DISTILLATE Product B4 Tool
Rapid Appraisal Participatory Geographic Information System (RAP-GIS) for 'Out-of-the-Box' Transport Option Generation, suitable for use with 'Hard-to-Reach-Groups'

Introduction

There are four Option Generation products being developed as part of Project B. This one addresses how to improve the development of scheme options involving local residents and generating potential transport solutions that may be considered 'out-of-the-box' or novel – i.e. not "out of the bottom drawer" or rehashes of previous plans. The tool is designed to engage with so called 'hard-to-reach' stakeholder groups.

Methods – Interviewing & Mapping

Defining these 'hard-to-reach' groups is obviously problematic, contentious and possibly divisive, however, local authorities in general have typically identified the following types of person as requiring special effort for inclusion:

- People from black, minority or ethnic groups
- Asylum seekers
- People with disabilities
- Young people
- Older people
- People living in areas of deprivation or on a low income.

Local authorities have experienced difficulties in engaging with these groups. Problems that have been identified that may be exacerbating the lack of engagement from these groups include language barriers, cultural differences, time, and ability to attend conventional consultation events.

The tool presented here uses of a form of participatory GIS (PGIS) that encourages greater involvement from specific target groups.

Out-of-the-box transport schemes

While in our everyday experience, new ideas often appear to come from nowhere, 'knowledge science' has identified complex interactions between the quantity of knowledge and wisdom we possess, the level of our curiosity and enthusiasm, and our reluctance to engage. The challenge in developing tools for option generation in any applied field is to create an environment where these seemingly random processes can be stimulated and made rational, systematic, transparent and accountable.

For scheme option generation with residents, this required a tool that promoted lateral thinking away from the obvious 'transport' focussed solutions. The tool should assist participants in identifying schemes that address transport issues – but possibly in a non-obvious way. We use a form of questions that promote 'out-of-the-box' thinking for the participants, linked to rapid participatory mapping of their ideas.

In order to encourage local residents to identify options for schemes beyond their initial – possibly obvious – suggestions, an iterative structured querying approach is employed. These queries are integrated into the mapping activity to further stimulate lateral thinking by engaging with the physical attributes and options presented by the map of the specific location.

Firstly the feature to be changed is identified and if appropriate mapped as a 'problem' on the participatory maps. The participant is then asked to identify what change they would make and again indicate where they would implement this on the mapping (if appropriate). They are then asked to describe what this change would achieve and why this outcome was needed, or what benefits it would generate. These last three stages are iterative with people asked to think if an alternative change could achieve similar, superior or complementary improvements and again mapping where this would be implemented. The stages in this process can be seen in figure 1.

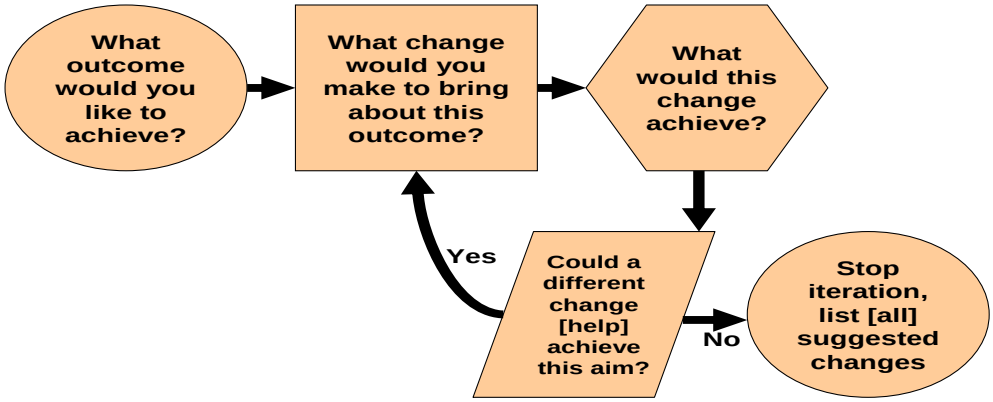

Figure 1. Iterative structured queries to encourage 'out-of-the-box' scheme solutions linked to RAP-GIS

A worked example may provide the best overview of how the structured queries can be applied in practice.

Interviewer: What outcome would you like to achieve?
Respondent: Improve the car park
Action: Car park marked as problem on map
Interviewer: What change would you make to bring this about?
Respondent: More disabled bays and better signage
Action: Preferred location and type of disabled bays and signage marked on map
Interviewer: Why do you want this change?
Respondent: Improve safety of car park users and shoppers
Interviewer: Could a different change achieve this aim? Could a different change help with safety?
Respondent: The kids hanging around make me feel unsafe – especially when they hang out in groups. So I would stop the kids hanging around.
Action: Location of where kids loiter marked on the map as a problem
Interviewer: What change would you make?

Respondent: Put in facilities for kids?

This can be followed by a discussion of what kinds of facilities for young people are needed and where they could be located. Other options for improving safety can then be discussed in a further iteration of the structured queries.

Other examples of 'out-of-the-box' suggestions that we have had, using this method, include improving the office space to ensure that the area, shops and car park remained well used and vibrant leading to overall regeneration which would mean greater access to local services for everyone. Another example is the problem of road safety – with the problem of excessive speeds on the current road sections – leading to an option of traditional traffic calming – but then moving on to increased pedestrianisation instead of traffic calming to slow traffic and the consequent increase in the space available for community use of the pedestrian areas.

In situ Mapping and multi-temporal survey location

The RAP-GIS tool is specifically designed to be used in-situ at the location for which schemes are being discussed. Once engaged, potential participants should be informed that anything said by them will be used by the Council for consideration. In addition participants should be told that the consultation process could be completed in five minutes. This combination of usefulness of the exercise and rapidity helps to encourage uptake by participants.

The use of on-street RAP-GIS mapping also allows people who could not (or would not) consider attending a public meeting to make a contribution whilst undertaking their everyday activities. In addition, the consultation should be carried out at a range of times from early morning (during the commute to work and school run), through the day and into the early evening when younger people utilised the space. This flexibility of when people can participate also encourages people who might not normally be willing, or able, to spend any significant length of time answering surveys or attending meetings to make sure their views are included. Moreover, if the research team is there all day, people can chose when to spend their 'five minutes' with some availing of a better time to make a return visit.

During the consultation, participants should be asked to indicate information about problem issues, scheme solutions and where they could be implemented. This should be done on individual maps for each participant at an appropriate scale (1:300 is suitable) to identify salient features: individual maps are used to encourage 'new' thinking rather than building a collective or consensus viewpoint reached through group discussion or *Planning for Real* type collective mapping.

In some circumstances small numbers of participants may successfully collaborate on the development of a single map. For example, families may work together as may small 'gangs' of young people. These can be treated as single maps, but the age and gender of all participants should be recorded separately as individuals to indicate the level of participation. If there are disagreements within these small groups, individual maps of specific viewpoints should be completed.

A3 sized base maps should be provided to participants. Suitable detail is indicated by the imagery used on *Google Earth*. It is useful for the specific zone under consideration for scheme development to have a lens applied to bleach out the underlying imagery making clear the locations of primary consideration. This also facilitates clearer mapping (by being able to clearly see any additions even on full-colour imagery). A mixture of colour versus black and white base maps can be employed if available. Younger participants show a slight tendency to select the colour base maps, but overall there appears to be no strong preference amongst participants for either type of

map. Thus, if cost is a factor, black and white maps could be used without impinging of the levels of participation (unless, of course, there was a particular drive to attract younger participants).

One of the benefits of PGIS is that the maps become the focus of participation; this is particularly the case with the RAP-GIS tool. This tool removes the barriers present in public meetings where often the most vocal or confident people can dominate discussions.

The RAP-GIS tool allows the generation of target group-specific information. In alternative scenarios, specific groups might be selected based on their particular concerns, unique knowledge or understanding, or target groups might be selected by the local authority. For example, if scheme options for people with mobility problems were particularly relevant, then demographic details of this target group could be recorded alongside the information they provide in the consultation.

Methods – GIS Mapping

Ethical considerations of RAP-GIS

The visual nature of participatory mapping removes the barriers of literacy and to an extent language (although potentially introducing a new barrier for visually impaired groups and this must be considered – contact your in-house Disabilities or Access Officer). Best practice guidelines have been suggested for the use of participatory GIS (Rambaldi, Chambers, Fox and McCall (2006)):

- Who participates? Whose voice counts?
- Who identifies the problem?
- Who controls the process?
- Whose reality?
- Who own the outputs?
- Whose analysis and use? Ultimately…
- What has changed?
- Who has benefited?
- Who is empowered and disempowered?

The RAP-GIS technique fulfils only a subset of these ideals. The technique can be successfully used to increase participation from groups who would typically not engage in conventional consultation exercises. However, there is less control over participation than would be the case at a conventional focus group-type participatory exercise where particular stakeholders or representatives of specific groups may be invited. With RAP-GIS, participation is dependent on who is in the vicinity of the on-street activities. Sufficient pre-publicity may overcome this drawback especially if targeted at specific audiences.

The voices of different groups can be clearly differentiated using the technique as the demographics of the participants are recorded in the database. This ensures that the specific views of different groups can be highlighted in the generation of schemes. However, the ‘group’ identified is selected by you rather than being self-selected by the communities involved.For example, within the under 16 age group individuals may associate themselves with a specific

cultural group (skate boarder, footballer, Goth, and so on) rather than with other people of their own age-set, and thus not see themselves as a homogenous subset of society.

The outputs from the process are analysed, owned and controlled by the facilitators of the RAP-GIS process. This does not fulfil the criteria of best practice suggested above; however, if this limitation in the process is communicated to participants during the consultation so that at least they are informed and give their consent for this to occur, then the impact of this is ameliorated. This limitation is similar to many on-street survey techniques where information is captured quickly; individuals may not feel they have significant time to consider and discuss the full implications of their participation. Overall the RAP-GIS process fulfils some of the criteria under the guidelines for best practice but it is more extractive and less participatory. However, the technique is designed to generate scheme options that will hopefully benefit communities (or groups within them whose schemes options and preferences can be examined through the GIS database). The tool does empower communities through assisting them to generate scheme ideas for their local neighbourhood, a process they may typically have been excluded from in the past.

The options generated at the RAP stage, that is the on-street option generation phase, can and should then be re-presented to local forums or consulted upon more widely to ensure more general popular – or more specific – legitimacy.

RAP–GIS database structure and outputs

The outputs from the RAP-GIS consultation process described above are a number of paper maps containing a wide range of information and corresponding to data on problems, possible scheme options and demographic information. In order to enter this information into the digital database the mapped information has to be coded into a variety of thematic and spatial classes.

The specific geographic extent of the case study area should be split into discrete zones based on the location of comments received from the participants; these zones should then be given a unique code number. In a spreadsheet and linked database, the specific comments received from each participant should be recorded. Each participant's map is allocated a unique code and the age and gender of its author recorded to generate information and allow querying of the final database by demographic category.

On a separate worksheet, the comments received for specific zones are linked to the map and coded for each participant depending on whether they had indicated a problem for that area or a solution.

On final worksheets, the specific problems, solutions and scheme options for that area are recorded as text entries.

These worksheets are then imported into a database for linking to the GIS maps. PCI Geomatica can be used for the GIS analysis, however, any GIS could be used to store and visualise the type of information generated by the RAP-GIS process.

The structure of the RAP-GIS database allows a wide variety of maps to be produced to communicate visually the results of the consultation. The visual nature of these consultation outputs helps when communicating the outcomes to other stakeholders (such as other citizens, other local authority officers and local community leaders). This benefit is likely to be due to the advantage that images can be assessed more quickly that written information, especially when accompanied by an oral presentation of the detail behind the images.

The RAP-GIS process can be used to generate options for the future in isolation; however, a variety of supporting information can also be captured including the location of problem areas in the community. This supporting information is produced through the process of problem identification and generation of options for solutions as depicted in figure 1 above. Figure 2 (below) indicates

the intensity of problems from all participants. Using the RAP-GIS database these results can be visualised and broken down, for example by age and/or gender (see figure 3). If other target groups are important and their demographic information must be collected during the consultation process then the specific information generated by these informants can also be visualised.

Figure 2. Intensity of problem areas

Figure 3. Comments received from participants in the youngest age range

Maps can be produced highlighting the location of possible solutions generated by local participants. Some of the locations of solutions may be geographically separate from the problem areas they are designed to address; for example, a site identified with potential for increased youth facilities such as a skate park may be in one area while this is a solution to address the needs of the other public space users in a car park, elsewhere, where youths cause problems by skate boarding. These linkages between the spatial location of problems and solution options should be tracked in the RAP-GIS database.

In addition to the geographically located data collected through the RAP-GIS process, additional scheme suggestions, problems and ideas may also be generated. For example, suggestions for changes to shops, the availability of children's facilities, and other social issues should be captured as separate comments within a database (such as Access). These comments can and should be included in any reporting generated for local authority officers or the wider public.

The outputs provide a rapid visual assessment the locations of the information collected in the consultation together with their relative importance to participants (based on the number of comments). This is useful in communicating this data to experts, including policy makers and local authority officers.

From the RAP-GIS database, outputs that identify the particular problems can also be produced to contextualise the issues participants would like to see addressed as well as the range of viewpoints. An example of problems associated with a car parking area can be seen below (figure 4). In addition to the text comments, coded for different types of problems or differing viewpoints, supporting material such as photographs, videos or sound files can be included and visualised in the GIS database. This further contextualising of locally-specific information is particularly useful to report to officers who may be thinking more strategically and members and other non-local stakeholders who may be less familiar with the scheme area.

Figure 4. Range of options for solutions generated for the car park

From the collection of specific scheme suggestions generated through the RAP-GIS, tool it is possible to classify options into groups that are complementary, neutral or mutually exclusive. For example, improving the layout of the car park is mutually exclusive from grassing over the tarmac. However, improving the signage for the area or additional seating could be complementary to either scheme suggestion. This differentiation and amalgamation of individual suggestions allowed composite schemes to be generated and visualised to improve their communication to a wider stakeholder group. These visualisations have to be done in a vector graphics package outside the GIS (Corel Draw is ideal) although alternatively CAD may be usefully employed to carry out this process).

The RAP-GIS tool developed by DISTILLATE B4 'Option Generation' activity represents a new approach to engaging with hard to reach groups. It has proved successful in generating 'out-of-the-box' transport scheme suggestions and communicating these effectively to local authority transport officers and other stakeholders.

References and Further Reading

Cinderby, S. (2007) "How Communities Can Use Geographical Information Systems" in Clay, C., Madden, M. and Potts, L. (eds) Towards Understanding Community: People and Places. Palgrave.

Cinderby, S. (1999) "Geographic Information Systems for Participation: The Future of Environmental GIS?" International Journal of Environment and Pollution 11(3): 304-315.

Cinderby, S and Forrester, J. (2005) "Facilitating the Local Governance of Air Pollution Using GIS for Participation", Applied Geography, 2, 143-158.

Rambaldi, G., Chambers, R., McCall, M and Fox, J. (2006) "Practical ethics for PGIS practitioners, facilitators, technology intermediaries and researchers" in *Participatory Learning and Action Vol. 54: Mapping for change: practice, technologies and communication*, IIED: 106-113.