

PRESENTATION

- 1. Visualizing Air Rail Equipment Design**
- 2. Rail as a Piece of the Airport Ground Access Puzzle**

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Los Angeles, California

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Agenda Outline

1. Visualizing Air Rail Equipment Designs (Cesar Vergara)
2. Rail as a Piece of the Airport Ground Access Puzzle

Jacobs Consultancy, formerly Leigh Fisher Associates (LFA) and Sypher, operates with main offices in the San Francisco Bay Area; the Washington, D.C. area; Ottawa, Canada; and London, UK. Jacobs Consultancy's consulting staff has assisted airport operators with finance issues for over 60 years. Our consultants understand federal aviation and airport policy and can help airport operators plan for changes as the reauthorization effort proceeds. The Airport Management Consulting practice of Jacobs Consultancy provides extensive practical experience in all of the disciplines necessary for the planning and management of airports, including financial analyses and planning, economics and forecasting, commercial and concession planning, airport management and operation, facilities planning and design, ground transportation planning, noise and other environmental analyses, and simulation and operational analysis.

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1. Visualizing Air Rail Equipment Designs

■ Goals of visualization

- Customer ‘sneak preview’ of their purchase
- Stakeholders can influence design before it is built
- ADA compliance can be used as the avenue to create a more spacious and easy to use interior
- Security can be enhanced by providing greater visibility of packages and baggage. This can be done by using more transparent areas and by the use of mirrors. All of these can be part of the aesthetic design and work as passive safety elements.
- By designing the equipment first, one can build support from all stakeholders. The design is only 1% of the cost but it is 100% of the appearance and impression.
- Allows confirmation of design detail

Design should reflect geographical and practical needs of passengers

Example: Commuter Cars for New Haven CT Line

Metro North M8—the exterior is a statement of reliability and style



Front-end view

Cesar Vergara
National Principal Design, Jacobs Engineering

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Example: Commuter Cars for New Haven CT Line

Metro North M8—interior features

- **Key features of this design**
 - Openness, curved ceiling panels, spacious bag racks
 - Comfort, ADA compliant lavatory, ample vestibules
 - Interior colors will match red exterior color
- **Industrial Designed by C. Vergara (Jacobs)**
- **Cars will serve Metro North's New Haven Line to New Haven, CT**
- **Delivery starts in 2009**
- **340 cars (\$1B)**
- **Engineered and built by Kawasaki**



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Example: Commuter Cars for New Haven CT Line

Metro North M8—interior features

- **Visualization process**
 - Original concepts done in Alias Sketchbook
 - Concepts are first drawn free-hand on tablet computers
 - Concepts are then translated to CAD elevations and plans
 - Wire frames are prepared and a photo realistic image is produced
- **LTK is engineering consultant and responsible for the specifications**
- **Bar cars may be ordered later in the program**



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2. Rail as a Piece of the Airport Ground Access Puzzle

- Our approach
- Key questions
- Ground access planning considerations
- Case study



Jacobs Consultancy Approach to Airport Ground Access

- **Our client is the airport owner / operator**
- **Identify client goals and objectives**
 - Fix existing and / or anticipated deficiencies
 - Improve customer service
 - Safe, efficient operations
 - Financial
 - Political
 - Implementable solutions



Jacobs Consultancy Approach to Airport Ground Access

- **Airport ground access is a system serving multiple modes**
 - Private vehicles using curbsides
 - Private vehicles using parking (for trip duration or pickup/drop-off)
 - Rental cars
 - Taxicabs
 - Limousines
 - Door-to-door vans
 - Courtesy vehicles (hotels, parking, rental cars)
 - Airport parking shuttles
 - Scheduled buses
 - Public transit (bus, rail)
 - Service and delivery vehicles



Jacobs Consultancy Approach to Airport Ground Access

- ...and multiple patrons with diverse needs and on-airport destinations
 - Airport passengers
 - Meeters/greeters and well-wishers
 - Airport and tenant employees
 - Cargo carriers
 - General aviation users
 - Non-aviation users (i.e., on-airport industrial parks)



Key Questions

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 - Indicative of a World-Class airport?



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 - Trains are cool?



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....and.....

- **Is rail the best mode to meet the identified need?**

- or -

- **Can other modes, or combinations of modes meet the stated purpose(s) of the airport-rail link?**

Ground Access Planning Considerations

- **Who are the likely patrons?**
 - Passengers
 - Visitors / Residents
 - Business / Leisure
 - Employees

- **What are the patron demographics?**
 - Passenger age
 - Proportion of frequent-travelers
 - International passengers
 - Low-cost carrier presence
 - Trip duration
 - Number of bags per person / party
 - Typical party size
 - Price sensitivity versus travel time sensitivity

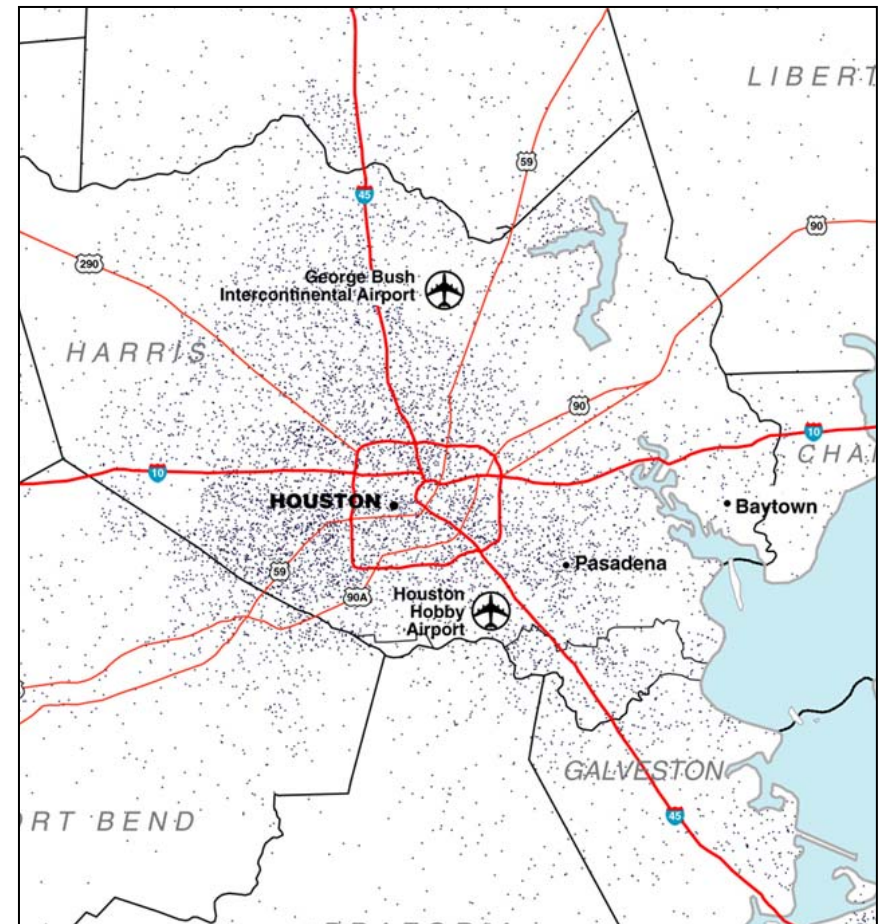
Ground Access Planning Considerations

- **Where are the patrons beginning their trip to (and ending their trip from) the airport?**
- **Where is the on-airport pickup/drop-off location(s) for a service?**
 - Are there multiple terminals?
 - Where are the employment centers (i.e., terminal, maintenance base, cargo sort facility)?
 - Can there be one location with an APM (or other technology) connection to various on-airport destinations?
- **What regulations (i.e., State, City, PUC) must be followed?**
- **Will the service generate revenue for the airport or require a subsidy?**

Case Study

Houston, TX

- **Non-attainment area for NOx**
- **Multiple airports**
 - IAH (international / domestic hub, 5 unit terminal buildings)
 - HOU (predominately O&D passengers, significant low-cost carrier presence)
- **Large airport catchment area**
- **Dispersed population and destinations (> 10 employment centers)**
- **Limited passenger rail coverage**



Case Study

Houston, TX (cont'd)

- **To reduce NOx, there must be**
 - Fewer vehicle miles traveled
 - Alternative fueled vehicles
- **Possible solutions**
 - Extend Metro light-rail system to one or both airports
 - Modify express bus service (i.e., baggage check, routes to exploit HOV lanes)
 - Door-to-door van service



Case Study

Houston, TX (cont'd)

Comparison of modes

	Extend light-rail	Express bus	Door-to-door vans
Travel time	Multiple stops	Limited stops (one to three)	Limited stops (one to three)
Baggage check	Could accommodate remote bag check	Could accommodate remote bag check	Could NOT accommodate remote bag check
Luggage accommodation	May require specialized cars	Can easily carry luggage	Can easily carry luggage
Minimizes transfers	May require transfers within region and on-airport	May require transfers within region	No transfers required
Potential for alt. fueling	Electric	Clean diesel	CNG, LNG
Ridership potential	Serves patrons near route	Serves patrons near route	Serves large, dispersed population
Financing	Would require subsidy	Pays fees to airport	Pays fees to airport

Case Study

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What level-of-service could door-to-door vans or express buses provide if they were subsidized?

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