

# Impact of Modular Containerization and Continuous Consolidation on Hyperconnected Parcel Logistics Hub Design and Performance

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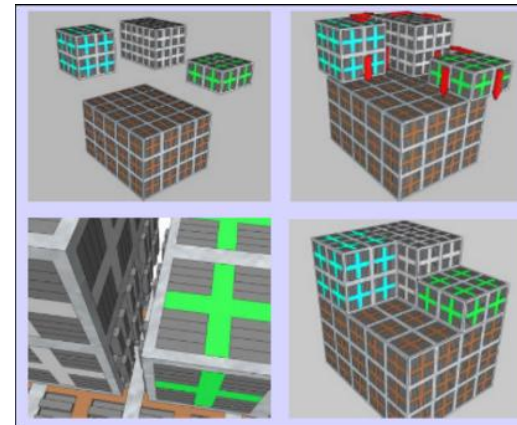
# Introduction:

- Customers are gaining more power in the parcel logistics industry.
- To stay competitive, service providers must offer a broader and more convenient range of products.
- This adds pressure to an already stressed supply chain.
- We focus on using pre-sorting and modular PI containers to gain efficiencies within the parcel hubs.

# Proposition:

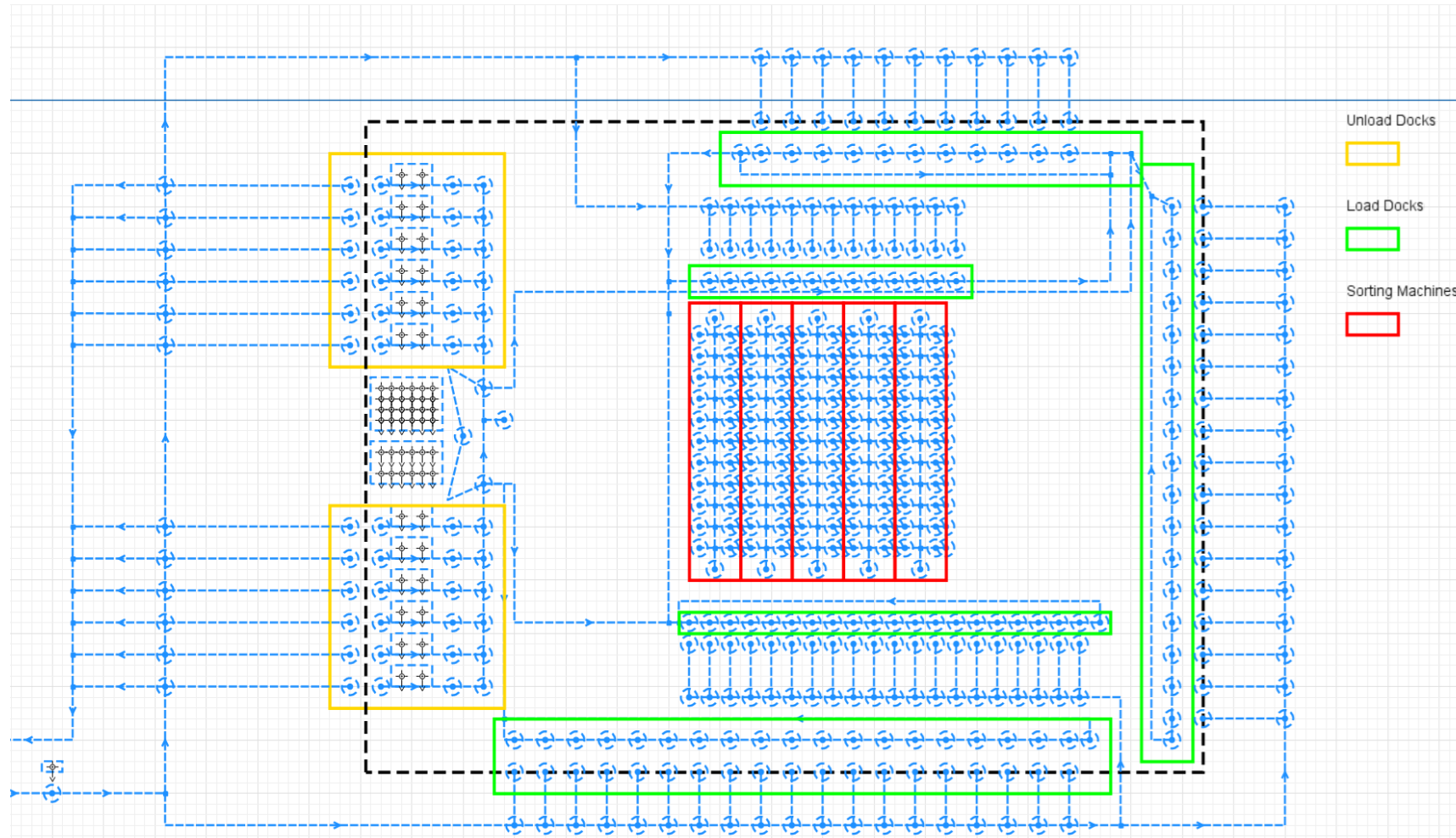


- Utilize Modular PI containers to enable pre-consolidation.
- Allow pre-consolidated parcels to bypass sorting and move straight to loading dock.
- Save time, space, machine and worker cost for sorting area of hub.



Montreuil, B., Ballot, E., Tremblay, W. (2015). Modular Design of Physical Internet Transport, Handling and Packaging Containers, Progress in Material Handling Research, v13, MHI, Charlotte, USA.

# Simulation:



# Key Results:

- With Just 20% of arriving parcels being pre-consolidated:
  - Average Parcel Time in Hub decreased by 30 minutes from 2hrs to 1.5hrs
  - Percentage of Parcels On Time increases from 84% to 92%
- With 60% of arriving parcels being pre-consolidated:
  - Average Parcel time in hub decreases by another 30 minutes to 1hr
  - Percentage of Parcels On Time increases another 6% to 98%

# Next Steps:

- Evaluate the impact of considering parcel sizes and not just weights.
- Investigate breakeven point for consolidation/deconsolidation time.
- Investigate the addition of wave-sorting concepts with pre-consolidation.



# Thank You