GameLets: Taking a Playful Tack in Group Support

Pieter W.G. Bots[*]   C. Els van Daalen[*]

[*]Faculty of Technology, Policy and Management, Delft University of Technology
P.O. Box 5015, 2600 GA Delft, The Netherlands
{p.w.g.bots, c.vandaalen}@tbm.tudelft.nl

Abstract

This paper reports on two different approaches to combine two bodies of knowledge—collaboration design and simulation & gaming—in order to expand the 'toolbox' for designers and facilitators of group processes in the context of public policymaking. The first approach involves embedding collaboration tools in a policy exercise. The second, more innovative approach is based on the *gameLet* concept: a building block for group processes that combines features of thinkLets and serious role playing games. Both approaches are illustrated with an example, and the practical application of gameLets in the context of health policy and innovation is described and evaluated in more detail.

1   Introduction

Group processes and purposeful collaboration are crucial ingredients for participatory policymaking. When properly designed and facilitated, they enhance the quality of a policy. This idea finds its roots in the developments in participatory policy analysis and planning [7], which emphasizes the functional role of discourse and learning in these processes. Active stakeholder participation in the analysis of ill-structured problems is seen to enhance both the substantive quality (scope of the analysis, use of available knowledge) and the procedural quality (mutual understanding, trust, willingness to act) of the problem solving process.

In this paper, we report on our attempt to crossbreed one particular concept from recent work on collaboration—the thinkLet—with the concept of serious role playing and gaming that is now steadily gaining acknowledgement in the field of policy analysis. The result of this crossbreeding, which we for obvious reasons have called *gameLet*[1], can be used to support

---

[1] We use the capital L in *gameLet* not only to emphasize the analogy with *thinkLet*, but also because *gamelet* (like *applet* and *thinklet*) with a lower case 'l' are commonly used in the

groups who are working on problem solving and decision making tasks. We expect that there will be synergy between the idea of small building blocks for collaborative work and particular benefits of the playful and safe environment that a game typically provides.

In the following sections, we first introduce thinkLets and serious role playing games, then outline and illustrate two ways in which they can be combined, and then report in some more detail on a practical application of gameLets. Since this is our first experiment, the conclusion of this paper will be brief and tentative, yet—we hope—inspiring.

2   ThinkLets

The thinkLet concept has been introduced by Briggs *et al.* [4] as "the smallest unit of intellectual capital required to create one repeatable, predictable pattern of collaboration among people working toward a goal". Although such intellectual capital is typically found as 'tacit knowledge' in an experienced facilitator, a thinkLet codifies it to make it transferable to others. Moreover, the thinkLet concept and the categories of thinking patterns it ties into provide a framework for more systematic investigation and interpretation of group support systems (GSS) phenomena.

Briggs *et al.* [5, p. 47] distinguish these five general patterns of collaboration:

- *Diverge* – to move from a state of having fewer concepts to a state of having more concepts

- *Converge* – to move from a state of having many concepts to a state of having a focus on, and understanding of, the few worthy of further attention

- *Organize* – to move from less to more understanding of the relationships among concepts

- *Evaluate* – to move from less to more understanding of the possible consequences of concepts

- *Build consensus* – to move from having less to having more agreement on courses of action

For each of these general patterns, several thinkLets have been developed that can be used as building blocks when designing more complex collaborative processes.

Since the application of thinkLets should be predictable and repeatable, the precise description of a thinkLet is important. Briggs *et al.* [4, 5] propose that thinkLets should be defined according to the *tool* used, the *configuration* of this tool, and the facilitation *script*. The

---

software engineering community to refer to software components.

tool and configuration relate to the hardware and software technology used, and the script contains the sequence of events and the instructions given to the group. This should then result in the desired the pattern of collaboration. In a more recent publication [9], members of the same group of authors propose a rethinking of the conceptual foundation of thinkLets. Their main argument is that the original definition of a thinkLet relates very strongly to the technology used, implying that using different software would mean redefining a thinkLet. Another argument is that thinkLets are difficult to classify, probably because the original definition is geared towards identifying the practical properties rather than the underlying theoretical properties.

The revised description of a thinkLet, proposed by Kolfschoten *et al.* [9] contains the following components:

- *Capabilities* – material capabilities required to perform the thinkLet
- *Actions* – the actions that are to be executed by the participants
- *Rules* – description of the actions under some set of constraints
- *Parameters* – pieces of information a team must have in order to be able to carry out the thinkLet
- *Roles* – in some thinkLets different actors must behave according to different rules

This new conceptualization of thinkLets suggests a structure that is quite close to the generic structure of games. In the next section, we will first describe for what purposes serious role playing games can be used in the context of public policy. We then look at the generic components of these games, briefly compare these with those of thinkLets, and then proceed by looking at two ways of combining both concepts.

3. Serious role playing games

Serious role playing games have found their first decision support application in the military, where strategy games have been used to explore and practice strategy [14, 15]. The period after World War II showed a marked increase in war gaming, which was caused by the growth of Operations Research, the development of game theory, and the application of mathematical methods to behavioral problems in addition to the development of the computer [14].

Gaming has a more recent history in relation to other types of policy problems. Formal modeling techniques started to be used in the 1960's, but in general, these models were not very effective in finding solutions to ill-structured policy problems [3, 15]. Formal models typically represent the problem from a single perspective. Important advantages of a gaming approach are that it does not assume rational behavior and can take into account different perspectives on a problem. Underwood and Duke [15] see these advantages, combined with the increasing complexity of the institutional environment since the 1970's, as an explanation why policy

games have become used for a broader range of applications in the last few decades. By playing a strategy game, underlying objectives can become explicit, options for resolution can be tested, and actors can see the problem from different perspectives by taking on roles.

Presently, the serious role playing game is rapidly evolving into a versatile tool that can be used for a variety of purposes in the context of public policymaking. Using the framework of Mayer *et al.* [11], we found that the different functions of games can be categorized according to these six types of policy analysis activities:

- *Research and analyze* – Some policy questions can be answered by performing applied scientific research. These questions may be about facts, causes and effects, and they require investigation of a problem situation. A game can be used to research and analyze a policy issue when it is not possible to study the real system (e.g., because it does not yet exist, or it would take too long) and it is not possible or desirable to include human behavior by way of a computer model (e.g., because the rational actor assumption does not hold). The analyst uses the game as a *laboratory*, and playing the game is seen as an experiment that can be repeated many times to allow conclusions to be drawn.

- *Design & recommend* – In certain situations the decision making process can be assisted by designing alternative solutions to a problem and analyzing and possibly weighing the consequences of these alternative solutions. A game that functions as a virtual *design studio* can be used to involve stakeholders in thinking about alternative solutions to a policy problem. By emphasizing particular aspects of the context, the game can selectively focus on certain problem dimensions to develop tactics that in a later stage may be integrated into a complete policy.

- *Provide strategic advice* – Policy analysis can be an activity to advise the client on the most effective strategy for achieving certain goals given a certain political constellation, i.e. the nature of the environment in which the client operates, the likely counter-steps of opponents, and so on. A game can serve as a virtual *practice ring* that allows the client to experiment with different strategies. In this type of game (war games being the oldest example) the other players act as sparring partners for the client: they play the role of another stakeholder as opportunistically as possible in order to best prepare the client for the next round in the policy process.

- *Mediate* – Certain policy issues may require mediation, and a policy analyst can act as facilitator in a process of seeking consensus between stakeholders. A mediation game can support this by putting the players around a virtual *negotiation table*. The interaction between stakeholders during the game (which is not, and should not be confused with, the actual negotiation situation) can facilitate changes in attitude or the discovery of new opportunities for conflict resolution.

- *Democratize* – Experts and elites are more likely to be involved in a decision making

process and carry greater weight than ordinary citizens and laymen. Policy analysis can try to correct this inequality by calling attention to views and opinions typically overlooked in policymaking and decision-making. Games may be used as a virtual *consultation forum* that allows equal access for all stakeholders and incorporation of views and opinions that are typically overlooked in a 'standard' policy process. An advantage of using a game, rather than a conventional round table discussion, is that the game context can provide a focus and people can speak out more easily when playing a role. Also, in sensitive contexts, several games can be played with different stakeholder groups.

- *Clarify arguments & values* – Implicit normative and ethical questions and opinions may have a significant influence on the decision making process. In this type of policy situation, a game can be used to clarify the values and arguments behind a point of view. An advantage of enacting a virtual *parliament* rather than having a real political debate is that the game can focus on making values explicit, while in political debates these tend to remain implicit. Moreover, when playing a role, positions and opinions of stakeholders can be magnified and identified more easily and the game can be designed to reward players mainly for the quality and clarity of their argumentation.

These six activities can be graphically arranged in a hexagon as depicted in Figure 1. As we explain in [2] and [11], the hexagon model of policy analysis activities enables reflection on the design and application of supporting methods and tools. Games can be designed to support a single activity, but also—as the dotted lines in Figure 1 suggest—combinations of several activities.
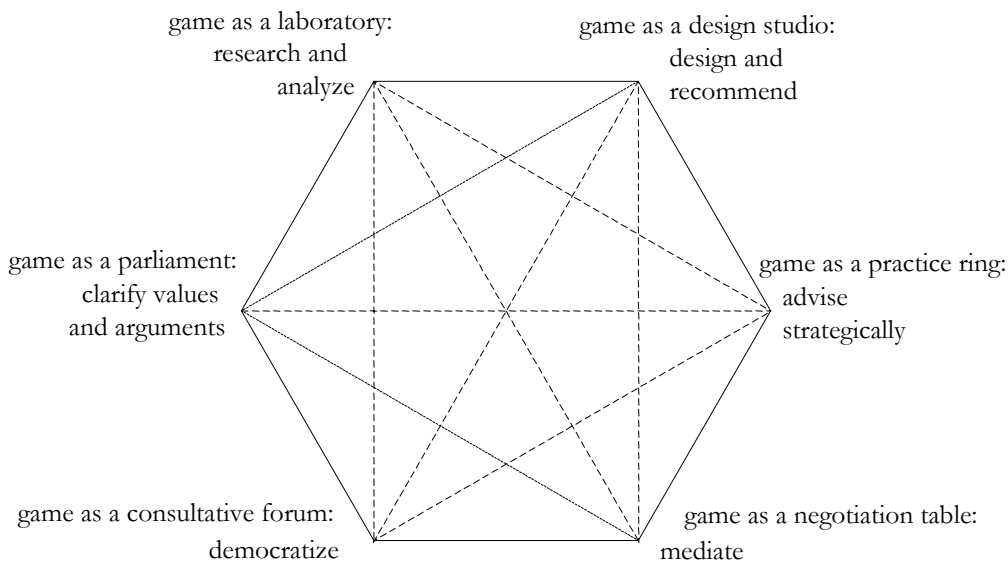

Figure 1: Functions of games in a policy analysis [2]

Like thinkLets, games can be defined in terms of generic characteristics and components. Salen and Zimmerman [13] argue that a game is *organized* play, by which they mean that this play is based on *rules* that limit player action. More specifically, these rules are explicit and unambiguous, shared by all players, fixed (or when dynamic, there is a set of fixed meta-rules that define how the rules of the game can be changed), binding (cheating is sanctioned either by social pressure of by a referee) and repeatable (p. 125). But most serious games cannot be defined in terms of rules only. The following set of properties (building on [2]) is more complete:

- *Purpose* – which (combination) of the six activities in Figure 1 is supported
- *Plot* – case setting, time horizon, focus on problem substance or interaction focus, level of realism and detail
- *People playing* – type of person (real stakeholder, expert, student), number of players
- *Roles* – player roles, non-player roles (observer, referee, bank, …), number of roles, level of detail of role scripts, persons or software agents
- *Rules* – rules for action (to change the state of the problem situation), rules for interaction (to collaborate with and/or influence other players)
- *Rewards* – incentives for players within the game (how to win the game)
- *Representation of the problem situation* – game board, props, use of computer models, level of detail
- *Representation of the interaction environment* – use of physical or electronic interaction environment, room configuration

Comparing these properties to those of thinkLets, it seems safe to conclude that the concept of serious role playing game is quite compatible with the thinkLet concept. The thinkLet capabilities, actions, rules and roles correspond almost one-to-one with the representations, rules and roles of our game descriptor. The *parameters* property of thinkLets is missing in the game property list, but can be a useful property of games as well (cf. §5). A game transcends a thinkLet because of its plot and its rewards. The plot, amplified by the roles (which in a game are much more than a means to assign tasks and responsibilities) takes the participants out of their real-world context into an artificial one. By manipulating the level of realism and detail of the plot, the group process designer can create a 'safe environment' [6] for the participants, stimulate their creativity [8], and increase their motivation [12]. The rewards can amplify the rules as a means to direct player behavior, and further increase motivation by challenging the players [12]. Thus, games add a valuable potential to the 'toolbox' of collaboration designers.

4. Crossbreeds

Having outlined the functions and properties of thinkLets and serious role playing games, we can now look for ways in which they can be combined. One way to crossbreed the two concepts is to design a serious role playing game using (amongst others) thinkLets as templates for certain stages of the game and facilitate the interactions of role playing individuals with embedded GSS. A representative example of such a game, which makes us of GSS tools to support *converge*, *evaluate* and *build consensus* thinking patterns will be given in §4.1. Although this type of hybrid is very functional, and its design is non-trivial, it is not innovative.

An alternative way to crossbreed thinkLets with serious role playing games is to use a small game—a *gameLet*—to create a particular pattern of collaboration among participants in a group meeting. Possible functions of a gameLet include ice breaking, clarifying lines of reasoning, sensitizing participants to a concept, and thinking 'out of the box'. In §4.2 the design of a gameLet for sensitizing participants to the impact of benchmarking on the adoption of innovations is outlined. Section 5 reports on a more elaborate application of a second gameLet in a workshop on adoption of innovations in health care. This application involved four different instances of this gameLet as a means to elucidate arguments explaining why organizations are slow in the uptake of innovations even when their merits have been proved in practice.

4.1 Games with embedded thinkLets and group support system components

The idea behind this way of combining the two concepts is that it will enhance the quality and efficiency of group processes that unroll as the role playing game proceeds. ThinkLets and the related GSS technologies facilitate players in acting out their role, especially when the game is substantively complex and puts high demands on their cognitive abilities. The following example illustrates how we embedded thinkLets and tailor-made decision support tools in a serious role playing game.

The DUBES game [1, 10] was developed to support a combination of policy analysis activities: design & recommend, democratize, and clarify values & arguments. The DUBES game situates players in a setting of an urban renewal project (typically the Greenward neighborhood in the fictitious municipality of Damshire, although the game has also been played with more realistic plots based on existing urban areas). The objective in the game is to reach consensus on a program of requirements for the urban renewal project. The one-day game session is divided into two rounds as depicted by Figure 2.

Introduction by game operators (today's assignment) and by urban planner of Damshire (map and problems for example, Greenward)

Individual *Prioritization* of Themes and Decision Areas to form a shared decision agenda (supported by GroupSystems)

Agenda setting Stakeholder-participants discuss and work with MEDIA and DUBES table in parallel thematic groups. They select and discuss the themes and decision areas to be addressed in the program of requirements and explore options. They are supported by DUBES advisors who operate MEDIA.

Presentation of the agendas by each of the groups and *comparison* of the results (plenary, MEDIA supported)

Welcome by game operators and/or client

Lunch and integration of choices and designs: The game operators compose a single preliminary design in MEDIA as starting position for the next round.

Further explanation by game operator of afternoon's assignment and (impact assessment) functions in MEDIA

Prioritization of themes and decision areas to form groups' agendas and sustainability focus of the program of requirements

Program of requirements/sustainable design Stakeholder-participants discuss and work with MEDIA and DUBES table in parallel groups. They develop a sustainable program of requirements, select options and assess the consequences. They are supported by DUBES advisors who operate MEDIA.

Presentation of sustainable programs and *comparison* of the results, (plenary, MEDIA supported)

Evaluation and debriefing: plenary group discussion facilitated by game facilitators: about the game, about the lessons learned in the game, and for real life.
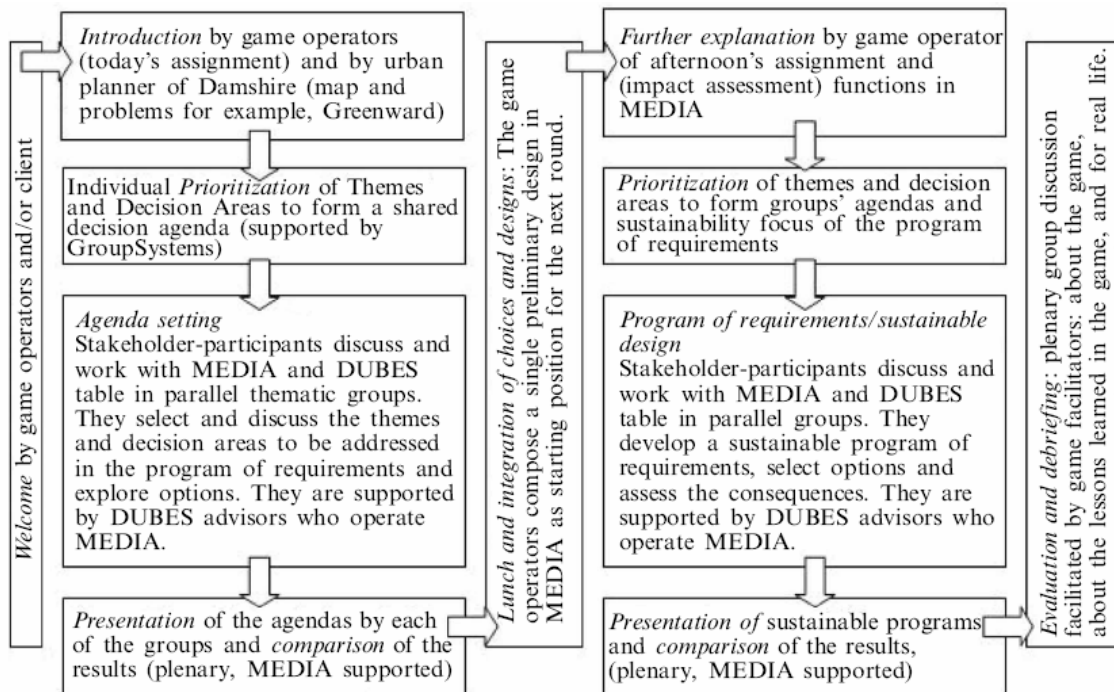
Figure 2: Process design for the DuBes game [10, p. 413]

In the first round, the players (each in their specific stakeholder role) are provided with a 'catalogue' of some 200 pre-defined decision areas relevant to urban renewal projects. Examples of decision areas are: What types of traffic should be allowed in a neighborhood? How should streets be lit? Should there be open water, and should it be suitable for swimming or fishing? The players are grouped according to which theme (e.g., mobility, livability, water, energy) correlates most with their interests. Each group then develops a 'decision agenda' by focusing on those decision areas that will most strongly affect their theme. For each of these decision areas, they select the decision option they believe to be most favorable.

During the break, the decision agendas of the groups are combined to produce a first version of the program of requirements for the urban area. In the second round, the players are 'reshuffled' to create heterogeneous stakeholder groups. Each group is challenged to improve the first version, making it more sustainable. Players are rewarded individually for their success in protecting their stakeholder interests in the design, while the teams are rewarded on the basis of the ecological, economic and social impacts of their design.

Both rounds in the DUBES game require specific collaboration patterns that can be supported by thinkLets: evaluation and consensus building thinkLets for the prioritization of decision areas, a converging thinkLet to define themes, organizing and evaluation thinkLets for the agenda setting, and converging, evaluating, and consensus building thinkLets for the definition of the program of requirements. We refer to [1] and [10] for a more detailed account of the actions, rules and capabilities (the GroupSystems software, the DUBES table, and the

MEDIA software) of the thinkLets that have been embedded in the DUBES game.

4.2 GameLets

The idea behind gameLets is that adding a playful dimension to thinkLets can enhance their effectiveness and also leads to new patterns of collaboration, i.e., provide other functions than those reported in the present literature on thinkLets. The BENNO gameLet presented in this section was designed for 'ice breaking' and 'sensitizing to a concept' and would seem to fall outside the scope of the thinkLet functions to date (diverge, converge, organize, evaluate, and build consensus). The ContestCause gameLet that we will elaborate in the next section has been designed to enhance the motivation of participants to be creative in generating arguments ('diverge-plus') as well as to enhance the quality of the arguments that players generate ('organize-plus').

The BENNO gameLet is a 'closed' gameLet because its rule set consists mainly of action rules that are enforced by software. The interaction rules are few in number and leave little room for interpretation or improvisation. The design of the BENNO gameLet can be summarized as follows:

- *Purpose* – To sensitize a group to the effects of benchmarking in the health care service sector (or any other service sector).

- *Plot* – Several organizations each provide the same health care service to clients. As time goes by, new ways of service provision are discovered. When properly implemented, these innovations are more efficient but adopting such innovations will require the specialists in an organization to change their way of working. To stimulate efficiency, the government is benchmarking the sector and publishes a performance ranking of the organizations.

- *People playing* – Three or more teams with six individuals per team. Teams correspond to organizations, individuals are specialists within their organization.

- *Roles* – All players have the role of a specialist able of performing one particular action in the health care service provision process. The specializations are abstract, coded with a color only. The role of the government that performs the benchmarking is played by the game supervisor.

- *Rules* – Each round, a new client arrives for treatment. Players must each perform their specialist action, observing a particular sequence. The specialist actions are abstract: the players must key in their own 3 to 6 digit code. When a wrong code is entered, the treatment is cancelled and the game moves to the next round. Players are free to communicate in any form, but are not allowed to key in other players' codes.

- *Rewards* – A team scores points for each fully completed sequence. Innovative sequences are likely to generate more points, but switching to a new sequence costs points. The team with the highest score wins the game.

9

- *Representation of the problem situation* – The game runs on a PC with a separate numeric keypad connected to it. This keypad represents the client who comes for treatment. Players have to key their codes into this keypad. The teams can decide for themselves whether they pass the keypad from player to player or leave it in place on the table with the PC. Figure 3 shows the player interface. The team performance score is shown on the right, the number of correctly entered codes and the number of errors by each player are shown on the left. Initially, only sequence A is displayed at the top of the window. After a few minutes, an innovative sequence B is also displayed, and later a third sequence C. The team can switch from one sequence to another by clicking the corresponding Switch button. The interaction is supported by visual feedback and informative sound effects.

- *Representation of the interaction environment* – The teams are spread out over a room in such a way that they can see the published team rankings. The players of a team stand in a semicircle around their computer screen.

We have tested the BENNO gameLet, first with students and later also with (senior) staff members and invariably found that the game generates a 'flow' experience in the sense that players become engaged and absorbed by the game action [12]. We also found that it is difficult to 'tweak' the parameters of the game (number of digits to key in, points to subtract when switching to a new treatment sequence, points to add for completed sequences, duration of the game and the intervals between innovations) in such a way that the teams become reluctant to adopt an innovation—a reluctance that is overcome later when they see that innovative teams perform better in spite of the initial costs. Interestingly, this lack of correspondence between game and reality need not frustrate the purpose of the gameLet. In case all teams adopt innovations immediately after they become available, the facilitator can challenge the participants with the question why in the real world this ready adoption does not occur.
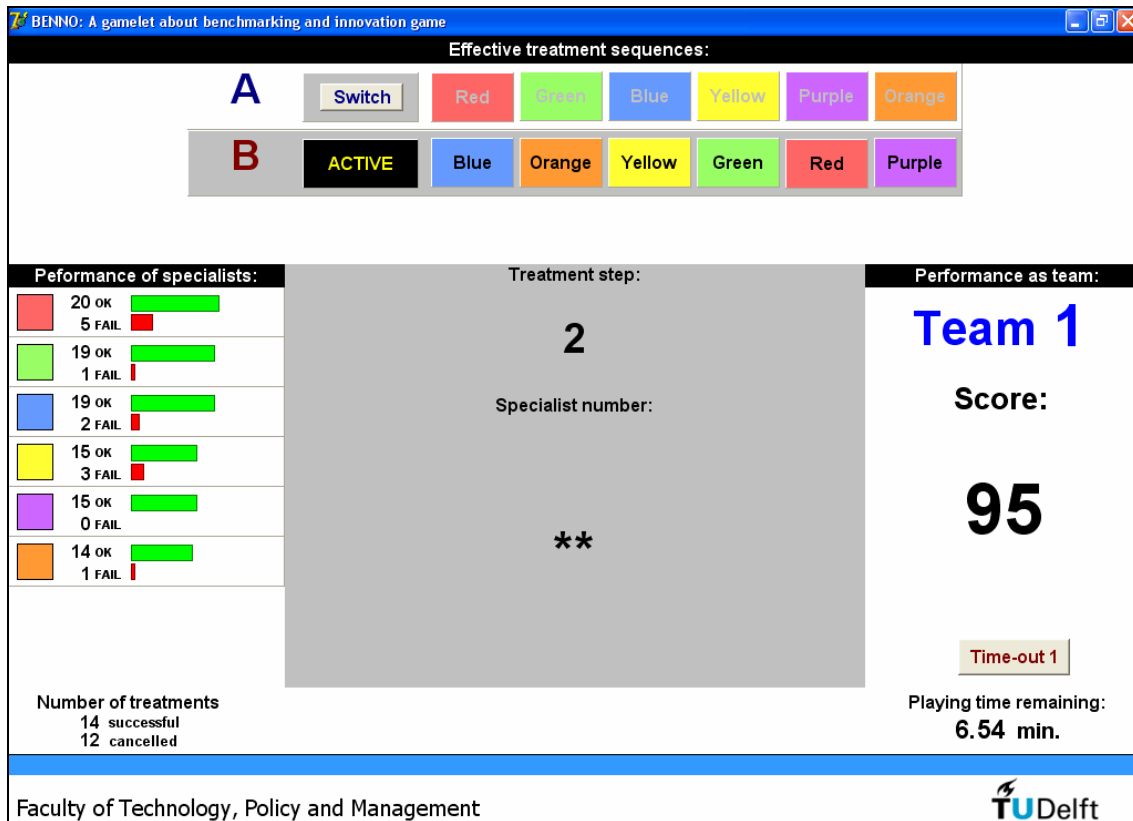
Figure 3: Screen shot of the BENNO gameLet

5. A gameLet for health policy development

Concerned by a lack of adoption of innovations in health care, the Ministry of Health, Welfare and Sport in The Netherlands requested advice from the Dutch Council of Public Health and Health Care on measures to stimulate the adoption of innovations. Delft University of Technology was asked to contribute to this project by the Dutch Council of Public Health and Health Care. Two workshops were organized at Delft University of Technology which were aimed at identifying factors that influence the adoption of innovations, relating these factors to each other, and identifying measures the Ministry can take to stimulate the adoption of innovations. Nineteen participants attended the workshops, delegated from diverse organizations in health care, such as patient organizations, hospital management, home care organizations, ICT suppliers, insurance companies, and health care professionals.

The first part of the first workshop was devoted to identifying the factors that relate to the adoption of innovations in health care. We saw several reasons not to use a regular brainstorming technique for identifying these factors, but to design and use the ContestCause gameLet instead. First, the identification activity had to be conducted at the beginning of the

workshop, and most people did not know each other, which might inhibit the participants in putting forward their ideas. By assuming a role in the safe environment of a role playing game, we expected that participants would speak out more freely. Second, we expected that the game setting would enhance imagination and creativity. Third, brainstorming does not automatically include argumentation of the factors and actually forbids criticism. We defined the roles so that the players would automatically press each other to put forward their arguments, while others would record them.

The design of the ContestCause gameLet can be summarized as follows:

- *Purpose* – To identify consequences (positive as well as negative) of a possible innovation, to identify conditions for successful implementation of this innovation, and to provide arguments that uphold these consequences and preconditions.

- *Plot* – A particular innovative technology or *modus operandi* has been developed recently and it looks as though this might be applied on a large scale. A group of stakeholders in favor of this innovation has organized a meeting, inviting delegates from other parties in the sector whom they wish to convince of the merits of this innovation. Some of these delegates are skeptical and plan to challenge the promoters, others take a more detached position and wish to learn more about the pros and cons of the innovation.

- *People playing* – Professionals working in a sector, who are (or may become) stakeholder in innovations in this sector. Even when the plot is very realistic, players need not play their own role but may assume the role of some other stakeholder.

- *Roles* – Promoters of the particular innovation, skeptics, observers, facilitator, recorder (optional). The facilitator should make the discussion proceed in good order, allowing both sides to voice their views. A recorder can be added to relieve the observers from their recording task and/or make sure that no information is lost.

- *Rules* – This is an 'open' gameLet in the sense that there are no action rules and only very general interaction rules: promoters and skeptics engage in an open discussion, observers do not engage in the discussion, but follow it critically and record the factors and arguments that are mentioned, as well as factors and arguments they think up themselves but find to be overlooked by the discussants.

- *Rewards* – The group with the most convincing arguments is declared the winner of the game. The facilitator decides after being advised by the observers.

- *Representation of the problem situation* – A brief (1 page maximum) case description of an innovation that is still in a research or test phase, but may become a real possibility in the (near) future.

- *Representation of the interaction environment:* Two tables (facing each other) for the promoters and the skeptics, a third table (positioned laterally) for the observers.

The ContestCause gameLet is 'parametric' in the sense that the innovation that is discussed can vary. For the workshop, we chose four innovations that ranged from more technically oriented innovations with organizational components to a purely organizational innovation ('operation robot', 'life shirt', 'online doctor', and 'hospital at home'). The 1 page description of the innovation would be a gameLet parameter as defined by Kolfschoten *et al.* [9].

The gameLet requires about 35 minutes to play. All players are allowed 10 minutes to individually read the case and think about the factors and arguments they will use (or expect to be used by others) in the meeting. They get 5 more minutes to confer with their role-partners (i.e., the promoters, the skeptics, and the observers, respectively). The meeting itself has a duration of 15 minutes. The facilitator then ends the game, lets the participants who played the observers summarize the discussion, and leads the participants through a reflection on the possible effects of innovations and conditions for their adoption. The group is asked to think beyond the specific innovation that was part of the plot of the gameLet, looking for generalized factors, such as costs of implementation, efficiency of care, and commitment of management.

During the workshop, two times two gameLets were played in parallel. The nineteen participants were divided in two groups, each with three promoters and three skeptics. Having played the first gameLet with a mainly technical innovation, the groups played a second gameLet with a mainly organizational innovation. The participants played different roles in the two gameLets. Subsequently, the (positive as well as negative) consequences of the adoption of an innovation derived from all the different cases were combined into one list, and the conditions that need to be in place for successful adoption of the innovation pertaining to the different cases were also combined into one list. These lists were then used as the basis for the remainder of the workshops. The use of gameLets to identify relevant factors proved very appealing to the participants. The ten participants who responded to a questionnaire on the workshops rated the role playing exercise with a score of 4.3 (scale 1 = bad to 5 = excellent), with no scores lower than 4.

6. Conclusion and outlook

The gameLet concept resembles the thinkLet concept in its purpose (to create a collaboration pattern in a group process), but has distinctly new features. While thinkLets strongly emphasize the cognitive aspect of collaboration patterns, gameLets also address the affective aspect by appealing to the playful traits in the participants' personalities. If the game can be 'won', participants are likely to engage more in the interaction. Also, a fictitious plot and/or a role that is different from the one they play in real life will allow participants to be more straightforward, devious, extreme, etc. This effect could be stronger even than that of anonymity in an electronic brainstorm.

Neither the list of thinkLet properties nor the list of game properties makes explicit mention of a debriefing. For thinkLets, this may be OK, but most professionals who use serious

games will agree that a game is merely a lead up to the debriefing. It is the reflection on the game just played that makes participants learn. Our experience with the two gameLets suggests that a debriefing is crucial for gameLets with the purpose of sensitizing to a concept. The message the BENNO gameLet is to convey will not come across unless the facilitator guides the participants in their interpretation of their game experience. The abstract actions and game outcomes must be translated to the real-world context. A debriefing is less crucial for gameLets with a more realistic plot and functions that are closer to those of thinkLets, such as diverge and organize. For the ContestCause gameLet, the purpose of the debriefing is review and generalization of the arguments, rather than drawing lessons from the abstract events during the game.

In conclusion, we can say that crossbreeding of GSS and thinkLets with serious role playing yields an interesting hybrid: the gameLet. Although the concept is not fully formed yet and our practical experience with purposefully designed gameLets is limited still, gameLets seem to be effective and most certainly are fun to work with. We look forward to developing and testing new gameLets in the future and hope that this paper may induce other researchers to take a playful tack in group support.

References

[1]   Bots, P.W.G., Mayer, I.S., Van Bueren, E.M., Seijdel, R., and Van der Voort, H. (2004) "A Simulation-Gaming Approach to Collaborative Decision Making for Sustainable Urban Renewal". In: Kriz, W.C., and Everle, T. (eds.): *Bridging the Gap: Transforming Knowledge into Action through Gaming and Simulation*. SAGSAGA, Munich, pp. 124-133.

[2]   Bots, P.W.G., and Van Daalen, C.E. (2005) "Functional design of games to support NRM policy development". In: *Simulation & Gaming* (forthcoming, accepted for publication).

[3]   Brewer, G.D. (1986) "Methods for synthesis: policy exercises". In: Clark, W.C. and Munn, R.E. (eds.), *Sustainable Development of the Biosphere*, Cambridge University Press, pp. 455-473.

[4]   Briggs, R.O., De Vreede, G.J., Nunamaker, J.F., and Tobey, D. (2001) "ThinkLets: Achieving Predictable, Repeatable Patterns of Group Interaction with GSS". In: Nunamaker, J.F., and Sprague, R.H. (eds.): *Proceedings HICSS-34*, IEEE Computer Society Press, Los Alamitos.

[5]   Briggs, R.O., De Vreede, G.J., and Nunamaker, J.F. (2003) "Collaboration Engineering With Thinklets To Pursue Sustained Success With Group Support Systems", In: *Journal of Management Information Systems* **19** (4), 31-63.

[6]   Duke, R.D., and Geurts, J.L.A. (2004) *Policy Games for Strategic Management Pathways into the Unknown*. Dutch University Press, Amsterdam.

In R. Vetschera (Ed.) (2005). *Proceedings of the international conference on Group Decision and Negotiation*. Vienna: University of Vienna.

[7]   Durning, D. (1993) "Participatory Policy Analysis in a social service agency: A case study". In: *Journal of Policy Analysis and Management* **12** (2), 297-322.

[8]   Finke, R.A., Ward, T.B., and Smith, S.M. (1992) *Creative Cognition - Theory, Research, and Applications*, MIT Press, Cambridge, MA.

[9]   Kolfschoten, G.L., Briggs, R.O., De Vreede, G.J., Jacobs, P.H.M., and Appelman, J.H. (2005) "Conceptual Foundation of the ThinkLet Concept for Collaboration Engineering". In: *Group Decision and Negotiation* (forthcoming, accepted for publication).

[10]   Mayer, I.S., Van Bueren, E.M., Bots, P.W.G., Seijdel, R., and Van der Voort, H. (2005) "Collaborative Decision Making for Sustainable Urban Renewal Projects: A Simulation-Gaming Approach". In: *Environment and Planning B: Planning and Design* **32** (3), 403-423.

[11]   Mayer, I.S., Van Daalen, C.E., and Bots, P.W.G. (2004) "Perspectives on policy analyses: a framework for understanding and design". In: *International Journal of Technology, Policy and Management* **4** (2), 169-191.

[12]   Rieber, L.P. (1996) "Seriously considering play: Designing interactive learning environments based on the blending of microworlds, simulations, and games". In: *Educational Technology Research & Development* **44** (2), 43-58.

[13]   Salen, K., and Zimmerman, E. (2004) *Rules of Play: Game design fundamentals*. MIT Press, Cambridge, MA.

[14]   Shubik, M. (1975) *Games for Society, Business and War; Towards a Theory of Gaming*. Elsevier, New York.

[15]   Underwood, S.E., and Duke, R.D. (1987) "Decisions at the top: Gaming as an aid to formulating policy options". In: Crookal, D. *et al.* (eds.), *Simulation-Gaming in the Late 1980s*. Pergamon press, Oxford, pp. 289-296.