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SII – Sustainability Innovation Inventory

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Drin Bus (Genoa)

Executive Summary

A classic example of "demand responsive transport" (DRT), AMT's Drin Bus is a flexible bus service that connects the hilly, low-density areas of Genoa through a "many to many" (pickup/drop-off points) operational model. Riders can reserve the bus up to 30 minutes prior to their desired departure time via telephone, or catch it "on the road" if the bus has room. GPS-GIS integrated bus-monitoring software allows a central call center to manage the bus fleet dynamically according to demand.

Since its implementation in April 2002, the percentage of residents in the Drin Bus served areas who use their cars everyday has dropped 4%, and the number of people who never use a car has increased 13%. Drin Bus ridership has been increasing by 5-13% per year in different neighborhoods. In 2004, Drin Bus expanded to serve the Bolzaneto area, replacing two existing bus lines and extending the service area previously covered by the traditional bus routes.

Data from the first several years of operation show that the operating costs of the Drin Bus service are similar to previous traditional fixed-route bus services, but the Drin Bus has an increased number of passengers and revenue. Additionally, environmental cost/benefit analyses of the Drin Bus program indicate an estimated savings of €34,500 per year due to decreased environmental impact.

Why Implement a "Many to Many" Bus Service?

Flexible public transportation that responds to demand (DRT) can save money and emissions over fixed-route systems. At the same time, DRT services are capable of serving a wider geographic area, thus contributing to the social inclusiveness of a region by making inexpensive public transportation (and therefore urban conveniences and opportunities) available to underprivileged or mobility-challenged social groups in low-density areas.

While DRT services offer cost savings, social inclusion, and environmental benefits, however, they require a sophisticated and adaptive management structure as well as a tight communications system connecting the dispatch centers, buses, and numerous bus stations. Regional transportation authorities interested in starting a DRT program should expect a learning period after implementation, during which data from customer feedback and real-time bus monitoring can be incorporated into the program management structure. The European Union CIVITAS Initiative (which was formed to improve transportation in European cities) suggests that new DRT programs focus their attention on communication and marketing. As an example, they recommend that new DRT programs include a free test period during which the public can be encouraged to get to know the new service while data is being collected to customize the service to the specific region.

Current Technology

Genoa's public transport company AMT operates the Drin Bus service with a fleet of Mercedes Sprinter minibuses, which seat 8-13 passengers and run on low-emissions methane. GPS-GIS integration allows the call centers to monitor buses on the road and helps bus drivers keep track of their scheduled routes (see Figure 1). The call centers are connected with the buses through GSM digital telecommunication technology.

Bus stops are an average of 200m apart. The call to make a reservation is free, and Drin Bus honors Genoa public transportation passes, with a minimal supplemental charge. Drin Bus service is available Monday through Saturday from 6 AM to 8 PM. Customers requesting the service in advance may choose their time of departure and arrival.

The CIVITAS Caravel Project (2005-2009) is currently working on software upgrades for the Drin Bus system, which will add new booking capabilities and include an interactive voice recognition system.

Figure 1: Navigation software on board a Drin Bus (photo from CIVITAS)

Technology and Experience Roadmap

Demand responsive transport could coordinate easily and effectively with a number of other recent technology applications in transportation.

Personal Multimodal Navigational Devices

As a form of public transportation, Drin Bus could easily be incorporated into personal navigation software (such as Trekker and Navitime) that allows users to plan multimodal trips. Drin Bus can be used by navigation software in several ways:

- Navigation devices can incorporate the flexibility of Drin Bus into trip planning made in advance, allowing riders to request pickup at times tailored to a multimodal trip involving other fixed-schedule transport
- GPS location information sent by the buses (and shared by the Drin Bus control centers) would allow personal navigation devices to alert travelers if a Drin Bus is nearby and can be caught "on the road."
- Real-time traffic information monitoring capabilities offered by pedestrian navigation devices would allow riders to track Drin Bus efficiency and change or cancel reservations in the case of unexpected traffic or delays.
- Navigational software for mobile phones could allow riders to use the above information from anywhere in the city and immediately schedule or cancel a ride with the Drin Bus call center.

Traffic Monitoring

As a public transportation system with on-board GPS and communications technology, Drin Bus could potentially be used as a fleet of mobile traffic monitoring devices. Over the past several years, mobile phone companies such as Nokia and Vodafone have been researching ways to use mobile phones in cars for traffic monitoring in place of more expensive and maintenance-intensive fixed

traffic cameras and speed sensors. One major problem such traffic monitoring programs are actively researching is phone owner privacy/anonymity. Since Drin Buses are public vehicles whose locations are monitored routinely in the interest of providing efficient service, they already have the infrastructure to provide traffic information without having to address privacy concerns. Obviously, Drin Buses are limited in number and cannot provide full traffic coverage, but it may be possible to use Drin Bus monitoring technology in coordination with GPS/communications retrofits for fixed-route buses, taxis, and other municipal or commercial vehicles to form a network of mobile traffic monitors without needing to rely heavily on private mobile phones.

Car Sharing Programs

Car sharing programs are often praised, in many of the same terms used for Drin Bus, as a way of connecting public transportation systems to hard-to-reach suburban areas. Connecting the two transportation options could add even more flexibility and convenience to a metropolitan area. One can imagine a system, for example, where:

- City dwellers with business outside of the city could take Drin Bus to a car share pickup location, thus avoiding having to drive in downtown traffic but having a car available where public transportation ends.
- Riders using Drin Bus for large shopping trips or moving bulky items could have the affordability of taking Drin Bus most of the way home and then rent a shared car for a short amount of time to bring unwieldy items the rest of the way home.

Works Cited and Sources for Additional Information:

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