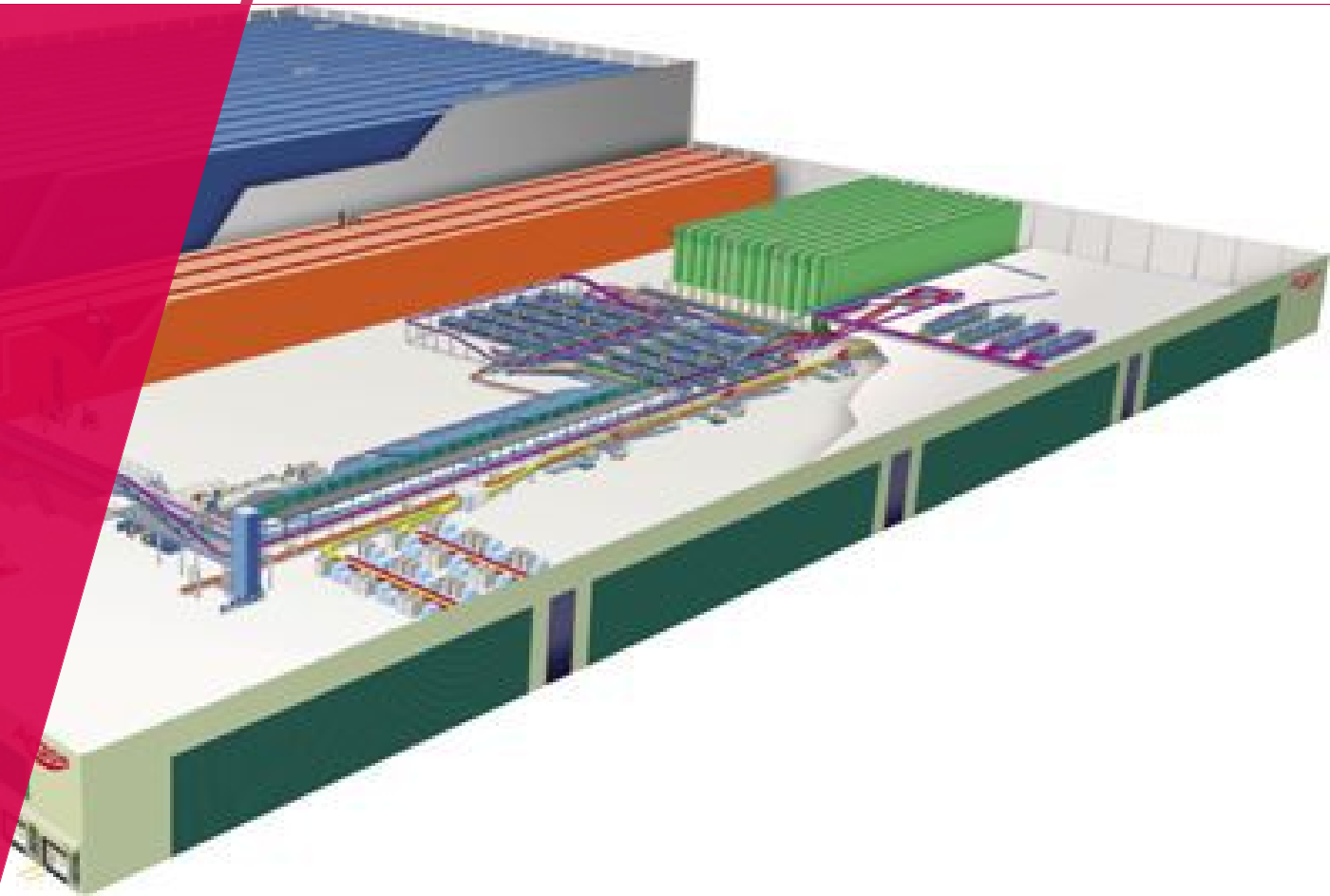
Technische Universiteit
Eindhoven
University of Technology

Facility Logistics Management

Ivo Adan

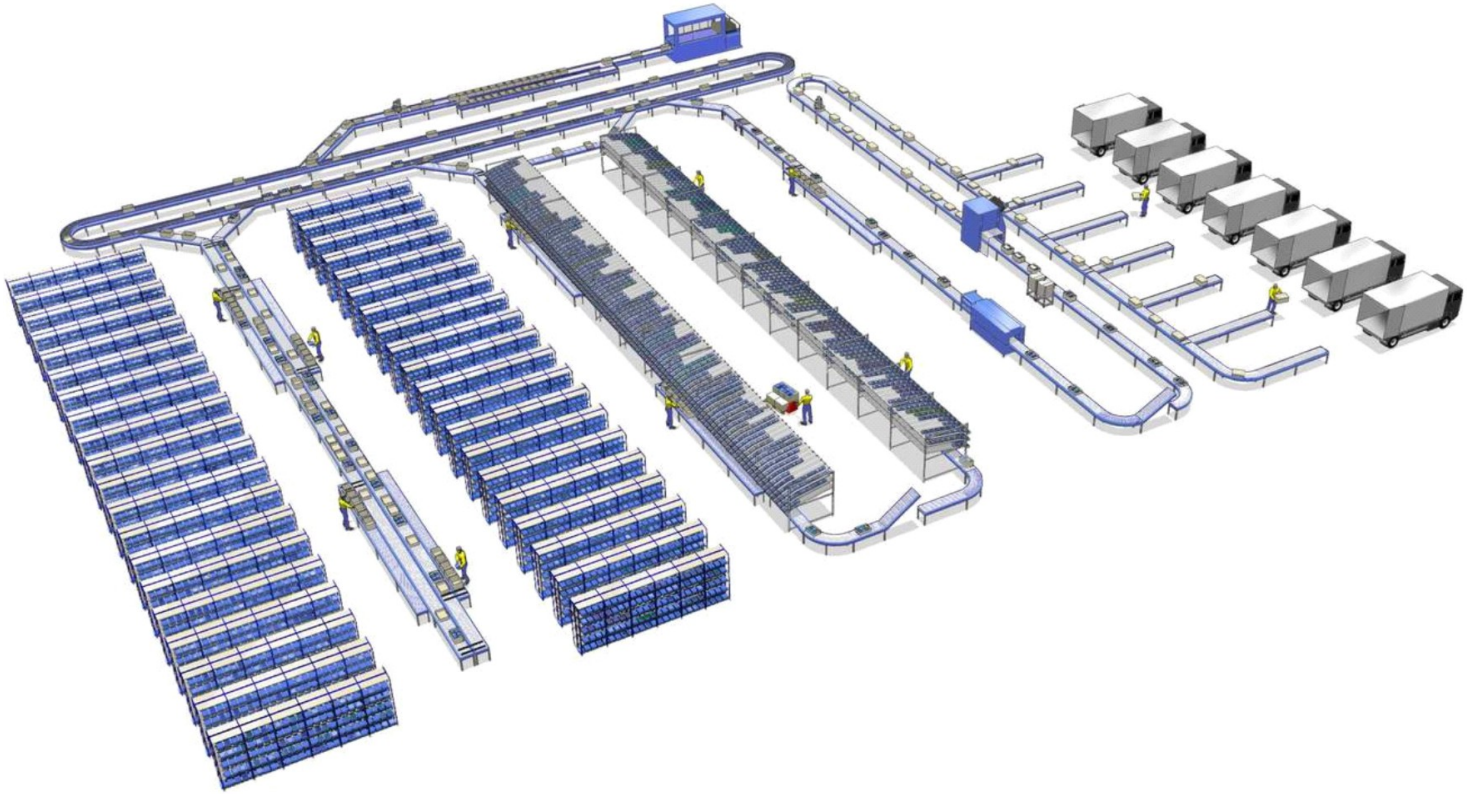


Where innovation starts

Organization

- Course material
  - Teams
  - http://www.win.tue.nl/~iadan/flm
- Examination
  - Individual take home assignment (35%)
  - Assignment due April 30
  - Send assignment as PDF file by email to iadan@tue.nl
- Contents
  - Single-station queueing systems
  - Multi-station flow lines
  - Open queueing networks
  - Closed queueing networks
  - Warehousing applications

Zone-Picking System



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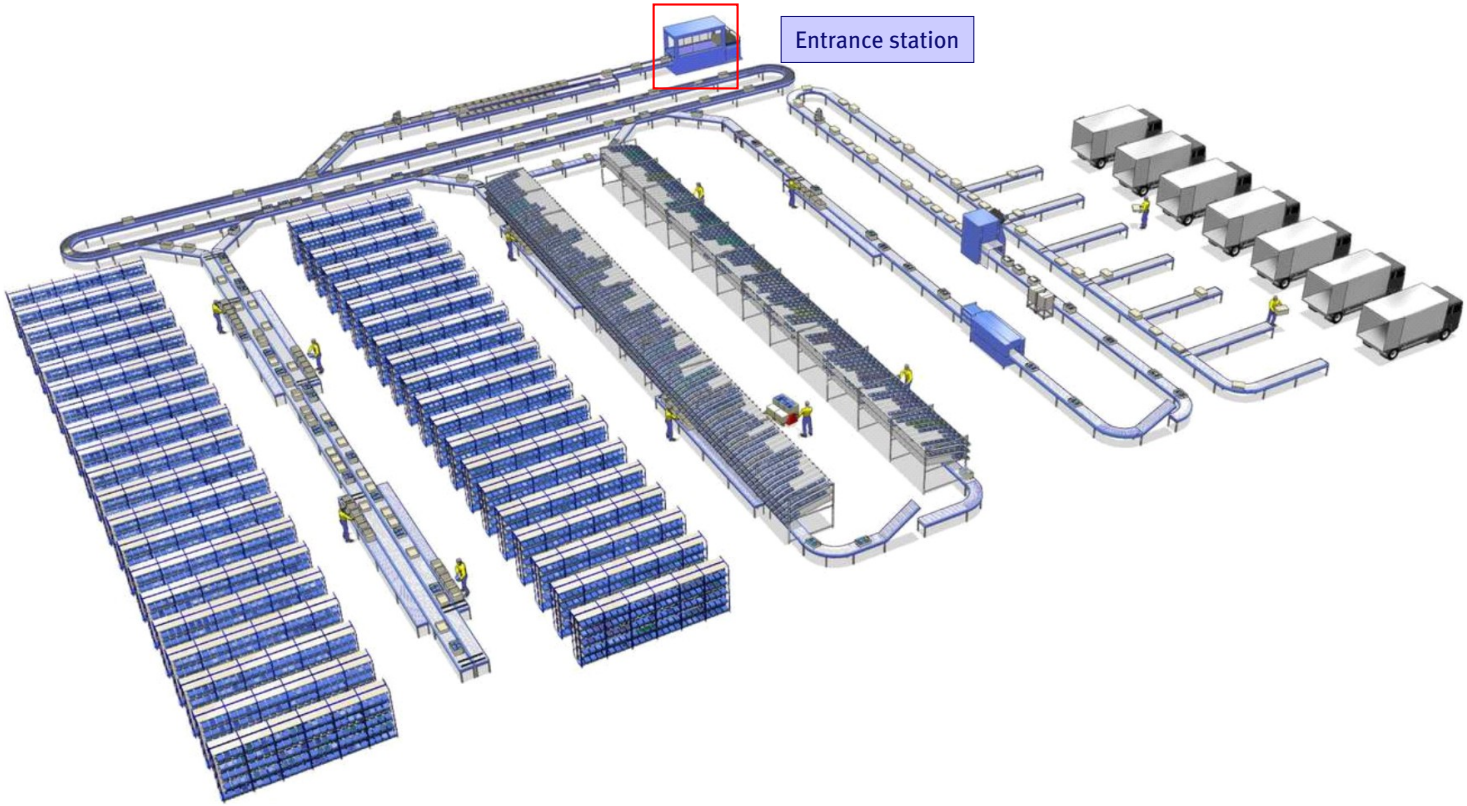

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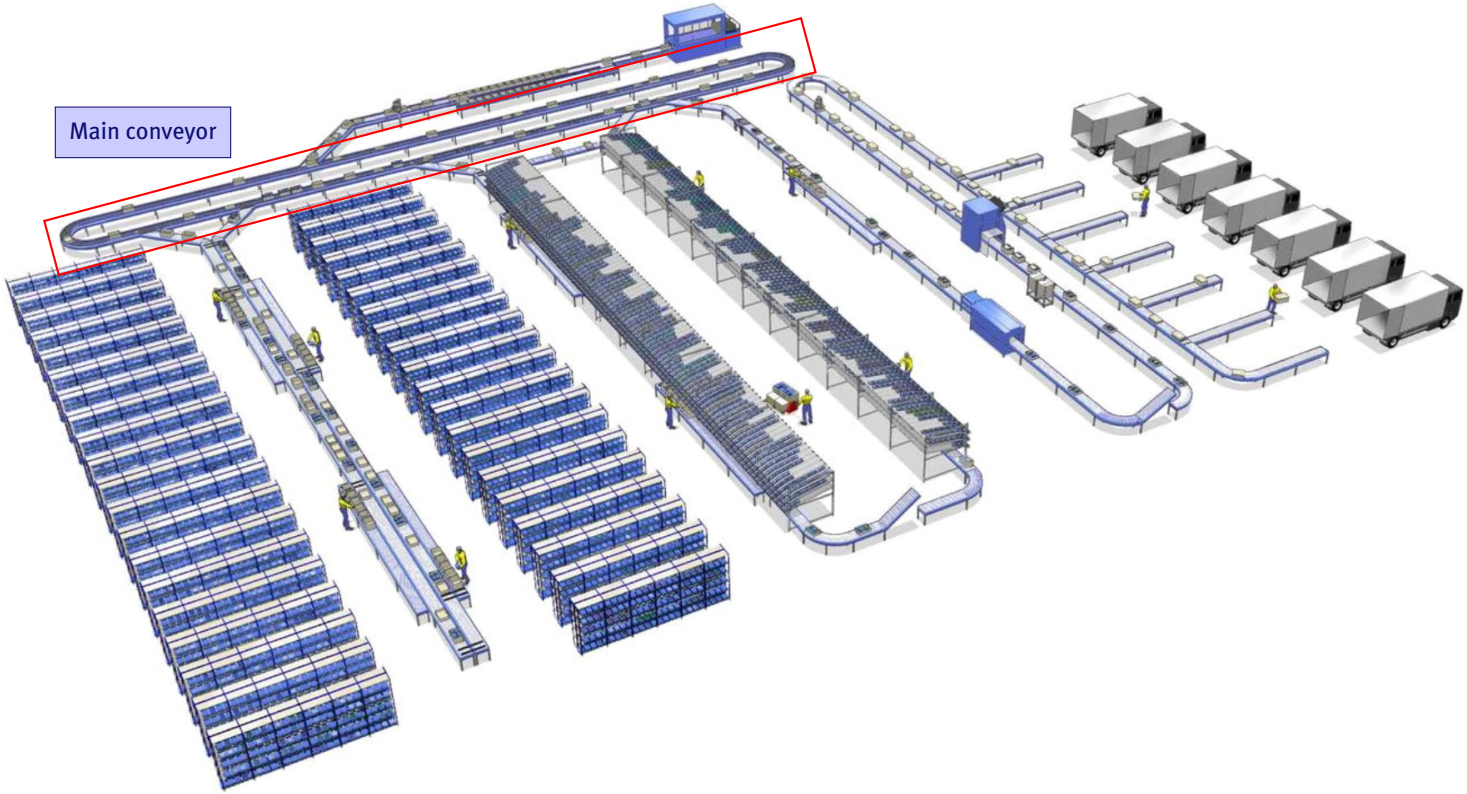

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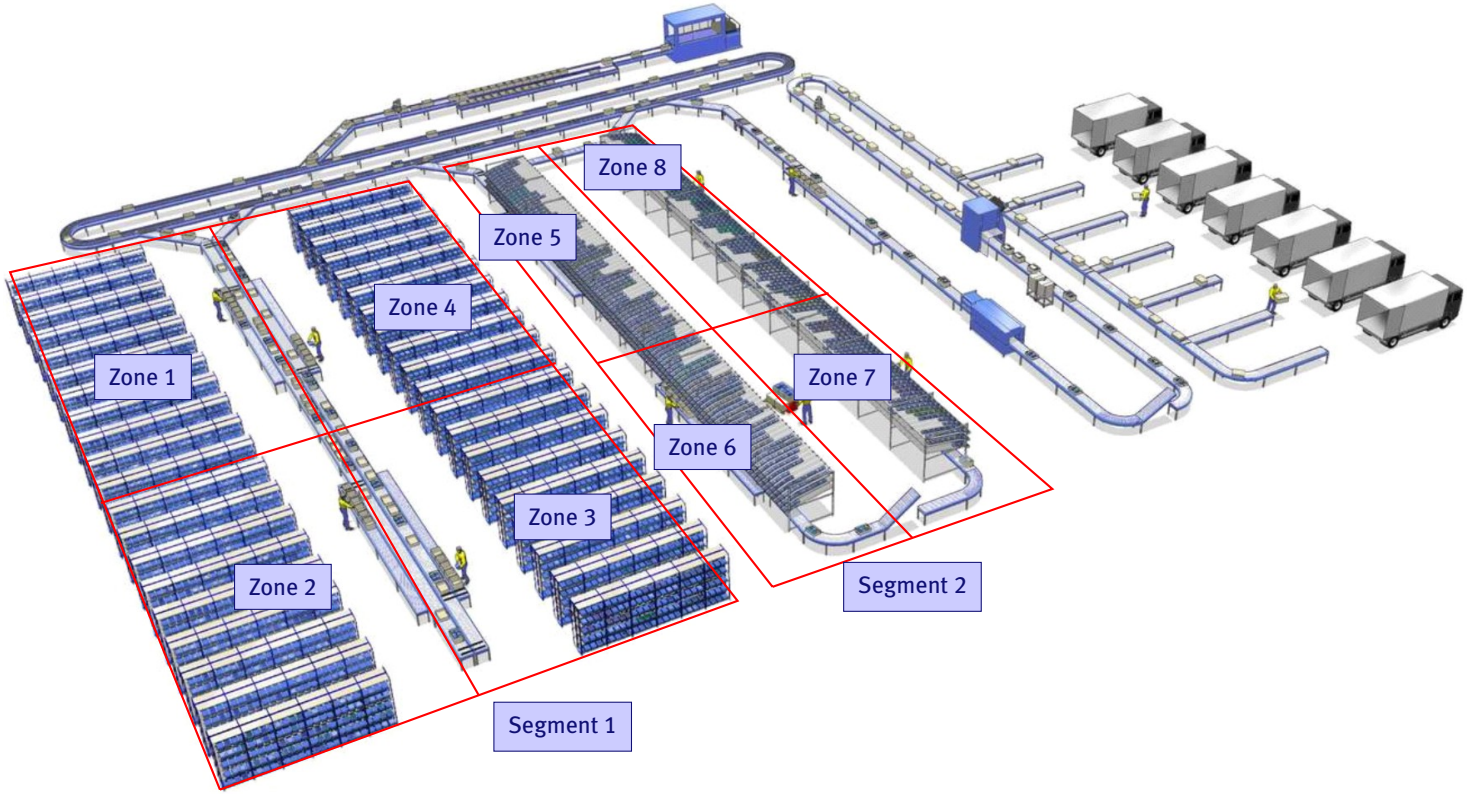

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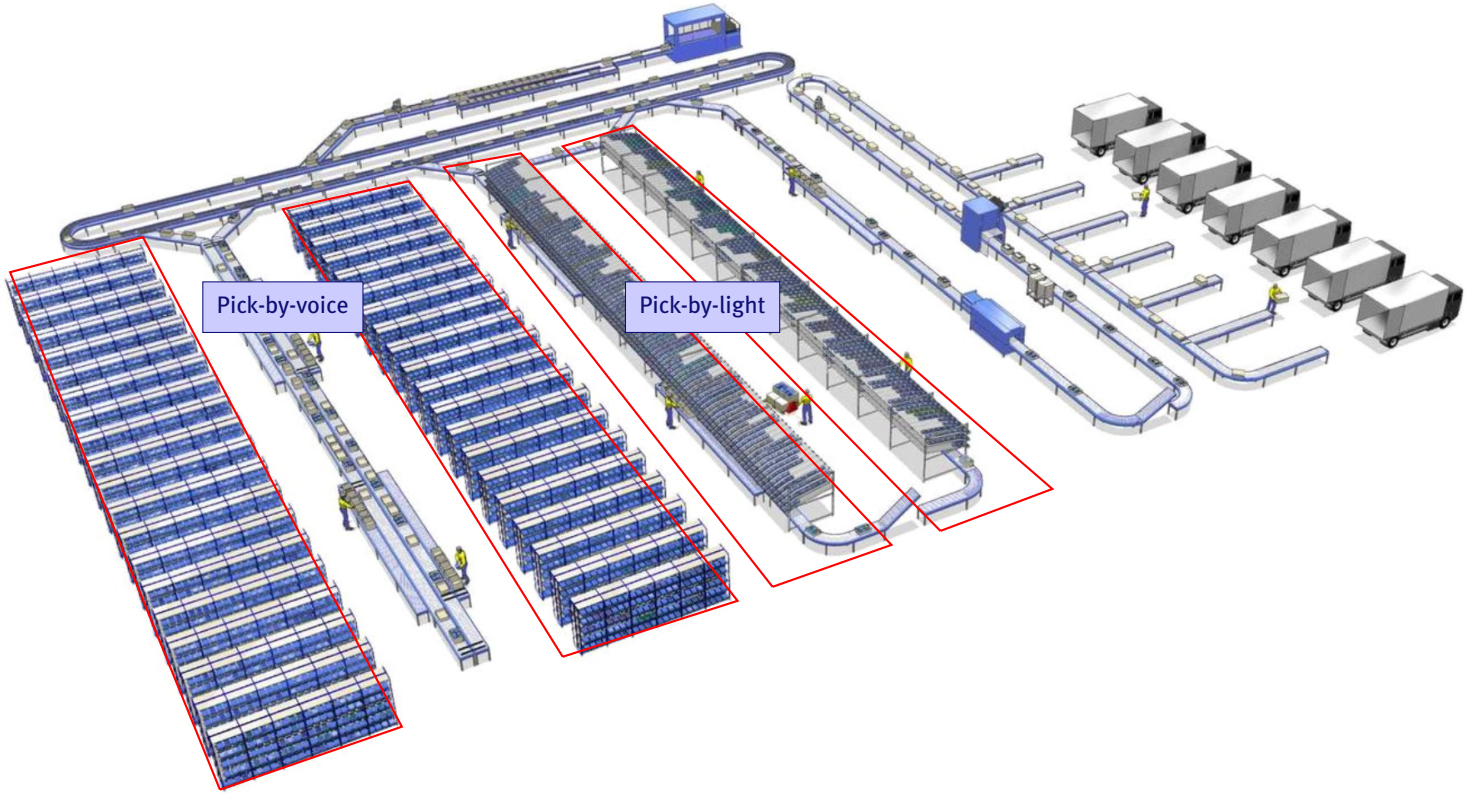

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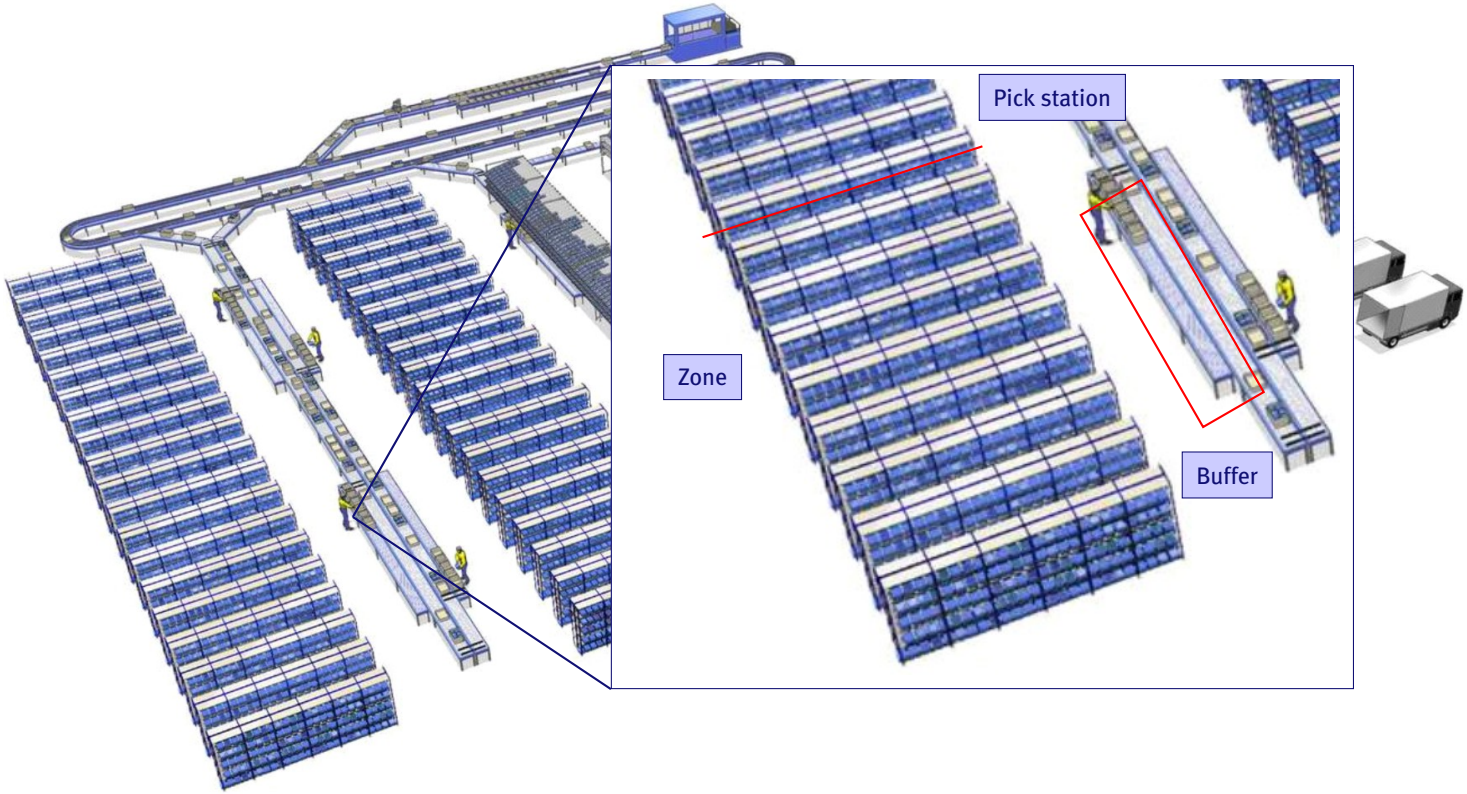

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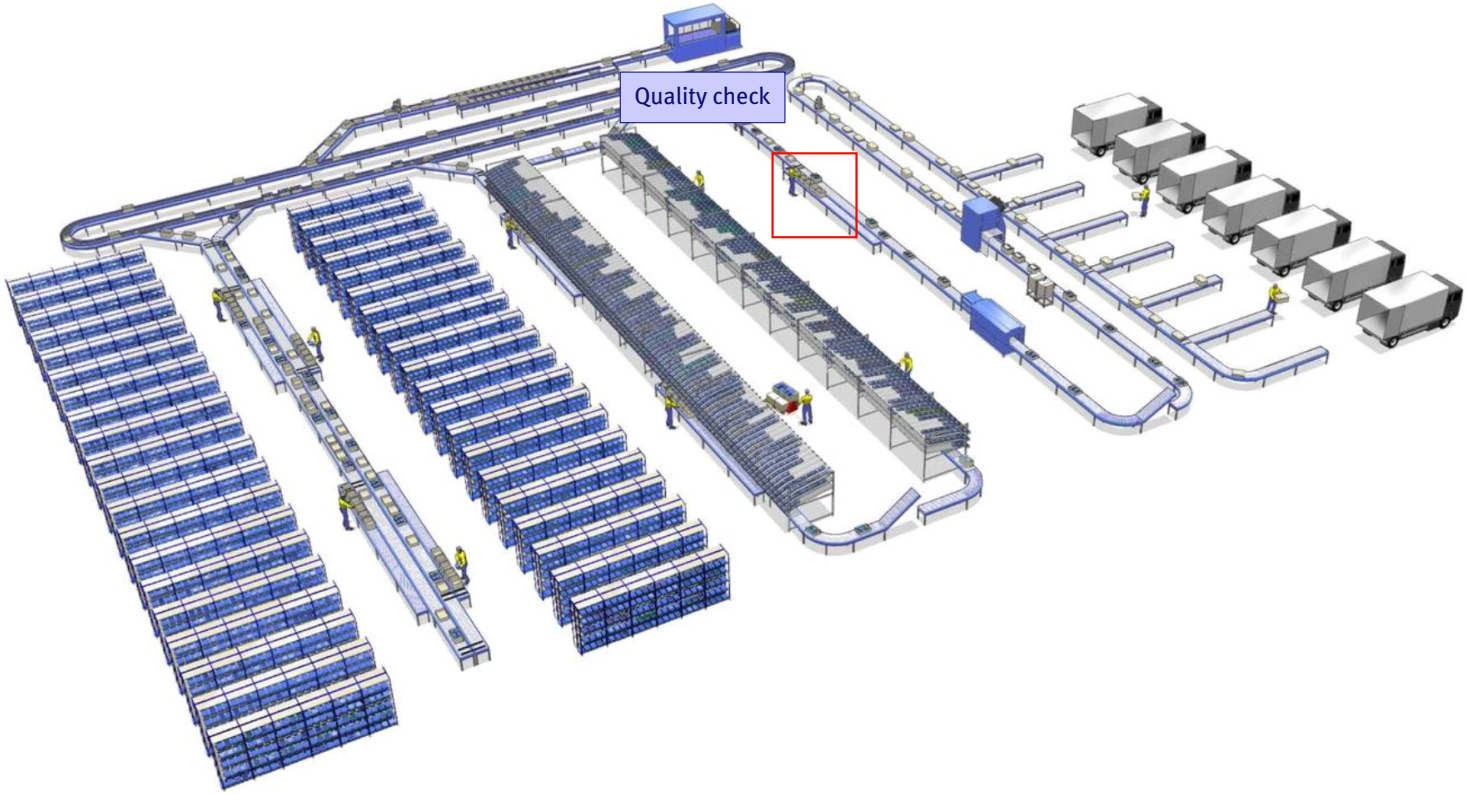

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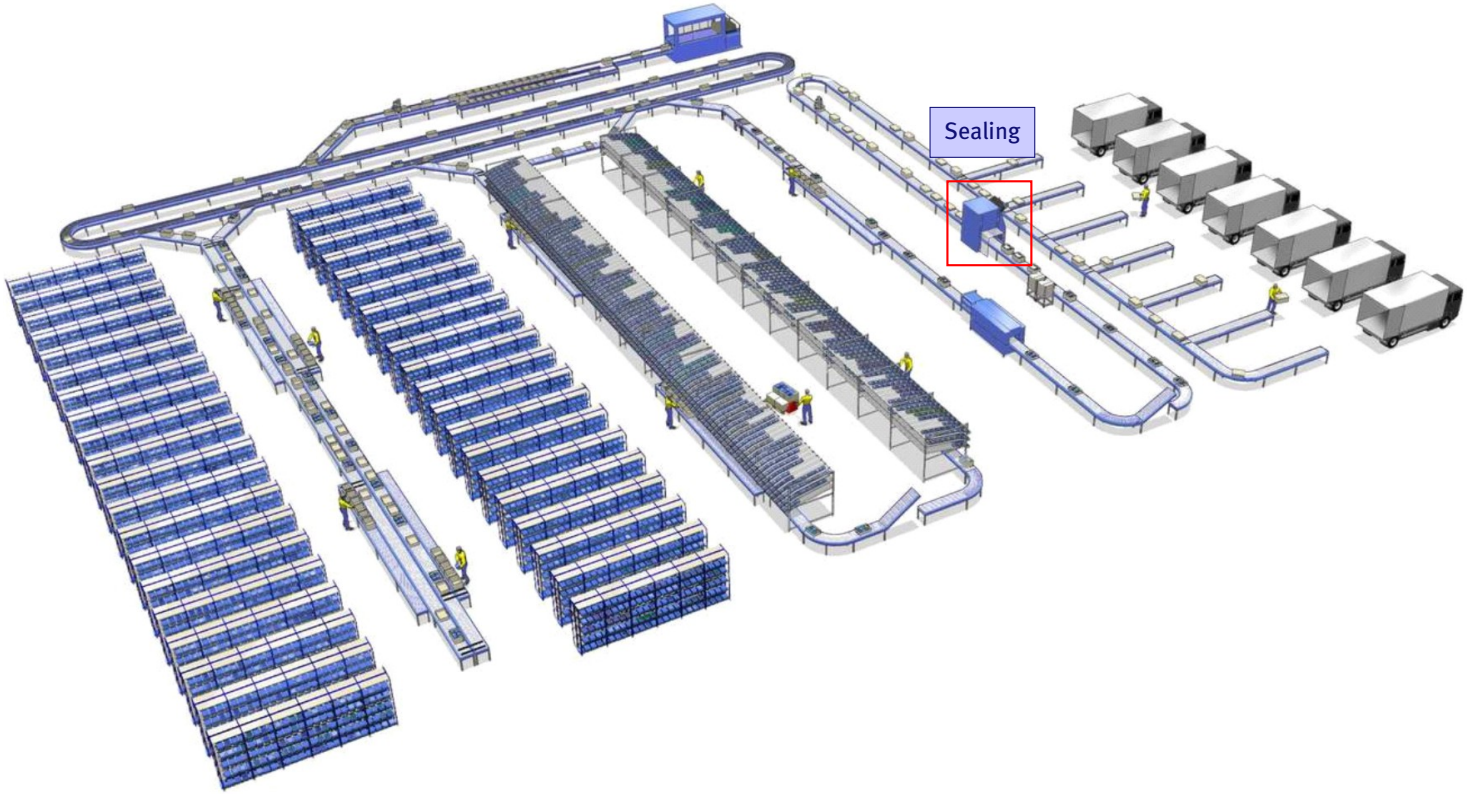

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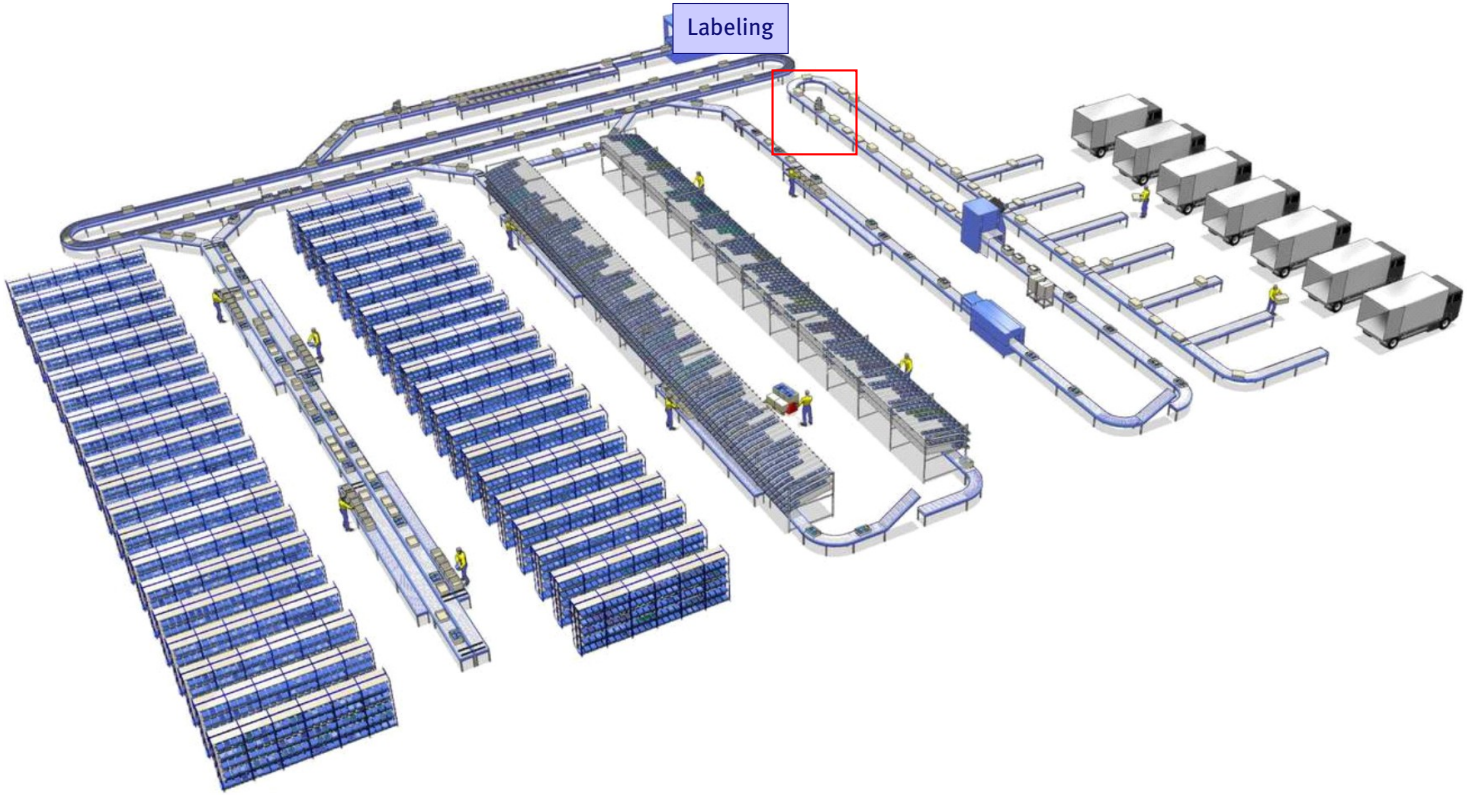

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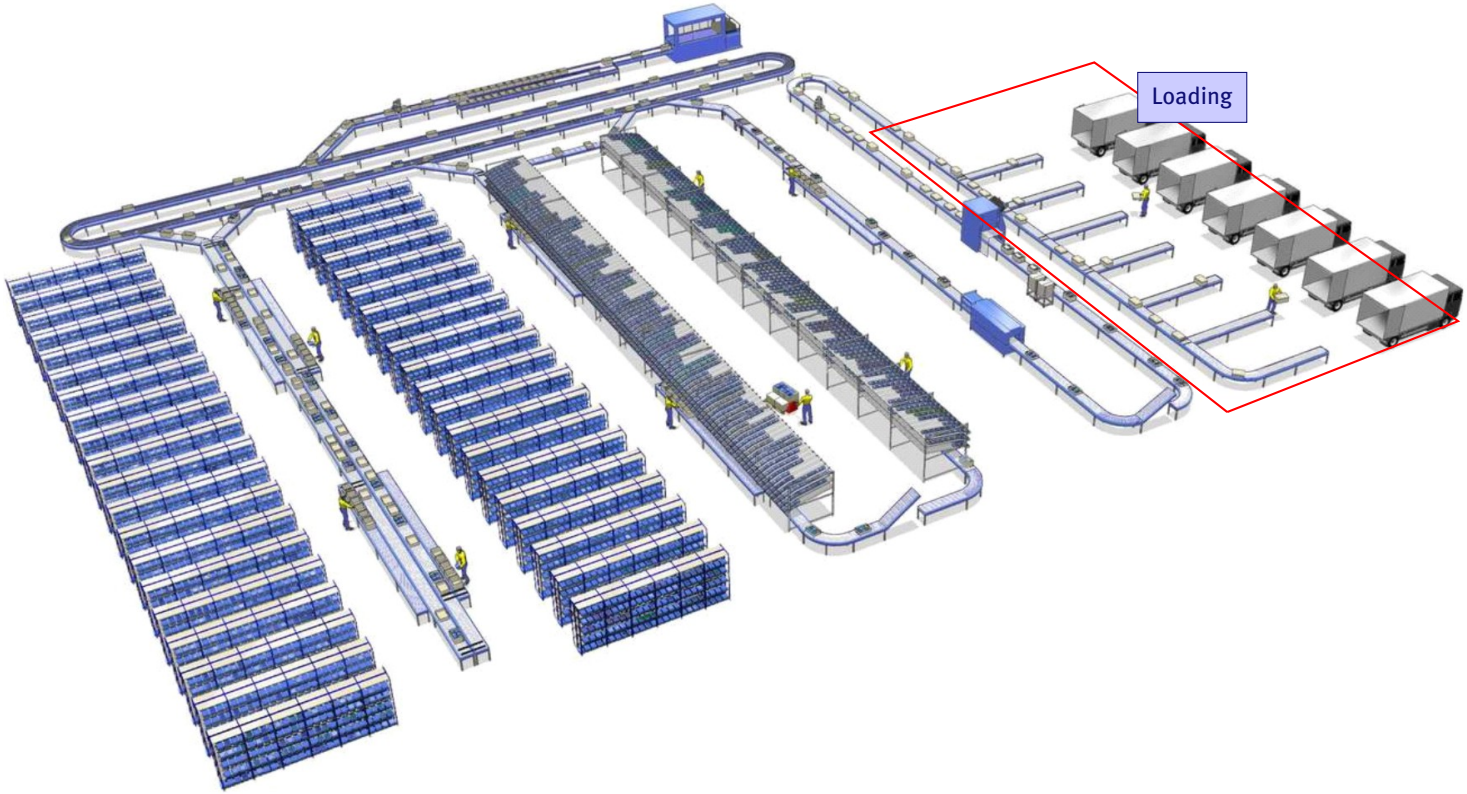

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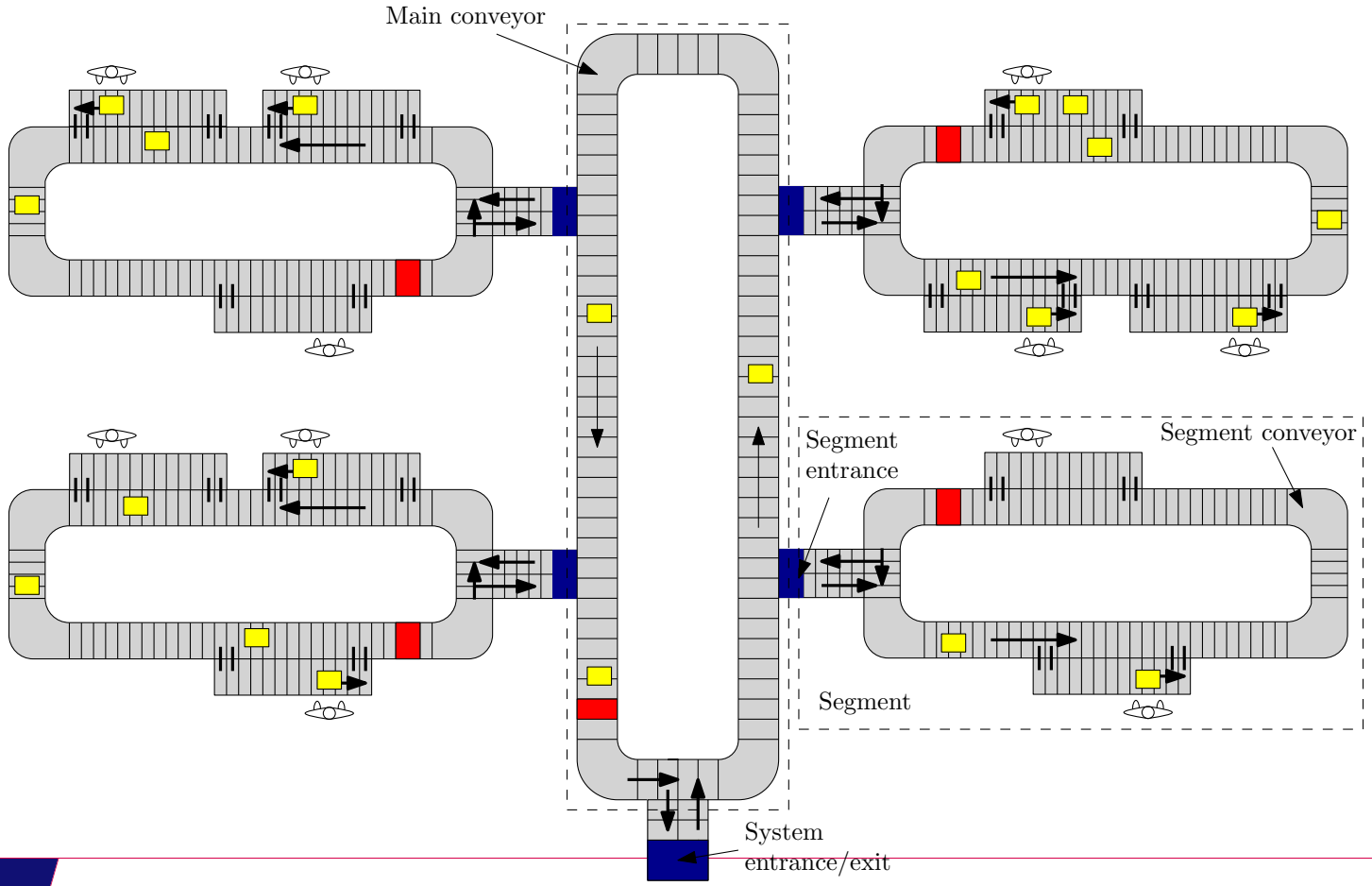
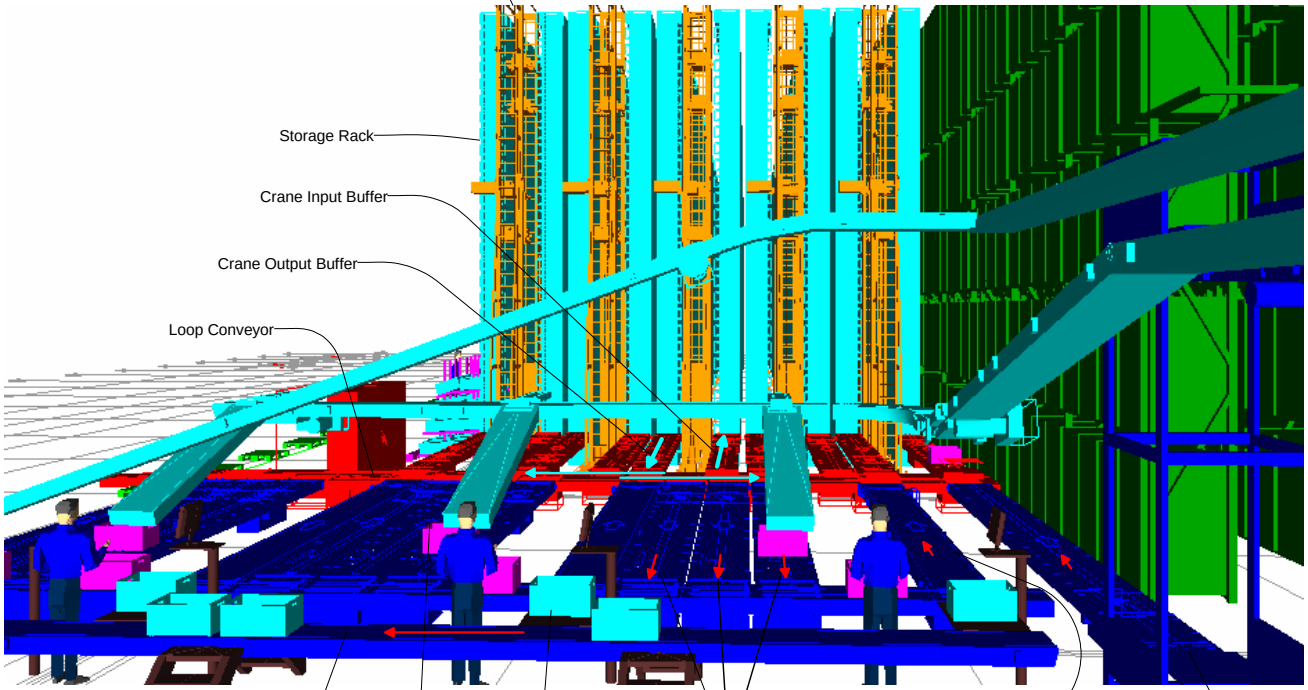


Zone-Picking System

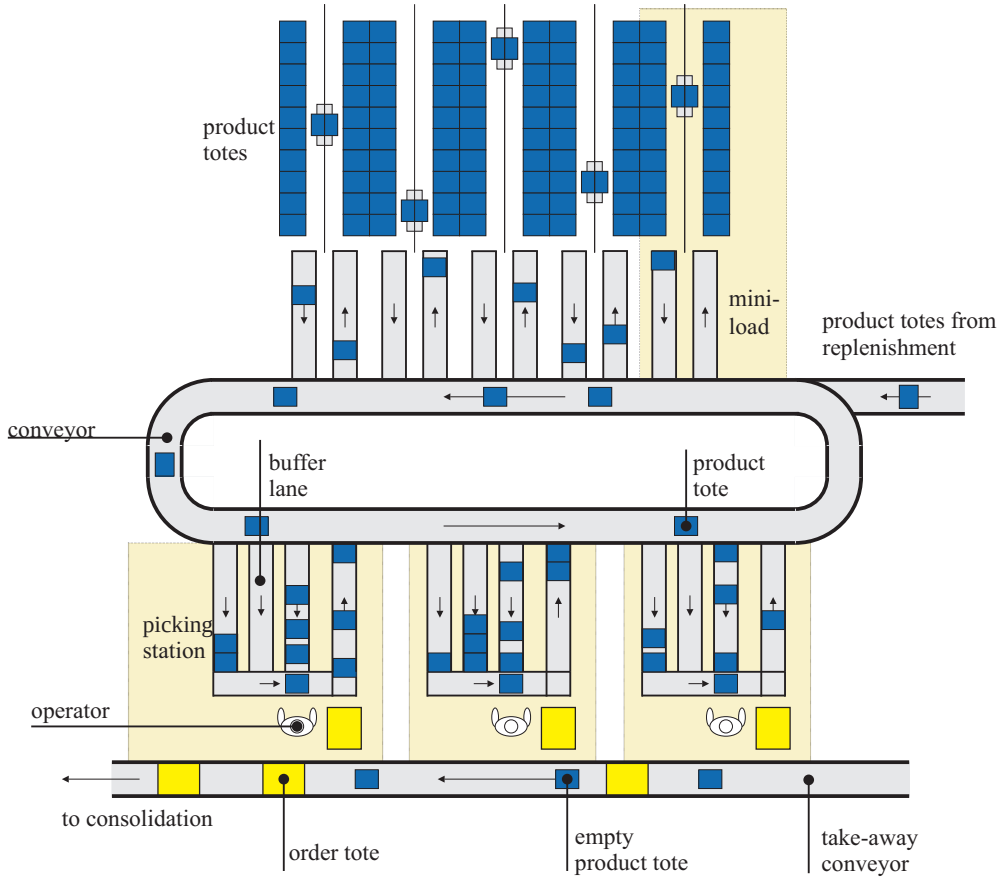
- Key features
  - Man-to-goods solution
  - Work-load control at multiple levels
  - Limited buffer space at zones
  - Recirculation (on main and local loops)
- Design issues
  - Layout of the network
  - Number and size of zones
  - Location of items
  - Number of pickers
  - Required WIP level

Compact picking system



Arrows indicate the moving direction of the conveyor.

Compact picking system



Compact picking system

- Key features
  - Goods-to-man solution
  - Work-load control per picking station
  - Batch service of cranes
- Design issues
  - Required pipeline level
  - Number of picking stations
  - Number of mini-loads and batch size

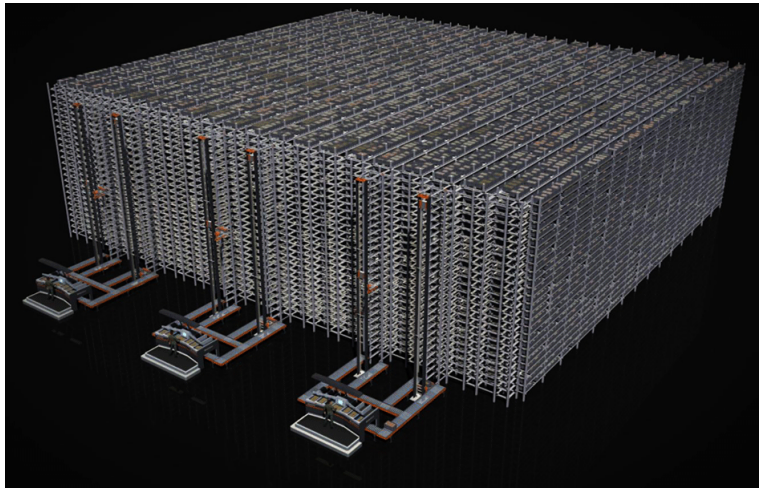
KIVA system

Kiva robot

Operating in warehouse

- Key features
  - High throughput capability, flexibility and scalability
- Design issues
  - Number and routing of robots
  - Storage location of racks
  - Number and location of pick locations

Answer of VDI: ADAPTO



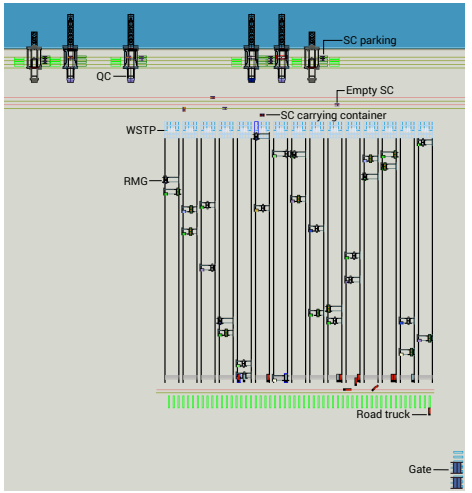
- 3D automated shuttle system developed by Vanderlande Industries (VDI)
- Design issues
  - Control of shuttles (central or autonomous)
  - Layout (number of cross aisles, intermediate buffers, lifts)

Container terminal

Straddle carrier

Container terminal

Schematic layout

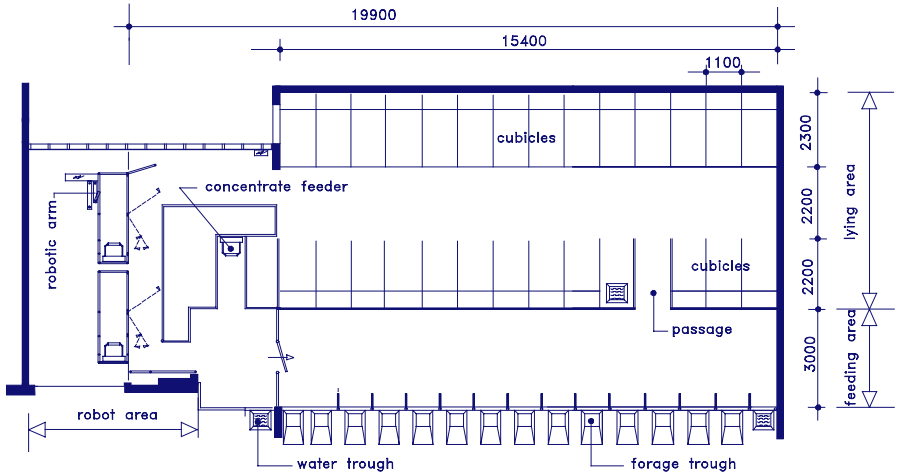


- Design issues
  - Number of quay cranes
  - Number of straddle carriers

Robotic Dairy Barn

Milking robot

Schematic layout



- Design issues
  - Number of robots
  - Number and location of feeders, troughs, drinking places, cubicles