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Melaka Tourism Location Based Service

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Abstract

This paper presents a Location Based Service framework application deployed in Melaka urban area. The Melaka Tourism Location Base Service is delivered to support tourist activity to find any nearby venue around their current location. The program is specifically designed for mobile phone which supports MIDP 2.0 profile and CLDC 1.1 configuration to run JSR 179 Java Micro Edition Location API due to its capability handling networking activity in handled device.

Index terms—

1 INTRODUCTION 1) Background and Related Work

Melaka is world known for its long history, historical sites, cultures and cuisines where it has charmed millions of visitors since its founding in the 15th century. This historical city received the popular recognition of World Heritage Site by UNESCO in 2008.

The Development of mobile technology has made a significant impact on services and other human related activity more reliable. The comprehension of tourism market opportunity and the increasing of demands toward mobile activity create new phenomenon of localization technique. The prevalence of mobile devices with personally identifiable locationbased information is top concerns for 2011, say experts from Proof point, Inc.

The basic idea of location based service is to answer Where am I? What is around me? Where is it?. When individual find themselves in new environment they are not familiar with, their needs and behavior are easily predicted. People need to find somewhere to stay, where to eat, or to withdraw money from ATM. As the tourism sector is heterogeneous, the diversity of information services for mobile users is clearly a usability issue. How can information be delivered based on their needs?

LBS technology is served in between of some major technology. It is intersection between three technologies. It is created from New Information and Communication Technologies (NICT) such as mobile telecommunication system and hand-held devices from Internet and Geographic Information System (GIS) with spatial database. Despite of its popularity of the technology, it is not being efficiency utilized especially for tourism industry. Theoretically tourism world can intrinsically benefit from the use of mobile technology which provides services to travelers on the move since tourism is always identical with location.

Melaka Tourism Location Based Service is deployed using a client server environment in projection of the whole system. The client act as system component who requests service and data provided by server, who has resources to be utilized. As the system architecture can be represented as below.

Figure2 LBS System Architecture Several frameworks has been successfully developed such as The Location Based Mobile Tour Guide Services Towards Digital Dunhuang, LBS application implemented for Dunhuang Mogao Grottoes a world cultural heritage by the Chinese Academy Sciences of Beijing China. The system is deployed for a specific urban area having the same characteristic with the system this project is developed for. Both system similarities happens in the system architecture for using J2ME technology as multi threading mechanism, MIDP network programming, and JSR 179 Location API. University New South Wales also has developed the same framework deployed in university campus usage enabling the 3D rendering capability for indoor navigation.

2 2) Paper Organization

This whole paper is consisted of 3 sections and organized as follows: Section 1 gives a brief explanation about the LBS technology and its implementation towards Melaka Tourism. Section 2 listing any research frame methods using in developing the system. Section 3 detailing the various features available in the system while the last section summarize the whole paper. The Location API supports the conversion of string representation of coordinates into double representation and vice versa and the calculation of distances. Furthermore, an application can make use of so-called landmark stores for storing, deleting, and retrieving landmarks from a persistent database inside the mobile devices. A landmark can be used to represent points of interest and it contains fields for specifying coordinates, address information, a name, and a description [1].

3 II.

4 RESEARCH FRAME

5 2) Haversine Formula

Calculating the distance between points locations is often an important component of many forms of spatial analysis in business and research. The haversine formula is preferred to be used in GIS application for common case to minimize rounding errors. It assumes a spherical earth and ignores ellipsoidal effects.

In order to calculate distance between two earth coordinates as demonstrated in figure **??**, the following algorithm is used:

Figure4 Distance between two coordinates on sphere Given: two coordinates A (?1, ?1) and B (?2, ?2), sphere radius R, and distance (between A and B) d, ?1 is the latitude of A, ?1 is the longitude of A, ?2 is the latitude of B, ?2 is the longitude of B, ? ? = ?2 ? ?1 , ?? = ?2 ? ?1 , and haversin(?) = sin2(?/2). So, d can be obtained by: Google Static Maps API is an easy way to provide a map when user doesn't have Javascript available. It is not as powerful as the full Google Maps API but still, it can provide a basic map containing both markers and paths. The basic concept is to generate image by adding URL parameters to the querystring of the URL. The Google API Maps parameters are certain value separated using ampersand (&) character. The basic Google Static Map URL must be in the following form to complete the API request:

"http/maps.google.com/maps/api/staticmap? parameters" There are several parameters available to be used on the API to customize the map item:

? Location Parameters (centre, zoom)

? Map Parameters (size, format, map type, 'language) ? Feature Parameters (markers, path, visible, type) ? Reporting Parameters (sensor) Figure5 Google Static Map Image Other Google service implemented in the system is Google Reverse Geocoding API via HTTP request. Reverse Geocoding is a method to convert geographic coordinates into an address. The Geocoding API supports reverse geocoding directly using the latlang parameter. "http://maps.googleapis.com/maps/api/geocode/json?la tlng=x,y&sensor=true_or_false"

Where x is latitude coordinate, and y is longitude coordinate. The query will result a JSON (Javascript Object Notation which later will be parsed into php file to return a specific address of current location. Figure6 Google Reverse Geocoding 5) Routing Direction One of features implemented in Melaka Tourism Location Based Service is routing capability to a specific point of interest from current detected location. The routing functionalityis applied using Bing Map REST Services Application Programming Interface (API) provides rrepresentational State Transfer (REST) interface to preform task such as creating map with puhpins, geocoding an address, retrieving imagery data, or creating route.

In order to display a static map route the following URL format must be sent. "http://dev.virtualearth.net/REST/v1/Imagery/Map/Road/ Routes&wp.0=a,b&wp.1=c,d&key=bingmapkey" wp.0 is the current coordinates, wp.1 is the destined coordinates, and bingmapkey is the api map registered on the bing service. both Client and Admin. The Client service covered services such as retrieve current location using Global Positioning System, view location map, finding nearby point of interest, view its detail, and retrieve walking direction from the current coordinate. While the admin side able to add, edit, and delete the existing POI in the database. [1] [2]

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[2] March 2011Melaka Tourism Location Based Service ©2011 Global Journals Inc. (US)

Figure 1: Figure1

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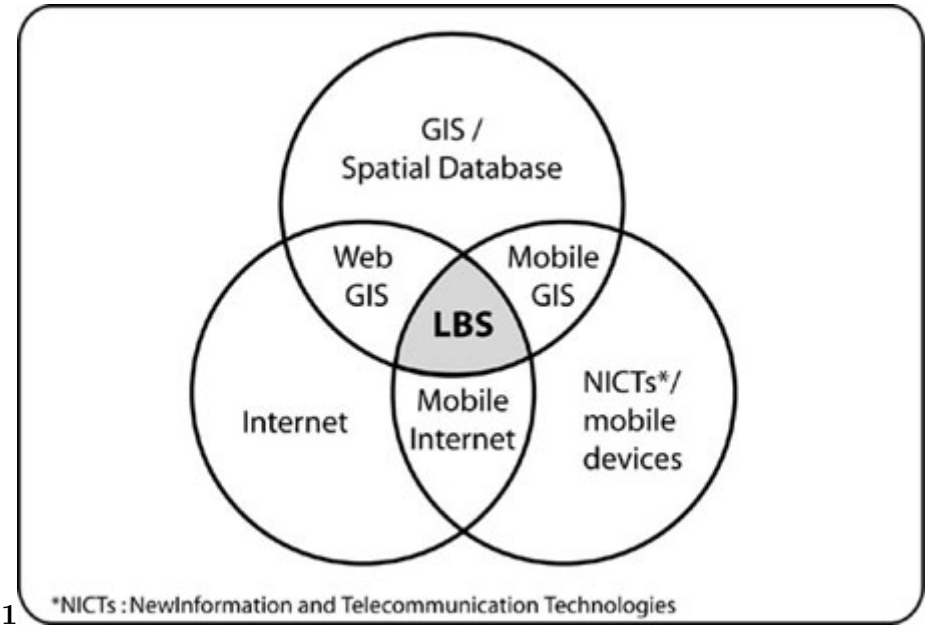

Figure 2: 1)

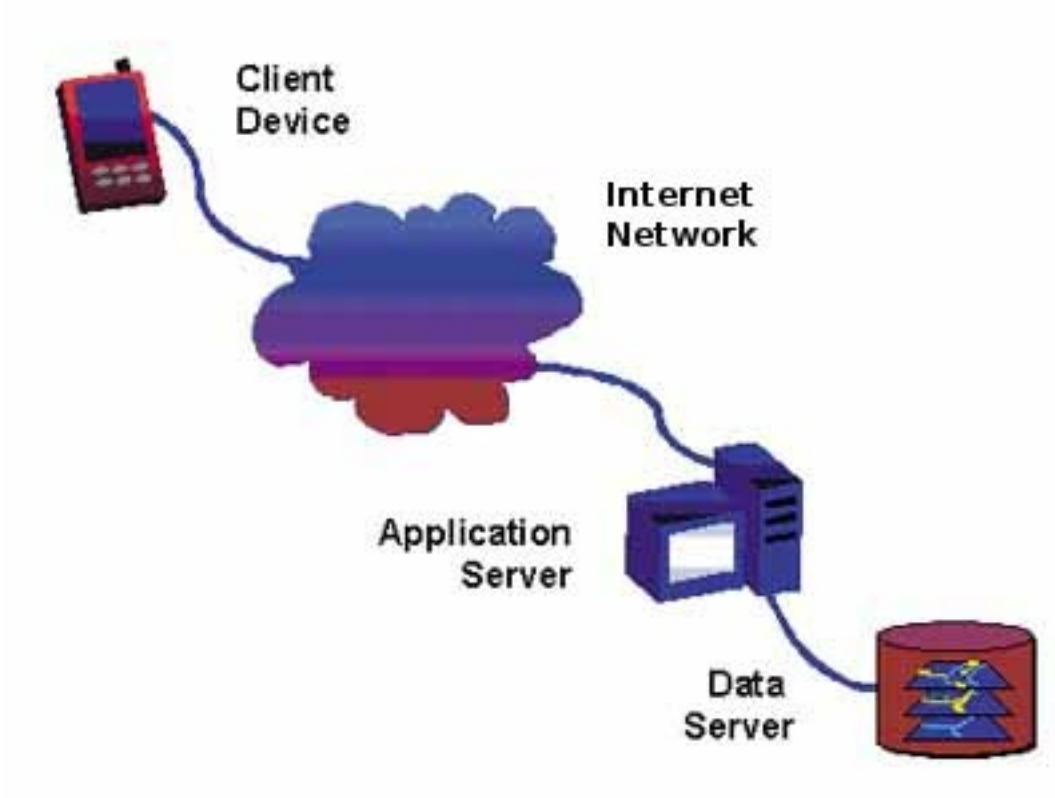

Figure 3: Finally

Class	Description	Usage notes
LocationProvider	Represents a source of the location information, starting point of location request.	
Criteria	Used for the selection of the location provider.	
Location	Represents the standard set of basic location information. This includes the time-stamped coordinates, accuracy, speed, course, etc.	The implementation has a limit for the maximum number of location read requests that can be sent simultaneously.
Coordinates	Represents coordinates as latitude-longitude-altitude values.	
LocationListener	Listener that receives update events associated with a particular LocationProvider.	
ProximityListener	Receives updates based on terminal crossing into a defined radius around a coordinate.	The implementation has a limit for the maximum number of proximity listeners that can be added simultaneously.
Landmark	The Landmark class represents a landmark, such as a known location with a name (such as a monument).	The implementation has limitations such as maximum number of landmark store categories, landmarks in landmark store, etc.
LandmarkStore	The LandmarkStore class provides methods to store, delete and retrieve landmarks from a persistent landmark store.	The implementation may only support default landmark store and not support creating and deleting LandmarkStore methods.

7

Figure 4: Figure 7

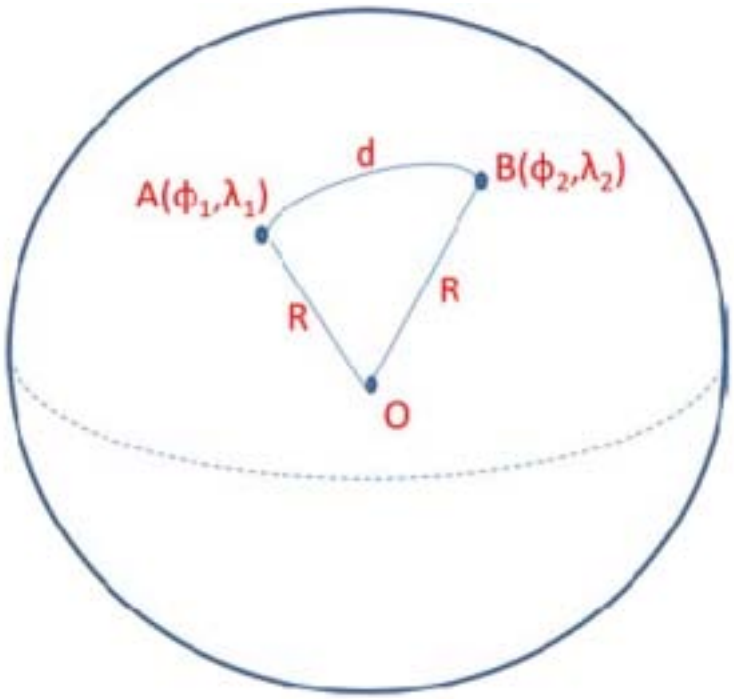

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Figure 5: Figure 8

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