

# Problems

In use of conventional packet  
automatons

[www.pickdelso.com](http://www.pickdelso.com)

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# Loading problem

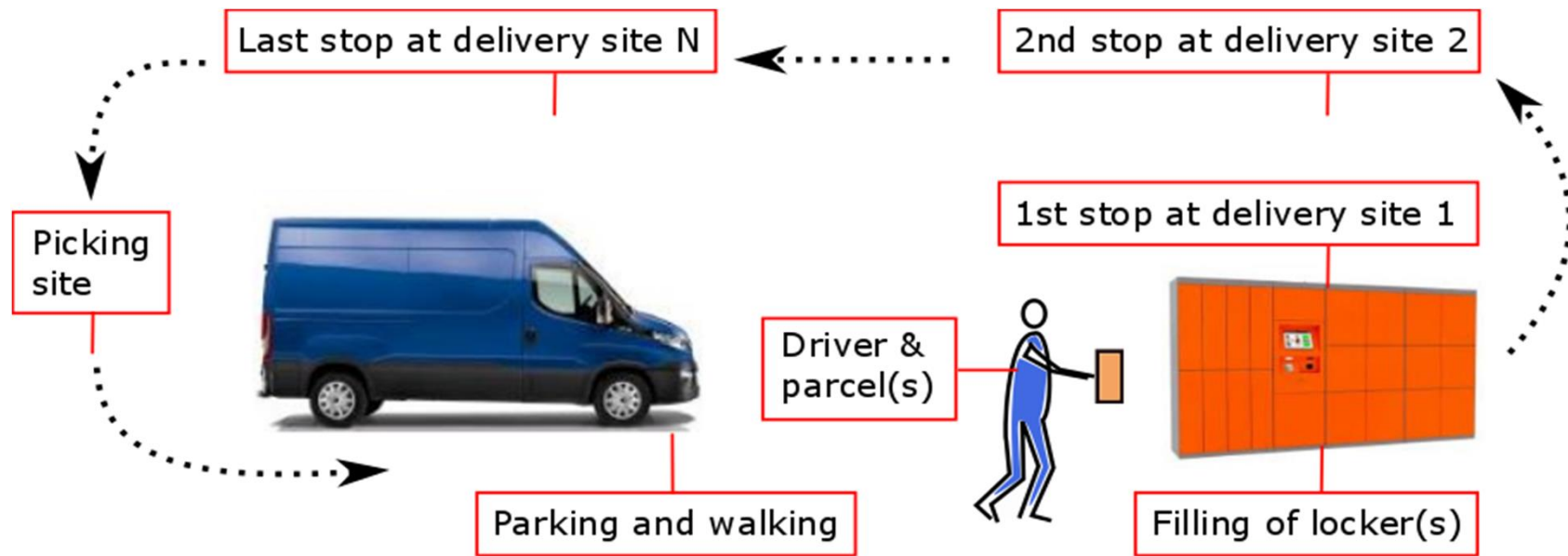
- Trolleys including parcels are manually moved into a delivery vehicle
- Trolleys need to be bind in the delivery vehicle trunk
- Problem: manual loading and binding of the trolleys take time
- A part of the problem is that the delivery vehicle trunk should not be filled 100% because then it's difficult to take a certain trolley out of the trunk

# Transportation problem

- Efficiency of delivery can be measured in a number of items delivered per hour
- Delivery cycle starts from a picking site, such as a sortation hub, and ends to the picking site
- When delivery is efficient it:
  - includes as many items (or orders) as possible and
  - ends as soon as possible
- Problem: each stop within the transportation includes time-consuming tasks

# Transportation problem

- Delivery circle includes many stops and each stop consumes time:

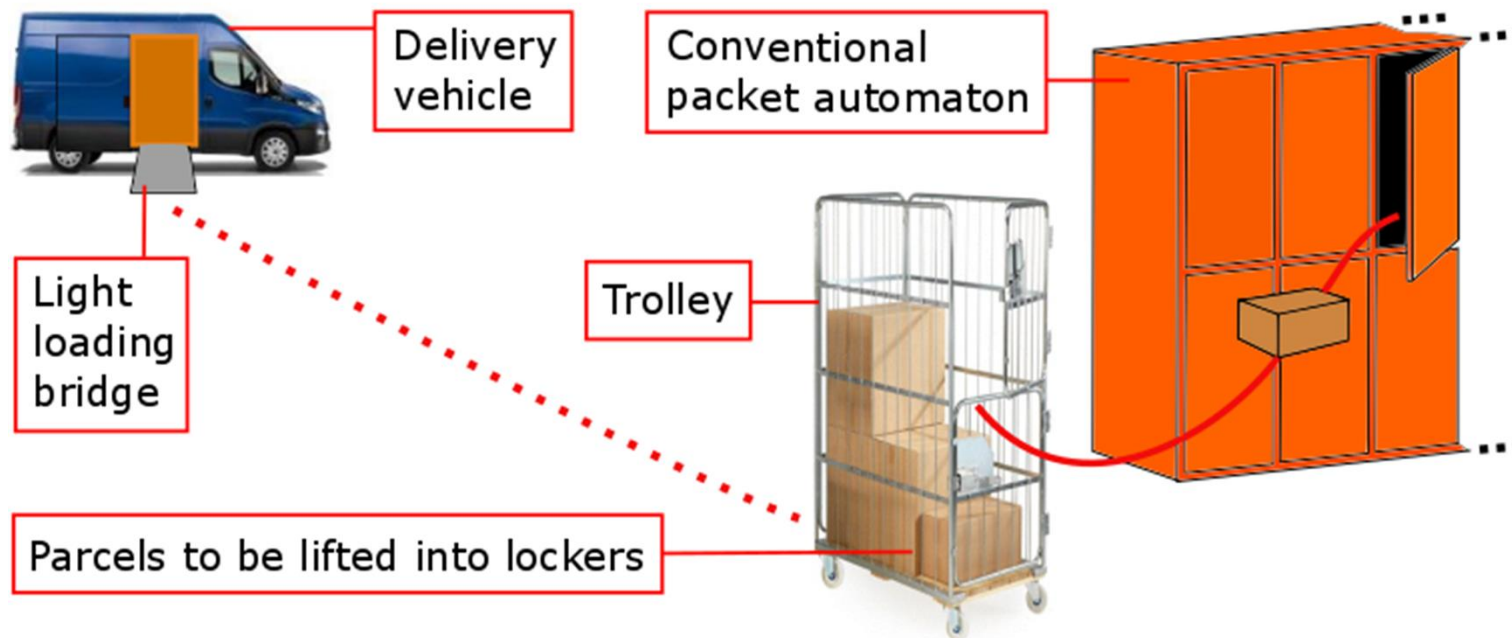


# Filling problem

- Filling of a conventional packet automaton is a quick task, if there is only one parcel to be delivered
- One parcel per automaton, however, means that there are many stops (and parking and walking) for a single parcel
- On the other hand, if there are so many parcels that they don't fit into a trolley, the filling of automaton takes a lot of time
- Either way there is a problem

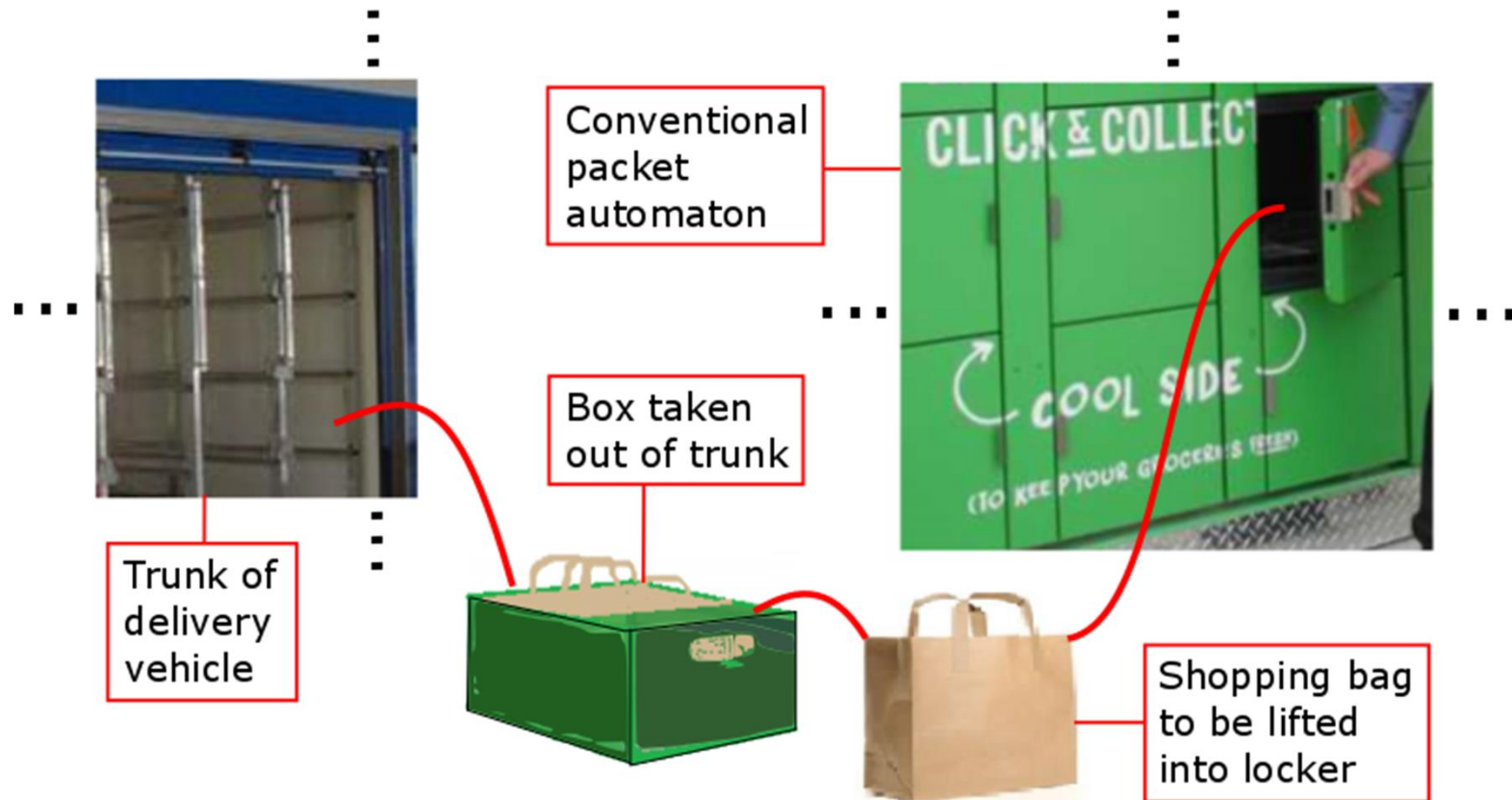
# Filling problem - parcels

- Example: a conventional packet automaton is manually filled with parcels



# Filling problem - groceries

- Example: filling an automaton with shopping bags



# Bar code reading problem

- At each delivery site, parcels are picked one by one from a trolley and their bar codes are manually read
- Problem in use of conventional packet automatons is the time-consuming bar code reading
- Problem is solvable, at least in parcel delivery, if a parcel sortation hub includes such sorter that can automatically scan bar codes