

Designing Participatory Processes

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Abstract. Cooperation emerges in various forms in the context of eGovernment. Cooperation is practised between the members of a municipal department, between two or more departments, between the municipal representatives and other stakeholders. Sometimes the cooperation involves public participation. In each cooperation mode, expert knowledge and experience has to be collected, shared and processed, and leads eventually to the desired outcome of the cooperation – the solution of the task. The cooperating planners, decision makers and stakeholders accomplish a number of procedures everyday, for example various recurring city planning tasks, visionary participatory planning processes, decisions on how to distribute funds, site selection, voting tasks, and many more. All of those procedures can benefit from IT-support. However, it is crucial to follow certain steps in the preparation of the respective process to heighten the chance of success. There is a long way from the problem at hand to a high-quality solution, from the outline of the process plan that includes the definition of the task, naming the involved parties, determining the amount of time and resources, via the decision on the process structure and the composition of steps and methods, to the core of the communication – its ontology – and then up to the transformation of the plan into a real-world setting, the combination of media and tools, the structuring of the underlying software systems and online and onsite meetings, not to forget the importance of the moderation and the objective evaluation. The paper gives an overview on how to realize web-based participatory processes. It shows how to draw a process plan from the beginning to the end. The presented knowledge was achieved by evaluation of various experimental and real-world processes. It consists of best practice experiences and cross-disciplinary research results.

1 Motivation and Methodical Background

For several years our group ‘Knowledge and Communication’¹, has accomplished and analyzed a range of participatory planning and decision processes. All discourses, as we call these goal-oriented communication processes, are moderated and supported by internet-based collaboration and communication software. During our experimental and real-world applications we gain experience in the development of process plans.

¹ The *Knowledge and Communication* team was formerly known as the *Mediation Systems* team of the Fraunhofer-Institute for Autonomous Intelligent Systems (AIS). Website: www.ais.fraunhofer.de/MS

On the one hand we investigate participatory processes in a laboratory environment through experiments on specific tasks, similar to real-world tasks. The goal of the experiments is to help guide the development of IT-support for cooperation through a process-oriented, evolutionary, iterative and participative process (Floyd & Züllighoven, 1997). This approach is facilitated by the construction of future usage scenarios (Carrol, 1995), (Anker, 2002). Scenario design incorporates procedural change in the former unsupported procedural routine. The experimental setting is chosen to guarantee control over the variable factors of (computer) mediated participation processes and to maximize the learning effect from the experiments through detailed documentation. The experiments are set up as role playing exercises in a laboratory environment. They are described in some of our publications (Voss *et al.*, 2003a), (Roeder & Voss, 2002; Voss *et al.*, 2003b), (Roeder & Jankowski, 2003), (Voss *et al.*, 2002).

On the other hand we support real-world processes in cooperation with municipalities. Several pilot projects had shown the need for moderated online discourse in the area of participatory decision making including citizens into the municipal decision making process. We accompany the process from the outline of the plan to the final evaluation, and broaden our experience in dealing with diverse problem classes and task types. We accompanied for example visioning processes, spatial development and planning processes as well as public budget participation processes. Some of our recent publications describe the processes (Märker *et al.*, 2002a), (Märker *et al.*, 2002b), (Märker *et al.*, 2003).

In the early stages of our research, we focused on process plans and models and outlined process phases according to the standard phases of decision making and mediation. Later, we went into the details of the phases and focused on organizing the discourse process between the concerned stakeholders. We deciphered several levels to a process - process, phase and step. Participatory discourse processes show certain schemes. They are usually divisible into several phases, depending on the task, each showing several steps of action. In supporting participatory decision making processes it is hardly possible to stick exactly with a plan in light of dynamically changing influence between task, software and process. Thus, the flexibility of the software is an important aspect, as well as the fact that a moderator (a neutral third party) is needed to restructure the process and configure the system dynamically, and take much of the burden of meta-discussion about the process from the participants.

Albeit difficult because of the interacting factors, it is possible and necessary to plan the process in advance. A long history in the field of group facilitation provided us with on-site process knowledge on group communication situations. This knowledge can be used for planning the overall structure of the process.

In the following, best practices are listed, which we use as a guideline to plan IT-supported participative processes. The paper may serve as a checklist for process designers.

2 Process Preparation

Task types: First of all, the type of the task has to be identified. Several types of tasks may be solved in a participatory way. For example site-selection or the selection of site combinations, as well as the distribution of facilities or of monetary resources are topics to be solved by a group of concerned parties. The insight about the true char-

acter of a process is valuable, but often difficult to gain in the beginning. Each type of task requires its own plan.

Degree of cooperation: The task may be to cooperatively solve the problem at hand. Also, it could be possible that only parts of the task need input of the stakeholders or that the process should be participatory only in a consultative or informative way. A project (or a phase in a project) may roughly be qualified as being closed, informative, consultative or cooperative. Different groups of participants may be involved in different ways. The grade of participation is chosen on the level of the phases.

Stakeholders: Stakeholders are for example representatives of municipal departments, citizens, enterprises, etc. The respective process designers, mostly the moderators but also representatives of enterprises, municipal departments, stakeholder groups or consultants are responsible for planning the participatory process and for inviting all stakeholders. If it occurs during the process, that another party is identified as a concerned stakeholder, the moderator is responsible for including them as well.

Resources: The time frame and monetary resources are general conditions with impact on the process structure. Mostly, they are given and can not be negotiated. They have to be considered as hard constraints during the planning and design of the process.

3 Process Design

There are several levels to a process - process, phase and step. Participatory discourse processes show certain schemes. They are usually divisible into several phases, depending on the task, each showing several steps of action. Recurring discourse schemes, which can be found in different processes, can be called 'discourse patterns'. Discourse patterns are more or less abstract pieces of a discourse plan. They can be found at all levels, the process, phase and step levels. The patterns can be called accordingly macro (process), meso (phases) and micro (steps) patterns (Voss *et al.*, 2003c).

The phases: The phases are influenced from criteria of both, the results of the process preparation phase and the steps of which the phases consist. While intent and goal as well as selection of participants of a phase may be derived from the process preparation phase, its time and resources are also influenced by the steps that make up the phase. A phase is defined through the intent or the task to be accomplished, the number and background of the participants, the time frame and the monetary resources. A phase may or may not have guidance through a moderator, and it may have break-off criteria.

The steps: After the phases and their goals are decided on, the smallest units of the process define which methods and which tools are needed. Steps, the elementary units of a process, may be composed sequentially, in parallel or otherwise interleaved. The composition of these small units has to be planned very carefully to reach the intent of the phase efficiently. The goal of the phases can be accomplished via different steps, out of which the most appropriate has to be chosen (the time frame of the steps is the most varying attribute). A step is defined through its own time frame, its goal, the participants, the moderation method, the tools, the place (e.g. 'distributed') and the collaboration modus (actions can be progressed synchronous and asynchronous).

The steps define how the communicative exchange takes place. They contain the core of the textual discussion. It is crucial to allow the participants enough freedom and flexibility to express their thoughts, but also to provide them with enough guidance through method, media and tool to stick to the task, that is, to reach the intended goal of the step and its phase. Still, more innovative software supported moderation methods are required for cooperative and participative decision processes. Process designers need suitable methods and feasible systems.

Media and tools: Although face-to-face sessions may not fully be replaced by electronic media, IT could support defined parts of processes. In order to help decision makers, a selection of techniques for data analysis, simulation, visualization and modeling has become available, together with software tools such as decision support systems (DSS), mediation and group decision support systems, expert systems, databases and data ware-houses (Lavrac *et al.*, 2001).

They support – depending on the system - several work modes (private, small groups, altogether, anonymous) and several work settings (same place - synchronous, same place – asynchronous, different places – synchronous, different places – asynchronous). A famous groupware classification scheme regarding this context is the time/space matrix (see figure 1).

	same place	different places
same time	face-to-face interaction	synchronous distributed interaction
different times	asynchronous interaction	asynchronous distributed interaction

Fig. 1. Time/space matrix

Online/Onsite: According to the appropriate method for a step, online or onsite realization will be decided.

The appropriate choice of mode as well as media and tools to support the actions electronically is the vital challenge during the preparation of the process. Besides the decision or group support systems this might be email, asynchronous discussion forums, chat, polling, group editors, shared whiteboards, application sharing, audio- or video-conferencing and even phone, fax or SMS. Each step in a plan has to designate an electronic place where the documentation will be stored, optionally applicable to discourse ontology.

Media breaks: As soon as different media and tools are selected, the problem of media breaks arises. How can data and information be transferred from one medium to another, in particular from non-electronic to electronic media, but also from one software tool to another? A solution might be, to use an integrated platform that supports all required features.

Ontology: Also on the step level, the method defines the ontology of the communication. The classification of contribution types (e.g. question/answer, idea/comment) helps to structure a discussion according to a predefined ontology. Discussions can become more precise, comparable and repeatable.

4 Process Realisation

The realization phase is characterized by adapting the process plan to the real world setting. Unforeseen events might come up, that require adaptation of the outlined structure. This is another reason, why it is necessary to support the process by independent moderation. The moderator acts on the content level as well as on the meta level of the process and is also a key figure for the evaluation of the process.

Moderation: In most processes, the moderator is also the process planner. Moderation is an important success factor for online cooperation processes. The moderation accompanies the process; the moderator is coordinator, facilitator and mediator. A question specific to the process and its task is, if the moderator also needs to be an expert regarding the content.

Contrary to onsite moderation, online moderation allows the use of synchronous and asynchronous moderation methods. This is a new area to gain experience in, especially against the background of the number of software tools and media. Onsite moderation methods should not simply be mirrored online, but checked, if there could be adaptations, that lead to resource savings, i.e. if a shortening of the time frame could be reached.

On the technical side there need to be software-features especially for the process moderators. Moderators of electronic discussions should be able to design a cooperative step in detail (participants, roles, beginning and end time, review and publication periods, obligations and rules, etc.). They must be able to monitor and control the discussion process, and to change the setting in a transparent way. Moderators and participants should be aware of the social context: individual contributions of a person, active, passive and absent participants, coalitions and opponents. There should be help to interpret the discussion and identify progress: controversies arising and being settled, chances for compromises, changes of opinions, opening and closing threads, etc. Switching between methods should be easy, so that moderators can initiate a survey, a review, or a private discussion with selected persons rather spontaneously. Writing summaries, restructuring or editing argumentation structures should be easy.

Evaluation: During and after the process, the contracting partner needs summaries and reports. The final report has to document the results of the process.

Beside means to “affect” an e-discourse, e-moderators need “sensors” and “meters” to support their perception in order to intervene intelligently. They need to understand the progress of the discourse, recognize peaks of activity or inaction, potentials of conflict or consensus, passive participants or trouble-makers. And not only the moderator is interested in the progress of the cooperation, the participants also might like to know whether there are many participants online or what tendencies the contributions have (e.g. if there are many pro or contra contributions). Awareness features can help to determine those aspects, and are needed for a comprehensive evaluation of the online parts of the process (Wolff, 2003). For evaluation purposes, online-polls and questionnaires are also features that help keeping the discussion goal-oriented (Salz & Voss, 2003).

Once a successful process is completed, it should be possible to store, maybe generalize, adapt and re-use it. Ultimately there should be guidance for picking good candidates from a library of successful e-discourse plans. We use the term ‘discourse management’ for all ways of re-using past e-discourses as plans or as templates.

5 Knowledge Aspects

From the rather practical viewpoint of the moderation there are mainly three facets regarding the knowledge aspects of the process: the combination of distributed knowledge, the creation of new knowledge and how to embed the resulting knowledge into the framing administrative or political procedures.

Combination of distributed knowledge: Cooperative processes intend to capture and combine distributed knowledge. The knowledge is distributed among the stakeholders. Text based discussion methods are beneficial in phases of knowledge sharing and knowledge exploration, since the publication of knowledge in a forum is a way to document the knowledge comprehensibly structured from the viewpoint of the participants of the text based discussion.

Mostly, the knowledge among the stakeholders regarding the task is sufficient, as they should represent all concerned parties. For highly complex problems, it could be necessary to install a library about the subject, where the stakeholders submit their expertise in terms of short texts, diagrams, etc. If additional knowledge is needed, the moderator should invite the respecting experts to the discussion, or obtain the requested information from suitable sources.

Some doubts exist regarding the citizen's expertise. In processes, in which the citizens are concerned (for example urban development decisions), they take the place of a stakeholder group. Public participation raises the suspicion, that decisions are based on laities preferences instead of expert's knowledge, and also that legal power structures are going to be undermined by favouritism. Often the municipalities fear, that citizens only contribute irrational requests that are either too expensive or too absurd to be considered at all. These doubts on the citizen's expertise may in some cases be justifiable, but experiences have shown, that comprehensive information, serious moderation and the participation of decision makers and key persons in the discussions with the citizens are factors that enable a fruitful discussion with the so called laities. Furthermore, often the citizens are most qualified in assessing possible outcomes of decisions. They are able to anticipate the results of a solution, since they mostly live in the concerned areas for a long time.

Creation of new knowledge: Good moderation can be a catalyser in the process of knowledge creation. Using a few techniques during the discussion process, the moderator motivates the group to explore new ideas and to build new knowledge.

One of the techniques is called 'weaving'. It describes the process of pulling discussions or contributions together like weaving a cloth. Some of the contributor's statements are collected and related to the focus on the consultation, thus they are mirrored back to the consultants in a new interrelation. The moderator might add a new dimension by himself, or end a 'weaving' contribution with an open question (Salmon, 2000).

Another technique concerns knowledge that may not be original, but new to the participants. The participants need to be acknowledged in order to be heard. The on-line moderator avoids the temptation to discount the experience in any way to counter it and enter into argument. The contribution is available for others to read and so it becomes a form of inventory. This promotes the creation of the inventory so that it can be used by others. The moderator may comment on whether the information and opinions being presented are complete and on the quality of argument supporting them (if no other participant does this). This method ensures that the experiences of

participants, whilst valued, are not necessarily considered complete in themselves. The moderator models ways of exploring and developing arguments (Salmon, 2000).

Many other knowledge related moderation techniques can be found in the context of e-learning.

Process embedding: Participative processes are embedded into a framing context. The framing context provides the task that is to be processed in a participative mode by a group of people. The central precondition for embedding the process is the precise description of the process task and the type of the aimed result - e.g. a decision of some sort, a list of guidelines, a vision, etc. The task to solve and the requested outcome type are delivered to the process designers by the institution or group that acts as the contracting authority or in a similar functionality. The degree of cooperation should be addressed – if the process will be of a cooperative, consultative or informative nature. The participants need to know what the contractors expect, and they also need to know what they intend to do with the expected result. Afterwards the process should maintain a certain transparency, so that the participants will be aware of the impact that their work has on the framing context.

For example showed an experience from a case study, that external relevance (process embedding) is the main factor limiting knowledge management in the sense of Horst Rittel: Citizens' participation needs the willingness to listen and to learn and, with regard to the political actors, the ability and courage to put back power claims, or, at least, if politicians do not want to participate, the promise that results will be taken into consideration (Märker *et al.*, 2002b).

6 Discussion

After discussions with municipalities, we are under the impression that the term “e-government” has lost some of its initial power. This could partly be a result of the technique-centred discourse that accompanied its first applications. The need for less technocratic discussions became obvious. We try to focus on participative aspects of e-government as an application field with immediate benefits for citizens and municipality. In this context, we see e-participation as a motor for e-government.

During several events and presentations in municipal contexts, the municipalities expressed their need for very small steps towards e-government and e-participation. Small projects, like the participative design of the homepage of the town, could be first steps towards a culture of e-participation in a city. The successful implementation of small projects should ideally lead to trust regarding the new methods, and further to acceptance and applications of e-participation in bigger project contexts.

Next steps would be to identify small projects that occur in most cities, and to design a standard process plan for each. This way, e-participation can be brought into the cities incrementally, without too much financial charge.

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