PUBLIC TRANSPORT ORGANIZATIONAL MODELS:

ROLES FOR THE PUBLIC and PRIVATE SECTORS

Outline

- Organizational Models
- UK Bus Industry Experience
- US Transit Industry
- Prospects for the future
- Public/Private Roles in Rail Systems

Transit vs Other Modes

Key differences between urban public transport and examples of fairly recent US deregulation:

- **US transit has been operated by public sector for past 30-40 years**
- **US transit has been operated at a deficit for past 30-40 years**

US vs Europe

- US has been the leader in deregulation outside transit
- UK, and now Europe, the leader in restructuring transit organizations

Organizational Models

- Unregulated/Deregulated
- Regulated Competition
- Threatened Competition
- Private Monopoly
- Public Monopoly
- Contracting Out

Six Organizational Models

		MODELS					
		Unregulated	Regulated Competition	Threatened Competition	Private Monopoly	Public Monopoly	Contracting Out
FUNCTIONS	Regulation	Minimum	Yes	Yes*	Yes	Yes	Yes*
	Financing	PR	PR	PR	PR	PU	PR
	Planning	PR	PU & PR	PU & PR	PR & PU	PU	PU
	Ownership	PR	PR	PR	PR	PU	PR (or PU)
	Operation	PR	PR	PR	PR	PU	PR
	Maintenance	PR	PR	PR	PR	PU	PR

* The model is regulated in the form of contracts

PU: Public Sector; PR: Private Sector

.

UK Experience with Bus Industry Restructuring

- Background
- Bus Deregulation outside London
- London strategy
- Results to date

Background

- **Prior to mid-1980s, UK local bus industry broadly comparable to US transit industry:**
  - **public ownership at local level**
  - **heavily subsidized**
  - **slowly declining ridership**
  - **little innovation in technology, service, or management**
  - **little responsiveness to public needs or concerns**
- **Buses played a larger role than in US because of lower car ownership levels and higher car operating costs**

Bus Deregulation Outside London (1986)

Basic premises behind bus deregulation:

- deregulation would produce a competitive market
- competition would substantially reduce costs
- a competitive market would improve resource allocation
- there would be no significant negative side effects

Basic Elements of UK Bus Deregulation

- **Bus markets were divided between commercial and non-commercial, with the following definitions and rules for each:**

<u>Commercial</u>

- **Defined as any service that an operator is prepared to offer with the only government support being**
  - **concessionary fares reimbursement**
  - **fuel tax rebate**
- **Services are registered including the route and timetable, and changes become effective after 6 weeks notice**
- **Fares can be changed with no prior notice**
- **Unrestricted entry and exit from the market**
- **Known as "Competition In the Market"**

Basic Elements of UK Bus Deregulation

Non-Commercial

- Services which are not registered as commercial, but needed for social reasons as identified by local authorities
- Awarded to a private sector operator after a competitive bidding process for a period of (typically) three years

Public Transport Authority Reorganization

- As a transitional strategy, public transport authorities were to be "corporatized," i.e., held at arm's length from government
- Could receive subsidy only as a result of success in a competitive bidding process
- Eventually they were to be privatized
- These large operations were not broken up into smaller competitive units

London Strategy

- Deregulation not introduced in London because of concerns about:
  - the effects of free entry on congestion in Central London
  - rail system interaction effects
- London Transport (now Transport for London) opted to retain control over all planning functions but to move to privatization through competition for incremental pieces of the London bus network
- TfL controls routes, frequencies, quality standards, and fares
- Known as "Competition For the Market"

London Buses Reorganization

- Decentralization of London Buses Limited (LBL) operations, giving progressively more independence to LBL depots
- Put out to competitive bid about 10% of the bus network annually
- Awarding approximately 50% of competitive tenders to LBL subsidiaries with the remainder to independent private bus operators
- Used competitive pressure to induce LBL subsidiaries to restructure labor contracts and management strategy
- In 1994 all LBL subsidiaries were privatized

Table 1: Key bus operating statistics, GB and London, 1985/86 to 2004/2005

	Bus km (mil)	Pax trips (mil)	Subsidy			Operating costs per bus-km (in 2000 dollars)
			Total £m	Per bus km	Per pax trip	
London						
1985/1986	273	1152	£335	£1.23	£0.29	£2.71
1989/1990	292	1188	£238	£0.82	£0.20	£2.23
1994/1995	356	1167	£177	£0.50	£0.15	£1.59
1999/2000	365	1307	£134	£0.37	£0.10	£1.49
2004/2005	450	1793	£601	£1.34	£0.34	£1.95
GB Outside London						
1985/1986	1804	4489	£904	£0.50	£0.20	£1.51
1989/1990	2150	3886	£682	£0.32	£0.18	£1.02
1994/1995	2293	3253	£620	£0.27	£0.19	£0.86
1999/2000	2234	2972	£613	£0.27	£0.21	£0.76
2004/2005	2146	2944	£730	£0.34	£0.25	£0.87

Source: Transport Statistics GB 2007 and earlier editions
Note: Subsidy includes concessionary fares payments; Operating Costs and Subsidies are in constant 1999/2000 prices

Table 2: Percentage change in key bus operating statistics with 1985/86 as base

	Bus km	Pax trips	Subsidy			Operating costs per bus-km (in 2000 dollars)
			Total £m	Per bus km	Per pax trip	
London						
1989/1990	+7%	-3%	-29%	-33%	-31%	-18%
1994/1995	+30%	-1%	-47%	-59%	-48%	-41%
1999/2000	+34%	+13%	-63%	-72%	-69%	-45%
2004/2005	+65%	+56%	+80%	+9%	+16%	-24%
GB Outside London						
1989/1990	+19%	-13%	-25%	-36%	-10%	-32%
1994/1995	+27%	-28%	-31%	-46%	-5%	-43%
1999/2000	+24%	-34%	-32%	-46%	+5%	-50%
2004/2005	+19%	-34%	-19%	-32%	+24%	-47%

Source: Transport Statistics GB 2007 and earlier editions

Results of Bus Deregulation (1)

- Operating costs dropped significantly -- by about 50%, most of impact immediately after deregulation
- Bus kilometers of service increased substantially immediately after deregulation, but now again is in modest decline
- Fares rose significantly, particularly in major metropolitan areas
- Relatively little sustained on-the-street competition

Results of Bus Deregulation (2)

- Great majority of services (80-85%) are operated in commercial regime
- Subsidies have declined by about 30% since deregulation
- Ridership has declined significantly since deregulation
- Subsidy per passenger has remained approximately constant despite major decline in subsidy per vehicle kilometer
- Perceptions of service instability

Typical Trajectory Following Deregulation

- Incumbent operator registered most of pre-existing network as commercial
- Reduced costs and raised entry cost by converting to minibuses
- Establishing a foothold for a new entrant via competitive bidding proved difficult
- Price competition proved to be ineffective relative to frequency competition
- Large bus holding companies emerged through mergers and acquisitions
- The urban bus market as it developed in the UK proved not to be truly contestable
- Local bus planning staff were largely eliminated

London Results

- **Similarities:**
  - **Unit cost reductions in London are close to those attained outside London**
  - **Service provided increased by a similar amount to outside London**
- **Differences:**
  - **Ridership in London has experienced modest growth**
  - **Subsidy initially declined much more substantially in London than elsewhere -- prior to Congestion Charging effects**

European Strategy

- Several major European cities adopted London-like schemes, e.g., Copenhagen, Stockholm
- Separation of public sector from direct operation is an accepted principal
- Contractual agreements developed between the planning and oversight agency (in the public sector) and the operators (in the private sector)

US Transit Industry

- **Organizational Models in the US**
  - A. Traditional regional transit authority
  - B. Expanded regional transit authority
  - C. Split policy/operations: Single service providers
  - D. Split policy/operations: Multiple service providers
- **Industry Structure**

Transit Industry Structure

- **Remarkably little change since the early 1970s:**
  - **regional transit authorities regulating, planning and directly operating most services**
  - **principal use of private sector is in providing purchased services to transit authorities**

Purchased Transit Service in US Transit Industry (2006): Operating Expense

Mode	Directly Operated	Purchased	Total	% Purchased
Bus	15,923.0	1,893.4	17,816.4	10.6%
Heavy Rail	5,245.9	41.6	5,287.5	0.8%
Commuter Rail	3,547.6	223.8	3,771.4	5.9%
Light Rail	1,011.7	58.4	1,070.1	5.5%
Demand Response	1,175.0	1,921.7	3,096.7	62.1%
Total	26,903.2	4,138.9	31,042.1	13.3%

Source: American Public Transit Administration Fact Book 2008 (for 2006)

Use of Purchased Transit Services

- Dominant for demand-responsive service
- Little or none for urban rail services
- Modest for fixed route bus services

Fixed Route Bus Services

- Represents more than 50% of all services in the US
- Could clearly be operated efficiently and effectively by the private sector under contract
- The real potential for significant expansion for the private sector in transit

BUSES OPERATING EXPENSE (2007: $ million)
(All agencies with Operating Cost > $100 million)

City	Total Op Ex (incl PT)	Total PT	% PT
NEW YORK CITY TRANSIT	1,914.1	0.0	0.0%
CHICAGO (CTA)	828.1	0.0	0.0%
NEW JERSEY	682.1	45.5	6.7%
WASHINGTON DC	469.9	4,9	1.1%
PHILADELPHIA	447.3	0.0	0.0%
SEATTLE	405.9	33.0	8.1%
MTA BUS	339.1	0.0	0.0%
MIAMI	309.3	0.0	0.0%
SAN FRANCISCO	307.5	0.0	0.0%
BOSTON	306.3	5.8	1.9%
HOUSTON	267.9	35.7	13.3%
PITTSBURGH	257.8	0.0	0.0%
OAKLAND	253.3	0.0	0.0%
DENVER	251.2	77.0	30.6%
BALTIMORE	234.6	32.1	13.7%
MINNEAPOLIS-ST PAUL	208.2	0.0	0.0%
DALLAS	206.8	0.0	0.0%

Source: National Transit Database Transit Profiles, Data Tables for RY 2007 http://www.ntdprogram.com

BUSES OPERATING EXPENSE (2007: $ million)
(All agencies with Operating Cost > $100 million)

City	Total Op Ex (incl PT)	Total PT	% PT
PORTLAND	203.2	0.0	0.0%
SANTA CLARA	196.5	2.6	1.3%
ORANGE COUNTY	194.8	4.1	2.1%
DETROIT	174.6	0.0	0.0%
CLEVELAND	164.0	0.0	0.0%
ATLANTA	162.1	0.0	0.0%
HONOLULU	137.9	135.4	98.2%
CHICAGO (PACE)	130.3	12.3	9.5%
MILWAUKEE	127.6	2.0	1.6%
NYC DOT	120.4	119.1	99.0%
PHOENIX	115.7	89.6	77.5%
ST LOUIS	114.3	0.0	0.0%
LONG ISLAND BUS	110.2	0.0	0.0%
LAS VEGAS	105.7	76.1	72.0%
WESTCHESTER CO., NY	104.8	95.1	90.7%
AUSTIN	102.5	13.8	13.5%
TOTAL	**9954.0**	**779.2**	**7.8%**

Source: National Transit Database Transit Profiles, Data Tables for RY 2007 http://www.ntdprogram.com

Largest 33 Bus Operators

- Less than 8% of bus service is currently provided under purchase of service arrangements
- 16 of 33 agencies do not provide any purchased bus service
- Only 9 agencies provide more than 10% of bus services under contract: New York City (Department of Transportation), Honolulu, Westchester Co, Phoenix, Las Vegas, Denver, Baltimore, Austin, and Houston

Agencies Using Purchased Services Extensively Fall Into Three Groups

- Agencies which took over financial responsibility for franchise operators: New York City Department of Transportation
- Agencies taking over franchised services and/or expanding services through purchase agreements: Baltimore (MTA), and Chicago (PACE)
- Agencies required to transfer core services to purchased service arrangements: Denver

Prospects for the Future

Key ingredients for private sector participation:

- service is new and different
- external intervention
- incomplete assimilation of private operators

Direct transit authority operation is highly stable in North America:

- small leverage for central government; 13(c) labor protection clause
- at state/local levels of government organized labor is a powerful force

  likely to resist change
- confrontational/ideological nature of the debate

Possible Strategies

- Development of non-confrontational, incremental change proposals
- Contingency plans
- Replacement of marginally performing routes by contracted van or minibus service
- Develop a database on results of initiatives by credible agency
- Split policy board from operating functions
- Corporatization and privatization of bus depots in large metropolitan areas

Public/Private Roles in Rail Systems

Inter-city Rail:

- Japan (late 1980s)
- Argentina (mid 1990s)
- British Rail (late 1990s)

Urban Rail:

- London Underground PPP (2002)
- Puerto Rico - Tren Urbano (2004)

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
- JRs (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
- 20-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 (10-year) results:

- All but one concessionaires had filed for protection from creditors
- 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

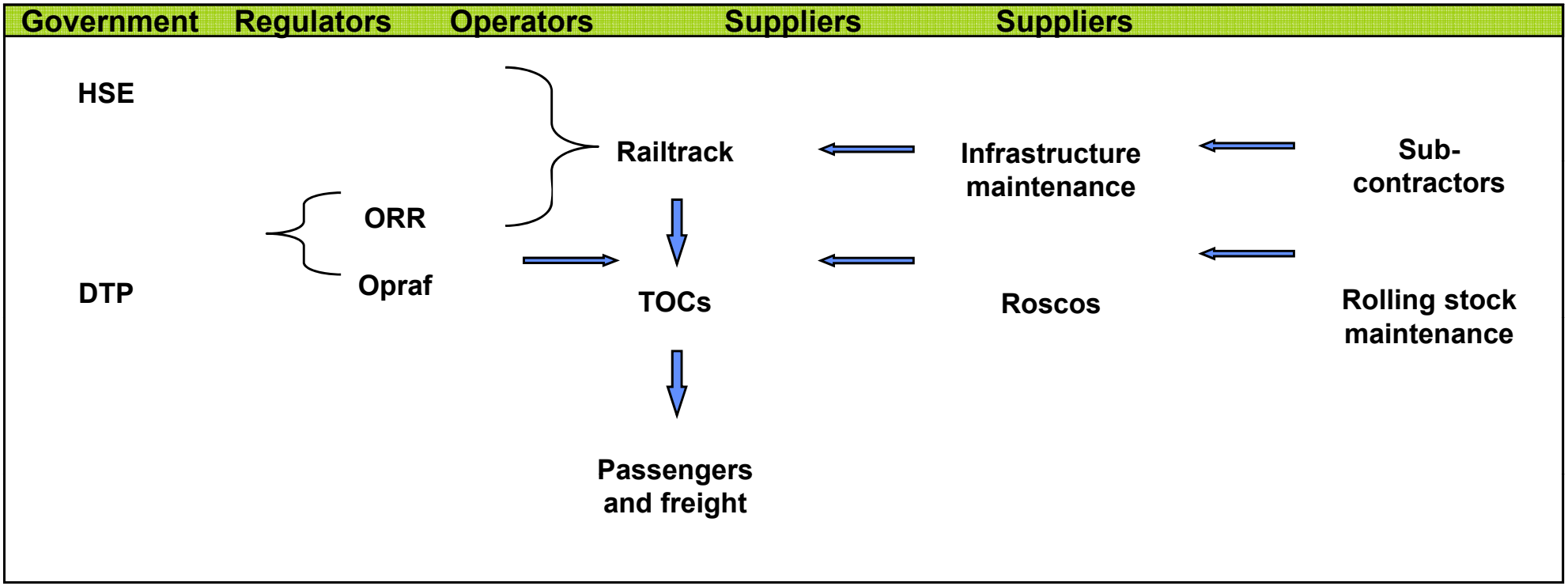
Premises Underlying British Rail Restructuring

- markets, contracts, and regulation would serve better than a central unit making top-down decisions
- the private sector would provide better service
- separation from Government would free the railways from Treasury restrictions
- vertical integration was not the required model
- the railways would be profitable

British Rail

- British Rail restructured into ~100 separate companies (vertical segmentation) including:
  - Train Operating Companies (TOCs) (28 total)
  - Rolling Stock Leasing Companies(3 total)
  - 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

The Privatized Structure (simplified)



British Rail Restructuring Results

- accident rates have continued long-term decline
- passenger km increased by 38% since privatization
- train services have increased by 20%
- more imaginative pricing and promotion
- declines in reliability due to deteriorating infrastructure
- substantial increases in operations cost
- increased subsidies - from £1bill/yr to £3-4 bill/yr
- maybe vertical integration benefits outweigh the costs

PPP Approaches in Urban Rail Systems

INFRASTRUCTURE			
		Public	**Private**
OPERATIONS	**Public**	**Public Provision (USA)**	**London Underground**
	Private	**Operating Concessions (Buenos Aires, Rio, San Juan)** **Share Issue Privatization (Singapore)**	**DBFO (Kuala Lumpur)** **Share Issue Privatization (Hong Kong)**

London Underground PPP Background

- public provision and financing dominant until last few years
- long-term inadequacy of investment and annual funding cycle led to chronic operations and maintenance problems
- poor project management track record in LUL
- Kings Cross fire in 1987 highlighted operational and cultural problems in LUL

London Underground PPP

- Operation of Underground remains responsibility of LUL - a public sector entity
- Three infrastructure companies awarded long-term (30-year) concessions to finance, improve, and maintain the rolling stock and infrastructure
  - produce £8 bill of infrastructure investment in 15 years
  - Tube Lines and Metronet consortium selected
  - NPV of £16 billion with set-up cost of £455 million
- Approach was highly controversial, with LUL transferred to TfL in 2003 after the contracts had been signed

London Underground PPP Performance Measures

1. Contractual Performance Measures: actual performance
   - Availability – measured by lost customer hours
   - Capability – long-term capacity and journey times
   - Ambience – quality of travelling environment measured by MSS
2. Maintenance and Asset Performance Measures
   - Rolling stock – MMBF
   - Average duration of delays > 2 mins
   - Lift and escalators – time between failures, avg time to repair
3. Renewals and Upgrades
   - Track renewal
   - Lift and escalator replacement
   - Station enhancements
   - Line upgrades

See TfL report on PPP performance at: http://www.tfl.gov.uk/assets/downloads/LU-PPP-report-data-summary-06-07.pdf

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

Tren Urbano Master Plan

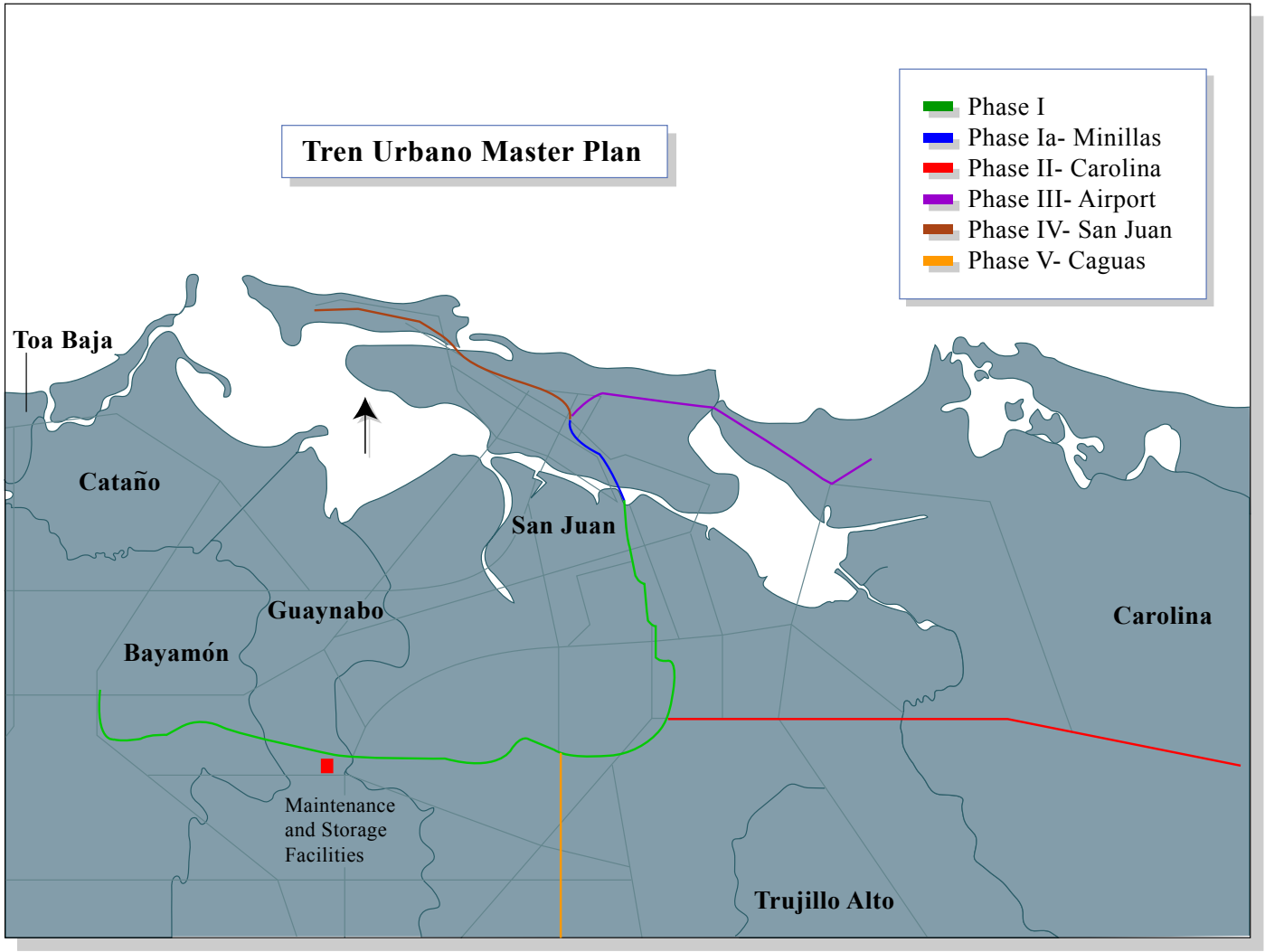


Figure by MIT OpenCourseWare.

Alignment by Segments – Phase I

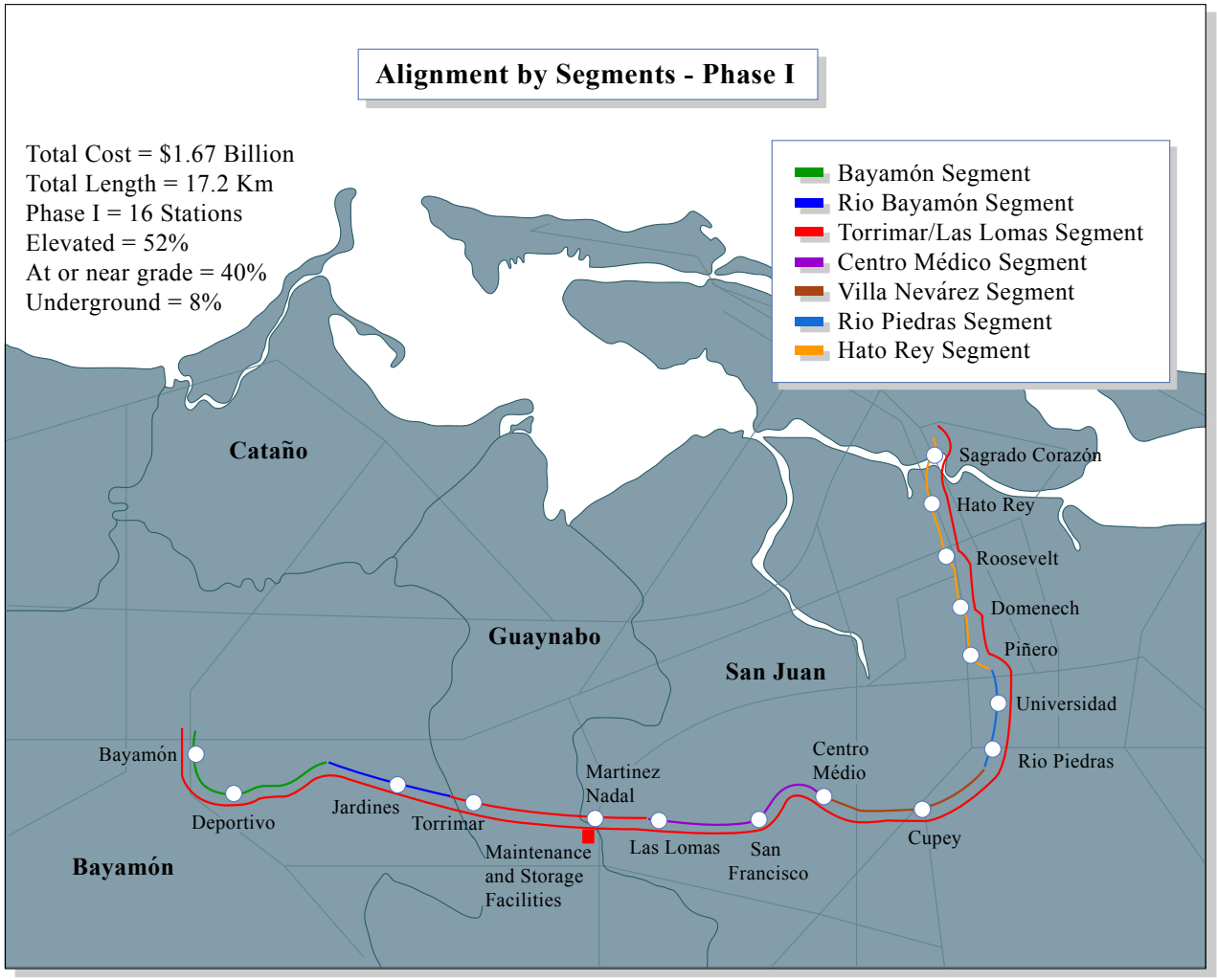


Figure by MIT OpenCourseWare.

Tren Urbano Phase I - Summary

Segment	Length	Stations	Investment ($ MM)	Finish	Consortium
1 Bayamón	2.9 KM	1 Bayamón 2 Deportivo	78	4/2001	Grupo Metro San Juan
2 Río Bayamón	1.7 KM	3 Jardínes	42	3/2001	Redondo-Entrecanales
3 Torrimar/ Las Lomas	2.6 KM	4 Torrimar 5 Martínez Nadal	656	5/2002	Siemens Transit Team
4 Centro Médico	2.5 KM	6 Las Lomas 7 San Francisco 8 Centro Médico	81	6/2001	Redondo-Entrecanales
5 Villa Nevárez	1.9 KM	9 Cupey	78	8/2001	Redondo-Entrecanales
6 Río Piedras	1.8 KM	10 Río Piedras 11 Universidad	279	5/2001	Grupo Kiewit
7 Hato Rey	3.6 KM	12 Piñero 13 Domenech 14 Roosevelt 15 Hato Rey 16 Sagrado Corazón	134	10/2001	Necso-Redondo

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
- Ridership far below prediction (40K vs 115K pass/day) because of lack of system integration

1.258J / 11.541J / ESD.226J Public Transportation Systems

Spring 2010