Concept Design:

**Location Based Service:** Location based services (LBSs) can be defined as information services accessible with mobile devices through the mobile network and utilizing the ability to make use of the location of the mobile device.

The basic idea behind location based services is to provide answers to the following questions to a user:

“Where am I?”
“What is here around me?”
“How can I go to?”

Any application service that can answer the above mentioned questions can be denoted as location based service. With the current age of smart phones, these answers are always in hand of any mobile user.

LBSs can be classified into two types:

- ‘Push’ or ‘triggered’ services which are triggered by application service providers when a user arrives or enters certain geographic location, e.g. localized weather warnings or push-advertisements when in a shopping mall etc.

- ‘User-requested' or ‘pull’ services, which are typically information services requested by a user from an application service provider, e.g. finding nearby cafe.

**Current Protocols:** Current LBS protocols take user query to the server and the server returns answers to the query. One of the basic requirements to such approach is internet access. With high internet traffic and in a situation where internet access are not available such services become inaccessible too.
Many research works have been done to improve the performance of the wireless networks to serve location based services. In [1] an agent based location aware service is proposed, where the proposed system model breaks a network into several clusters of network with each network comprising of active agents. In [2], an infrastructure is proposed for location based services with moving object database; this still requires internet access for the client device. In [3] a new type of location based web service architecture is proposed which is named as ‘Person Wide Web (PWW)’. Based on the geographical location of the mobile user PWW effectively recognized the location specific web resources. Most of the protocols proposed for location based services are server to user services.

There are also some privacy issues involved. In today’s mobile communication networks the LBS that use subscriber’s location information are managed and controlled by mobile network operators. Mobile operator “trusted” 3rd party application service providers can access this information via standardized interfaces from location servers which are part of the mobile operator core network. Even though the mobile operators are considered as trusted partners, there still remains the issue that the user’s location information no longer stays confidential.

Several research works have been conducted to resolve this privacy issue. [4] Proposes a decentralized system architecture, where the user has full control over his location information. When positioning is done, the location data is generated and controlled at user mobile device and can be provided to a trusted known peer or application service provider of user’s choice. In [5] the proposed protocol states that a query initiator can select itself or one of the k - 1 agent in its ad-hoc network as a query requestor, the query initiator remains k-anonymous. In addition, the location revealed to the location service provider is a rectangle instead of an exact coordinate.

**Proposed New Solution:** Our proposed approach provides LBS without internet access. The basic idea behind this is: “What information I need is a subset or the superset of the information needed by the people around me”. At any particular geographic location whatever information I may need is also needed by the people around me. E. g. if I need to locate any supermarket, one option is always ask people around me. Other option is to use LBS.

We combine here the LBS approach with the first one, which is, ask others around. Exception is in this case the smart phones will ask other smart phones around.

Our LBS structure will be as follows:

Every smart phone will contain a local database with the location information of places around. Whenever another new smart phone in the area will require any location information it will try to connect to other cell phones around via Bluetooth connect and in case of successful connection will send the query to the connected device. The other phone will return the result.
Functional Decomposition:

We decompose our system into two parts:

- **Generate the local database:**
  - Whenever any mobile user will visit any new place the location information will be saved into his mobile device.
  - The mobile device will automatically check the current user location at a periodic interval.
  - If it finds any new location it will ask the user, whether he wants to save this new location in his local database or not.
  - In case the user wants to save, it will then ask for additional information related to the new location.
  - After user confirmation the location will be saved in the cell phone’s database.

- **Location search:**
  - Whenever a mobile user will arrive in a new location where he is not aware of any service centers or restaurant or supermarkets, it will use one search interface in its mobile device.
  - The device will take the keyword, and try to detect other Bluetooth devices around.
  - In case it gets to connect to any new device, it will send the query to the device.
  - The device will then search within its local database and send back the result.

Implementation Platform

As we know iPhones, iPods are location aware devices; we will use these devices as our implementation platform. There are SDKs available for iOS devices to detect locations.

- Mobile device: iPod, iPhones.
- Programming language: Objective C.
Bibliography:


