Public/Private Roles in Rail Systems

- Japan (late 1980s)
- Argentina (mid 1990s)
- British Rail (late 1990s)
- US Intercity Passenger
- Other US urban rail systems
Japan

- JNR was privatized in 5 geographical units with vertical integration - internal restructuring approach
- Surplus labor was not transferred
- Government takes the lead in new high-speed rail infrastructure
- JR (East, Central, etc.) have to operate at a profit
- Government controls fare levels
- Viewed as a successful model
Argentina

- National, regional rail and subway system serving Buenos Aires with
  - massive fare evasion
  - excess labor and many "no show" employees
  - inadequate maintenance
  - no investment
  - strong labor unions
- Restructured as 7 separate bid packages with vertical integration
- Public sector owns facilities and sets fares, schedules, investment requirements
- Contractor keeps fare revenue
- Ten-year concessions agreements
- Subsidy to be continued with awards based on minimum subsidy bid
Argentina (cont'd)

- Required at least 2 operators so competition threat remained
- World Bank funded buyout of excess labor
- Broad outreach to solicit interested bidders
- Lengthy bidding and transition process harmed the system

Immediate (1-year) results:
- Improved quality, fare collection and ridership up by 30%

Longer-term (5-year) results:
- At least one of four concessionaires performing poorly
- Non-cooperation on unified fare system
- Lobbying to change contract terms and duration
- Quantity and Quality of public monitoring function eroded
- Government late on payments
British Rail

• British Rail restructured into ~100 separate companies (vertical segmentation) including:
  • Train Operating Companies (TOCs)
  • Rolling Stock Leasing Companies
  • Infrastructure company

• Oversight from the Office of the Rail Regulator

• TOC concessions awarded for seven-year terms with subsidy built in

• Infrastructure company, originally Railtrack, was a shareholder-owned company with assets transferred from the government and income from TOC access charges

• Railtrack did an inadequate job on maintenance and ended up going out of business

• Replaced by Network Rail as a public entity
London Underground PPP

• Operation of Underground remains responsibility of LUL - a public sector entity

• Infrastructure companies awarded long-term concessions to finance, improve, and maintain the rolling stock and infrastructure
Tren Urbano

- New heavy rail/metro system for San Juan metropolitan area
- Design-Build-Operate-Maintain approach taken
- Public sector controls schedules and fares and retains fare revenue, but with operator revenue incentive
- Aggressive outreach for consortia to bid on RFP
PUERTO RICO: Some Relevant Data

• Population: 3.6 million U.S. Citizens.

• 37% of the population (1.3 million people) lives in the San Juan Metropolitan Area.

• Population density:
  – Island 1,028/square mile
  – San Juan Metropolitan Area 3,410/square mile
  – City of San Juan 8,500/square mile
    (In some sections of the City you find densities comparable to those of N.Y. City.)

• Population in the San Juan Metropolitan Area is expected to increase by 20% for the year 2010, for a total that year of 1.55 million people.
PUERTO RICO: Some Relevant Data (continued)

- 146 vehicles per mile of paved road:
  - The highest such ratio in the world.
  - Three times more than in the continental U.S.

- In SJMA urban core:
  - 4,286 cars per square mile.

- 1.3 million residents of SJMA generate more than 3.2 million trips per day.

- Person trips per day are expected to increase 45% by the year 2010, for a total that year of 4.6 million trips per day.

- Daily trips per person are expected to increase from 2.46 in 1990 to 3.0 in 2010, a rate that is substantially lower than for most major U.S. cities, and which indicates a suppressed travel demand.
Traffic Congestion

• High population density.

• Concentrated patterns of development:
  – 1/3 of the population of the SJMA lives in San Juan.
  – 1/3 of the population of the SJMA lives in Bayamón and Carolina.
  – 63% of the jobs of the SJMA are located in San Juan.
  – 26% of the jobs of the SJMA are located in Bayamón, Carolina, and Guaynabo.

• Limited system of main roads: only approximately 1/4 of the roads in the SJMA have 4 lanes or more.

• Decrease in the use of public transportation: from 37% in 1964, to less than 10% in 1990.
Tren Urbano

- Fixed guideway rail transit will operate independently of vehicular traffic and serve as the backbone of a multimodal transportation system for the San Juan Metropolitan Area.
- 10.5-mile (17-kilometer) inverted L-shaped alignment serving Bayamón, Guaynabo, the Medical Center, Río Piedras/UPR, Hato Rey, and Santurce.
- 16 stations and a storage and maintenance yard.
- Travel time of approximately 30 minutes between Bayamón and Santurce.
- Approximately 50% of the alignment makes use of existing ROW.
- 60% of the alignment will be elevated; 40% will be at-grade.
- Expected ridership: minimum of 115,000 passengers per day.
- Estimated cost: $1.675 billion.
Environmental Permit Schedule

- DEIS, Comments Period: March 21-May 27, 1995
- DEIS, Public Hearing: April 27, 1995
- FEIS, Comments Period: November 6-December 28, 1995
- FEIS Approval by P.R. EQB: January 22, 1996
- ROD (Record of Decision): February 7, 1996
- Full Funding Grant Agreement (FFGA): February 13, 1996
- P.R. Planning Board Approval: May 1, 1996
Tren Urbano Master Plan

- Phase I
- Phase Ia- Minillas
- Phase II- Carolina
- Phase III- Airport
- Phase IV- San Juan
- Phase V- Caguas

Maintenance and Storage Facilities

Figure by MIT OCW.
Total Cost = $1.67 Billion
Total Length = 17.2 Km
Phase I = 16 Stations
Elevated = 52%
At or near grade = 40%
Underground = 8%
Figure by MIT OCW.
## Tren Urbano Phase I - Summary

<table>
<thead>
<tr>
<th>Segment</th>
<th>Length</th>
<th>Stations</th>
<th>Investment ($ MM)</th>
<th>Finish</th>
<th>Consortium</th>
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<td>1 Bayamón</td>
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<td>Grupo Metro San Juan</td>
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<td>Redondo-Entrecanales</td>
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<td>Redondo-Entrecanales</td>
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<tr>
<td>5 Villa Nevárez</td>
<td>1.9 KM</td>
<td>9 Cupey</td>
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<tr>
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<td>12 Piñero 13 Domenech 14 Roosevelt 15 Hato Rey 16 Sagrado Corazón</td>
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<td>10/2001</td>
<td>Necso-Redondo</td>
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Tren Urbano: Short-term Results

- Successful in getting construction underway quickly compared with traditional approach
- Operator's perspective influenced the design
- Many interfaces created major problems
- Inadequate public sector oversight of construction process
- Major contractor problems resulted in significant delays and cost overruns
Other US Urban Rail Systems

- BART
- WMATA
- Los Angeles
- San Diego
- Portland
- Denver
- Salt Lake City