
Christoph Roth, CEO of BOXBAX

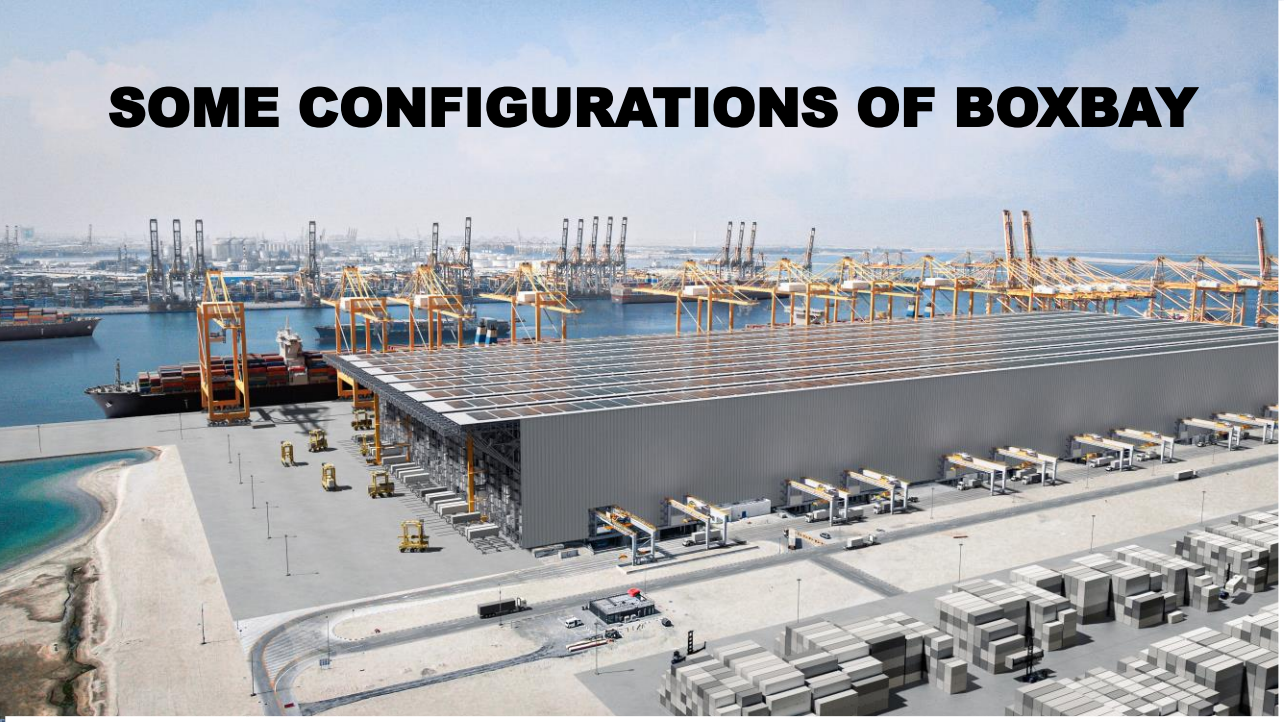
# UNVEILING THE NEXT PHASE:

# NEW FEATURES & ADVANCEMENTS FOR FURTHER BOOST OF TERMINAL EFFICIENCY

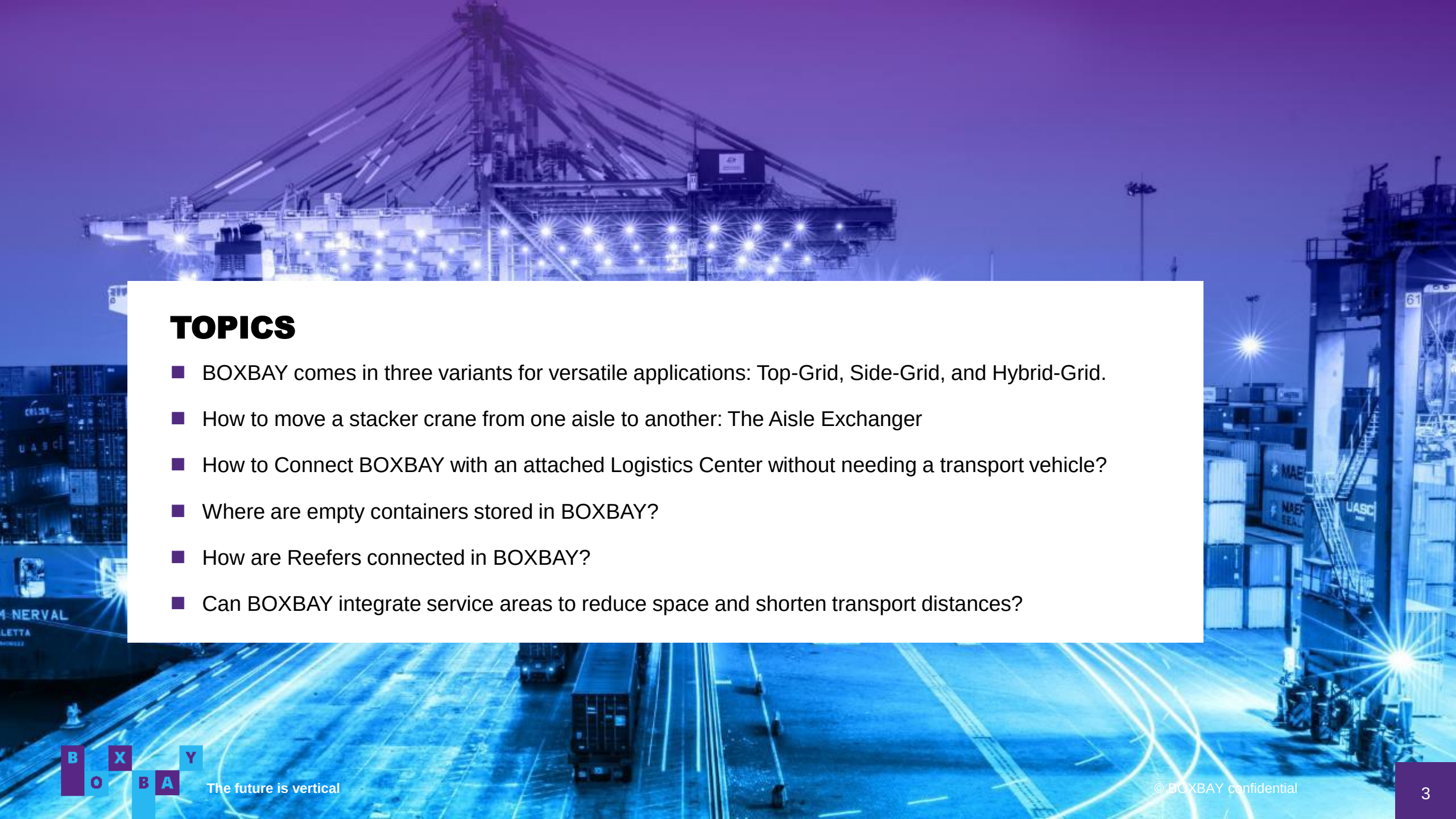
The future is vertical

TOC Europe, Rotterdam, 11 – 13 June 2024

# SOME CONFIGURATIONS OF BOXBAY



The future is vertical



# TOPICS

- BOXBAY comes in three variants for versatile applications: Top-Grid, Side-Grid, and Hybrid-Grid.
- How to move a stacker crane from one aisle to another: The Aisle Exchanger
- How to Connect BOXBAY with an attached Logistics Center without needing a transport vehicle?
- Where are empty containers stored in BOXBAY?
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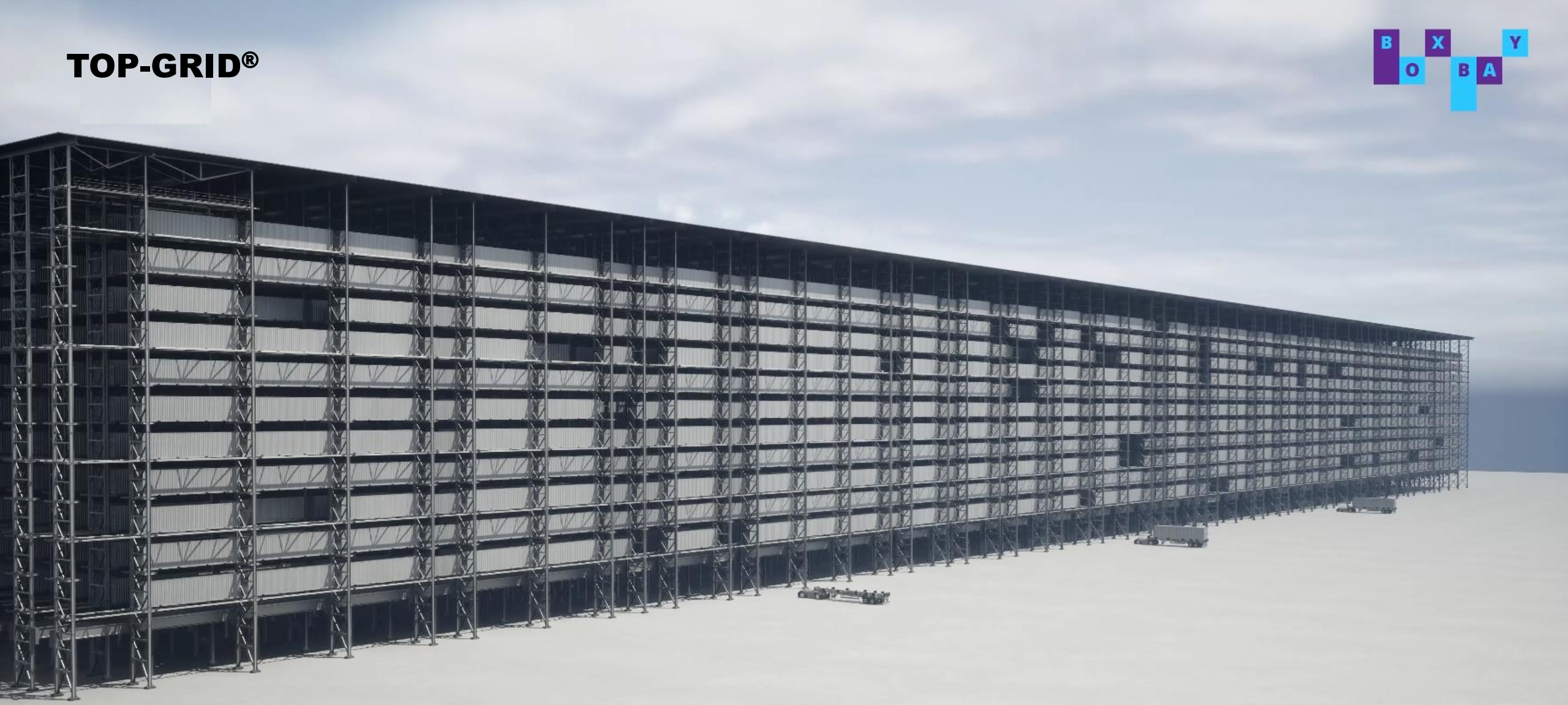
# SIDE-GRID®

The Side-Grid has interfaces on both the end faces and the longitudinal sides. Because trucks are serviced via CPC loops and Truck Transfer Cranes on the longitudinal sides, it is called the Side-Grid.

# TOP-GRID®



In the Top-Grid, the warehouse is elevated and accessible from below. AGVs or automated trucks operate at ground level beneath the aisles and are serviced directly by the Stacker Cranes from above

# HYBRID-GRID®

The Hybrid-Grid combines features of both the Top-Grid and Side-Grid. AGVs or automated terminal trucks are serviced direct under the HBS, landside truck traffic is handled using CPC loops and truck cranes.

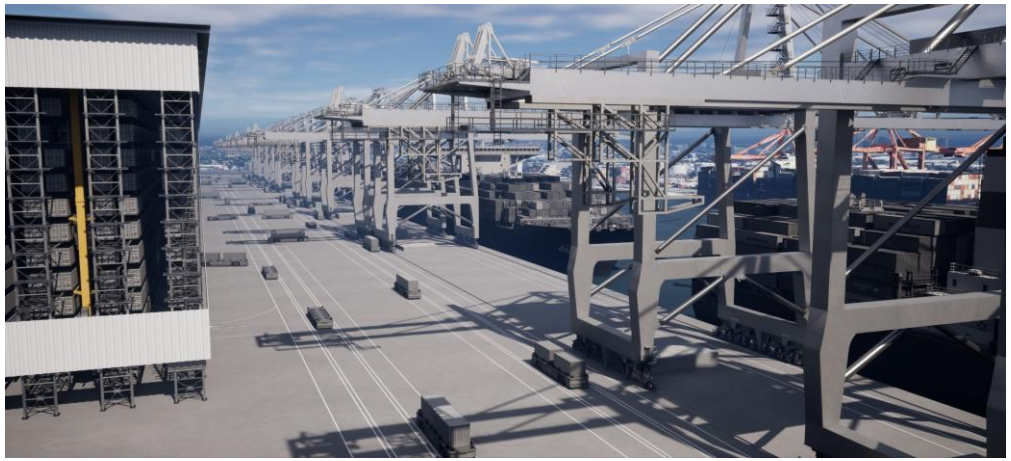
# SUMMARY: SIDE-GRID® VS TOP-GRID®

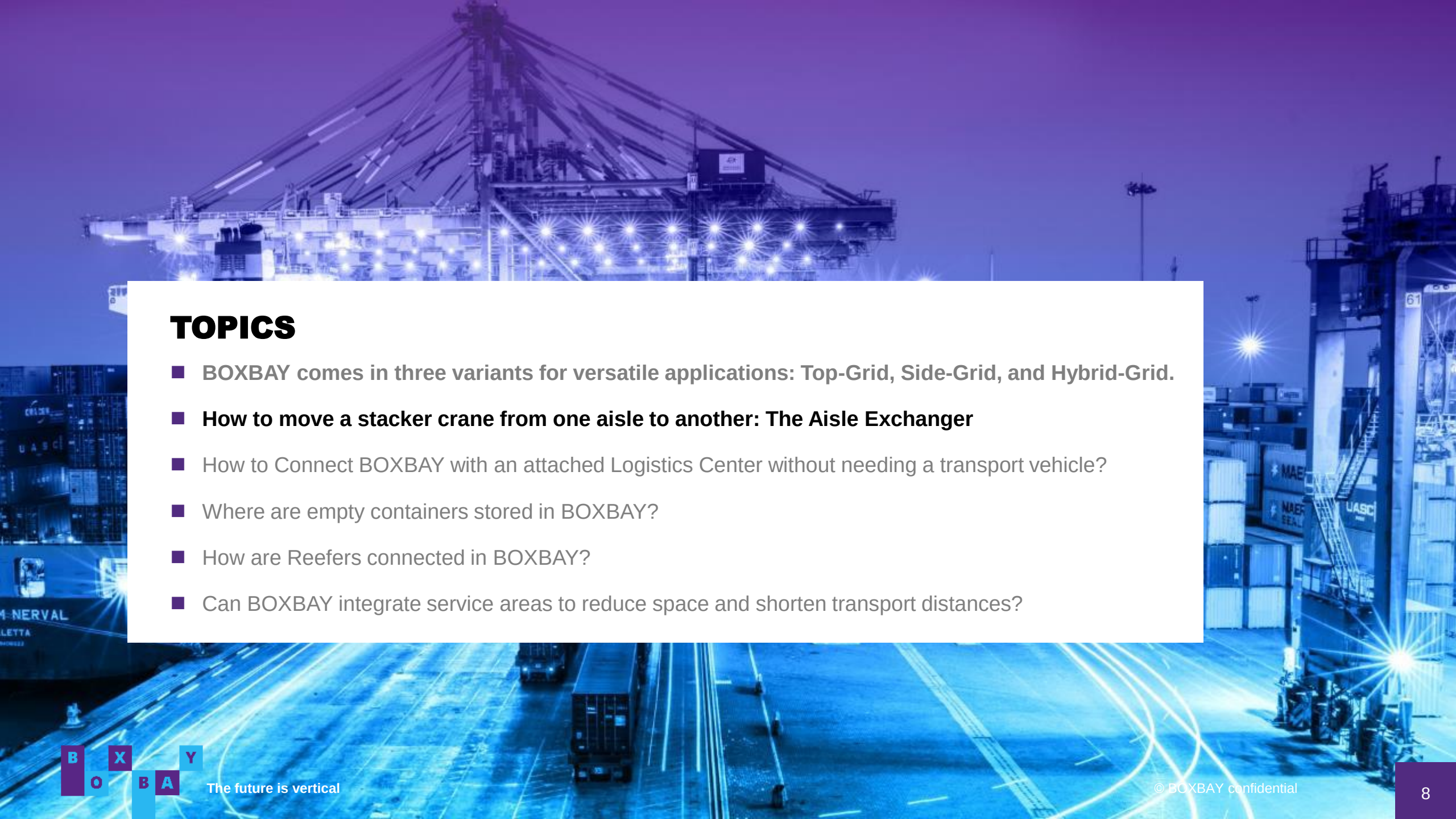
## SIDE-GRID CONFIGURATION:

- **Intended use:** waterside ops by straddle/shuttle carriers
- **Waterside interface:** waterside containers go in/out via the end of the storage aisles at the side; Strads with transfer tables for decoupling.
- **Landside interface:** automated truck crane (drive thru) connected by conveyor

## TOP-GRID CONFIGURATION:

- **Intended use:** interfacing with waterside terminal trucks (TTs) or AGV's / ITVs.
- **HBS steel structure lifted** above traffic level
- **Water side interface:** autonous TTs, ITV/AGVs drive underneath rack; handling directly from the top by Stacker Cranes
- **Completely closed** all around





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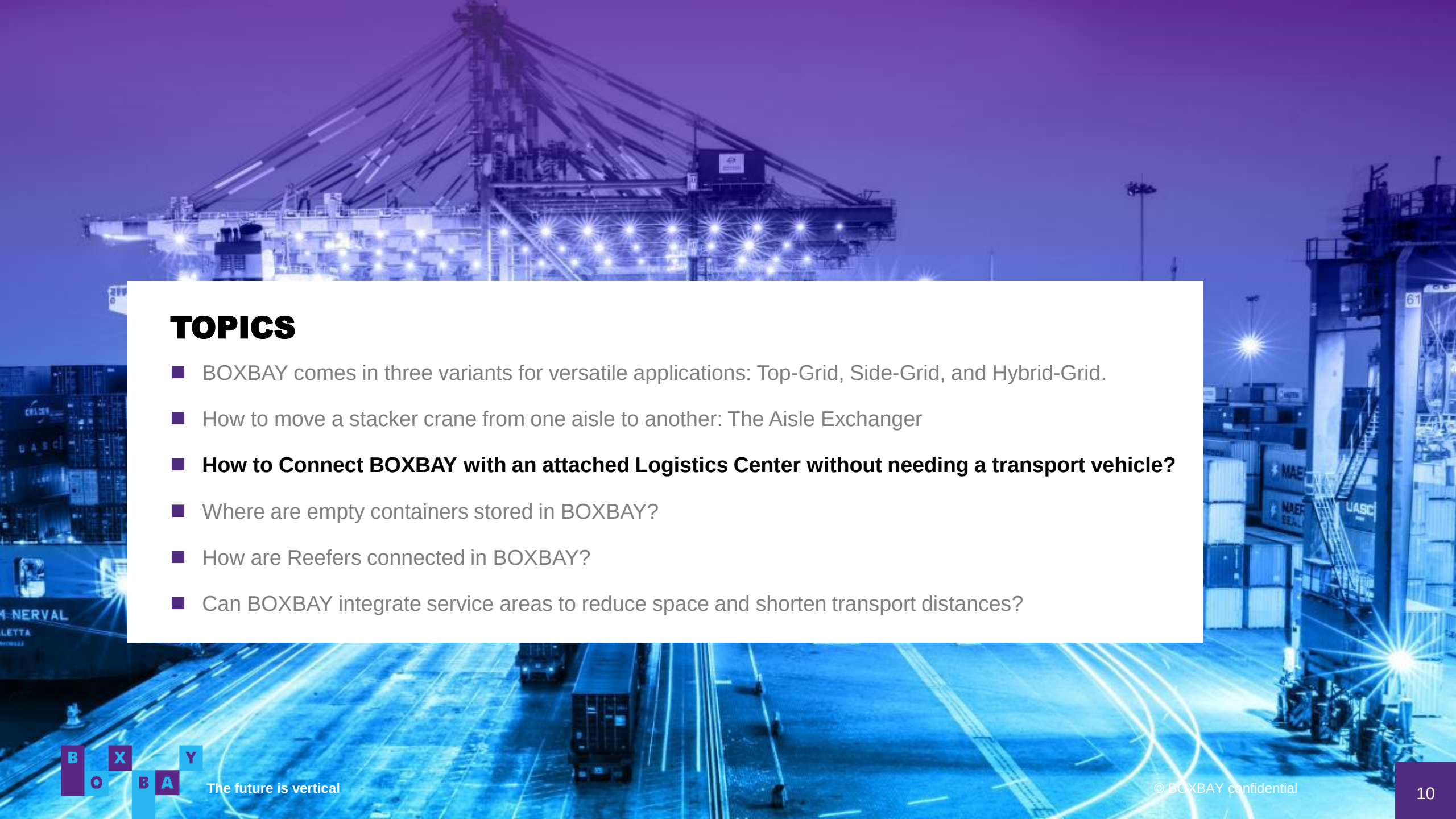
# THE AISLE EXCHANGER



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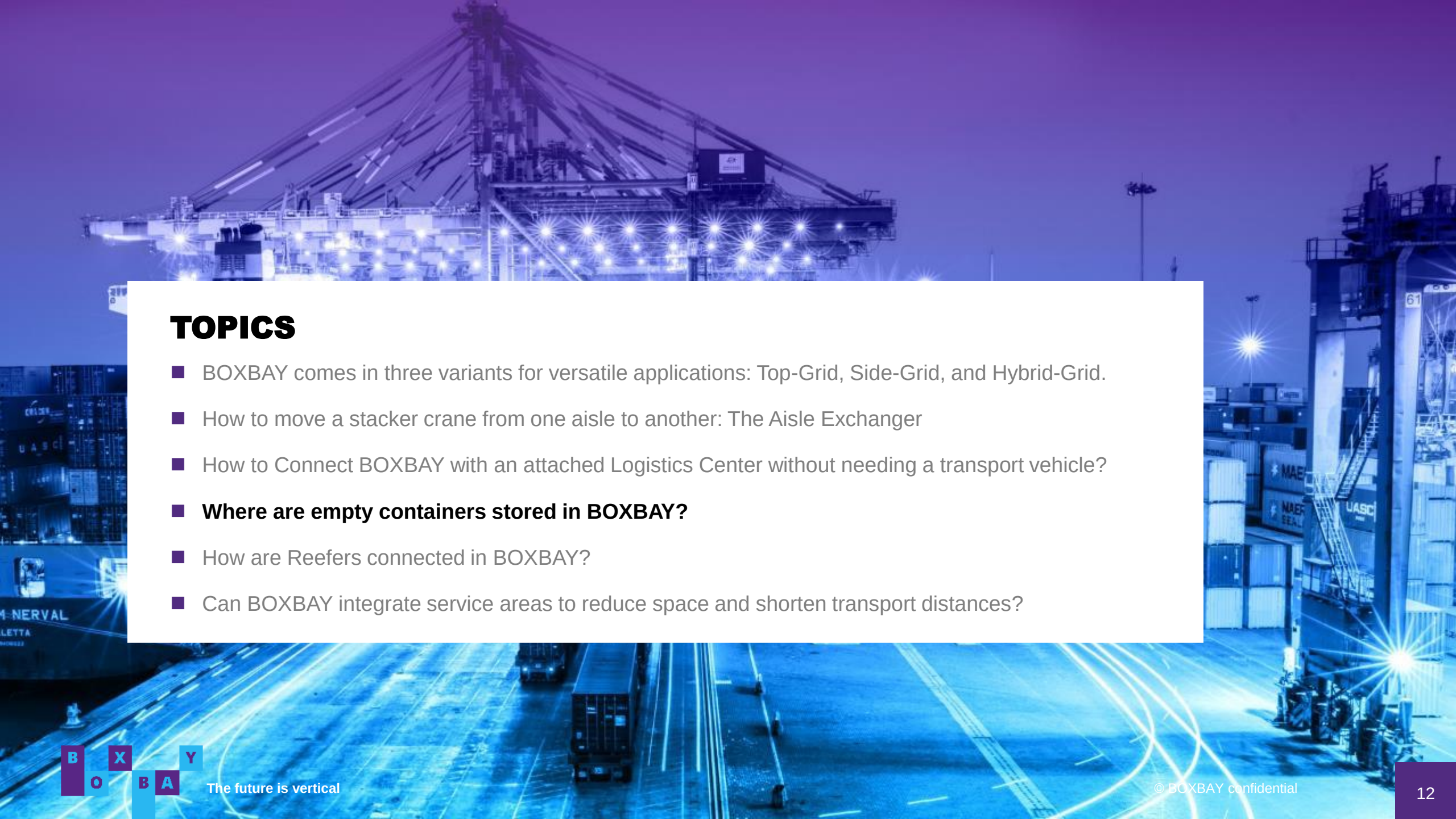
# HOW TO CONNECT BOXBAY WITH AN ATTACHED LOGISTICS CENTER



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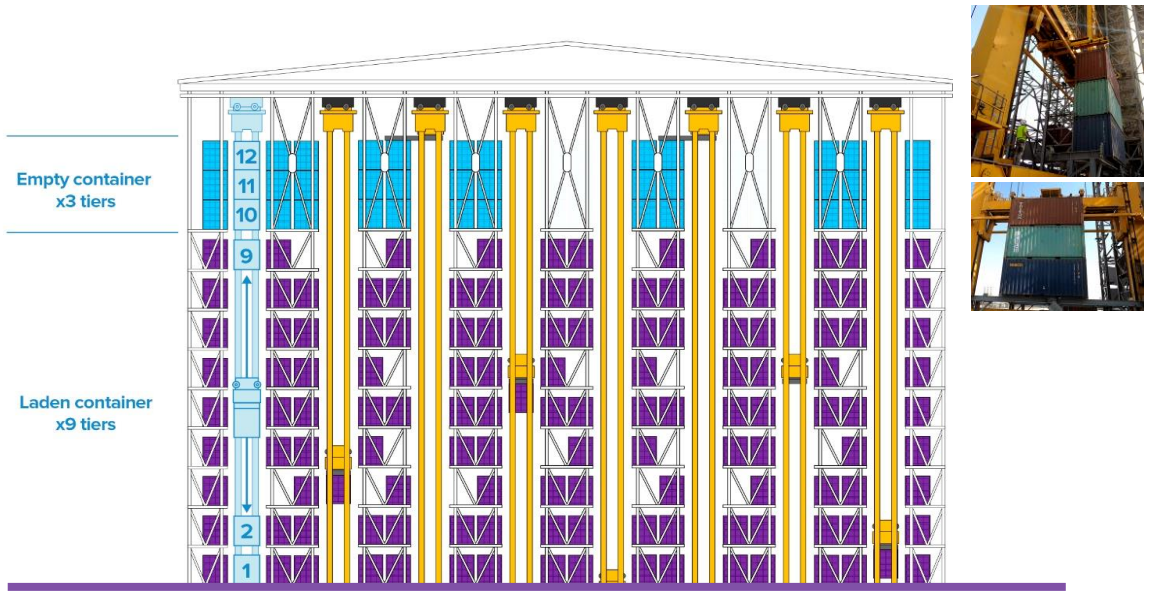
# TWO CONFIGURATIONS FOR HANDLING EMPTIES WITH BOXBAY

## 1. MIXED STORAGE OF LADEN AND EMPTIES

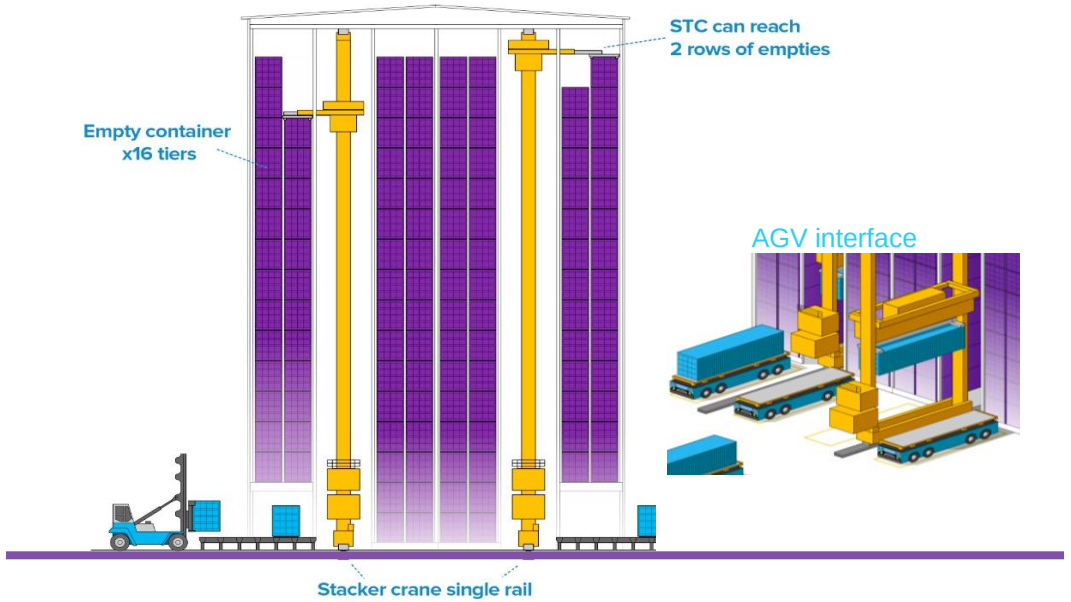





- Empty stacks on highest tiers suitable for each BOXBAY
- 12 tiers for container storage on same design envelope
- Works with TOP-GRID and SIDE-GRID

**Space utilization over 3,800 TEU/ha**

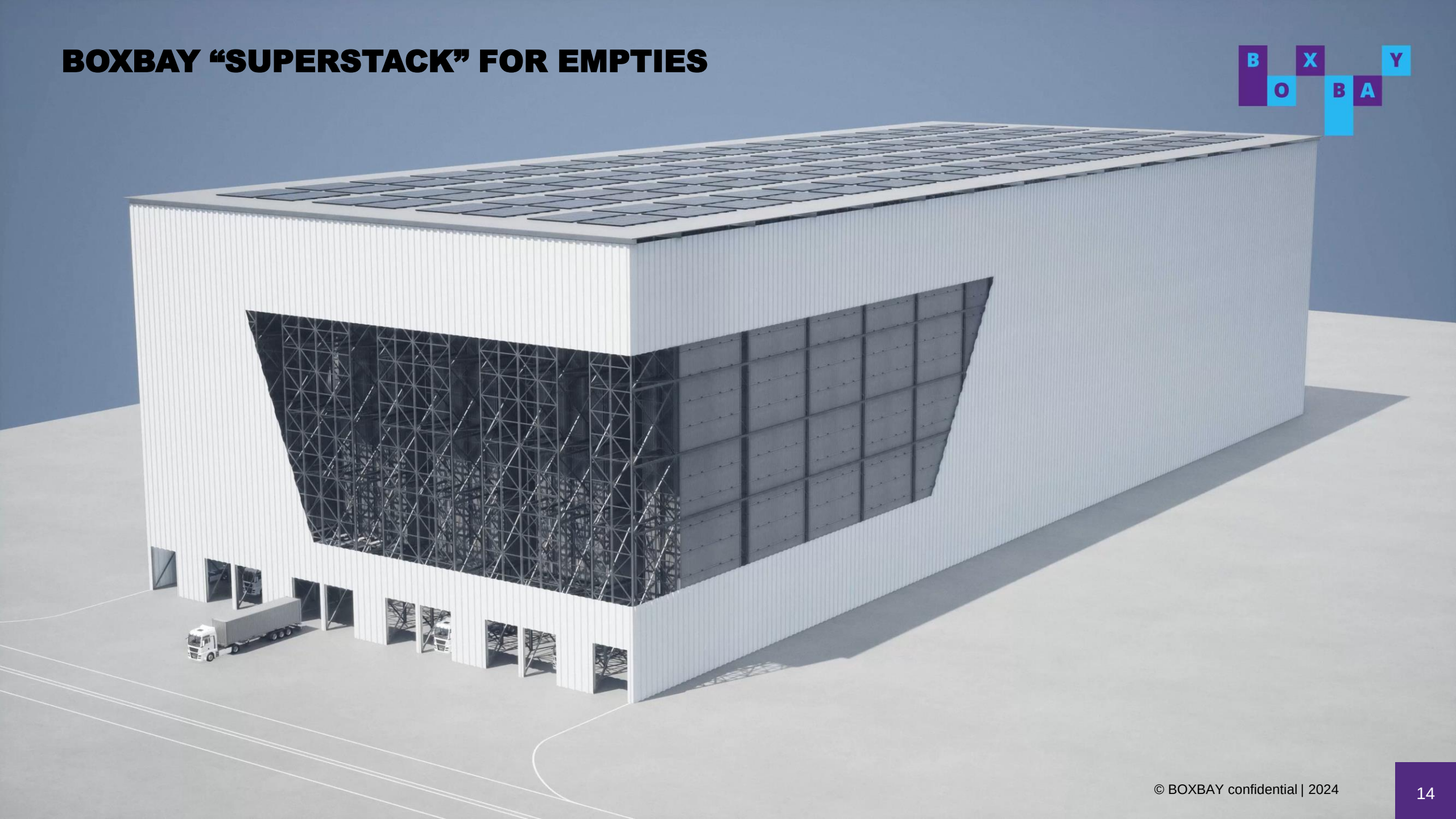
## 2. PURE EMPTY STORAGE: EMPTY SUPERSTACK

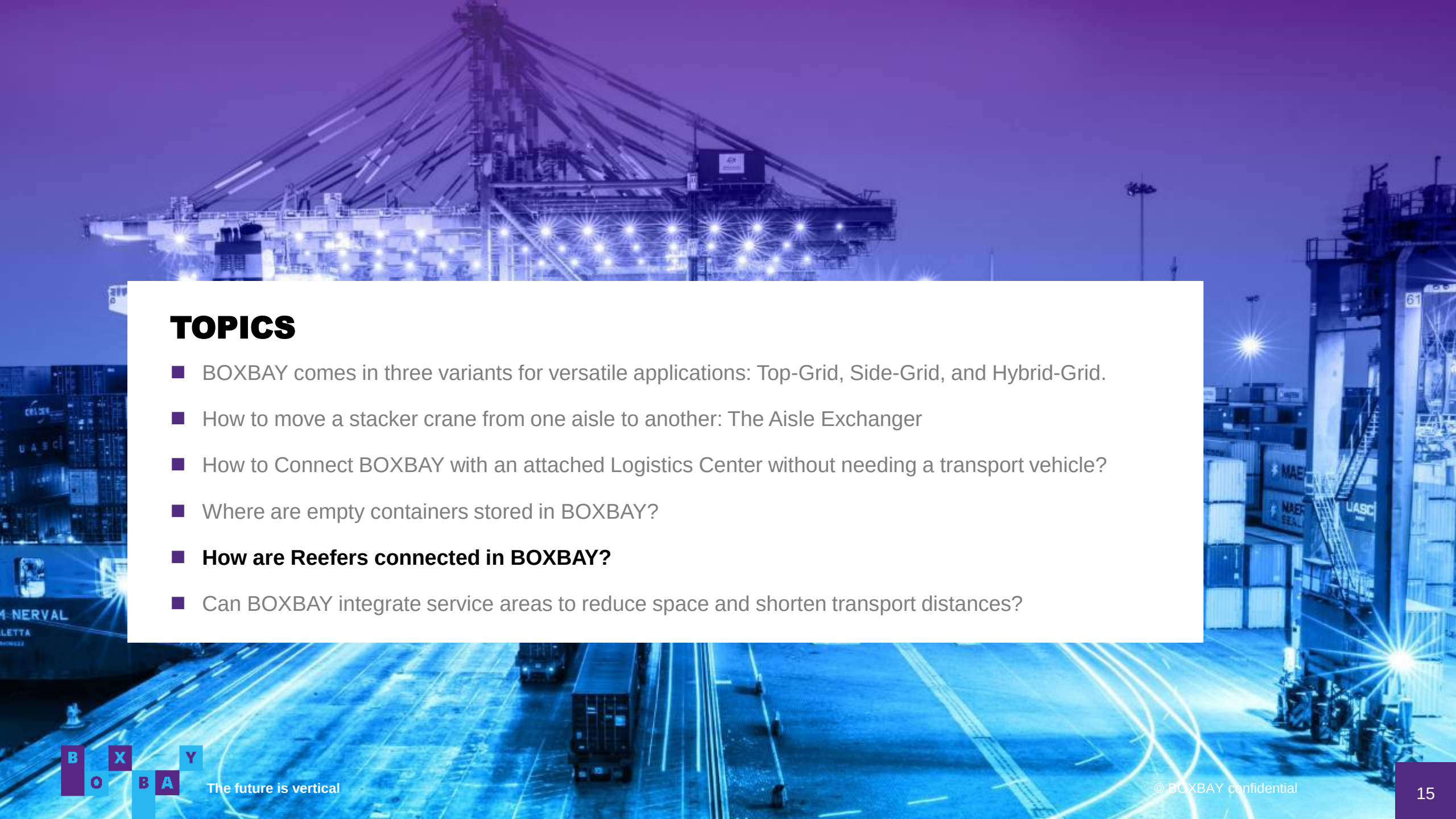



- Empty stacking on 16 tiers, double-deep, lighter crane
- Various interfaces at each aisle end (possible for all ITVs)
- Integration of manual or automated equipment

**Space utilization over 5,200 TEU/ha**

# BOXBAY “SUPERSTACK” FOR EMPTIES





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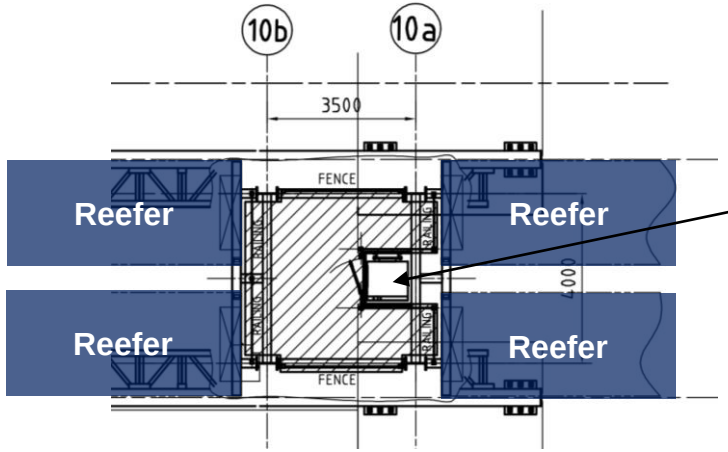
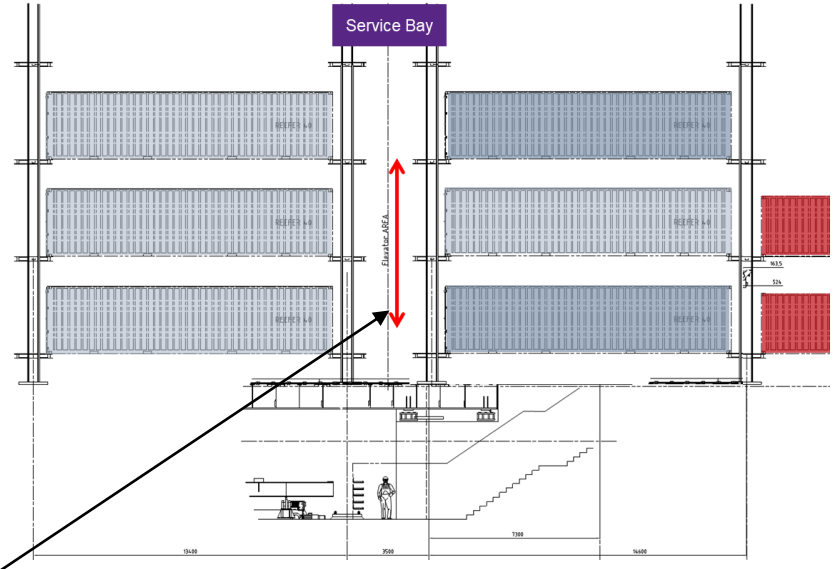
# ELEVATOR ACCESS TO REEFER SECTIONS

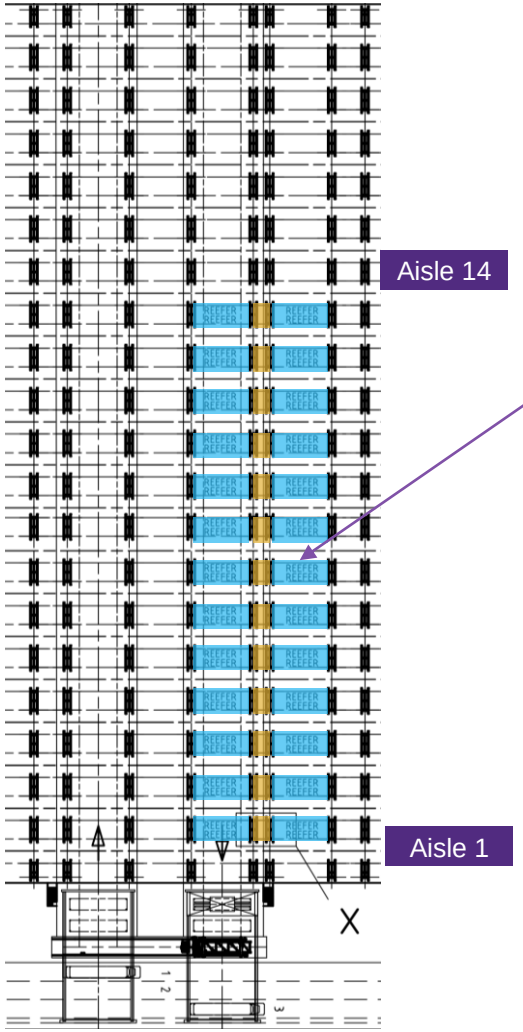
- Service Lift consists of a compact, ladder-guided cabin with aluminum housing
- Cabin is designed for a payload of 250 kg for 2 people and offers a high level of security
- Service lift is CE certified
- Lifting speed: 18 m/min
- Per tier operator can access up to 4 reefers

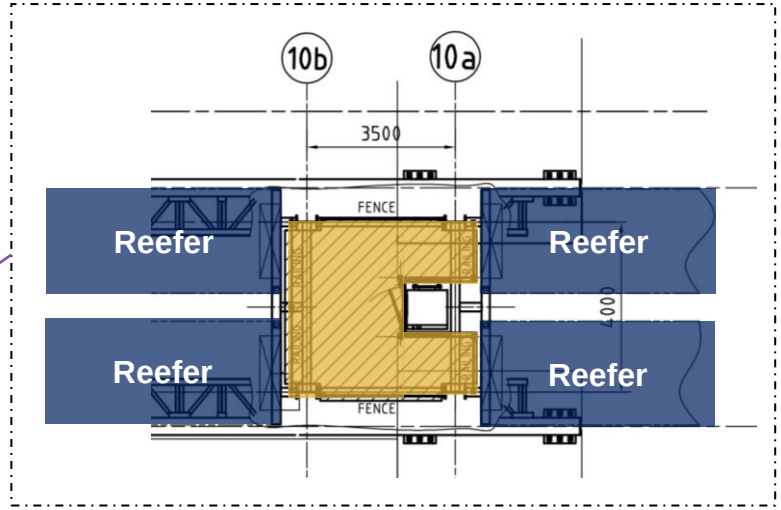


# ARRANGEMENT OF REEFER SECTIONS

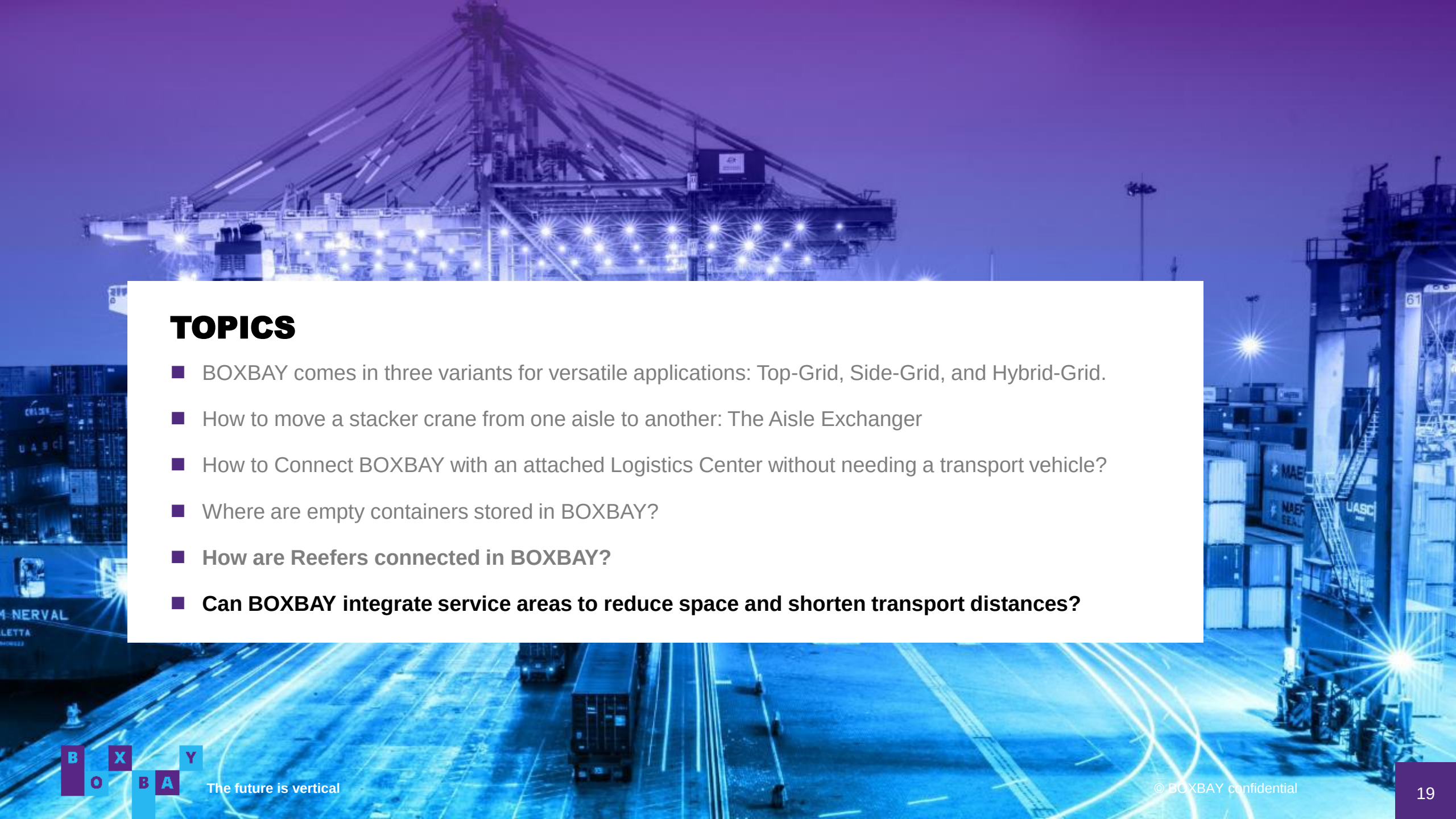
- The defined share of 4.0%  reefer requires in total ≈ 572 locations
- For 572 locations 14 HBS aisles in total have to be equipped with the elevator configuration
- By addition of the remaining 6 HBS aisles a reefer share up to ≈ 5.7% can be supported
- All reefer positions can be utilized with standard container as well
- 20’ reefers are stored on tier 1 at bay columns 10a – 10b
- HBS reefer section bays are designed for the higher reefer container weight profile
- Reefer container have a back-to-back orientation to be accessible from the service platform; necessary door orientation correction is performed by SC on WS and by a TC with rotating spreader on LS



# CONSOLIDATED HBS REEFER RACK – HIGH REEFER SHARE = 7%

- Dedicated rack of full HBS length for reefers
- No 20’ bays
- Position for 20’ reefers only on tier 1
- Adaptation to 34,000 kg containers weight
- Walk platforms on tier level for access to connectors and control (temperature, thermostat setting, etc.)
- Access to walkways by elevator
- Max. 34,000 kg container weight
- Infrastructure for energy supply to container
- Integration of auto-plug and remote reefer monitoring supported

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# INTEGRATION OF SERVICE AREAS REDUCING SPACE AND TRANSPORT