Mobile Social Networking

OMESH Networks Incorporation
www.omeshnet.com
3 Kilkenny Drive
Toronto ON, Canada M1W1J3
Tel: 1-416-837-8980
Fax: 1-416-977-2796
Email: info@omeshnet.com

Applicable Areas

Social Networking connects people to everyone and everything of interests. A social experience that helps you discover what's going on with your world and helps the world discover what's going on with you. Successful examples of Social Networking on Web include: Facebook, Myspace, Twitter, Youtube, Delicious, AMI, Google Mail and Yahoo! Mail updates, also known as Web 2.0.

With the booming of smart phones, social networking is moving to mobile platform (Social Networking on Mobile). More and more people are used to update their social networking website, for example Facebook etc., from their smart phones at anywhere anytime. The shared content can be coming from the real world beyond the cyber world, for example from the (video) cameras of smart phones. (Yahoo! Go Flickr, and Nokia Ovi, etc.)

But this can just be a very beginning of changes, and true Mobile Social Networking shall eventually take the convergence of the Internet cyber world and the real world. In a nutshell, it helps you to discover what's going on with both your Internet world and the physical real-world around you, and vice versa.

	Content Source	Whom to Share
Social Networking on Web	Usually the cyber world	The cyber world
Social Networking on Mobile	Both the cyber world and the real world	The cyber world
Mobile Social Networking	Both the cyber world and the real world	Both the cyber world and the real world

With the popularity of smart phones, everyone is really becoming a real-time digital content provider, and smart phones are virtually mini-servers of personalized contents from both the real world and the cyber world. The World Wide Web and Internet search engines such as Google have set forth a "standard" way to publish and search information in the cyber world. A white-hot theme of Mobile Social Networking will be: how to publish and search information in both the real world and the cyber world.

Social networking also faces another major challenge from mobile platforms, which is the limited wireless access bandwidth. The reality is: social networking needs a mass collaboration of people. A mass collaboration of people needs virtually free in the communication cost on one hand, and creates a mass volume of data and multimedia on the other hand. This posts barriers on the wireless carriers' acceptance of smart phones with social networking, since ubiquitous wireless Internet infrastructure such as 3G/LTE/WiMAX has been very expensive to build, and are of limited bandwidth. Carriers are the buyers of mobile phones, who need smart phones to attract people (their customers) at one hand, and are intimidated by any mass bandwidth consumption on the other.

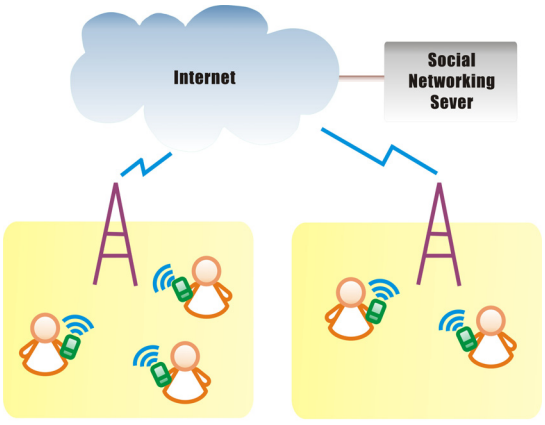
OMESH's solution on Mobile Social Networking solves the dilemmas of both smart phone manufactures and wireless carriers. In principle, it creates a real-time ad hoc wireless network among local smart-phone users, off-loading the large volume of social networking traffics from the carriers' 3G/4G access infrastructure. In addition, by establishing a direct connection among smart phones, it creates a consumer attachment to the smart-phone brand.

Principles of the Solution

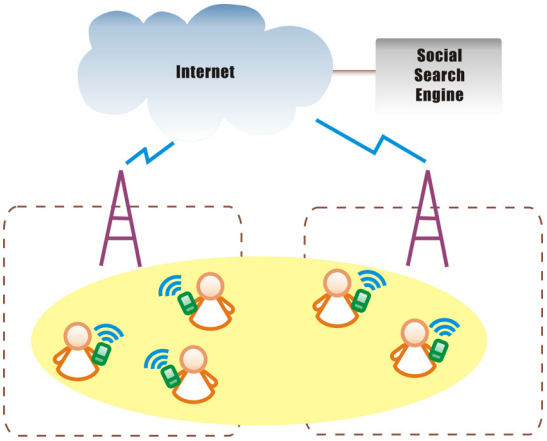
The following figure shows the transition from "Social Networking on Mobile" to "Mobile Social Networking". In the former, people simply uses wireless to access a social networking web-server on Internet, where mobility can simply facilitate personalized contents in real-time and from the real world.

In Mobile Social Networking, smart phones become mini-servers of personalized contents in the real world. The previous "social networking web server" translates to a "Social Search Engine" in the real world. The Social Search Engine caches certain information about smart-phone mini-

servers just similar to what Internet search engines do with Internet web servers. Such cached information can include: digest/keywords of contents, names of special interest groups, locations, and network address, which are of little bandwidth consumption.



Social Networking on Mobile



Mobile Social Networking

When you (the user) sends a real-world search query to the Social Search Engine, it replies with a list of searching results that match the query and the user (or user specified) location. Each searching result also provides a network address being associated to the related smart-phone mini-server. User application can then locally reach the smart-phone mini-server by the network address, where the applications on users and servers can then exchange a large volume of data and multimedia information without consuming the precious bandwidth of carriers' core 3G/4G networks. For example, joining and on-line chatting in a local special interest group, watching a local live video- streaming cast, and all other information about people and things happening around you (the user) in the real world.

When you (the user) wish to publish a personalized content in the real world, the smart-phone mini-server simply sends a content digest for caching in the Social Search Engine with little bandwidth consumption.

Technology and Comparison

The core technology of the solution is on local information sharing. It is the OPM (Opportunistic Mesh) Networks (or Large-scale Cognitive Networks) which sets forth how the smart phones with OPM module can connect to each other and exchange social networking traffic with free bandwidth.

OPM can dynamically establish large wireless networks without predetermined topology constraint and spectrum allocation, and support high mobility for the smart phones. It also uniquely provides reliable and real-time (multi-hop) wireless communications over unlimited number of wireless hops. More specifically in Mobile Social Networking, the technology advantages of OPM translates to:

- Supporting instantaneous communications among a large number of smart phones with high mobility; performance improving with larger network scale (more phones with OPM modules);

- Supporting reliable real-time data/multimedia sessions among smart phones over unlimited number of wireless hops; providing unicast, broadcast, and multicast;

- Adaptable to interference in unlicensed bands; low power consumption; low cost and small footprint;

- Compatible with OMESH's solution of broadband wireless access, and so providing potential convergence with wireless carriers' infrastructure; compatible with Internet Protocols.

In the implementation, smart-phone manufacturers could replace the WiFi module in dual-mode phones with an OPM module. The provided OPM module has similar footprint and power consumption as a standard WiFi module, but is integrated with a superset of functionalities for locally sharing information and even Internet access connection. It therefore can provide an open platform for Mobile Social Networking to search/publish and connect both the real world and the cyber world.

Here is a comparison between standard WiFi and OPM 802.11 compatible wireless modules:

	WiFi Module	OPM Module
Functions	WiFi standard access	**WiFi access and OPM networking by time sharing**
Reliability /Scalability	Usually 100-200 meters from AP (single-hop)	**Unlimited multi-hop wireless; supporting unicast, broadcast, and multicast;**
Real-time Multimedia	Partially	**Supported**
Bandwidth	Usually less than 5-10Mbps	**Up to 20Mbps**
Work Power Consumption	1-2 W	**<1.6W**
Frequency	2.4G/5.8G	**2.4G/5.8G**