Who is CMA CGM?

- 3rd largest container shipping company in the world
- Primarily a maritime shipping company! They own a fleet consisting of 566 vessels
- Presence in 160 countries
- Operate at 420/521 of the world’s commercial ports

Problem Structure

A network problem with demand forecasted between origin/destination pairs. In this problem, we attempt to minimize the total cost of transporting shipping containers along rail lines while meeting demand. Beyond transportation costs, we also consider penalties and incentives that are defined in contracts between CMA CGM and rail carriers.

Penalties and Incentives

Penalties
- MAG Penalties
- Balance Penalties
- GRI Penalties
- CSX Lane Commitment Penalty

Incentives
- Quick Pay Incentives
- BNSF Inland Intermodal Incentives
- Growth Volume Incentives
- Balance Incentives

Decision Variables

- Which route should we select for a given Origin/Destination (OD) pair?
- Over 1200 OD pairs in the network
- How much volume should we send along the selected route in a given month?
- Over 1 million containers transported along rail lines annually

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Sliding Contract Windows

Figure 5: Our model seamlessly accounts for sliding contract windows between carriers

Projected Savings Opportunities

- $17M in immediate savings opportunities
- Interpretable strategies to help route planning teams decide between railroad carriers
- Scenario-based simulations of optimized model
  - Additional $9M savings opportunity in future contract negotiations
  - Global cost comparison across various demand scenarios/contract strategies