- **IMPORT**: Minimize carrier waiting time
- **EXPORT**: Minimize customer storage time

Phase-by-Phase EXPORT Workflow Design

Phase 1: Customer Collection Assessment

```
assign_barges_to_single_order_export(order, barges)
```

Abstract Pattern: **Reverse Greedy Resource Allocation with Pickup Optimization**

Algorithmic Behavior:

- **Pickup Window Optimization**: Prioritizes customer-ready cargo
- **Upstream Capacity Planning**: Reserves barge capacity for export journey
- **Collection Route Optimization**: Minimizes customer waiting time

Deep Analysis:

```
├── get_customer_ready_time(customer) [temporal availability check]
├── calculate_collection_capacity_requirements(order)
├── haversine_customer_to_stations() [reverse distance optimization]
└── barge.reserve_export_capacity(load)
```

Constraints: Customer storage limits, pickup time windows, export vessel schedules

---

Phase 2: River Collection Orchestration

```
_collect_cargo_from_customers(order, customer_locations)
```

Abstract Pattern: **Multi-Pickup Vehicle Routing with Consolidation**

Algorithmic Behavior:

- **Collection Route Planning**: Optimizes pickup sequences from multiple customers