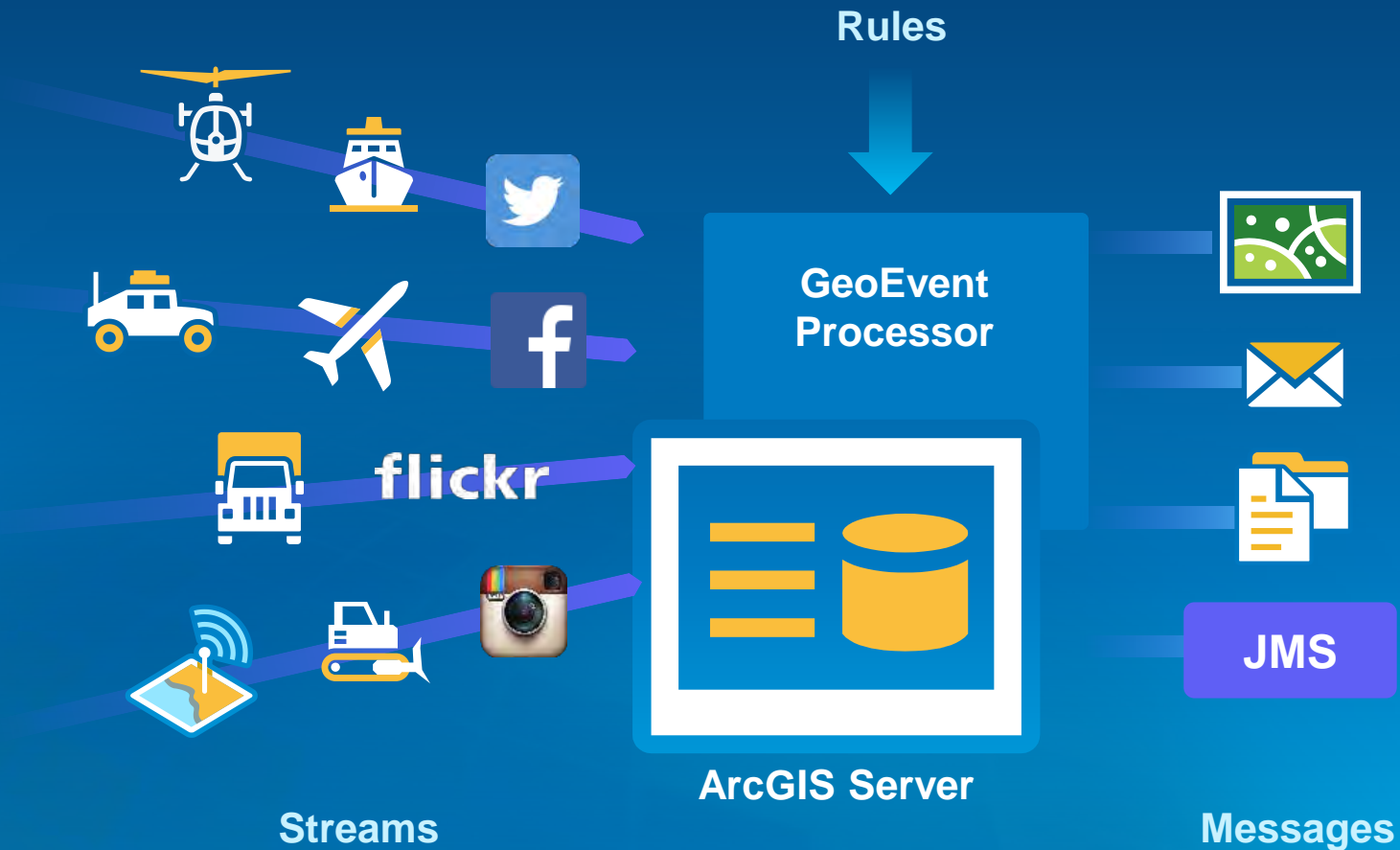
Many Sensors

- POES
- GOES
- DMSP
- Jason-2
- Suomi NPP
- GOES-R



Integrate Real Time Data

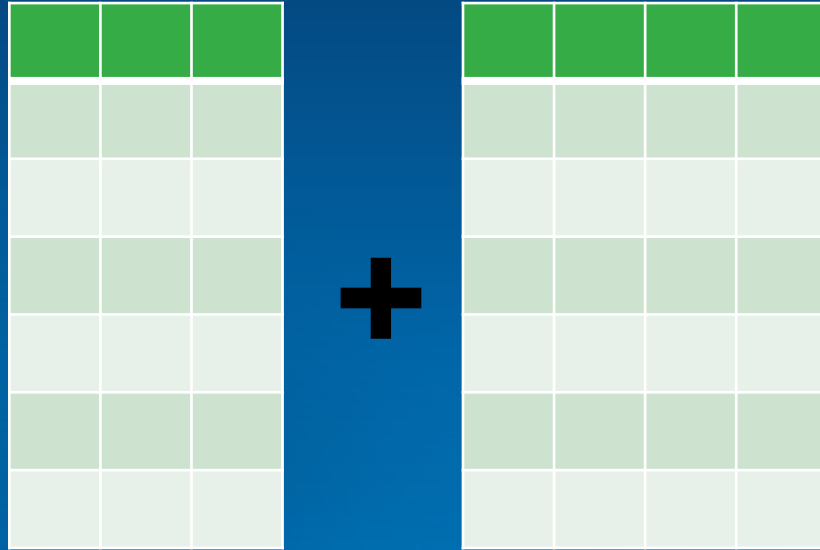
Continuous Processing and Analysis



Integrate Many Types of Data

Analyze Communities

- 2013/2018 Demographics
- Access to Care
- Adult Preventive Services Use
- American Community Survey
- Birth Measures
- Building Permits
- U.S. Business Locations
- Business Summary
- Census 1990 Demographics
- Census 2000 Demographics
- Census 2010 Demographics
- Consumer Spending
- Crime Indices
- Death Measures
- EPA Enforcement
- Food Access
- Food Consumption
- Food Stamps



NASA, NOAA TEAM UP FOR SATELLITE TO INCREASE TORNADO WARNING TIMES

-CNN

U.S. completes warmest 12-month period in 117 years

-Washington Post

USA records warmest March in history

-USA Today

NOAA'S GOES-13 SATELLITE PROVES METTLE DURING SANDY

-NOAA

NOAA: Data from New Satellite Implemented in Record Time; Meteorologists Are Now Using Information for Weather Forecasts

-ScienceDaily

NOAA Geostationary Satellite Program Gets Favorable Review

-FCW

March Heat Melts Records

-ABC News

New Computer Model Will Help Forecast Hurricanes This Year

June heat wave might have broken all-time records in GA, SC

-The Augusta Chronicle

Hotter summers could be a part of Washington's Future

-Washington Post

Funding weather sites crucial for

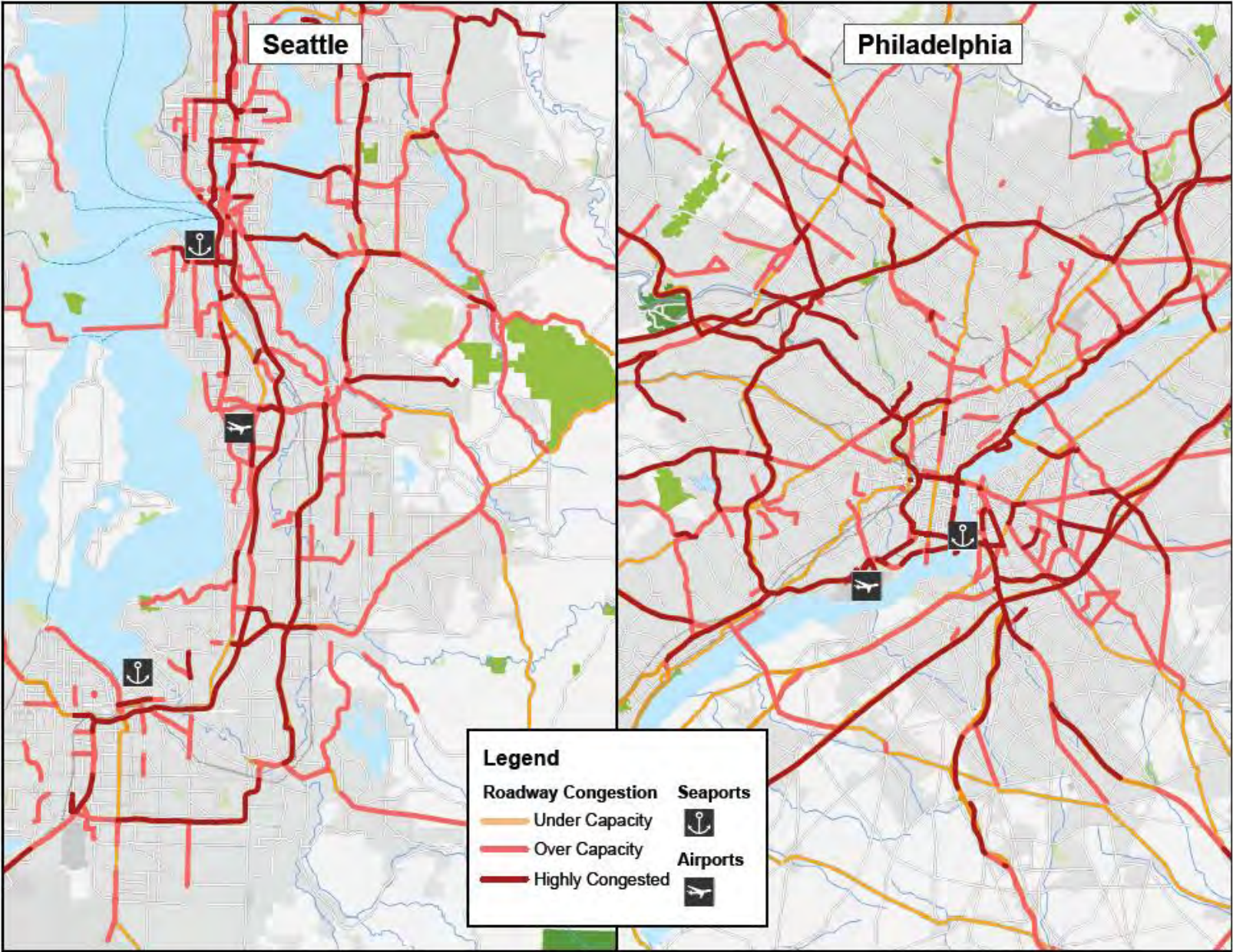
New generation satellites shine on weather forecasting

-Accuweather

Value Drivers for Data-driven Organizations

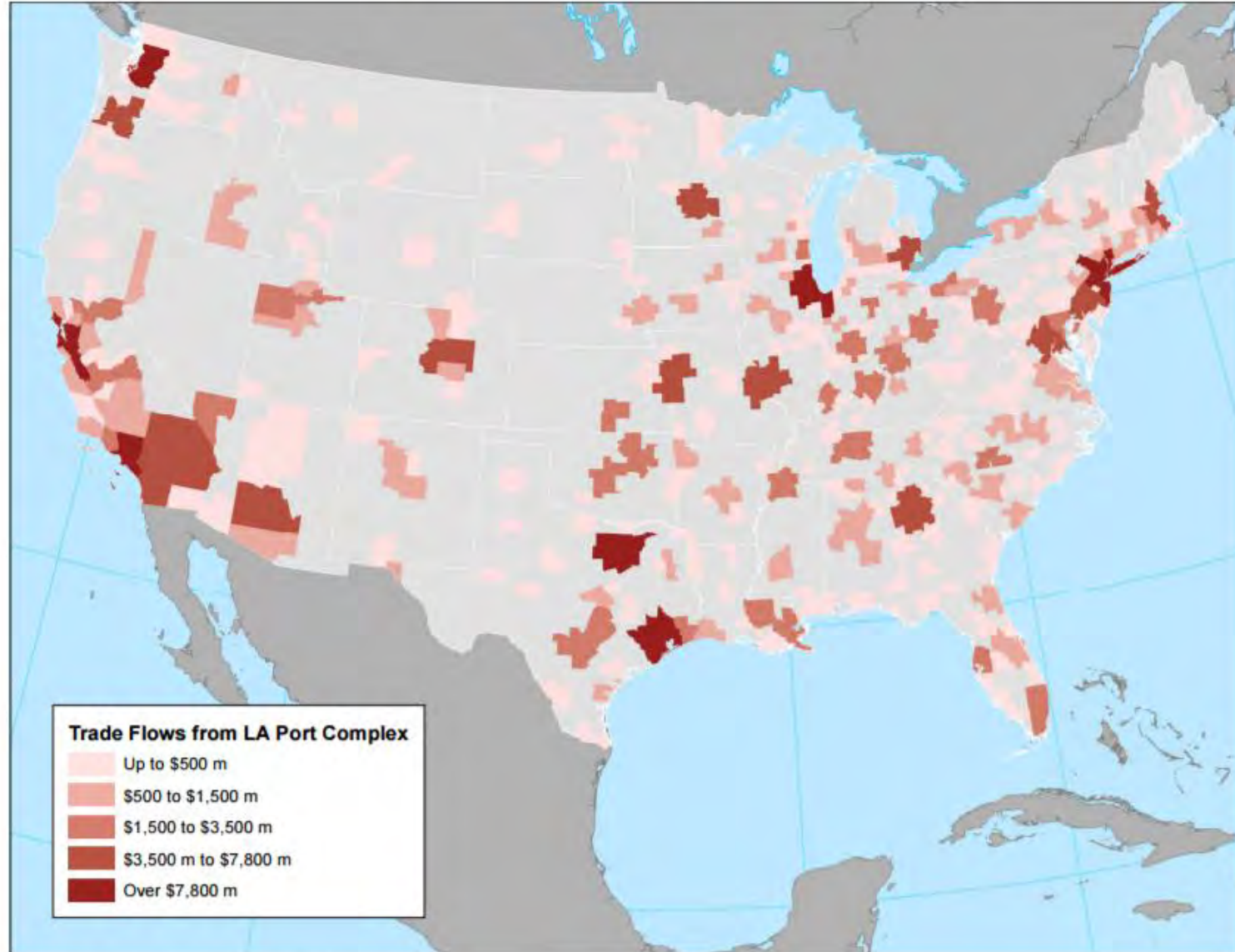
	Driver	Example
Strategic Value	New Opportunities	Uncover hidden patterns and generate new business opportunities
	Faster Decisions	More frequent and accurate analysis
	Better Decisions	Quantify impact of decisions
	Proactive Decisions	Gain operational insights
Improve Efficiency	Improve Capabilities	Data-driven decision making culture
	Increase Automation	Reduce reporting effort
	Eliminate Redundancy	Tools, data stores, processes
	Improve Processes	Continuous improvement
	Reduce Costs	Infrastructure, process, tools

Map 4. Roadway Congestion Surrounding Ports in Seattle and Philadelphia



Source: Brookings analysis of Freight Analysis Framework 3.4 (2007) data

Map 3. Domestic Market for Goods Shipping Through the Los Angeles Port Complex, 2010



Source: Brookings analysis of EDR data



esri

**THE
SCIENCE
OF
WHERE**