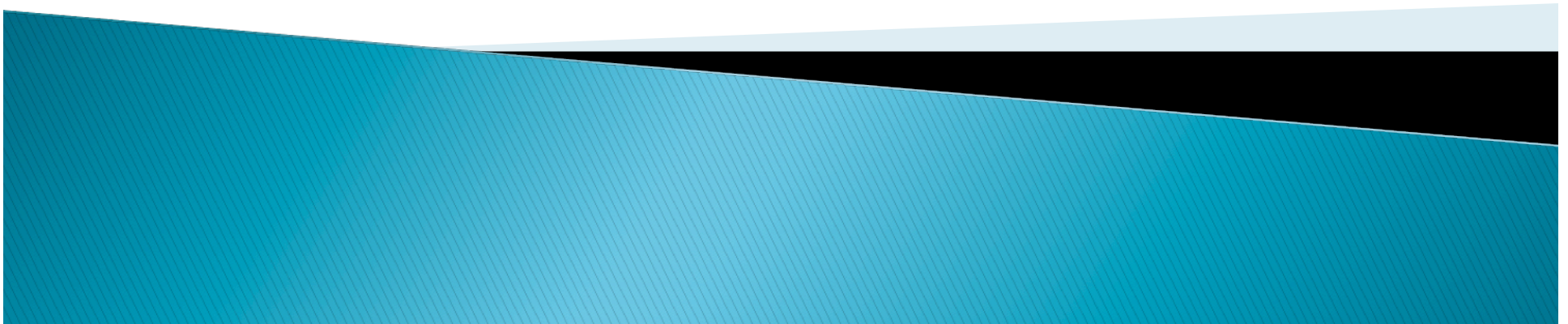


PASSENGER RAIL DEVELOPMENTS IN EUROPE

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Change has come to America—Transportation Policy is undergoing a major shift

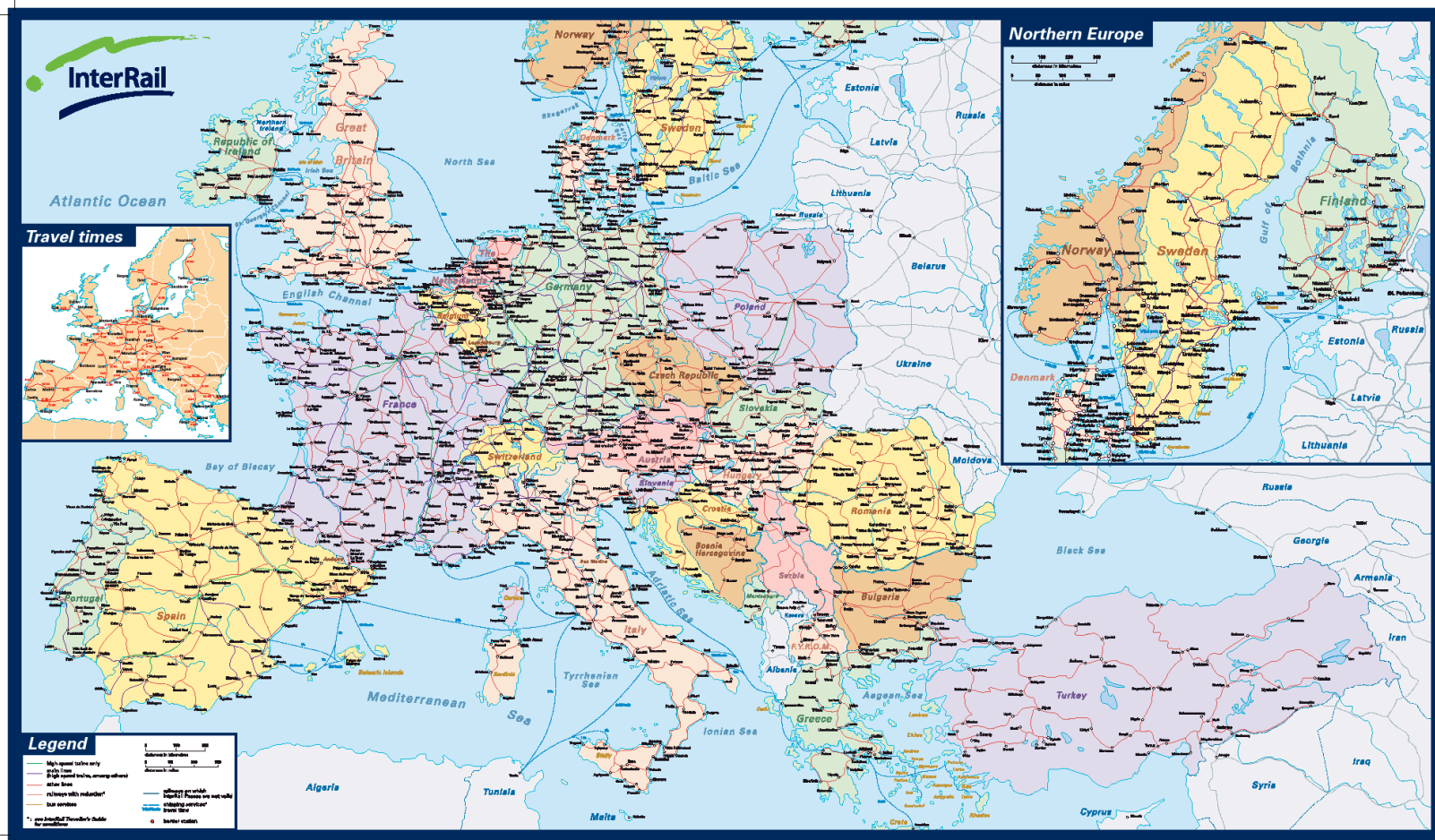
- ▶ President Obama is committed to a program of improved rail passenger service including high speed rail and is backing it with an initial \$8 billion down payment and a promise of more to come.
- ▶ Expanded rail service will give Americans and our visitors more travel options, help meet sustainability goals, will be an important tool in dealing with climate change and has the potential of creating new industry and jobs.
- ▶ Outside of the N.E. Corridor: Boston-New York-Philadelphia-Baltimore-Washington DC, the U.S. has no high speed trains and only a handful of corridors with frequent service
- ▶ Rather than reinvent the wheel we need to learn from others who are way ahead of us in the development of passenger rail
- ▶ Europe has undergone dramatic changes in rail travel in the past three decades and we can benefit from that experience



New Trains are Everywhere in Europe, carrying more people to more places faster than ever before.



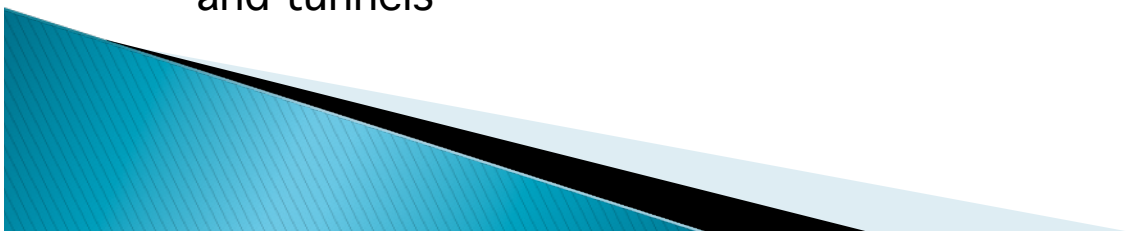
Europe has an extensive network of rail lines where investments are allowing more capacity for faster trains



Glitz and Glamour

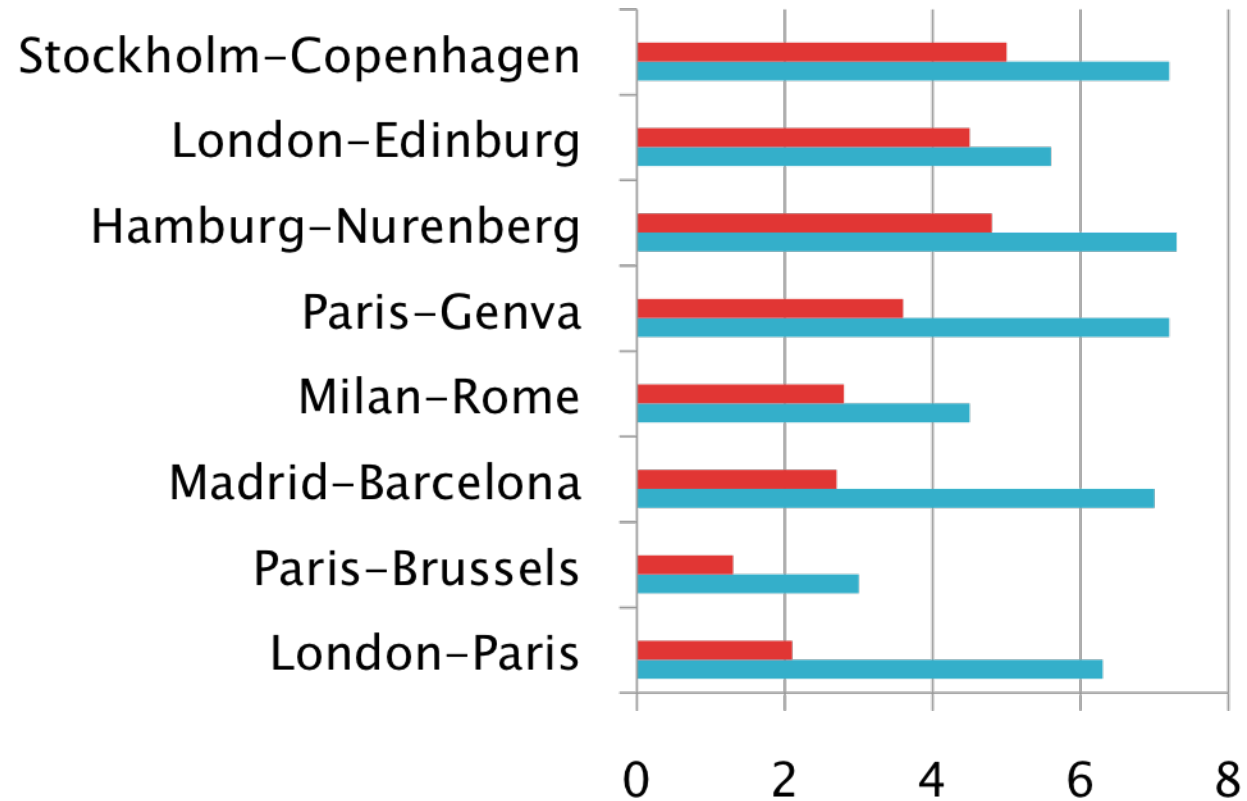
- ▶ High Speed Trains (100 to 210 mph)
- ▶ French TGV
 - Capacity on existing Paris-Lyon line
 - Other dedicated lines follow
 - TGV's operate beyond dedicated high speed lines
- ▶ Swedish X2000
- ▶ German ICE
- ▶ Italian Pendolino
- ▶ Spanish Talgo and AVE
- ▶ British HST-125 (diesel powered)

Upgraded existing lines, additional tracks, easing of curves, new bridges and tunnels



Glitz and Glamour

High Speed Rail Reduces Travel Time (Time in Hours)



Glitz and Glamour

- Comfort, service



The Workhorses

- ▶ More than 90 percent of the trains operated in Europe
- ▶ Intercity Trains
 - Day Trains
 - Overnight Trains
- ▶ Regional Trains
- ▶ Local (Suburban, S-Bahn)



The Workhorses

- Intercity Day and Night Trains



The Workhorses

- ▶ Regional and Local Trains



Top 10 Rail Passenger Operators in 2007

(Source: Railway Gazette International, May 2008)

Country	Rail Operator	Passenger km. (millions)
India	IR	694,764
China	CR	689,618
Japan	JR Group	253,121
Russia	RZD	173,411
France	SNCF	81,981
Germany	DB	74,790
UK	(ATOC)	48,448
Italy	FS	45,223
Spain	RENFE	19,990
Poland	PKP	17,081



Top 10 Rail Freight Operators 2007

(Source: Railway Gazette International, May 2008)

Country	Rail Operator	Ton km (millions)
USA	AAR Class 1s	2,820,061
China	CR	2,211,266
Russia	RZD	2,090,337
India	IR	480,993
Germany	DB, AG	98,790
Belarus	BC	47,933
Poland	PKP	43,548
France	SNCF	40,632
Japan	JR Freight	23,076
Italy	FS	21,197



Fastest Countries---rail networks over 125 mph

Country	1 st line opened	Current miles	To add by
Japan	1964	1,394	0
France	1981	1,069	200
Spain	1992	941	649
Germany	1987	589	0
Italy	1987	346	326
China	2003	251	671
Taiwan	2007	210	0
South Korea	2004	139	80
Belgium	1997	106	51
U.K.	2005	68	0
Turkey	2009	0	156
Netherlands	2009	0	53

How did Europe make it happen?

- ▶ New policies
- ▶ Major investments
- ▶ New financing approaches
- ▶ New technologies



New Policies---at both national and international levels

- ▶ Identifying transportation as a Europe-wide concern
(EU provides framework for planning, investment and operations)
- ▶ Integrating Planning and Development
- ▶ Recognizing of rail as a tool to meet mobility, economic development and environmental goals
- ▶ Making financing available at national, regional and Europe-wide levels
- ▶ Involving the private sector as a partner



Changing Ownership

- ▶ 30 Years Ago all rail lines were government owned and operated
- ▶ Today rail infrastructure is still government-owned, but some operations are carried out by the private sector
- ▶ In UK, 18 franchise operators provide all of the rail passenger service
- ▶ New “Open Access” rules established by EU which go into effect in 2010 provide competitive opportunities

Air France---interest in Chunnel service

NTV---private operator to compete with TrenItalia



Major Investments

- ▶ European countries have invested heavily in rail improvements
Some examples:

France, over \$25 billion since 1980

Germany, average \$2 to 3 billion annually

Switzerland, nearly \$15 billion since 1990

Ireland, \$ 6 billion since 1999

UK, recently committed \$40 billion to rail infrastructure
upgrades over next decade

Germany, \$2 billion for new Berlin station

UK, \$4 billion public and private investment in St. Pancras
station in London

Sweden, \$2 billion in HSR track upgrades



Major Investments---Infrastructure

- ▶ Building new lines
Dedicated, high-speed, passenger trains only
- ▶ Upgrading existing lines
Easing curves, multiple tracks, greater capacity
- ▶ Electrification
All mainlines and many secondary lines; multi-current trains
- ▶ Signal Systems
ERTMS
- ▶ Communication
Train operations and traveler information systems



Major Investments---Infrastructure

➤ Connecting Islands and Peninsulas

Channel Tunnel (France and UK)

1992

Oresund Bridge/Tunnel (Denmark-Sweden)

2000

Bosporus Tunnel (European-Asiatic Turkey)

2011



Major Investments--Infrastructure

- ▶ Easing Alpine Barriers

Lotschberg Tunnel 21.5 mi. 2007

Gotthard Tunnel 35 mi. 2015

Brenner Tunnel 32 mi. 2025

France-Italy Tunnel 33 mi. 2020



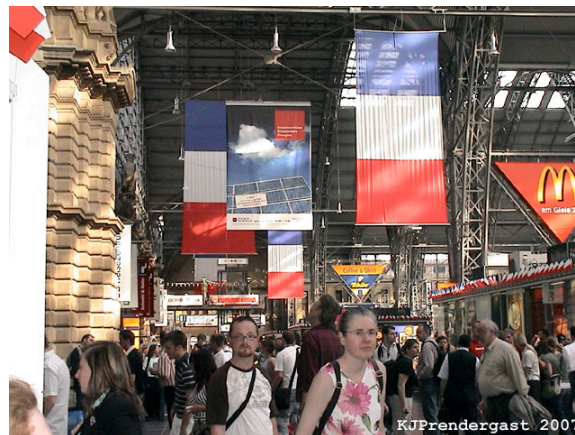
Major Investments---stations and maintenance facilities



Major Investments---stations and maintenance facilities



Major Investments---intermodal connections



Integrated Planning--Hierarchical

- ▶ EU role in identifying critical rail corridors and integrating with national transportation planning
- ▶ National role in coordination across modes to improve national transportation systems and to coordinate with sub-regions and urban areas
- ▶ Local role in planning with transportation operators and public agencies
- ▶ Service planning for integrated scheduling, ticketing, marketing and communication at all levels

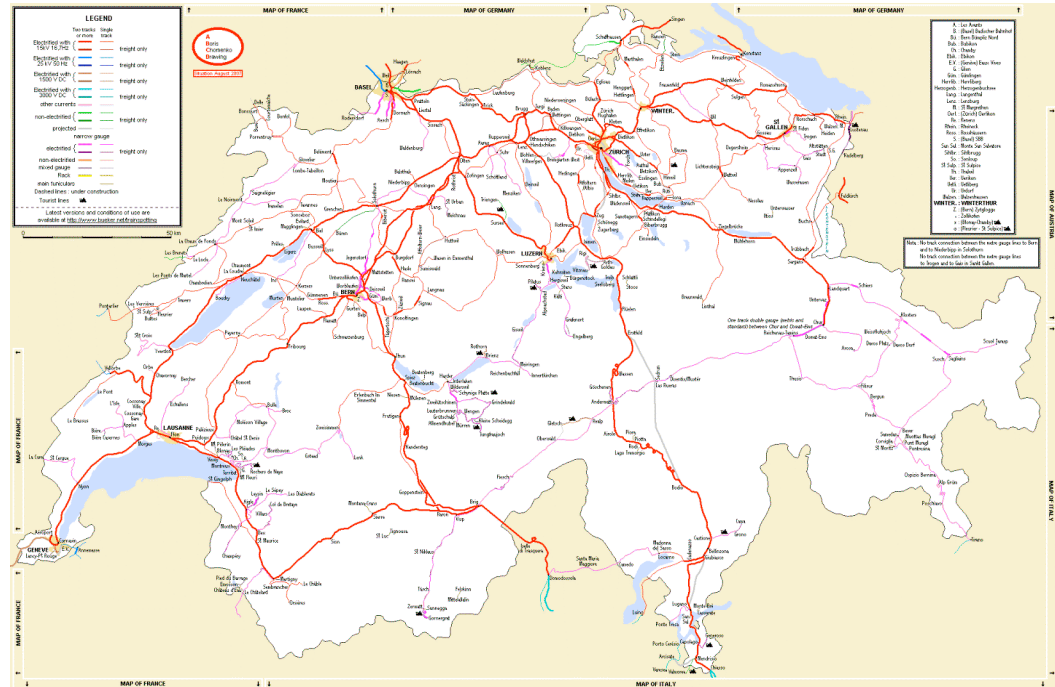


New Financing Policies

- ▶ EU programs to help smaller, less well-off countries
- ▶ National financing programs often based on fuel taxes levied on cars and trucks
- ▶ Tolling on critical highway corridors to help finance rail infrastructure improvements
- ▶ Local financing to support regional and local services in partnership with national governments
- ▶ Greater private sector involvement: franchise train operators; infrastructure maintenance; station development; manufacturing of rolling stock and other items



National Examples: Switzerland



National Examples: Switzerland

Most intensely developed and used rail system in the world

- ▶ Combination of Swiss Federal Railways (SBB) and 18 regional railways
- ▶ 9,000 daily trains
- ▶ 96.2 % on time
- ▶ 3,200 miles of route; 1,200 miles doubled track
- ▶ 1,100 stations
- ▶ 98 % electrified
- ▶ 322 million passengers in 2008
- ▶ Very frequent service and excellent connections
- ▶ Stations link with local transit, post buses, lake boats, and airports in Zurich and Geneva
- ▶ Annual Swiss Pass



National Examples: Spain



National Examples: Spain

Goals for National High Speed Network

- ▶ 6,500 miles by 2020—mostly new dedicated standard gauge rail
- ▶ 90 % of population within 30 miles of a high speed station
- ▶ Intermodal connections to other modes including air

Accomplishments

- ▶ Major financial commitment
- ▶ Lines opened connecting Madrid to Sevilla, Toledo, Malaga, Barcelona
- ▶ Major manufacturer of High Speed Trains—Talgo and CAF
- ▶ Gauge-changing trains



Three Decades of Progress in Europe

- ▶ More people traveling to more destinations
- ▶ Shorter trip times; greater frequency of service; highly reliable performance
- ▶ New trains; greater traveler comfort and convenience; lower carbon footprint
- ▶ Rail stations reinforcing, or becoming focal points of, urban activity
- ▶ Europe has become one of two centers of innovation and rail technology development
- ▶ Investment in rail systems and technology has contributed to growth and prosperity in Europe



Three Decades of Progress in Europe

- ▶ From this . . .



- ▶ To this . . .



Lessons from Europe

- ▶ Have a vision—recognize that rail is part of the solution along with other modes
- ▶ Identify travel needs—where do people want to go?
- ▶ Match rail with those needs to provide meaningful service
- ▶ Plan collaboratively and include all constituencies in the process
- ▶ Secure funding—explore innovative, non-traditional approaches
- ▶ Recognize that transportation and the community fabric are interdependent---trains help shape communities
- ▶ Push the technology envelope
- ▶ Develop enough service to foster the transportation industry which provides jobs in planning, manufacturing, building, maintenance and operations
- ▶ Never loose sight of the customer



Beginning anew in America

- ▶ New federal policy has opened a window for renewal of the American rail passenger network
- ▶ We need to make our voices heard
- ▶ Tell your friends; write your legislators; attend a public meeting; join an advocacy organization
- ▶ These are exciting times—can we make rail passenger service a travel option that enhances our mobility, contributes to the environment, and creates new jobs?

YES WE CAN!



Credits

- ▶ Cook's Continental Timetable
- ▶ Deutsche Bundesbahn
- ▶ International Railway Gazette
- ▶ J.W. Prendergast
- ▶ MIT Technology Review
- ▶ RENFE
- ▶ Dave Smith Photo Gallery
- ▶ Swedish State Railways
- ▶ Swiss Federal Railways
- ▶ Talgo
- ▶ Today's Railways--Europe
- ▶ Trains Magazine
- ▶ Transportation Research Board
- ▶ Wikipedia

