

The role of e-government and public participation in the planning process

Richard Kingston¹

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Abstract

The current UK Government have made a commitment to provide 100% of their services on-line by 2005 through ambitious plans to use Information Communication Technologies (ICTs) to deliver a whole range of services to citizens. In particular the UK Government have recently invested over £4m in a Planning Portal which will be a general planning advisory service linking the public, business and other users of the planning system to a wide range of advice, guidance and services on planning and related topics. This paper will present on-going research (Carver et al 2000, 2001, Kingston et al 2000 and Kingston 2002) investigating Egovernment practices and public participation in the planning process. The paper will focus on the use of ICTs to provide innovative means of access to, and participation in environmental planning problems. A key feature of this is the application of Geographical Information Systems (GIS) via the Internet to communicate spatial data, issues and problem to community groups and the wider public. This paper will show how web-based public participation GIS (PPGIS) can help to overcome some of the problems in participatory planning by providing access and information to data and planning problems which have previously remained within the domain of 'experts'.

While there is a statutory requirement for the public to be involved in the planning process this is all too often limited to a fairly basic level of participation. This more often than not allows the public the right to know about what is happening and a right to object but there is often very little participation in the real decisions. The paper will highlight the potential and drawbacks of current Egovernment practices in participatory planning based on case study research by the author and provide advice on best practice.

Introduction

Current methods of involving the public in the planning process are often limited in both extent and effect and are often determined by the organisational structures within a local planning authority (Forester, 1999). On-line public consultation exercises can be used as a means to augment traditional methods of participation such as public meetings, focus groups and consultation documents. In the past GIS has been criticised by some geographers and social scientist as being an elitist technology (Pickles, 1995). It has been viewed as being a technology that has handed increasing power to those in authority while giving community organisation and the general public less of a say in the decision making processes due to a lack of access to, and understanding of the technology. Furthermore participatory processes within the UK planning system have traditionally been set within a quasi-legal arena engulfed in legal jargon, a technocratic style of operation and requiring the ability to withstand cross-examination by lawyers (Mandanipour et al, 2001, p.207).

¹ Centre for Computational Geography, School of Geography, University of Leeds, Leeds, UK, LS2 9JT.
richard@geog.leeds.ac.uk <http://www.ccg.leeds.ac.uk/democracy/>

The process is not the type of experience which a member of the 'general' public feels particularly comfortable with and is not the best process for dealing with large numbers of objectors across a range of planning topics.

Over recent years the Internet and the World Wide Web (Web) has become a popular medium for carrying out all kinds of commercial, social and governmental activities. Arguably the Internet has encroached upon and become a part of society quicker than any other previous new technology (such as the television, telephone or automobiles). Across the world the Internet is being championed as a new democratising tool supposedly bringing people closer together and allowing them to participate in civilised society (Woolgar, 2002). In the UK vast sums of money are being spent by Government to promote and ensure that all members of society are capable of accessing the information society more actively. The UK Government is committed to having all of its services on-line by 2005 (Cabinet Office, March, 1999). The extent to which this may occur has recently been criticized, as an extremely ambitious project (Millar, 2001).

This paper examines potential public participation techniques in the UK planning system and investigates how new technology is being implemented with the aim of enabling increased levels of participation in the planning system. Using case study examples we examine the processes of providing electronic access to public participation in real environmental decision-making problems at the local, regional and national scale in the UK. Various map-based devices and interfaces have been tested as part of the research. Key to the research has been the successful incorporation of GIS data and functionality into interactive web based interfaces to allow experimentation in decision problems with a high degree of spatial data content. This is fundamental to facilitating better social understanding of environmental decision problems across a range of spatial scales from local to regional to national. A key aspect of these systems is that they provide a two-way flow of information between the client (the general public) and the server (the local authority).

E-participation

In a UK context there are two main methods in which the public become involved in the planning process. On the one-hand we have *development control* which deals with the day-to-day processing of applications to the planning authority to obtain permission to develop land, building or make alterations to current developments. In terms of strategic planning this is mainly achieved through the *development plan*². Both of these elements of the planning system contain within them varying degrees of public participation ranging from neighbour notifications, exhibitions, public meetings, public enquiries through to high court hearings. Once again, it is not for this paper to go into a full explanation of how all of these processes work³. The aim of this paper is to focus on how ICTs can be used to encourage and increase participation. Over recent years the methods of participation have been criticised by many (Healey, 1998) for several reasons. The primary methods of participation are nearly always held in a fixed place or location and at a fixed time, often

² It is not for this paper to explain the finer workings of the UK planning system. For a good overview see Cullingworth and Nadin (1997).

³ A full and detailed explanation of the various forms of public participation in the UK planning system can be found in Chapter 11 of *British Planning Policy in Transition* by Huw Thomas.

when people are at work or in evening when other commitments mean people cannot attend meeting etc. The meetings are quite often confrontational, can be dominated by minority vocal groups, it is often difficult for the layperson to understand and the whole process quite often involves highly technical and legal 'jargon'. For the past 5 years the author has been investigating alternative methods of participation by making use of ICTs and web-based public participation GIS (PPGIS). In the mid 1990s a number of examples were developed which made use of GIS technology within public participation.

Methods were developed by Shiffer (1995) who provided the public with access to media, computerised analysis tools including graphical interfaces, associative information structuring, and computer-supported collaborative working within a PC-based collaborative planning system. Shiffer concluded that increased access to relevant information, aided by the implementation of a collaborative planning system led to greater communication among participants in a group planning situation which in due course had a positive effect on the quality of plans and decisions made by the planning authority. Using Shiffer's stand alone systems research by the author and colleagues led to the development of web-based participatory mapping tools. The various PPGIS developed over the last 5 years have mirrored traditional planning process to ascertain whether or not such systems have a role to play within the planning system. This has been complimented over the same time period by the British Governments commitment to the E-Government agenda. A key question to ask though is how "*are these on-line participatory systems likely to increase participation?*" As Figure 1 illustrates the aim behind on-line participatory systems is to give the public a greater level of engagement in the issues and access to the relevant tools, data and information to enable more informed participation and decision making.

E-government

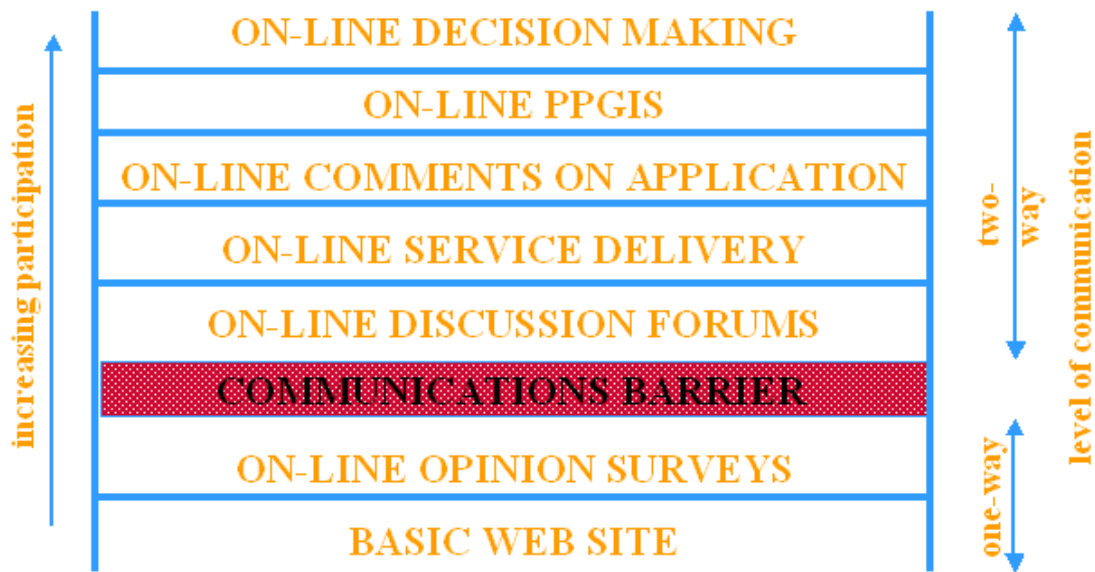
As stated earlier the UK Government is putting substantial amounts of investment into ICT infrastructure and provision, including their commitment to having all services on-line by 2005 (Cabinet Office, May 2000). Public access points such as cafés and community buildings have remained a slower though steady growth area, but may be the most appropriate forum to target for consultancy exercises (see Liff *et. al.*, 1999, for examples of the typical spaces). There are of course a whole range of issues associated with social access to ICTs but once again that is not the focus of this paper. Within a planning context the most significant development to date has been the introduction of the The Planning Portal (<http://www.planningportal.gov.uk/>).

The Planning Portal

This is a relatively new government project to develop an e-business system giving access to a range of planning services on-line. The Planning Portal is being promoted as the "one-stop shop" for all planning information providing access to planning application forms, development plans and a facility to track planning applications and appeals among its many services. The system is still in the very early stages of development and many of these services will not be available for some time. At the moment there is no mention of the Portal offering participatory approaches and it appears that the system will give people the "*right to know*" and the "*right to object*" but not the ability to "*participate in actual decision making*". This is in light of the fact that the recent Planning Green Paper (DTLR, 2001) makes clear reference to the use of new technology and states "*electronic technology has a huge potential to make the planning system more transparent and accessible*" (p.32).

The Planning Portal will eventually give direct access to individual planning authority documents through one central point. It will provide access to development plans allowing anyone to view policies relevant to where they live, work or anywhere they are interest in through an on-line GIS interface. It will be possible to apply for planning permission on-line and view planning applications on-line. Key questions which need to be asked of the service though such as whether it will be possible to participate on-line and what will be the level of E- participation will be possible. In the meantime several local planning authorities in the UK have been developing some innovative systems and if the Planning Portal turns out to be similar to some of these systems it will have achieved its goal. As the system is still in early development only time will tell.

Figure 1: E-participation Ladder



Putting it into practice

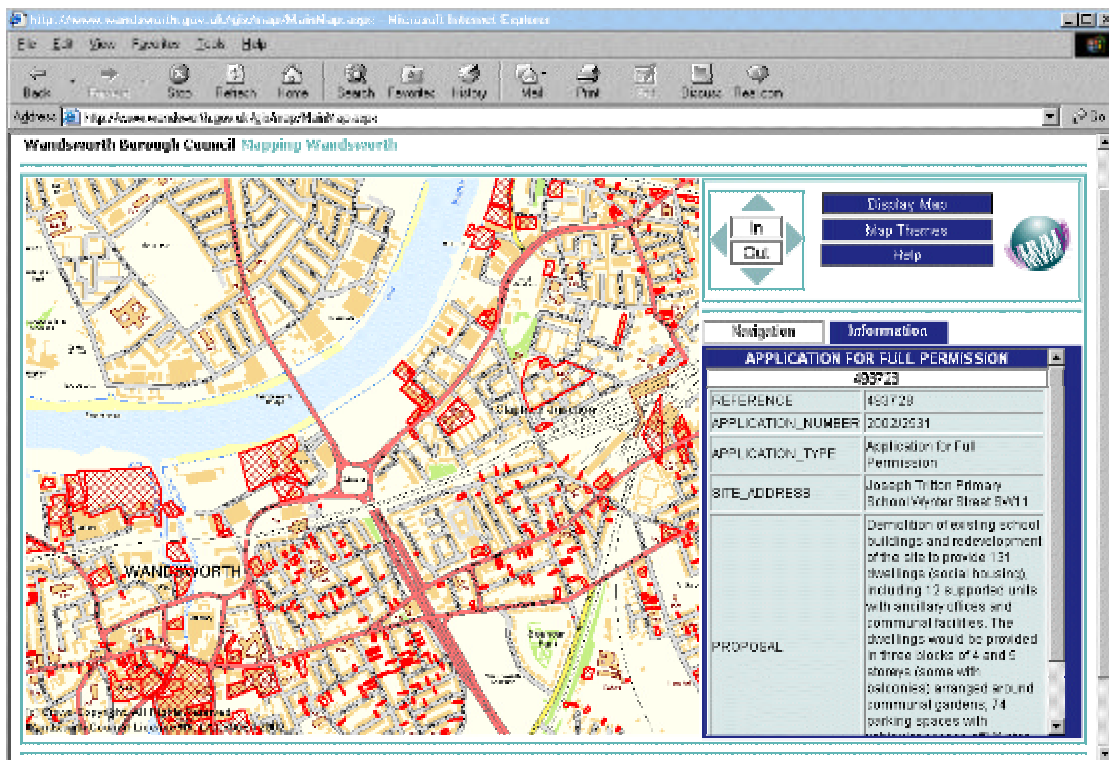
Several local planning authorities (LPAs) have started to implement the –agenda in various ways. A number of them already have their planning registers on-line which list recent applications for planning permission. The London Borough of Wandsworth has a system which allows the public to search the planning applications database and view the appropriate details, including plans and drawings. They also have an on-line GIS which identifies the locations of planning applications as can be seen in Figure 2. The public can search around the map, zoom in and identify applications via the map, access relevant details and then comment on the application through the web site or by e-mail.

Some ‘real world’ examples

A number of LPAs are providing on-line access to development plans and planning applications in similar ways to Wandsworth but while these systems are quite innovative by public sector standards they still fall quite short of approaching participatory systems. At the moment they are purely systems which offer the public the right to know, inform the public, and give the public the right to object. They are still not allowing the public to participate in defining the interests, the actors involved and determine the agenda. They do

not allow the public the ability to access the various environmental risks of alternative proposals or recommend solutions and the final decisions are more often than not outside the control of the general public. Overall the systems currently available do not providing the public with the ability to allow them to fully participate in the decision making process. This is in spite of the fact that current technology allows us to give public access to the GIS *tools* to aid and inform decision making and overcome some of the earlier criticisms of GIS made by Pickles (1995). By democratising the technology in such ways some of the recent criticisms of GIS as an elitist technology can be overcome.

Figure 2: Wandsworth’s on-line planning applications



(Source: <http://www.wandsworth.gov.uk/gis/map/MapStart.aspx>)

As early as 1993 Innes and Simpson recognised that “*they can design GIS primarily for expert use or they can make them accessible to the lay professional and even to the general public*”. In an attempt to show how GIS can be implemented in such ways the author and colleagues have undertaken a series of case studies developing innovative web-based PPGIS at the local, regional and national scales. Using real world planning situations with the general public we have implemented four systems. The first was a local community participation exercise using the Planning for Real® (PFR)⁴ techniques but in an on-line

⁴ PFR is an idea developed and patented by the Neighbourhood Initiatives Foundation (NIF), as a means of involving local people more closely in local environmental planning problems and decision making. NIF is a National Charity, based in Telford and founded in 1988, with the main aim of maximising the participation of local people in decisions that affect their neighbourhoods and quality of life. The founding director, Dr Tony Gibson, devised PFR in the 1970s as a technique that is now employed by the NIF fieldwork team. This is achieved through active participation and interaction with large-scale maps or physical models of the area. NIF has continued to develop and adapt this primary tool to meet both local and strategic consultation needs and as an essential process in community development programmes.

environment allowing the public to pan, zoom and query a GIS and make comments about features on the map in a similar way to a traditional PFR exercise (For a full explanation of this case study see Kingston et al, 2000). The second case study involved an on-line multi-criteria evaluation (MCE) decision support system for locating new areas of woodland within the Yorkshire Dales National Park Authority (YDNPA) in northern England. A further two case studies looked at siting a nuclear waste repository in the UK and identifying areas of wilderness (Carver et al 2002) both using MCE and PPGIS.

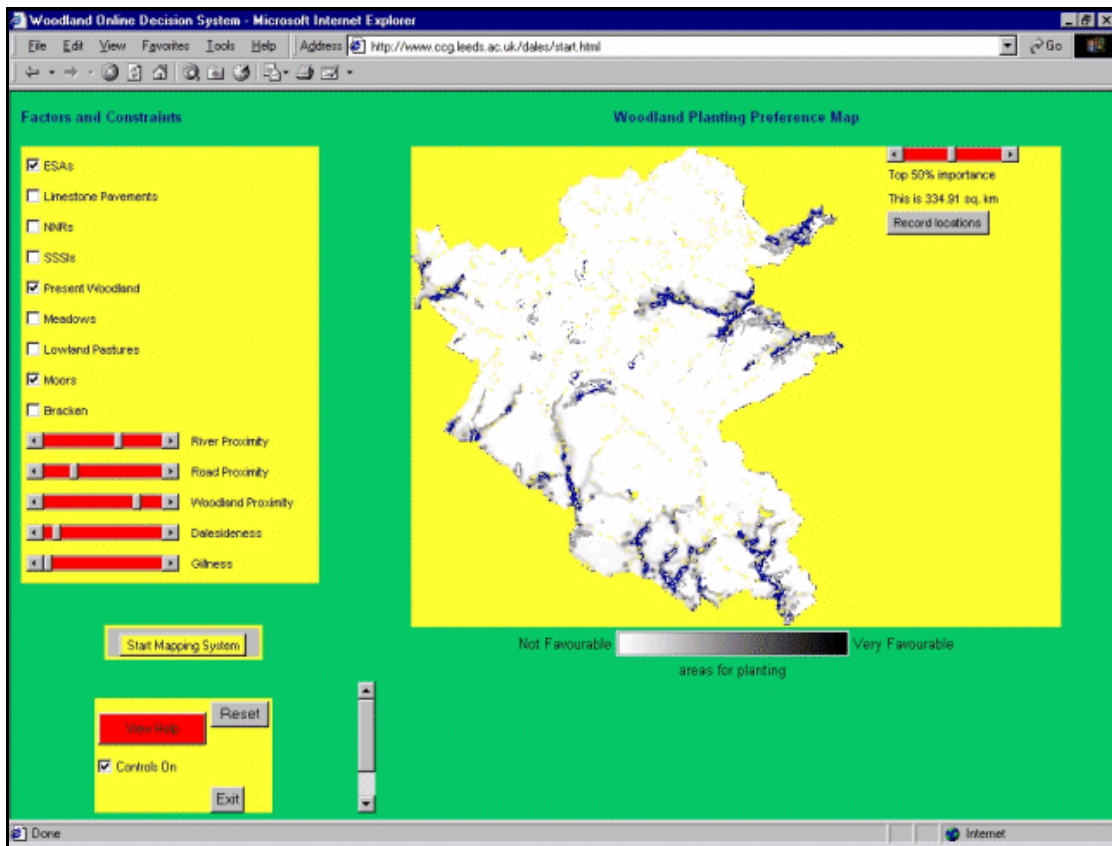
The Woodland Planting System

The regional case study, working with the YDNPA focused on identify areas where new trees should be planted. The Park Authority were interested in gaining public input into where new trees should be planted which required input not just from local residents but also tourists. The YDNPA is responsible for and has a statutory duty to conserve the National Park and promote its quiet enjoyment. The Authority works alongside councils and other organisations to conserve the sensitive landscape; it strives to maintain a healthy regional economy to allow local people to continue to live and work in the Dales; while also allowing visitors to enjoy the unique countryside. The National Park is made up of a series of over 20 Dales, in total covering an area of 1,769 square kilometers. The park lies astride the Pennines in the north of England, in the counties of North Yorkshire and Cumbria.

It was decided in collaboration with the YDNPA that the issue of woodland planting would be a viable and worthwhile '*decision problem*' to use as an experimental case study. This provided the research with a single-issue decision problem at the regional scale. The case study generated interest from a wide range of the public; from Park residents and workers through to tourists living in other parts of the country and visiting the area because of its historic value as a National Park. The study involved collating data from a variety of sources and undertaking some manipulation to generate new datasets. Once the necessary GIS data was in place, the task of designing the web based system began. The system needed to accommodate a wide range of user-stakeholder groups, including local residents, farmers, land-owners, park visitors and YDNPA representatives, and required them to identify areas that are deemed both suitable and acceptable for natural forest regeneration and new planting.

The case study focused on a two-stage approach involving GIS-based modelling to identify areas best suited for regeneration of natural forest cover, and user-focused participatory mapping techniques to identify which of the suitable areas are most acceptable to Park residents and users. The user is taken through a series of maps with associated (attribute) information about that particular data set and how it may be important to and effect planting. The user then has to decide whether this is important in their personal decision-making process. When the final data input is completed the on-line system calculates the most suitable locations for tree planting based on the factors and constraints set by the user. Figure 3 reproduces a typical scenario. A map is produced on screen showing the results of the GIS modelling. The user is also provided with a window showing the choices that they had previously made. They are then given the opportunity to re-assess their decisions and can refine these interactively if they are unsatisfied with their decisions made previously. As the user alters their initial factors and constraints the map changes 'in real time' accordingly.

Figure 3: A Typical Users' Map



(Source: <http://www.ccg.leeds.ac.uk/dales/>)

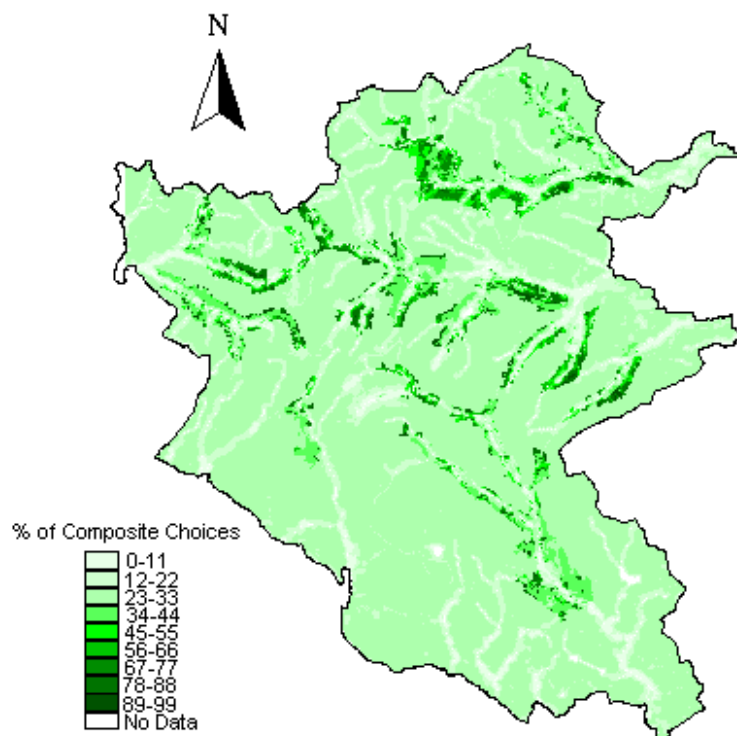
The final version of the system was live tested over a public holiday weekend with Internet terminals supplied at four of the National Park's main visitor centres: Hawes, Aysgarth, Malham and Grassington. Over the three days of testing the Woodland web was used by over 200 people. From these, 125 valid responses were received. System log files have been used to reproduce the choices and weightings the individual members of the public placed on the factors and constraints. There was an observed increase in the proportion of middle aged people who used the system from the previous case study. This is largely due to the age-structure of the people visiting the Dales and National Park visitor centres over the Bank Holiday weekend period. Another factor which may have caused this change was the fact that this case study was carried out twelve months after the first case study and may represent a change in peoples' ability and familiarity with information technology. However, observations of system use showed that many school students appeared very comfortable using the system while their parents made suggestions about which factors and constraints to set and the comments to make.

The results outlined here all rely on the public being truthful when they fill in the user profile at the beginning of the system. It is quite possible that some people do not fill this in correctly, and unfortunately there is no way of ensuring that correct and accurate information is collated. Out of the eight questions people were asked in the user profile only five of these were essential. The required data fields were: whether you lived in the National Park or not; your postcode; gender; age group; and occupation group. The 125

valid responses received included only seven people who actually lived within the National Park. The users living outside the National Park came from all parts of the UK. Nearly twice as many males used the system as females, with 64.8% being male and the remaining 35.2% being female. Again, this reflected the demographics of Internet users at the time, and it has recently been found that there are now more female users than male (BBC, 2001).

Fourteen individual maps were used in the system. These represented the hard-fixed constraints, user-selectable soft constraints and user-selectable weighted linear factors that were used to derive individual decision maps. Each of the fourteen maps had a short textual explanation to give the user some background to allow them to form an opinion as to whether the particular dataset was important in their decision-making. User choices of constraint maps and user specified weightings of factor maps were used to run a simple multi-criteria evaluation model to show the suitability of selected areas for planting. This model was 'hidden' from the user, though a short explanation was provided for interested people explaining MCE techniques. The area of suitable land was calculated by the model and shown on the display (Figure 3). The user was then given the opportunity to 'top slice' a percentage of the most suitable areas based on the weightings they have made on the compound map. This then gave the user's final decision map.

Figure 4: Final Composite Decision Map



To arrive at an overall solution revealing where the most acceptable and appropriate location for new planting was, each individual's decision map was combined to create a composite woodland planting map. Figure 4 shows the composite decision map that has been drawn by combining all 125 complete individual decision maps generated by users of

the system over the holiday weekend. The map was created in the Arc/Info GIS package using the system log files and the GRID module. This shows the level of agreement between users as to the best areas for replanting native woodland in the National Park. It can be seen in Figure 4 that there is widespread agreement among participants that woodland should be concentrated on the Dale sides. The darker areas of the map identify those areas where the greater numbers of participants agreed that new planting should take place. The darkest areas of the map represented the choices of over 95% of users of the woodland system. These areas are broadly in line with the favoured locations for planting suggested by the National Park Authority in their Woodland Strategy document.

The expansion of current woodland along the Dales sides can be clearly seen on the map. The white areas of the map represent rivers, lakes, reservoirs and roads which are generally in the lower lying areas of the National Park and were excluded from the model. The overall solution is a function of the data itself to a certain degree. This is due to the use of binary maps for certain datasets that limits the options for planting to a simple “yes/no” scenario dependent upon the particular datasets. For example, the Sites of Special Scientific Interest (SSSI) map allowed the user to make a decision over whether to allow tree planting to occur in a SSSI or not. This makes the decision over these binary datasets relatively simplistic compared with some of the other datasets used, which involved setting levels of weighting in relation to distance to/from a road, for example.

System Structure and Components

The websites were based around two Java™ 1.1 applets that give general PPGIS facilities. The local community participation case study used a vector-based applet, while the woodland case study centered on a raster-based system. Both systems were initially developed for the studies, but were given sufficient flexibility that non-programming developers with a basic understanding of web pages and server-side logging could choose the data displayed, functionality used, and outputs recorded. This flexibility has been utilized in a number of on-going studies.

The vector system applet allows those with GIS knowledge to load ESRI shapefiles into a web page, map the features, and show dbf file attribute information to the user, and allows the user to pan and zoom. When a feature or coordinate is selected by the user, a web page request containing information about the location of the click, and the feature it represents, is sent as a traditional HyperText Transfer Protocol (HTTP) request to with the server where the page originated. This can be captured by a standard Common Gateway Interface (CGI) script and an appropriate response initiated. In the case of the Slaithwaite study this involved sending the user a PERL generated form to fill in detailing their comments, which appeared in a frame next to the map. The applet was based around a set of reusable open-source Java classes (the “GeoTools” package) developed at Leeds for dealing with geographical data (Macgill, 2002). The system is controlled from outside the Java code by the simple HyperText Markup Language (HTML) which embeds the applet in the web page, allowing developers to easily stipulate the files they want shown, line colours, shading, etc.

The raster based system used for the woodland planting, wilderness and nuclear waste case studies allows the YDNPA to show a composite weighted raster image in a web page. It displays a series of scrollbars or checkboxes, each of which is associated with a single graded or binary raster image respectively. Moving a scrollbar changes the degree, in real

time, to which the composite display includes the associated raster image. Checking a checkbox cuts out or allows in areas of the composite display depending on the associated binary (cut-leave) raster image. The system also allows for masked areas, which show up as the colour of the applet background, allowing irregular shapes (such as the UK mainland) to be displayed.

Once the user is happy with their composite image, they can submit the weighting values they've chosen. The composite weighted image can be shown to the user as they change the weights, or after an initial submission to test for the effect of geographical understanding (this was added to allow for assessment of Not In My Back Yard ("NIMBY") alteration of the weights in sensitive planning situations). If the user is shown the map after an initial submission, they can then be given the option of further experimentation with the map. In addition, the user can be presented with top-slicing or single location selection tools. Once the user is entirely happy, the data is sent to the server using an HTTP request, which is stored by a CGI script in a log file.

In the case of the Yorkshire Dales case study, the raster maps were generated using Arc/Info GRID. However, the final files pulled into the system are grayscale or black-white images in the standard web page GIF or JPEG format. This has the great advantage of opening the system up to developers without GIS knowledge. Again, the files uploaded to the system, the associated weighting controls, and the colour schemes, are all controlled outside the Java code with simple HTML. The Java code (GeoTools) for both the vector and raster systems are freely available from the web site.

Usability

The PPGIS systems developed go beyond some of the more widely available systems currently available and being used by LPAs. The systems developed above gives the public a more participatory role. They allow them to *explore* the decision problem using spatial and aspatial information about the issues or problem. *Experiment* with different scenarios or solutions, *formulate* choices and settle for their own solution and submit ideas. The systems also allow the public to *review* and *comment* on other people's ideas and provide feedback.

Benefits, problems, experiences and recommendations

It has been shown that E-participation can have practical benefits for participation and offers a means of wider public involvement in particular planning problems. By informing the public and allowing more in depth feedback it can aid the decision making process and helps to inform decision makers of the communities view. It can remove some barriers to participation by providing 24/7 access and it can foster a non-confrontational environment. There are of course many problems still to be overcome and several issues unique to web based participation and which differ from the more traditional methods which are usually encountered. In designing and implementing an on-line PPGIS careful consideration of the following issues need to be addressed:

- access to the technology;
- GIS and IT understandability;
- data and copyright issues;

- trust and response legitimacy.

Public consultation and participation in decision-making processes over the Internet is an intricate problem requiring multi-level systems depending on the characteristic of the individual user. Although it is noted that everyone should be capable of making judgments about a particular problem, it is recognised that differences in age, background, education, profession, etc. require different levels of information and interface complexity if effective interaction is to be achieved. How well multi-level systems can be engineered depends very much on the complexity of the problem to which they are addressing.

Access to the technology

Access is one of the most important issues, and problem populations fall into one of three categories: those who are financially unable, or who are unwilling to connect; those with technological problems; and those who are physically disadvantaged with respect to the medium.

Taking the first case. The studies outlined above found a significant skew in the user base of the systems, however, this base accurately reflected the general Internet-using population. This has become increasingly representative of the population in general since the studies (GUV, 1998a; GUV, 1998b; BBC, 1999). In particular, the advent of *free* connections (especially the cheap-rate call charge only scheme of Freeserve™ service) and the subsequent introduction by British Telecom of flat-rate schemes has leveled the demographics and allowed more people to consider access. In addition to market forces, the matter is also being addressed by the UK Government with substantial amounts of investment going into ICT infrastructure and provision, including their commitment to having all services on-line by 2005 (Cabinet Office, May 2000). In two of the case studies, terminals were provided at key community spaces or at community events, and this was found to be extremely worthwhile. While it may be said that there is little difference between this and the traditional PPGIS mechanisms of taking GIS to the stakeholders, the interfaces are, by nature, not expert led, and the results can be instantly fed back to the community as a whole. At present T.V. Web browsers tend to be incapable of running Java, though Flash is common (see below). In addition, a lack of understanding of the nature of public interest in the web has driven most TV companies to produce *closed garden* systems of limited content or use. This will undoubtedly change as broader access to the whole Web becomes available through PCs.

With respect to the more considerable problem of accessibility for the disabled, organizations have a moral and legal responsibility to ensure the widest possible access to information. When the information is in the format of maps and images this becomes particularly problematic, and this partly accounts for the absence of more working sites of this nature. While the present studies were prototypes and therefore made little attempt to tackle this more difficult area, the problems are not intractable. All on-line consultations should provide text-based options for those with speaking browsers. These are unlikely to have the functionality of map-based systems, but represent the best possible option at this stage. The future is considerably more promising. It would actually be possible to have attribute data read to users from the systems outlined above, however, such functionality will be a good deal easier when web browsers allow Java 2 applets to run without the present need for a plug-in. Java 2 has accessibility functionality built into the basic interface classes, and with time mouse-overs/keyboard navigation should be able to give

the user a detailed vocal picture of the data and interface. The latest version of Netscape comes with Java 2 as standard, and the move towards a universal code virtual machine architecture by Microsoft suggests it is only a matter of time before others follow.

GIS and IT understandability

This could be seen to be a potential problem that needs to be addressed. An obstacle to participation could be lack of familiarity with the technology. Many people, particularly older people and people from blue-collar professions may never have used a mouse before, indeed evidence from our case studies highlights some interesting issues relating to how people used the systems with children operating the GIS while their parents informed them on what comments to make. Recent initiatives by Age Concern, a charitable organisation for the elderly, aims to overcome this problem through hands-on training (Gaines, 2001).

In terms of understanding the material presented by a public consultation, web based systems are undoubtedly the most equitable and best adapted to the broad range of the population – provided genuine public participation is sought. Several major software vendors have been moving towards adaptive user interfaces and intelligent agent based systems over the last few years, which may suggest these as mechanisms for improving individual user's experience of the consultation process. However, a number of prominent public-relations disasters (most notably Amazon's alleged attempts to structure prices based on user loyalty) suggest systems that adapt to the interests and abilities of users, however helpful they may appear, would be judged morally wrong by most in this context. Instead, the studies outlined above used a structured data system to present information on the relevant issues, which had an excellent response. A broad overview was presented to the user, and they could then find out increasingly complex information on a subject if they wished by moving further down the tree menu system. Such a system encouraged a broad range of participation and allowed the to select their level of interest.

Data and copyright issues

While many of the technical issues have been overcome there are still certain copyright issues relating to spatial data, particularly detailed map data which pose particular problems in the UK. At present the most detailed data provided by the UK's national mapping agency (Ordnance Survey) for putting on the Internet is at a scale of 1:10,000 (Ordnance Survey, 2001) and this may not necessarily be appropriate for some public participation schemes. In addition to the cost of actually purchasing the data and the copyright costs may also discourage public bodies from carrying out on-line PPGIS consultations.

Trust and response legitimacy

Trust is essential for on-line participation to work successfully, and by *successfully* we mean getting a good response *and* for the system not to backfire badly. There are two essential ingredients to public trust in systems: trust that something will be done and the system not abused, and trust in the information given and the process. If you lose either of these you will not simply have failed, you will have done positive harm to the planning process.

The flip side of trust from the public, is trust in their responses. Until a national electronic I.D. system becomes available, if it does, there can be no guarantees that users are responding legitimately, and this should be accepted as an inevitability, but not a malevolent one. At the present stage of technological awareness there are actually some

advantages in allowing flexibility in who enters the system. As was mentioned above, in many cases parents and grandparents allowed children to enter their demographic details at the start of our case studies, but were then observed to *back-seat drive* their way through the actual responses. This not only allows the technically unsure to make their voice heard, but if children can see the physical responses to *their* democratic decisions it may lead to a more engaged public over the coming years.

Conclusions

On-line participation has been shown to offer a good alternative to turning up at a meeting at a set time and/or location. It is possible to offer the tools to allow the public to make better informed decisions by using PPGIS. Most importantly though is that it should not be seen as a replacement to traditional participation. E-participation should only be used as a method to compliment a range of participatory methods. E-participation will only work though if the public *want* to participate and if they believe that their views are being listened to by the elected officials.

References

- BBC (1999) Net catches the UK. BBC News On-line, 26th October. http://news.bbc.co.uk/hi/english/sci/tech/newsid_486000/486413.stm
- BBC (2001) Women overtake men on-line. BBC News On-line, 14th June. http://news.bbc.co.uk/hi/english/business/newsid_1388000/1388408.stm
- Cabinet Office (March, 1999) Modernising Government White Paper, Office of the E Envoy. http://www.e-envoy.gov.uk/publications/reports_index.htm
- Cabinet Office (April 2000) E-government: a strategic framework for public services in the Information Age. <http://www.e-envoy.gov.uk/ukonline/strategy.htm>
- Carver, S., Evans, A., Kingston, R. and Turton, I. (2000) Accessing Geographical Information Systems over the World Wide Web: Improving public participation in environmental decision-making. *Information, Infrastructure and Policy*. 6, 157-170.
- Carver, S., Evans, A., Kingston, R. and Turton, I. (2001) Public participation, GIS and cyberdemocracy: evaluating on-line spatial decision support systems. *Environment and Planning B: Planning and Design*. 28(6), 907-921.
- Carver, S., Evans, A. and Fritz, S. (2002) Wilderness Attribute Mapping in the United Kingdom. *International Journal of Wilderness*. 8(1), 24-29.
- Cullingworth, J.B. and Nadin, V. (1997) *Town And Country Planning In The UK*. London: Routledge, 12 edition.
- DTLR (2001) *Planning: Delivering a Fundamental Change, Planning Green Paper*. London, HMSO.
- Forester, J. (1999) *The deliberative practitioner: encouraging participatory planning processes*. Cambridge, MA: MIT Press.
- Gaines, S. (2001) Surfs up for gran. *The Guardian On-line*, 21st June, p.10-11. <http://www.guardian.co.uk/internetnews/story/0,7369,510050,00.html>

- GUV (1998a) GUV's Tenth annual user survey (October 1998): Age. Graphics, Visualization & Usability Center, Georgia Tech. http://www.cc.gatech.edu/gvu/user_surveys/survey-1998-10/graphs/general/q54.htm
- GUV (1998b) GUV's Tenth annual user survey (October 1998): Primary Industry. Graphics, Visualization & Usability Center, Georgia Tech. http://www.cc.gatech.edu/gvu/user_surveys/survey-1998-10/graphs/general/q30.htm
- Healey, P. (1998) Building institutional capacity through collaborative approaches to urban planning. *Environment and Planning A*, 30, 1531-1546.
- Innes, J.E. and Simpson, D.M (1993) Implementing GIS for Planning. *Journal of the American Planning Association*, 59(2), 230-236.
- Kingston, R., Carver, S., Evans, A. and Turton, I. (2000) Web-based public participation geographical information systems: an aid to local environmental decision making, *Computers, Environment and Urban Systems*, 24(2), 109-125.
- Kingston, R. (2002) Web Based P GIS in the UK. In W. Craig (ed.) *Community Empowerment, Public Participation and Geographic Information Science*. Taylor & Francis.
- Liff, S., Steward, F. & Watts, P. (1999) Public access to the Internet: New approaches from internet cafes and community technology centres and their implications for libraries. *New Review of Information Networking*, Vol. 5, pp27-41.
- Macgill, J (2001) Geotools – a Java Mapping Toolkit. <http://www.geotools.net>
- Madanipour, A., Hull, A. and Healey, P. (2001) *The Governance of Place*. Aldershot, Ashgate.
- Millar, J. (2001) Government's internet project 'doomed to fail'. *The Guardian*, 4th June. <http://www.guardian.co.uk/internetnews/story/0,7369,500998,00.html>
- Ordnance Survey (2001) Business Geographic Internet Licence. <http://www.ordsvy.gov.uk/downloads/ism/20967a5.pdf>
- Pickles, J. (1995) *Ground Truth: the social implications of geographical information systems*. London: Guilford Press.
- Shiffer, M. (1995) Interactive Multimedia Planning Support: Moving from Stand Alone Systems to the World Wide Web. *Environment and Planning B: Planning and Design*, 22, 649-664.
- Thomas, H. (1995) Public participation in planning. In Tewdwr-Jones (ed.) *British Planning Policy in Transition*. London, UCL Press.
- Woolgar, S. (ed) (2002) *Virtual Society? - technology, cyberbole, reality*. Oxford, Oxford University Press.