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No-Shows, No Problem:

Anticipating No-Show Containers using Regressive Machine Learning and Stochastic Optimization



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Problem Statement

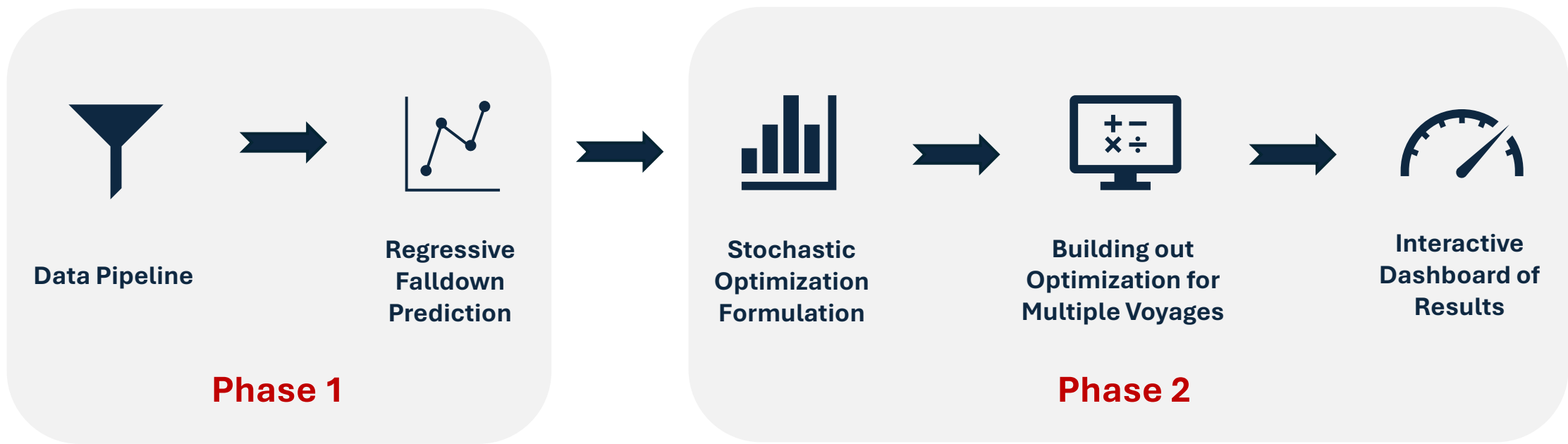
Motivation:

Falldown refers to the difference between the *number of containers originally booked* and the *number that actually arrive* to be loaded on a vessel. CMA CGM currently predicts falldown manually using historical averages and institutional knowledge. They use these predictions to help inform strategic decisions such as how many bookings to accept on a given vessel.

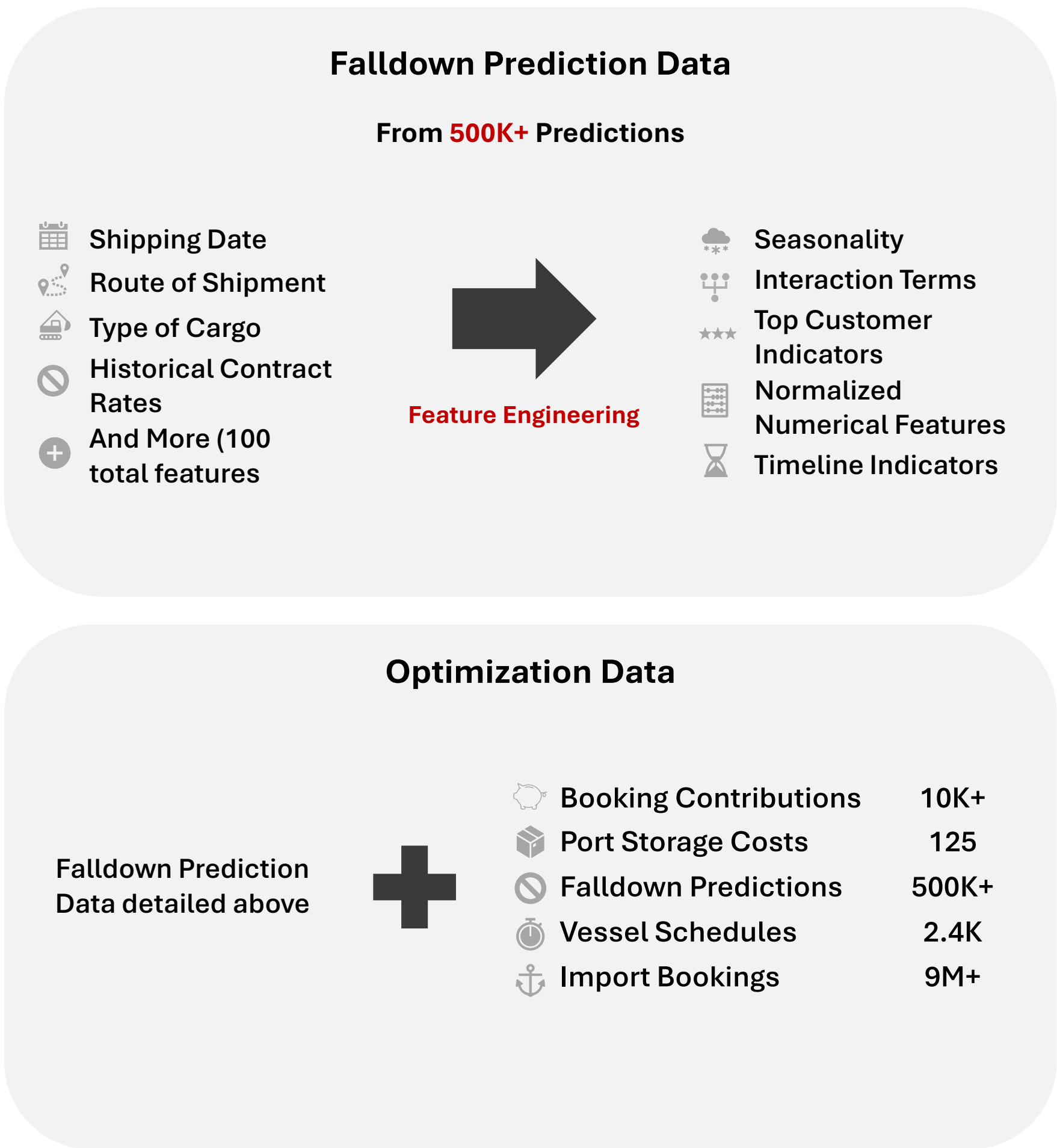
Objective:

- 1) Build a machine learning model that predicts falldown (container no-shows) more accurately than current method
- 2) Design a robust pipeline and optimization algorithm to recommend to the US Exports Trade team which bookings to accept, delay, ship, and store.

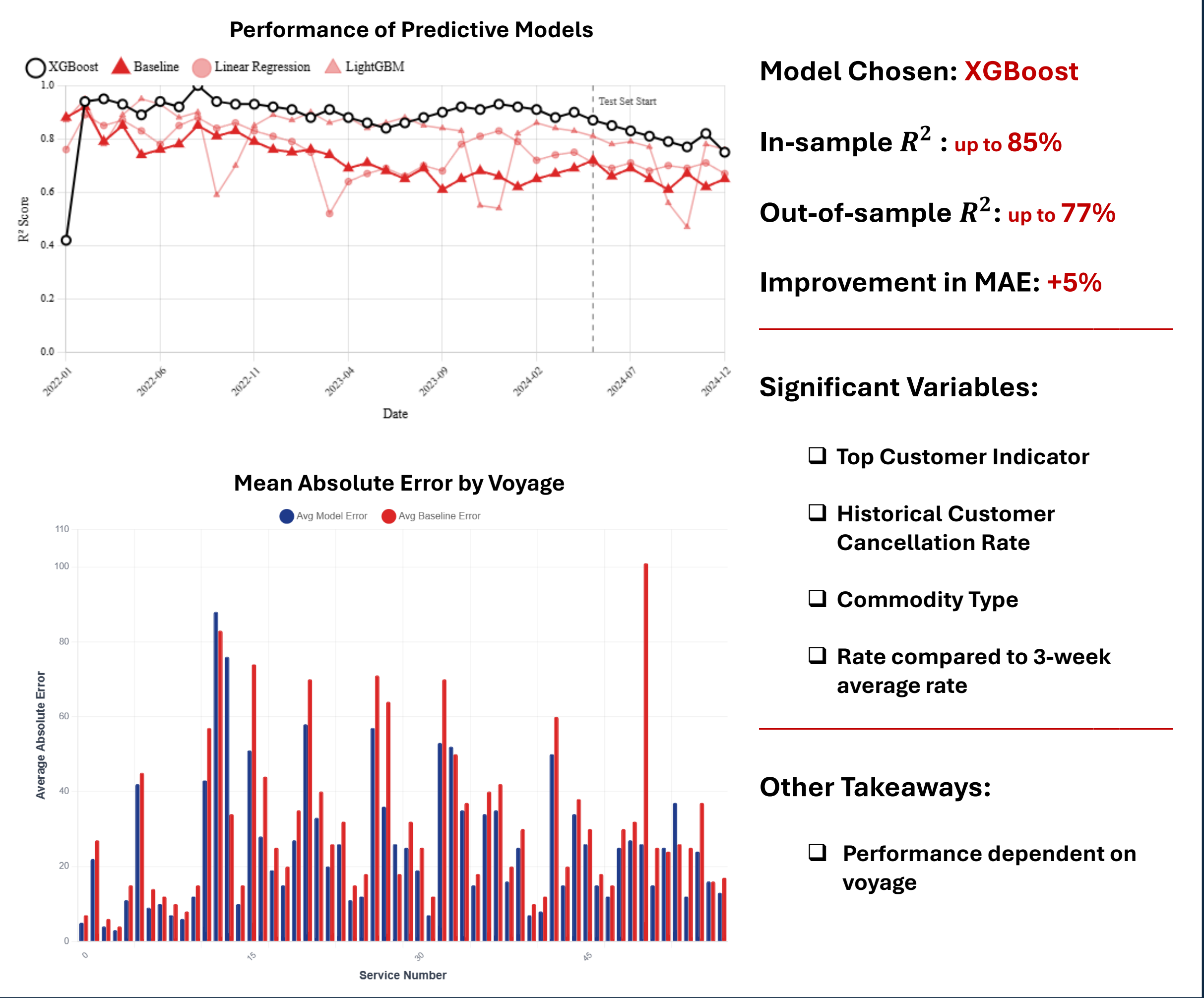
Project Overview



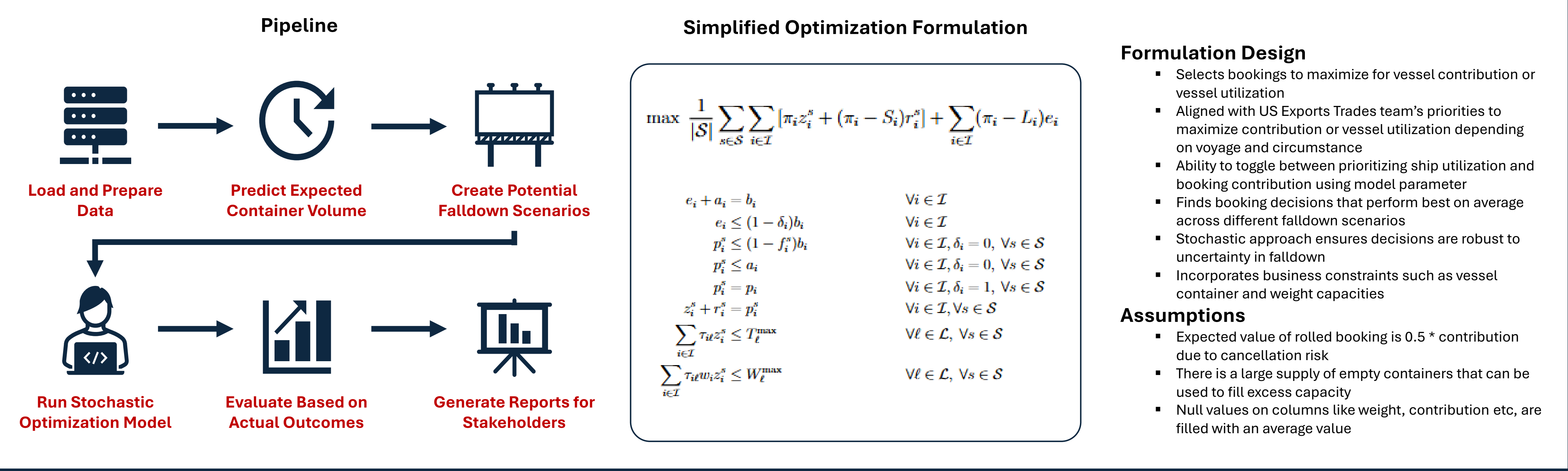
Data



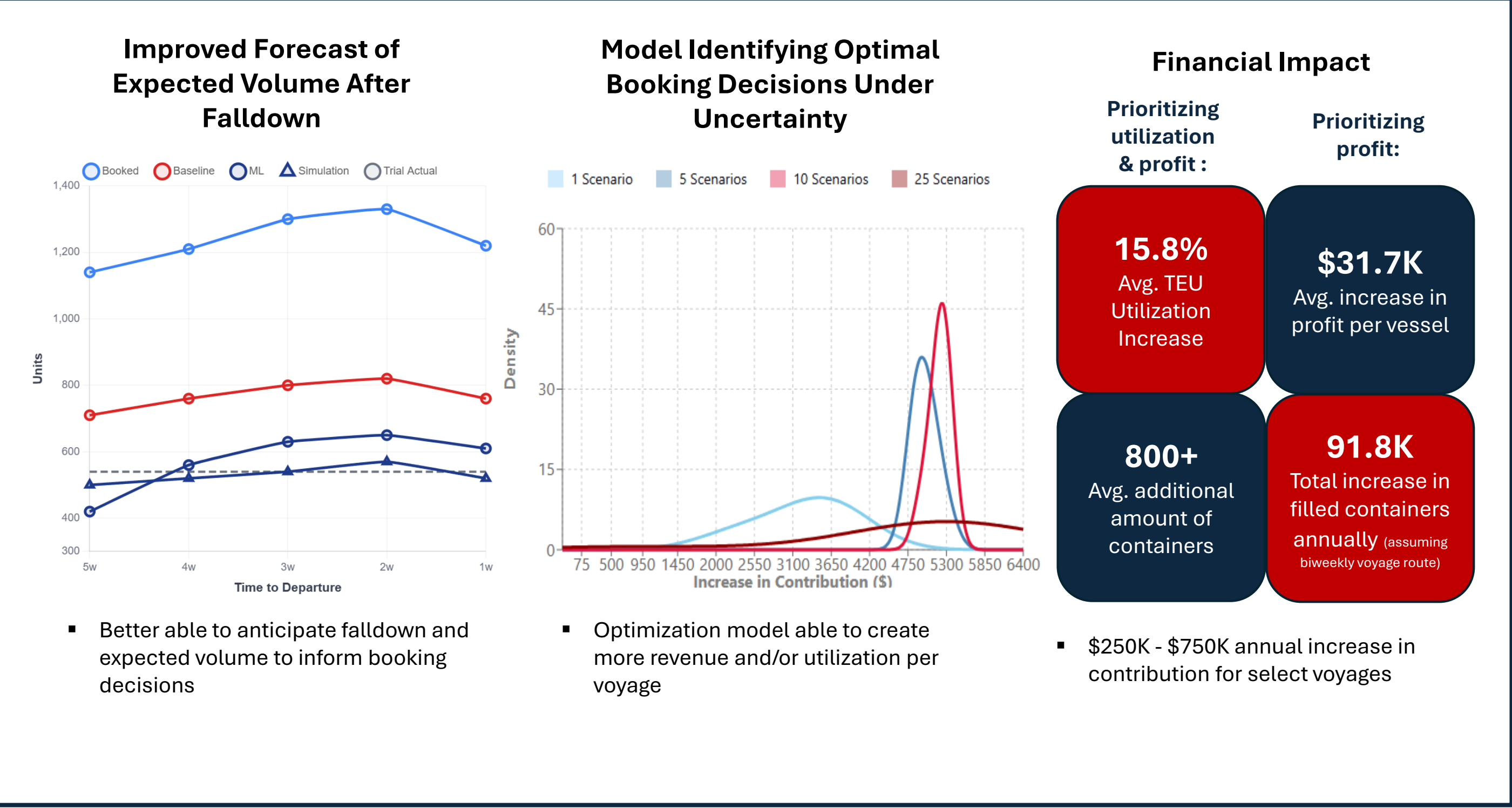
Falldown Predictions



Optimization



Results



Next Steps

- If we had more time...**
- ☐ Continue to iterate on feedback from stakeholders
 - ☐ Add additional business specific constraints
 - ☐ Identify customers that cannot be rolled
 - ☐ Identify bookings previously rolled
 - ☐ Expand to other sides of the business outside of US Exports
 - ☐ Deploy live into production for testing
- Continuation of this project...**
- ☐ We presented our findings in Norfolk, VA to get continued sponsorship for the project
 - ☐ With sponsorship, we could get improved data quality to feed into this project
 - ☐ With sponsorship, we could get further stakeholder cooperation to map additional details and constraints that appear in the booking process
- Recommendations**
- ☐ Obtain data to measure additional demand beyond when we stop accepting bookings
 - ☐ Solidify capacity constraint data