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COORDINATED APPROACHES TO EXPANDING ACCESS TO PUBLIC TRANSPORTATION

This TCRP digest summarizes the mission performed May 4–May 19, 2006, under TCRP Project J-03, “International Transit Studies Program.” This digest includes transportation information on the cities and facilities visited. It was prepared by staff of the Eno Transportation Foundation and is based on reports filed by the mission participants.

INTERNATIONAL TRANSIT STUDIES PROGRAM

The International Transit Studies Program (ITSP) is part of the Transit Cooperative Research Program (TCRP). ITSP is managed by the Eno Transportation Foundation under contract to the National Academies. TCRP was authorized by the Intermodal Surface Transportation Efficiency Act of 1991 and reauthorized in 2005 by the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users. It is governed by a memorandum of agreement signed by the National Academies, acting through its Transportation Research Board (TRB); by the Transit Development Corporation, which is the education and research arm of the American Public Transportation Association (APTA); and by the Federal Transit Administration (FTA). TCRP is managed by TRB and funded annually by a grant from FTA.

ITSP is designed to assist in the professional development of transit managers, public officials, planners, and others charged

with public transportation responsibilities in the United States. The program accomplishes this objective by providing opportunities for participants to learn from foreign experience while expanding their network of domestic and international contacts for addressing public transport problems and issues.

The program arranges for teams of public transportation professionals to visit exemplary transit operations in other countries. Each study mission focuses on a theme that encompasses issues of concern in public transportation. Cities and transit systems to be visited are selected on the basis of their ability to demonstrate new ideas or unique approaches to handling public transportation challenges reflected in the study mission’s theme. Each study team begins with a briefing before departing on an intensive, professionally challenging 2-week mission, after which they return home with ideas for possible application in their own communities. Team members are encouraged to share their international experience and findings with

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peers in the public transportation community throughout the United States. Study mission experience also helps transit managers to better evaluate current and proposed transit improvements and can serve to generate potential public transportation research topics.

Study missions are normally conducted in the spring and fall of each year. Study teams consist of up to 14 individuals, including a senior official designated as the group's spokesperson or team leader. Transit properties are contacted directly and requested to nominate candidates for participation. Nominees are screened by a committee of transit officials, and the TCRP Project J-03 Oversight Panel endorses the selection.

Study mission participants are transit management personnel with substantial knowledge and experience in transit activities. Participants must demonstrate potential for advancement to high levels of public transportation responsibilities. Other selection criteria include current responsibilities, career objectives, and the probable professional development value of the mission for the participant and sponsoring employer. Travel expenses for participants are paid through TCRP Project J-03 funding.

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About this Digest

The following digest is an overview of the mission that investigated coordinated approaches to expanding access to public transportation in the United Kingdom, the Netherlands, Sweden, and France. It is based on individual reports provided by the team members (for a team roster, see Appendix A), and it reflects the observations of the team members, who are responsible for the facts and accuracy of the data presented. The digest does not necessarily reflect the views of TCRP, TRB, the National Academies, APTA, FTA, or the Eno Transportation Foundation.

COORDINATED APPROACHES TO EXPANDING ACCESS TO PUBLIC TRANSPORTATION

The theme of this study mission was "Coordinated Approaches to Expanding Access to Public Transportation." Over a 2-week period, the

study team met with senior officials and management staffs of public and private sector transit organizations in eight major European cities: London, United Kingdom; The Hague, Rotterdam, and Amsterdam, the Netherlands; Stockholm and Gothenburg, Sweden; and Grenoble and Paris, France (for a list of host organizations, see Appendix B).

Public transportation officials face a daunting challenge as demographic data showing aging populations increasingly make the case for facilities and services that are usable by persons with a wide range of mobility limitations. In 2000, 16% of the world's population was over 60. This figure will increase to 30% by 2050. With age, of course, comes a natural increase in the number of persons experiencing limited mobility. Only 6% of persons age 15 to 24 have a functional limitation, but this figure rises to 45% for persons age 65 to 69, and 73% for those age 75 or older.

However, accessibility in public transportation is about more than addressing the realities associated with age-related physical impairments. It extends to providing access to transport for other underserved populations, such as individuals who live outside major urban centers, those with limited transportation access to jobs, and those with disabilities or other special mobility needs not related to aging.

The study team sought to discover how transit providers in Europe are adopting flexible, coordinated approaches to address the mobility needs of all community members. The team also aimed to explore the partnerships, technology, communications, financing, and politics that underpin these approaches. The eight cities chosen by the J-03 project panel are those that provide a range of approaches for addressing mobility concerns. The team's goal was to observe initiatives under way in these cities with an eye toward identifying practices that would be instructive for transportation providers in the United States.

The study team made a number of key overall observations based upon its meetings and visits with officials:

- The organizations visited are all committed to making their services and facilities accessible, but they have made varying degrees of progress toward achieving that goal.
- Several of the cities embrace a broad definition of mobility impairment. They consider individuals with disabilities as only part of the

picture. Persons traveling with multiple children or babies in strollers, able-bodied elderly who may require special assistance, pregnant women, and even riders traveling with luggage or heavy packages are perceived to have special mobility needs.

- More input from public transportation users resulted in the development of better services for people with mobility impairments.
- In general, paratransit services appeared to be less widely available compared to the United States.
- As they build their accessibility programs, the agencies visited are more focused on providing mainstream public transportation services than special transportation services.
- European accessibility legislation adopts a more permissive, “thou should” approach, in contrast to “thou shalt” provisions contained in the Americans with Disabilities Act.
- Newer tram and subway lines, as well as buses, are accessible; however, older subway systems (e.g., Paris, London) face tremendous challenges in making necessary accessibility upgrades.

The following two sections provide background and accessibility information about the public transportation systems in each of the cities visited by the study team. Subsequent sections discuss how organizational partnerships, technologies, communications approaches, financing techniques, and political factors support efforts to expand access.

OVERVIEW OF PUBLIC TRANSPORTATION NETWORKS

London, United Kingdom

London, the capital of the United Kingdom, is located in the southeastern part of the country along the Thames River. The city’s population of approximately 7.4 million occupies a metropolitan area that extends for more than 30 mi at its widest point and covers 620 mi². London is one of the world’s leading financial and cultural capitals.

Public transportation in London is a critical service for the millions who live in or commute to the city on a daily basis. London’s public transportation services are overseen by Transport for London (TfL), which was created by Parliament in 2000 as the integrated body responsible for the city’s trans-

portation system. TfL is responsible for the management and operation of London’s buses, subway (the Underground, or “Tube”), and the Docklands Light Railway (DLR) and the management of Croydon Tramlink and London River Services. The Tramlink and London River Services are licensed to private operators. TfL also runs Victoria Coach Station and London’s Transport Museum.

Nearly 30 million journeys are taken daily in greater London: 6.3 million by bus, 3 million by the Underground, 1.4 million by rail, 150,000 on the DLR, 11 million by car or motorcycle, 7 million on foot, and 333,000 by bicycle.

TfL is responsible for the planning, specifications, and infrastructure of the overall system. TfL has more than 20 private companies operating 500 contracts for 700 fixed routes, which reflects 99% of the overall service being subcontracted.

The Underground is one of the world’s oldest subway systems. Some stations date back to the late 1800s. Today, the Underground operates 12 lines that serve more than 420 stations.

The city’s bus system consists of 8,000 buses. TfL requires contractors to replace buses every 4 years. Eighty percent of bus routes are frequent enough not to need a timetable (i.e., routes are serviced by more than five buses/h). Bus patronage has steadily increased in the past decade to 1.8 billion passenger journeys in 2005, up from 1.2 billion in 1995.

Londoners can travel throughout the city, and on multiple modes of public transport, using a single fare medium. TfL’s “Oyster Card,” a smart card that can be replenished at a number of retail establishments, is used by 60% of all riders.

The Hague, Rotterdam, and Amsterdam, the Netherlands

The Netherlands, which covers a total area of just over 16,000 mi², is the most densely populated country in Europe. Forty percent of the country’s 16.2 million inhabitants live in the heavily urbanized “Randstad” region, which spans several of the country’s western provinces. The region is home to three of the Netherlands’ largest cities: The Hague (population 472,087), the country’s seat of government; Rotterdam (population 588,718), which boasts Europe’s largest port; and Amsterdam (population 742,951), the official capital of the Netherlands and the country’s major cultural and financial center.

The public transportation infrastructure in the Netherlands consists of 5,700 buses, 578 trams, 258 subway trains, 86 regional trains, and 17 boats. A rail network connects major and minor cities; buses and trams are common in urban areas, and Amsterdam and Rotterdam have subways. Private car ownership is increasing, and the estimated 6 million cars in operation within the country have contributed to greater congestion, particularly in metropolitan areas. Like the rest of their countrymen, inhabitants of the Randstad rely heavily on the bicycle, which accounts for an estimated 35% of all movement within the region. In fact, the Netherlands is second only to China in bicycle usage by its citizens.

Public transportation in the Netherlands is two-tiered. Tier 1 consists of a national rail system run by two contractors: Nederlandse Spoorwegen (NS) [Netherlands Railways], the operator of the railway system, and ProRail, the contractor responsible for the infrastructure and maintenance of the rail system. Tier 2 consists of a series of regional systems for buses, trams, subways, and light rail. In this tier, budgets are set at a provincial/municipal level and the local governments can choose how to administer their own public transportation systems, although they are required to conduct public tenders of contracts.

The primary public transportation offerings in The Hague are trams and buses, operated by HTM Personenvervoer. Daily passenger counts are high, with 140,000 passengers traveling daily on buses, and 280,000 traveling on trams.

Residents in Rotterdam are served by a network of bus, tram, and subway lines that are operated by Rotterdam Electric Tram (RET), the municipal transportation company. The RET operates two subway lines covering a total length of 109 mi, nine tram routes with a total line length of 58 mi, and 38 bus routes covering a total length of 269 mi. The RET-provided public transportation accounts for more than 600,000 daily trips made in the Rotterdam region.

In Amsterdam, the public transportation company GVB operates a network consisting of 49 bus lines, 16 tram lines, four subway lines, and four ferry lines. Roughly 1 million people within the greater Amsterdam area travel on these modes every day. The total tram track length is 50 mi, and the total subway rail length is 51 mi. The tram, bus, and subway lines service 1,900 stops and stations.

Stockholm, Sweden

Stockholm, the capital of Sweden, is located on the country's east coast where Lake Mälaren meets the Baltic Sea. The central parts of the city consist of 14 islands, which are all part of the Stockholm archipelago. The geographical city center is situated on the water, in the Bay of Riddarfjärden. Stockholm is the largest city in Sweden, with an estimated population of 774,000.

Residents of Stockholm rely heavily on public transportation, which accounts for 75% (2.3 million) of the total daily trips made within the city. Stockholm's public transportation system consists of the Stockholm subway (Tunnelbanan, or T-bana), three regional/suburban rail systems, three light rail systems, and a large number of bus lines.

The 67-mi T-bana services 100 stations (46 of which are underground) and serves 500,000 daily passengers. During peak times, 105 T-bana trains are put into operation, departing at a rate of roughly one train every 30 s. T-bana trains also service smaller communities outside the urban area, operating at a rate of around one train every 20 min. The trains have a reported 99% on-time performance.

All land-based public transportation in Stockholm, with the exception of airport buses and trains, is run by Storstockholms Lokaltrafik (SL), Stockholm's public transportation authority. SL has agreements with several contractors, including Connex, who provide for the operation and maintenance of the public transportation services. Connex operates the T-bana and the regional/suburban railways.

Gothenburg, Sweden

Located on the southwest coast of Sweden, Gothenburg (population 450,000) is the country's second-largest city. It is the metropolitan and government seat of Västra Götaland County, whose 1.5 million residents account for 17% of Sweden's total population. Gothenburg is also the largest university city in Scandinavia, with some 60,000 students.

Public transportation accounts for 12% of the county's total transportation market; the percentage share in the city of Gothenburg is higher. The public transportation authority, Västtrafik, is owned by the regional government and the county's 49 regional municipalities. Västtrafik is responsible for all public transportation services in the county; it provides 500,000 journeys each day that take

place on 207 trams, 1,381 buses serving 20,000 stops, 57 regional and commuter trains, and 31 ferries. Västtrafik completes an estimated 153 million journeys annually.

The region's tram network is one of Europe's largest, covering 118 mi in the greater Gothenburg area. The trams, which receive priority at nearly all traffic-regulated intersections, account for 60% of all trips made by public transportation in the region.

Grenoble, France

Grenoble is a city in southeast France that is situated at the foot of the Alps, and at the confluence of the Drac and Isère Rivers. The city, often called the "capital of the Alps," is mainly built on the alluvial plain of the Isère, at an altitude of approximately 702 ft. The Grenoble metropolitan area consists of 23 communes (district authorities) and has a population of approximately 400,000. Given its location, mountain sports are very popular in the area; roughly 20 ski resorts surround the city.

Syndicat Mixte des Transports en Commun (SMTC) is responsible for the investment in, and the organization and operation of, the Grenoble metropolitan area's public transportation network. The network consists of three tram lines with a total of 88 tram cars, and 22 bus lines with a total of 350 buses. There are also seven "park and rides." The buses and trams service 1,150 stations and bus stops. Semitag, a semi-public company financed in part by a public-private partnership, operates all public transportation services under a 7-year contract to SMTC. Under the contract agreement, SMTC provides all necessary equipment to Semitag. Residents in the Grenoble area take 74 million annual trips on public transportation.

The backbone of Grenoble's public transportation network is the tram system. When SMTC was founded in the early 1970s, buses were the only public transportation option. (The city's first tram system had been dismantled following World War II.) However, even with 190 buses operating on dedicated bus lines, SMTC was unable to meet community transportation needs and officials decided to revive the tram service. Grenoble's first reconstructed tram line began service in 1987; the second opened in 1990 and the most recent line was launched in May 2006. Today, SMTC structures its bus routes around the three tram lines.

Paris, France

Paris, located in north central France along the Seine River, is France's capital and largest city. It is also the capital of the Ile-de-France region, which includes Paris and its 22 administrative regions. Approximately 11 million people live in the city and the surrounding Ile-de-France region within a land area of 7,456 mi². Known as "The City of Lights," Paris is world famous for its beauty and charm and is France's political, cultural, and economic center.

The Ile-de-France public transportation area is organized in a set of three geographic "rings" around Paris. Paris makes up the center ring; three départements (counties) compose the second ring; and four other counties compose the outermost ring. Most of the population of Ile-de-France lives in the central urban area, which makes up a little more than the center ring. Syndicat des Transports d'Ile-de-France (STIF) is the public body that brings together the regional council and the eight counties (including the city of Paris) that make up the region.

Public transportation is heavily used and relied on in urban areas of the region, accounting for 35 million trips every day. Thirty percent of the households in Ile-de-France do not own a car; in central Paris, more than half (53%) of all households do not own a car.

The Ile-de-France public transportation network overseen by STIF includes heavy rail, light rail, buses, and the Paris subway (Metro). Public transportation services are provided by more than 90 companies, chosen and authorized by STIF. The two largest companies—Régie Autonome des Transports Parisiens (RATP) and Société Nationale des Chemins de Fer Français (SNCF)—are public monopolies. RATP operates the 16-line Metro system, the two tram lines, 4,300 buses, and two heavy rail lines. SNCF, the state-owned national railway company, operates heavy rail lines that provided 602 million trips in 2004. Another 93 operators are private companies who are organized in an association called OPTILE. These operators run 3,900 buses, primarily in the rural outer ring, and they hold exclusive rights to their lines.

ACCESSIBILITY

London, United Kingdom

Mobility-impaired customers account for 6% of all trips taken on London's Underground. Their low level of patronage may be partially attributable to

the low number of stations with step-free access (only 17% of the Underground's more than 420 above- and below-ground stations). Accessibility on the Underground varies by line. As a general rule, newer portions of the system (e.g., the 1999 extension of the Jubilee Line) better accommodate persons with mobility impairments.

The older lines and stations present a number of barriers to accessibility. Many stations lack elevators, requiring patrons to use steps and escalators to navigate the system. Turnstile widths are not wide enough to allow mobility devices to pass through. Turnstiles are also located off to the far side of the platforms, thereby lengthening the travel distance between platforms and subway lines. Platform-to-train car gaps—both horizontal and vertical—are frequently large, which make boarding difficult for those who are using mobility devices or have other walking limitations. Many Underground trains do not have wheelchair tie-downs or do not contain adequate spacing for mobility devices.

National and commuter rail stations also have serious issues regarding platform-to-train gaps. Although audio and visual cues continually remind customers to “mind the gap,” gaps in some areas (like the National Rail System's Greenwich station) are more than a foot wide with no ramps. Large gaps such as these can be intimidating even for ambulatory, able-bodied persons (Figure 1).

Unlike many of the older subway lines and commuter and national rail stations, the DLR was built with accessibility in mind. All of the stations on this

automated light rail line, which provides access to areas near London that are underserved by the Underground, contain elevators or have street-level access. Platforms and trains were built to the same height, so there are minimal gaps (Figure 2). Train cars also have room for mobility devices along with easily reached buttons for door openings. Audio announcements are made for the visually impaired.

Although tactile markings were observed at a number of Underground, commuter and national rail, and DLR stations, their placement and configuration in relation to the platform edge are not uniform. The absence of a European Union (EU) standard for tactile surfaces has resulted in a mix of designs (Figure 3) that can change from city to city and between stations—old and new.

One in ten persons who use London buses is mobility impaired. Fortunately, all of London's buses are accessible by low floors and ramps and have priority seating, handrails, and stop buttons. Moreover, as part of recent renovations and upgrades to city bus stops, TfL is introducing platforms that allow buses to make contact with curbs without leaving marks on the tires or the concrete so that bus floors can be flush with platforms.

There are plans to improve accessibility on public transportation in London in the near future. The upcoming 2012 Olympics is spurring new transportation investments, including improved boarding platforms at bus stops, reductions in gaps at Underground stations, and the construction of two new accessible rail lines that will service the eastern



Figure 1 Wide gaps, like this one between a London commuter train and platform, are a danger to riders who have special mobility needs.



Figure 2 In London, the DLR provides level boarding for persons with disabilities.



Figure 3 Two different configurations for tactile markings on platforms. The absence of a consistent standard has resulted in a mix of designs throughout Europe.

areas of London where the games will be held. TfL has also set a goal of increasing the percentage of step-free Underground stations to 25% by 2010, and to 33% by 2013.

Hackney Community Transport

Team members also visited a distinctive non-profit agency in London's Hackney borough that offers an outstanding example of a coordinated approach to expanding public transportation access.

Hackney Community Transport (HCT) is a user-directed agency that provides a variety of special transportation services for individuals who are unable to use mainstream public transportation. PlusBus Hail and Ride, HCT's demand-responsive service, is a route-deviated service that operates with small,

shuttle-type buses that have ramps and priority seating for persons with disabilities. PlusBus was intended to fill the gap between conventional fixed-route transit and door-to-door services. It utilizes both on-demand and bus stops for boarding and alighting. HCT also operates a door-to-door service, for individuals who need assistance to and from the vehicles, and provides school transportation as well as contracted services for community organizations.

HCT is managed by a committee elected from its users. User participation is a key component of its operations. User forums are held throughout the year for all HCT-provided services. Feedback from these forums is provided to the management committee for use in service planning (e.g., decision making regarding bus stop placement). To keep its operating costs low, HCT relies on volunteer drivers and provides driver training for area residents that offers a bridge to employment for local youth, many of whom have moved on to full-time positions as bus drivers with TfL. The organization trains about 150 new drivers/year.

HCT has become so successful with its special transportation services that it has developed a for-profit unit that provides, under contract to TfL, traditional, fixed-route bus service on three routes with an annual ridership of 1.8 million. HCT channels the proceeds from its TfL contracts back into the organization's community-based special transportation service programs.

The Hague, Rotterdam, and Amsterdam, the Netherlands

Public transportation officials in the Randstad are pursuing a number of approaches to improve accessibility in the region.

In The Hague, tram fleets primarily consist of older cars that require a significant step up from the mostly street-level boarding locations. The underground tram stations (a tram tunnel was built in the city center at the crossing of two main streets, Grote Marktstraat and Spui, to reduce congestion between the tram lines and road traffic) contain raised platforms, but they still are not high enough to allow level boarding onto the trams. Horizontal platform-to-tram car gaps are reduced in the underground stations (Figure 4), except for the doors on the end of each tram that angle away from the platform. Overall, however, the underground tram stations, which



Figure 4 An underground tram station in The Hague.

feature easy-to-find elevators, tactile floor markings, and a number of visual aids that delineate arrival times for the various tram lines, are more friendly to mobility-impaired passengers. Team members also noted that trams have doors on only one side of the car.

When implemented, a planned rail line between The Hague and Rotterdam will operate newer tram sets with priority seating, space for mobility devices, and additional audio and visual devices to assist passengers, including a system in which a person in seating reserved for passengers with disabilities can send messages to a tram operator via an intercom. Additionally, a number of tram stations in The Hague area are being modernized to allow level platform boarding and provide step-free access to stations.

In Rotterdam, the tram lines are well incorporated into the streetscape. The sidewalk system is very accessible, with well-marked crosswalks, curb cuts, and pedestrian crossings with both visual and audio signals. Tram stations with raised platforms permit relatively easy boarding for those using mobility devices. Tram cars have hand rails, but they do not have priority seating areas for mobility-impaired passengers.

The subways in Rotterdam service a mix of modernized and older stations. At Wilhelminaplein (one of the city's rebuilt stations), elevators, wider turnstiles, and directional floor markings are present for mobility- and visually-impaired passengers. Wilhelminaplein also has a separate turnstile gate for passengers who require an elevator, with the elevator conveniently located at the end of the

loading platform to allow for a shorter path to board the subway.

The subway platform at Kralingse Zoom, an older subway/park and ride station, is accessible by both elevators and escalators from the bus transfer station. The station platform provides for near-level boarding of subway trains and has a minimal gap but does not have in-ground tactile markings for visually impaired passengers. The bus transfer station has approximately six lanes for bus boarding. There are no curb cuts for mobility devices, and there is little visual information for hearing-impaired passengers.

In Amsterdam, the integration of bus, tram, and paratransit service is on display along a new corridor built from the Central Station to a new development that rests on reclaimed land in the eastern part of the city. Team members traveled along the corridor's new tram line, which features cars with level boarding (except at the Central Station), space for wheelchairs and other mobility devices (Figure 5), handrails, and audio stop announcements for visually impaired passengers.

Buses and paratransit vehicles in the city have tie-downs, wheelchair lifts or low floors (Figure 6), ramps, and stop announcements.

Stadsmobiel is the paratransit program offered in Amsterdam by ROA, the regional public transportation authority. The program is open to persons with disabilities as well as those who are 65 or older. Passengers apply for the program and, if approved,



Figure 5 Trams in Amsterdam provide ample space for strollers, wheelchairs, and other mobility devices.



Figure 6 A low-floor bus with wheelchair ramp access in Amsterdam.

are authorized for a specific number of trips on Stadsmobiel within a 15-mi radius of their home. Passengers with disabilities face no trip limits, while others may take up to 350 one-way trips/year. With its fleet of 125 buses (Figure 7), Stadsmobiel completes 1 million annual trips for about 35,000 active passengers. A trip is initiated when a passenger calls for a Stadsmobiel ride 1 h ahead, at which time the dispatchers locate the nearest vehicle using global positioning system (GPS) technology. Passenger information is transmitted to the data terminal on board the vehicle. The addition of these electronic devices has made the ride scheduling much more efficient and has permitted more trips to be provided. The driver collects the designated fare of 45 cents euro for every 3 mi traveled. About 8% of the cost of the ride is covered by fares; the rest is covered by the local authority.

Another form of public transportation in the Amsterdam area is NS, the national rail system, which functions very much like a commuter rail system between Amsterdam and The Hague. The NS train sets are older and therefore do not allow for level boarding; many of the trains have steps. However, the NS trains have been modified to allow for limited wheelchair boardings, where marked, and the train compartments have been outfitted to facilitate boarding by individuals with mobility impairments. Dutch rail authorities have also developed a program in which assistants are made available to help passengers with train boarding and station navigation.



Figure 7 Extended wheelchair lift on a Stadsmobiel bus, part of Amsterdam's special transportation services program.

Stockholm, Sweden

In Stockholm, the T-bana presents a number of challenges to passengers with mobility impairments. Varying platform heights and large platform-to-train gaps are a barrier to easy, level boarding at a number of stations. SL, the public transportation authority, maintains it will eliminate these problems by 2010. However, access could remain an issue because some of the train platforms on the system are controlled by the National Railways rather than SL.

Elevators are provided in 99% of the T-bana stations, but not every platform or entrance has an elevator. Where elevators are in place, passengers with disabilities often face obstacles in using them. Some elevators must be activated and operated by station managers. At major stations with multiple platforms, inconvenient elevator placement requires passengers with disabilities to backtrack, adding to travel

time from the street level to the proper platform. Station managers are also consistently challenged to keep elevators clean.

Newer train sets have spaces available for mobility devices; however, these spaces are often shared with grocery carts and bicycles.

The study team met with two Swedes, who use wheelchairs and are also advocates for the community, to learn about accessibility issues from their perspective (Figure 8). The men demonstrated the challenges that a person with disabilities faces in using Stockholm's T-bana at a central downtown station. Their trip on the T-bana required the assistance of a station employee. Stockholm has a "call ahead" rule, where persons with disabilities wishing to travel on the T-bana are requested to call the station prior to embarking upon their journey. The men did not call ahead, but they did receive assistance from a station employee. While able-bodied passengers took a short escalator ride from the street level to the platform, the men, assisted by the employee, had to use a series of elevators. Their trip from the street to the platform took more than 30 min.

Both men maintained that there is much left to be done to assist public transportation passengers with disabilities in Stockholm.

Audio and visual aids for hearing- and visually impaired passengers—including display and audio announcements (Figure 9), and timetables in Braille, in large print, and on audio tape—are provided and well utilized. Tactile markings are widespread in stations to lead visually impaired passengers to and from entrances and turnstiles, and to the nearest elevators. The tactile markings do not always lead



Figure 8 Swedish disability rights advocates brief the study team.



Figure 9 Digital displays on a Stockholm bus provide clear information to all.

a passenger all the way to the boarding platform, however.

Low-floor vehicles make up roughly 55% of Stockholm's 2,200-vehicle bus fleet; SL aims to increase that number to 100% by 2010. The only exception will be the long-distance bus lines, which would utilize lifts.

Nearly 2% of public transportation riders qualify for Stockholm's special transportation services (STS), which have been required by the national Social Security Act since 1982. According to the most recent statistics, STS provides 2.6 million annual trips for 79,000 registered passengers. Trips must be booked 10 h in advance. Passengers are approved for either regular taxis or specialized minivans with ramps. Passengers can use the taxi for up to 140 round trips annually; this method is used by approximately 64,000 passengers. The remaining 15,000 STS passengers use the minivans and face no annual trip limit. Passengers pay about 16% of the cost of STS.

Gothenburg, Sweden

In Gothenburg, a comprehensive 185-page plan for the Västra Götaland region sets the standards and norms for the provision of accessible transportation services for individuals with mobility impairments. Local officials say that their goal is to move from segregation of passengers with disabilities to integration into mainstream transportation modes, which include bus, tram, ferry, and commuter rail lines.

The region's overall goal is to enable 98% of all citizens to travel on public transportation modes operated by Västtrafik by 2010, up from the current 95.5%. More than 153 million linked passenger

trips/year are provided by Västtrafik. Another 1.8 million trips are provided by Göteborgs Stad Färdtjänsten (Special Transportation Service for the Disabled), which is the responsibility of the city council. Approximately 22,000 Gothenburg area residents use Färdtjänsten, with transport being provided by a combination of taxis and wheelchair-accessible buses.

A range of mobility aids are visible on the various public transportation modes in the Gothenburg area. On the city’s extensive tram system, stations feature elevators as well as a number of tactile markings, including textured station maps (Figures 10 and 11). New fare machines with touch screens are also in the process of being implemented.

At the same time, however, a number of obstacles to access are also evident. Although tram cars provide space for mobility devices near the entrance to the car doors, boarding the trams can be difficult. Passengers must step up from the platform to board, and relatively large platform-to-car gaps are also present, partly because most tram cars are more than 20 years old. New tram cars that will permit more level boarding and better maneuverability and seating arrangements for mobility devices are currently being tested and will be incorporated into the fleet.

Commuter rail patrons must take a step up from the platform and navigate yet another step in order to board trains, presenting an additional layer of difficulty for people with mobility impairments. Commuter rail trains also contain no spaces for



Figure 10 A map with raised features of an intermodal station in Gothenburg aids patrons with visual impairments.



Figure 11 Braille signs help patrons with visual impairments access train announcements in Gothenburg.

mobility devices and a minimum of handrails to assist with travel down the crowded train aisles.

Gothenburg’s buses have the EU-mandated low floors, handrails, and stop announcements. Bus lines provide for level platform boarding with little to no gaps. As a complement to Färdtjänsten, Gothenburg’s bus lines also feature 11 “Flex Lines,” a deviated, fixed-route bus service whose goal is to bring passengers with mobility limitations into mainstream transportation modes. Flex Lines cover more than 50% of the city and are open to all passengers. At “meeting places” (the term used instead of bus stops), GPS-triggered automated callouts inform riders that the bus is on the way and to go outside. The bus may deviate up to 220 yds from any meeting place to assist with a pickup or dropoff. Flex Lines transport an average of 2.4 passengers/h.

Ferries are an important mode of transport in Gothenburg; residents use ferries both for commuting and for pleasure travel. Ferry terminals with well-placed ramps provide level platform boarding for individuals using mobility devices (Figure 12).

Grenoble, France

Officials in Grenoble have embraced the concept of universal accessibility through design. The crown jewel of SMTC’s efforts to upgrade the city’s tram system was the May 2006 introduction of Grenoble’s third and latest tram line, which was designed from the ground up to ensure that the line, and the entire corridor, would be accessible to persons with mobility



Figure 12 Ferry ramps in Gothenburg provide easy access to all.

impairments. The new tram line features accessible tram sets, platforms with tactile markings, shelters, sidewalks, street crossings, and store fronts (Figure 13). Tram cars provide ample space for mobility devices (Figure 14) and feature audio and visual aids, such as stop announcements.

Minimizing the differences between the platform and tram car height was a special concern for the project engineers who worked on the new tram line. Builders of the tram cars dictated 3 cm as the minimum gap between the car and platform to allow for height differences that may occur when the cars stop at each station. However, to enable a smoother transition for persons using mobility devices, the city of Grenoble decided to accept the liability of making 1.5 cm the minimum gap for the new tram line (Figure 15).



Figure 13 Grenoble's new tram line illustrates an integrated system of accessible vehicles, crossings, and sidewalks.



Figure 14 Tram car interior in Grenoble.

SMTC is working to upgrade the other two tram lines in Grenoble with platform changes, tactile markings, elevators on multi-level stations, and other devices to aid mobility.

Buses are still an important component of Grenoble's public transportation system, and steps are being taken to ensure their accessibility. In 2005, 82% of the city's buses and 65% of its bus stops were deemed accessible. To increase these percentages, SMTC is pursuing a major bus stop remodeling program at an estimated per-stop cost of 30,000 euros.



Figure 15 Minimal platform-to-car gaps on Grenoble's new tram line.



Figure 16 Raised chair arms assist passengers who may have difficulty rising from a seated position.

Improvements include usable tactile surfaces, contrasting colors, raised platform heights, and a target line that bus operators can use as a guide to land at the space of greatest accessibility at each stop. A small but important feature already present at a number of Grenoble bus stops are perches and bench chairs with arms in bus shelters. The perches are easier to sit down on and rise from than a standard bench, and the bench chair arms provide assistance to persons who have difficulty rising from a seated position (Figure 16).

Grenoble also operates a mini-bus program that operates as a supplement to assist passengers with special mobility needs. The program, which operates 10 vehicles, provided 34,000 trips in 2005. Because the demand has exceeded the program capacity, it is now available only to passengers who use wheelchairs, have vision impairments, or have difficulty walking. To use the mini-bus program, a passenger must have a doctor certification.

Paris, France

In Paris, the Metro system provides limited accessibility to passengers with mobility impairments (Figure 17) and to those who have visual and hearing disabilities. Most stations lack accessible turnstiles and ticketing windows, and passengers confront large gaps and steps to board most trains. Tactile marking for the visually impaired is only present along the edge of train platforms. With the exception of the newest line, most Metro stations do not have elevators.

Public transportation officials indicate that they are devoting greater attention to ensuring accessibility on the bus system throughout the Paris area, with a goal of achieving full accessibility by 2015,



Figure 17 An entrance gate for passengers with disabilities inside the Paris Metro.

before retrofitting the Metro system. Currently, only a small number of bus lines are accessible. These lines are served by low-floor buses and buses with wheelchair lifts. Buses have space for one wheelchair tie-down, but the space is often filled with strollers and carts. Some buses contain securement devices, but officials indicate that securement is only required once the bus reaches the outskirts of the Paris region. While easy access to bus stops is mixed, most stops have curb heights that allow for level boarding onto low-floor buses. Most bus shelters have space for mobility devices. However, there are fewer accessible bus stops and sidewalks outside the central part of the city.

For individuals who are unable to travel via subway or regular buses, public transportation is provided through the Paris Accompagnement Mobilité (PAM) program. The program operates 115 accessible vehicles, providing service only to adults with severe disabilities who receive disability payments from the government. Most vehicles have one or two wheelchair tie-downs, though some have up to five. At peak times, trips are moved from PAM vehicles to taxis to meet the demand. Each passenger pays a fare based on distance traveled. Public funding provides for about one half of the program's cost. About 5,000 people are registered for PAM, and 5,000 trips/week are provided.

PARTNERSHIPS

Partnerships between transit agencies and other entities can serve accessibility goals. The study team

learned about a number of collaborative efforts from the transit agencies visited that were designed to better accommodate mobility-impaired individuals. Such efforts included relationships forged between government agencies to better integrate various transportation modes in Gothenburg, as well as a cooperative effort between the public transportation provider and local businesses in Grenoble to make universal design concepts a reality along a new tram line.

Project KOLLA

Initiated in 2003, Project KOLLA is a cooperative effort among Gothenburg's three primary transportation organizations—Västtrafik (the area transportation authority), the Göteborgs Stad Trafikkontoret (Transport Office), and Göteborgs Stad Färdtjänsten—to make public transportation accessible to 98% of Gothenburg's citizens by 2010, by eliminating borders between special transportation and public transportation services.

To reach the 2010 goal, the transportation organizations have worked together under the KOLLA umbrella to set specific activities and targets for 2006 and each year thereafter. Some of the targeted activities for 2006 include providing travel training; providing additional personal assistance to travelers with disabilities on the public transportation system; developing the region's Flex Lines; developing a fully integrated information technology system; developing an easy-to-use, accessible payment system; and conducting a test of a linked journey system. Staff assigned to KOLLA is also conducting research and development to help influence passengers with disabilities who are skeptical about using basic public transportation to experiment with Flex Line journeys that feed into regular, scheduled public transportation routes.

KOLLA's accomplishments to date include adjusting sidewalks and tram/bus stops along prioritized routes to facilitate use by persons with disabilities and introducing personal assistance for persons with disabilities in several targeted areas.

Working with Local Businesses to Improve Accessibility

Public transportation officials in Grenoble have worked in partnership with local store and business owners in an effort to create a completely accessible

environment for people with mobility impairments—from the storefront to the tram or bus line.

Grenoble is committed to implementing universal accessibility through design. The impact of this approach can be seen in the city's new tram line, which was introduced in May 2006. The line was designed from the ground up; a large section of highway through Grenoble was torn down to create the new tram corridor. Once the highway was removed, SMTC and Semitag worked with the businesses along the line to rebuild the streets, the sidewalks, and the storefronts to make the entire corridor accessible to persons with disabilities. Storefronts were altered to allow for more gradual and wider approaches that are easier to navigate for individuals using mobility devices.

Addressing Complex Administrative Structures

The Netherlands offers an example of the need for greater partnership when administrative structures supporting public transportation reach high levels of complexity.

Ministerie van Verkeer en Waterstaat (The Ministry of Transport, Public Works, and Water Management, or VenW) sets the policy framework for public transportation in the Netherlands. VenW provides funds to 19 regional public transportation authorities (PTAs) across the country; these PTAs are responsible for organizing the transportation services (the 450 municipalities they represent are responsible for actual system operations). Although coordination is required among the contiguous PTAs, it can be forgone if the national interest is deemed better served by doing so.

Ministerie van Volksgezondheid, Welzijn en Sport (The Ministry of Public Health, Welfare, and Sports, or VWS) is responsible for accessible transportation for special needs populations. It works cooperatively with VenW in the coordination of the national policy for persons with disabilities and coordination between the specialized transportation and public transportation systems. VWS's role in providing accessible transportation to those with disabilities is complicated. It currently oversees six different programs for transporting people with special needs. Moreover, entities that provide transportation to wheelchair users face four different sets of regulations, the application of which depends on the type of wheelchair in use.

Passengers are often forced to deal with these complex administrative structures when trying to access the different public transportation schemes, each of which has its own requirements and ambiguous and fragmented division of responsibilities. The result has been service gaps for passengers and system inefficiencies.

Officials in the Netherlands recognize that the administrative system is fragmented and they are pursuing coordinated approaches to planning and development to ensure maximum integration and coordination in the future. Pursuant to a 2005 Mobility Policy Document, PTAs and the national rail network are working together to achieve seamless transportation services. Work is also under way to integrate services between PTAs and the municipalities. Kennisplatform Verkeer en Vervoer (Traffic and Transport Platform for Authorities in the Netherlands, or KpVV), a professional research organization similar to the Transportation Research Board in the United States, is also helping to further coordination among transportation authorities. KpVV supports local authorities in their efforts to develop and implement traffic and transportation policies by providing research and technical assistance, arranging meetings, and setting up professional networks.

TECHNOLOGY

The study team was able to see first-hand several areas in which public transportation officials are enlisting technology to help provide greater access to services. Technological tools for fare collection, travel status and information systems, travel planners, and vehicle locating systems and software for scheduling and dispatch of specialized transportation vehicles are being integrated into operations at a number of the agencies visited to eliminate transportation barriers and create a more seamless travel experience across different modes.

Smart Cards

A number of the transportation agencies visited are using smart card technology in their fare collections to eliminate barriers to accessible public transportation, particularly for multi-modal travel.

In London, TfL's "Oyster" smart card is a comprehensive yet simple-to-use fare tool. The Oyster can be used on the London Underground, buses, the DLR, and on some of the national rail services. The

reusable card stores bus and other pass information as well as travel value. It also allows usage to be tracked, so that a passenger never pays more than the cost of a 1-day travel card on the public transportation system. The Oyster makes fare handling simple and easy for all passengers no matter what transportation mode they are using, is easy to obtain and add value to, and provides TfL a flexible and simple fare collection tool.

Officials in the Netherlands aim to eliminate barriers to cross-regional travel by moving toward a nationwide smart card launch in the near future. Smart card systems are already in place in some portions of the country. In Rotterdam, RET's Chipkaart smart card (Figure 18) is valid for all public transportation modes, including the city's subway, tram lines, bus lines, and the RandstadRail system. The card has eliminated the need for zones and has removed the barriers in boarding and changing buses and trams. Scanned at both the entry and exit point, the customer is charged for the exact cost of the trip, based on kilometers. The primary advantages to the customer are faster boarding, cost savings, and easy reloading through ticket vending machines. There are three types of Chipkaart to choose from, based on customer need: anonymous card, personalized card, and disposable card. RET's goal is to have 800,000 Chipkaarts in circulation by the end of 2006.

Gothenburg is currently phasing in a smart card system for use on its various public transportation modes. This system will allow a person to register his card and obtain a replacement if it is lost. Single-ride fares will be offered through the system, but multi-ride cards will be cheaper to purchase.

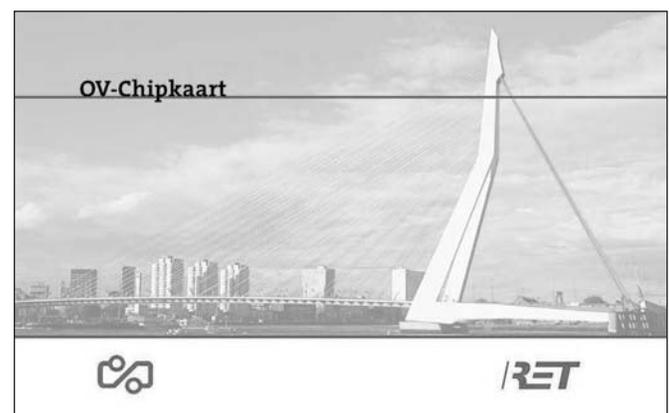


Figure 18 Rotterdam's Chipkaart.

Audio and Visual Information System

The Audio and Visual Information System (AVIS) has been installed on board all of London's DLR trains. The system uses verbal announcements and scrolling display screens to provide train passengers information on train destinations, next stations, and transfer opportunities. It is designed to make the DLR trains more accessible to persons with hearing and visual impairments.

iBus

In London, TfL is installing iBus, an advanced vehicle location technology system, to track bus movements within the public transportation system and enhance accessibility and service quality for all passengers. The system will allow for better management of on-time performance and tracking of system performance and quality as well as provide real-time bus service information on buses, at stops, and on mobile devices. The system will generate audio and visual next-stop announcements on each bus and provide better capability for responding to emergencies. The system will also feature headway control, enabling an operator to slow the bus down if it gets too close to the bus traveling ahead on the same route. Additionally, the system will trigger traffic lights at specific locations to improve on-time performance.

Haaglanden Mobiel Travel Information System

In late 2005, the Haaglanden Mobiel travel information system was implemented in the Netherlands. Haaglanden Mobiel provides multi-modal information, by phone or via a dedicated website, about road and public transportation system delays. Officials in the Netherlands consider the provision of real-time, accessible passenger information to be a key driver for increasing public transportation usage.

Geographic Information Systems

In Gothenburg, geographic information systems (GIS) are being used to provide real-time service information at stops (Figure 19), on the Internet, and by mobile phone.

Travel Planner

Gothenburg's travel planner service available via the Internet is used by 30,000 persons/day to plot



Figure 19 Digital displays provide arrival and departure information in Gothenburg.

out journeys all along the city's public transportation system. A voice-activated service is also available for those who are visually impaired or who do not have adequate Internet access.

Demand-Responsive Systems

In Paris, officials are in the early stages of experimenting with demand-responsive systems. These systems seek to integrate the use of scheduling and dispatching software with GIS technology to increase efficiency of door-to-door service public transportation services.

COMMUNICATIONS

The study team viewed communications as a matter of advocacy and outreach. In the cities visited, it was clear that there were examples, external and internal, of both forces in action. Externally, organizations representing the mobility-impaired community could push for public transportation

authorities to act to achieve greater levels of accessibility. Conversely, there were also instances where the transportation authorities themselves provided the impetus, by engaging community groups and reaching out to gather input about proposed design or operational changes. In general, the team found that the cities where authorities more routinely solicit input from the mobility-impaired community, such as Grenoble, have more accessible systems.

TfL's Outreach to Persons with Mobility Impairments

In London, TfL has reached out to persons with mobility impairments historically through targeting relevant media, seeking local stakeholder input on specific projects, issuing publications in alternative formats, monitoring complaints from target groups, and measuring service performance using undercover passengers.

TfL representatives provided a number of examples of consultation between the transportation authority and advocacy groups for persons with disabilities. In developing a demand-responsive plan, TfL held a forum to receive input from interested parties and consumers as well as created a subcommittee to the long-standing London Mobility Advisory Panel to give passengers an opportunity to discuss strategic and policy issues.

More recently, TfL developed a draft Disability Equality Scheme (i.e., a strategic plan) with a 3-year action plan. During this process, TfL representatives met with various stakeholder groups to ask whether the plan met expectations and if there were any unidentified needs. The consultation on the action plan concluded in March 2006.

Internally, TfL does not have a formal committee on mobility issues affecting persons who are elderly and persons with disabilities. Those issues are considered along with other transportation issues by TfL's 45-member Passenger Committee. TfL has established a Group Equality and Inclusion Unit, which approaches planning from the universal design perspective, to design systems that provide for inclusive transportation. It is also working to develop an Independent Disability Advisory Group, which will provide input at planning and project levels. The group will supplement, not replace, TfL's traditional project-by-project outreach to advocates for persons with disabilities.

Advisory Groups and Committees in Sweden

Sweden has established a number of advisory groups and committees at the national and regional levels to focus on transportation issues affecting its mobility-impaired citizens. The Office of the Disability Ombudsman is the consultative group to the government at the national level. With responsibility to address accessibility issues in all sectors—not just transportation—the group's mission is to monitor the rights and interests of persons with disabilities and to identify gaps and deficiencies in laws and regulations. Two of the group's fifteen members must come from organizations representing persons with disabilities. Group members are selected by the national government.

Another national group, the Disability Advisory Committee, informs and advises the national government on actions to improve road transport and public transportation situations for persons who are elderly and persons with disabilities. The committee reports to Sweden's National Road Administration. Its members consist of organizations for persons who are elderly and persons with disabilities, municipalities, and public transportation authorities as well as the civil aviation, maritime, and rail administrations.

Seven Regional Disability Committees address issues affecting persons with disabilities on the regional level and comprise representatives from organizations for persons who are elderly and persons with disabilities, municipalities, and public transportation authorities.

In addition, a disability coordinating group, which consists of representatives from various national government departments (e.g., the National Road Administration, agencies for aviation, railways), exchanges information regarding accessibility issues for which the members' respective departments are responsible.

Consultation with Special Interest Groups in the Netherlands

In the Netherlands, public transportation officials are required by law to engage in significant consultations with special interest groups, including advocates for persons with disabilities and persons who are elderly.

The Passenger Transport Act of 2000 instructs public transportation authorities and their third-party contractors to consult with these groups about

a minimum number of areas, including accessibility, fares, timetables or significant schedule changes, and passenger information. Although the law does not limit the number of special interest groups involved in the process, it does state that in every province the groups must be represented through a single special-purpose committee called a ROCOV. The ROCOVs allow advice and feedback to be provided to transportation authorities on a variety of issues through a single point of contact.

Advocacy in Stockholm

Officials in Stockholm indicate the public transportation authority has a long-standing cooperative relationship with organizations representing persons with disabilities, with consultative meetings held four to five times a year. Additionally, various organizations are consulted as part of project-specific groups for major developments or procurements. SL also holds monthly meetings with the mobility service administration. Special events have also been held to raise awareness of accessibility issues among SL employees and the general public, such as having the SL chief executive officer use a wheelchair to navigate the system for a day.

However, as mentioned earlier, team members met with advocates for persons with disabilities who feel that the communications channels between policymakers and the community still have a long way to go to become truly effective. One of the advocates mentioned a trip he took to observe how groups representing persons with disabilities in the United States organize themselves and communicate with government officials. He hopes to use some of their techniques as a model for the groups in Sweden.

Both advocates stressed that accessibility needs to be a civil right in Sweden, similar to the treatment it receives in the United States under the Americans with Disabilities Act. They also suggested that a sense of complacency exists among their countrymen, who think that if a process for persons with disabilities is put into place, it will eventually lead to an action plan. This, they said, is not always the case.

Working with Disability Advocates in Grenoble

Public transportation officials in Grenoble have received significant input from groups representing persons with disabilities over the past 30 years, and



Figure 20 Passengers with mobility impairments prepare to ride Grenoble’s new tram line.

this dialogue has led to many key improvements in the city’s transport systems. In 1979, Grenoble’s Association of Disabled People (ADP) pressured SMTC to create a mini-bus service that is still in operation. Today, ADP has continued to be very involved with SMTC’s accessibility efforts, as it helps the agency to prioritize which bus and tram stops should undergo accessibility renovations (Figure 20).

Another example of SMTC’s work with ADP and other groups representing persons with disabilities is Grenoble’s multi-year effort to make city bus stops accessible, which started in 1995. Standards were developed on bus stop heights, ramps, slopes, and color and location of urban furniture. After making all the stops accessible on a bus line, SMTC would invite representatives from the groups to review the work and provide feedback. SMTC would then review and incorporate their suggestions before it began modernization work on the next line.

Overcoming Language Barriers

London is one of the most ethnically and culturally diverse cities in the industrialized world. According to the 2001 census, nearly 30% of London’s residents were either born outside the United Kingdom or belong to a minority ethnic group. As a result, estimates indicate there are more than 130 different languages being spoken in greater London.

Language can pose a significant barrier to use of the public transportation system. To achieve and maintain quality customer service for non-

English-speaking customers, TfL has worked to make system and route information accessible in languages other than English. Timetables and route maps are provided in 14 languages, including Chinese, Japanese, Portuguese, and French. In addition, travel information signage in train stations is provided in multiple languages as well.

TfL is also experimenting with visual forms of communication to overcome language barriers. Most notably, officials have created a “spider map” for city buses, which takes easy-to-understand, color-coded concepts from the Underground and applies them to bus routes. Officials indicate that the map, which TfL originally developed for people with learning disabilities, has made the city’s bus program more understandable both for locals and visitors to the city.

FINANCING

Public transportation agencies fund their accessibility efforts through a variety of means. While some agencies may receive dedicated appropriations targeted specifically to infrastructure improvements, others depend on more general funding to meet their accessibility goals. Some are benefiting from measures put in place to address other transportation challenges in their respective regions, such as London’s congestion charging that aims to reduce private vehicle traffic in the center city but also raises funds for public transit. Meanwhile, France’s experience offers a reminder that financial support for greater accessibility does not always translate into infrastructure improvements; it can also be a tool for providing needed passenger subsidies.

Access for All Fund

In the United Kingdom, the national government has responsibility for funding all public transportation in the greater London area. Within this structure, an additional commitment has been made to ensuring accessibility for mobility-impaired persons through the creation of the Access for All Fund. This special fund will provide more than 580 million British pounds (GBP) over 10 years for infrastructure improvements to improve station access, with the ultimate goal of achieving barrier-free access throughout the entire rail network. Fund revenues come from property taxes, fare box revenues, and

congestion charging. Fare box revenues account for up to 40% of the Fund’s total income.

Congestion Charging

In 2003, London implemented a congestion charging system to reduce road traffic in the city center, to increase capacity on bus service, and to raise funds for a barrier-free infrastructure. Under the system, motorists are charged 8 GBP/day if they choose to drive in downtown London weekdays between 7:00 a.m. and 6:30 p.m. (Figure 21). Motorists can arrange to make daily, weekly, monthly, or annual payments. The gross annual revenue received from congestion charging is 175 million GBP, with net revenue of 78 million GBP. Thus far, congestion charging has contributed to greater accessibility by helping to reduce fares and providing a source of funding for expanding the public transportation network, increasing capacity, and making needed infrastructure improvements to the Underground.



Figure 21 London’s congestion charging program helps pay for public transportation infrastructure improvements.

Road Pricing Policy

Officials in the Netherlands are planning to implement a road pricing policy that will provide a funding source for public transportation services in the country.

Road traffic is a serious problem in this small country that has 6 million cars in operation. To address the issue, a national commission was convened and charged with formulating a road pricing policy. Using input from many sectors, the commission has created a policy that will be implemented in two phases. Under Phase One, the policy will work to solve congestion bottlenecks with a congestion fee that will be implemented in certain highly congested urban areas. Phase Two will see the policy evolve into a system where residents will have to pay a road-use fee based on every kilometer they drive on national roads.

As the road-use fee is phased in, the country's tax on automobile purchases (35% of the purchase price) that supports public transportation will be phased out. Other sources of funding for public transportation, including an annual use tax based on car weight, fuel taxes, and parking revenues, will remain intact.

Sweden is evaluating a similar road pricing plan, which would enable government officials to replace the country's fuel tax with revenue gained from vehicle-miles-traveled charges.

Employer Payroll Tax

France's national government finances public transportation in Paris and its suburbs. The national government also provides some funding for large rail projects. Provinces or groups of municipalities in France are responsible for organizing and financing transit at the regional or local level.

In 1973, the national government approved an employer payroll tax to subsidize public transportation. The tax can be levied against companies with more than nine employees. Municipalities with regular bus service can levy up to 1% of a company's payroll; municipalities with more extensive public transportation investments, such as tram lines, can impose a levy of up to 1.5%. The employer tax contributes approximately 40% of the cost of public transportation in France. In Paris, the tax provided for approximately two-thirds of STIF's overall budget in 2004; public subsidies and road/traffic fines accounted for the remainder.

Variable Fare Structures

France's urban public transportation systems feature variable fare structures, or "social fares," to provide transportation access to individuals who meet certain criteria, including low-income workers. Under a national statute passed in 2000, urban public transportation networks in France must offer a 50% discount on the regular fare to any person who earns less than 500 euros/month. Most systems offer reduced fares to persons who are unemployed, have disabilities, are elderly, earn low incomes, or receive pensions.

POLITICS

Accessibility issues continue to move up the priority list on political agendas of countries throughout the EU. The study team looked at the issue of politics through the lens of determining how countries are using either legislation or regulations to encourage or mandate the achievement of their accessibility goals. Some countries—and even regions within countries—are much further along in making key changes. Governments, in general, lean more toward encouraging than mandating action on accessibility, and the absence of measures classifying accessibility as a civil right leaves room for accessibility issues to linger. Some countries and governments, such as the Netherlands, are establishing timetables that provide 30 years or more to make needed changes.

European Union

More than 45 million persons with disabilities are living within the EU. One in four EU households has a member with some form of disability. In addition, like many other parts of the world, the EU confronts the reality of a rapidly aging post-World War II population.

These factors have prompted the EU to take a more active role in addressing the mobility needs of senior citizens and others with mobility impairments. The EU has created a number of Europe-wide directives in recent years focusing on accessibility in transportation. The European Conference of Ministers of Transport (ECMT) Charter states that accessibility is a non-negotiable condition of public investment in transportation. The European Commission Bus Construction Directive made accessibility a Europe-

wide requirement on new buses, starting in August 2003. The ECMT and the International Association of Public Transport (UITP) cited partnerships between local authorities and transportation providers as a “good practice.”

United Kingdom

Under the Disability Discrimination Acts of 1995 and 2005, the United Kingdom enacted legislation that will secure accessibility to public transportation for those with mobility impairments. The country’s standard is “inclusive mobility,” and the test used is one of “reasonableness” for accessibility. Public transportation is covered in part by statutory rights and in part—for vehicle standards—by technical regulations.

The Disability Discrimination Act of 1995 provides a “right of access” to goods, services, facilities, and transportation infrastructures, which includes stations, bus stops, and airports. A number of specific rights to reasonable access became mandatory in 1999, with another set of rights becoming mandatory in late 2004.

Door-to-door services for persons with mobility impairments are viewed as complementary to accessible general public transportation services. There is no legal requirement to provide demand-responsive or paratransit services in the United Kingdom. Such transportation is funded and provided locally to meet local needs, because it is viewed as a complement, not a substitute, to public transportation.

The Netherlands

The government of the Netherlands has created a national transportation policy plan, *Nota Mobiliteit 2004–2020*, whose primary focus is strategy and funding that will underlie the transportation policy of the Netherlands in the next 15 years. It is also focused on moving responsibility away from the central government to local provinces and regions that will be responsible for the transportation policies pertaining to their areas of the country.

In 1999, VenW, which sets the national policy framework for public transportation, formulated general policy goals that set forth accessibility goals for bus transportation, by 2010, and for railways, by 2030. However, in 2004, growing political pressure from Parliament led to an accelerated movement to develop specific plans to make the accessibility goals

a reality. Since that time, VenW has been required to report to Parliament on its action plan to improve accessibility on all modes of public transport.

Under the Passenger Transport Act of 2000, special interest organizations have the right to obtain information from transportation authorities and the right to provide formal advice to regional PTAs and the third-party contractors providing the actual transportation services. As mentioned earlier, the law also stipulates that PTAs and their third-party contractors should consult with these advisory groups about a minimum number of areas, one of which is accessibility. Although the law does not limit the number of special interest groups involved in the process, it does state that the groups must be represented through a single special-purpose committee known as a ROCOV. This restriction allows advice to be provided to transportation authorities on a variety of issues through a single point of contact.

The national government also states that door-to-door transportation services for specific target groups should be available if there are no public transportation services available.

Sweden

Sweden’s national policy is “inclusivity” for those with disabilities. This policy includes all disabilities, even those that are not obviously discernable. The national government has enacted several pieces of accessibility-related legislation since 1979, when a statute was first introduced that promoted the adaptation of public transport for those with disabilities.

Most recently, the Swedish government established a national policy objective targeting 2010 as the date when accessibility to public transportation, with a wide range of travel options, shall be available to all. On May 31, 2000, the Riksdagen (the Swedish Parliament) adopted a bill whose objective is a society that makes it possible for persons with disabilities to fully participate in social life. It provides that the needs of persons with disabilities shall be accommodated in all sectors of society. The legislation does not have the force of a civil rights statute, however, and some confusion exists about what Riksdagen actually intended to achieve with the legislation.

Special transportation services have been available in each of Sweden’s municipalities since 1980. A statute formally requiring the services, and setting specific standards for accessibility, was enacted in 1998.

France

Public transportation is defined under French law as a public service. This public service has been further defined as (1) an activity of general interest and (2) an activity whose definition and organization are the responsibility of local public authorities in France. Thus, the decision to organize and implement a public transportation network in any particular area remains a decision for local authorities, although most have now set up some level of public transportation network.

In November 2005, a special law affecting the rights of persons with disabilities in France went into effect. This law requires all transportation authorities to attain total accessibility for people with any kind of disability on their whole “chain of mobility,” which includes streets, stations, and rolling stock, before 2015.

Under the 2005 law, participation of the community and advocates for persons with disabilities in the consultation process for achieving accessibility is mandatory. The goal is to have a master plan of accessibility by 2008. The development of the plan will entail a collaborative effort with organizations representing persons with disabilities; however, the law does not establish a formal process for such collaboration. Plans are also under way to designate a public body that will be in charge of receiving complaints about restrictions to mobility under the new law. Future funding for public transportation will be dependent upon compliance with meeting accessibility requirements.

In Paris, STIF is developing an accessibility policy for the city’s various public transportation modes in order to meet the new legal mandates. However, authorities recognize that modernizing the Paris Metro system for full accessibility will be a major challenge due primarily to its age and the difficulty and expense that retrofitting the system will require.

APPENDIX A—STUDY MISSION TEAM MEMBERS*

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APPENDIX B—STUDY MISSION HOST AGENCIES/COMPANIES

United Kingdom

Transport for London (TfL)

ABOUT

Ann Frye Ltd

Hackney Community Transport/CT Plus Limited

PB Consult

The Netherlands

Ministerie van Verkeer en Waterstaat (VenW)

Ministerie van Volksgezondheid, Welzijn en Sport (VWS)

Organisation of PT Consumers (OPC)

Rotterdam Electric Tram (RET)

Regionaal Orgaan Amsterdam

Stadsgewest Haagland

HTM Personenvervoer

Kennisplatform Verkeer en Vervoer (KpVV)

Royal Netherlands Embassy

Sweden

Storstockholms Lokaltrafik (SL)
Connex Sverige AB
Veolia Transportation
Västrafik
Göteborgs Stad Färdtjänsten

France

Syndicat Mixte des Transports en Commun (SMTC)
Semitag BP
Syndicat des Transports d'Ile-de-France (STIF)
Paris Accompagnement Mobilité (PAM)
Groupement des Autorités Responsables de Transport
(GART)

APPENDIX C—LIST OF ABBREVIATIONS

ADP Association of Disabled People
APTA American Public Transportation Association
AVIS Audio and Visual Information System
DLR Docklands Light Railway
ECMT European Conference of Ministers of
Transport
EU European Union

FTA Federal Transit Administration
GBP British Pounds
GIS Geographic Information Systems
GPS Global Positioning System
HCT Hackney Community Transport
ITSP International Transit Studies Program
KpVV Kennisplatform Verkeer en Vervoer
NS Nederlandse Spoorwegen
PAM Paris Accompagnement Mobilité
PTA Public Transit Authority
RATP Régie Autonome des Transports Parisiens
RET Rotterdam Electric Tram
SL Storstockholms Lokaltrafik
SMTC Syndicat Mixte des Transports en Commun
SNCF Société Nationale des Chemins de Fer
Français
STIF Syndicat des Transports d'Ile-de-France
STS Special Transportation Services
TCRP Transit Cooperative Research Program
TfL Transport for London
TRB Transportation Research Board
UITP International Association of Public Transport
VenW Ministerie van Verkeer en Waterstaat
VWS Ministerie van Volksgezondheid, Welzijn
en Sport

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