

Smart Bikes: Public Transportation for the 21st Century

by Paul J. DeMaio

One mode of transportation has largely been overlooked which is ideal in an urban setting and inexpensive to purchase and maintain—the bicycle. Bicycles are not commonly thought of as a form of public transportation; however, recent technological advances have allowed this to be successfully challenged throughout the world, and soon here in the US, with the “Smart Bike.”

The public-use bicycle concept began in 1968 as an ideology of a progressive era with the “White Bikes” of Amsterdam, The Netherlands. The White Bikes were ordinary bikes, painted white, and provided for the public to use. However, the program was abused and it collapsed within days. Again in 1995, this time in Copenhagen, Denmark, a second generation of public-use bicycles was launched with improvements. These bikes were specially manufactured and could be picked-up and returned at specific locations throughout the inner city with a coin deposit. The “City Bike” program continues today in Copenhagen and many additional cities around Europe. In addition, informal programs, like that of Amsterdam, presently exist in North America.

The problem of theft gave rise to a third generation of public-use bicycle programs, the Smart Bike. A high tech solution involving intelligent transportation systems has allowed public-use bicycles to be “smartened,” and, therefore, better tracked.

What Is a Smart Bike?

The basic premise of Smart Bikes is sustainable transportation. A Smart Bike allows individuals to meet their transportation needs in an environmentally sound manner. One accesses a Smart Bike with either a smartcard, magnetic stripe card, or unique numerical code. Smart Bikes are located either in groups as “stations” of bicycles, each bicycle electronically locked to a specially-designed rack, or individually at parking meters and bicycle racks. One may ride the Smart Bike to his/her destination, and lock it at another station or parking meter for someone else to use. With a few hundred or thousand Smart Bikes on the street, there should always be one available for use.

With the station concept, a display at each station provides a boundary map of the area in which Smart Bikes must remain, and station locations to assist in trip planning. Smart Bike stations are strategically placed at train and bus stops, multistory housing complexes, shopping districts, tourist attractions, and other areas with high volume foot traffic.

The Smart Bikes themselves are designed to be utilitarian and, therefore, are usually built with solid rubber tires, strong steel frame, adjustable seat post, and chainguard. The components are designed to require the use of special tools for disassembly. In addi-

tion, most of the components are of uncommon dimensions and would therefore not be usable on other bikes. In some models, disc wheels and the frame also lend themselves to advertising for additional revenue generation beyond the user charges, which vary.

Smart Bikes are ideal for short-distance urban trips due to their advantages over other types of public transportation. Smart Bikes:

- provide on-demand transportation,
- reach destinations underserved by other modes of transit,
- require less infrastructure than other modes of transportation,
- are inexpensive to produce and maintain,
- do not add to vehicular congestion,
- do not create pollution in their operation,
- decrease theft of personal bicycles, and
- provide the user with the added benefit of exercise.

As of Fall 2003, 10 Smart Bike programs existed around the world. Eight of these programs are operated by Clear Channel Adshel (www.adshel.com/products/SmartBike.html), and the remaining two are operated by Deutsche Bahn (www.CALLABIKE.de), Germany's national rail provider. Clear Channel Adshel's Smart Bike programs are located in:

France: Rennes with 250 Smart Bikes;

Norway: Drammen with 280, Oslo with 50, and Bergen with 100 Smart Bikes;

UK: Cardiff, Wales with 50 Smart Bikes; and

Singapore: Bukit Batok, Bukit Gombak, and Pasir Ris with 280 Smart Bikes distributed amongst the three.

Deutsche Bahn's Smart Bike programs are located in Germany: Munich and Berlin, with 1,000 and 1,200 Smart Bikes, respectively.

Smart Bikes Riding to Your Town (Soon)

A few cities and universities in North America are experimenting with adapting the Smart Bike concept into their own transportation systems. Arlington County, VA, and the author are developing a Smart Bike program for the progressive Washington, DC, suburb with a hopeful launch date of Spring 2003. In addition, Annapolis, MD, is working with Clear Channel Adshel to launch a Smart Bike program in 2003, using the Washington Metropolitan Area Transit Authority's (WMATA) "SmarTrip" smart-card.

The purpose of requiring a smartcard to check-out a Smart Bike is for tracking purposes and to encourage its return after use. Individuals not returning a Smart Bike will be charged its replacement cost. Integration with present fare and identification media provides an immediate customer base for the Smart Bikes and removes the cost of distributing additional identification media specialized to the program. In WMATA's case, over 200,000 have been sold presently.

Liability

Smart Bikes are designed as a "Use at Your Own Risk" activity. While the Smart Bikes should be regularly maintained to prevent mechanical failure, bicycle-riding can be dangerous, so helmet use should be encouraged and a minimum age requirement set.

Individuals planning to use Smart Bikes must read a Web-based liability waiver and electronically "sign" the document, certifying that they understand the rules of the Smart Bike program, the inherent risk of riding a bicycle, and agreeing not to hold the program liable should an incident occur. Once an individual completes the document, then he or she would have access to the Smart Bikes.

Conclusion

Smart Bike programs should be implemented in conjunction with a host of bicycle facility improvement measures that not only make bicycling more comfortable for Smart Bike users, but for bicyclists as a whole. This includes bike lanes and trails, bike racks, and a philosophy that puts the concerns of pedestrians and bicycles before single occupant vehicles.

The introduction of intelligent transportation systems to the public-use bicycle concept has set the bicycle on the path of becoming revolutionary for urban public transportation systems. Smart Bikes are designed to be complementary with existing transportation modes and therefore encourage increased use of all public transportation systems. In today's age of rapid technological advancement in transportation, the dawn of the Smart Bike era in North America has just begun.

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