

ORACLE

Data Management Strategy

How our data management strategy works for Sail GP

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High Performance Data Analytics



Sail GP

- World's fastest sailing yachts
- 8 Teams, identical boats, all teams see all data
- Wind power + sea power + solar power
- Sailing athletes + Data Science athletes



SAIL GP



Challenges - Data

1200 data points from 900 sensors on 8 boats



Challenges – User Experience

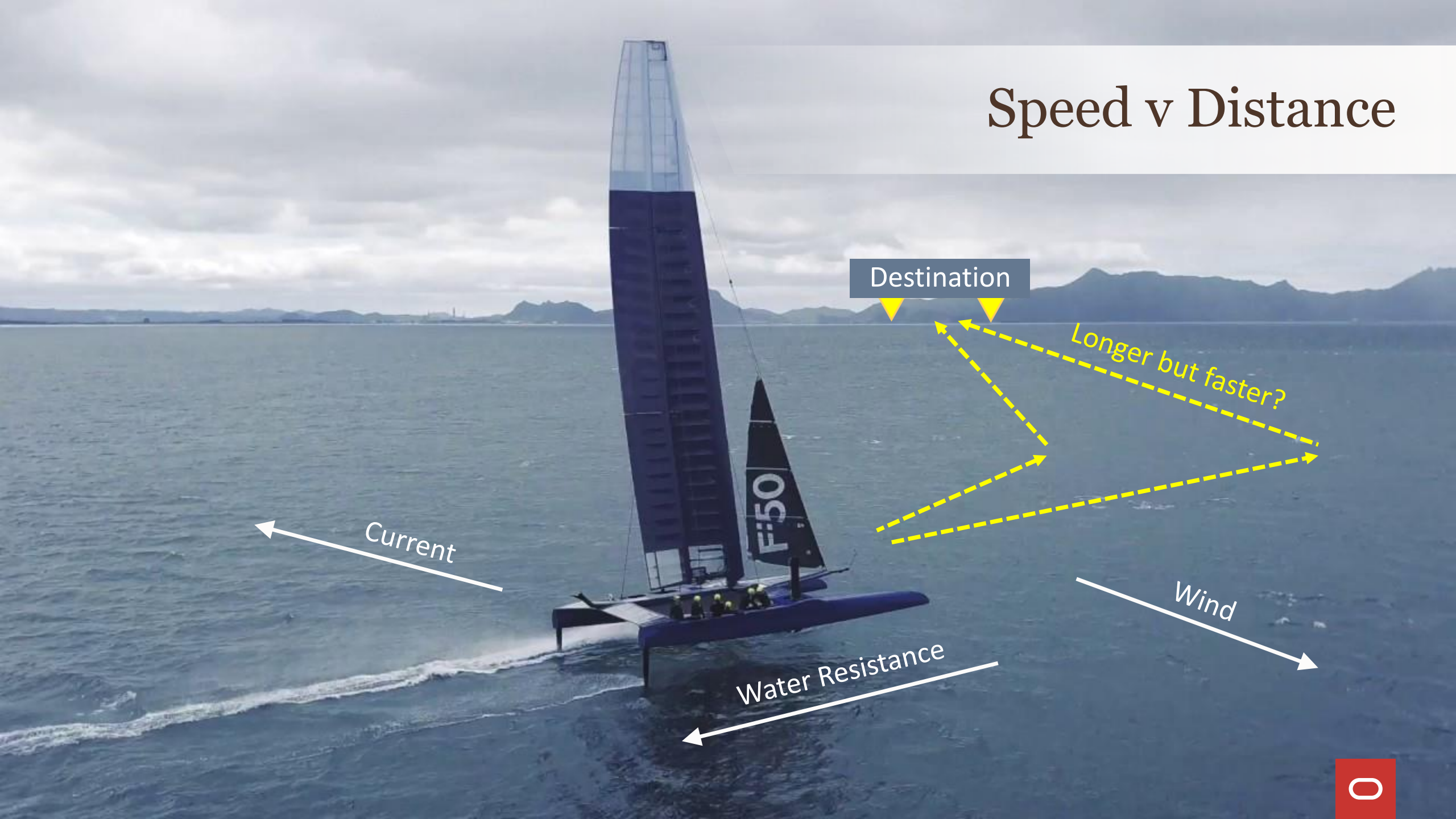
- Simple Visuals
 - For sailing novices
 - Facts and figures, results, social media, conversational interface
- Advanced Analytics
 - For Sail GP data scientists
 - Anomalies and trends, predictions, optimising performance



Sailing Basics



Speed v Distance



Destination

Longer but faster?

Current

Water Resistance

Wind

Using the Foils



Team GB breaks 50 knots



Team GB breaks boat



Data Ingestion and Preparation

 SLINGSBY



Data Requirements

Sensor Data	Course Info	Core Data	Analytics	GPS	Shortest Path
JSON	XML	Row-Based	Columnar	Spatial	Network

Analytics

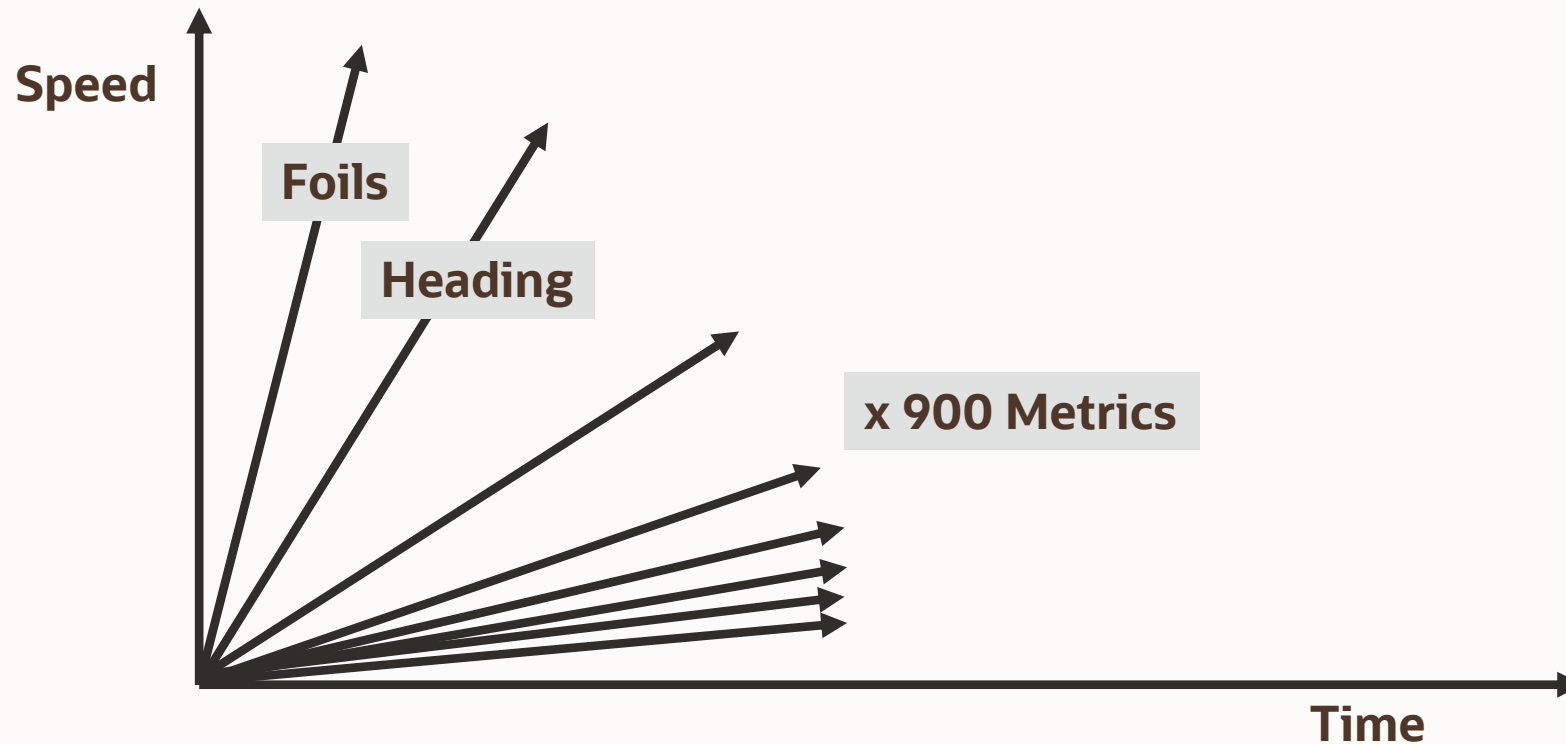


What happened to GBR ?



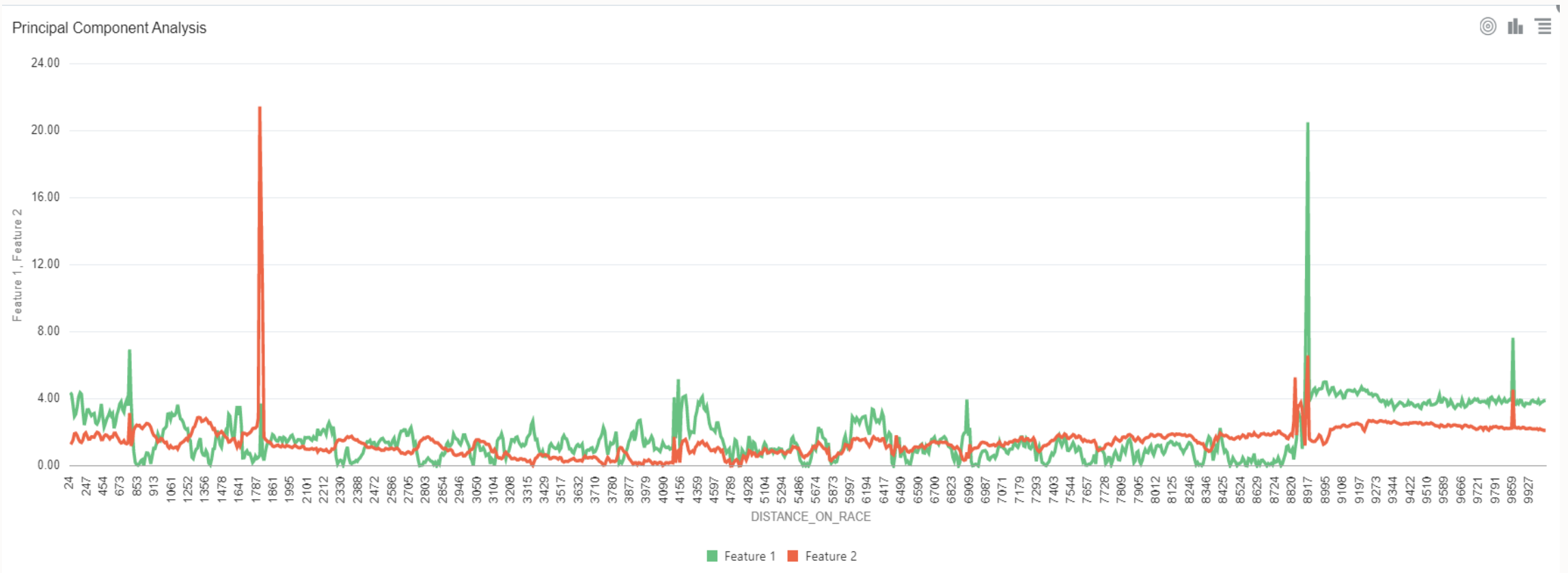
What happened to GBR ?

Each race generates 900 data points per second for each boat



What happened to GBR ?

Principal Component Analysis filters 900 dimensions down to 2



What happened to GBR ?

Filter all visuals to just data related to GBR incident

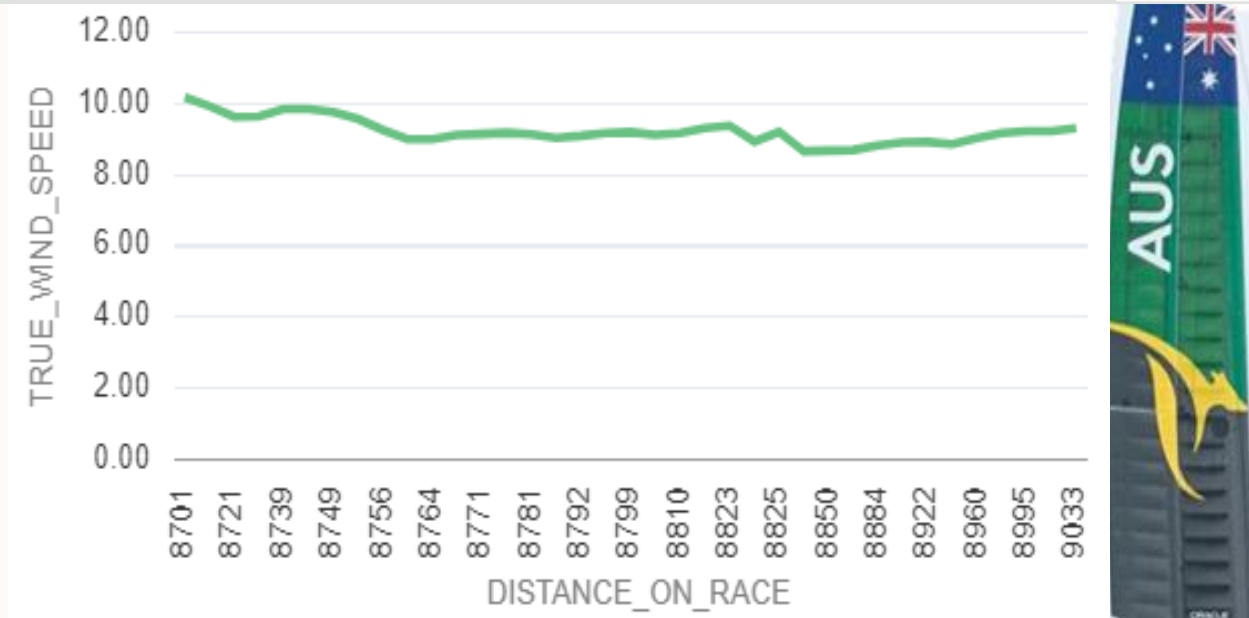
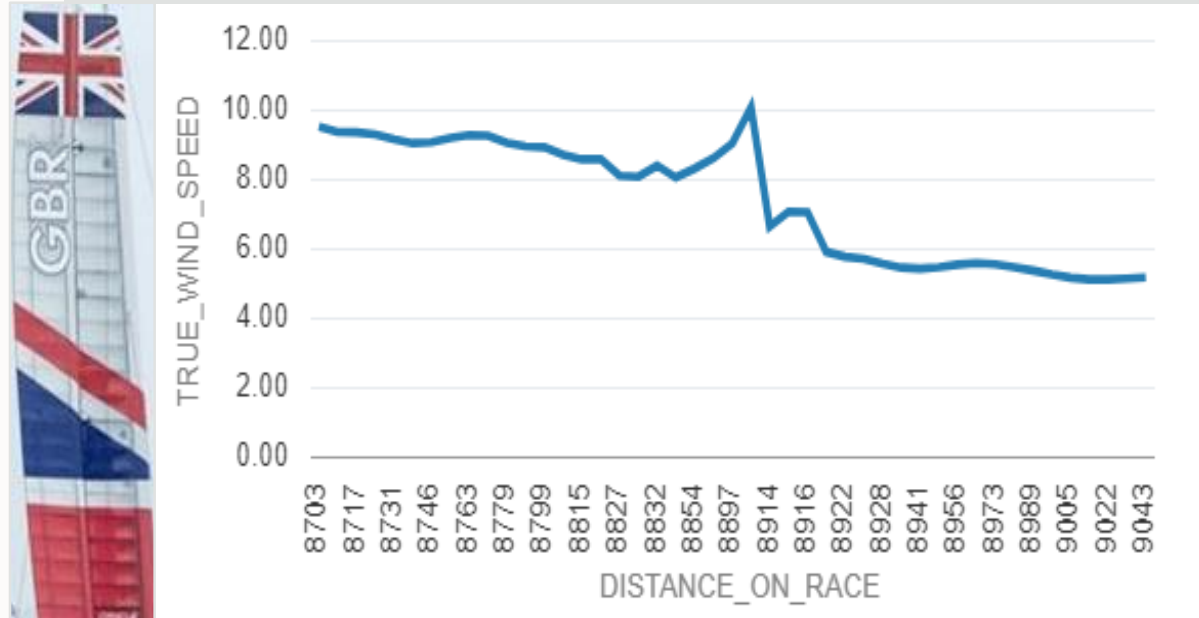
The screenshot shows the Oracle Data Visualization interface. At the top, the title is 'Sail GP - London - GB Crash'. Below the title bar, there is a filter configuration area where a filter is applied to the 'COUNTRY' column. The main area displays a data table with the following columns: BOAT, ALTITUDE, APPARENT_WIND_ANGLE, APPARENT_WIND_SPEED, AVG_SPEED_IN_REGATTA, AVG_SPEED_IN_REGATTA_RACE_TO_GO, BOAT_SPEED, COUNTRY, and COURSE. The data rows show various values for these columns, with the 'COUNTRY' column consistently showing 'AUS' for the visible rows.

#	BOAT	ALTITUDE	APPARENT_WIND_ANGLE	APPARENT_WIND_SPEED	AVG_SPEED_IN_REGATTA	AVG_SPEED_IN_REGATTA_RACE_TO_GO	BOAT_SPEED	COUNTRY	COURSE
	302	-0.06600000000000000	17.6797387615589000	22.24550000000000000	9.818203921101356	0	13.60	AUS	18
	302	-0.39100000000000000	17.3440961943418900	21.62990000000000000	9.817817034467707	0	12.97	AUS	19
	302	-0.38100000000000000	13.4696493423261230	20.37520000000000000	9.817262009487285	0	11.29	AUS	21
	302	-0.44800000000000000	3.4316843165379733	19.28200000000000000	9.814825082187426	0	9.60	AUS	24
	302	-0.45800000000000000	-6.6886806848353740	18.45070000000000000	9.810429608892235	0	8.71	AUS	26
	302	-0.58800000000000000	-13.1323587755974300	17.86300000000000000	9.805475891037503	0	8.48	AUS	27
	302	-0.83600000000000000	-16.5607470931120000	18.12840000000000000	9.800282444305173	0	9.14	AUS	28
	302	-0.96400000000000000	-19.1634876552629400	17.63690000000000000	9.794505211012078	0	8.98	AUS	28
	302	-0.87100000000000000	-20.4687032685323800	16.91170000000000000	9.788830941036114	0	8.68	AUS	28



What happened to GBR ?

Wind Data





Predictions and Machine Learning

Predict race winner in real time - Statistics

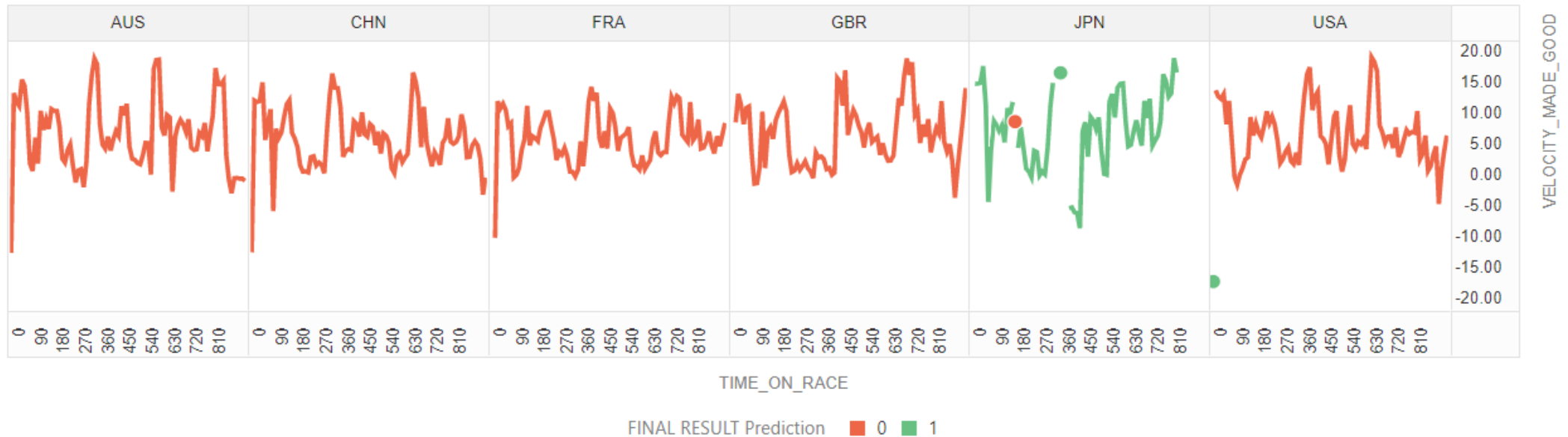
Current race position + Average speed for rest of course



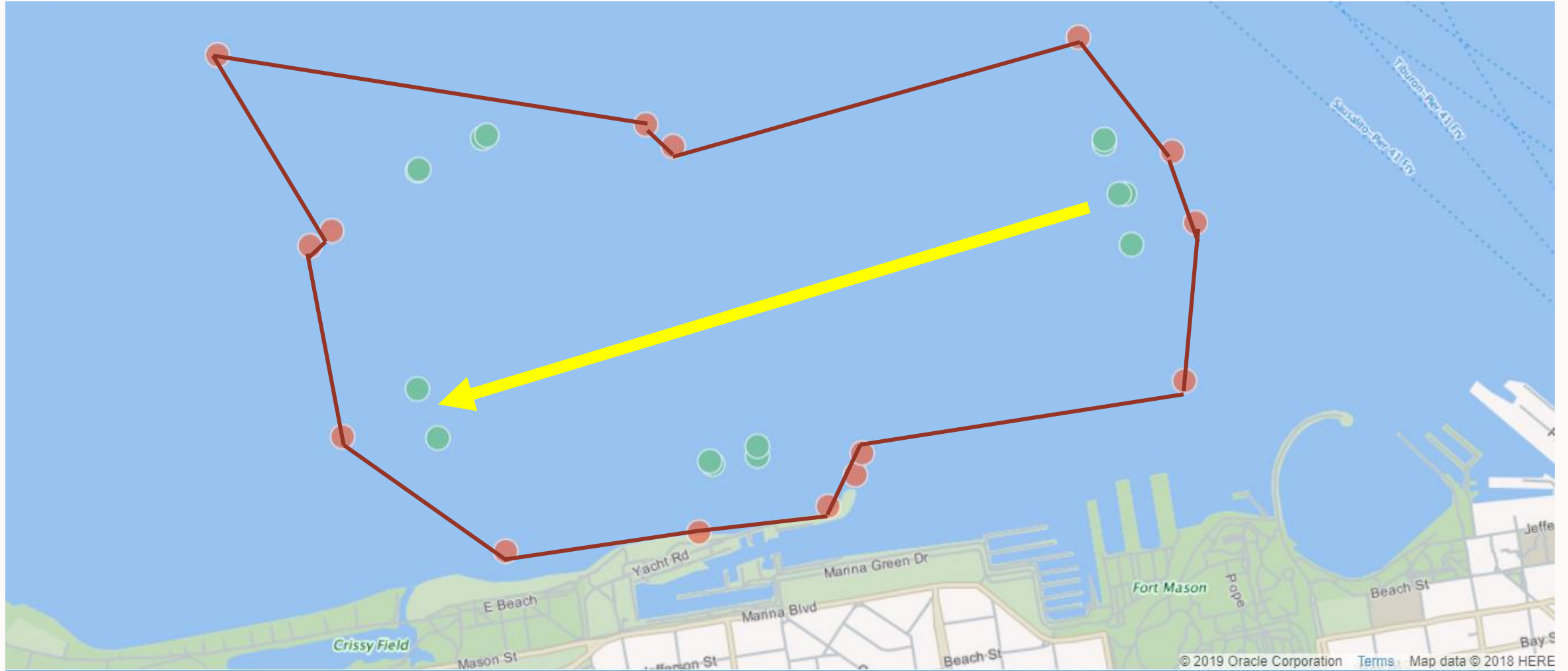
Predict race winner in real time – Neural Network

AUS	CHN	FRA	GBR	JPN	USA
Final Finish Position per Country	Final Finish Position per Country	Final Finish Position per Country	Final Finish Position per Country	Final Finish Position per Country	Final Finish Position per Country
2	5	6	3	1	4

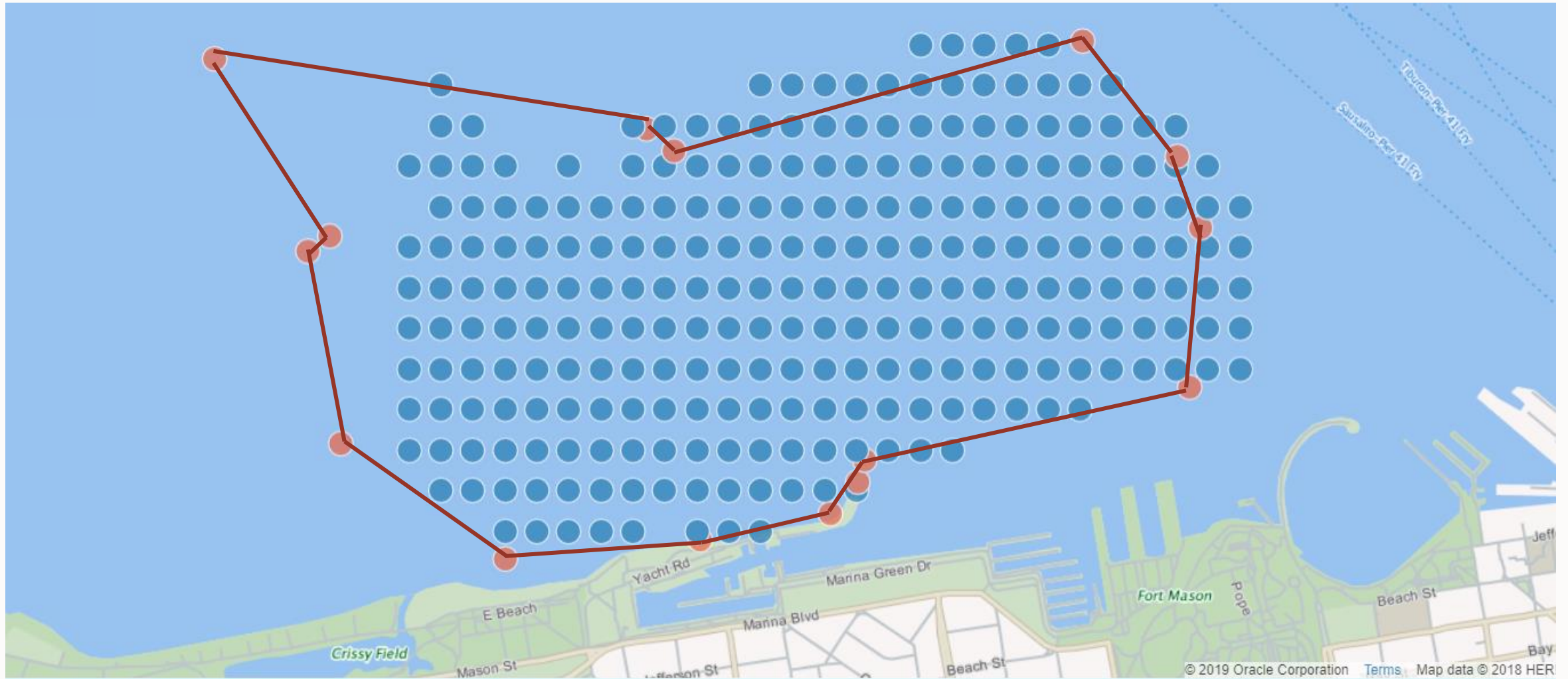
Accuracy of Neural Network Model



Predict the optimal course - “The Ghost Boat”

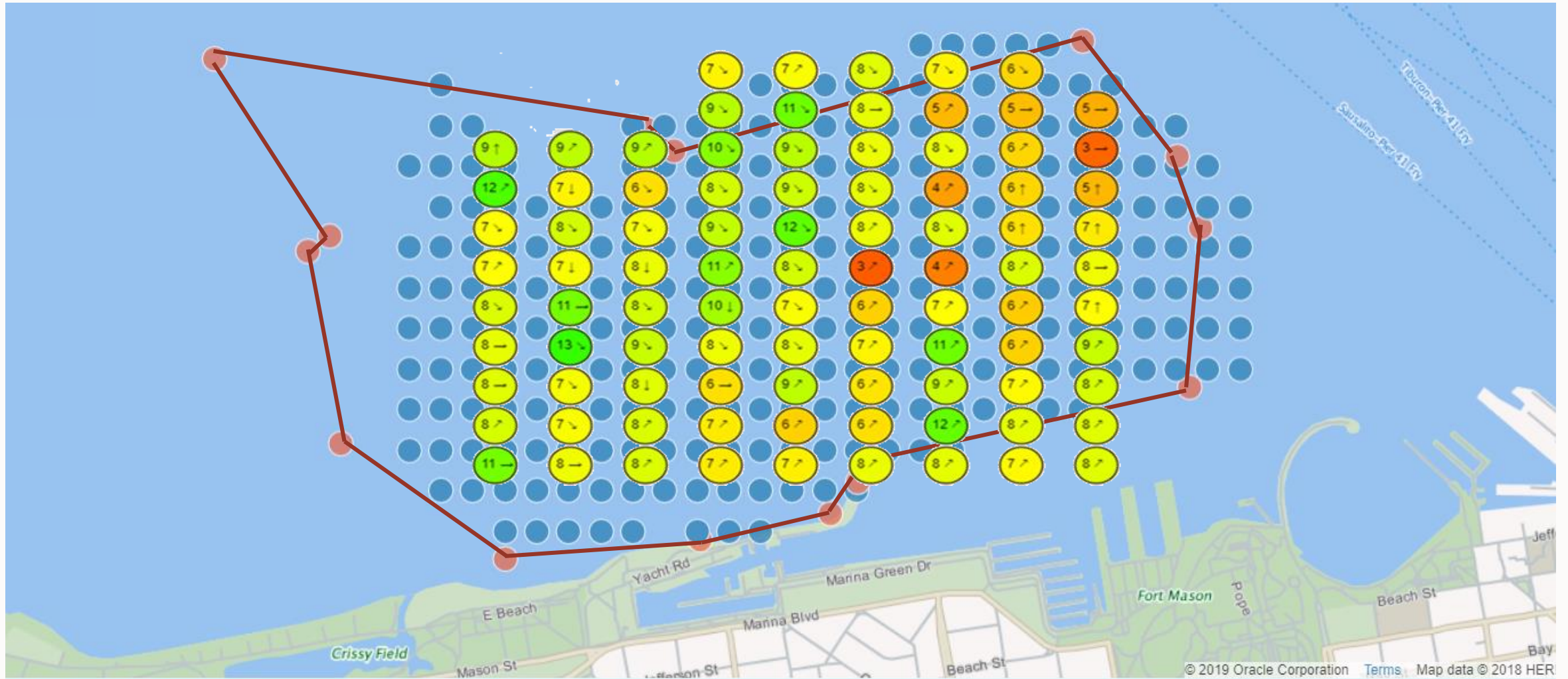


Divide the course into a Spatial Grid



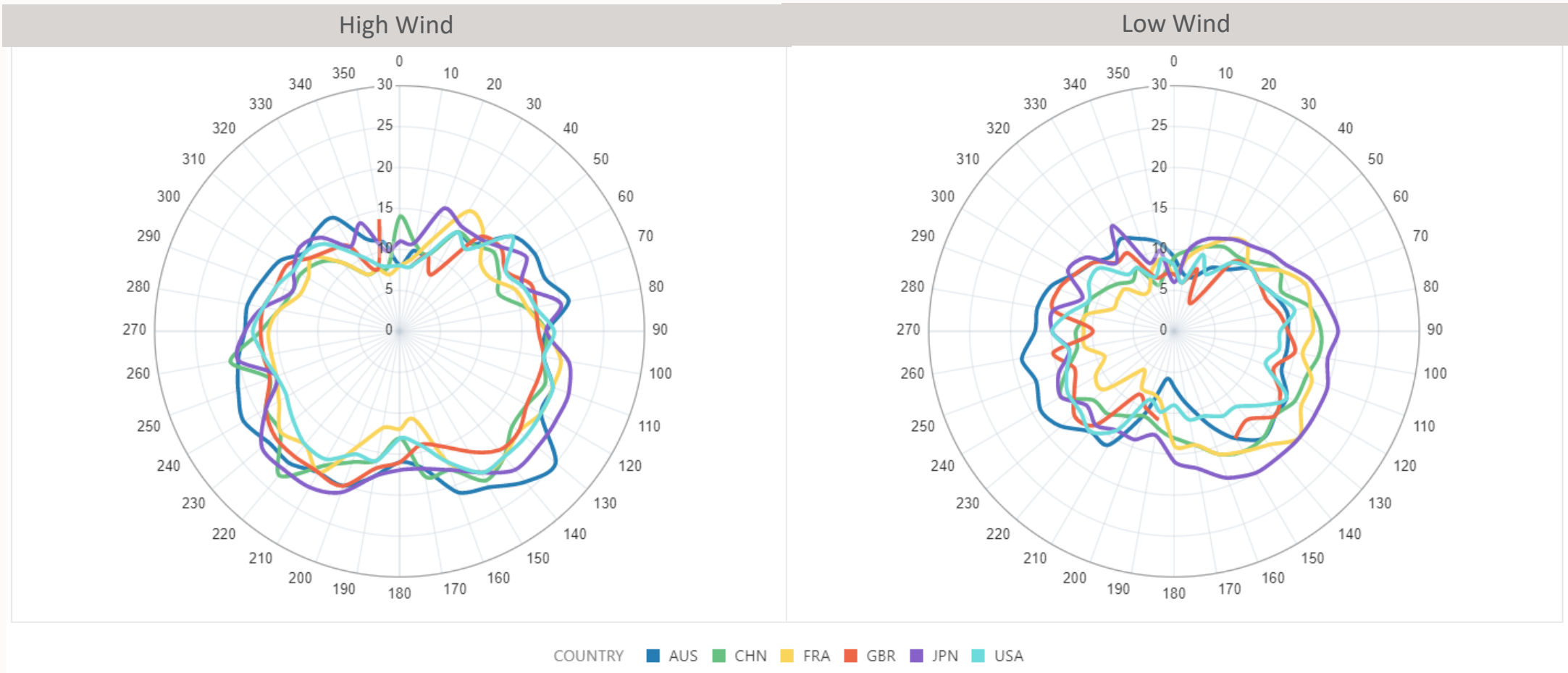
Overlay Wind Speed + Direction

Using Data from all Boats



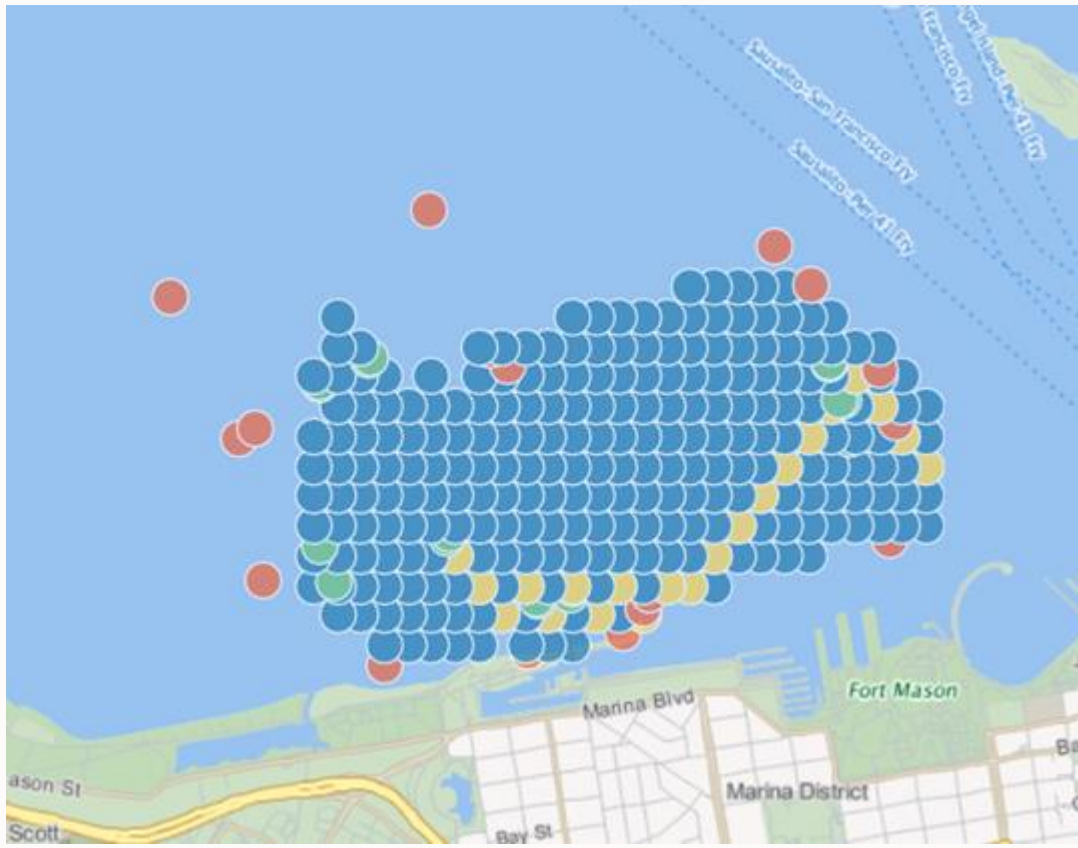
Predict Best Possible Boat Speed

For every wind speed, wind angle and direction using data from all boats

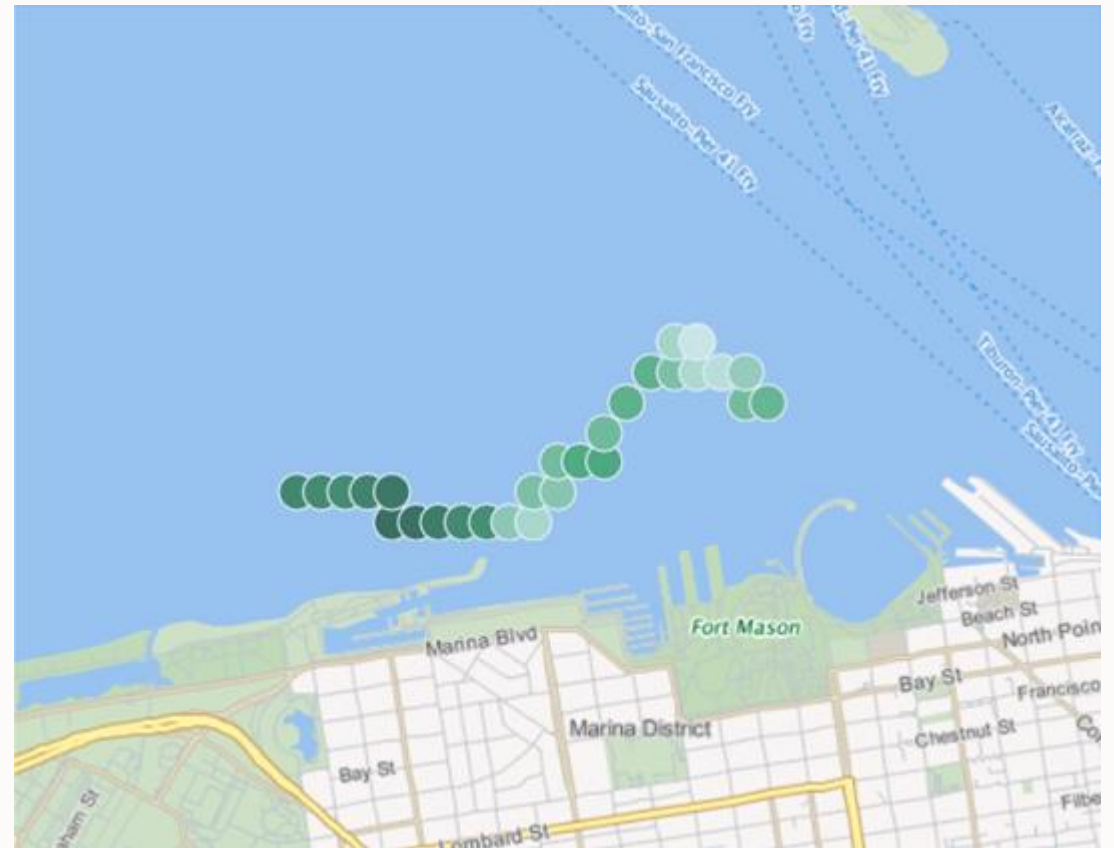


Compare with actual course taken

Optimal Course



Actual Course

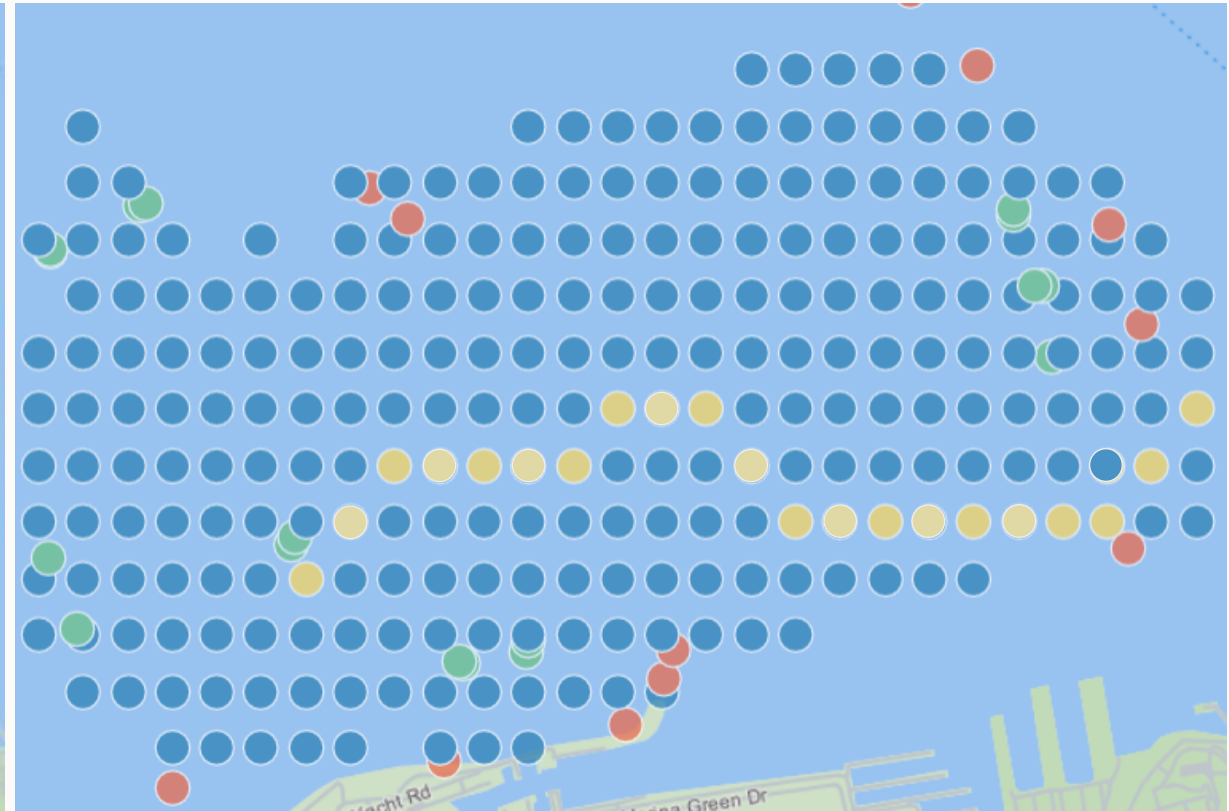


Ghost Boat model

Version 1.0



Version 2.0

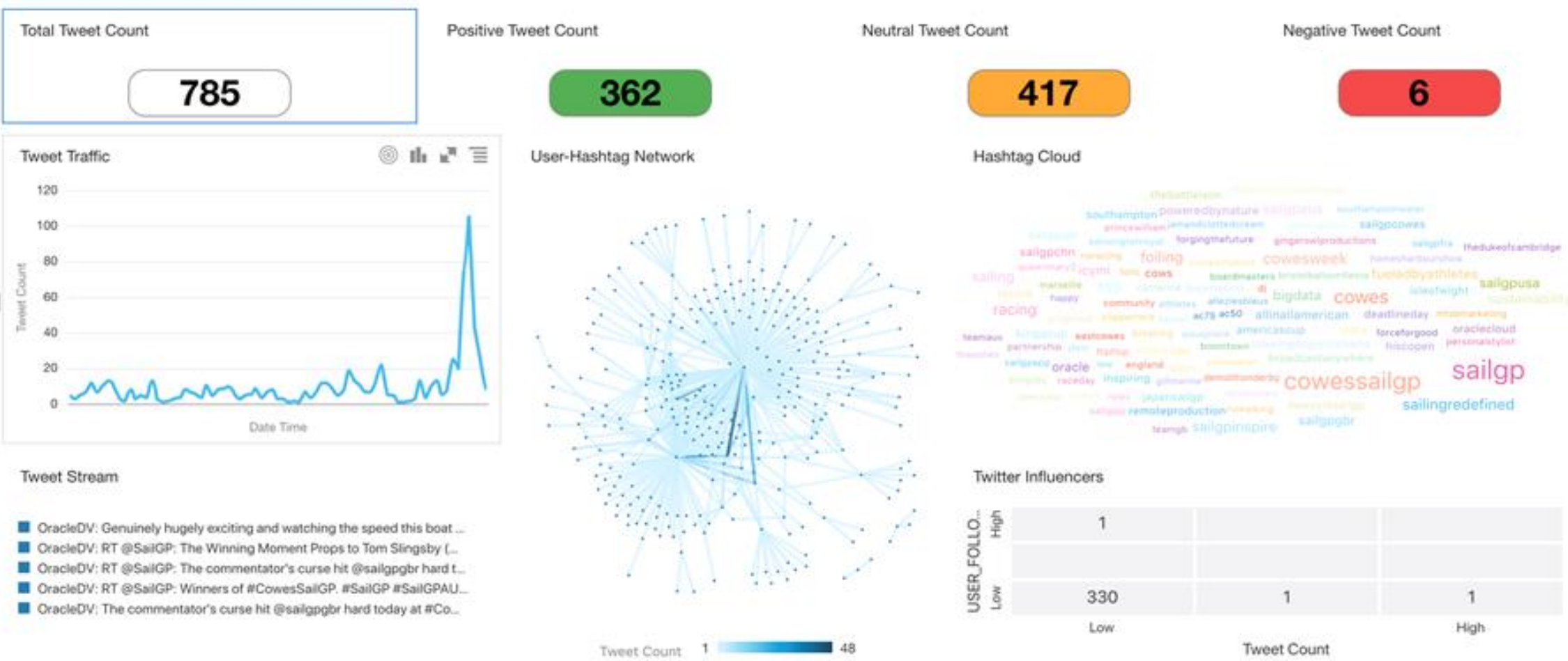




Social Interactions

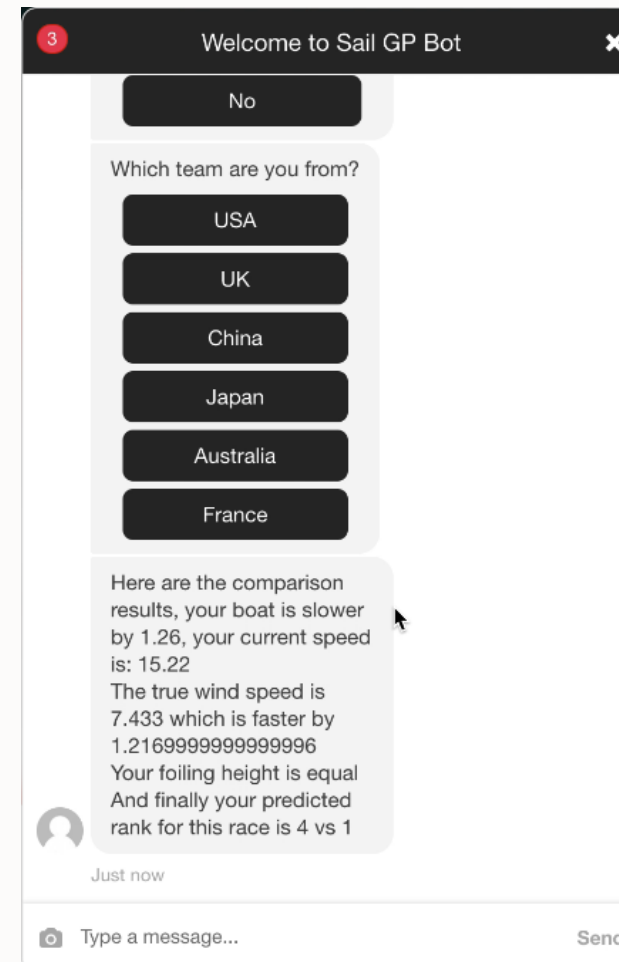
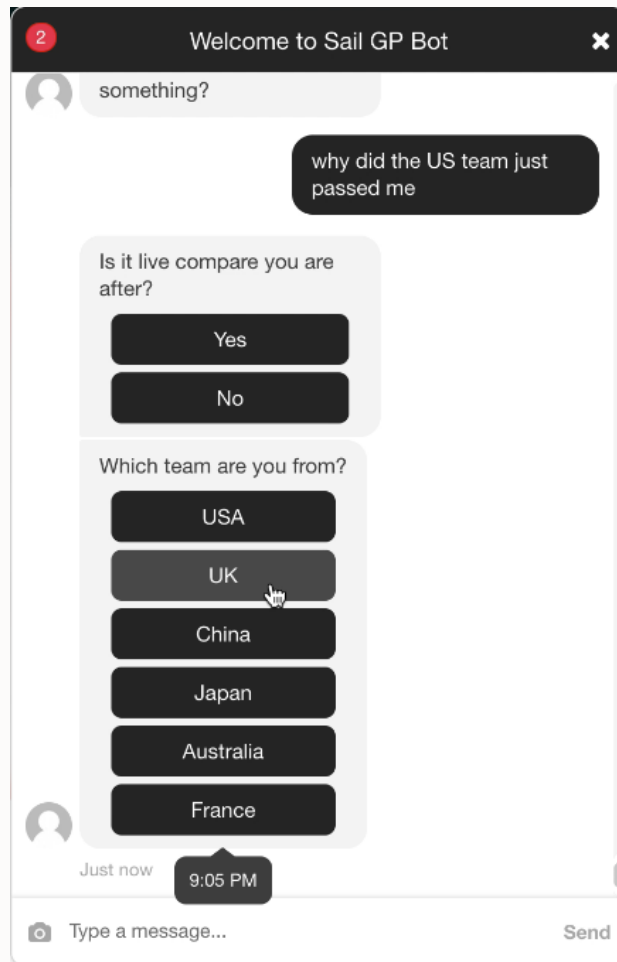


Social Media Analysis



Digital Assistant V2.0 – “Talk to the Boat”

Ask the Boat for Performance Stats, Competitive Info etc





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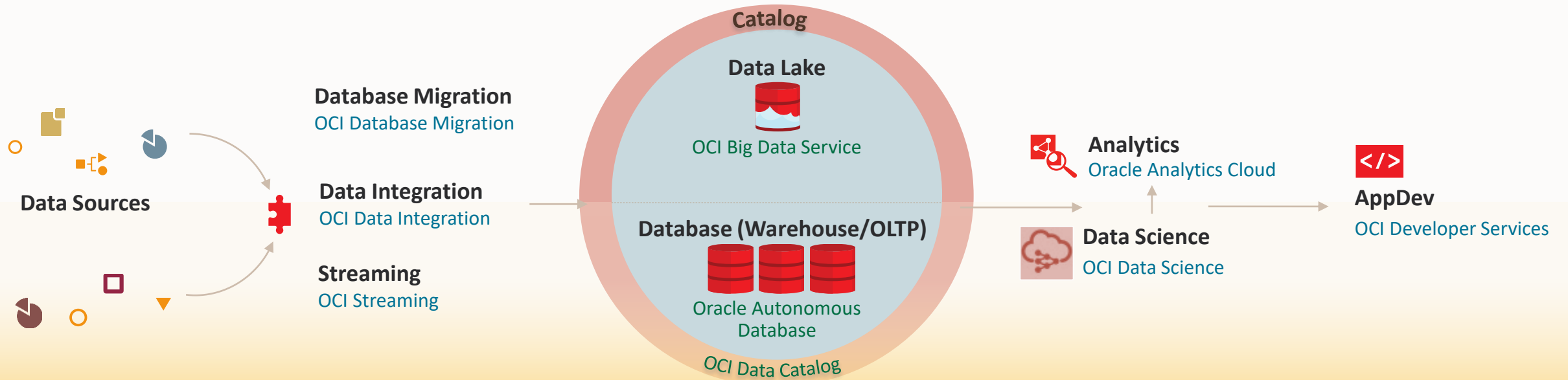
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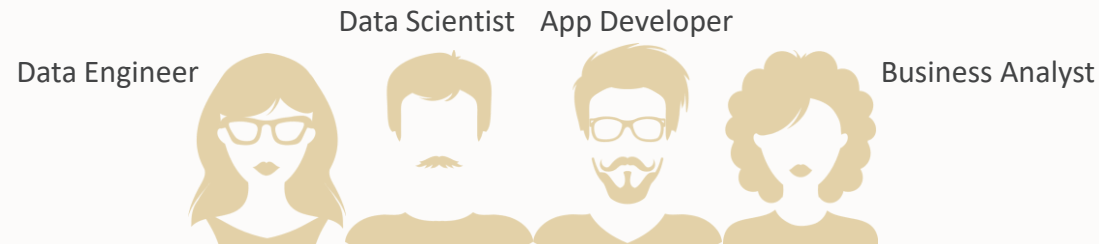
SAIL GP

Oracle's Data Analytics Platform

End-to-end Platform for Data Ingestion, Data Management, Predictive Analytics & Apps



Oracle Cloud Infrastructure: Built for Artificial Intelligence and High Performance Computing Workloads



Some options for how we can help...

- Support Rewards
- Free Case 4 Innovation Prototype creation
- Free implementation with cloud lift services
- Free Hands on Test Drives – Analytics, Autonomous DB, AI/ML/Data Science
- Free Data Management maturity assessment



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