

## Personal Travel Assistant (PTA)

An Innovative *Connected and Sustainable Mobility* Pilot by the Cisco Internet Business Solutions Group (IBSG) and the Cities of Seoul and Amsterdam

### Overview

Personal Travel Assistant (PTA) allows people to access transportation information on any web-enabled device, from any location, helping to improve their transit experience within urban environments and reduce their personal carbon footprint. Unlike map-based direction-finders or trip planners, PTA provides a wide array of real-time information, including suggestions that allow citizens to reduce the cost of travel and find the route and transportation method that will result in the lowest carbon emissions.

A Connected Urban Development (CUD) pilot initiative, PTA is a web-based service developed by Cisco Internet Business Solutions Group (IBSG), the company's global strategic consulting arm, in partnership with the cities of Seoul and Amsterdam. Additional concept development has been provided by the Massachusetts Institute of Technology (MIT) Mobile Experience Lab.<sup>1</sup> PTA enables cities to provide users with travel information in a convenient format through various channels, including smartphones, PDAs, websites, transit stations and vehicles, and personal computers.

Figure 1. Personal Travel Assistant for Informed Urban Citizens



<sup>1</sup> mobile.mit.edu

The Seoul PTA pilot will be launched in Seoul, South Korea, in conjunction with the Third Connected Urban Development Conference on May 21-22, 2009. Seoul is one of seven cities partnering in the Connected Urban Development program, along with Amsterdam, Birmingham (England), Hamburg, Lisbon, Madrid, and San Francisco. Cisco IBSG worked with Seoul to develop PTA, with parallel development taking place in partnership with the city of Amsterdam. Initially, Seoul PTA will serve the Jung-gu and Jongno-gu districts of Seoul; citywide coverage will roll out later in the year.

Seoul PTA is available at [pta.seoul.go.kr](http://pta.seoul.go.kr), which can be accessed from any IP-enabled device.<sup>2</sup>

## Key Features

Seoul PTA incorporates “virtual assistant” features that provide transit guidance based on user preferences and trip context (for instance, whether time is more critical than expense for a particular trip), employing real-time traffic and public transportation information. PTA consists of four key features:

Figure 2. Seoul PTA Shows Planned Personal Travel with Real-Time Traffic Information

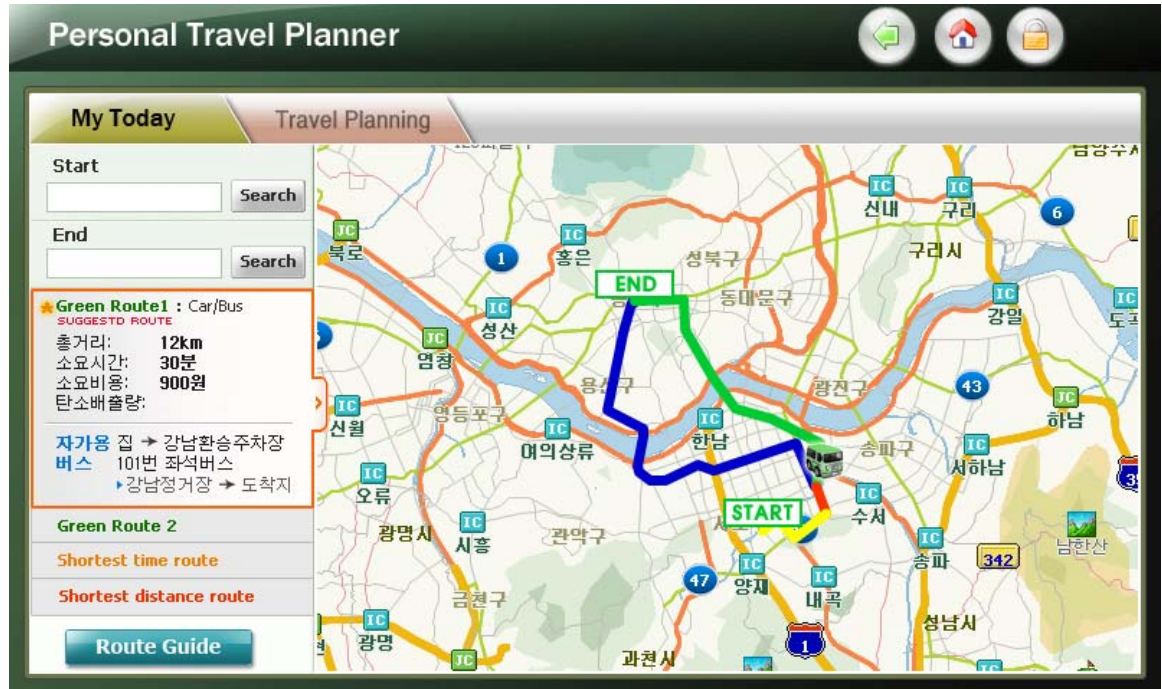


- **Personal Travel Planner:** PTA offers a personal activity scheduler that enables citizens to reduce the duration, costs, and carbon impact of their transportation choices—all based on user profile and context. Daily travel often consists of one or more trips. Each trip may involve using different transportation modes, such as driving the car to the train station, taking the train to a particular depot, and catching a bus that stops near the workplace. Personal Travel Planner helps citizens select better transportation modes for each trip segment based on user preferences,

<sup>2</sup> The Seoul PTA service is available online free of charge. Access from mobile devices may be subject to service provider charges.

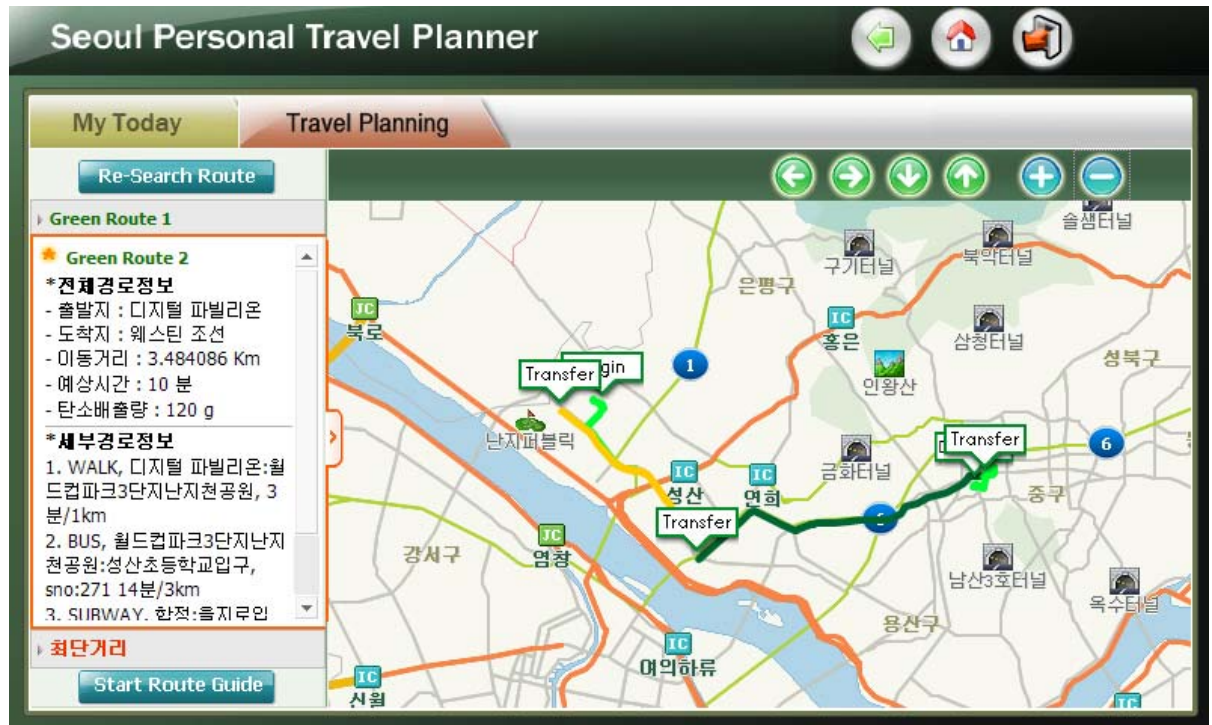
available transportation options, and the expected duration, distance, and carbon emissions of the planned trip.

Figure 3. PTA Real-Time Trip Router Shows Citizens Greener Transit Alternatives



- Carbon Calculator:** PTA informs users about the distance, cost, and carbon footprint of their travel activities—on a daily, weekly, monthly, and yearly basis. PTA estimates the carbon emissions of each planned trip based on two factors: (1) the average speed used to reach a given destination by each transportation mode, and (2) the tier-3 greenhouse gas calculation logic suggested by the Intergovernmental Panel on Climate Change (IPCC). The carbon calculator stores users' travel distance and carbon emissions so they can view and manage their carbon footprint and travel modes.

Figure 4. PTA Shows Tie-Ups and Alternative Routes in Real Time



- **Real-Time Router:** PTA allows citizens to find alternative routes based on real-time traffic information and their current location. If a traffic accident occurs while a user is in transit, for example, the service will remember the trip's origin and destination, and reroute proactively. Using electronic maps, PTA offers information about nearby parking, public transportation stops/stations, and specific destinations. It also provides available transportation modes with trip routes, a recommendation for the fastest option, and an estimate of carbon emissions from current location to destination.
- **Transportation Information Service:** PTA provides public transportation route maps and schedule information with convenient search options. Citizens gain enhanced visibility into public transportation (for example, when the next bus will arrive at a stop or station), making their overall travel experience more predictable and enjoyable.

A more detailed feature set for the PTA service is outlined in Table 1:

Table 1. PTA Feature Set for Pilot

Feature	Description
Route and schedule information	Provides public transportation (bus, subway, etc.), route maps, and schedule information using easy search features.
Current travel conditions, alerts, and avoidance	Offers real-time information on roadway and transit conditions; provides alerts when special problems develop on intended routes and recommends alternatives.
Travel optimization	Optimizes travel planning to minimize time and transportation/environmental costs based on user profile and context.
Transit vehicle arrival	Provides real-time information on when the next transit vehicle will arrive at a stop or station.
Mapping and guidance	Offers information about nearby parking (automobile and bicycle), public transportation stops/stations, and destinations.
Real-time location information	Uses electronic maps to tell individuals where they are; provides a record of personal mobility carbon footprint.
User travel analysis	Informs users of their travel activity in kilometers/miles, costs, and impacts (CO2 emissions).
System analysis	Provides information on when, where, and how people travel to facilitate transportation planning.

Source: Cisco IBSG Connected Urban Development and Victoria Transport Policy Institute, 2008.

Future versions will include additional features, such as enhanced bus transit information, including bus speed; integration with Smart Transport Payment; integration with real-time parking lot information; and carbon mileage point conversion into T-money, Seoul's smart transportation e-payment card.

## An Urban Services Platform Approach

CUD ultimately envisions PTA as part of a global urban services platform approach for—and among—cities. Services will include, but are not limited to: citizen engagement; collaboration; community-building; professional geo-referential data; real-time environmental and energy metering and monitoring; simulations for real estate development; transportation planning; location marketing; and city scenario planning. Incorporating PTA into this platform will enable cities to optimize citizen services over time, encourage adoption of alternatives to road travel—whether public transportation or IP-based “smart work” options—and provide a catalyst for local services innovation, all with a goal of enhancing economic development and carbon reduction initiatives.

## Citizen Benefits

PTA's goal is to help citizens improve quality of life by transforming urban mobility and transportation patterns. PTA allows citizens to see the impact of their mobility-change activities, while also motivating people to manage their personal carbon footprint:

- Provides the ability to easily balance alternatives and make more informed decisions on day-to-day travel activities, whether for commuting, offsite meetings, or personal activities
- Empowers citizens by enabling them to make better decisions about their travel options, based on time, cost, and carbon impact
- Reduces unnecessary travel time and increases productivity

## **Policymaker Benefits**

PTA enhances the ability of city leaders and agencies to manage the urban environment and transportation system, while boosting citizen engagement:

- Empowers cities with a tool to increase citizens' participation in transportation management programs
- Improves city planning through greater understanding of citizens' transportation alternatives and trends, and provides data about the impact of citizens' transit decisions in terms of usage, cost, and carbon impact
- Helps city managers improve citizen transit experience and reduce carbon emissions
- Improves the city's quality of life and helps increase its attractiveness
- Encourages citizens to replace personal car travel with low-carbon transportation alternatives
- Increases asset/capital management and utilization (and, as a result, road capacity), eliminating the need to add infrastructure capacity
- Helps enable a more relevant services offering—especially for on-demand services such as parking and public transportation
- Provides a technology platform for the incubation and creation of local technology and services, aiding economic development

## **Partners**

PTA is a collaborative effort among the following partners:

- Cisco
- City of Amsterdam
- City of Seoul
- MIT Mobile Experience Lab
- Victoria Transport Policy Institute
- Y&H Engineering & Consulting Ltd.

## Background

In recognition of the profound trends of urbanization, climate change, and innovation at the beginning of the 21<sup>st</sup> century, Connected Urban Development (CUD) was born from Cisco's commitment to the Clinton Global Initiative to participate in helping reduce carbon emissions in cities. Launched at the end of 2006, CUD consists of building partnerships with cities worldwide to focus on using the network as the platform, applying information and communications technology (ICT) to promote innovative practices for reducing carbon emissions, while fostering economic growth and improving the quality of life. Innovation is transforming urban life, and is making it possible to design and manage cities in radically different ways. With the advance of broadband, wireless, and increasingly smart city infrastructures, collaboration and connectivity are becoming essential to urban sustainability.

CUD envisions that the same principles of openness that have made the Internet a thriving ecosystem over the past 20 years can be applied to make cities a smarter platform for people, products, and services. This global, open-standards approach will support all urban and natural environment-related applications, tools, and technologies. It will provide real-time, tangible information to enable citizens, communities, cities, countries, and business organizations to make smarter decisions and to develop policies that improve the sustainability of cities. Following are the program's urban technology principles:

- Wired communications provide infrastructure
- Wireless communications provide mobility
- Miniaturized, inexpensive electronic devices provide access points everywhere
- Digital memory and processing power provide intelligence everywhere
- Software and online content provide new functionality and services

For more information, please visit the Connected Urban Development community website at <http://www.connectedurbandevelopment.org/>.