ARTERIAL STREETS TOWARDS SUSTAINABILITY

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1. INTRODUCTION

ARTISTS¹ (Arterial Streets Towards Sustainability) is a joint European Project funded by the European Commission. The project is a part of Key Action "City of Tomorrow and Cultural Heritage" in the Fifth Framework Programme "Energy, Environment and Sustainable Development". The project has lasted for three years and is due to be completed in December 2004.

ARTISTS has the primary aim to improve the reconstruction of arterial streets in our cities. The results will be presented in a report for planners and decision makers with propositions of how to improve the different parts in the planning process towards more balanced, innovate and sustainable solutions when reconstructing arterial streets. In addition the results will be presented and discussed with traffic planners and decision-makers in connection to various workshops and seminars.

The project has 9 partners from research organisations from 9 countries and 6 city partners, each linked to one of the research partners each. Countries represented are Belgium, Denmark, Greece, Germany, Hungary, Portugal, Sweden, Spain and UK. Åse Svensson at the Department of Technology and Society in Lund is the co-ordinator of the project.

2. BACKGROUND

The first question to be raised is: What is actually an arterial street? Our answer is that it is a major street combining strategic network role with urban activities. It has a lot of conflicting functions, while there at the same time is no guidance how to treat these conflicting functions. The most obvious interest groups are:

- People living along these streets
- Children
- Elderly
- Cyclists
- Car drivers
- Shop owners
- Public transport
- Freight and delivery

The arterial street has an accident problem, including problems with great risks for injuries in these accidents. This is particularly true in accidents with vulnerable road users. The air quality is poor and it is very noisy. Traffic flows are big, which – together with high speeds – create an effective barrier. In addition the aesthetics is most often very poor.
These problems are usually to be found in their most extreme form along the major arterial streets in most European towns and cities. One important part of the problem is that we have not appreciated enough that infrastructure and the vehicle forms the man in the road system. We have therefore produced a "high-speed" system, both on the infrastructure side ......

.... and on the vehicle side...
In some other parts of the city, in particular the central areas and residential areas these aspects are beginning to be accepted. Attempts are made to control these problems by reducing the dominance of the motor vehicle and promoting a more sustainable infrastructure and more sustainable transport modes e.g. through pedestrianisation, access control and traffic calming measures. These measures, when systematically applied, has also been found to be very efficient from a safety point of view, with reductions of serious injuries with up to 70% in a 10 year period. (Adolfsson 2004). It has been rather simple to define the function of the central urban area; a flourishing city centre, good access for shoppers, etc. The same goes for the rural highways which have been allocated the function to serve the flow traffic between regions. The multifunctional arterial streets, however, have in the main no clear vision, there have been few attempts to improve conditions by re-design and street management.

Arterial streets present a particular challenge to sustainable urban planning, because they attempt to meet four, often conflicting functions. First, they provide a major conduit or channel for movement between different parts of the city. Second, they provide access for employees, customers and deliveries to the land uses fronting the street. Third, they represent a major public space that is visually dominant, culturally charged and of great importance for social interaction. Fourth, they represent “the garden” for many residents.

Arterial streets are multifunctional roads; roads that combine a strategic network role with urban activities. These are often the historic radial routes that existed before they were part of any urban areas, but gradually became a focus for activity and urban development. These roads have the character of carrying through traffic between different parts of the city, a collector; have a mixture of different road user categories and have mixed land use, often mix of residential dwellings and retail. When ARTISTS partners in the seven cities were asked to pick out their arterial streets of major interest none of them had a motor vehicle AADT less than 10 000.

3. STREET CLASSIFICATION SYSTEM

Street classification is a key issue in ARTISTS. It is our understanding after having studied existing street classification systems that there seems to be an adopted common understanding that there have to be an inverse relationship between circulation and access (Marshall et al., 2004). If a street is assigned an important function for carrying motorised traffic then this very same street is not supposed to have any significant access function. The reality is, however, that many urban streets have mixed and conflicting functions. The fact is that not many of today’s (and yesterday’s) streets do not comply with such a system. For instance the ordinary and very common arterial street in our European cities does not fit into the conventional classification system. Thereby there is no clear conception of what an arterial street actually is and how it could be part of an urban street network that could form the basis for a future more sustainable urban system.
Figure 1. The conventional classification has no place for the traditional arterial street (Marshall et al., 2004)

As the arterial street does not have a place in the classification system the street does in a way not exist because it is not recognised as a certain type of street. It is therefore difficult to determine its function and purpose and comparisons cannot be made to other streets. It is difficult to justify resources for reconstructions as today's function and purpose cannot be described and therefore it is impossible to describe in what direction to go i.e. describe the street we're aiming for. Finally, because of the lack of fundamental definitions it is difficult to assess the performance of the street. To be able to do this the intended function of the street has to be decided in accordance with the classification system.

Traditional classification in Europe is often a means to organise types of streets into hierarchies. Often these hierarchies are more of the type road hierarchies than street hierarchies and the focus on motorised traffic is striking. It is difficult to find systems that both allows for a high traffic function and a high sustainability or urban function. At a closer analysis it becomes evident that this traffic function is not the same as traffic flow but rather a kind of network function.

The fundamental basis for a new classification system is to look at network function / link function and urban place function as two independent variables. By doing so the system would allow for streets to have any combination of these two variables and still be included in the classification system. An important element in a new approach is to see the street as a continuous artery, facilitating efficient "people movement" along the street, built up by a number of locales made up of the buildings, the spaces between the buildings and the related activities.

The basic elements of a new classification system is

- Link function; defined as the significance of a street as a link in the overall road network
- Urban place function; defined as the significance of a street as urban place relative to the overall urban system; town centre, district centre, local centre, specific shopping street, etc.

By combining these two elements the link function and the urban role will be considered in the wider city context (see Figure 1). This means that both the link function and urban place function will depend not only on the immediate attributes on the micro level, but on the wider street and urban system considered as a whole. It also means that in designing street-
space within the locale, there will be a simultaneous trade-off between the immediate demands for space and time (for pedestrians to cross; for one stream of traffic to turn right or left across another stream; for street trading, etc.), and the overall functioning of the city.

With this approach any urban street – including the arterial - is recognised and has a location in the classification system.

Figure 2. Factors influencing designation of status (Marshall et al., 2004)

4. STAKEHOLDER PARTICIPATION

Participation can be defined as the involvement of stakeholders in the decision making / planning process with the purpose of influencing at one or several stages of this process (Nilsson, 2004). Stakeholders are everyone that is affected by, or can influence any decision or action. It can be a person, group of persons with similar background, a company, any business, or it can be an institution. Public participation concentrates on stakeholders representing the citizens (residents / transport users / the public). Key purposes of participation are to improve the quality and efficiency of planning and to raise the awareness and empower the actors involved. By including stakeholders they can be “educated” so that they better can understand the complex processes that are guiding the whole planning process. Including stakeholders also means that you as a professional has “signed a contract” saying that you will do your best to consider their interests and demands in the process. Studies of existing decision-making and design processes (Underlien Jensen, 2003) show that the most successful reconstructions of arterial streets are projects with early stakeholder involvement and several design alternatives. In ARTISTS the purpose has been to engage stakeholders at several phases in the reconstructing process and to evaluate this engagement in order to be able to propose recommendations when reconstructing arterial streets.

The “normal” reconstruction process consists of the following phases

1) Selection of site for reconstruction
2) Identify problems and needs
3) Formulate objectives
4) Generate alternative design options
5) Choice of option
6) Development of option and implementation
7) Assessment
ARTISTS has covered stages 2) to 5) at six demonstration sites located in Malmö (Sweden), Copenhagen (Denmark), London (UK), Freiburg (Germany), Girona (Spain) and Kalamaria (Greece). For each of the four stages stakeholders have been engaged to participate in:

- Preliminary interviews (PI) to identify problems and needs
- Focus group discussions to identify problems and needs (FG1) and to express visions and set objectives (FG2)
- Design workshops for generating alternative design options (FG3)
- Design decision events like an exhibition and or seminar for choosing the preferred option (FG4)

There are many stakeholder groups to consider when entering a public participation process. The list below serves the only purpose of demonstrating the wide range.

**Users of the street**
Local residents
Pedestrians, Cyclists, Public transport users, Car drivers
Visitors to shops, to businesses, to residents and other visitors

**Users / Other stakeholders**
Groups of handicapped people
Environmental NGO’s
Motorist associations, Public transport user groups, Cyclists associations, Pedestrian associations
House owners’ association
Local community-based organisations
Local specific interest groups

**Other stakeholders**
Transport operators and providers
Business associations
Local chambers of commerce
Local transport authority
Politicians
Ministry of Transport
Regional government
EU
Other local transport bodies
Professional staff (planners, designers, transport consultants)
The police
Local road safety council
School boards
It has been made clear during the ARTISTS project that it is very difficult to include all different stakeholders. Exactly which stakeholders groups to address depends very much on the proportion of the project and the local characteristics at the site. Motorists travelling along the arterials were one of the groups that were of quite general interest to involve in large parts of the process. However, this group was particularly difficult to reach. Even if we met them at the site (they were stopped by the police) it was almost impossible to have their interest for getting involved in the focus group sessions. It would be interesting in a continuation of any kind to find out more about why they were so difficult to engage. It is of course interesting as it is likely that they will be one of the groups that might be exposed to “negative changes”

4.1 Preliminary interviews

The purpose of the preliminary interviews (PI) was to get a general picture of the situation at the street. It was thought to be important to as early as possible get the users’ view of the street. Some 220-490 (depending on location) users of the street either filled in a questionnaire in the form of a postcard that was sent back after completion or answered the questions verbally through interviews at the site. The questionnaire consisted of four open questions mainly dealing with perceived advantages and problems with the site. The PI produced a lot of valuable information about different stakeholders’ problems and needs. This enabled us to be better prepared for the following focus group discussions. If the purpose of the PI is solely to make sure that important aspects are not neglected at this early stage then the PI could be less extensive than here. If, however, there is an interest to get some statistical values of how frequent different aspects are then the PI has to be quite extensive. Statistically safe information is important in the sense that it can be used for later comparisons with a similar interview study in an after situation. Some partners in ARTISTS also used the PI to get a ranking of positive and negative aspects.

4.2 Focus group discussions

The conceptual framework for ARTISTS regarding the performance of the street was based on the following quality aspects:

- Movement along and across the street
- Business climate
- Traffic safety
- Security
- Status of maintenance
- Health
- Air quality
- Noise

These qualities have been the backbone in the discussions with the stakeholders. The planning of the focus group discussions was then very much based on these aspects and of course on the results of the preliminary interviews.

The two prime objectives central to the focus group discussions, FG1 and FG2 (Plowright & Pinzone, 2004), were:

• To gain a deeper understanding of ‘problems’ and ‘positive aspects’ in the case study street (FG1).
• To achieve a strategic discussion on street ‘functions’. What is the vision for the future? (FG2)
Representatives of different stakeholder groups were forming groups of 8-12 persons. The aim was, primarily to get views on the above mentioned objectives, but also to achieve added value to the process when stakeholders discuss the issues from different points of view. We hoped to create a better understanding among stakeholders about the needs, interests and “fears” among different users.

In addition to the prime objectives we also tested the “meaningfulness” and “importance” to stakeholders of the initial performance indicators pursued within the ARTISTS project. By asking the question “what is important” we hoped to gain feedback on the “meaningfulness” of those initial indicators, and add to that set locally to reflect cultural differences. The intention was that the focus groups would allow the researchers to refine the ARTISTS indicator set and explain to city planners the degree to which “core indicators or themes” are likely to have to be supplemented locally.

Most partners combined FG1 (to identify problems and needs) and FG2 (to express visions and set objectives) as it was felt that FG2 was a natural continuation of FG1. The visions primarily dealt with general statements about how people would like to see a new street. The designing of the street was to be reserved for FG3. These sessions were evaluated - via questions posted to the participants - regarding how well the aim was fulfilled and how the sessions were organised.

The focus groups were successful when it came to identify additional issues as compared to the preliminary interviews and to identify user needs for the arterial street. There was a reasonable confirmation that the ARTISTS performance headings were meaningful to stakeholders in that they did relate to issues they considered important. Broadly, both participants and facilitators were positive about the general process of FG1 and FG2 and the achievements of the objectives. Participants expressed it being positive to face representatives from different user groups; that it was challenging to be confronted with different views; that the own apprehension of the street was broadened and that it was fruitful to both discuss positive and negative aspects. The major negative criticism was the lack of time. The main concern among facilitators was often related to the poor representation/spread of stakeholders among the participants. The lack of interest might to some extent depend on the change of focus in ARTISTS. The aim to perform real reconstructions at the demonstration sites had to be abandoned due to budget restrictions in the cities. Stakeholders had to respond to a “hypothetical” decision to reconstruct the street. To attract participants to focus groups is likely to be difficult unless stakeholders can clearly see that there is real change proposed for a street.

As usual it seems important to have a pilot session before the real session. To some extent combat the “lack of time” problem the recommendation must be to in the guidance to the focus group activities emphasis that it is needed to be realistic about 1) what can be undertaken and 2) how long each activity is likely to take; thus to be very clear as to the objectives and only set very limited number of objectives. As always it is very important that participants are aware of the whole planning and participation process to fully understand their role in it.

4.3 Design workshop

The next step in the process was to summarize the results from the focus group discussions. These were to act as preconditions for the coming exercise when alternative design options were proposed. The main objective of this “Design workshop” or FG3 (Pinzone, 2004) was to build up a set of design options for the demonstration case in each city. A number of new design options were to be set up to enhance the street, which addresses the needs of different users in a sustainable manner. New options drawing on local knowledge and innovation, options that technical professionals might not identify, were also to be identified,
In this workshop we also wanted to estimate whether it is possible to let stakeholders, who per definition are “novice” regarding urban planning, formulate their own options rather than react on already formulated design options. Finally we should also evaluate the tools and materials used to develop options.

To create the necessary conditions for “creative” solutions
- teams of 5-6 persons were set up
- within the groups there was a mixture interests
- tools for generating alternative design options were developed.

Material

The tools for generating alternative design options (FG3) included:
- Base plan of the street or the section in 1:200
- Posters of real life reconstructed arterial streets. Pictures of before / after situation, description of measures and effects.
- Collage of design elements
- A series of information sheets on different design elements. The information sheet is double-sided. The front side provides photos, general description of the street element and effect regarding street user behaviour. The rear side is entitled Planner’s Tool. It provides further detailed information about design considerations, indicative costs and it’s affect on the street’s performance.
- Design elements in the form of overlays in acetate. These are to be used together with the base plan of the same scale; primarily to test whether the potential changes fit within the available space but also to raise curiosity.

Figure 3: Use of transparent overlays on a base plan
Overall, the transparent overlays were considered to be the most useful material developed. It seems to be a helpful way of understanding street space. This tool could be further refined to include more elements and to reflect different widths to provide less constraint on the exercise carried out by participants. The overlays may need to be made country specific, in terms with widths and styles.

The information sheets appeared a useful resource; however, most participants did not have the time to use them to the full. Information on the sheets may need to be simplified and shortened. Perhaps the Planner’s Tool on the reverse side ‘can be included only on the facilitator’s set up. Among planners themselves there is prejudice regarding design elements and their assumed effects.

The posters seem to have been of least use to participants. The quality of some posters especially regarding the quality of the photos could be improved. The perceived relevance of the reconstructed street that is presented is also something to consider.

Additional materials suggested included the need for a video or film to show the existing conditions on the street, examples of how streets have been reconstructed, and footage showing best practice elements in the street scene.

The design exercise

Overall, people liked to play the role of designer and the event was an appreciated way of communicating with other stakeholders.

The following key points were raised:

- There is a need to be clear at the outset about the objectives and constraints for design. This needs to be communicated to participants before they commence their design, in order to manage their expectations so that the output of the exercise is valuable and useful.
- Participants need to be familiar with the street being consulted on for the design exercise to be worthwhile. A tour of the street, pointing out key features and issues to participants, is an additional exercise that could be undertaken to provide more information to participants.
- The design workshop is part of a much larger consultation process and is perhaps more valuable if undertaken with participants who have been involved in all stages of the process.
- Participants must be told how their designs are going to be used by the professionals – how their ideas will be incorporated into professional designs.

4.4 Design decision event

Between the design workshop (FG3) and the design decision event (FG4), the 5-6 different alternative design solutions were properly elaborated with by professionals and presented on huge printed posters.

The objectives of the sessions to achieve a preferred option, FG4 (Underlien Jensen, 2004), are:

- To present a range of design options to participants.
- To seek feedback on design options developed using the results of FG3 design workshops.
- To identify a preferred design option using a comment and feedback form.
- To evaluate the tools and materials used to present and seek feedback on design options.
The FG4 events were done using either an Exhibition or a Seminar;

- Exhibition was based on an informal open invitation to all participants. The arrangement was primarily a display of the different alternative options. If desired there was the possibility of discussing the options with an ARTISTS representative. Before leaving, the participant was asked to vote for the preferred option. At most exhibitions the participant was also asked to complete an evaluation form.

- At the Seminar the design options were presented to a selection of participants. The options were then either discussed in a plenary session or in round-table groups. Before leaving the session participants were asked to vote for the preferred option and to fill in the evaluation form.

The material presented varied between partners. Often it was a mixture of photos and base plan of the existing situation; base plan + cross section + photos of the different alternative designs. Participants commented that the presentation should have little text / few words and a great selection of visuals like photos, base plans, cross sections and photos.

A reflection made afterwards is that it would be valuable to include predicted effects using traffic analyses and expert opinions. This would straighten up the whole discussion. As long as this kind of facts were missing there was always a risk that participants could carry through own ideas without a proper foundation in facts.

Facilitators indicated that participants started to get difficulties in their choosing when the design options became too many and too similar. It seems to be preferred to present at most 3-4 distinct design options.

To open up for the next stage where the preferred option was further revised the participants were asked why that particular option was preferred. Could they suggest improvements. This discussion may be very fruitful in getting feedback that may help the professional to elaborate a final street design. There are different opinions regarding whether it is preferable to have professionals’ design option included here as one of the options or if the preferred option (based only on non-professional design solutions) together with comments should be the basis for a final professional design option. To include the professionals’ option, might be important in cases where there is a big gap between the solutions proposed by the stakeholders and the professionals. Then it might be important to give the stakeholders the view of the professionals so that the stakeholders can reassure themselves that they actually have considered all important aspects in their preferred design option.

4.5 Conclusions

Stakeholder participation takes time and must be allowed to take time if this type of engagement is to be used at all in the planning process. It must be carefully considered where and when to involve stakeholders as it is perhaps not an optimal solution to have stakeholder participation in every phase of the process. It is, however, preferable to have stakeholders involved as early as possible in the process. The work with stakeholders within the ARTISTS project has shown that with the right preconditions, tools and material it is quite possible for the ordinary user of the street to propose draft design solutions.

The work with ARTISTS has clearly shown an inexpensive way of involving citizens early in a process towards reconstruction of an arterial street. The citizens have been able to define visions and goals and set out means of how to get to the desired future.

The costs involved are rather high at least in relation to what planners are used to spend for this kind of purposes to-day. The benefits are, however, quite high but can primarily only be appreciated in the long term. A strong recommendation is anyway to at least involve stakeholders for bigger projects and to make them participate early in the process.
The structuring and preparation of the sessions is important. A well prepared session includes proper presentation of the scope / purpose, have available relevant material about the case and clearly define the role of the participant's, and how this exercise should contribute to the further process; etc.

Despite the involvement of quite competent stakeholders it is vital to remember that the professionals still hold the final responsibility.

5. FINAL REMARKS

A new classification system together with an intense communication with users of the street can facilitate a more creative planning process that better provides “locally adapted” layouts of arterial streets. In this way the street design is adapted to actual street use, local culture and attitudes. This means partly moving away from uniform design manuals.

Representatives of different stakeholder groups may very well be involved in the design and decision-making process. They provide valuable input when defining problems and visions and they are also capable of contributing with proposals for various solutions to the problems defined. The result is definitely a better and more successful solution but also a better and more successful process towards the solutions. The latter is as important, especially because it can be seen as a necessary development towards a greater “respect” for the needs and interests of the stakeholders. Planning in the future must be more firmly based on the participation of all those who are going to be the actual users of the streets. We have still a long way to go, so therefore we must also accept that we have to make new investments in this kind of exercises.

REFERENCES

Adolfsson, L., (2004), Trafiksäkerhet en fråga om långsiktighet - Trafiksäkerhetsarbetet i Göteborgs kommun under 40 år, Trafikkontoret Göteborg, PM 2004-03-17


