New SmartParking Solution Solves Auto Congestion and Land Use Issues

Overview

Country:
USA

Industry
Consumer
Transportation

Customer Profile
Acme Innovation Inc., the creators of the ParkingCarma service, is a California-based provider of SmartParking solutions for densely populated metropolitan cities.

Business Situation
Transit authorities in the San Francisco Bay Area were looking for ways to decrease commuter traffic congestion, optimize existing parking facilities and increase BART light rail ridership.

Solution
A new SmartParking solution using Microsoft Speech Server 2004, Microsoft SQL Server, wireless technology and micro-electrical mechanical systems (MEMS) parking space sensors was developed.

Benefits
- Reduction in VMT by up to an estimated 2 percent
- Better utilization of parking spaces
- Increased mass transit ridership
- Less arterial and local traffic congestion
- Improvement in commercial transportation

> "Solutions like ParkingCarma could reduce VMT by 2 percent or 200 million miles each day. If cars average 20 mpg, commuters would save 10 million gallons of gas a day or about 500,000 barrels of oil."
>
> **Rick Warner**
> **CEO and Founder**
> **ParkingCarma.com**

San Francisco transportation authorities wondered if better commuter parking information could result in fewer cars, less congestion and better use of Transit and Park and Ride parking spaces. With the expertise of ACME Innovation, a Microsoft Gold partner, and its ParkingCarma™ service, a traffic transformation is under way. With the power of Microsoft® Speech Server 2004 R2, Wi-Fi, parking space sensors and Microsoft SQL Server™ in a Microsoft .NET environment, a solution was created that connects drivers with parking spaces at Park and Ride lots serviced by light rail. California's BART ridership is up 14 percent in new or returning riders. If a solution like ParkingCarma was deployed in key U.S. cities to increase public transportation ridership, the 10 billion miles traveled each day could potentially be reduced by up to 2 percent — the equivalent of 500,000 barrels of oil.

Microsoft Windows Server System

"The SmartParking pilot program has resulted in an estimated 14 percent increase in new BART riders from a specific, high-use Park and Ride. Fully deployed, the impact could be very significant."

Randell Iwasaki
Director
California Department of Transportation (Caltrans)

Situation

In the Bay Area, responsibility for oversight of highways, land use and mass transit is shared by the California Department of Transportation (Caltrans), the Metropolitan Transit Commission (MTC) and BART. Caltrans' mission is to reduce highway congestion; MTC is charged with improving urban land use; and BART is the mass transit arm in the San Francisco Bay Area, with the goal of increasing ridership.

The University of California, Berkeley's research department and Acme Innovation saw a point of intersection where the interests of the state government agencies and the public met — specifically, in a parking space of an Oakland BART park-and-ride facility. Better utilization of BART parking lots could get drivers off the freeways and onto mass transit, but only if commuters had more accurate information about available parking spaces, which are at a premium in the densely populated Bay Area. What was missing was a solution that was low cost, simple to use and easily scalable for mass transit needs. In addition, the solution would need to offer the potential for the better use all parking spaces — public and private — throughout the area.

Solution

Using ACME Innovation's patent pending ParkingCarma system, and through a research project managed by the University of California, Berkeley, a pilot SmartParking solution was developed and deployed using Microsoft Speech Server 2004 R2, Microsoft SQL Server, wireless technology and micro-electrical mechanical systems (MEMS) parking lot sensors.

The ParkingCarma SmartParking solution is designed to lure motorists off congested highways and onto public transit. It uses wireless sensors in the lots to provide real-time information on the availability of spaces at the Rockridge BART Park and Ride lot in Oakland. The information is electronically relayed via the Internet to a centralized computer that processes the data, compares it to the known number of parking spaces and historical information, and sends the number of available parking spaces to changeable message signs, located on Highway 24 within one mile of the Rockridge station. Commuters approaching the frequently congested Caldecott Tunnel can now know instantly if a parking space is available.

If commuters choose to use a cell phone or local area network (LAN) phone before or during a commute to access the service, a Speech Server 2004-enabled persona named "Kate" prompts the caller through an information request. The application also allows a commuter to reserve and pay for a specific parking space while driving to a BART station.

The ParkingCarma solution can be applied to public and private parking facilities.

The ParkingCarma voice-enabled solution is based on two concepts that can be applied to any parking facility: Dynamic Space Sharing and Premium Parking Services.

Dynamic Space Sharing refers to the means by which empty parking spaces can be made available to drivers searching for a space. For instance, a company may have a private parking lot for its employees, but most of those spaces are not used in the evenings when restaurant- and theatergoers need parking. Also, on any given day, some of the private spaces are empty because employees are out of the office. A public lot might also have unused spaces at different times of the day. Even homeowners and apartment tenants can have unused parking spaces at times. These "parking asset owners" can work with ParkingCarma to identify their available spaces. Using a technology-based, real-time system, ParkingCarma can keep track of these sites and direct drivers, who call or use

the Internet, to the closest available spot. Parking asset owners, public and private, will enjoy increased parking revenues, and drivers will be able to find convenient parking.

Premium Parking Services brings true parking convenience to consumers by allowing them to use the Internet, phone or a wireless device to find and reserve a parking space. Drivers are directed to the most convenient space available, given exact directions to find the spot, and then are billed through their method of choice. Drivers can find a parking space more quickly, avoid fines, and do not need to carry cash. Spots can be reserved for single-time use within minutes before arrival or on a daily or monthly basis.

Benefits

Reduction in VMT by up to an estimated 2 percent

Total vehicle miles traveled (VMT) are climbing rapidly while capacity continues to be constrained. This trend is expected to be mitigated where SmartParking solutions such as ParkingCarma are deployed. According to the federal Department of Transportation, more than 10 billion vehicle miles are traveled each day.

"Solutions like ParkingCarma could reduce VMT by up to 2 percent or 200 million miles each day," said Rick Warner, CEO of ParkingCarma. "If cars average 20 mpg, commuters would save 10 million gallons of gas a day or about 500,000 barrels of oil."

Better utilization of parking spaces and land

ParkingCarma SmartParking is an interim solution to immediate parking needs in urban areas as well as a long-term solution to managing parking revenues citywide. ParkingCarma can reduce street congestion and parking frustration by adding thousands of "new" parking spaces to the average midsized city without costly construction or delays.

ParkingCarma can make unused parking spaces available during times of peak demand and manage these spaces accurately and efficiently.

Robert Stang, president of Pacific Park Management, a San Francisco-based company that manages numerous private and public parking facilities, sees significant potential with the ParkingCarma approach.

"We estimate that we could potentially increase the total number of accessible parking spaces in the city of San Francisco by 10 percent without spending another nickel on new construction," Stang said. "By making visiting our city more user-friendly, the economic and environmental impact could be huge."

In the process of launching and monitoring a pilot program, a significant amount of user information was gathered. One portion of the research identified the target user of SmartParking as a busy female commuter.

"Our research shows that commuters spend an average of 20 minutes each day looking for a parking spot, and that 30 percent of urban congestion comes from circling," Warner said. "A SmartParking-enabled parking lot eliminates that hassle."

Increased mass transit ridership

BART sees a double benefit to converting more of the Bay Area's daily commuters — 3.4 million and ever-increasing — to mass transit: increased operating revenue and a positive environmental impact.

"The SmartParking pilot program has resulted in an estimated 14 percent increase in new BART riders from a specific, high-use Park and Ride," said Carter Mau, head of BART customer access. "Fully deployed, the impact could be very significant."

Less arterial and local traffic congestion

The ParkingCarma solution is also

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Linda Novick
Private Public Partnership Operations Manager
PATH Research
University of California, Berkeley

geared toward helping cities and states improve planning, manage growth, ease congestion and allow businesses to maximize the use of available parking. Improvements in any or all of these areas will ultimately aid in saving the environment through the impact of the creation of more accessible parking spaces.

"Caltrans' job is to facilitate the research and pilot programs for concepts like voice-enabled ParkingCarma and SmartParking," said Randell Iwasaki, director of Caltrans. "Now, it's time to partner with public and private companies to deploy this exciting, proven solution on a much broader scale."

The initial pilot research also underscores the potential impact of ParkingCarma's SmartParking solution.

"The SmartParking field test provided evidence that the combination of technology and commuter behavior makes sense," said Linda Novick, private public partnership operations manager at PATH Research, University of California, Berkeley. "It has great potential as an integrated, systemwide solution."

Improvement in commercial transportation

The concept of smarter parking and better utilization of parking spaces can also directly translate into the world of commerce and trucking. ParkingCarma's SmartParking can gather truck parking data to facilitate mandatory driver rest periods, helping ensure safer movement of goods.

"ParkingCarma's technology can be a reliable source of information for state and municipal managers," Warner said. "It can provide the optimal and most efficient rest-stop parking for long-haul trucks."

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Software and Services

Microsoft Speech Server 2004 R2

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