MOBILITY INNOVATION CENTER

Future of regional transportation infrastructure

Presented to

NW CCC Northwest Construction Consumer Council

Nov. 5, 2026

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Director
Mobility Innovation Center

UW COMOTION
Your Innovation Partner

Agenda

- About the Mobility Innovation Center
- Glimpse into the future with Mobility Washington 2050
- I-90 Digital Twin
- AI uses in transportation
- Q/A



Ten Years of Daring to Be Different

2016 → 2026



Applied research

Near-term, partner-driven work

Cross-sector trust

Public + private + nonprofit + UW

From pilots to practice

Tools, evidence, and implementation paths

Ten Years of Daring to Be Different

2016 → 2026

24

academic departments

230

collaborating partners

50

projects launched



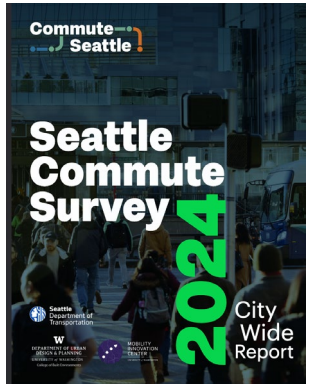
MOBILITY INNOVATION CENTER at the UNIVERSITY of WASHINGTON

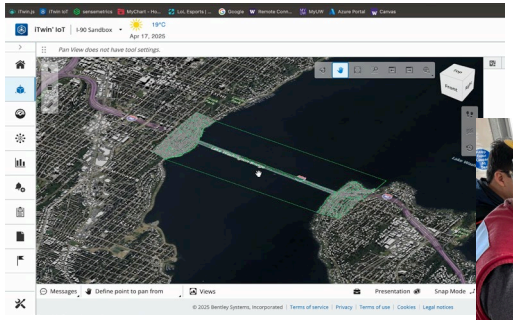
How the Mobility Innovation Center Works

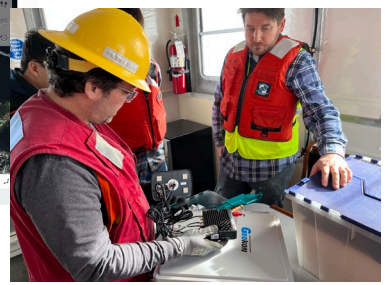
- Public-private partnerships for innovative applied research
- Disrupt the traditional academic process, delivering results faster
- Research and practitioners working together



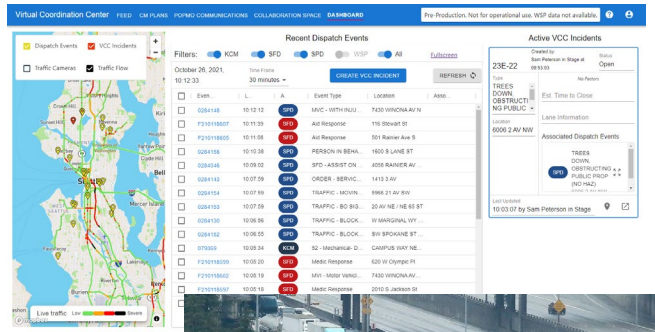


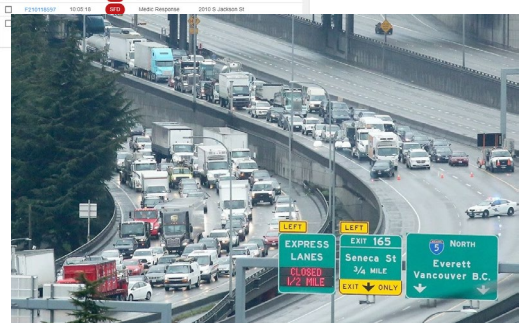






I-90 Digital Twin





Virtual Coordination Center (VCC)

Mobility Washington 2050: The Future in Motion

Partners

WSDOT

King County

Microsoft

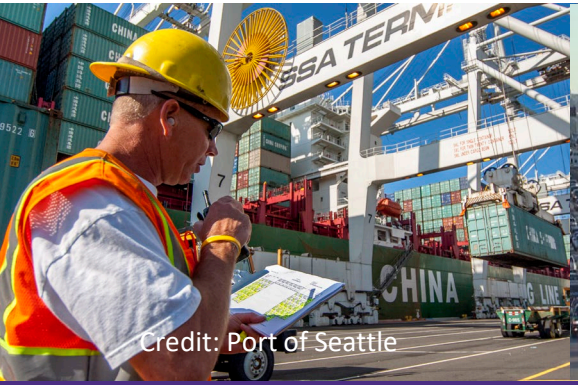
CHALLENGE SEATTLE

BOEING

Alaska AIRLINES

Puget Sound Regional Council




Credit: Port of Seattle

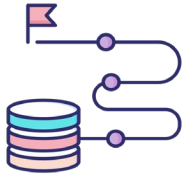

Credit: KING 5 News


Credit: WSDOT


Credit: Port of Seattle

Our Approach

Data-Driven



Gathering and Unifying Agency Data



Visual Design of Interactive Dashboards

Human-Centered

Who Are the Users?



Platform Testing with Transportation Experts and General Public

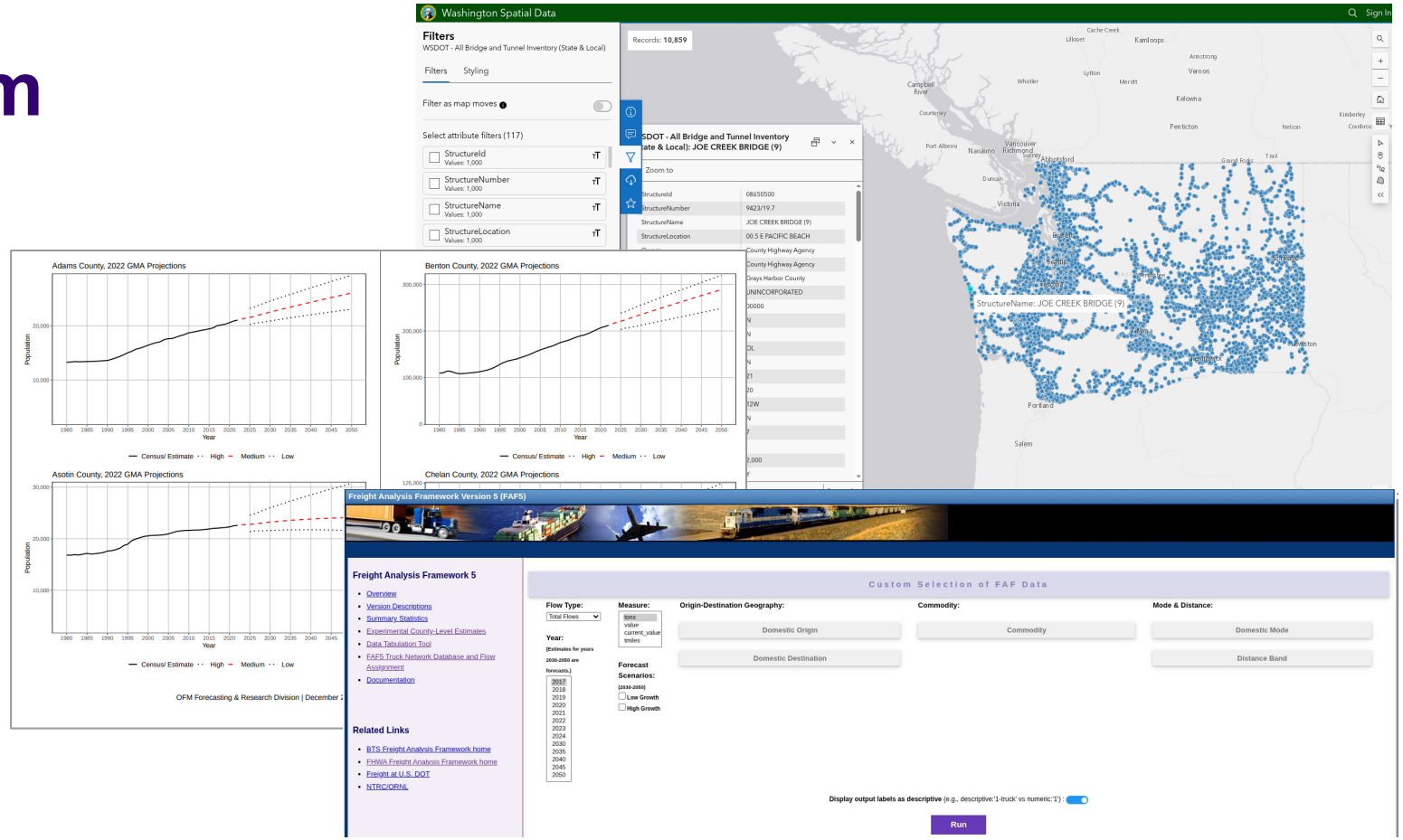


Visual Storytelling

Behind the Platform

Data Visualizations

- Population Growth
- Traffic Forecast
- Airport Capacity
- Freight Mobility
- Bridge Condition



WASHINGTON STATE OFM Office of Financial Management

DEPARTMENT OF TRANSPORTATION UNITED STATES OF AMERICA

WSDOT

TRPC THURSTON REGIONAL PLANNING COUNCIL

FEDERAL AVIATION ADMINISTRATION

Puget Sound Regional Council

Successful Research-based Outcomes



"It would benefit our agency... one of our jobs is to allocate money to transportation projects... This type of information would help evaluate the importance of that funding."

– From an interview with transportation professional

FLOATING BRIDGES IN SEATTLE

LAKE WASHINGTON POSED A UNIQUE CHALLENGE FOR ENGINEERS.

The lake is miles across, over 200 feet at its deepest point, and lying at the bottom is another 100 feet of mud. This made it unsuitable for crossing with a fixed pier bridge.





Homer Hadley (1885-1967)
Mercer Island Historical Society
© 2001

The solution proposed in 1921, to cross the lake using floating concrete pontoons, was first ridiculed as "Hadleys' Folly."

Despite setbacks, by 1940, the first floating bridge was opened to traffic with around 12,000 vehicles crossing the first day.

WSDOT now owns and operates four floating concrete pontoon bridges, which are critical to the economic prosperity of the region.

Image: https://www.seattlemet.com/news-and-city-life/2024/11/lake-washington-floating-bridge-history

Innovation and Partnerships



WSDOT

CHALLENGE SEATTLE

Bentley®

Microsoft Azure

T-Mobile

SIERRA WIRELESS IS NOW SEMTECH®

wsp

COMPASS

CIVIL & ENVIRONMENTAL ENGINEERING
UNIVERSITY of WASHINGTON
College of Engineering

eScience Institute
ADVANCING DATA-INTENSIVE DISCOVERY IN ALL FIELDS

COLLEGE OF BUILT ENVIRONMENTS
UNIVERSITY of WASHINGTON

U.S. Department of Transportation
Federal Highway Administration

ABC UTC IBT

MOBILITY INNOVATION CENTER
at the UNIVERSITY of WASHINGTON

STIC
State Transportation Innovation Councils

UW team members



Carrie Sturts Dossick



Bart Treece



Travis Thonstad



Michael Motley



Amos Darko



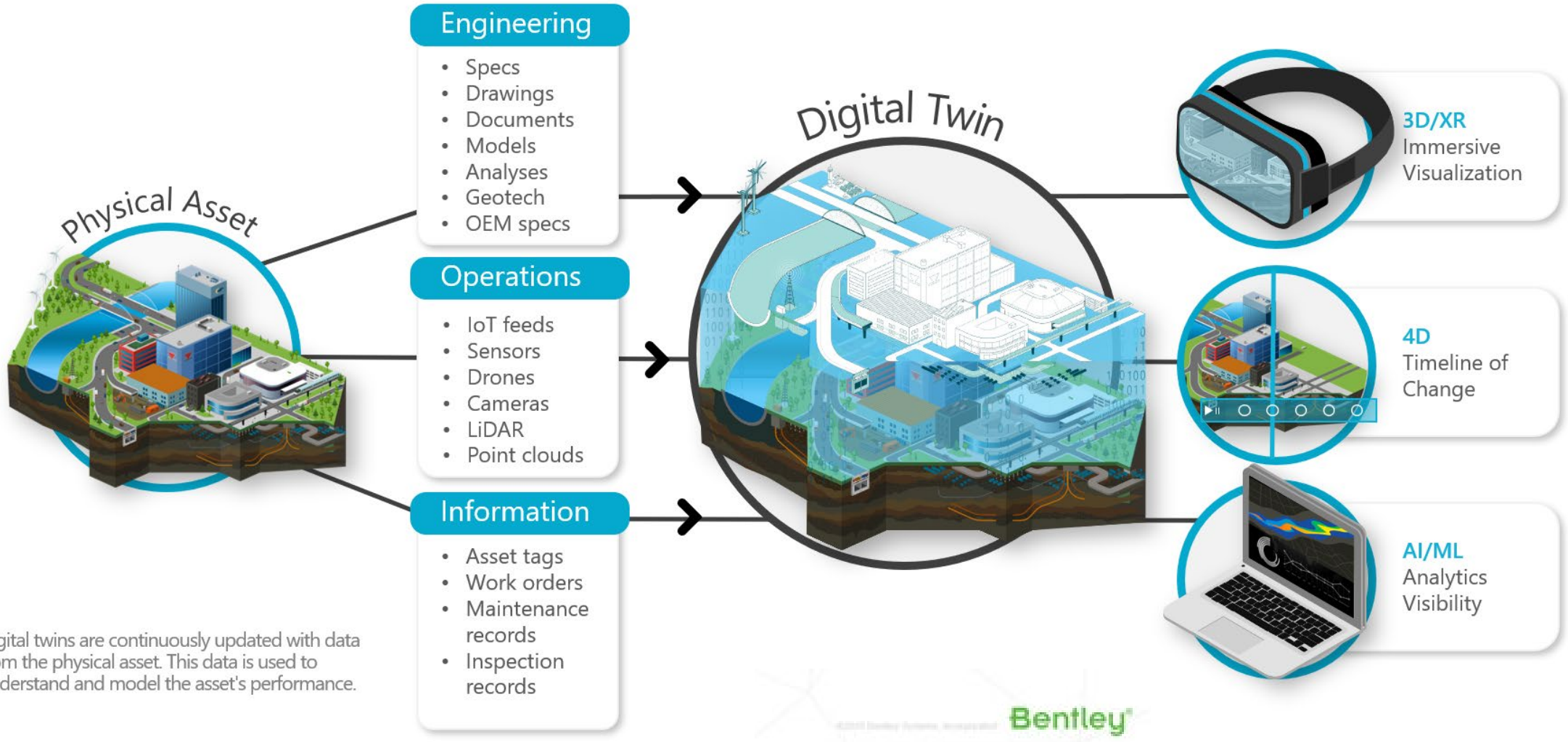
Ori Borjigin

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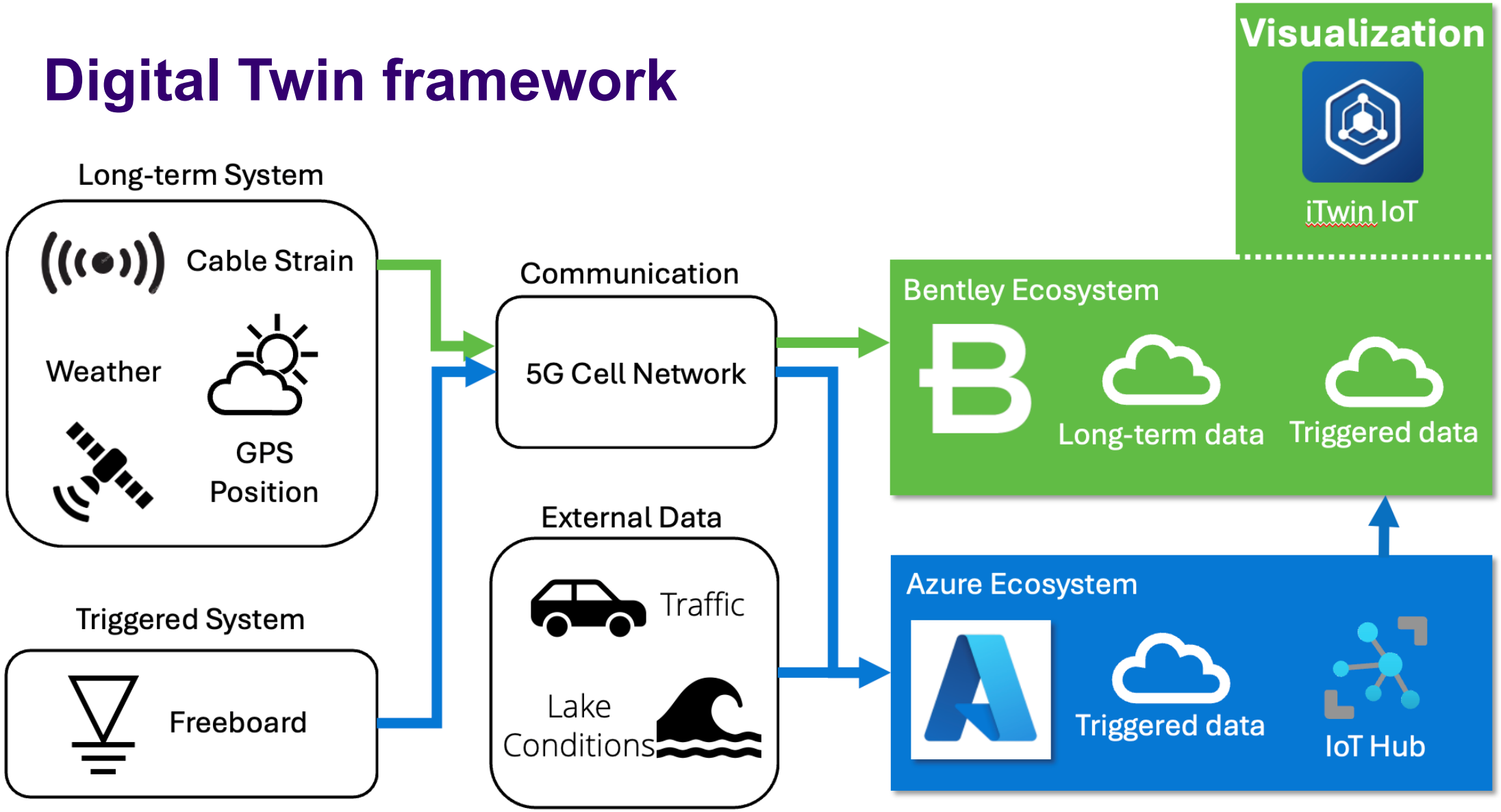
CONSTRUCTION MANAGEMENT
UNIVERSITY of WASHINGTON
College of Built Envrionments

CIVIL & ENVIRONMENTAL ENGINEERING
UNIVERSITY of WASHINGTON

What is a Digital Twin?



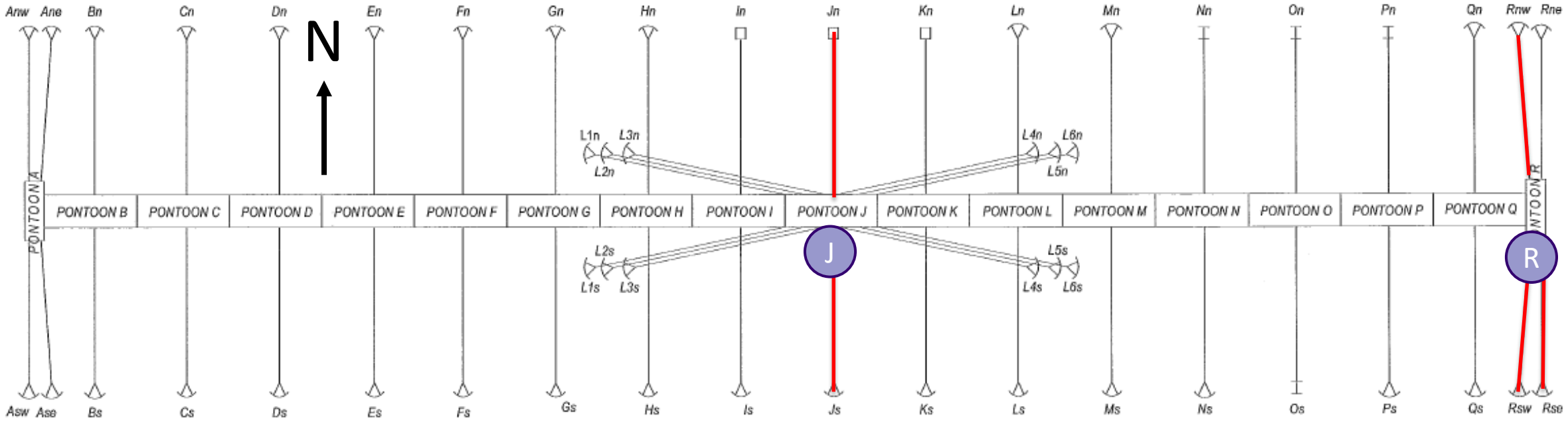
Digital Twin framework



LONG-TERM MONITORING SYSTEM

0 BASE STATION

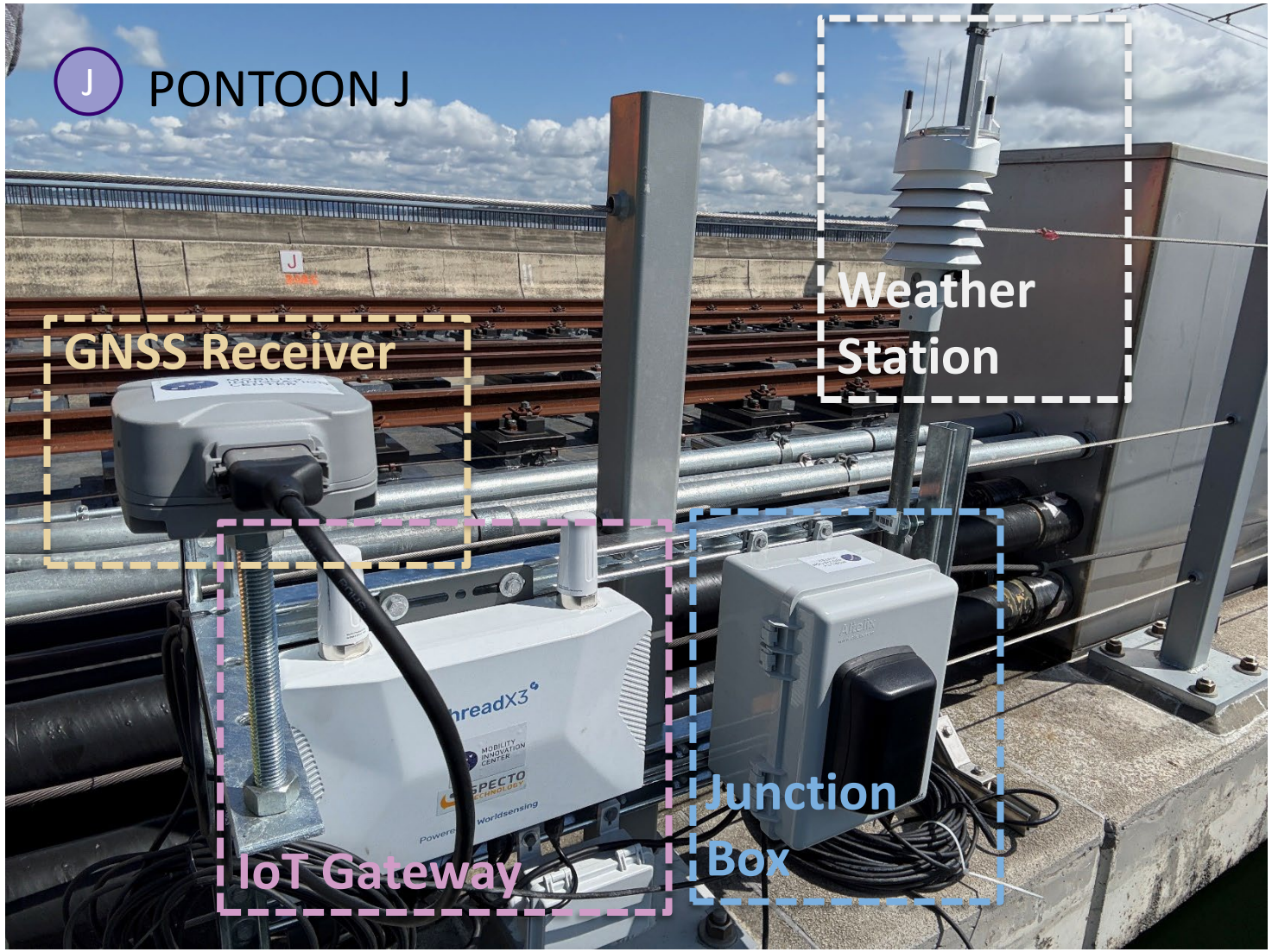
- Measurement frequency varies by instrument from 1-60 minutes
- 24/7 real-time bridge conditions including position and anchor cable tension



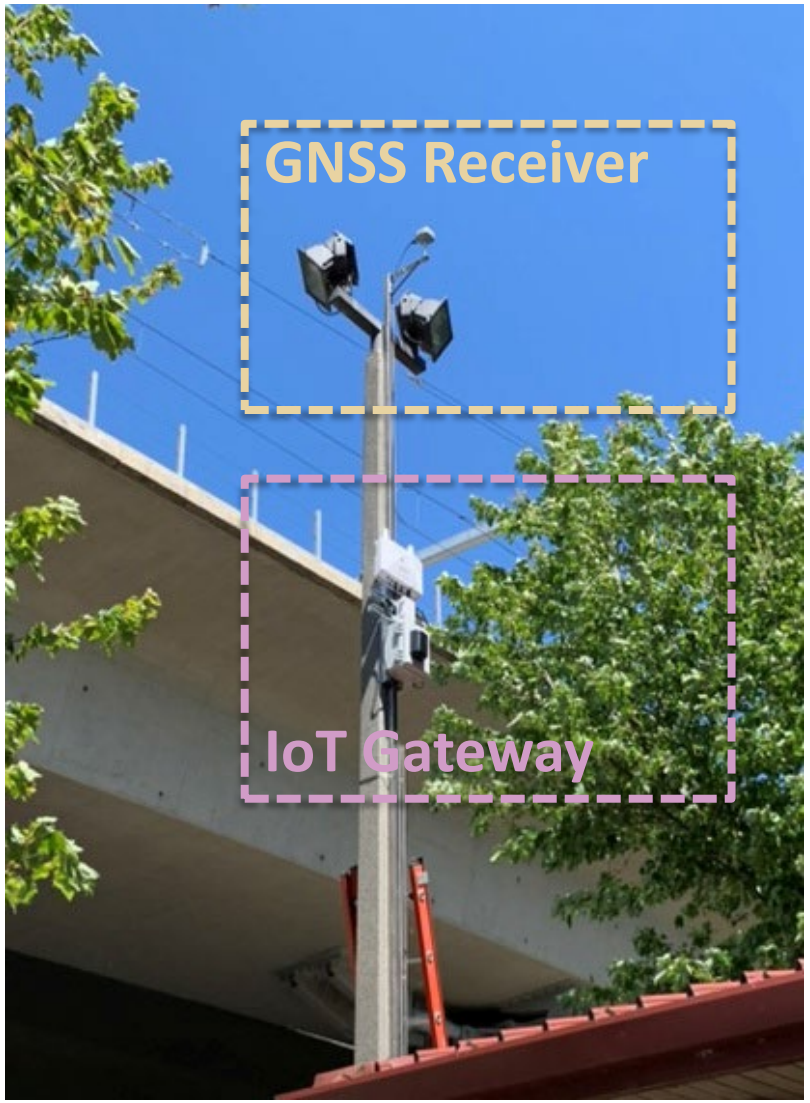
PONTOON J PONTOON R

LONG-TERM MONITORING SYSTEM

J PONTOON J

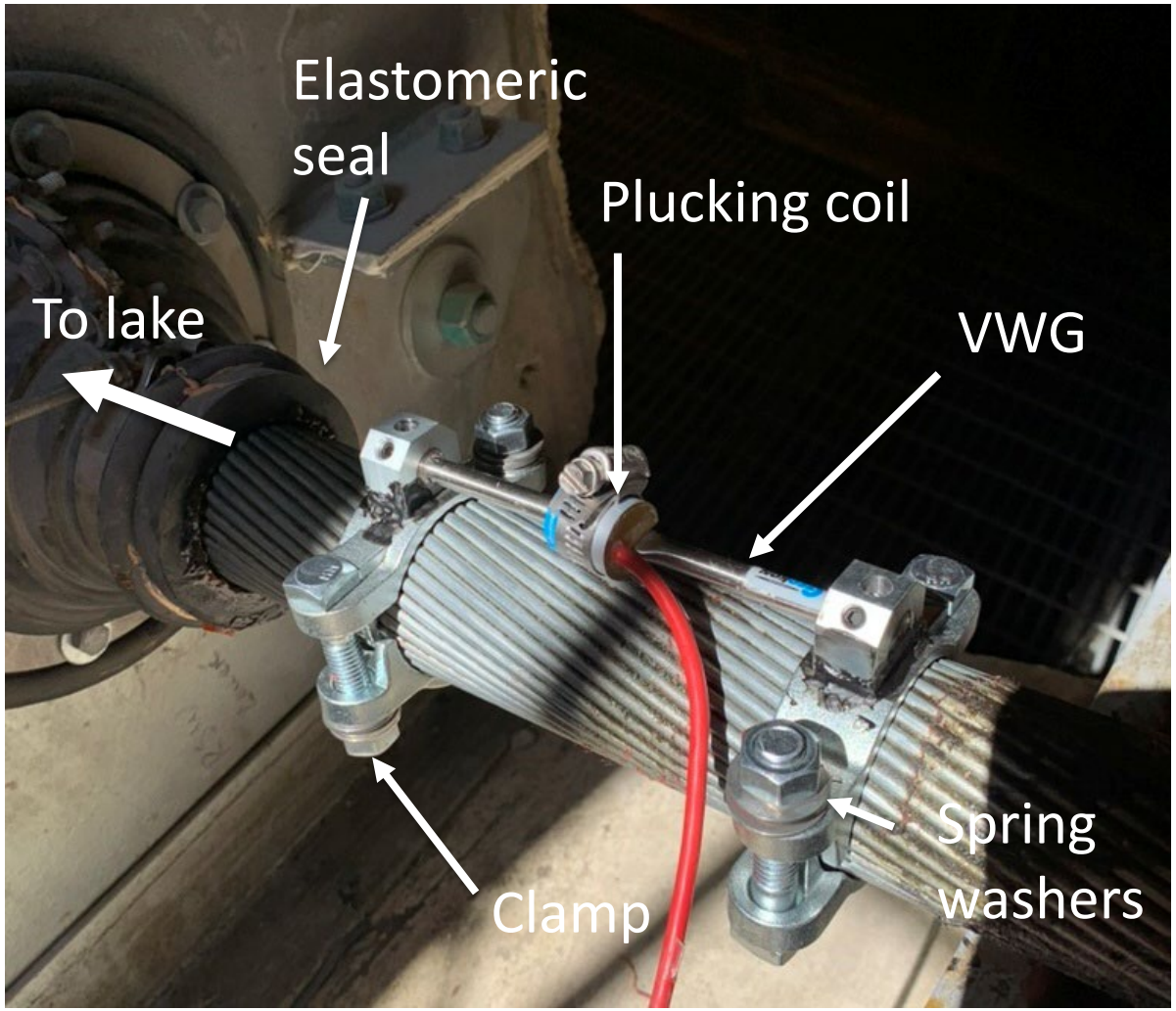


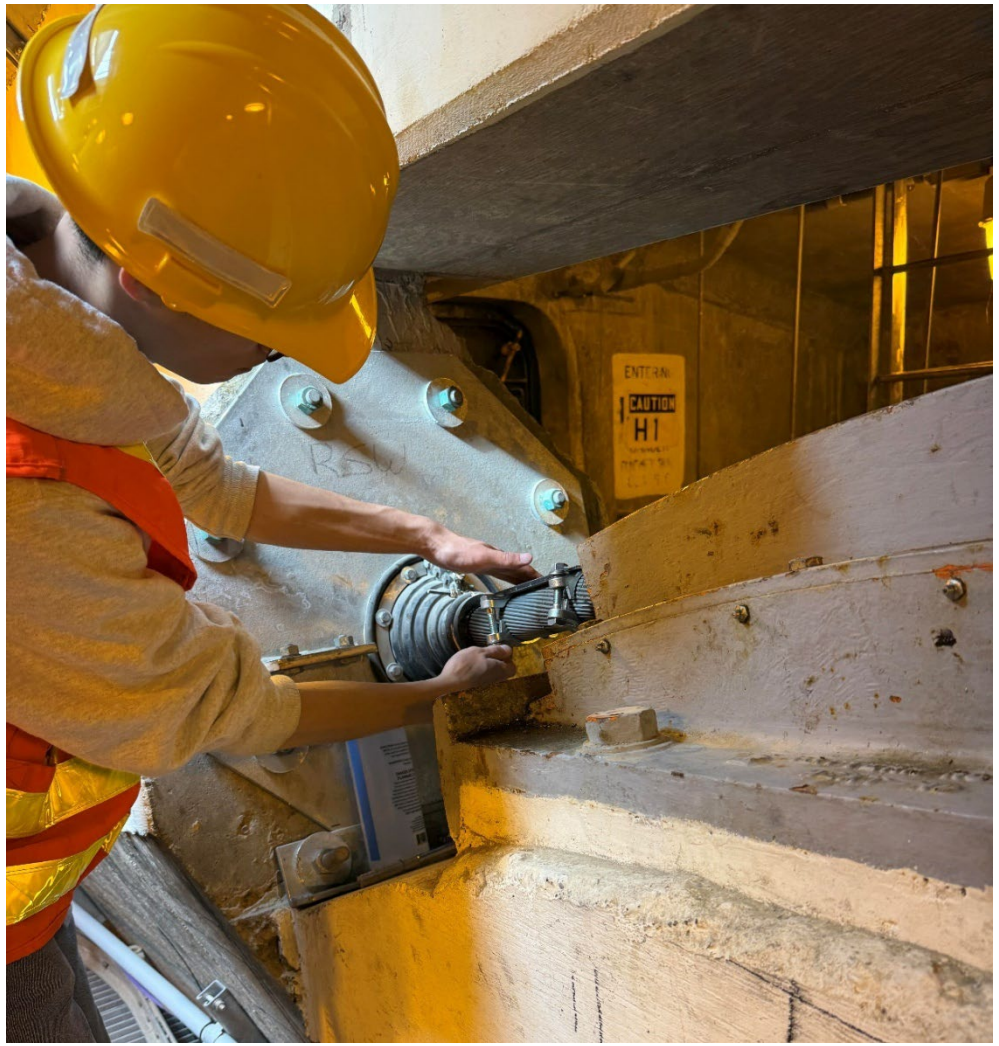
0 BASE STATION



LONG-TERM MONITORING SYSTEM

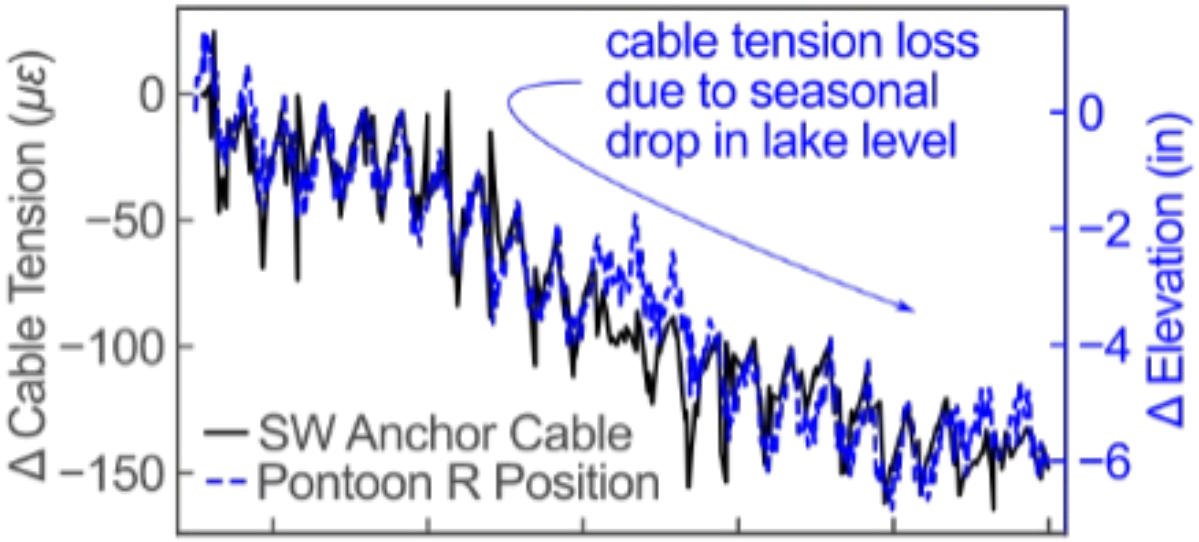
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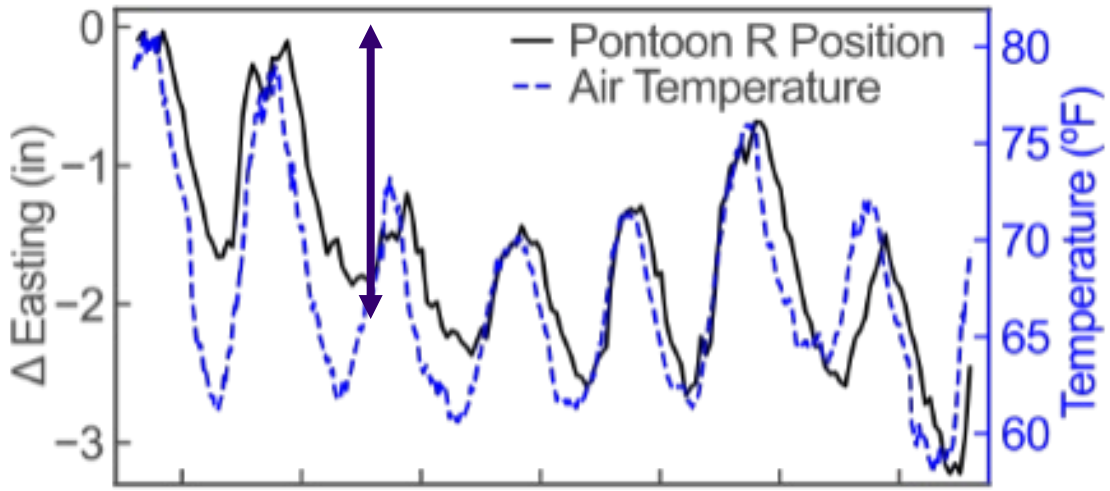


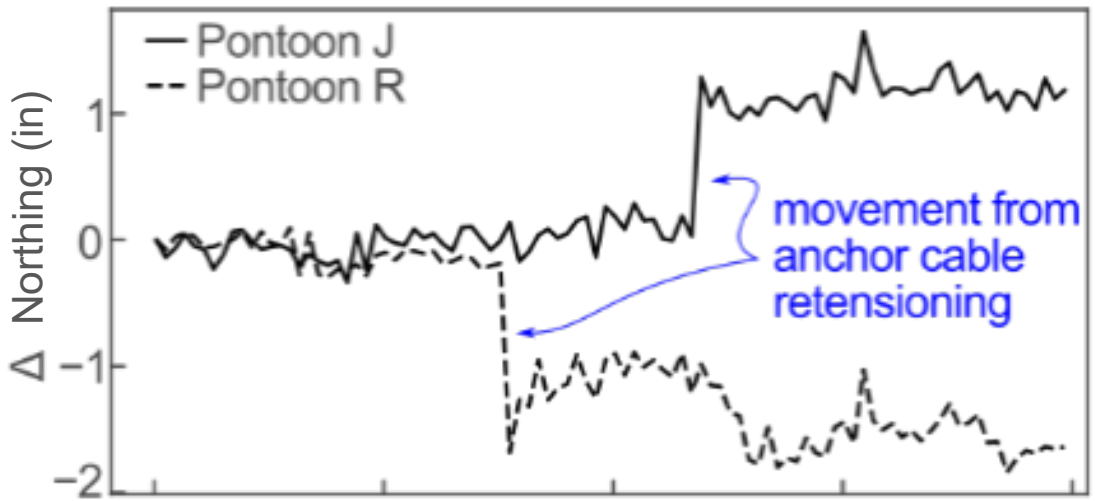
PRELIMINARY RESULTS

2600 ft × 12 in/ft × 5.5E-6 in/in/deg × 10 deg ≈ 1.7 in



150 με × 29 000 ksi × 3.0 in^2 ≈ 6 tons

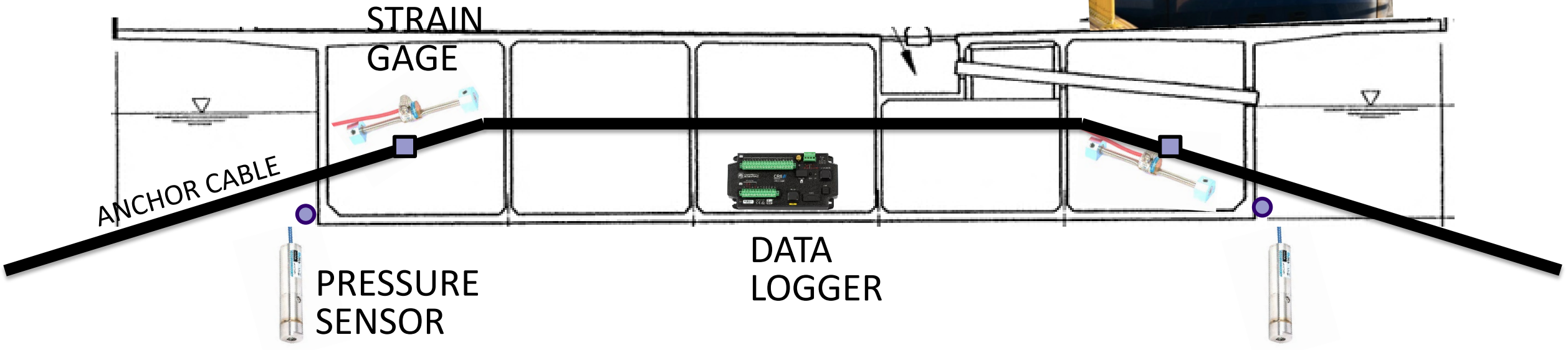




TRIGGERED SYSTEM

- High-frequency data collection (100 Hz)
- Sends data on train passage
- Loss of freeboard / roll of pontoon





TRIGGERED SYSTEM

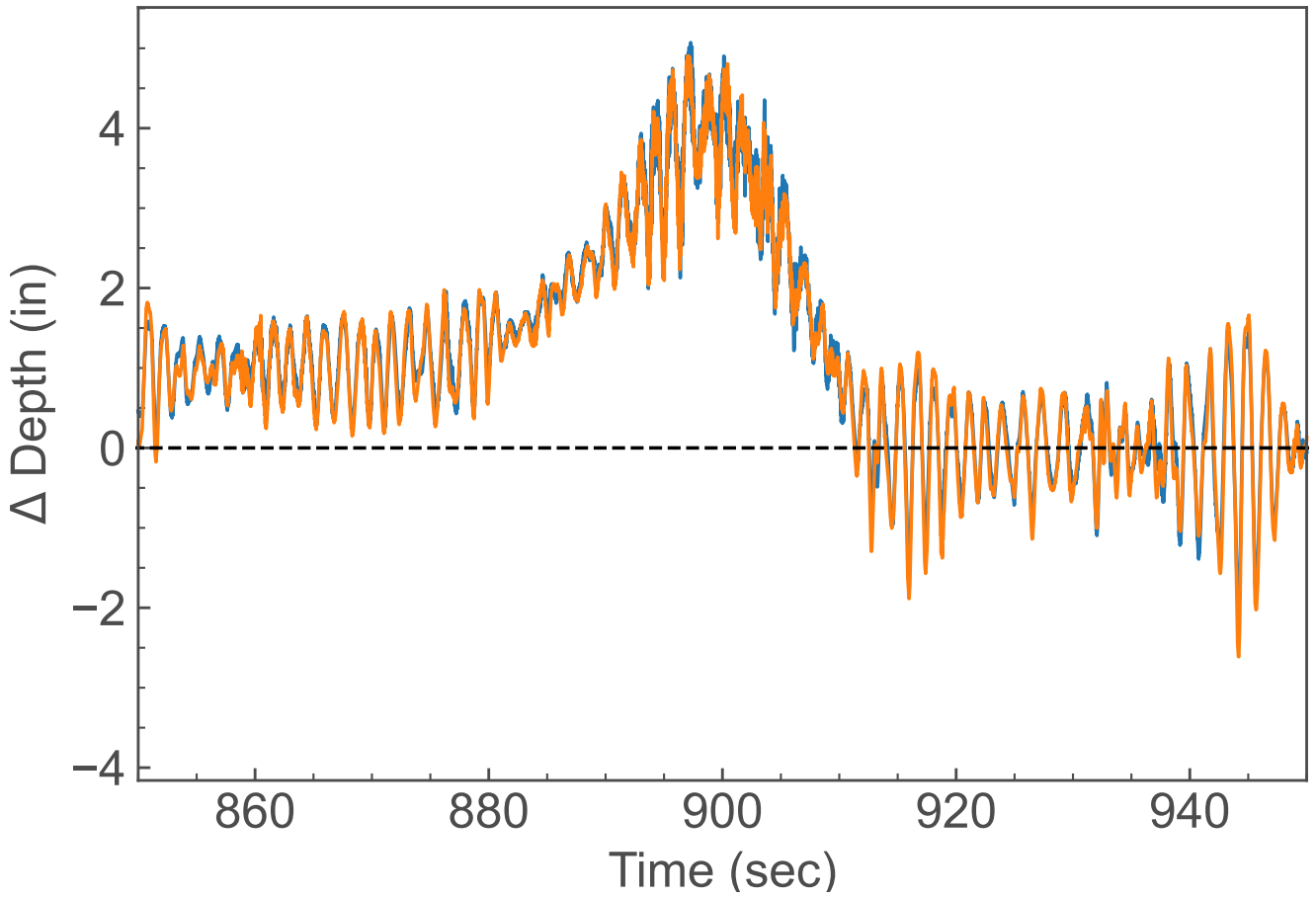


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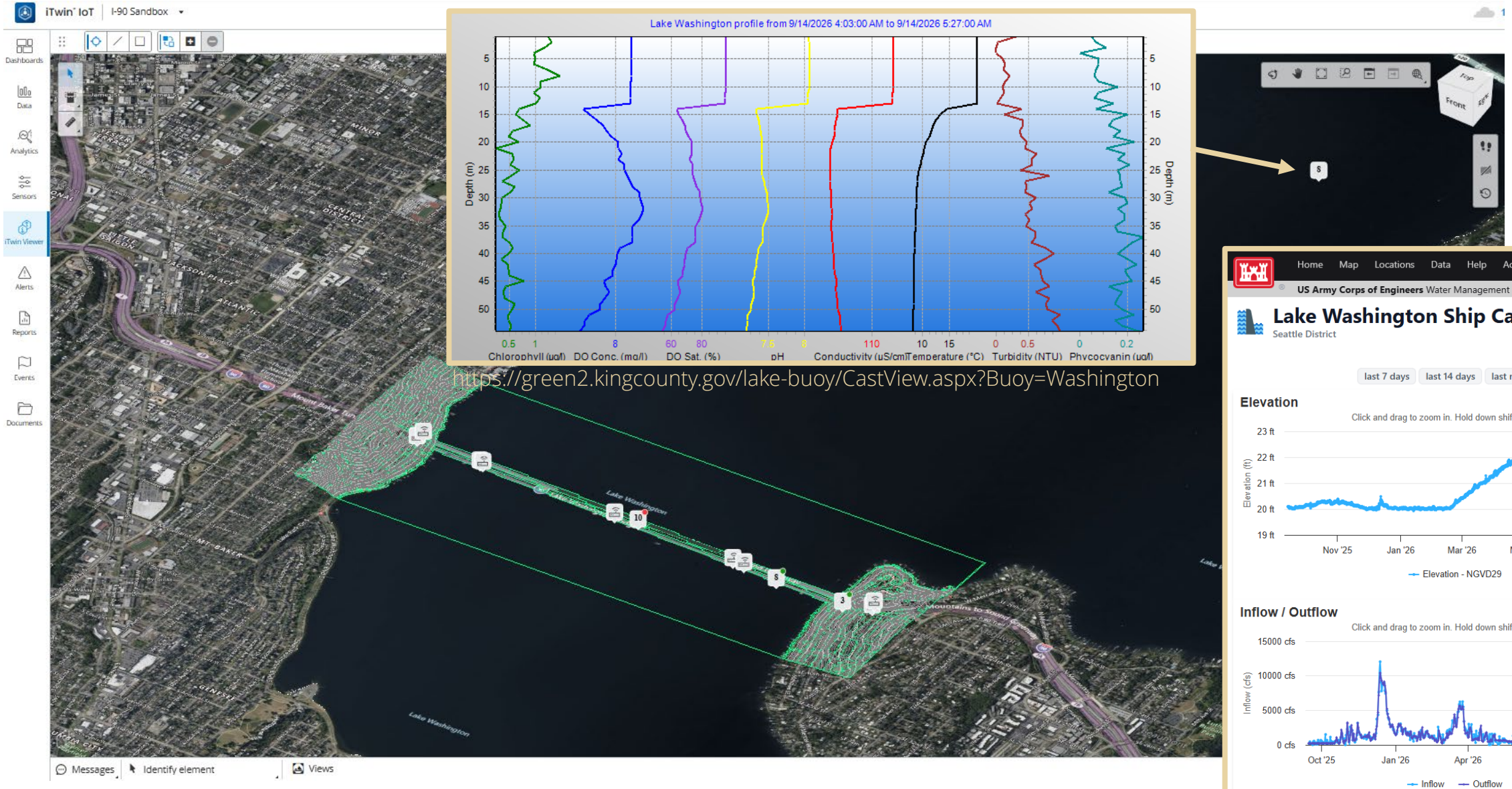
PRELIMINARY RESULTS

> Sept 16, 2025





EXTERNAL DATA



https://green2.kingcounty.gov/lake-buoy/CastView.aspx?Buoy=Washington

Results

WSDOT using data to make decisions

”Virtual inspector” for bridge maintenance

Coordination with Sound Transit

Sensors used for cathodic protection system

Phrase 2 with Sound Transit

Integrate light-rail sensors into the twin



Lessons learned

Digital twin complexity

Cyber security, interoperability, investment

Digital twin strength

Combining data from a variety of sources

IT/OT are key

New age of engineering and decision-making



AI in transportation



Sound Transit: Train Arrival Times

Improve estimates following service disruption



DRIFT: Dynamic Resilience in Ferry Transit

AI-assisted ferry scheduling optimization

Key Takeaways

Leverage the power of partnerships

Shared values and ownership of challenges and choices

Put people first

Technology is a tool, not a replacement for human judgment

Dare to be different, take calculated risks

Fortune favors the brave



Thank You!



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