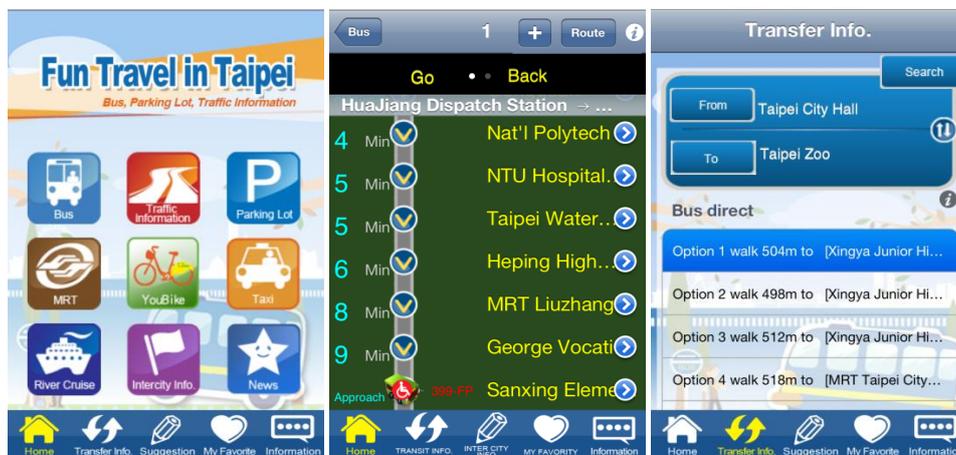


Fun Travel in Taipei:

An Innovative Advanced Traveler Information Service



Operated by Taipei City Government Department of Transportation



Nominated by Chinese Institute of Transportation Taiwan

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I. Name of the Project

Fun Travel in Taipei: An Innovative Advanced Traveler Information Service

II. Outline of the Project

When is the bus coming? How much longer to my destination? Where is the nearest parking lot? Why is the road congested? Is the traffic on the freeway smooth at the moment? How do I transfer on Mass Rapid Transit (MRT)? Which service stations have Youbikes (the Taipei Bike Sharing System) available? What is the number to call for taxi services? With the smartphone App “Fun Travel in Taipei” (hereafter referred to as “**FTiT**”), people living in the Taipei metropolitan area will no longer need to worry about these problems. More than 230 thousands inquiries were made daily through using **FTiT**, and the average daily inquiries of the traffic information reached 1.73 million times in 2012.

FTiT answers every need you may have about traffic information, it provides real-time bus information, road speed, incident information, changeable message sign (CMS), images from closed circuit television (CCTV), car parking lots and available parking spaces, MRT information, taxi information, YouBike, river cruise, trip planning, intercity and international public transport information (including Taiwan Railways, Taiwan High Speed Rail, Taipei Airports, intercity bus stations), My Favorite, etc. People can use the **FTiT** to plan their journeys and reduce travel time. Furthermore, by offering open information to the public, the number of **FTiT** users has significantly increased.

The integrated traffic information content provided by **FTiT** is based on the main subsystems of the intelligent transportation system (ITS), such as advanced traffic management systems (ATMS), whereby developments started in 1991. **FTiT** is a real-time information system that comprises intelligent transportation systems related subsystems and/or services, such as traffic monitoring, parking information and bus information systems, which allows travelers to conveniently obtain necessary traffic information. Moreover, with the aim of enhancing the efficiency of traffic information transmission, the traffic information database is open to public and private agencies (organizations). With the creativity and added value by private organizations, the traveling public is provided with diversified information inquiry channels, and thus the application scope for promoting Taipei City’s intelligent transportation services expands.

1. Course of Development

FTiT was launched on April 25, 2011; it integrates traffic information from Taipei City and other government departments to offer real-time traffic information, such as bus, road, parking lot, MRT, public bicycle, taxi, river cruise, and inter-city transportation to the public.

Taipei City began constructing the ITS infrastructure in 1991, and developed the traffic monitoring system, parking lot guidance system and E-Bus system year by year. With the development of network infrastructure and popularization of smartphone, smartphone Apps have become a new way to deliver the traffic information.

The 2010 Taipei International Flora Exposition was held in Taipei from November 6, 2010 to April 25, 2011. It was a mega-scale exhibition, where the total floor area covered 91.8 hectares and the number of visitors exceeded 8.96 million. To ease the surrounding traffic conditions during the mega event and provide the general public with exhibition venue information and real-time traffic information in the Taipei metropolitan area, as well as in response to the fact that smartphones would become the main traffic information source for the public, Taipei City Department of Transportation developed the “Travel to Taipei Flora Expo” smartphone App, with the exhibition as the main theme. The service had been popular since its first launch, and its functions were able to cater to the large crowd during the international flora exposition as anticipated; 80% of the visitors made use of public transport and there were no traffic congestion in the surrounding areas. After the exhibition, the application of “Travel to Taipei Flora Expo” had been continuously developed and its experience passed down. Now, the previous version has been upgraded into **FTiT** to improve the transport service for the residents in the Taipei metropolitan area, and enhance the service efficiency of the City’s transportation system.

FTiT comprises traffic information provided by the intelligent transportation systems. Together with the convenience of smartphones and location-based service (LBS), it provides the following travel information services:

- 1) Bus Information: provides real-time public bus information in greater Taipei, including: real-time bus information, bus inquiry for surrounding area, bus arrival alert at user’s selected bus stop, alighting alert, as well as city bus and MRT transfer planning service, to promote public transportation.

- 2) MRT Information: provides greater Taipei's MRT information, including: station information (station location map, station information diagram, and first and last train service schedule) and travel guide (fare, traveling time, transfer station, etc)
- 3) YouBike: provides YouBike's real-time available parking slots, number of available bicycles, navigation function from user's current location to a YouBike rental station, as well as the bikeway network in the Taipei metropolitan area.
- 4) International and Intercity Public Transportation: provides real-time inquiry for various public transportation in the Taipei metropolitan area, such as: Taiwan Railways, Taiwan High Speed Rail, intercity bus, Taipei Songshan Airport, Taiwan Taoyuan International Airport, etc.
- 5) Parking Lot Information: displays real-time remaining parking spaces for car parks through map and color indication: red (more than 95% full), yellow (80% to 95%) and green (below 80%); provides information on the name, location, fee, motorcycle and bicycle parking slots, etc, on all public and private car parks in the administration area, as well as the direction to the car park.
- 6) Traffic Information: uses simple diagrams and the red, yellow and green colors to indicate traffic congestion levels ranging from heavy traffic to smooth traffic for the main roads and highways of Taipei City; it also provides information such as road image, changeable message sign (CMS), traffic incident, road work, road closure, etc.
- 7) Taxi: provides taxi service telephone numbers, internet taxi booking service and information on designated driver service and elderly transport service.
- 8) River Cruise: provides information on the operating routes, pier locations, cruise schedule, direction to piers and real-time water level of Taipei City's River Cruise.
- 9) News: provides Taipei City's news and municipal administration information, announces major traffic regulation information in response to major events (such as street marches, typhoons); a marquee is also added on the main page to provide the user with information about the incident.

To cater to different groups of users, **FTiT** provides iOS, Android, Windows Phone, with Chinese and English versions. Since its first launch on April 25, 2011, total cumulative downloads has reached 349,136 times as of the end of 2012, with an average monthly usage of 7.51 million in 2012; the highest number of monthly usage being 14.96 million on July 2012. The high number of downloads and usage illustrates that **FTiT** has become a daily necessity for the travelers in the Taipei metropolitan area.

2. Project Funding

From 2011 to 2012, the total funding for the development of **FTiT** was USD 114 thousand. However, as the real-time traffic information provided by this smartphone App was based on the infrastructure of the intelligent transportation systems which was developed during the 1991 to 2012 period, the construction fund totaled USD 86.6 million.

Until 2012, the Traffic Monitoring System for the City's expressways and major areas, has already been completed at a total cost of USD 67.2 million; a total of 2,429 traffic lights, 149 changeable message signs (CMS), 698 vehicle detectors (VD) and 260 closed circuit televisions (CCTV) were installed. 216 CMS for parking information were installed as part of the Parking Lot Guidance System at a cost of USD 8.96 million, to provide real-time remaining parking space information for 165 off-street car parks. In addition, at a cost of USD 10.5 million, the E-Bus System has been installed on 4,100 public buses and 383 routes in the whole city network, with 794 intelligent bus stop signs being set up.

III. Impact of the Project

1. Benefits to Society

The implementation of the project has not only increased the ways to access traffic information, but also increased the utilization of public transportation, thereby slowing down the growth of private transportation, reducing air and noise pollution, as well as increasing energy efficiency, which in turn also reduces traffic congestion and increases transportation mobility. For the general public, public transport information has become a daily necessity where they can conveniently obtain the required public transport information.

In 2012, the total number of commuters in Taipei City taking public buses was approximately 615,340,000. With the minimum bus headway during peak hours being 3 to 5 minutes, it is estimated that the E-Bus System has reduced the waiting time for each person by approximately one minute, which adds up to a waiting time reduction of 10,255,666 hours in 2012.

Furthermore, the Parking Lot Guidance System was accessed 669,053 times in 2012. Based on an average estimated time saving of nine minutes for finding a parking space, the total time saved by the system in 2012 was approximately 100,333 hours, equivalent to a reduction of about 660,000 kilograms in carbon emissions (calculation based on a speed of 30km/h and 0.22kg/km of carbon emission).

Until the end of December 2012, a total of 125 public and private agencies (organizations) have applied for interfacing with the traffic information systems, with the total number of traffic services developed reaching 79. In 2012, the average monthly inquiries of the traffic information database reached 52.11 million times, and the highest number of monthly inquiries was 61.43 million times. This indicates that traffic information has already become a daily necessity for the traveling public.

2. Transportation Benefits

FTiT provides residents with the necessary real-time traffic information. The user can make use of this software to decide when to set off or choose a cost-effective transportation mode while traveling. This creates convenience for the general public when engaging in various activities in Taipei City, hence increasing efficiency in mobility.

FTiT provides integrated public transport information, and the user can make use of the bus route number to inquire regarding bus information, including: bus route, expected arrival time and bus stop location; they can also inquire concerning the arrival times of other buses at the bus stop to reduce the anxiety of waiting. In addition, the system also provides customized service whereby the user can add the bus inquired into “My Favorite” to allow quick access. With the convenient city transfer inquiry service, a list of various modes of transport (including bus and MRT transfers) can be shown simply by entering the starting and ending point. Conveniently reaching the destination via public transport meets the objective of providing a time saving and seamless public transport service.

FTiT provides information on parking and traffic conditions. If the traveler intends to drive, they may first inquire about the car park location and direction. If there are no car parks at the destination or if there is traffic congestion on the road, they may switch to using public transport on the spot.

To encourage the public to make use of YouBike, **FTiT** allows the general public to inquire concerning YouBike's rental stations and their respective available bicycles and parking slots. The rider can use YouBike as the transport link for the last mile of their journey whenever necessary,; with the extensive bikeway network available, the utilization of green transportation can also be increased.

FTiT also provides instant feedback of traffic information online. Through simple operation, the public can report on service deficiencies and provide recommendations at any time. The Department is able to quickly retrieve the report and provide feedback, and promptly carry out corrections and improvements to enhance the service efficiency of the transportation system. This fulfills the user-oriented service concept, and increases the public's identification and satisfaction with government policies.

3. Economic Benefits

Application is available for public and private agencies (organizations) to interface with the traffic information database. Real-time traffic information can be widely assimilated to enable the public to promptly obtain such information. As of 2012, a total of 125 government agencies and private organizations have applied to interface with the database. The service items developed totaled 79, including: 51 smartphone Apps, 14 websites, six digital television channels, six navigation systems and two display boards. This demonstrates that the traffic information interface service has effectively increased enterprises' scope of services. The creativity and value-added applications by the enterprises also provide the public with diversified information inquiry channels, thereby creating the greatest value for traffic information.

Real-time traffic information is necessary for various travel and transportation activities. Services developed based on such information database have also flourished, given that the traffic information interfacing is open. For example, enterprises have developed value-added traffic information services for smartphones, websites, vehicle navigation systems and digital television channels, with the main applications being smartphone Apps and websites for bus, parking and traffic information, map-based enterprises such as Google Maps, and navigation software such as: Garmin, Mio and NaviKing, as well as for Yulon Luxgen. Furthermore, banks and insurance companies have also made use of special smartphone Apps to provide public transport information for their branches, to aid their customers to use public transport to reach the branches and increase the service quality of their enterprises.

In addition, due to the enterprises' creative value-added applications by interfacing with real-time traffic information, lifestyle information Apps (such as iSearchHome and VoiceGO!), travel websites (Fun Taipei, Show Taiwan), Yangmingshan National Park mobile navigation system, community networking platform and news channels (CTV, FTV and CHT's MOD) have also been widely used.

IV. Technology of Project

1. Fun Travel in Taipei

FTiT provides multiple versions such as iOS, Android, Windows Phone 7 and Windows Mobile versions; its functional diagram is shown in Figure 6. The overall system includes a set of announcement servers (equipped with load balancer for balancing server load) to allow FTiT to access the information via API and 2 Mac Mini Servers to provide Push Notification service for the iPhone version of FTiT. The server layout diagram is shown in Figure 7.

2. Traffic Information Interface Platform

So far Taipei City Department of Transportation has supplied 16 real-time traffic information systems for public and private agencies (organizations) to interface with free of charge, through which value-added applications can also be developed. The systems include: Taipei City Parking Information and Navigation System Database which provides parking lot information and remaining parking space, Taipei City Traffic Control Center Database (provides road speed, changeable message sign (CMS) display information, vehicle detector (VD) information and closed circuit television (CCTV) images), My Bus 5284 Database which provides locations of bus stops, bus routes and every buses and estimated arrival time, and Taipei City Accident Database which provides time, location and type of accident. With the creativity and value-added applications by public and private agencies (organizations), there are more and more information inquiry channels that provide the public with diversified information.

V. Finance and Management

FTiT was funded by Taipei City Department of Transportation, which entrusted the private sector with the design and development. The development lasted two years with the total funding amounting to USD 114 thousands. It successfully integrates all of Taipei City's traffic information and presents integrated real-time traffic information to the general public through a user-friendly interface, fully utilizing the features of smartphone Apps. Residents in the Taipei metropolitan area and overseas tourists alike can get hold of real-time traffic information and easily travel in Taipei.

VI. Uniqueness of the Project

1. Multi-mobility

In order to provide the public with integrated travel information service, Taipei City Department of Transportation integrated real-time traffic information for roads, parking and bus from the ITS plan over the past 20 years, and developed “Fun Travel in Taipei” (**FTiT**). The applications provided by the system are far more integrated than those provided by traffic smartphone Apps of other countries.

2. Integration

Compared to general smartphone Apps which can only inquire on one mode of transportation, **FTiT** provides an integrated public transport service network, including intercity transportation information such as: flights, Taiwan Railways, High Speed Rail and intercity buses; parking and transfer information such as roads and car parks; city public transport information such as bus, MRT and river cruise; as well as last mile connection services, such as small shuttle bus, YouBike and taxi. The general public can make use of **FTiT** to rapidly search for the required traffic information and make travel plans to reduce waiting time. They can also select the appropriate mode of transport to have a comfortable and efficient journey in the Taipei metropolitan area, and enjoy a seamlessly integrated transport service.

3. Public Private Partnership and Cooperation

The traffic information interfacing is open to public and private agencies (organizations). This widely promotes real-time traffic information, and allows the public to swiftly obtain real-time traffic information, thus enhancing transportation efficiency. It is in line with the objective of promoting the overall public interest: increasing the flow of traffic information to create the greatest added value. For the government, integrating the information interface channels allows it to maintain system stability and speed up the administrative operation. For private organizations and enterprises, this can increase their scope of services and improve brand image. For the general public, traffic information becomes a daily necessity, where high-quality integrated real-time traffic information can be promptly obtained.

VII. Pictures and Drawings on the project



Figure 1: Travel to Taipei Flora Expo

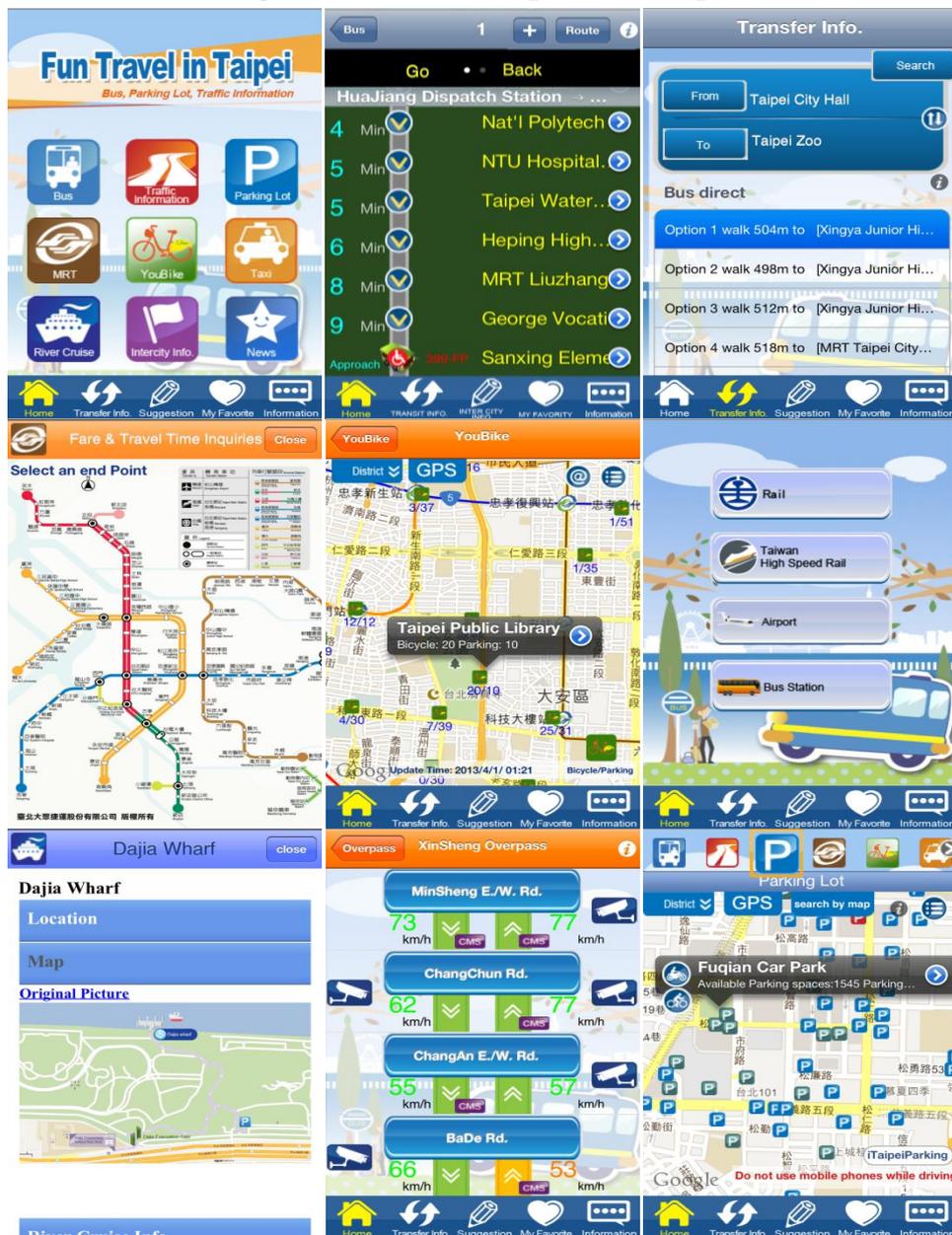


Figure 2: Fun Travel in Taipei

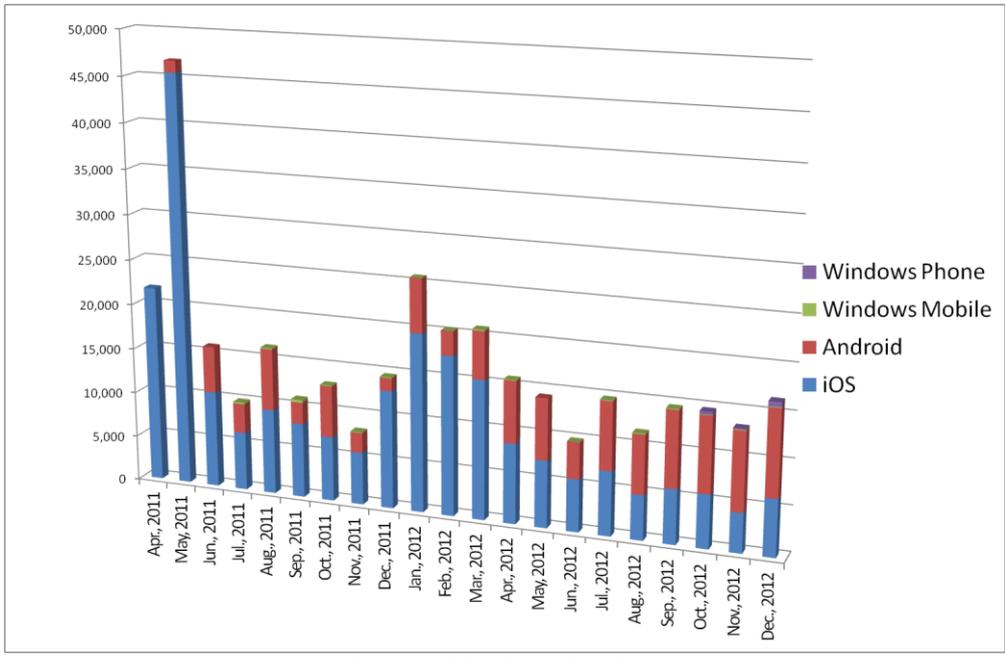


Figure 3: Monthly downloads of FTiT

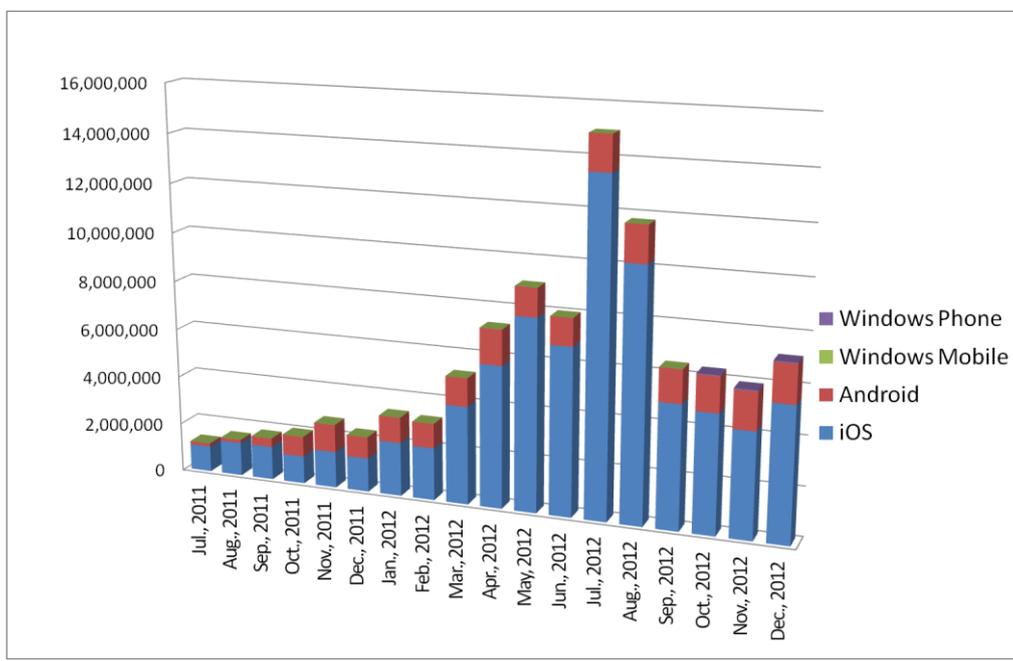


Figure 4: Monthly usage of FTiT

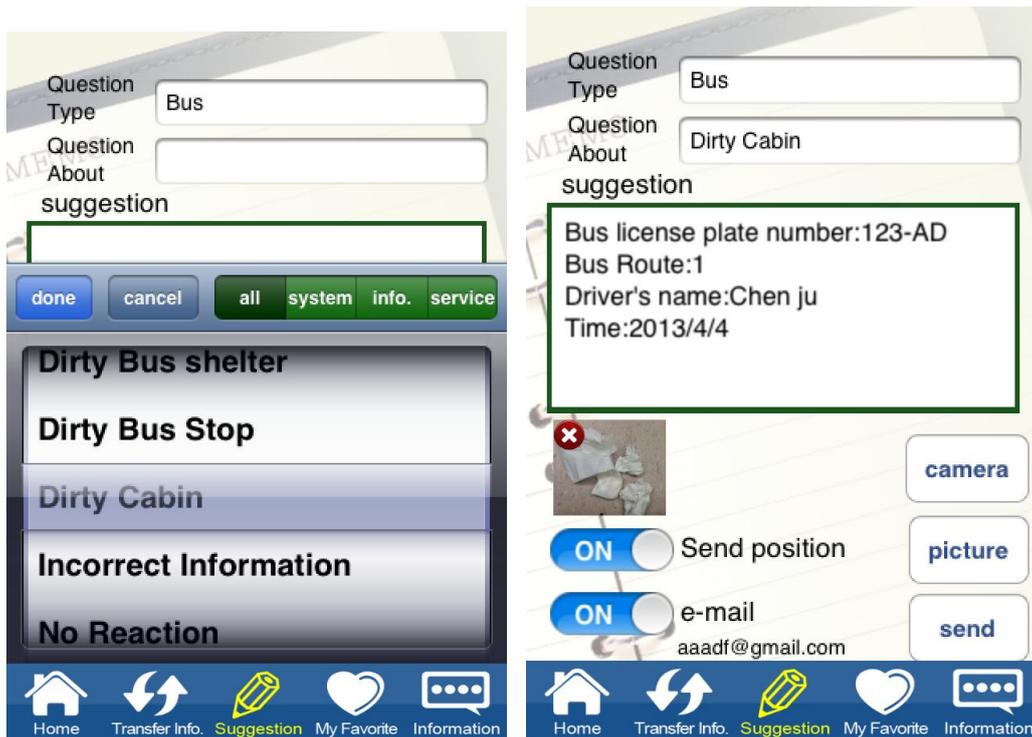


Figure 5: FTiT's online feedback function

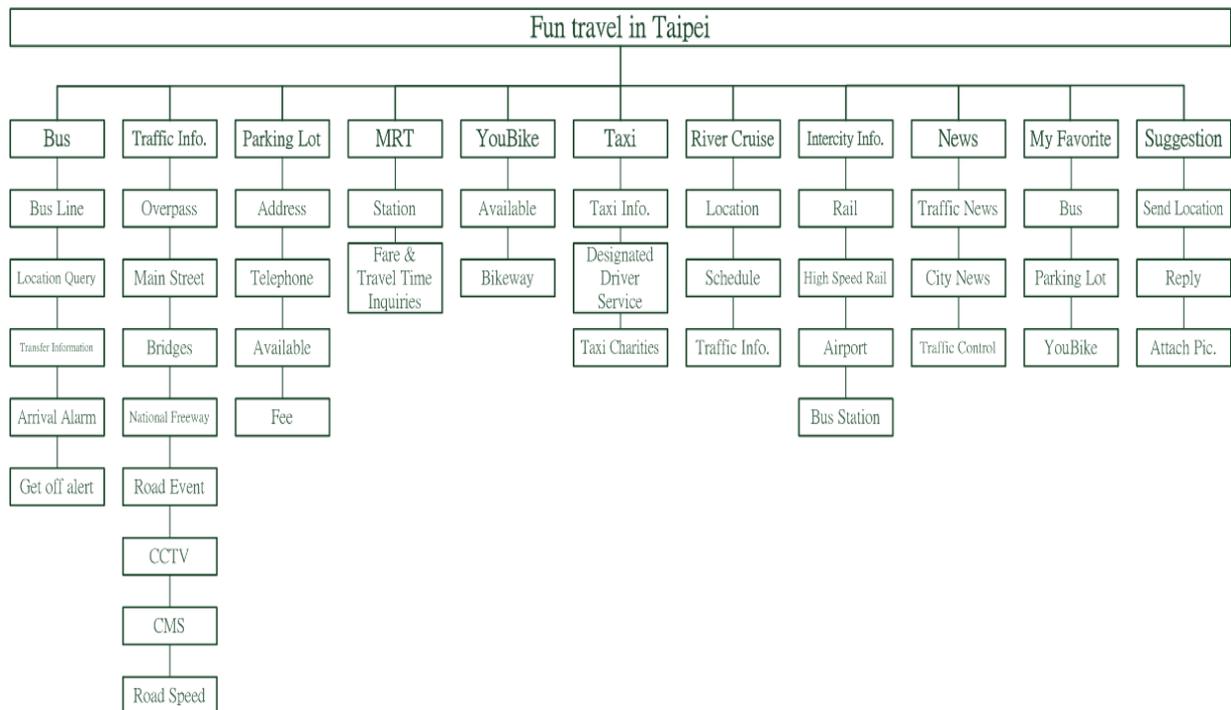


Figure 6: Functions of FTiT

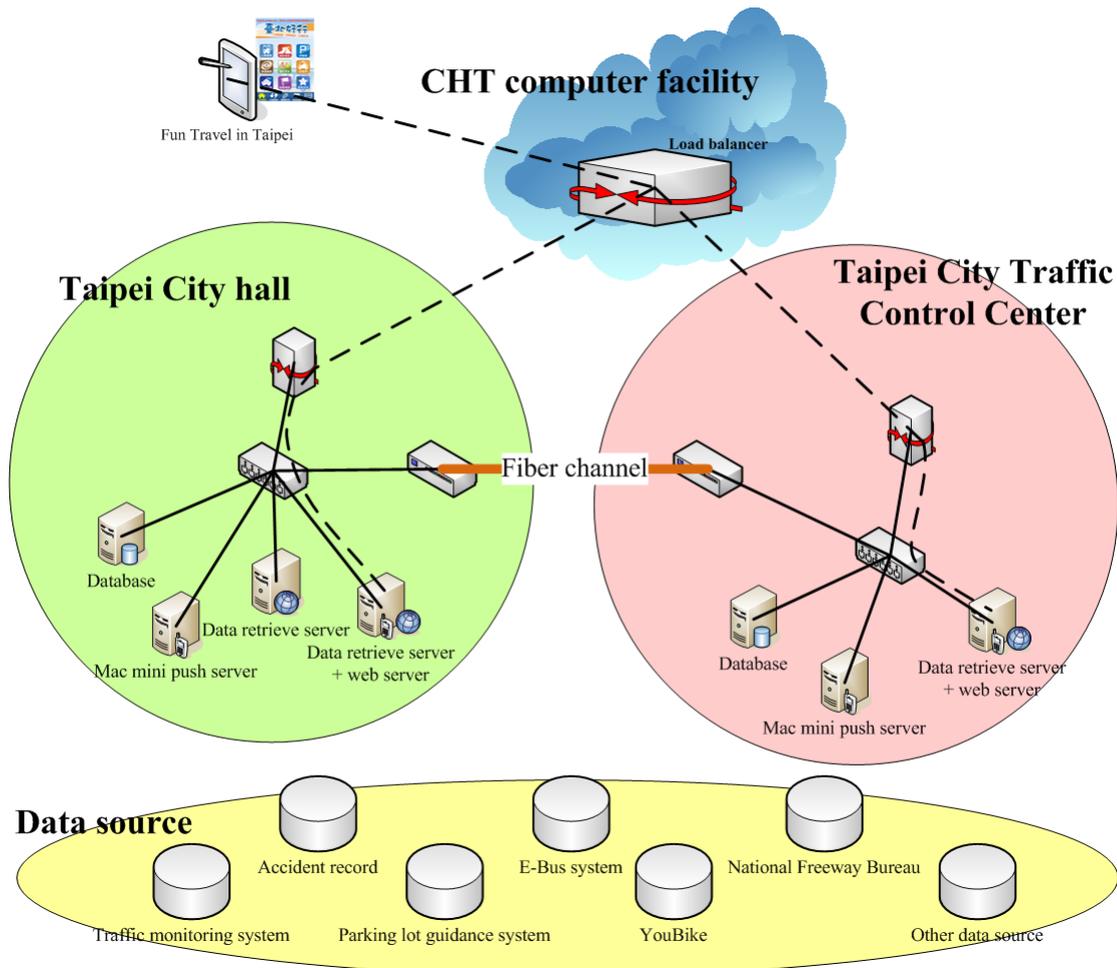


Figure 7: Architecture of FTiT

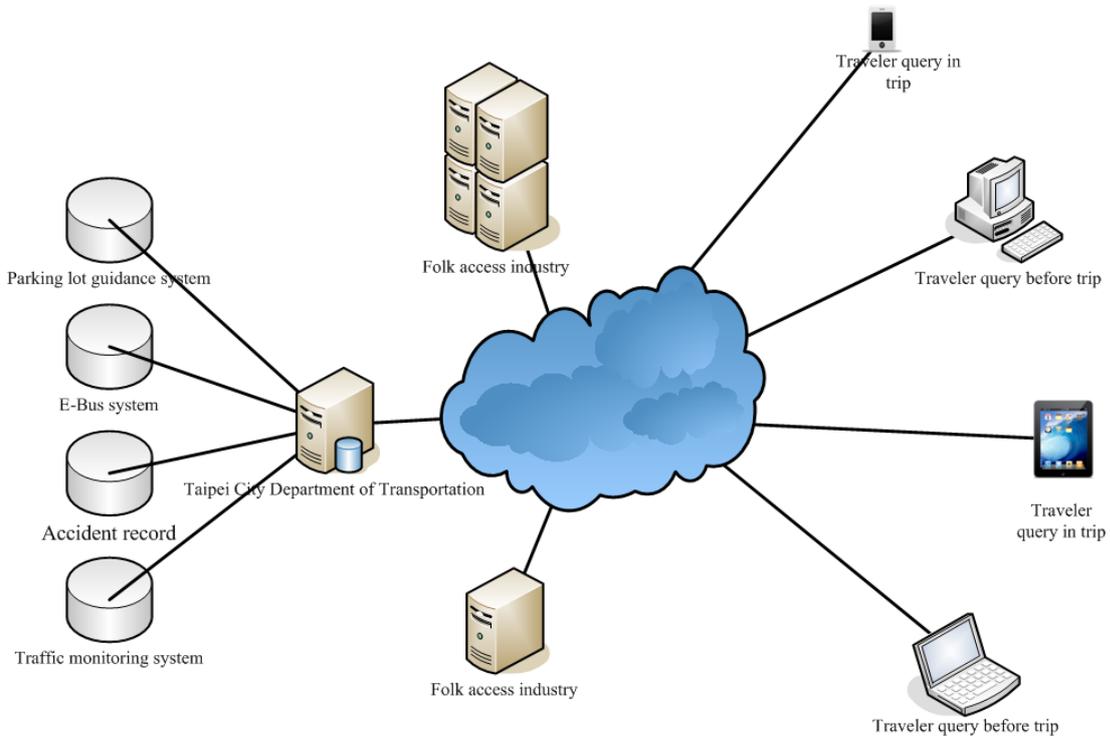


Figure 8: Public Connectivity Network

Fun Travel in Taipei



Introduction Video of **FTiT**

VIII. Point of Contact Person

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