Using Smart mobile Applications for extracting real-time transit information
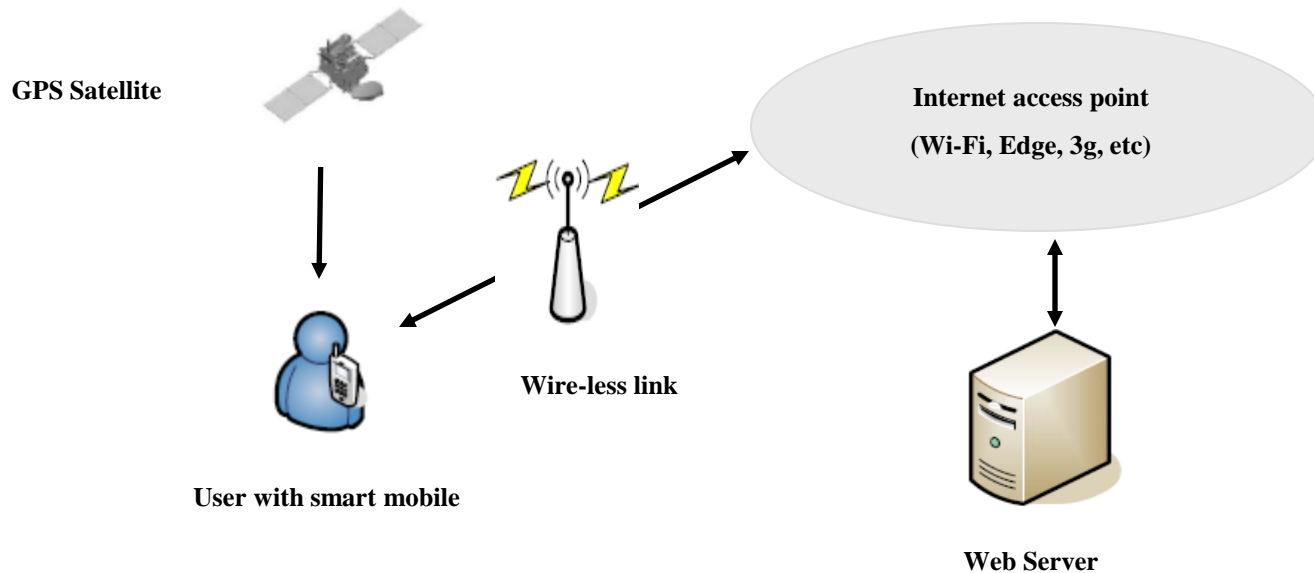
Bashir Shalaik, Ricky Jacob and Adam Winstanley
Department of Computer Science,
National University of Ireland Maynooth
Ireland

E-mail:bsalaik @cs.nuim.ie

Introduction and Background

- Smart mobile devices have the ability to browse the internet and obtain information and services based on their location
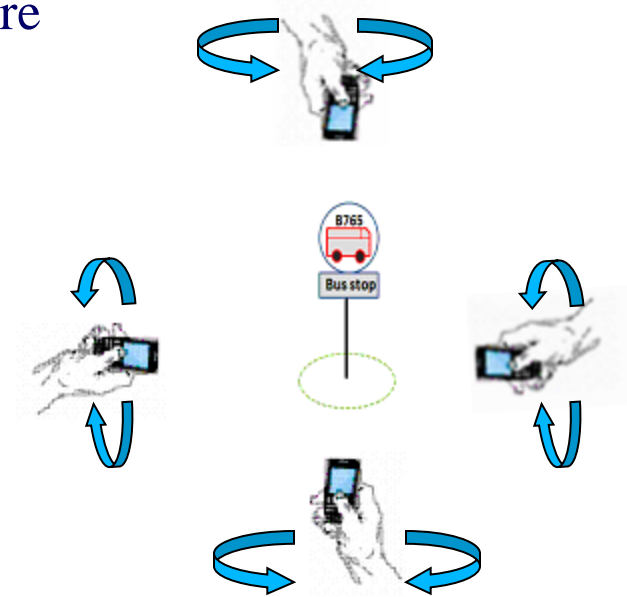
GPS Satellite

Internet access point
(Wi-Fi, Edge, 3g, etc)

Wire-less link

User with smart mobile

Web Server

- These devices are equipped with GPS receivers and other sensors, like the accelerometer and the digital compass
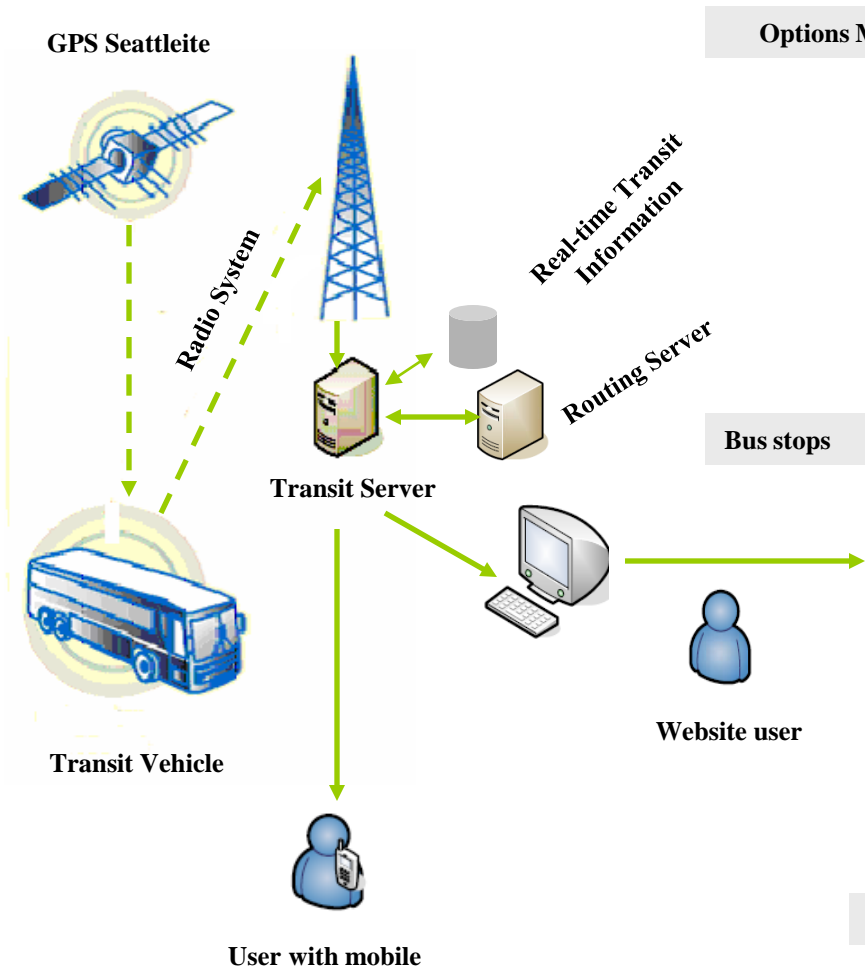
• Users who have smart mobile device can receive real-time transit information such as bus arrival/Departure times.

• The integration of small sensors like GPS and the digital compass provides orientation aware in addition to the traditional location based systems

Our Real-time Bus Tracking System

GPS Seattleite

Radio System

Real-time Transit Information

Routing Server

Transit Server

Bus stops

Website user

Transit Vehicle

User with mobile

Options Menu

Updating Textual display

Vehicle Locations on Map

Real-Time Bus Information As of 15:40:05 PM—2008-06-24

BLACKPOOL   MORE

Routes:
Line 5

Next Bus:
- Victoria Hospital (to Blackpool)
- Grange Road/Layton Square
- Market Street M3
- Central Drive/Rigby Road
- Royal Oak
- Farmers Arms
- Blackpool Business Park TERMINUS
- St Annes Road/Halfway House
- Lytham Road - Farmers Arms
- Waterloo Road/Royal Oak
- Central Drive/Rigby Road
- Corporation Street C3
- Talbot Road/Layton Square
- Victoria Hospital TERMINUS

See/Hide Route   See/Hide Stops   Route No

All Vehicles
248
250
251
252
253
254
255
256
257
All Vehicles

Timetable

Trip Advisoer

Bus Route 5

Bus #	Status	Last update	Last known Position	To Terminus
248	out of service	2008-06-24 00:00:00	Depot	-
250	in service	2008-06-24 15:38:54	Bank Hey Street/McDonalds	Blackpool Business Park TERMINUS
251	in service	2008-06-24 13:55:28	Depot	-
252	in service	2008-06-24 15:39:12	Central Drive/Bloomfield Road	Victoria Hospital TERMINUS
253	in service	2008-06-24 15:38:46	Victoria Hospital TERMINUS	Victoria Hospital TERMINUS
254	in service	2008-06-24 15:39:21	Central Drive/Chapel Street	Blackpool Business Park TERMINUS
255	out of service	2008-06-24 00:00:00	Depot	-
256	out of service	2008-06-24 00:00:00	Depot	-
257	in service	2008-06-24 15:38:53	St Annes Road/Halfway House	Victoria Hospital TERMINUS

bing

List of Transit Vehicles

Real-time Bus Tracking System's Architecture

Public user interface of real-time bus tracking system

We Provide Several Different Tools for Services Management

With real-time bus tracking, operators can:

- Detect any poor service phenomena such as vehicle- bunching or time-table adherence deviation.

- Provide better operation support.

- Provide customers with real-time service information.

Transit's operator interface of real-time bus tracking system

Adherence to the published timetable is shown through colour coding i.e. green for On-time buses, red for late buses and black for temporary out of services buses.

Operator Specific Display

Example: Enhancing Trip Planning including Walking Direction/ Advices

Trip Planning Service

Workflow Model for accessing real-time transit information
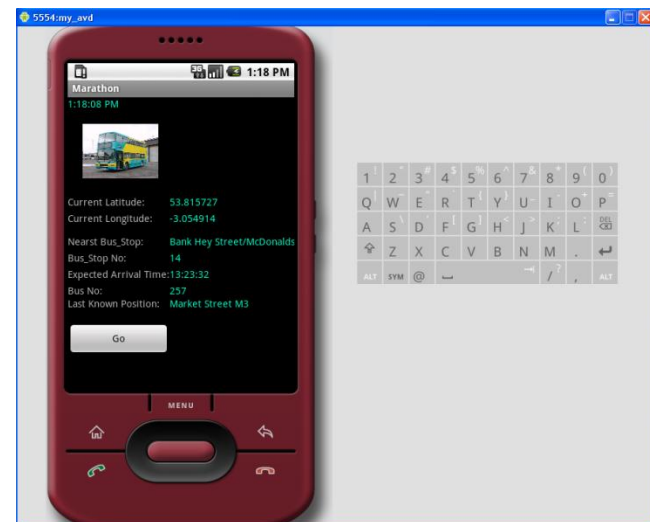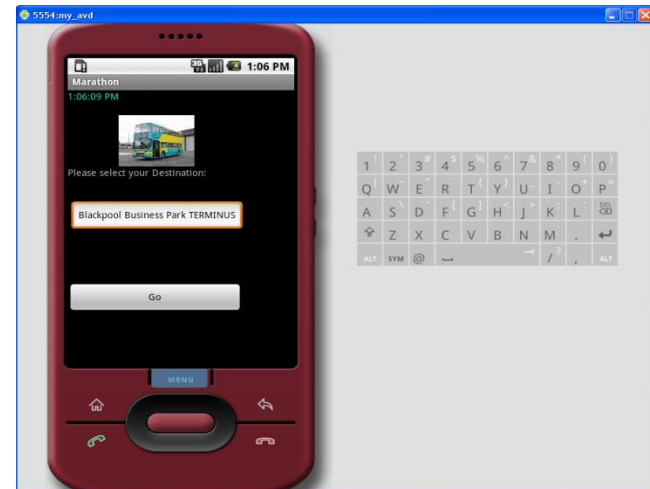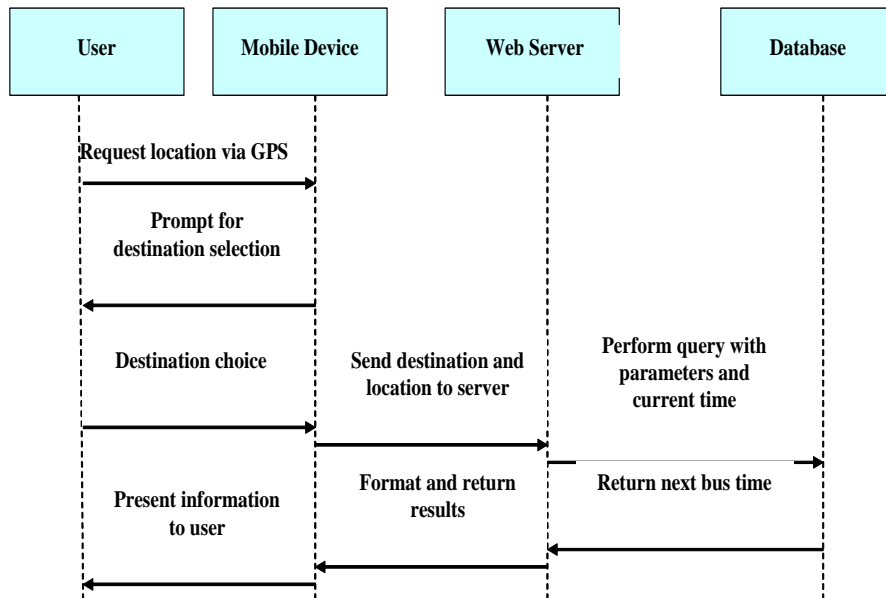
Integration of real-time bus data with 'point-to-query' transit information system

1- Point mobile for scanning

2- Return nearest Busstop ID

3- Query Transit & Routing Servers

4- Return real-time transit information & Routing Advices

stop no:18
Direaction: South
Route: 5
Central Drive/Rigby Road

surved by:
51,52,53,54,55,56,57,58,59,,

Current Time:08:22:15
Bus no:66
Bus stop no:18
Departure Time: 08:30
Walking Time: 7 Min(s)
Routing Advices
You Have to Hurry To Catch This Bus

Workflow Model for Integration of point to query
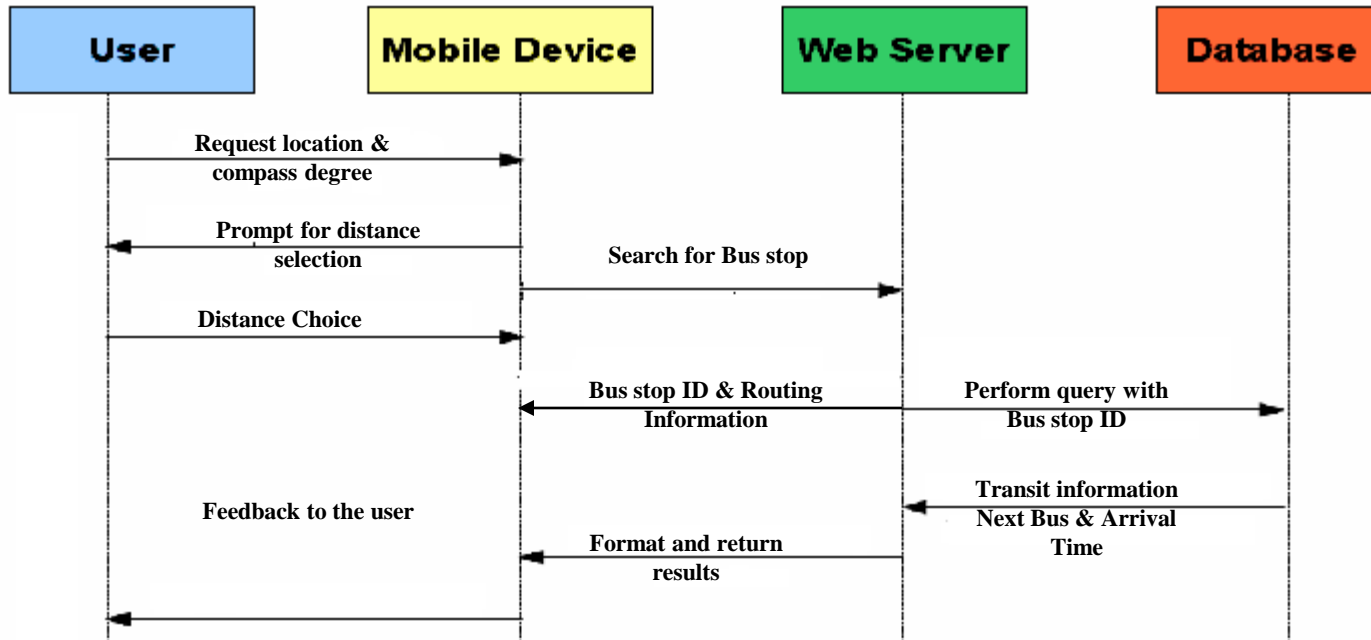
The flow of information across the four parts of the system.

Conclusion and Future work

- Smart mobile devices can provide orintation based services for passengers using public transport

- Instead of using websites, this prototype focuses on accessing transit information through mobile devices

- This can be useful when the user is particularly new to the area and is unsure which bus stop he/she should be at to catch the right bus.

- To demonstrate the success and use of such an application in the real-world, extensive user trials need to be carried out with a wide range of participants.

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Thank you for your attention!