



# 08 INNOVATIVE TECHNOLOGIES AND EDUCATIONAL PROGRAMS - Training and Technology Assistance



According to a 2009 estimate, life expectancy in the United States is 78.11 years (75.65-males, 80.65-females).<sup>1</sup> Life expectancy increases can be contributed to innovative technological improvements, such as: medical breakthroughs, better disease prevention, and improved knowledge of nutrition. Increases in the average American lifespan have allowed modern retirees better health and enjoyment in retirement. There are now opportunities for many older adults to participate in fitness programs geared for the aging and classes to learn new skills such as computer literacy. These advances allow for life spans to extend and the average life expectancy to increase; therefore, the existing infrastructure and environment must be improved to adapt to the needs of the shifting population.

Great progress has been made in the development of technology designed to assist older people. There are various devices that are used by people that need additional support in their daily activities and their navigation of the outside environment. Some devices are used to assist people while they are operating a vehicle, which use Global Positioning System (GPS) technologies. GPS is readily available to many people because of its application on most cellular phones. Just like the GPS available in vehicles, the handheld tool can be used to help the pedestrian as well. Advances in technology such as rear-

view cameras, warning signals, or sounds in a vehicle warn drivers of nearby vehicles or pedestrians. In doing so, they help drivers of all ages to drive with a greater sense of ease and safety, and with an increased awareness. New technologies provide protection for not only those handling the vehicle but pedestrians or cyclists of all ages as well. Smart phones and other mobile devices can provide real-time information and assistance for the elderly as well as all people. Navigation tools help to not only map and guide drivers and pedestrians alike, but keep them mobile and safe. These technologies can benefit the lives of older adults by assisting them with their daily tasks and enabling them to live independently. The case studies that follow are examples of the use of training and technology for the elderly.

<sup>1</sup> Central Intelligence Agency (CIA), The World Factbook 2009.

# PORTLAND, OREGON

## Active Aging Programs



IMAGE 26. Seniors participating in Portland's Bicycle Program. Image used with permission from Portland Parks & Recreation – Senior Recreation.

**Active Aging Programs in Portland Oregon** focuses on providing programs for the elderly that encourage cycling and walking, creating opportunities for senior participation and thereby keeping older adults active and mobile.

Active Aging Programs in creating opportunities for seniors to participate in physical exercise relates to *Age-Friendly NYC Initiative 38*, which addresses the issue of the lack of engagement of regular physical activity by older adults, and the creation of senior participation in activities that promote healthy aging.

### BACKGROUND

Portland has incorporated a number of strategies that integrate planning concepts in order to benefit the city's residents, in particular the elderly. The Active Aging Program is relatively new in Portland but has received national attention because of its success. Participating older adults experience physical benefits, such as improved health, as well as psychological gains by spending time with others.

### IMPLEMENTATION

Active Aging Programs have been encouraged by two of Portland's government agencies, Parks and Recreation and the Bureau of Transportation, which work together to provide activities to keep seniors engaged and mobile. The Senior Cyclist Program offers free training on comfortable tricycles. This program also provides helmets for all participants (IMAGE 26).<sup>2</sup> There is also a Senior Strolls Program, which offers seniors two to three mile walks through different parts of Portland. Both programs run seasonally from May through October.<sup>3</sup>

### FINDINGS

The Senior Strolls and the Senior Cyclist programs have proved to be beneficial for the seniors who participate in them. Funding for these programs are provided by a combination of city funds and other sources such as CMAQ, parking revenues, parking citations, and the state's business energy tax credits (BETC) because this qualifies as a conservation project.<sup>4</sup> In 2008, Portland was recognized by AARP as one of the top five Active Aging communities in the United States. When participants were polled regarding the senior strolls program, 53 percent indicated that they walk more and 71 percent reported that they have replaced at least one driving trip with a walking trip.<sup>5</sup>

### NEW YORK CITY APPLICATIONS AND OPPORTUNITIES

There is currently one program available throughout New York City that offers free recreation classes. The City Parks Foundation offers seniors over age 60 free tennis instruction, yoga, and walking in

<sup>2</sup> Portland Parks and Recreation, *Portland Parks & Recreation and the Portland Bureau of Transportation Receive National Award for Active Aging*.

<sup>3</sup> Portland Office of Transportation, *Senior Strolls*.

<sup>4</sup> Donna Green, City of Portland Bureau of Transportation, Email Correspondence, April 14, 2011.

<sup>5</sup> Environmental Protection Agency, *Building Healthy Communities for Active Aging Awards 2008*.

nine parks throughout New York City.<sup>6</sup> The classes are seasonal, offered from May to October. In addition to the City Parks Foundation program, DFTA provides New York City seniors with health and wellness literature. They also maintain a directory of city-wide registered walking clubs on their website.

The Portland bike and walking programs have been very successful and there is evidence to suggest that a similar bike program could thrive in New York City. New York City has more than 1,700 parks, playgrounds, and recreation facilities, but senior fitness classes are only held at nine parks.<sup>7</sup> If the recreation classes were to rotate to more parks throughout the six month season, then more New York City seniors would have the opportunity to participate and subsequently reap the benefits.

Active aging programs address the challenge of senior participation and their engagement with healthier lifestyles. By keeping older adults participating in city life and engaging them in activities, they remain active and mobile. There are many opportunities for expansion, further implementation and improvement of current New York City programs.



IMAGE 27. CarFit promotion poster. Image used with permission from AAA.

**CarFit Programs in the United States** focuses on an educational program that offers older adults the opportunity to check how well their vehicles fit them to attain maximum comfort and safety.

#### BACKGROUND

CarFit is an educational program created by the American Society on Aging and developed in collaboration with AAA, AARP and the American Occupational Therapy Association (IMAGE 27).<sup>8</sup>

CarFit focuses not on the abilities of the mature driver, but instead on their proper placement within their vehicle. The objectives of CarFit are to help older drivers (age 65+) learn how to utilize their vehicle's safety features, thereby improving overall road safety. The program also strives to show older drivers how to properly adjust their seats and windows so that their body fits into the car comfortably and safely. A properly adjusted vehicle will improve safety for the driver.

Prior to holding nationwide events, there were pilot CarFit events held in ten cities in the spring of 2005.<sup>9</sup> According to the pilot program results, more than one-third (37 percent) of elderly individuals have at least one critical safety issue that needs to be addressed, and one in ten (10 percent) were seated too close to the steering wheel. Roughly 20 percent of pilot program participants did not have a line of sight at least three inches over the steering wheel. Additionally, knowing how to properly adjust one's side view mirrors can greatly minimize blind

6 City Parks Foundation, *City Parks Senior Fitness Programs*.

7 New York City Department of Parks and Recreation, *Frequently Asked Questions*.

8 Carfit, *Frequently Asked Questions*.

9 Ibid.

spots for drivers who may wish to change lanes.<sup>10</sup>

### IMPLEMENTATION

The pilot program results were startling to the administrators, and so it was determined that the program would expand. Volunteers are essential to the success of CarFit. The volunteers are required to undergo training prior to becoming a technician at a CarFit event. The events showcase adaptive devices that may make the drive more comfortable for the motorist, such as seat belt and visor extenders and steering wheel covers.<sup>11</sup>

### FINDINGS

The findings have shown that CarFit increases a driver's knowledge of his or her vehicle. Additionally, in an initial survey, many seniors indicated that they made changes to improve on the fit of their vehicle after attending a CarFit event. Many past participants also added that after their training they were more open to discussing their ability to drive with family.<sup>12</sup>

### NEW YORK CITY APPLICATIONS AND OPPORTUNITIES

For many, driving is second nature. Most Americans begin driving in their teenage years and continue driving for many decades. The CarFit safety training programs revealed that there are many basic adjustments for a better fit in their cars that older adults were not practicing. CarFit events tend to take place throughout the country; however, the current calendar does not have any scheduled events in New York City area. If the city offered a comparable safety program, it could be beneficial for older New York City drivers.

NYCDOT provides training through their Safety City program. One program teaches parents how to properly install a child car seat. Another program teaches children, the disabled, and the older adult populations the importance of pedestrian safety. There may be an opportunity to expand the current safety program to include regular training programs similar to CarFit that are specifically geared towards New York City seniors.

<sup>10</sup> Ibid.

<sup>11</sup> AAA, *Sharing a Drive to Protect Motorists*.

<sup>12</sup> CarFit, *Frequently Asked Questions*.

## JAPAN Pedestrian Navigation System



**Pedestrian Navigation System in Japan** focuses on incorporating technology to help the elderly to navigate their surroundings safely.

### BACKGROUND

As part of Japan's 2000 Traffic Barrier-Free Law requiring every subway station in Tokyo (and nine other prefectures) to provide at least one barrier-free route, meaning that is free of steps from the subway entrance to the platform by 2010,<sup>13</sup> there has been increased demand to create a pedestrian support system that can provide basic services for pedestrian intelligent transportation systems (ITS) such as warnings, delays, information on surroundings, and route information. This Free Mobility System provides an environment in which everyone, including the elderly, the disabled, and foreign tourists visiting Japan, the ability to move around freely and easily by permitting anyone at any time or place to obtain information needed for movement.<sup>14</sup> A pedestrian navigation system has been developed in Japan to remove the current barriers that create inaccessibility.<sup>15</sup> The pedestrian ITS system, which provides navigation information and thereby enhances mobility and improves access for the elderly, was demonstrated at the ITS World Conferences in London in 2005 and in Beijing in 2007.

The demand for ITS is growing in many countries. In Japan it is seen as an essential component in the struggle to reduce greenhouse gas emissions, carbon dioxide, and other transportation pollutants. The main objectives of ITS in Japan are to enhance traffic safety, improve traffic flow, and to repair the environment. Japan's ITS comprehensive plan includes nine areas of focus. The nine areas are the following:

<sup>13</sup> Harrington, *Tokyo Olympic Bid Highlights Universal Design*.

<sup>14</sup> Sakurai et al., *Pedestrian Navigation with InfoSign*.

<sup>15</sup> Oka, et al., *Nationwide Introduction of the Free Mobility System*.

1. Advances in navigation systems
2. Electronic toll collection systems
3. Assistance for safe driving
4. Optimization of traffic management
5. Increasing efficiency in road management
6. Support for public transport
7. Increasing efficiency in commercial vehicle operations
8. Support for pedestrians
9. Support for emergency vehicle operations<sup>16</sup>

### IMPLEMENTATION

The mobility system was implemented at a number of test sites throughout Japan. The sites that were chosen were tested for two years beginning in 2004. The technology works by using sensors that are placed in the environment to detect a person's location (latitude/longitude data). The sensors are embedded in guide blocks and the information is accessed by the user through a portable electronic device or a white cane, in cases when a person has vision impairment.<sup>17</sup> The information flow is as follows (IMAGE 28).<sup>18</sup>:

1. The place information transmitter, which is used to identify where a person is located, is sent to the user's electronic device or portable terminal.
2. The portable terminal is then sent to the server.
3. The server converts the place information to a uniform resource locator (URL) to search for the information using GIS technology.
4. A map with the map data information is sent back to the portable device.<sup>19</sup>

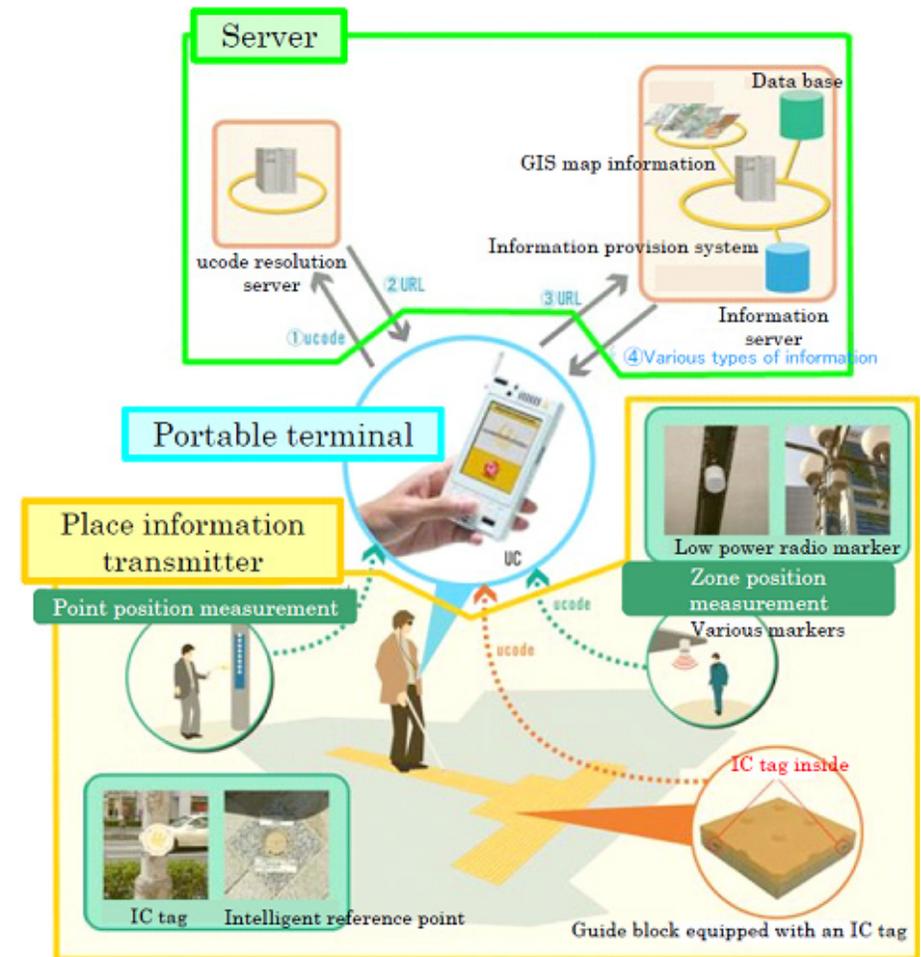


IMAGE 28. Kunihiko Oka & Shinsuke Setoshita, 2005

There were a number of municipalities that tested the technology; some of the more notable ones will be described below.

The most testing was conducted in Kobe City, Japan. Some of the experiments include testing barrier-free route information, tourist site information, transmission of real-time transportation data, as well as other technical tests.<sup>20</sup> There was a navigation project conducted in Wakayama, Japan. This area of Japan is listed as a World Heritage Site and many people visit the historic city. Route guidance, historical site information, tourist facility information and shopping information

<sup>16</sup> ITS Japan, *Nine Areas of ITS*.

<sup>17</sup> Oka, et al., *Nationwide Introduction of the Free Mobility System*.

<sup>18</sup> Sakurai et al., *Pedestrian Navigation With InfoSign*.

<sup>19</sup> Ibid.

<sup>20</sup> Oka, et al., *Nationwide Introduction of the Free Mobility System*.

were provided.<sup>21</sup> Another navigation pilot was conducted, called the Yuki Navi Aomori Project. This area tested the technology when there were large amounts of snow on the ground to determine if the system could still work properly for those who are visually impaired. The test confirmed that the system did not have any problems because of snow.<sup>22</sup> Another location in the Kumamoto prefecture focused on barrier-free and universal design. It tested both people that were unfamiliar with the area and people that were visually impaired. These tests were primarily conducted near crosswalks and at streetcar crossings.

### FINDINGS

Using ITS on roadways has become more commonplace in recent years. There are a number of cities that use transmitters, such as EZ-Pass to electronically collect tolls at various places on the highway. The creation and adaptation of this technology for pedestrians and those with mobility limitations is still in the preliminary stages. The findings of the Japanese pilot experiments proved that people who used the services thought they were convenient.<sup>23</sup> Testing is expected to continue in other regions and ways to reduce the costs are also going to be studied.

The Traffic Barrier-Free Law has created a legal requirement to eliminate the current environmental barriers. Programs such as the pedestrian navigation system benefit not only those who are disabled and elderly, but also tourists who often have difficulty navigating foreign surroundings. Although the pedestrian navigation technology has been demonstrated at many events and in many locations throughout Japan, more testing will be conducted before it is available to the general public. Pedestrian ITS requires indoor and outdoor positioning in order to work properly so that service is not interrupted when the user enters underground subway stations or buildings. The information obtained in these experiments will be used to help people navigate their environment with greater independence and safety.<sup>24</sup>

### NEW YORK CITY APPLICATIONS AND OPPORTUNITIES

Technology is a dynamic industry that may seem intimidating to many older users. More training is needed to familiarize older individuals

<sup>21</sup> Sakurai et al., Pedestrian Navigation With InfoSign.

<sup>22</sup> Oka, et al., *Nationwide Introduction of the Free Mobility System*.

<sup>23</sup> Ibid.

<sup>24</sup> Sakurai et al., Pedestrian Navigation With InfoSign.



IMAGE 29. When vehicles stop in the crosswalk, pedestrians are sometimes pushed into harms way. New vehicle safety technology may prevent unsafe vehicular-pedestrian conflicts in the near future. NYC DCP.

with computers and new technologies that can offer assistance. As in the case of pedestrian navigation experiments in Japan, new ideas are always sprouting using existing technologies, such as Bluetooth and computer mapping programs such as GIS. There are already a number of products on the market specifically targeted toward older adults, but because of the explosive number of aging adults, it is likely that many more businesses will begin producing devices.

There are new safety features available on certain vehicles. For example, some car makers have installed warning systems that alert drivers of the closeness of another vehicle, blind-spots, and some even have rear-and side-view cameras.<sup>25</sup> There are opportunities for government officials to encourage wide-spread installation of such devices and to train people how to use them effectively. There are potential partnership opportunities for the City to work directly with some of these warning system manufacturers to create a technology that would help drivers, and other road users to create safer streets for older adults and all pedestrians to navigate (IMAGE 29).

<sup>25</sup> CNN Money.com, *The Future of Car Safety*.

