

**CHAPTER 2**

**THE INTERNET AS A  
PARTICIPATION TOOL**

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## CHAPTER 2

### THE INTERNET AS A PARTICIPATION TOOL

#### 2.1. INTRODUCTION

Since the advent of Information Technology, there has been intense interest in its potential use to enhance and improve governmental functions. Despite innovations in many areas of governance, the use of the information technology in general and the Internet specifically to facilitate citizen involvement in urban planning has been limited.

According to **Goodspeed** (2008), two fundamental reasons explain this:

1. The unique character of public participation has made it difficult to replicate online.
2. Professionals have hesitated to work on the Internet due to the unequal distribution of Internet access.

These reasons also serve to describe the obstacles that must be overcome before effective online participation can be realized. New tools and expanding Internet access address these concerns.

This section seeks to apply the historical and theoretical lessons to suggest a path for use of the Internet for participation; it will provide an outline on how planners and practitioners can use technology to engage public in a planning process.

#### 2.2. PUBLIC PARTICIPATION IN E-GOVERNMENT

The Center for Technology in Government defines e-government as:

*“The use of information technology to support government operations, engages citizens, and provides government services.”*

Defined in a more general sense, E-government is the use of Information and Communications Technologies (**ICT**) to promote more efficient and effective government, facilitate more accessible government services, and

allow greater public access to information in order to make the government more accountable to citizens.

Also, E-government might involve delivering public services via the Internet, telephone, wireless devices or other communications systems.

The four broad government functions reflected in this definition are:

1. The electronic delivery of services (**E-Services**)
2. Use of information technology to improvement management (**E-Management**)
3. Use of the Internet to facilitate citizen participation (**E-Democracy**)
4. The exchange of money for goods and services over the Internet (**E-Commerce**)

Despite that the fact that E-Services and E-Commerce have spread rapidly, the development of E-Democracy tools has lagged behind; the innovation in the area of participation has been limited to facilitate individual communication (e.g. email) to government officials.

Although enhanced participation in government decision-making has long been a theoretical goal of E-Government advocates, its actual implementation has been limited. By 2008, the vast majority of planning departments and commissions had at least posted plans and other information online, many posted contact information to government officials, agendas and minutes from government meetings and many have also begun to experiment with putting geographic databases online. (Charles H. Kaylor, 2005).

Consultants have emerged specializing in workflow management, online document production, and even receipt of public comments for proposed plans in electronic formats.<sup>7</sup>

Despite broad adoption of some level of Internet use by public sector planners, few have elevated it to an important place in their work. A 2003 study of 60 urban planning processes in Florida and Washington found just 5 % used web sites as a “*Central role in providing information*”. (Brody, Godschalk, and Burby, 2003)

Government planners have not readily adopted Internet tools to engage the public in urban planning processes partly because of a lack of appropriate

<sup>7</sup> The UK-based Limehouse Software, [www.limehousesoftware.com](http://www.limehousesoftware.com), markets their product to government agencies as an integrated system to create documents, engage the public, and collaborate through a virtual environment. Urban Insight , [www.urbaninsight.com](http://www.urbaninsight.com) , publisher of the popular planning portal Planetizen, offers clients web design and development, database development, and internet consulting services.

technologies. The work of creating plans is not limited to individual communications with the general public, but involves working with groups of people to identify problems and build consensus.

In creating their plans planners must engage multiple distinct stakeholders, and often reach out to specific communities, organizations, and government agencies. (Kelly and Becker, 2000).

Planners need easy-to-use tools that allow multiple constituencies to hold a mutual conversation. They need appropriate means to moderate the conversation as well as present a large amount of visual, cartographic, and textual data. Finally, despite advances in teleconferencing, the subtle aspects of face-to-face interaction cannot be easily reproduced virtually.

This style of communication contrasts sharply with the technology developed for E-Services and E-Commerce. These systems are oriented towards managing individual requests, or managing relationships between individuals and a central organization. Technologies emphasizing individual communication have limited utility to planners trying to build consensus between people and groups.

The creation of plans is fundamentally different than many other government actions because of its unique character. It often involves a large volume of information, takes place over relatively long periods of time, and entails abstract and value-laden policy choices like defining a future vision for a city. Planning processes involve public input and engagement with multiple constituencies. Unlike issuing permits or receiving service requests, it is difficult to imagine moving the process of creating long term plans entirely online.

Although access to the Internet has grown considerably, access remains unequally distributed. From a planning perspective, online initiatives may reach only a select group of residents or may be totally inaccessible to community members.

Expending time and effort to development Internet systems seem less democratic than conventional means of engaging the public: meetings, notices, and receiving written comments.

However, access to the Internet ranges widely, and participants of conventional participation practices can be more unrepresentative than online population.

### 2.3. OBSTACLES TO EFFECTIVE ONLINE PARTICIPATION

The Gates Foundation study of year 2005 showed that 87% of the world's population has no access to Internet. Though the majority of the United States population can be reached using online tools, majority of world's population cannot be reached due to the lack of internet accessibility. Difference in access to internet, speed, language and disability is one major challenge in using technology to enhance participation process. (Karki, 2009).

Other challenges include administrative barrier, technical barrier and educating the public about the use of planning tools. Every time new technologies are introduced and the expense associated with new hardware and software creates an administrative barrier in an organization. Planning departments or planning firms cannot keep up with the rapid technology change. They fear that the technology they invest on may be quickly outdated and may need replacement. (Jennifer and Conroy, 2006)

Technical barriers usually occur due to the lack of staff knowledgeable in both planning and technology. Identifying right hardware and software for an interactive website, designing the website, using the right file size for citizen's access and managing the information obtained from online citizen participation are some of the technical problems faced by the planners.

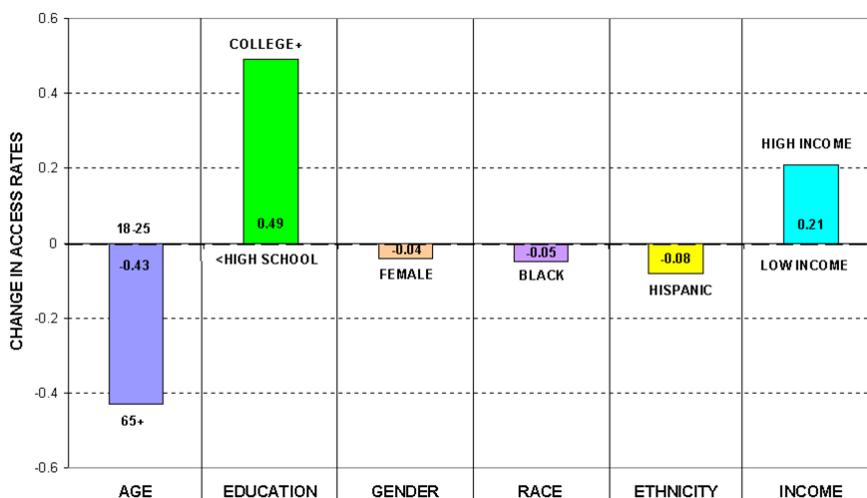
If planners are successful in creating a web-based tool, then it is not just sufficient to create the tool but it important to educate the public about its use. Many times planning support system fail because of the lack of awareness among citizens about how to use them. For example:

*“Greenpeace Canada launched a website to support its Stop Esso campaign in May 2002. The site included a forum to help people organize for the campaign, which aims to pressure the giant oil company to change its environmental policies. But according to David Fields, a former campaigner with Greenpeace Vancouver who worked on the project, many interactive features such as sending private messages to other users or broadcasting messages to the home page simply did not get used.” (Groc, 2005)*

Unless planner educate people about the features available in the planning support system and how to use them, people will not make the best use of the system. Thus, if the planners want an effective result from citizen's participation using the planning support system they have to use techniques to educate the public about the tools. New technologies and approaches are developed to address these concerns.

## 2.4. THE DIGITAL DIVIDE

There are some demographic differences in Internet access. (See Figure 2.1) 21% of differences in Internet access can be explained by demographic factors. (Weisbard, 2000)



**Figure 2.1:** Difference in rates of Internet Access; Effects of Age, Education, Gender, Race/Ethnicity, and Income.

By far the most important factors facilitating or inhibiting Internet access are **education** and **age**, and not income nor race/ethnicity or gender, each of which account for less than 5% change in rates of access and are statistically insignificant.

By contrast, a college education boosts rates of internet access by well over 40% points compared to the least educated group, while people over 65 shows a more than 40% point drop in their rates of internet access compared to those under 25. Age really reflects generational differences, and thus shows what to expect in the future. (Compaine, 2001)

There are few demographic differences in Internet use. (See figures 2.2, 2.3) Only 6% of differences in Internet use can be explained by demographic factors: thus, once people are connected to the Net they hardly differ in how much they use it and what they use it for-except for a drop-off after age 65, and a faint hint of a gender gap.

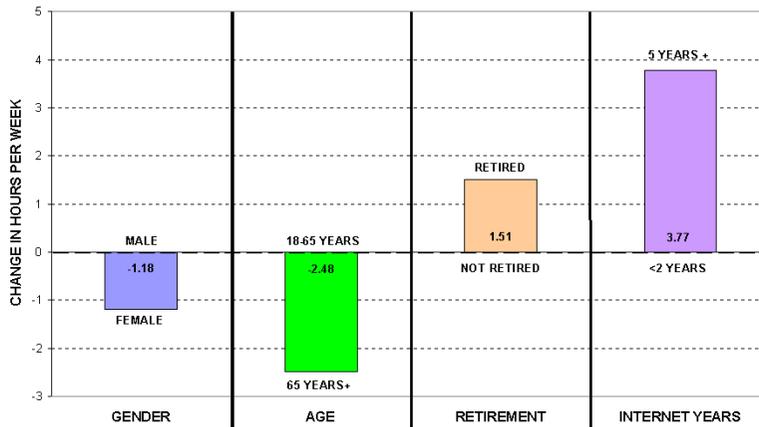


Figure 2.2: Difference in hours of Internet use; Effects of Gender, Age, Retirement, Internet years.

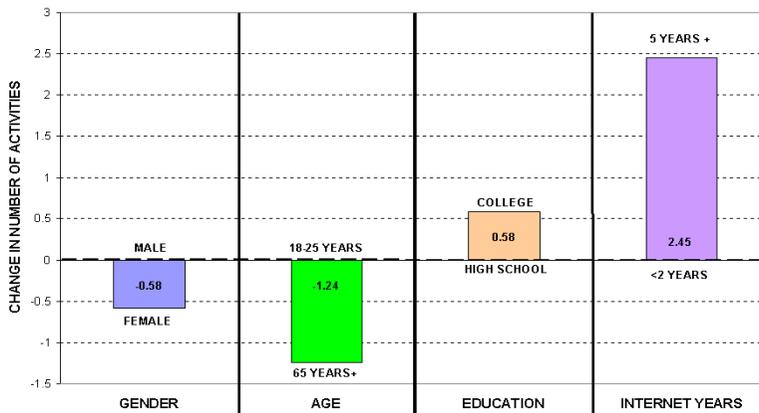


Figure 2.3: Differences in range of Internet Activities; Effects of Gender, Age, Education, Internet years.

Demographic differences in Internet use involve at most an hour and a half a week, mainly reflecting people’s time budgets and work status; and they involve hardly more than half an additional Internet activity, in the latter case reflecting levels of education.

Instead and above all internet use increases dramatically, both in terms of amount of time and in terms of range of activities. The longer people have been connected to the Internet, and this fact will make for steady growth in the future.

## 2.5. THE DIGITAL DIVIDE IS DISAPPEARING

The data shows a gap in Internet use according to several important social and economic variables, a fact that has fueled concern with a “*digital divide*” and its effectiveness as a citizen participation tool. Although overall growth in the rate of Internet use has flattened in recent years, several historically underrepresented groups have seen rapid gains in Internet use. (Fox, 2005)

Furthermore, Internet access in public schools and libraries has become practically ubiquitous, reaching public schools and school classrooms in 2002. (Kleiner and Lewis, 2003)

The cost of computer hardware and Internet connections has declined sharply, with a fully-featured desktop computers available for less than \$500 (\$20 a month using credit programs), and dial-up Internet connections for less than \$10 a month. Increasingly the paradigm of a technologically-driven “*divide*” between groups is inappropriate.

While disparities remain, the data shows significant variation in access to Internet connections, quality of the connection, and skills and motivation to use it. One scholarly examination of the “*digital divide*” urges us to “*Declare the War Won*”. Citing rapidly expanding use, declining cost, and advancing technology, concludes the “*digital divide is disappearing*” and the role of public policy will be to help those left at the fringes. (Compaine, 2001).

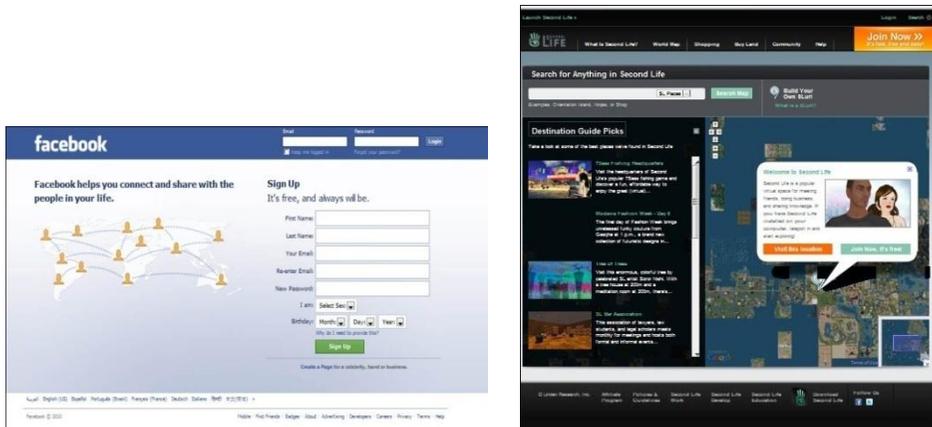
A colloquium between activists in low-income communities and urban planning academics underscores the shifting understanding of the impact of the Internet. The activists were excited to learn about applications of information technology to enhance urban planning, empower communities, and compete for government resources and attention.

*“All these reasons contributed to the activists’ enthusiasm to learn about information technology (IT), even though the academics... argued that IT is unlikely to alter the conditions of the urban poor.” (Sanyal and Schon, 1990)*

Despite excitement about the potential for e-democracy, technical barriers remain. Utilization of government websites depends on the website’s accessibility, usability, design, and functionality. Even citizens with computers may not be able to access websites that don’t function on their computers or that are difficult to use.

## 2.6. NEW GENERATION OF WEBSITES

Since 2000, a host of highly interactive and popular websites has developed that allow Internet users to share information, form communities, and interact in new ways. Described by commentators as “*Web 2.0*” websites, they include social networking websites and specialized platforms allowing users to easily share photos and information.<sup>8</sup>



**Figure 2.4:** Facebook & Virtual Reality, highly interactive and popular websites

These websites share a common dedication to simplicity, usability, and interactivity. Collectively, they allow groups to communicate and collaborate online. Standards and technologies developed in this generation of websites are the source material for some services provided by planning technology consultants.

These technologies have several ramifications for the urban planning community. Because they have engaged huge numbers of citizens, they have created sources of information about very local issues. Neighborhood email lists, blogs, discussion boards, or other types of interactive websites are now commonly found in neighborhoods and towns across the country, containing a mix of information and opinion.<sup>9</sup>

<sup>8</sup> These include websites to share links (del.icio.us), videos (youtube.com), photos (flickr.com). The term was popularized by technology writer Tim O’Reilly. For more information see Wikipedia contributors, “*Web 2.0*” Wikipedia, The Free Encyclopedia, [http://en.wikipedia.org/wiki/Web\\_2](http://en.wikipedia.org/wiki/Web_2), 2008.

<sup>9</sup> **Email lists circulate email messages among all group members.** They can be privately administered, or easily set up using free services like Yahoo Groups or Google Groups, and the members and messages may or may not be moderated by the list owner. Blogs, short for web log, is a frequently updated website written by an individual or a group, and generally allow visitors to leave feedback in the form of comments. Discussion boards allow individuals to post messages on a website. All three may or may not be accessible to nonmembers, but blogs are generally the most easily available to general Internet users.

The technology offers a menu of tools well suited for planners' long-standing goals of sharing information, interacting with the public, and fostering community. (Steins and Stephens, 2008)

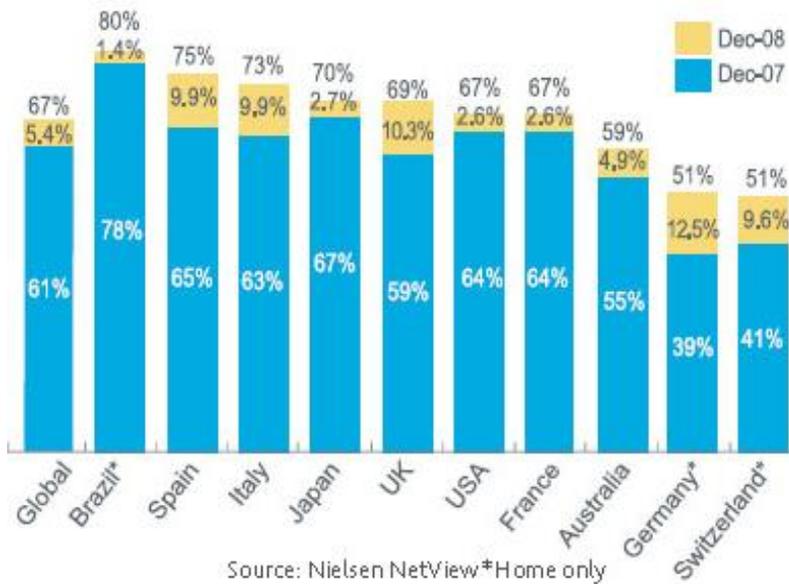


Figure 2.5: Social Networking Growth. (Nielsen's Global Online Media Landscape, 2009)

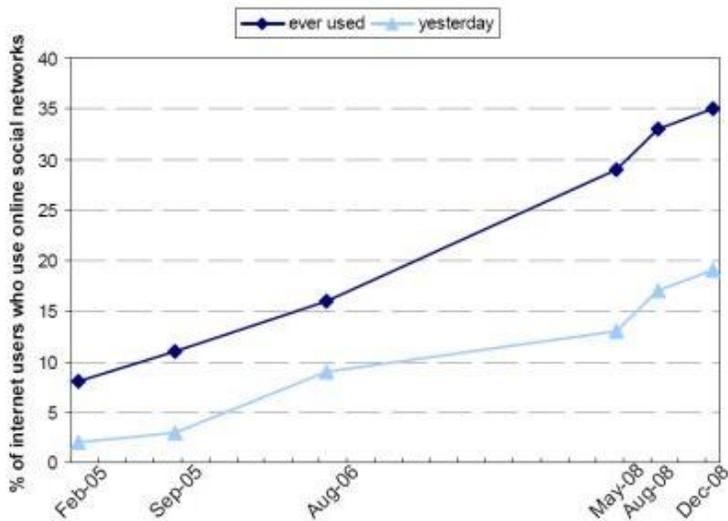
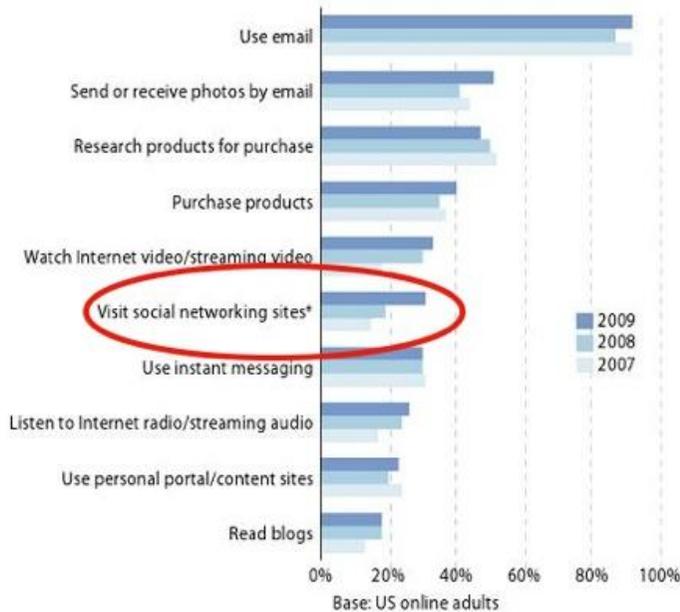


Figure 2.6: Growth in use of Online Social Network. (Martel, 2009)



**Figure 2.7:** Online Activities. (North American Techno graphic, Bench mark Surveys, 2007 to 2009).

In 2009, the *Pew Internet and American Life Project* released a report on the adult usage of social network sites. Though still for the young, these sites are seeing an increase of usage from adults and large-scale growth in general.

*“While media coverage and policy attention focus heavily on how children and young adults use social network sites, adults still make up the bulk of the users of these websites. Adults make up a larger portion of the U.S. population than teens, which is why the 35 % number represents a larger number of users than the 65 % of online teens who also use online social networks.”*

The Pew report concludes,

*“younger online adults are much more likely than their older counterparts to use social networks, with 75 % of adults 18-24 using these networks, compared to just 7 % of adults 65 and older.”*

## 2.7. EXISTING TECHNOLOGIES IN URBAN PLANNING

The use of technology in urban planning is also referred to as planning support system. The planning support system is a “*new perspective on computer-assisted planning*” (Mary Madden, 2006) that integrates different computer system to support the planning function. Several authors have defined planning support system in various ways,

**Britton Harris** (2005) defines it as:

*“An appropriate integrated system formed by the combination of a range of computer based methods and models to support planning function.”*

On the other hand, **Klosterman** (2007) keeps his definition broad enough to include all the current and future technologies useful for planning; he defines planning support system as:

*“Computer-based tools that include only the computer hardware, software and related information systems used specifically for planning.”*

Thus, planning support system is the computer based tools, which can be hardware, software, information system, web based technology or combination of all these tools developed to provide planners with all the capabilities to fulfill their responsibilities with ease.

Though planning support systems exist, planners have not made the best use of them due to the lack of awareness about the type of technologies that exist and their use in the planning and participation process. It is important to be aware about the existing technology that can be used for participatory process to ease the planning process and also to outline a technology centered model to enhance public participation. (Goodspeed, 2008)

This section will review the existing technologies available for planning and participation processes, developed to provide planners with all the capabilities to fulfill their responsibilities with ease.

Review of existing technologies will provide the planners a sense of type of technology available for planning and participation process and what are the potential advantage and disadvantage of such technologies. Technologies reviewed are selected based on internet search of the technologies used in public participation efforts and as found in literature review.

All the technologies reviewed are categorized into four categories and some technologies may fall into more than one category. (Slotterback & Hourdos, 2009)

1. Hardware: The technologies in this category are made up multiple physical component upon which can be installed an operating system or other software to perform desired function. Physical components are the unique feature of this category.
2. Software: Software is the term used to define the technologies that use computer programs, procedure and documentations to perform task on regular computers and/or over the internet. These technologies perform various functions like analyzing, calculating or managing.
3. Information system: Information system refers to technologies that store data and information. It does not perform any analytical function but helps to accessing and displaying information or data stored locally or remotely.
4. Systems: These technologies are the combination of hardware, software and information system. It does not function without the combination of all the components.

There are various activities related to participation efforts and each technology can be used to either do one or two or all of the activities related to participation efforts. The activities common in most of the participatory effort are as following:

Preparation for meeting: In any participation effort such as open house, public hearing and committee meetings planners have to prepare information and materials. Planners may have presentations and data that they need to share with public. By using technology they can create scenarios, project impacts and analyze data and plans.

Analysis and Facilitation: For every meeting there will be a facilitator or chair person to conduct the meeting. Technologies can be used by the meeting conductors to execute the meeting. They can use technologies to brainstorm, to visualize scenarios, to do impact analysis, share feedback and results. Use of technologies in these meeting will also give an opportunity for shy people to give their thought and opinion about a plan.

Dissemination of meeting outcomes: In any participatory effort participant provide their input on a plan which further needs to be incorporated and further disseminated to the participants. Thus use of technology in such situation will help to synthesize multiple inputs, summarize feedback and update the plans. Planner will also be able to

show the consensus to the participants and avoid misunderstanding. Technology can also make the dissemination of meeting information and communicating meeting outcomes easier.

In total thirty four different technologies were reviewed. Details about the various technologies reviewed are provided in Appendix 2. A summary table categorizing the technologies based on the type of technology and its application to prepare for meetings facilitate and analyze meetings, and to disseminate participation outcomes is provided in **Table 2.1** below.

From the table, we can see that same technologies can also be used different types of activities and can also fall into different category of technologies. For example, CommunityViz is software that can be used to prepare presentation and information of existing situation of a plan for a meeting. It will help to analyze a planning proposal by exploring various scenarios and data sets and further help the participants visualize the plan. Google earth is another technology that fall under software and information system category. It uses the database to give the visual of any site or locations.

Thus, these technologies help both the planners and the participant to communicate clearly based on facts and figure instead of assumptions or guesses.

Visual tools help to envision a realistic plan. Technologies used to analyze consensus, incorporate feed back in the plans and show the result to the participants provides power to citizen in a planning process as they can see their input has made a difference. (Slotterback & Hourdos, 2009)

EXISTING TECHNOLOGIES IN URBAN PLANNING	TECHNOLOGY TYPE				TECHNOLOGY APPLICATION		
	HARDWARE	SOFTWARE	INFORMATION SYSTEM	SYSTEM	PREPARATION	ANALYSIS FACILITATION	DISSEMINATION
1. BENEFIT-COST ANALYSIS OF BICYCLING FACILITIES		√			√	√	
2. BIG BOX EVALUATOR			√		√	√	
3. CAVE	√					√	
4. COMMUNITY IMAGE SURVEY			√			√	√
5. COMMUNITYVIZ		√			√	√	√
6. DECISION THEATER				√		√	
7. ELECTRONIC VISUALIZATION LABORATORY				√	√	√	
8. ELECTRONIC INTERACTIVE CHARRETTE			√			√	
9. ENVIRONMENTAL SIMULATION CENTER				√	√	√	
10. GEOWALL	√				√	√	
11. GIS/MAP PLANNING TABLE	√				√	√	
12. GOOGLE EARTH		√	√		√	√	
13. GOOGLE MAPS		√	√		√	√	
14. GOOGLE SKETCHUP		√			√	√	√
15. GROUPMIND EXPRESS		√				√	√
16. INDEX		√			√	√	√
17. KEYPAD VOTING	√					√	√
18. LONDON PROFILER			√		√	√	
19. M3D (MINNESOTA 3-D)			√		√		
20. MICROSOFT SURFACE	√					√	

21. PATHMAKER			√			√	√
22. PICTOMETRY				√	√	√	
23. PLACES		√				√	
24. SHAPING DANE			√			√	√
25. SIMCITY		√				√	
26. TELUS		√				√	
27. THINKTANK			√			√	
28. 28. TOWNSQUARE		√				√	
29. (CASA) UNIVERSITY COLLEGE LONDON CENTRE FOR ADVANCED SPATIAL ANALYSIS				√	√		
30. URBAN SIMULATION TEAM				√	√	√	
31. URBANSIM		√			√	√	√
32. WHAT IF?		√			√	√	√
33. METROQUEST		√			√	√	
34. SECOND LIFE		√			√		√

**Table 2.1:** Categorization of Existing Technologies based on Type & Application

Planners use various type of participatory effort in their planning process but the typical type of activity seen are presenting and sharing the information, facilitating meetings, getting participants feedback on a plan, incorporating participants feedback in a plan, creating collaboration with participants, getting consensus and taking votes.

Planners can select technologies listed in the existing technologies to enhance the public participation and to have an effective public meeting. Overall, the technology review provides a sense of the range of technologies currently being utilized in different settings. Many are designed for use in participation efforts, while others were developed for other purposes, but connections to public processes are now starting to be recognized.

### 2.7.1 Virtual Reality For Public Participation

New technologies extending spatial capacity never miss to appear. Among new visualization systems, there is virtual reality which deserves a very important section in this study.

Virtual space based on internet technology is now opening another battlefield, the cooperation between virtual and real world makes this battle even more anticipating.

For urban planning, an ideal Virtual Reality system can give the citizen the impression that he is present both in the actual and the planned environment.

*“Imagine you can feel your urban space, observe the progress, fix your errors, live the experience and see your fantasies come true in a virtual world....” (ASU, 2009)*

As described in this Chapter, modern technologies allow to radically changing the nature of public participation to decision regarding urban planning.

*“For the future, some are forecasting the apparition of a new kind of citizen, named cyber-citizens, or sometimes cyber- spatial citizens, who will be citizens using new information technologies to act as real citizens, especially in connecting with authorities.”*

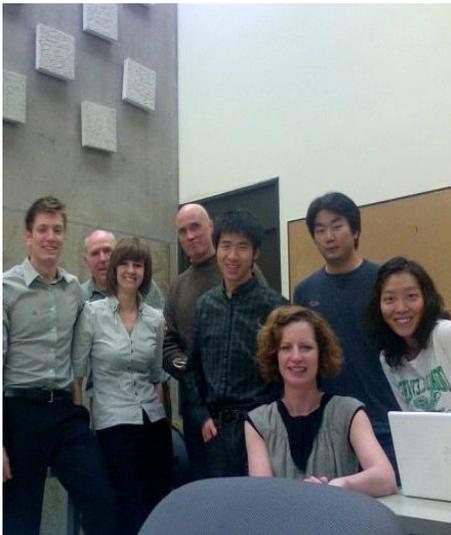
In this regard, let me briefly present a recent planning exercise. In 2009, Ain Shams University of Egypt (ASU) has performed an interesting cross-cultural collaboration project in liaison with the University of Southern California USC through virtual world. Details about this project are provided in Appendix 3.

The students of the third year of urban design & planning department in ASU were asked to collaborate with their colleagues in the USC in the designing of a master plan for a specific site using Second Life's (SL) application. The goal was to explore SL's application to the architectural field & create an interesting space that could be imagined and built in the real world. The team worked together in real life while working in SL. This made the communication much faster and the work much more enjoyable.

## 2.7.2 K2C PROJECT<sup>10</sup> | Cross-Cultural Collaboration in Virtual World

The students of the third year of urban design & planning department in ASU & USC were divided into seven groups consist of ten students each. Each team was asked to specify an actual site in Egypt and start working on the design of the master plan using the applications of the second life program.

*“Imagine all that put together .... collaboration and group work on an international scale, dealing with a whole different culture ,language and view of life ,over and above getting to master the use of a new tool as virtual world, a tool that makes your fantasies become a reality.... I think this is what K2C project offers us...new ideas...new tools ...a better perception of life and of future work in architecture and urban planning....” Heba Ghalib, One of the Egyptian team said.*



**Figure 2.8:** The American Team

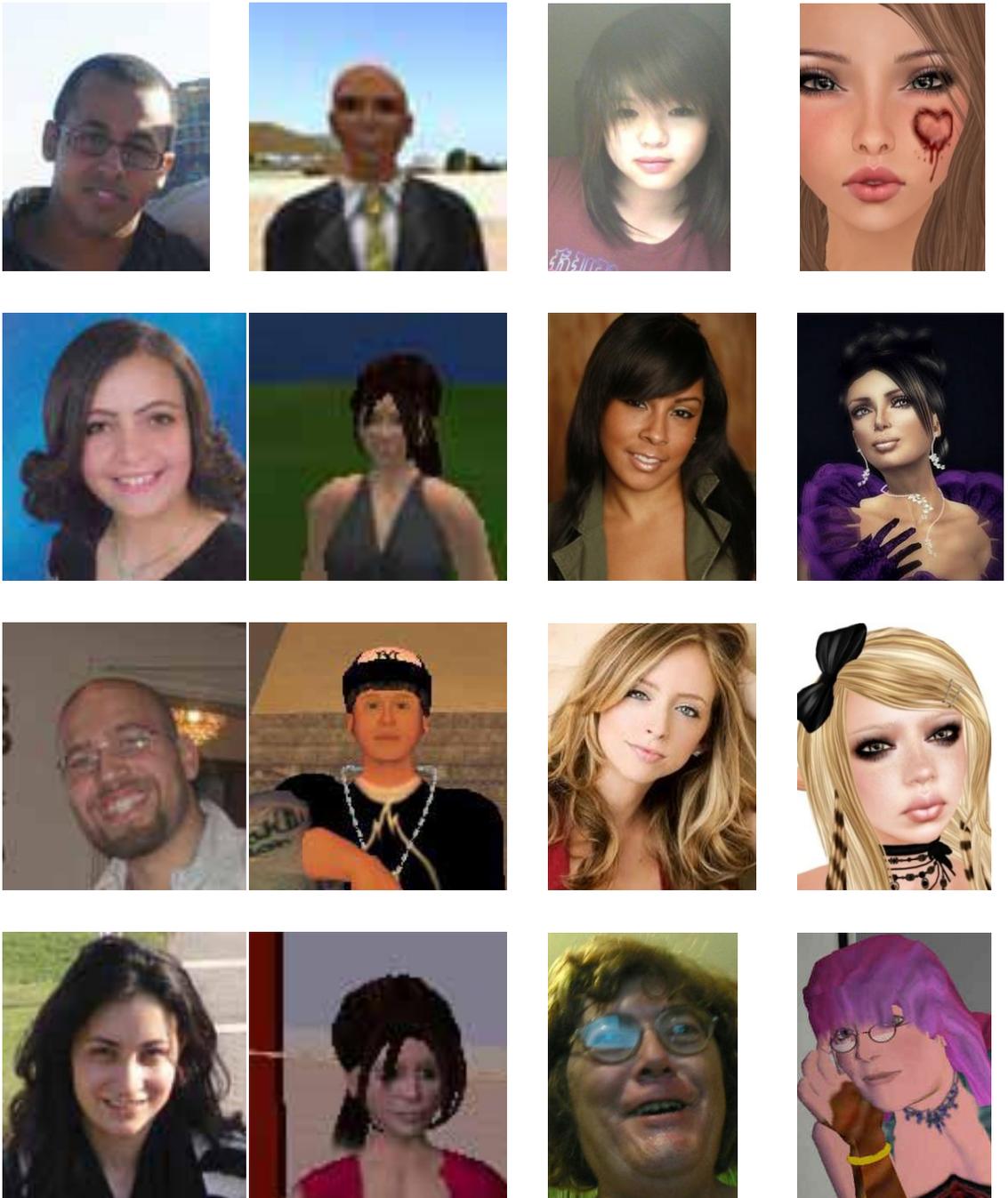


**Figure 2.9:** The Egyptian Team

In order to do that, each student should subscribe in the program and create an avatar of him.

*“In virtual world avatars are not humans, they are projected desires and interests, which are the things that actually bring us together”*

<sup>10</sup> **K2C:** (Kansas to Cairo) is a cross culture collaboration design project connecting students from the United States with students in Egypt.



**Figure 2.10:** Some of the Egyptians/Americans team members both in real life and as avatars

The project passed through three main phases:

PHASE 1: learning phase.

In which team members starts to learn about the tool, the professors gave them manuals as a general guideline, and then they developed their skills through actual practice.

PHASE 2: designing the project in the real world

Each team chooses a specific site and starts to collaborate with his team members discussing concepts and ideas until they agree on a common layout.

PHASE 3: using the tool and build the models on the second life.

Each team starts to build up the model in SL, playing with colors, textures, and glows, and using some assisting software such as AutoCAD, Photoshop, illustrator and sketch up.

For these approaches, a lot of communication were needed to decide the final design and share each student's ideas, both USC and ASU students used E-Mail, Skype and MSN messenger to share researched images and communicate with each other. Sometimes they used Digital Drop Box website to share larger images permanently.

Though the project encountered a lot of problems in overseas collaboration, for instance, time difference, interference in schedules and of course different backgrounds, yet it, was by all means, a new way to experience space. Working in SL gave both, the Egyptians & the Americans, a good opportunity to design, build, feel their own design, illustrate their concepts and exchange ideas where all the distance and cultural barriers disappeared.

*“The outcome was very much a surprise, we started off using SL only as a modeling tool, then we became more involved and used it as a platform for collaboration and erasing cultural boundaries, and then our ideas blossomed into regarding SL as way of life, actually A second life, with different projection of our own persons, with different needs and different architecture.”* **Nourhan Zakarany**, One of the Egyptian team said.

*“Second life, is such a new effective technique, by which we design exterior as well as interior, travel abroad and explore many countries in zero time without minimum move. Using second life in testing our buildings*

*avoids losing materials in real life.*” **Salma Showika**, One of the Egyptian team said.

Though Second Life cannot be used as a building design tools in the way that Rhino and other programs like Revit can, it gives one the unique opportunity to experience a 3D model in a new way, to literally walk through the project.

It can be used by anyone as they do not require knowledge of other 3d modeling programs, In other words, ordinary people will get to understand more the intentions behind the design through the experience of walking through it in Second Life. Second Life provides a platform where architects can easily communicate with the general public; an issue that has always been to contend with.

## 2.8. CONCLUDED REMARKS

Information technology is dominating the contemporary world. It links the government, economy, society and culture, now most of government information can be obtained from websites and one can use email instead of mails to contact government officials or planner.

Citing rapidly expanding use, declining cost, and advancing technology, concludes that the “*digital divide is disappearing*” and the role of public policy will be to help those left at the fringes.

However, despite excitement about the potential for e-democracy, technical barriers remain. Administrative, technical, accessibility barriers and lack of public education about the use of technology can be the challenges and risk for Planners to use technology in planning process.

Hardware and access are necessary but not sufficient to expand e-democracy in planning. Public participation planning processes are not easily moved to online systems and may contain qualitative features that cannot be replicated through Internet technology. Also needed is a conceptual model to understand how Internet technology can contribute to a larger planning process.

Since 2000, a host of highly interactive and popular websites has developed that allow Internet users to share information, form communities, and interact in new ways. These websites share a common dedication to simplicity, usability, and interactivity. Collectively, they allow groups to communicate and collaborate online.

The technology offers a menu of tools well suited for planners' long-standing goals of sharing information, interacting with the public, and fostering community.

Though planning support systems exist, planners have not made the best use of them due to the lack of awareness about the type of technologies that exist and their use in the planning and participation process. It is important to review the existing technologies available for planning and participation processes, developed to provide planners with all the capabilities to fulfill their responsibilities with ease. These technologies help both the planners and the participant to communicate clearly based on facts and figure instead of assumptions or guesses.

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Planners use various type of participatory effort in their planning process but the typical type of activity seen are presenting and sharing the information, facilitating meetings, getting participants feedback on a plan, incorporating participants feedback in a plan, creating collaboration with participants, getting consensus and taking votes.

Every process and tool has it positive and negative aspect of it but if the positive aspect outweighs the negative aspect and risk of using the system can be minimized then using the tool to achieve an effective result will be a sensible decision.

The use of technology will help in reaching wider audience, will make information accessible any time, provide equal access to information and feedback to all participants and allow participant to think carefully about an issue.

**The question now is whether the internet based techniques can extend the scope of participation and add a new dimension to the available methods.**

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