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Abstract

SUB-CELLID BASED GSM LOCATION SYSTEM

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Considering the recent convergence of computing and telecommunications technologies with the tremendous success of the Internet, the World Wide Web, and Mobile Communications, the next step is expected to satisfy user needs for anywhere, anytime access to information and services, including Location Based Services (LBS).

GSM location technique was firstly introduced in early 1990's, and being used in many countries to provide LBS. Though there are several of techniques based on cellular network, such as CellID, A-GPS, unfortunately, for the reason of problem concerning accuracy or the big investment. In practically, in many countries such as in china, only CellID technique is being in use now, which is usually provided by Telecom Corporation, with high price and poor function.

This paper presents an innovative LBS service applicable to the Mobile Marketing industry sector. We describe the architecture of the information system supporting the proposed service and a software prototype we implemented using a simulation environment for providing location information. This prototype is based on the so called Sub-CellID algorithm, which features higher accuracy (about 3 to 5 times) than traditional CellID algorithm based GSM positioning system (e.g. while CellID accuracy is 500m, Sub-CellID accuracy will be around 100m to 150m), lower cost than various kinds of enhanced positioning algorithm, ease of use, and the application platform is a Mobile Phone based E-Guide system.

We try to build a GSM network Layer 1 database collected in Macao S.A.R, design relevant positioning algorithm, and build LBS database also. Under such situation, we could use the GSM network database and the algorithm to acquire Client's location firstly, and then provide LBS from LBS database back to them.

We hope the GSM positioning technology, features innovative algorithm, can be flexible enough, to be put in use in occasion such as emergency call service, vehicle tracing, etc.

Keywords: GSM Network, Positioning Technology, Location Based Service, Sub-CellID Algorithm.