

An Exploration on Mobile Social Networking: Dodgeball as a Case in Point

By Nina D. Ziv and Bala Mulloth
Department of Management
Polytechnic University

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Abstract

With the evolution of the mobile platform and the rapid adoption of mobile devices such as cell phones and other handheld devices, social networks, which began as web-based applications, have migrated onto the mobile platform. This paper focuses on the development of these networks and how users of these networks have become a prime source of innovation on the mobile platform. Mobile social networks are the impetus for the creation of an entirely new sub-industry in the wireless sector, thus representing a new aspect of wireless innovation, and increasingly are providing a platform for content and technological innovation in the business environment. The paper discusses the implications of mobile social networks for the wireless sector, content providers, technology companies, and the users of the mobile platform. A case study on Dodgeball, a New York City based mobile social networking company, is presented to exemplify user-centric innovation on the mobile platform.

1. Introduction

In the mid-1990s, the Internet emerged as a robust technological platform and digital-based innovation began to develop. For the first time, technology was being used by firms in industries as diverse as media, healthcare, and financial services to create new products and reach new customers [1]. In addition to the impact of technological innovations on businesses, many people started to use the Internet as a means of communication with their friends, co-workers, and family members. While email served as the major vehicle for communication, social networks, which consisted of a variety of individuals who might be scattered geographically but who used the Internet as a conduit for discussion of common interests and

ideas, began to emerge [2]. Initially, these networks were based solely on the World Wide Web and

depended on the interaction among users who accessed various websites where dialogues could take place. However, with the advent of an increasingly stable mobile platform, the development of location based services and the rapid adoption of mobile devices such as cell phones, gaming machines and handheld computers by a wide variety of users, social networks have migrated onto the mobile platform. Indeed, forecasts indicate subscription revenues for these mobile social networks which are comprised of users in the 18 to 35 year old range, are expected to generate \$215 million by 2009, a major increase from the \$31.4 million generated in 2005 [3]. SMS.ac, a leader in the mobile social network market, claims it has 50 million users and expects the number of users to grow exponentially [4].

This paper will explore the development of mobile social networks. It will attempt to delineate the characteristics of these networks, and how they differ from web-based social networks. While there are clearly sociological aspects to these networks, this paper will focus on the implications of such networks for content providers, managers of technology companies who provide products and services to members of these networks, and firms who market their products to the target population which constitute the majority of users of these networks. Indeed, these newly developed communities have not only been the impetus for the creation of an entirely new sub-industry in the wireless sector, thus representing a new aspect of wireless innovation, but increasingly are providing a platform for the next stage in content innovation in the digital-based and wireless business environments. Moreover, businesses in such arenas as financial services, media and health care can gain a better understanding of the power of user-based collaboration and interaction by studying this new sub-industry.

There are four parts to this paper. The first part will provide some background on the evolution of electronic networks of innovation. Included will be a discussion of the importance of users as participants in these networks and as sources of innovation. The second part of the paper will discuss the evolution of electronic social networks from their inception in the

early 1990's when they were entirely web-based to the present where they have migrated onto the mobile platform. In the third part of the paper, a case study of Dodgeball, a New York City based mobile social networking company, will be presented as an example of a company which is in the forefront of innovation in the mobile social networking space and illustrates some of the ways in which this innovation is a significant development in the wireless sector. Finally, in the fourth part of the paper, some conclusions will be drawn about the phenomenon of mobile social networks and suggestions will be offered regarding further research in this area.

2. Networks of Innovation

As noted in Section 1, the Internet created a new group of users of technology in such industries as financial services, healthcare, and media. For the most part, the firms in these industries operated in the physical world and relegated technology to their back office systems. With the development of the Internet, these traditional firms were now facing a new business environment in which their customers were being lured away by companies who were creating new digital-based products. These new users of technology soon realized that in order to compete with companies that were basing their business models on digital products, they would have to venture beyond their traditional, circumscribed organizational and physical structures and tap into the resources that existed in a larger more networked business environment [5]. Indeed, it became increasingly clear that in order for firms to be innovative and maintain their competitive advantage in a business environment that was continually changing, managers would need to pay attention to the firm's ability to interact with the surrounding environment [6]. Thus along with having a set of core competencies, which defined how a firm would be successful and differentiate itself in the marketplace [7], it would also need to acquire a network competence, which would enable it to exploit the set of relationships among customers, suppliers, vendors, and other so-called 'nodes' on the network and thus accelerate innovation [8]. Such relationships are crucial and enable the transfer of knowledge and continuous feedback from the marketplace and other experts, which provides a richer environment for the development of innovative products and services [9] [10]. Clearly, it has become an important strategic task for managers to develop, plan, and interact successfully with the larger networked environment in which their firm resides.

One important aspect of these newly developed networks was the ability of customers to provide instantaneous feedback to firms. While

traditional firms had always 'pushed' their products to customers, the Internet suddenly enabled such customers to become significant players in the business network of many firms. Along with establishing this new method for communicating with businesses, users themselves became an important source of innovation. Such users had a great advantage over manufacture-centered development because they could create exactly what they wanted and could benefit from exchanges of ideas with other users in the community [11]. Some of these user communities consisted of informal networks of engineers and other like-minded affinity groups who traded ideas with each other in settings outside of the workplace especially as new software and hardware was being developed for use on the Internet platform [12].

A prime example of product development by users is the Apache open source software system. Started by Linus Torvalds in 1991, a computer programmer in Finland, as an alternative to the more proprietary software operating systems that were available in the marketplace, e.g., the Windows operating system by Microsoft, Torvalds developed an operating system kernel and made it available on the World Wide Web for anyone who wanted to view it and/or add to it. Thousands of computer programmers around the world began to contribute to the kernel and the Linux operating system was born. Torvalds became the moderator/facilitator of the Open Source project and the Open Source software movement has continued to thrive. One of the major features of the open source community is that users participate entirely on a voluntary basis and that they contribute freely to the code and ultimately the community because they derive personal satisfaction and enhance their reputations from making such contributions [13]. While Open Source software was initially a non-commercial endeavor, the Linux operating system is now offered to businesses as alternative to other operating systems and several new firms such as Red Hat have emerged which are exclusively devoted to selling the Linux family of products and services in the marketplace [14]. Thus, not only are users seen as sources of innovation and instantaneous feedback but also as creators of new business endeavors in which they take their innovation beyond simple interaction and into the marketplace.

The notion of users as sources of innovation has also manifested itself as an important aspect of the evolution of content on the digital and mobile platforms. In addition to traditional print media companies that have developed content for the Internet platform [15], users themselves have begun to create their own content for the World Wide Web in the form of blogs for example, which they post on websites. On

the mobile platform, individual creative talents such as artists and musicians are selling premium content such as ring tones and wallpapers to cell phone users [16]. The commercialization of content developed by users constitutes a new stage in content development which will continue to evolve especially with regard to mobile social networks.

3. The Evolution of Social Networks

In addition to business networks of innovation which thrived on the Internet, social networks and communities which have always existed in the physical world, began to emerge which were not tied to a particular place or even time zone [Figure 1].

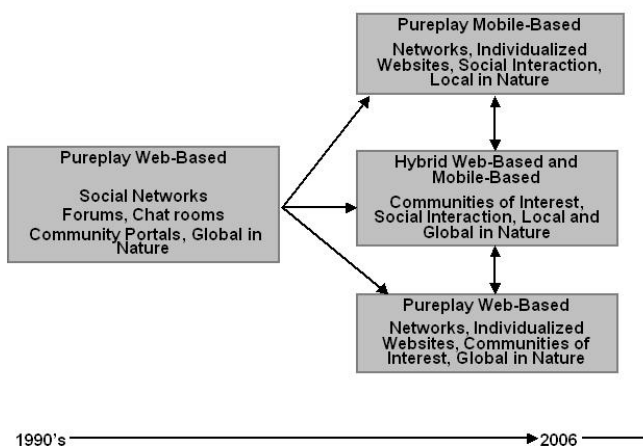


Figure 1. Evolution of Social Networks

Howard Rheingold, who pioneered such online communities, defined them as "...cultural aggregations that emerge when enough people bump into each other often enough in cyberspace" [17]. Various types of online communities emerged including special interest groups such as Usenet groups, professional associations and online forums where people could exchange ideas on specific topics of interest to them; portals which provided a single point of entry for individuals and businesses to interact with one another; chat rooms, where users sought new communities and contacts; and short term networks where users participated in one time events such as online competitions, quizzes and polls [18]. Some of these communities had moderators and others were more dependent on users to keep them going. For example The Well which still exists, is essentially an online set of forums which are available to users who pay a monthly fee to participate in discussions on such wide-

ranging topics as entertainment and media, computer tools, and politics [19].

As the Internet platform has become more robust, online communities have evolved from just being meeting places to serving various functions [Figure 2]. Some are personalized content-based websites which users populated with photos, blogs, and journals. These sites, which include Myspace.com, Xanga.com, Slashdot, and Multiply are for the most part not tied to any particular locale. Another type of social network is Facebook.com, which is an online directory of college students and enables such students to form social networks with one another and keep in touch. Ryze is more oriented toward business users and enables them to establish networks of business associates and potential clients.

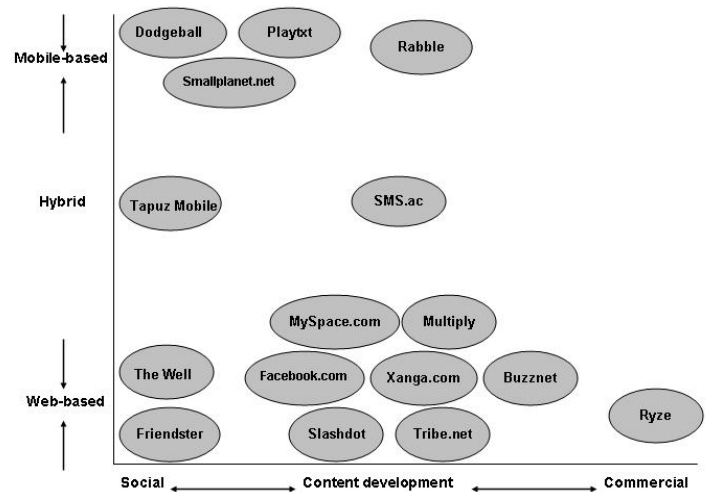


Figure 2. Social Network Matrix (Partial List)

Though these companies have actual business models, usually advertising or subscription-based, their main products are their user communities and the 'content' contributed by them. This shift to user-centric firms will be even more pronounced as social networks move to the pureplay mobile environment.

While online communities were initially only accessible through websites and therefore uni-dimensional from a technological point of view, with the development of the mobile platform, hybrid online/mobile communities have emerged with users participating both through a website and by using their mobile devices, e.g., PDAs, and cell phones. One such hybrid environment is Tapuz Mobile based in Ramat Gan, Israel [20]. Tapuz hosts approximately 1000 special interest communities and has over 1.6 million unique users per month who access these communities. While they are worldwide in scope, with users logging

in from China and the United States, the subject matter of these communities is Israel-centric with most users discussing topics relating to Israeli politics, culture, and society. In addition to hosting numerous online communities, Tapuz also provides its users with a variety of mobile and web-based applications such as BLOGTV, which enables users to create a live TV show and broadcast it on the web and on mobile phones, and Tapuz Chat! which offers full synergy between the web and mobile devices. Thus, users who are on the web-based chat platform can talk with users who are surfing from their mobile phones.

Tapuz, which hosts by far the largest online set of communities in Israel, attributes its success to not only offering superior technology but also being very attentive to the requests and needs of their users. The majority of Tapuz users are young people (the average age is 22) who are early adopters of technology and provide continual feedback to the company on a regular basis on Tapuz's applications and services. The Tapuz management team considers these users a prime source of innovation and often implements suggestions from users into the suite of applications on the website. Indeed, Tapuz is an example of a new kind of firm, which exists, in complete partnership with its users. In addition, Tapuz's communities while overwhelmingly social in nature, have sparked the interest of firms in the mobile product development arena who participate in some of these communities in order to get feedback about the mobile technology arena. Thus, one community which is a group devoted to a discussion of cell phones, has among its users, members of the cell phone manufacturing industry who listen to the dialogue and incorporate the suggestions and ideas they hear from the community in their designs of mobile devices for the marketplace.

The development of Location Based Services (LBS), has enabled social networking to evolve into a new phase, that is, the emergence of pure-play mobile social networking applications and companies built around such applications. LBS technologies allow programmers to capture the location of a particular user and integrate the position information into a wide variety of applications [21]. Such technologies include GPS (Global Positioning Systems) which allow customers to find their way to their destinations and alert friends and colleagues to their whereabouts and Wi-Fi, which can be used as the basis for determining position and acts like an indoor form of GPS, with access points acting as satellites. With this approach, the server software keeps track of client device positions and also transmits this information to specific clients [22].

The availability of LBS applications has transformed electronic social networking from being a people-to-people phenomenon which exists irrespective of geographical place to one in which individuals use technology to maintain a network of strong social ties within a local geographical context such as a city or a university community [23]. An entire sub-industry of the wireless sector is slowly being created as companies such as Dodgeball (see Section 4), Playtxt, and SmallPlanet.net begin to capitalize on this new phase in the mobile technology platform. While the majority of these early companies are oriented toward purely social networking in the mobile environment, some companies are differentiating themselves by providing a platform for user-generated content, which enhances the social networking experience. One such company is Rabble, which enables users to post location-based media such as photos, favorite hangouts, newsworthy events, and mobile blogs on a personalized channel on their mobile device which other users can access. Rabble has also partnered with Verizon and other wireless service providers, which offer Rabble to their subscribers. In the following section, a case study of Dodgeball will be presented which will shed some light on how mobile social networks function.

4. Dodgeball: A Case Study of a Mobile Social Network

Dodgeball is a New York City-based service that merges location-based services with social networks to help people connect with the people and places around them. The company was founded in 2000 by Dennis Crowley and Alex Rainert, and was acquired by Google in 2005. Crowley and Rainert worked on the concept of Dodgeball for their Master's degree thesis at New York University. Their goal was to develop a technology, which would help them keep in touch with other friends via mobile technology [24]. Dodgeball was initially a web-based service based on City Search and offered a way for people to familiarize themselves with certain neighborhoods. The idea of going mobile occurred to Crowley as soon as he got a phone with a web browser. In order to take the venture forward, the two entrepreneurs talked to a lot of different angel investors and venture capitalists, but no one really "got" what they were doing until they met people from Google. Google offered to buy their company, hire their creative services and also take care of their day-to-day operations, marketing, hiring and financing. Google does not view Dodgeball as a revenue generator but rather as a strategic experiment and investment.

Today, Dodgeball is available in 22 cities within the United States including New York, San Francisco, Los Angeles, Chicago, Washington, Boston and Seattle, and has ambitions of offering the service worldwide once the location tracking technology improves and the rates for international text messaging drops. Dodgeball is a mix of social networks tools, simple cell phone messaging, and mapping software. The salient feature of the Dodgeball technology is that it is built out of off-the-shelf open source tools such as PHP, MySQL and Perl that are cobbled together. Indeed, Crowley and Rainert figured out a way to make the service work via text messaging using the lowest common denominator technology, so that it would work on the most basic cell phone. There is no need to download anything or buy anything in order to use the service.

Joining Dodgeball entails filling out a profile, posting photographs of yourself on the Dodgeball Web site (www.dodgeball.com), and listing your friends and their cellphone numbers. The target demographic of the people who use the Dodgeball service are people aged 21-35, who have a lot of friends, go out a lot and are very social. When Dodgeball users “check in” at a given locale by sending out a text message, it goes to all their pre-selected friends, as well as any friends of friends within a ten-block radius. In order to check in, assuming the person is in New York City, all one needs to do is send a text message to nyc@dodgeball.com with the name of the location he or she is currently in. For example when a user named Sylvia, goes to one of her favorite bars, e.g., Solas, and wants some company, she sends a text message to nyc@dodgeball.com with the text “@ Solas.” A photo is sent along with the alert—which helps with identifying strangers who are nearby. Introductions are made, beer is poured, and then hookups can occur—casually, and in a low-pressure environment, all under the guise of knowing someone in common. The service also has a ‘crush’ feature. Users view profiles of other members and designate ones they’d like to meet. If the object of a ‘crush’ is nearby, he or she gets a message to that effect. The system maintains privacy by identifying users only by screen names.

Behind the scenes, Dodgeball technology enables Sylvia’s transaction to be completed. When Sylvia checks in from Solas, Dodgeball initially looks at which in-box her message landed in (nyc@dodgeball.com, sf@dodgeball.com, and so on) to figure out which city she's in. Next, Dodgeball looks at the originating e-mail address, ensuring that the message came from a mobile device, and looks up Sylvia’s profile.

The next step is to look up the venue's latitude and longitude in a database. Each bar or coffee shop in

Dodgeball's database is geo-coded, which means its address has been converted into Global Positioning System coordinates by the service's founders. For New York City, the database includes many of the city's most popular spots such as restaurants, museums, theaters, and sports arenas. Dodgeball then sends messages to all of Sylvia's friends who are nearby, letting them know where she is. After this, the friend-of-a-friend function is implemented. Dodgeball finds other users who have checked in within the last 3 hours and compares their locations on a virtual map to see if any are within 0.8 kilometers (10 city blocks) of Sylvia. Dodgeball looks through the social network, finding friends of Sylvia's friends. To keep from bombarding Sylvia with constant messages, it selects the closest one (user Ganesh, for example)—and both get messages. Hers would state: “Ganesh @ Off the Wagon. You know Ganesh through Alex,” while his would read: “Sylvia @ Solas. You know Sylvia through Alex.” Finally, acting as a sort of low-level dating service, Dodgeball checks the crush list and sends crush messages if applicable.

There’s a major premise underlying Dodgeball: The more dense the urban environment, the more valuable the service becomes. Thus, the ideal environment for Dodgeball is one where there are dozens of potential hangout spots within a few blocks of where users are and thousands of potential people to hang with. The bigger the city, the more likely it is that a user will be able to find just the right clique because the overall supply of social groups and watering holes is so vast. It is easy to imagine the model extended beyond your immediate social network into more narrow needs. One could query for specific services that require in-person encounters, e.g., find me an available Spanish language tutor, a mattress for sale or that most pressing of urban needs- an empty taxi.

5. Discussion

As the discussion on mobile social networks shows – with Dodgeball as a case in point – such networks are at an early stage of development. Yet these networks have the potential for evolving into entities, which not only can significantly influence the development of the wireless industry and be a potent source of innovation for it, but can also be a catalyst for change in urban environments.

On a fundamental level, mobile social networks are already creating new forms of social behavior that blur the distinctions between online and real-world interactions. The young generation, largely referred to as Generation @ increasingly looks at such networks as a medium through which they can establish their social identities. These social networks

act as virtual community centers, a place for the Generation @ to socialize online as well as use it to tap into information, buy books, and send flowers or even breakup with a boyfriend. Moreover, these social networks provide the platform for the next stage of content innovation as users generate personalized content such as mobile blogs and/or collaborate on the mobile platform to develop exciting new formats. Indeed, mobile social networks provide tools that enable people to collectively construct a range of resources that were too difficult or expensive, or simply impossible to develop previously [25].

Recognizing the power of users to generate innovative content either collectively or individually, content providers may need to partner more often with user-centric companies which emerge in the mobile social networking arena in order to be successful in the future. Beyond providing a platform for content innovation, these social networks also provide excellent opportunities for the business community as they enable firms to directly tap into the fickle youth market and better understand what products will be successful for this market segment.

On a more global level, mobile social networks can have a transformative effect on urban centers. Services such as Dodgeball show that digital networks actually make cities more attractive than ever before, as opposed to a widely held belief that the technology platform now in place which provides connectivity for vast numbers of users who are not necessarily in the same place or even time zone, and the mobile platform which encourages people to be dispersed, were going to make the whole idea of densely packed urban locations obsolete. This notion of anytime, any place computing which removed time and space constraints has also become popular for businesses who look upon this use of technology as a way to achieve greater efficiencies [26] [27]. Instead, mobile social networks promote the positive aspects of interaction and add credence to the Porterian notion of clustering of individuals and businesses in geographical proximity in order to achieve economic success [28] as well as to the idea that groups of people using mobile social networks will find new ways of organizing and interacting, and in doing so, will in some way change the nature of the social order [29].

As the mobile social networking arena evolves, challenges clearly remain. Although mobile devices allow people to stay connected to the community, limitations such as small screens on mobile devices, poor connectivity and issues of privacy and security will continue to be of concern to users. New advances in technology both on the infrastructure side and the device side are needed in order for this segment to move forward.

The mobile social networking arena is a burgeoning one and thus more research needs to be done in order to better understand how this industry segment is changing and how user-centric firms such as Dodgeball are evolving, if at all. It may be that some of these companies like Dodgeball will choose to remain purely social and influence the development of the wireless sector in less tangible ways while other companies will evolve into commercial entities or become hybrids which offer mobile social networking services as well as a rich environment for content innovation. For the wireless industry, it is important to understand the entire spectrum of the mobile social networking segment, its user population and its potential impact on the future environment of the industry.

References

- [1] A. Andal-Ancion, P.A. Cartwright and G.S. Yip, "The digital Transformation of Traditional Businesses", *MIT Sloan Management Review*, Summer 2003, Volume 44, No. 4.
- [2] K. Hafner, "The Epic Saga of The Well", *Wired Magazine*, May 1997, Issue 5.05.
- [3] O. Kharif and P. Elstrom, "Connections, the Wireless Way", *Business Week Online*, June 29, 2005.
- [4] M. Pousti, Message from Chairman and CEO of SMS.ac, January 2006, www.SMS.ac. (website)
- [5] H.G. Gemunden, T. Ritter, and P. Heydebreck, "Network configuration and innovation success: An empirical analysis in German High-tech industries", *International Journal of Research in Marketing*, 1996, Volume 5, No. 13, pp. 449-462.
- [6] T. Ritter and H.G. Gemunden, "The impact of a company's business strategy on its technological competence, network competence and innovation success", *Journal of Business Research*, 2004, Vol. 57, pp. 548-556.
- [7] C.K. Prahalad, and G. Hamel, "The Core Competence of the Corporation", *Harvard Business Review*, 1990, Volume 8, No. 3, pp. 79- 91.
- [8] T. Ritter, "The Networking Company", *Industrial Marketing Management*, 1999 Volume 28, pp. 467-479
- [9] M. Kodama, "Innovation and knowledge creation through leadership based strategic community: Case study on high-tech company in Japan", *Journal of Technovation*, 2005.08.007 (in press)
- [10] Leora Rothschild and Asaf Darr, "Technological incubators and the social construction of innovation networks: An Israeli case study", *Technovation*, 25 (2005), pp. 59-67
- [11] E. Von Hippel, "Innovation by User Communities: Learning from Open-Source Software", *MIT Sloan Management Review*, Summer 2001, Volume 42, No. 4.
- [12] For a discussion of informal networks in Silicon Valley's engineering community, see AnnaLee Saxenian, *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*, Harvard University Press, Cambridge Massachusetts, 1994

- [13] G. Von Krogh, "Open Source Software Development", *MIT Sloan Management Review*, Spring 2003, Volume 44, No. 3.
- [14] A. Maccormack, "Red Hat and the Linux Revolution", *Harvard Business School Case #9-600-009*, March 21, 2002.
- [15] N. Ziv, "The Chicagotribune.com: Creating a Newspaper for the New Economy (A)", in *Strategic Management: Competitiveness and Globalization*, 5th Edition. Eds. M. Hitt, R. Hoskisson, and R. Ireland, South-Western College Publishing, 2003, pp. C113-C126.
- [16] N. Ziv, "Toward a New Paradigm of Innovation on the Mobile Platform: Redefining the Roles of Content Providers, Technology Companies and Users", *Mobile Business Conference*, Sydney, Australia, July 2005, Conference proceedings published in *IEEE*, 2005
- [17] H. Rheingold, *The Virtual Community: Surfing the Internet*, London: Minerva, 1994.
- [18] R. Hamman, "Granada Broadband", presentation given at *The Fourth International conference on Virtual Communities*, London, June 2001.
- [19] The Well website, Thewell.com/aboutwell.html.
- [20] The information on Tapuz is taken from an interview conducted by Nina Ziv with Netta Zilberg, head of the Social Products Division at Tapuz's offices in Ramat Gan, Israel on January 1, 2006.
- [21] J. Geier, "Location Based Services Realize Benefits", *Mobilizedsoftware.com*, March 8 2004.
- [22] J. Geier, "Location Based Services Realize Benefits", *Mobilizedsoftware.com*, March 8, 2004.
- [23] Q. Jones and S. A. Grandhi, "P3 Systems: Putting the Place Back into Social Networks", *IEEE Internet Computing*, September-October 2005. pp. 38-46.
- [24] The information on Dodgeball is taken from an interview conducted by Nina Ziv and Bala Mulloth with Dennis Crowley in New York City on January 12, 2006.
- [25] For a discussion about participatory content development, see Daniel Terdiman, "Open Arms for Open Source News", *Wired News*, July 22, 2004.
- [26] H. Sheng, F. Nah and K. Siau, "Strategic Implications of Mobile Technology: A Case Study Using Value-Focused Thinking", *Journal of Strategic Information Systems*, September 2005, Volume 14, No. 3, pp. 269-290.
- [27] D. Pepe, "Issues with Managing Enterprise Mobile Devices", Unpublished paper, *Institute for Technology and Enterprise*, Polytechnic University, 2005.
- [28] M.E. Porter, "Clusters and the new economics of competition", *Harvard Business Review*, November-December, 1998.
- [29] Howard Rheingold, *Smart Mobs: The Next Social Revolution*, Cambridge Massachusetts, Perseus Books, 2002.