Podcar Applications for Airports

How to improve level of service while lowering costs

Presented by:
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PRT Consulting, Inc.

Outline

- Parking shuttles
- Shuttle consolidation
- Shuttle bus comparison
- In-concourse
- Terminal-to-concourse
- APM comparison
- Reinventing airports

Parking Shuttles

- Heathrow
- Greenville
- Denver

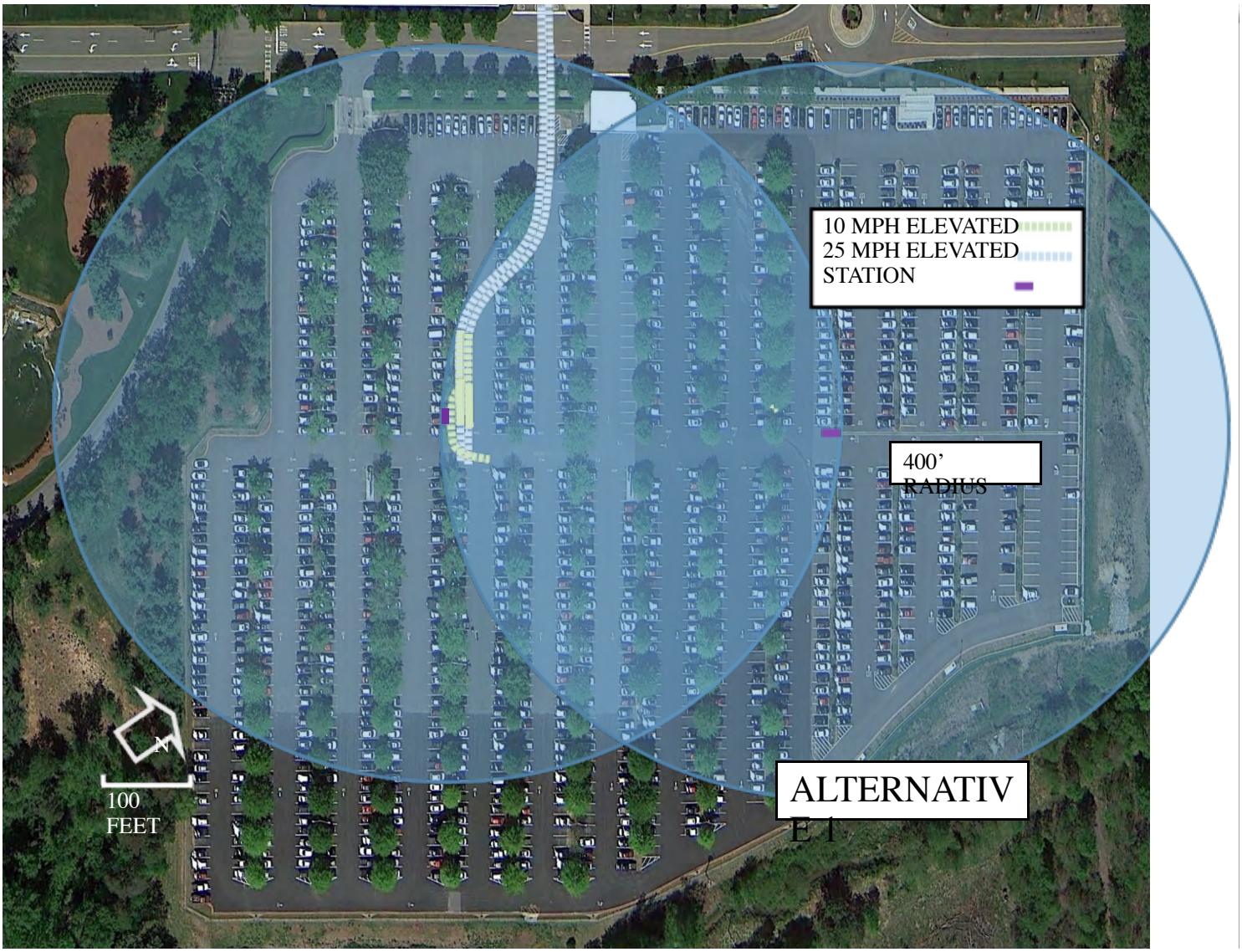
Heathrow International Airport

- Rave passenger reviews
- Replaced 70,000 annual bus trips
- Planned for expansion

Greenville-Spartanburg International Airport

- No present shuttle service
  - Passengers walk up to 500 m
- Conceptual investigation of podcars & autonomous shuttle with Ingmar Andreasson
- New study to investigate 30-year life cycle with on- and off-airport expansions

Source: Terminal Area Study

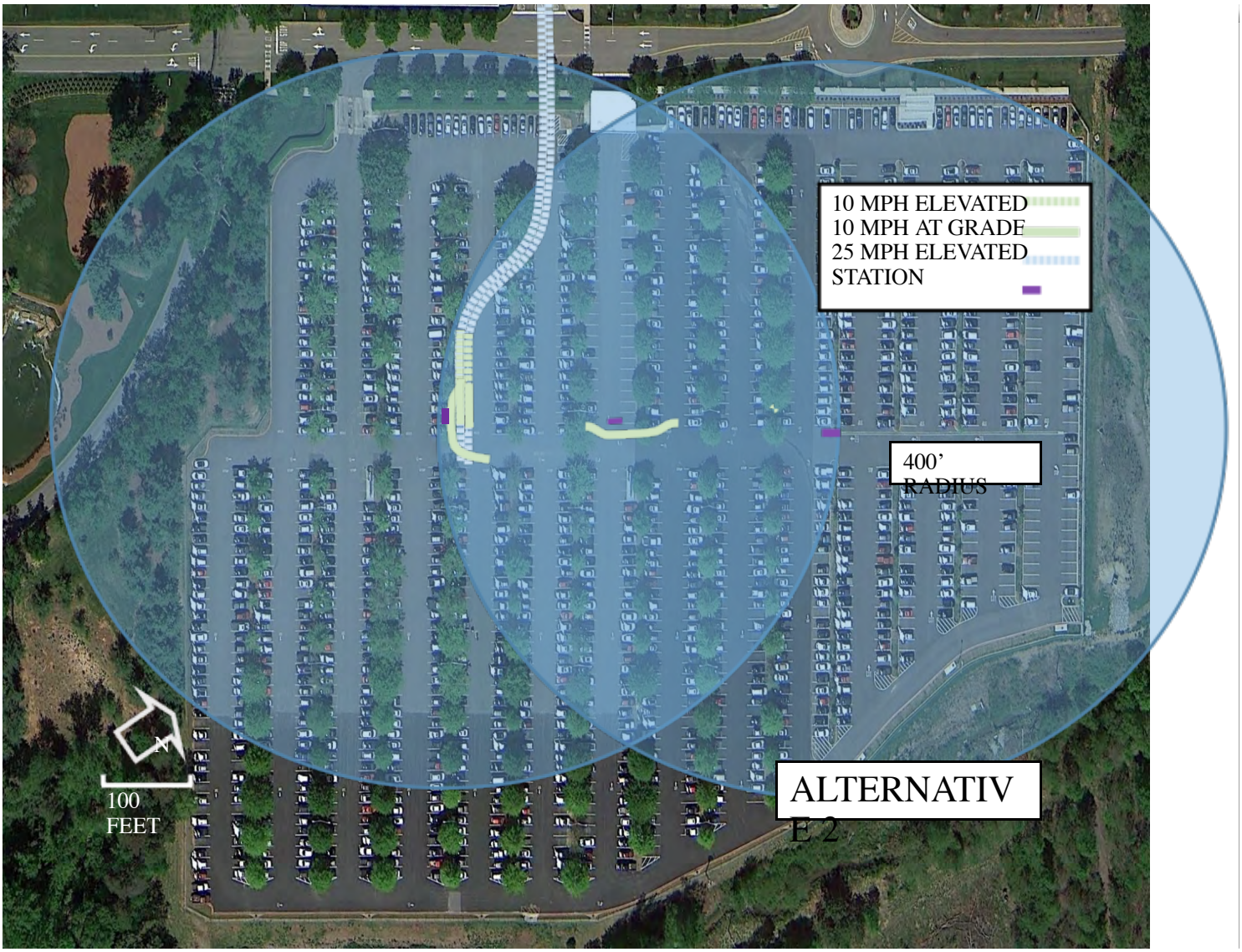

10 MPH ELEVATED
25 MPH ELEVATED
STATION
400’ RADIUS
N
100 FEET
ALTERNATIVE 1

9
,

36
,

Credit:
WSP

ELEVATED
STATION


10 MPH ELEVATED
10 MPH AT GRADE
25 MPH ELEVATED
STATION
400’ RADIUS
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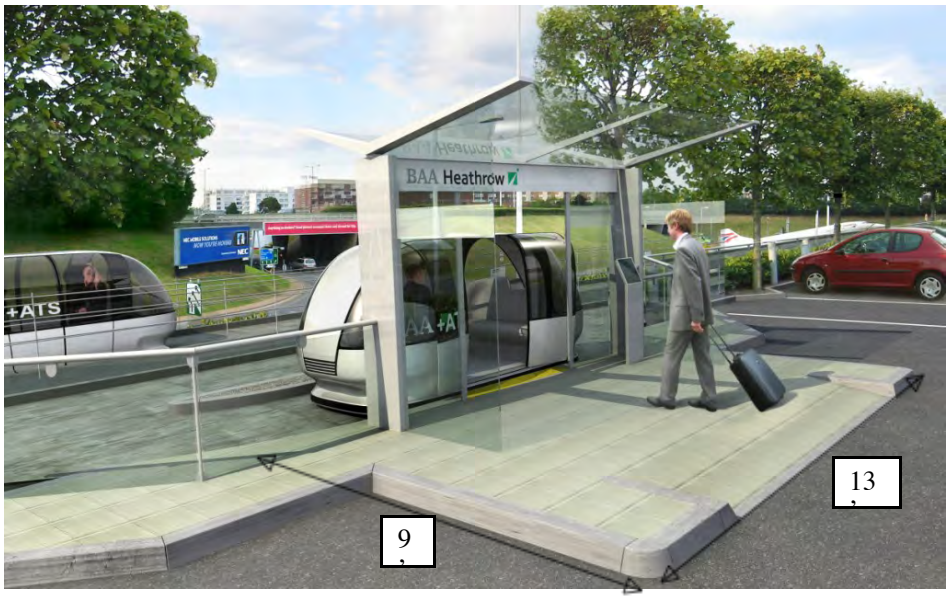
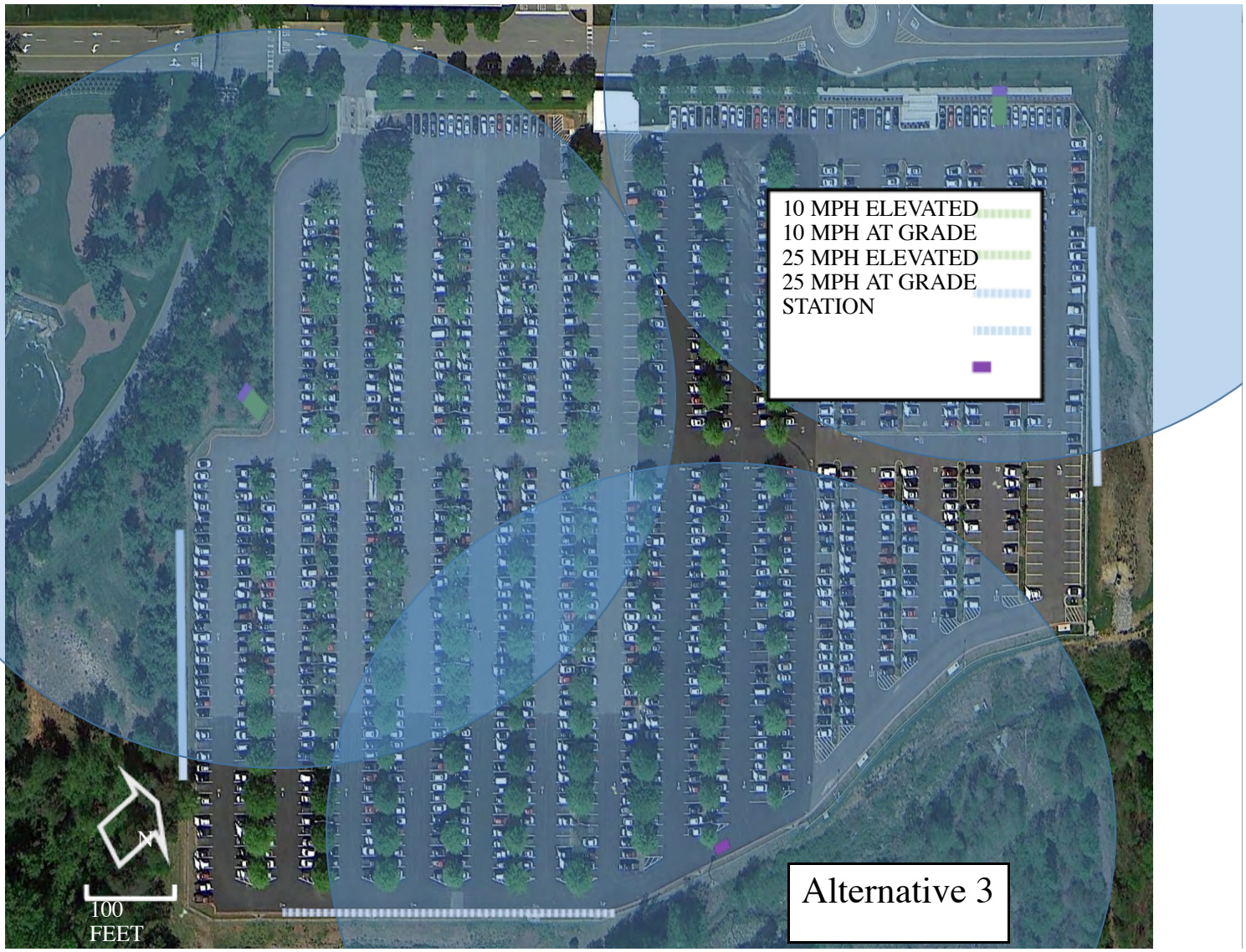
100 FEET
ALTERNATIVE 2



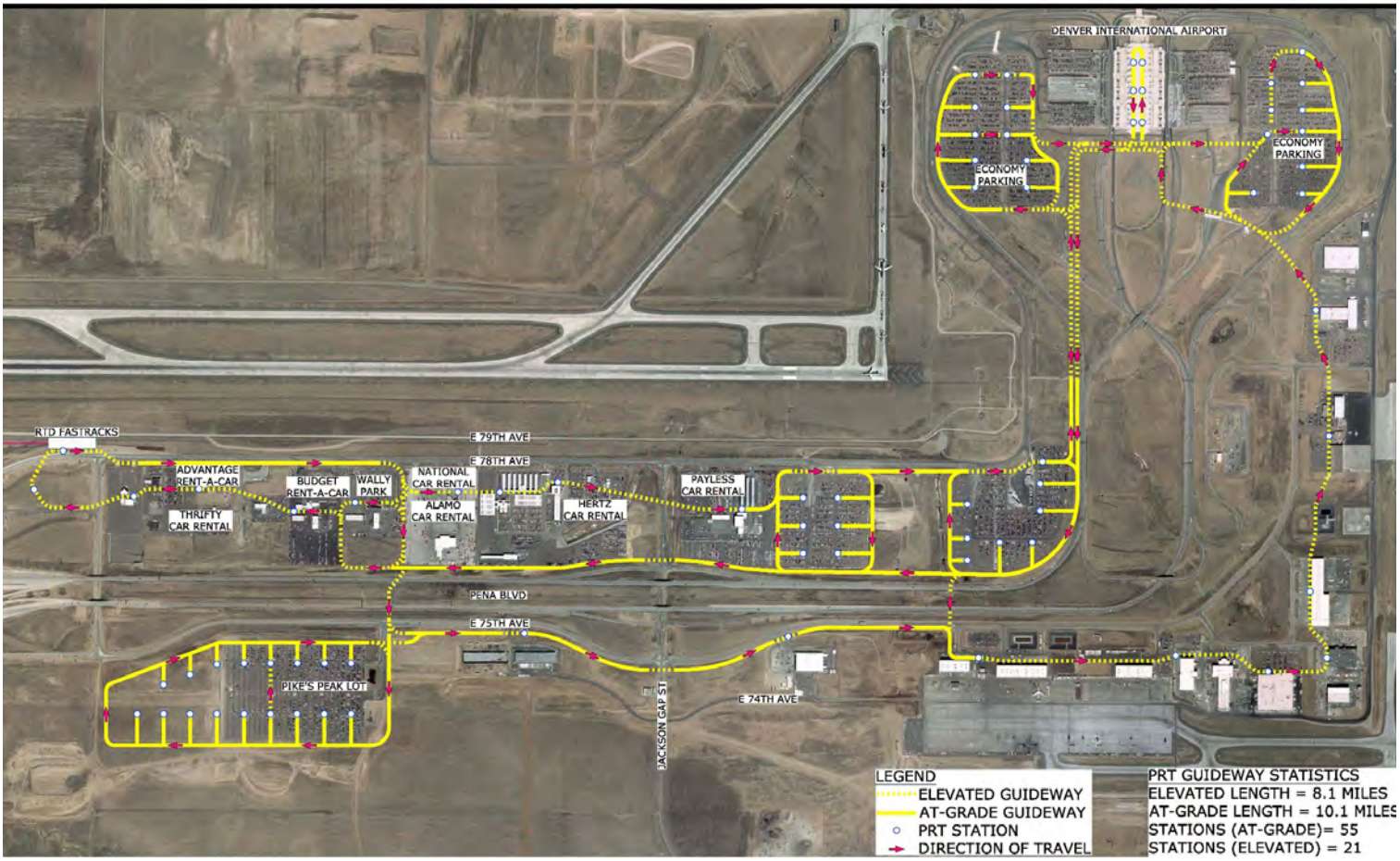
Credit: Ultra Heathrow

AT-GRADE STATION


10 MPH ELEVATED
10 MPH AT GRADE
25 MPH ELEVATED
25 MPH AT GRADE
STATION
N
100
FEET
Alternative 3

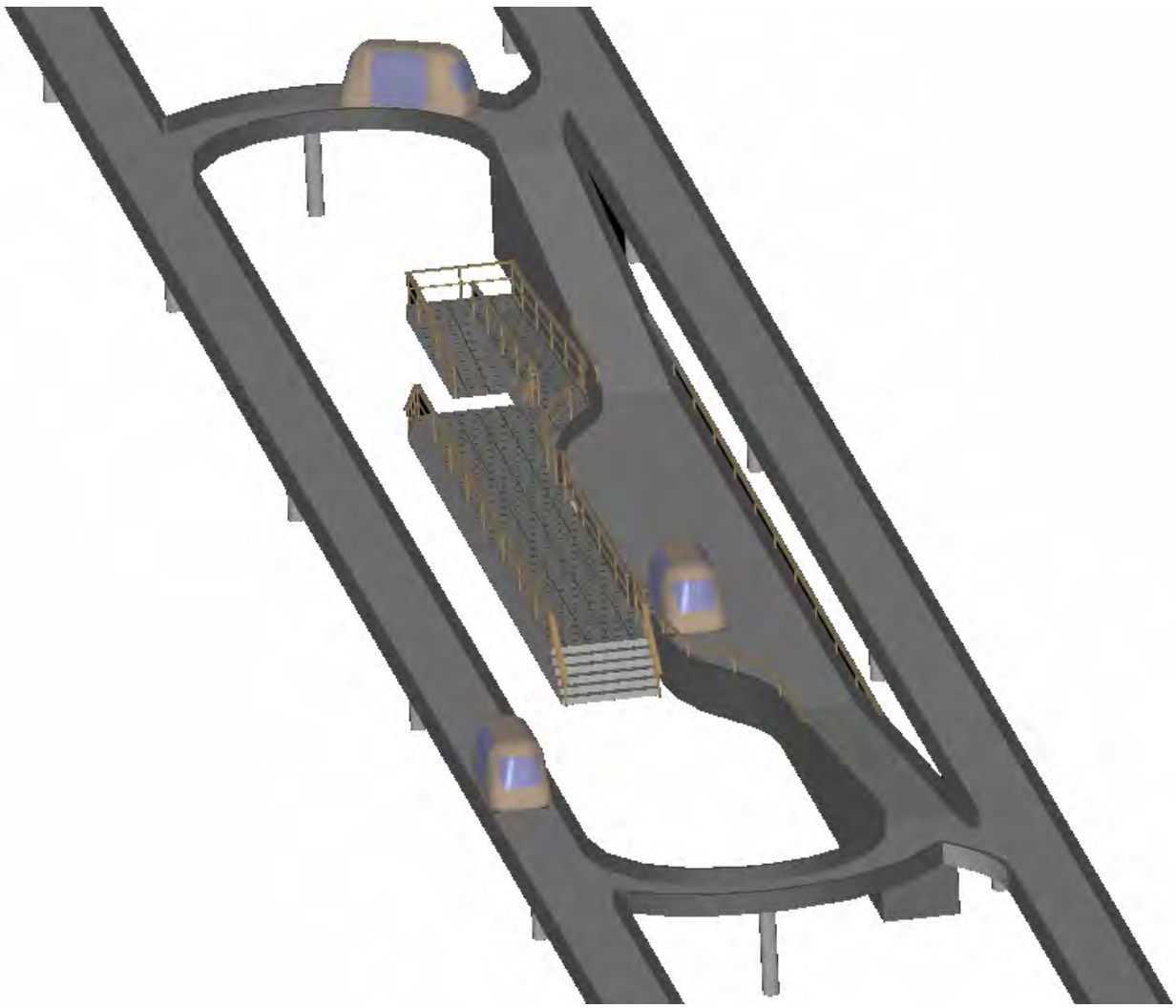
TERMINAL
GARAGE A
(1046)
DAIL
Y
(367)
GARAGE B
(1483)
ECONOMY 2
(1300)
ECONOMY
(1440)
ECONOMY 4
(1100)
ECONOMY 3
(1100)
LEGEND
EXISTING PARKING
PROPOSED PARKING
PROPOSED ROAD

Denver International Airport



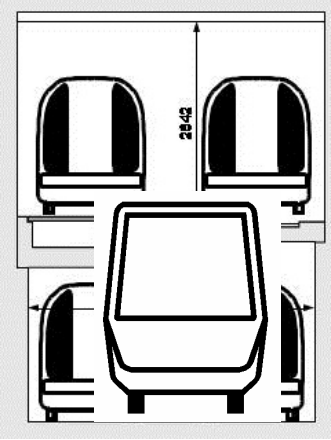
PRT - shuttle bus comparison

- Higher level of service
- Higher revenue
- Higher capital cost
- Same or lower operating cost

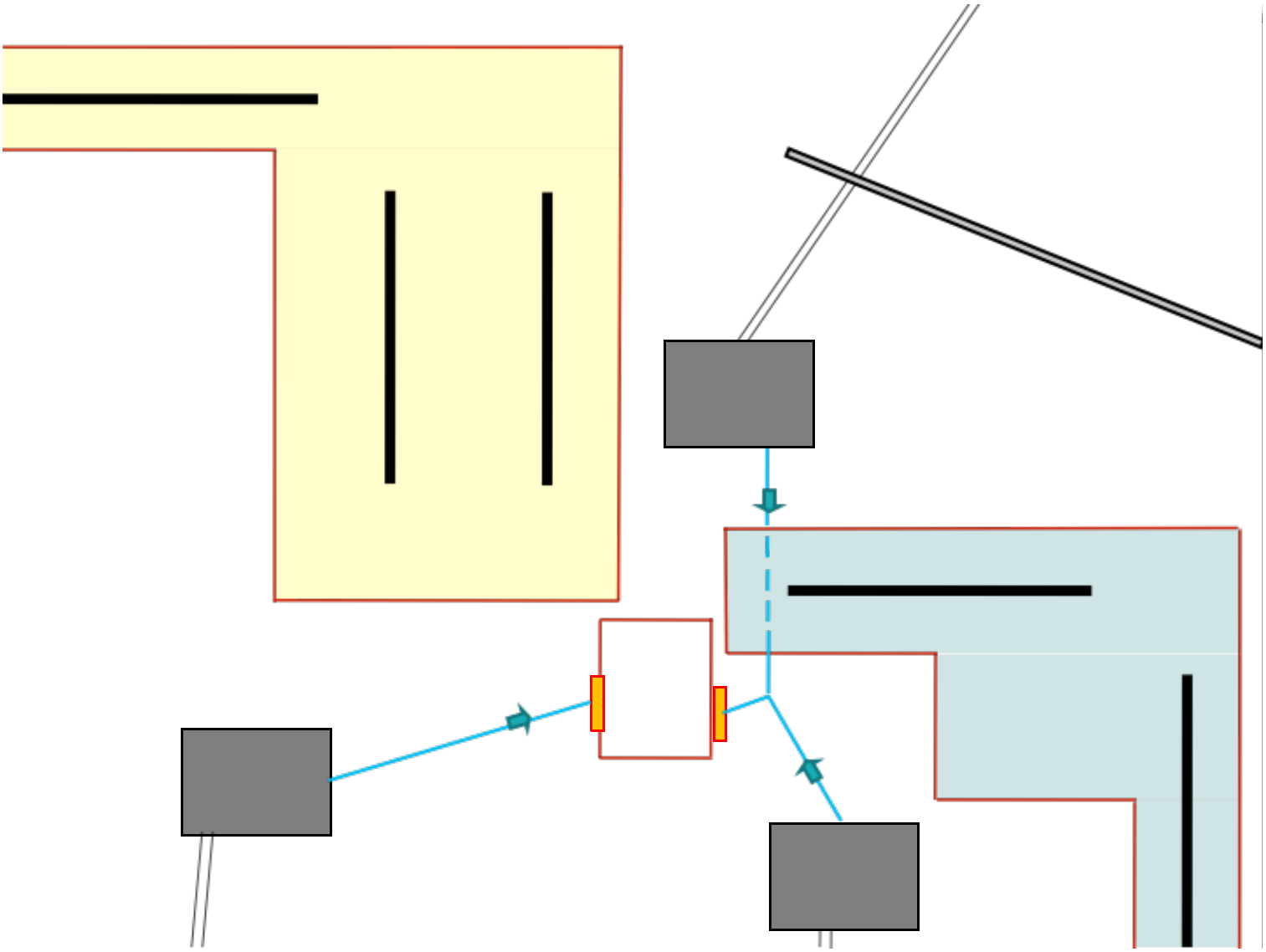


PRT - automated people mover comparison

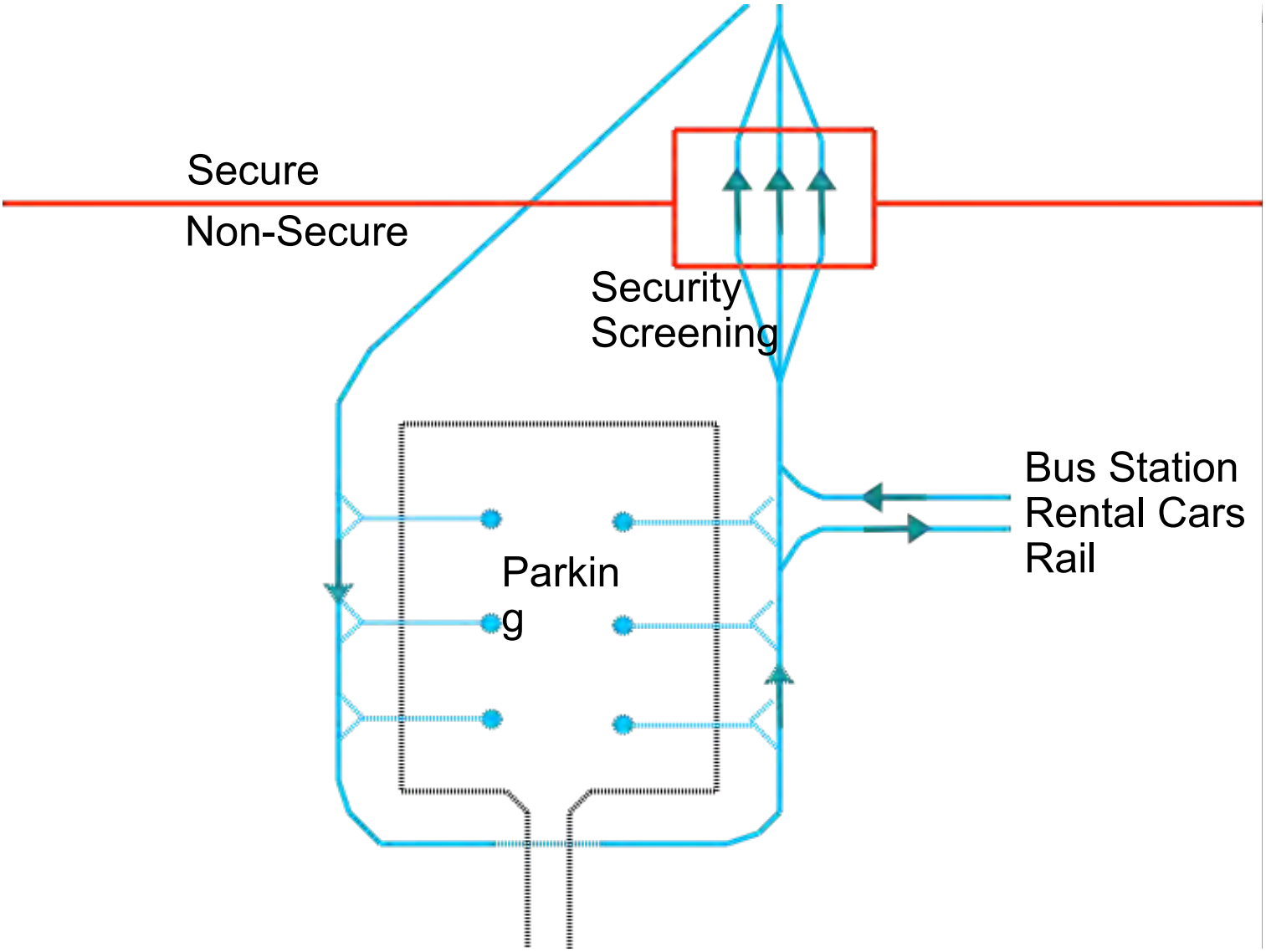
- Shorter trip time
- Guaranteed seat
- One seat ride terminal to gate vicinity
- One third to one half the capital cost and space
- Same or lower operating cost
- Same capacity (may require double guideway)



Reinventing airports



On-board check-in


Secure
Non-Secure
Security
Screening
Parkin
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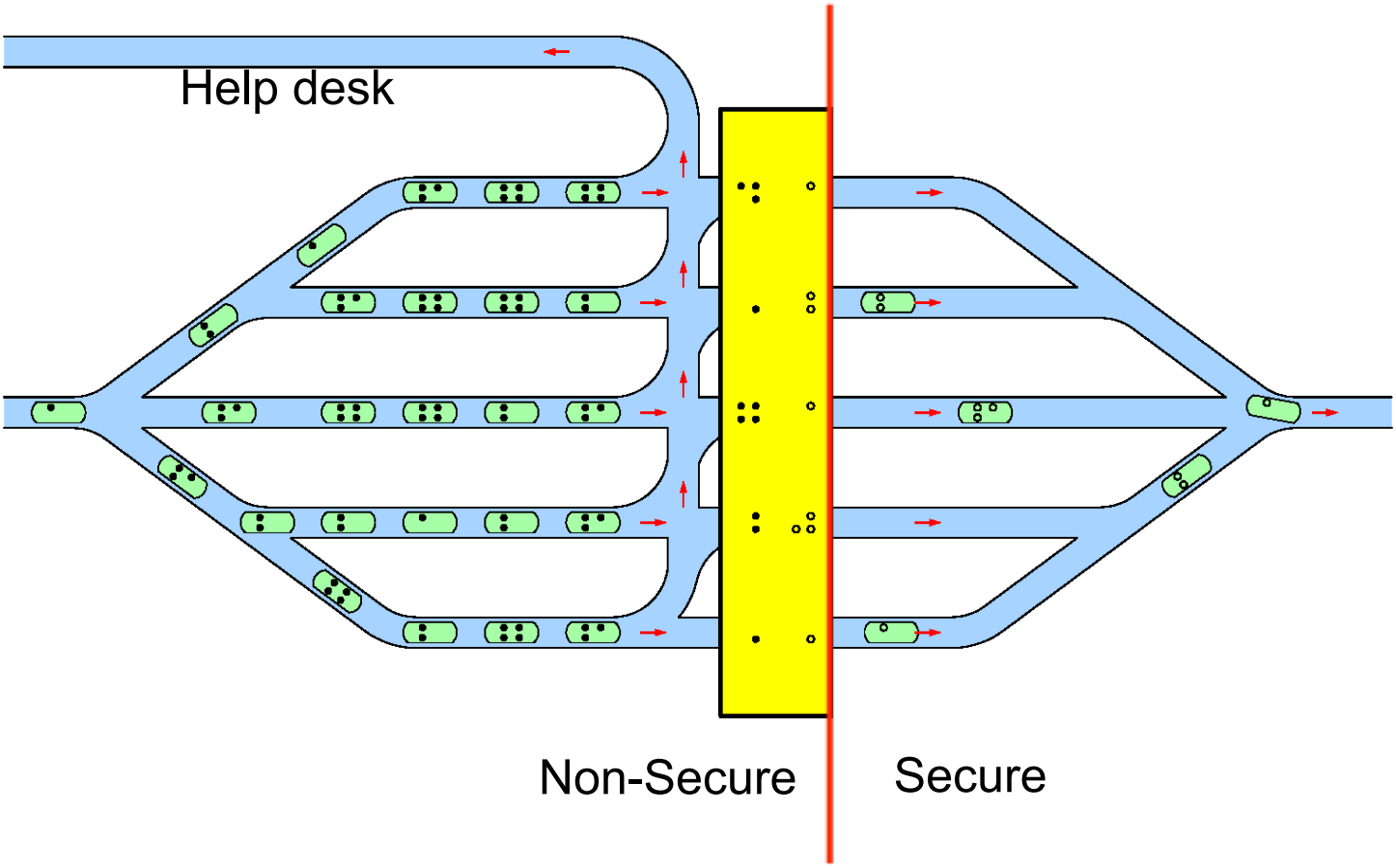
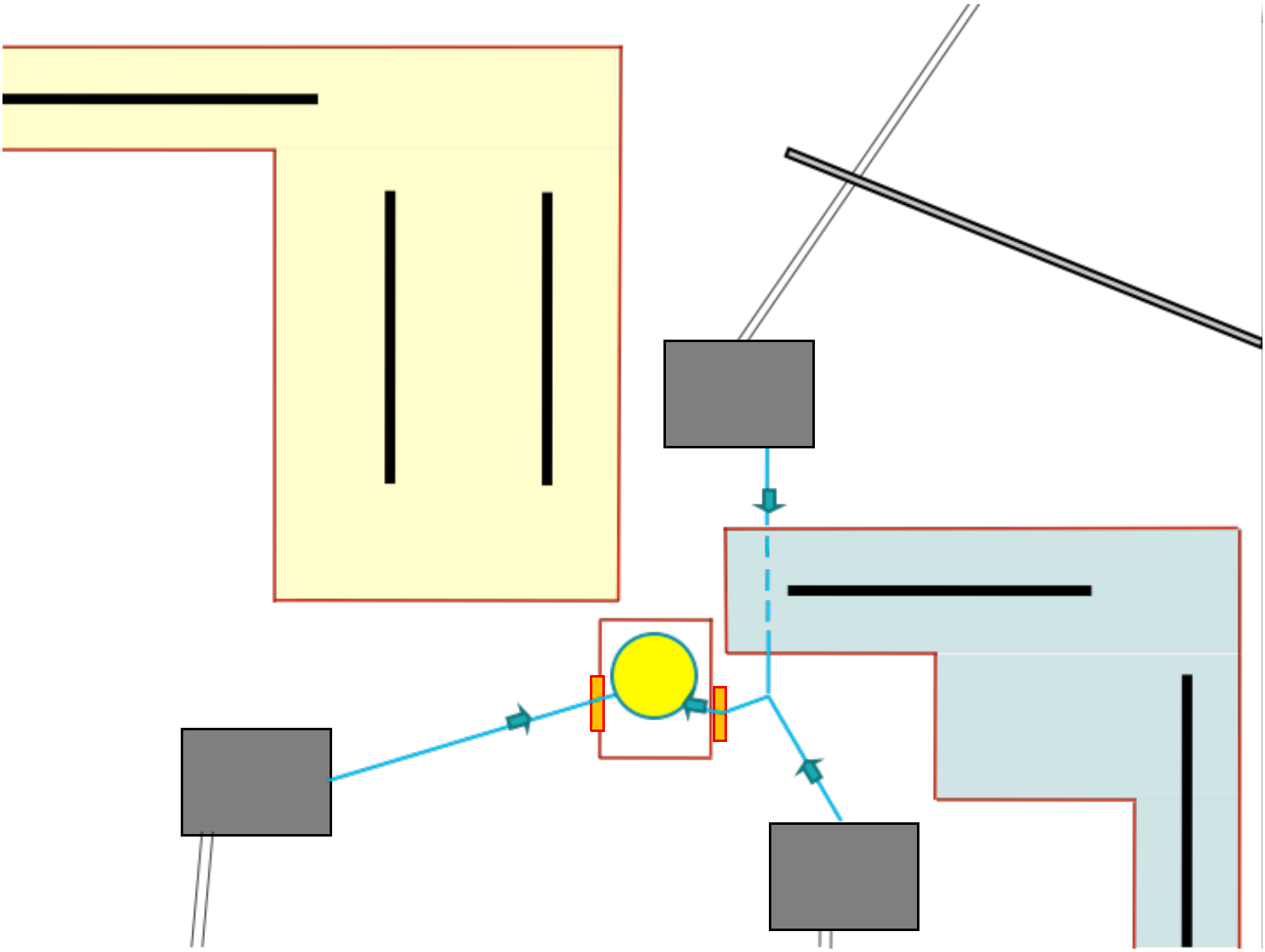
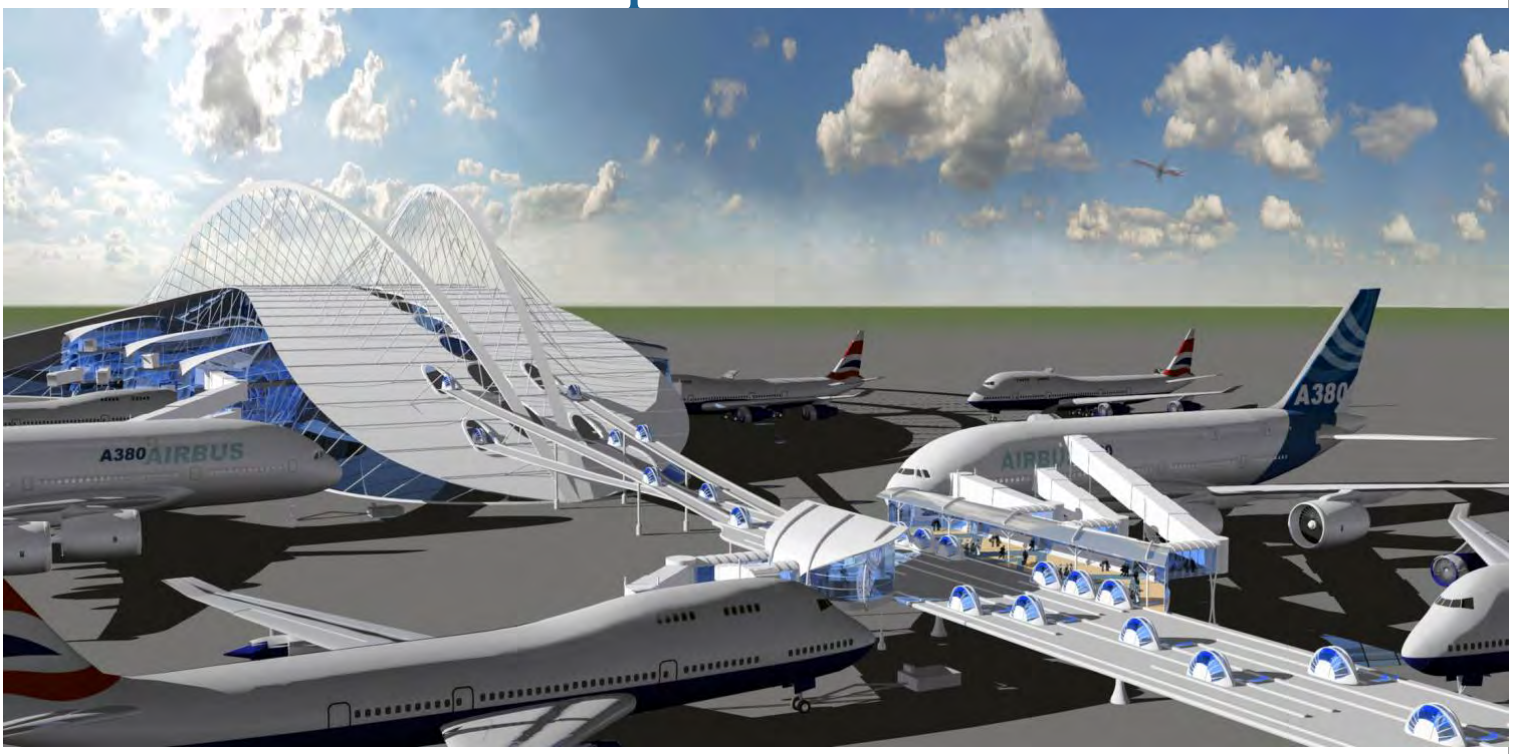
Bus Station
Rental Cars
Rail

Remote security screening





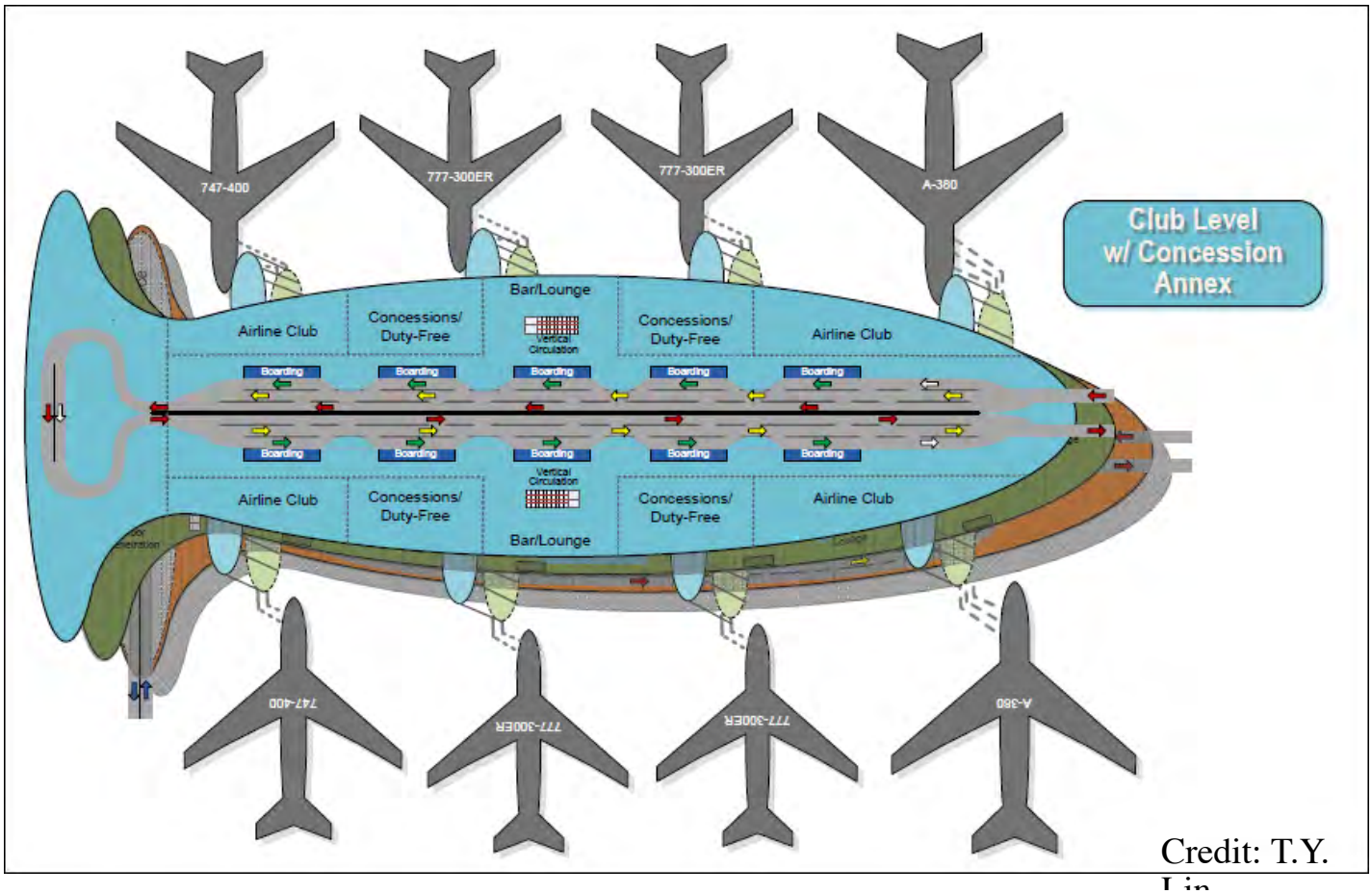
Automated airport terminal



- Three-level terminal with integrated PRT
- PRT Guideway with aircraft boarding stations

Credit: T.Y. Lin

3-Level Integrated Terminal



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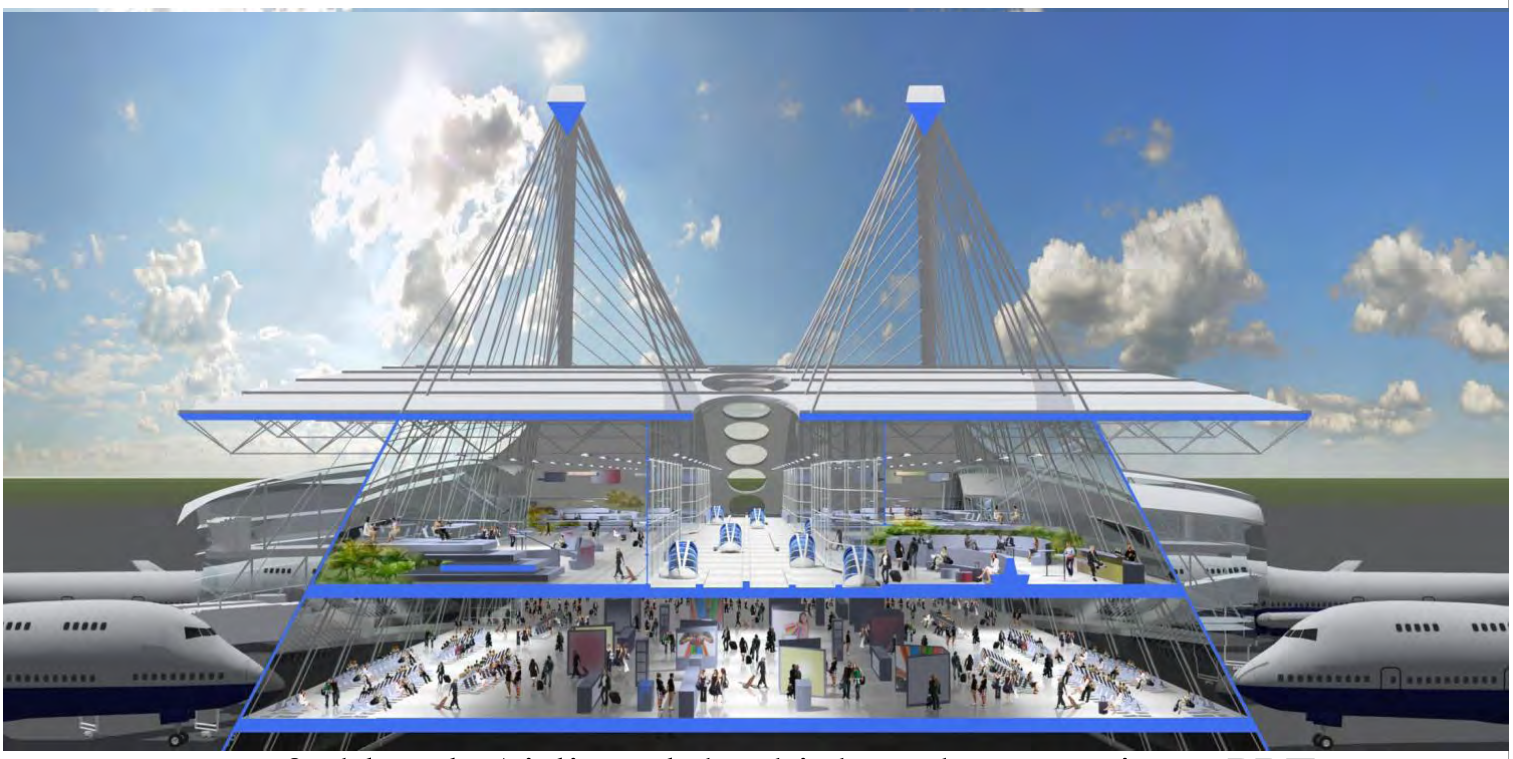
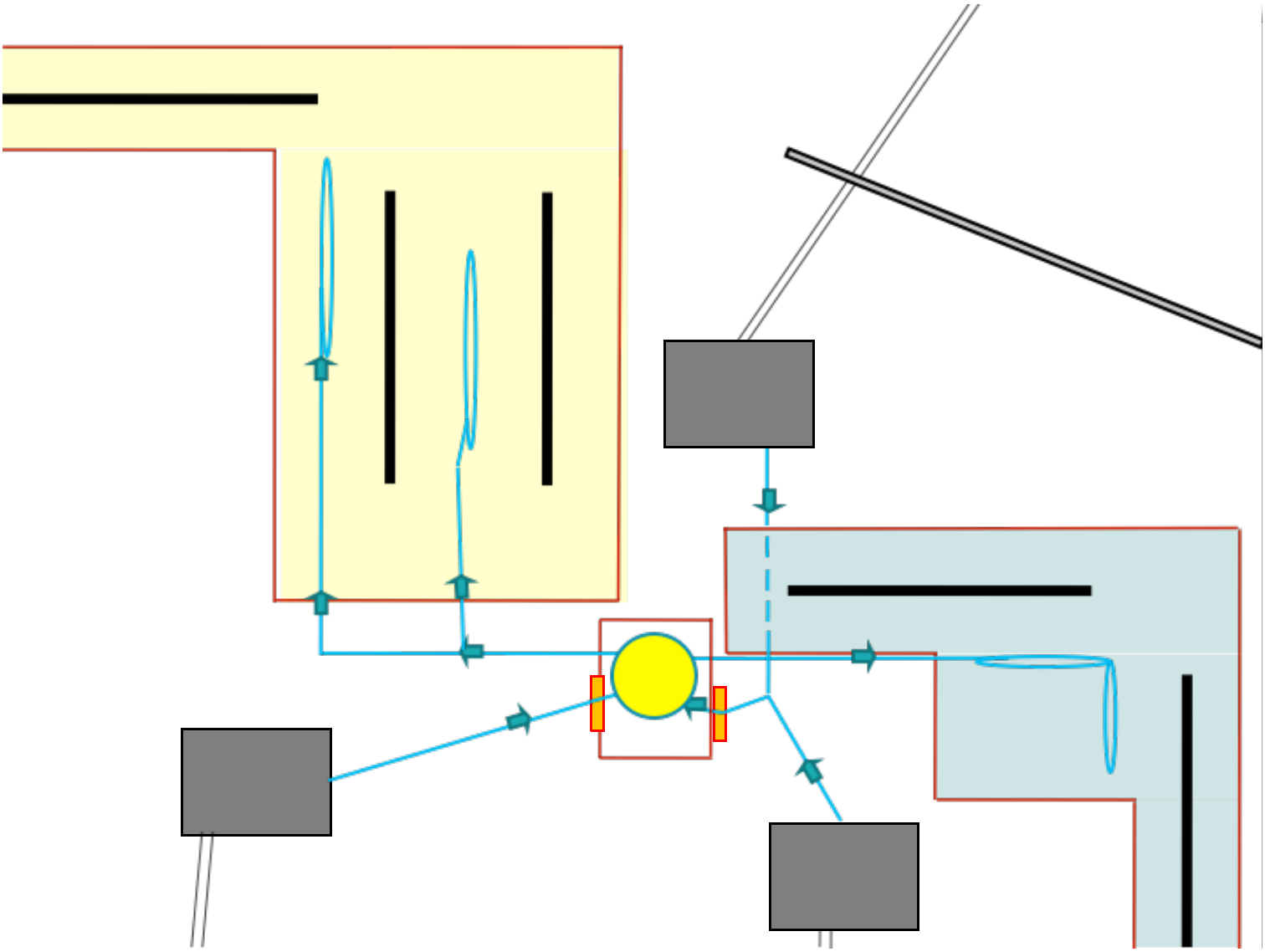
In-terminal PRT

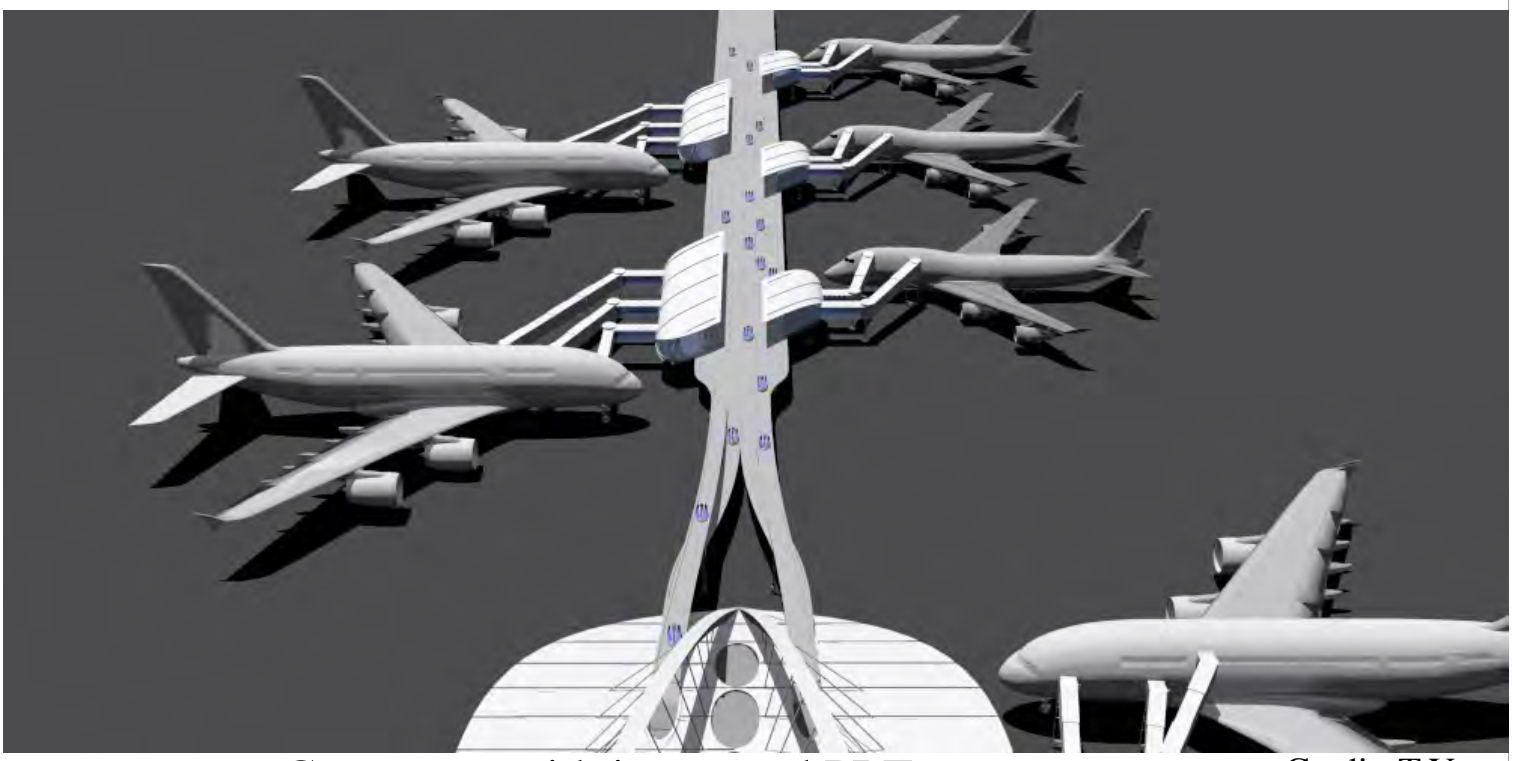


- 3rd level: Airline clubs, high-end concessions, PRT
- 2nd level: Boarding (contact gates), concessions
- 1st level: Boarding (PRT) – not shown

Credit: T.Y.



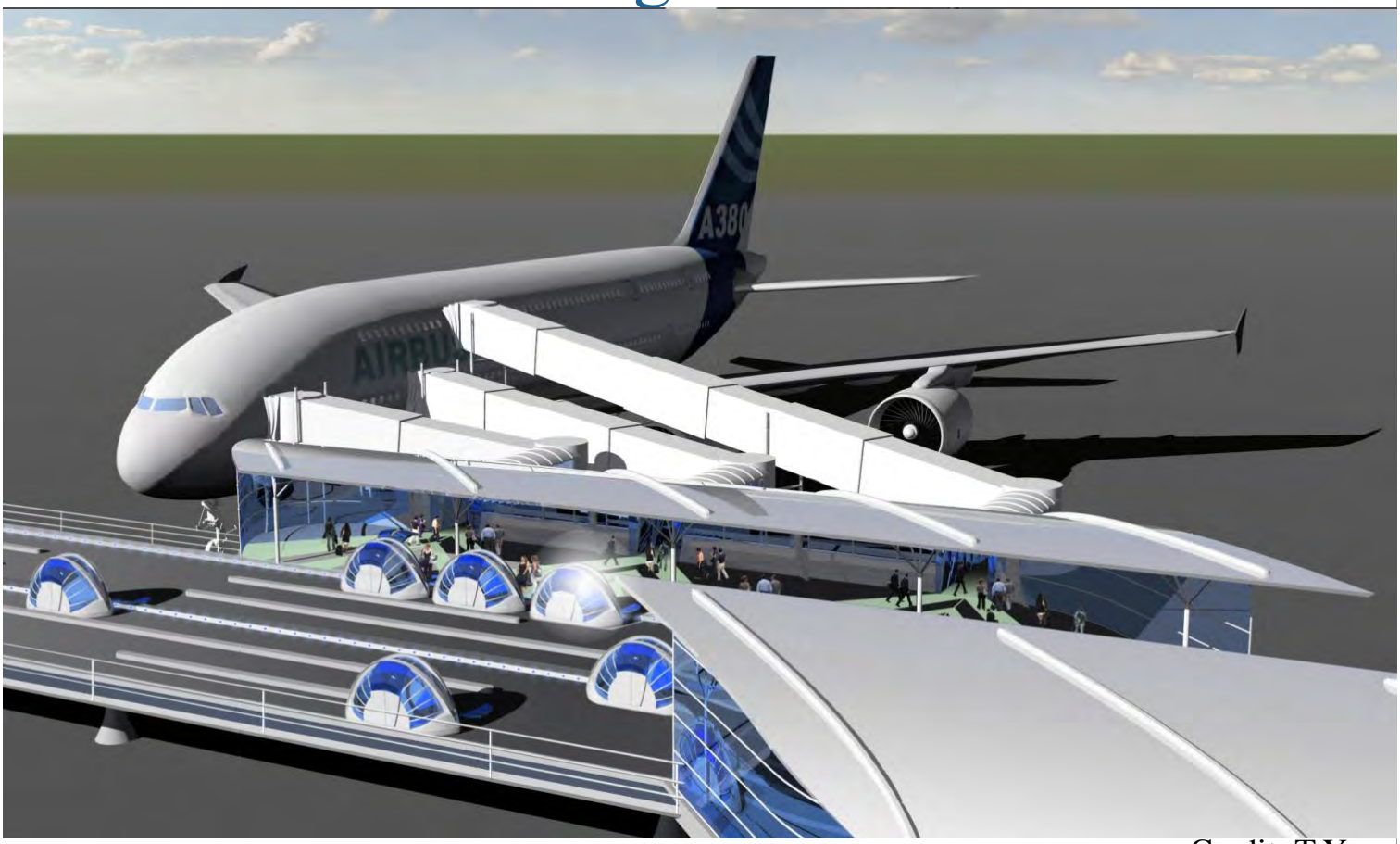
PRT station at each aircraft



- Concourse with integrated PRT
- Aircraft boarding stations

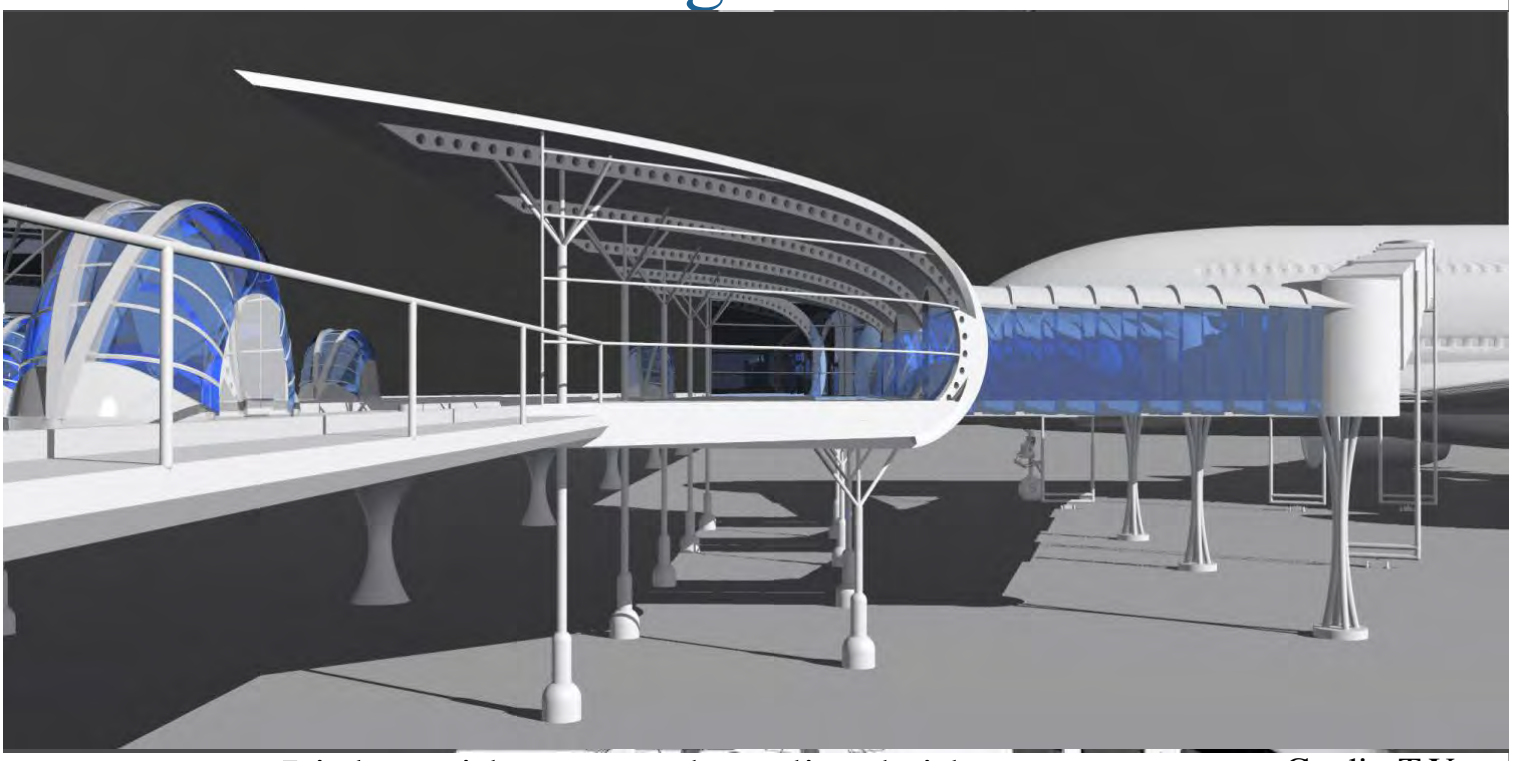
Credit: T.Y. Lin

Aircraft boarding station for A380



Credit: T.Y.

Aircraft boarding station

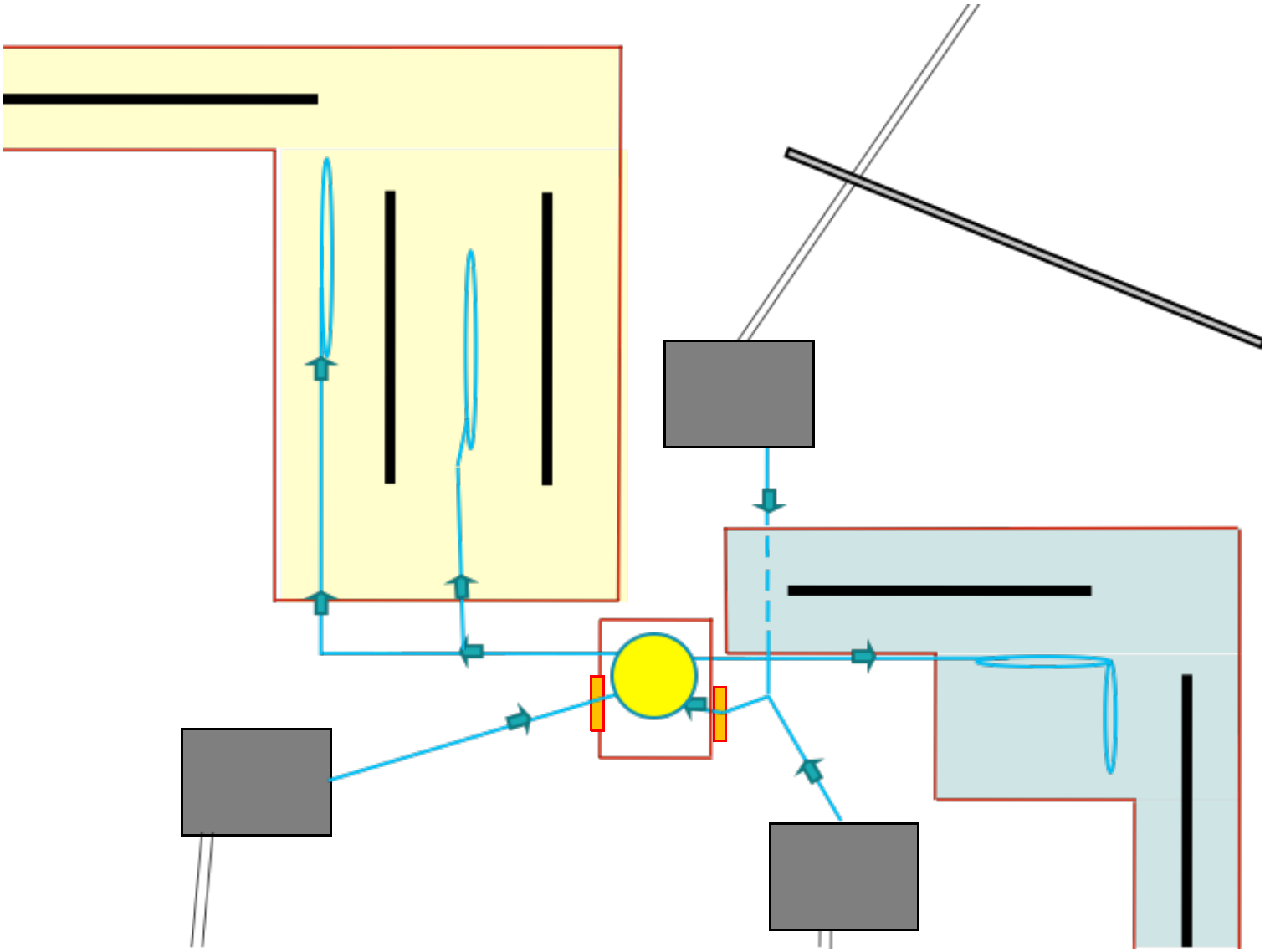


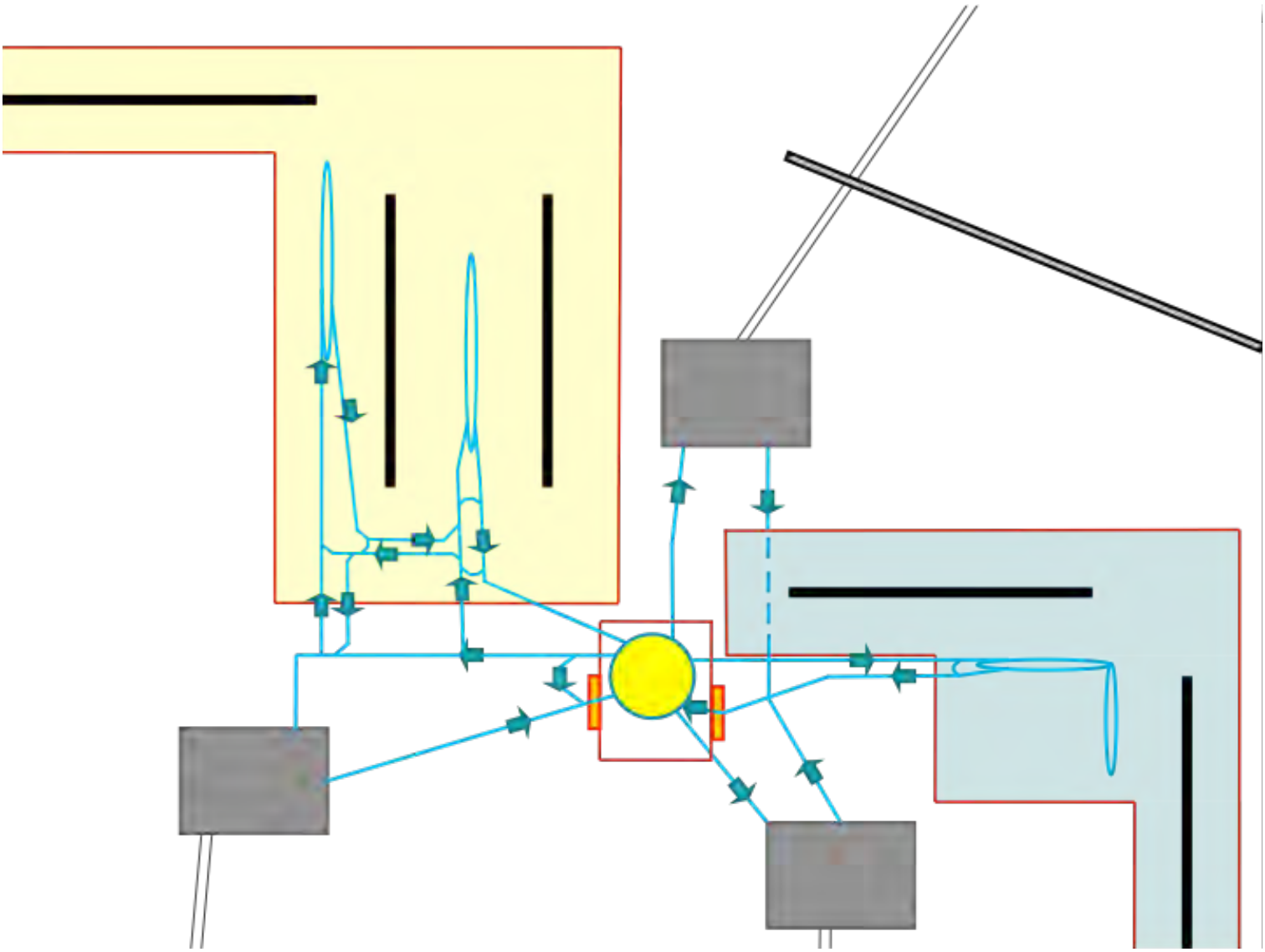
- Links guideways to boarding bridges
- Covered (enclosed as required)

Credit: T.Y. Lin

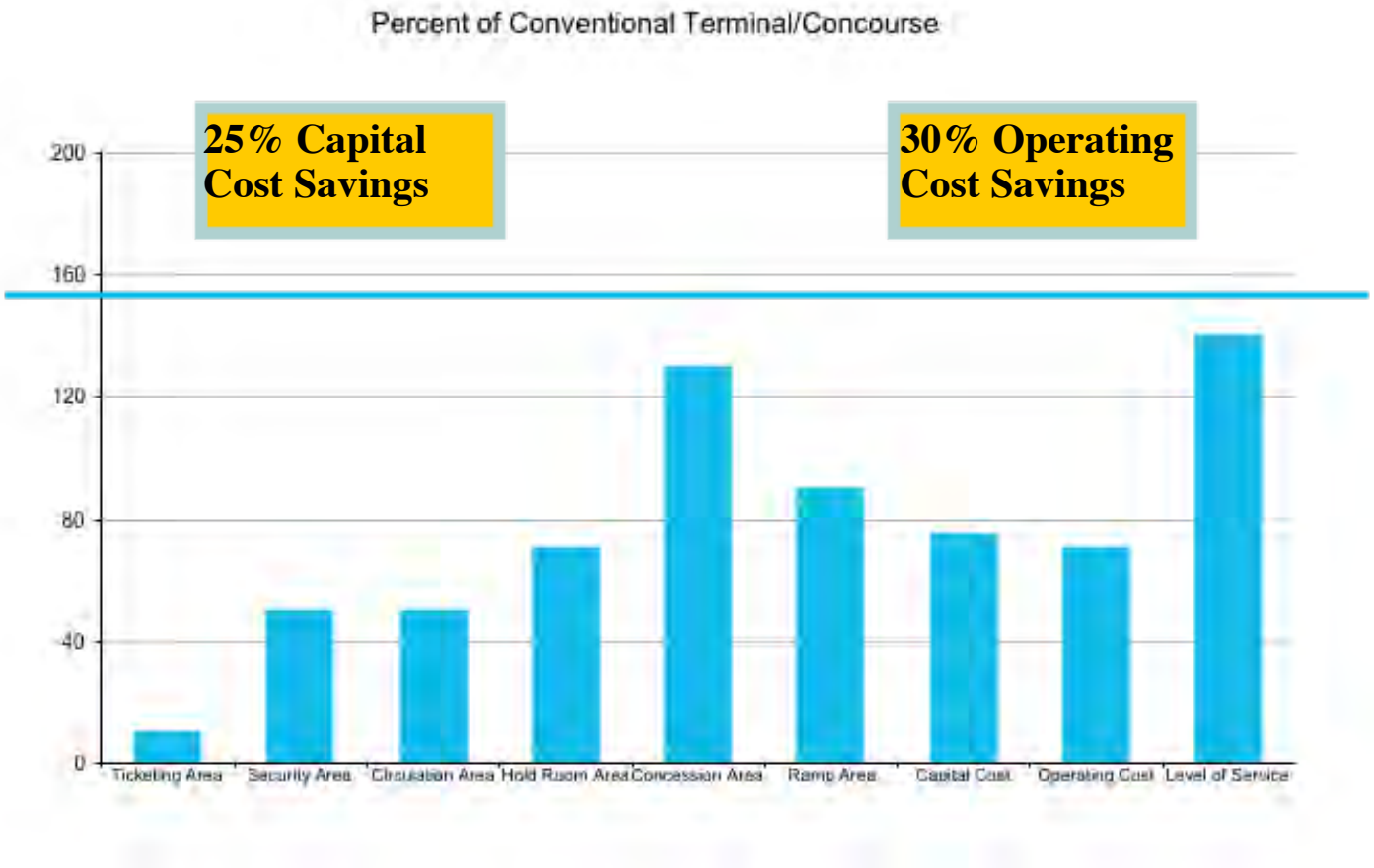
Aircraft boarding station

Credit: T.Y.





Optimization opportunities



Caveats

- Each airport application is different
- Detailed simulation and design is required

Conclusions

- Podcars are a good shuttle bus alternative
- Podcars could replace automated people movers in many instances
- Podcars could allow airport operations to be more efficient and cost effective