Airports of the Future
Taking the Terminal to the Traveler

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TYLINITERNATIONAL
Airport Perspective

Pre 9-11 Airport
- Customer Satisfaction was High
- Development Costs were Moderate
- Security was Generally Viewed as Non-intrusive
- Technologies were in Development

Post 9-11 Airport
- Airport Customer Satisfaction is Low
- Development Costs are High and Continue to Escalate
- Security Screening is Viewed as Highly Intrusive
- Technologies are Highly Developed
- Integration of Technologies is Readily Feasible
On-line Check-In and Print Boarding Passes

**Transit**
- Drive to Airport
- Park in Surface Lot or Garage
- Board Shuttle To Terminal

**Check-In**
- Walk to Ticket Counter
- Check-In Passengers and Bags
- Receive Boarding Passes

**Boarding**
- Walk to Security Checkpoint
- Walk to Gate and/or Concessions
- Board Aircraft
Future Passenger Movement

On-line Check-In and Download Boarding Passes

Transit
- Drive to Airport
- Park in Surface Lot or Garage
- Board Transit Pod To Terminal

Security Screening
- Scan Electronic Passes
- Tag/Drop Bags & Enter Security Tunnel
- Board Terminal Transit Pod

Boarding
- Exit at Sec. Bldg. or Concourse
- Enter Gate & Concession Lounge Area
- Board Transit Pod to Aircraft
Typical Development Hierarchy

- Security
- Functionality
- Revenue Production
- User-Friendly
Optimum Development Hierarchy

Security

(Revenue Generating)

Functional

User-Friendly
System Automation

SMART PHONES

SELF-SERVICE PARKING, SHOE SCANNERS, EDS, CUSS KIOSKS, BAG-DROP, WHOLE BODY IMAGING
The smartphone generation enables airport operators to take the terminal to the traveller.

If the implementation of new information and communication technologies is to be successful, airport design must be considered.

Self-Service

- Self Check-In
- Self Bag Tagging (RFID)
- Automated Screening
- Automated Bag Tracking
- Automated Passport Control
- Augmented Reality (Ancillary Revenue)
- Automated Boarding
Near-Term Future Airport 1

LANDSIDE FACILITIES
Conceptual Terminal Processor

SECURITY SCREENING

INTERMODAL TRANSFER & CHECK-IN BUILDING

Unsecure PRT PODs Loading Area
(Primary Security Check – Security Tunnel)

LANDSIDE PRT PODs
(Undergoing Security Validation)

Failed/Unsecure PODs
(Enter Secondary Screening)
Conceptual Security & Departures

Departures Platform

CHECK-IN & SCREENING ZONE
Near-Term Future Airport 1

Screened/Cleared Travelers

Cleared Travelers to Secondary Security
Conceptual Future Airport 2

- PRT-Enhanced Terminal Concourse
- Multi-Modal Transit Center
- Airport Support Facilities
- Hotel and Conference Center
- Office Building
- Processor Terminal
  - Ticketing
  - Bag-Drop
  - Security
- Off-Airport Check-in Facility
- Off-Airport Check-in Facility
- Off-Airport Check-in Facility
- Airside PRT/GRT
- Landside PRT/GRT
- Aircraft PRT
- Heavy/Light Rail Transit
- Airport Freeway/Access Road
Conventional Terminal
(with Single Linear Concourse)

- Figure 1: Standard Double-Stacked Flight Line (24 Aircraft Parking Positions/Gates)
- Figure 2: Conventional Linear Terminal with Connected Processor and Concessions
  (Terminal Concourse – Driven by Flight Line plus Boarding Areas and Transit Corridor)
Reconfigured Terminal Concourse (w/o Processor or Concessions)

Figure 2: Conventional Linear Terminal (2,974 ft / 906 m)
Figure 3: Consolidated Boarding Areas and Corridor (991 ft / 302 m)
Conceptual Future Airport
(with PRT Aircraft Stations)

- **Figure 3**: Consolidated Terminal Concourse - 8 Contact Gates (991 ft / 302 m)
- **Figure 4**: PRT-Enhanced Gates - 16 Gates Served by PRT Transit Vehicles (PODs)
Compressed Terminal Layout

- Conventional Connected Processor and Concourse
- Satellite Concourse (Creates Supplemental Space on Concourse)
Integrated Terminal Layout - Level 1
Integrated Terminal Layout - Level 2
Integrated Terminal Layout

- Three (3) Level Concourse w/ Integrated PRT Enhancement
- PRT Guideway w/ Aircraft Boarding Stations
Optimized Terminal Layout

- Concourse Level 3: Airline Clubs and High-end Concessions
- Concourse Level 2: General Boarding (Contact Gates) and Concession Core
- Concourse Level 1: General Boarding PRT Access (not shown)

Patent Pending

2011-02-22
Terminal w/PRT Guideway

- Concourse w/ Integrated PRT Enhancement
- PRT Guideway w/ Aircraft Boarding Stations

2011-02-22
Terminal w/PRT Guideway

- Concourse w/ Integrated PRT Enhancement
- Bi-directional PRT Guideway w/ Aircraft Boarding Stations

2011-02-22
Six (6) Lane PRT Guideway w/ Aircraft Boarding Stations
Multi-level Passenger Boarding Bridges
Elevated Aircraft Boarding Station

- Elevated PRT Guideway w/ Aircraft Boarding Station
- Covered Boarding Station (Enclosed as Required)
Aircraft Boarding Station

Patent Pending

2011-02-22
# Initial Capital Investment Cost

**Imperial Units**

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<tr>
<th>Sqft Cost</th>
<th>Term. Only</th>
<th>Term.</th>
<th>PRT</th>
<th>Total</th>
<th>Percent of Terminal Only Cost</th>
<th>Percent Cost Reduction</th>
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**Percent Cost Reduction**

1. Cost presented in US Dollars
2. Unit prices for PRT System maintained at the midpoint for cost comparison purposes, but would vary based on the material availability and cost.
Initial Capital Investment Cost

Metric Units

<table>
<thead>
<tr>
<th>Sq M Cost</th>
<th>Term. Only</th>
<th>PRT-Enhanced Term.</th>
<th>PRT</th>
<th>Total</th>
<th>Percent of Terminal Only Cost</th>
<th>Percent Cost Reduction</th>
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<td>60%</td>
<td>40%</td>
</tr>
</tbody>
</table>

1. Cost presented in US Dollars
2. Unit prices for PRT System maintained at the midpoint for cost comparison purposes, but would vary based on the material availability and cost.
Taking the Terminal to the Traveler

Percent of Conventional Terminal/Concourse

Non-Airline Revenue & Customer Service >++

Net Capital Cost Savings > 25%

Net Operations & Maintenance Cost Savings > 30%

Level of Service

2011-03-10
QUESTIONS
(Following Presentations)

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