Abstract
Citizen access to community based geographic information has often been overlooked in the past. This has in many instances led to the marginalisation of the individual, leaving local spatial governance in the hands of a few “representatives”. In socially excluded areas, the potential for isolation is even more acute. In recent years some advances have been made in the inclusion of citizenry in participatory decision-making, but these inroads have tended to utilise similar structures, processes, networks and technologies as in the past. This research looks at the possibility of applying new technologies in the form of Geographic Information Systems (GIS), interactive web-based mapping and multimedia.

This paper explores the mechanism for local access to geo-referenced data, including text, image, video and local knowledge, by community based organisations in one such socially excluded area in South County Dublin. This research also seeks to answer important questions on the nature, quality and usefulness of the various kinds of information and communication tools and data available and readily employed in the context of planning and community development.

Introduction
The importance of citizen access and dissemination of information in the planning process cannot be underestimated. From the earliest “community planning” exercises (Jacobs, 1961, Arnstein, 1969) to current participatory planning controversies in Ireland (“Planning for Real”, URBAN Initiatives and DDDA-Dublin Docklands Development Authority), the access to and dissemination of relevant and up to date information, knowledge and opinions can often be neglected or undervalued by planners, community based organisations and citizens alike. Providing citizens with the information necessary for them to make informed decisions about the community in which they live is an issue of vital importance in areas relating to quality of life, social equity and increased citizen participation in governance.

Adequate information provision, from planner to citizen, has long been held as a fundamental component necessary for the planning process to be considered legitimate. John Forester’s (1982) seminal work “Planning in the Face of Power” opens with the line
“Information is a source of power in the planning process”. Through the process of increased information availability, easy information download, improved information access and some degree of transparency, inequalities and power imbalances may be addressed, and therefore the implementation of such technologies may contribute to increased legitimacy in the planning process. However, for such technologies to fully meet their potential other socio-economic, political and even legislative components also come into play. For example, it is only recently that Freedom of Information legislation in Ireland (Government of Ireland *Freedom of Information Act, 1997*) has opened up many Government data sources to the public.

Other issues such as the copyright surrounding Irish national topographic data make it challenging to fully utilise such information in a community-based context. Furthermore, as others have argued, socially excluded citizens, rarely have the financial means to afford on-line access to local information, so there is always the possibility that such initiatives merely enhance exclusion and breed elitism (Rybczuk, 2001, Ghose, 2001). Perhaps most important of all in a community context is the support and involvement of local community development workers, as it is only in conjunction with a strong local commitment to fully realising citizen partnership and power that such systems can successfully approach “participation”.

As early as 1969, Arnstein, in her seminal work, “A Ladder for Citizen Participation” (Figure 1), recognized “Informing” as the third of eight major rungs. Just above “Manipulation” and “Therapy” on her ladder and classified as a “Degree of Tokenism”, informing does not appear at first to figure very prominently in her continuum from “Nonparticipation” to “Citizen Control”.

![Figure 1: A Ladder of Participation.](source: Arnstein (1969)]

Looked at another way however, and in keeping with the ladder analogy, informing can be seen as a necessary step, in a progression from lower to higher levels of participation. To Arnstein informing is fundamental and the first step above “Nonparticipation” on the ladder in a “chronological” progression towards Citizen Control. Citizen participation is synonymous with citizen power and “It is a strategy by which the have-nots join in determining how information is shared, goals and policies are set….” Arnstein (1969, 216). She calls the roadblocks to genuine participation “inadequacies of the poor community’s political socio-economic infrastructure and knowledgebase, plus difficulties
of organizing a representative and accountable citizens’ group in the face of futility, alienation, and distrust” (Ibid, 217). PPGIS has the potential to address issues of information inadequacies as they relate to a community’s knowledgebase through the collection, storage and retrieval of local information.

In Kingston’s (1998) modified ladder he views “Informing the Public” as the second rung above “Public Right to know”, the first step in his six step progression from “Low Level Participation” to “Top Level Participation”. Kingston argues that new Internet-based technologies “are a useful means of informing and engaging the public and can potentially bring the public closer to a participatory planning system” (Kingston et al, 2000, 109). His research outlines several key principles for Web-based PPGIS including: accessibility, understandability and accountability (Kingston et al, 2000). Variations on these principles are prevalent in the planning and geographic information literature with issues involving accessibility to computers and the web predominating, (Al-Kodamy, 2001, Carver, Evans Kingston and Turton, 2001, Ghose, 2001, Peng, 2001).

Other planning theorists, (Davidoff, 1965, Krumholz and Forester, 1990, Healy, 1998), hold the provision of information to citizenry central to the concept of participatory planning, healthy communities and of democracy itself. Many of them writing at the dawn of the “information age” and before the development of the personal computer and the spread of ICTs could not have foreseen changes in society that would soon attach ever greater importance and power to the control of information.

Irish Planning Departments and County Councils have stated a strong commitment to citizen participation and openness in planning decisions. However, this has tended to rely on the established planning consultation fora in which information is provided to citizens via reports and sometimes difficult-to-read maps. For example, the implementation of the participatory planning models “Planning for Real”, URBAN Initiatives, and DDDA have not occurred in such a way that takes full advantage of established Geographic Information System and Information and Communications Technologies (ICTs). Their goals to promote maximum public participation and openness have met with only limited success. Many of these strategies employ standard public hearing and formal presentation formats and have generated some controversies and resistance at the local level as they are seen by many as top down, council led or developer led models.

**An alternative model for information exchange: PPGIS**

The alternative model for information exchange is based on a “bottom up” PPGIS, which includes citizen design elements, donation activities and participatory data preparation. This alternative model relies on well-established “grass roots” organizing and community development practices and theories, many of which have been ignored or only partially considered by the planning and IT community in relation to information system design and implementation. Also, the utilisation of innovative multi-media applications, spatial data, GIS and ICTs in the context of “grass roots” community development activities has not been fully explored in the literature.

This alternative model is being assessed in the Fettercairn community area of West Tallaght, in co-operation with South Dublin County Council (SDCC) and the West Tallaght Partnership, (a local grass-roots organisation). The West Tallaght Partnership
have worked with SDCC to ensure that socially excluded individuals and groups are more effectively represented in the collaborative planning process, but they lack the resources to implement new technologies in this regard. The pilot project is testing two innovative concepts:

Figure 2. Data Types

PPGIS

Inputs to the PPGIS Model

Formal Data

Informal Data

SDCC

- Aerial Photographs
- Building Footprints
- Land Parcels
- Land Cover (CORINE)
- Land use zoning
- Development Plans
- Population and housing Statistics
- 1:10,000 OSI Topographic Maps
- Transportation
- Digital spatial video tour

Local population and community groups

- Local Sites of Interest
- Location of Local Assets
- Horse Project
- Local Heritage Sites
- Location of Market
- Local Opinions Views and Perceptions
- Location of Halting Sites
- Local Liabilities
- Pollution, Crime, Traffic issues
- Photographs
- Digital spatial video tour
The implementation of innovative multi-media and GIS technologies to facilitate the exchange of information between planner and citizen.

The utilisation of the same technologies to obtain and store data from citizens for use by other citizens, planners and public officials.

This type of innovation has the potential to enhance the quantity and quality of information flow between area residents, business people, community organisations, planners and public officials. The pilot project is tapping into sources of local information and knowledge held within the community and available formal data sets. These data can be divided into two types, formal and informal data sources (see Figure 2). The active involvement of the community has been encouraged at all stages of the project and is recognised as being critical to its success. The community based PPGIS pilot project is also adhering to characteristics from Schuler (1996) for the creation of an efficient public participation process. These characteristics include the need to be community based, reciprocal, contribution based, unrestricted, accessible, inexpensive and modifiable.

**Community Based Participants**

A GIS committee was created to facilitate the implementation of the PPGIS pilot. The GIS Committee Steering Group is acting as liaison between Tallaght area NGOs including: The Tallaght Partnership, the Fettercairn Parents Core Group, the Fettercairn Services Area Network, Fettercairn Estates Management Group, the Fettercairn Drug Rehabilitation Centre, the Westside Markets, the Lone Parents Network and other groups connected to the Fettercairn Community Centre and SDCC. SDCC is contributing technical support in the form of digital base maps, planning studies, and environmental data. Trinity College Dublin is contributing to funding, training and technical support.

**Methodology**

The methodology utilized in the design of the PPGIS pilot has involved several steps. The collection, analysis and storage of relevant formal data for West Tallaght was a first step and included: SDCC digital spatial data, census material, socio-economic surveys, citizen surveys, housing, settlement patterns-including travelling community halting sites, land use, zoning maps, transportation and infrastructure, recreational resources, crime patterns, environment, pollution and other sources.

An important aspect of the pilot project’s development was the acquisition of these formal data in cooperation with the institutions holding them. SDCC has proven helpful and responsive to inquiries. A considerable amount of digital data has been received from SDCC along with the permission to use those data sets in the PPGIS pilot. These data also include digital CAD files, OSI digital maps, housing surveys, background planning reports, zoning maps and future development plans. These data sets are now integrated into the PPGIS pilot as digital “base maps” (see Table 1) representing an important source of formal information for the community.

Informal data sources and local knowledge are critical components of the PPGIS. These data include the resources and liabilities contained within the community as outlined by the opinions, experiences and observations of citizens participating in the pilot. Public
meetings, consultations with local groups and interviews with individuals were utilised to collect some of these data. Other sources of local knowledge were obtained through donations by groups and individuals and include: citizen surveys, photographs and a guided “spatial video tour”. These types of data can only be obtained through the participatory approach currently being implemented in the PPGIS pilot.

The success of the design and implementation project is being evaluated via participant observation, questionnaires and interviews with both members of the local community, planners at South Dublin County Council and community workers at the Tallaght Partnership. The refinement of PPGIS model will continue throughout the length of the Tallaght PPGIS pilot project.

**Discussion**
The PPGIS pilot project is a “work in progress” and to date has been well received by the Tallaght community. The early involvement of several local organisations in the selection of information considered important for a community based PPGIS was of great importance. These initial community partnerships with organizations willing to participate in the pilot phase of the PPGIS raised a wealth of local knowledge and issues and the local data collected has proven valuable. One example regarding local knowledge involves an individual who complained about the inaccuracy of official statistics including the “undercounting” of single parent households in the community. Formal data collection methods including surveys and the Irish Census had failed to count many of the single parent households, misrepresenting the true condition of the community, according to this individual.
Table 1. Base Map Data

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<thead>
<tr>
<th>Title</th>
<th>Source</th>
<th>Type</th>
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<tbody>
<tr>
<td>Map of Ireland (Coast)</td>
<td>GSI</td>
<td>SHP</td>
</tr>
<tr>
<td>Map of Ireland (Counties)</td>
<td>TCD</td>
<td>SHP</td>
</tr>
<tr>
<td>Dublin Main Roads</td>
<td>OSI</td>
<td>ARC</td>
</tr>
<tr>
<td>Dublin All Roads and Streams</td>
<td>OSI</td>
<td>ARC</td>
</tr>
<tr>
<td>South Dublin County Boundary</td>
<td>SDCC</td>
<td>CAD</td>
</tr>
<tr>
<td>Action Plan Areas</td>
<td>Dublin Corporation</td>
<td>CAD</td>
</tr>
<tr>
<td>Population 1986</td>
<td>Dublin Corporation</td>
<td></td>
</tr>
<tr>
<td>% Public Housing</td>
<td>Dublin Corporation</td>
<td></td>
</tr>
<tr>
<td>% Unemployed</td>
<td>Dublin Corporation</td>
<td></td>
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<tr>
<td>Fettercairn</td>
<td>SDCC</td>
<td>DGN</td>
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<tr>
<td>Landuse</td>
<td>Survey</td>
<td>SHP</td>
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<tr>
<td>Building Footprints</td>
<td>SDCC</td>
<td>DGN</td>
</tr>
<tr>
<td>Community Landmarks</td>
<td>Tallaght Partnership</td>
<td>SHP</td>
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<tr>
<td>Photographs</td>
<td>Tallaght Partnership</td>
<td>Hotlink</td>
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<tr>
<td>Transportation</td>
<td>Dublin Bus</td>
<td>SHP</td>
</tr>
<tr>
<td>Zoning (Development Plan)</td>
<td>SDCC</td>
<td>DGN</td>
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<tr>
<td>Web Link</td>
<td>Web Site</td>
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<td>Web Images</td>
<td>Web Site</td>
<td>GIF</td>
</tr>
<tr>
<td>Spatial Digital Video</td>
<td>Survey</td>
<td>JPG</td>
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Another issue, which was raised involving the inclusion of statistical information, was that of privacy. Including detailed statistics on socially sensitive topics like single parent households, unemployment and crime in the PPGIS and having it accessible “for all to see” could tend to stigmatise certain areas and people within the community. Solutions discussed included the possibility of having limited password only access, stand-alone or a community Kiosk type system. Cost and technical considerations removed the Kiosk
type system from the discussion and the issue of privacy and access to the system is still being debated.

Inputting data, both formal and informal, into the PPGIS has been accomplished to date by researchers based in Trinity College with assistance from technicians at SDCC. The creation and input of additional local information and knowledge by members of the community is considered to be an important next step in the PPGIS pilot, potentially contributing to a greater sense of community ownership and increased legitimacy.

However, some local groups lack technical and financial resources including limited funding for data input and the maintenance of information system projects like a PPGIS. Questions surrounding the long-term viability and sustainability of the system are raised as being critical to its success, “Who will maintain the system? Who will update the information and enter additional data?” Addressing these types of issues will prove challenging. Sustainability has not been addressed at length in the PPGIS literature where the majority of projects are top-down, council led, developer funded or “once-off” special projects.

Establishing and maintaining relationships with staff who are mainly volunteers and/or who have other primary responsibilities has also proven difficult in some instances. Staff turnover and the resulting difficulties with maintaining the momentum and continuity of the PPGIS has also been an issue. Ongoing research is shedding light on these and other potential difficulties with the design, implementation and sustainability of the PPGIS.

Conclusions
Resident-based neighbourhood planning initiatives offer citizens a direct hand in the planning of their community. However, citizens cannot effectively plan without accurate, relevant information about their community on which to help them base their decisions. As neighbourhood based organisations, such as those in the Tallaght community take a greater role in the allocation of resources, tools such as GIS, multi-media, databases and Internet connectivity can provide invaluable assistance in planning, community development and resource management at the grassroots level.

Glossary

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>CAD</td>
<td>Computer Aided Design</td>
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<tr>
<td>DDDA</td>
<td>Dublin Docklands Development Authority</td>
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<tr>
<td>GIS</td>
<td>Geographic Information System</td>
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<td>ICTs</td>
<td>Information and Communications Technologies</td>
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<td>NGOs</td>
<td>Non Governmental Organisations</td>
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<td>OSI</td>
<td>Ordnance Survey Ireland</td>
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<td>PLA</td>
<td>Participatory Learning and Action</td>
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<td>PPGIS</td>
<td>Public Participation Geographic Information System</td>
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<tr>
<td>PRA</td>
<td>Participatory Rapid Appraisal</td>
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<td>SDCC</td>
<td>South Dublin County Council</td>
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Bibliography


