Collaborative IT policy making as a means of achieving Business-IT alignment

J. (Josephine) Nabukenya, P. (Patrick) van Bommel, H.A. (Erik) Proper

Institute for Computing and Information Sciences, Radboud University Nijmegen
Toernooiveld 1, 6525 ED Nijmegen, The Netherlands
{J.Nabukenya, P.vanBommel, E.Proper}@cs.ru.nl

Abstract. This paper is concerned with the application of *collaboration engineering* to improve the quality of *policy-making processes* as they occur in a *business-IT alignment* context. Policies are needed to guide complex decision-making. The creation of such policies is a collaborative process. The quality of this collaboration has a profound impact on the quality of the resulting policies and the acceptance by its stakeholders. We therefore focus on the use of techniques and methods from the field of collaboration engineering to improve the quality of Business-IT alignment related policy-making processes.

1   Introduction

Alignment of business and IT starts with the alignment of their respective underlying policies [2, 3]. The alignment of these policies entails a collaborative effort involving representatives from both IT and business domains. In this paper, we are concerned with collaborative policy making processes as a means to achieve business and IT alignment by starting at the policy level. In general, a policy [4] is a guide that establishes parameters for making decisions; it provides guidelines to channel a manager's thinking in a specific direction.

Policies are created in a *policy-making process*, which involves an iterative and collaborative process requiring an interaction amongst three broad streams of activities: problem definition, solution proposals and a consensus based selection of the line of action to take. The core participants of a policy-making process must be involved in complex and key decision making processes themselves, if they are to be effective in representing organizational interests. In the case of business-IT alignment, key decision makers from at least both IT and business side (but potentially also human-resources, finance, etc) should be involved. Obtaining specific, well understood, and committed to, policies are a key indicator for successful organizational decision-making.

In essence, a policy-making process is a collaborative design process whose attention is devoted to the structure of the policy, to the context and constraints (concerns) of the policy and its creation process, and the actual decisions and events that occur [5]. We aim to examine, and address, those concerns that have a collaborative nature and are related to Business-IT alignment issues. Such

concerns include the involvement of a variety of actors resulting in a situation where multiple backgrounds, incompatible interests, and diverging areas of interest all have to be brought together to produce an acceptable policy result. These collaborative challenges come particularly to the fore in the case of business-IT alignment.

2   Collaborative policy making processes

The concept of *policy* has been defined by several researchers [6, 7, 8, 10]. It is beyond the scope of this paper to provide a full survey of these definitions. However, based on the definitions of these researchers, we use the following integrated definition of a policy: *a policy is a purposive course of action followed by a set of actor(s) to guide and determine present and future decisions, with an aim of realizing goals.* In a Business-IT alignment context, the policies of the Business and IT domains will have to be aligned.

According to [5], the process of *policy-making* includes the manner in which problems get conceptualized and are brought to a governing body in order to be resolved. The governing body then formulates alternatives and select policy solutions; and those solutions get implemented, evaluated, and revised.

In shaping the collaborative nature of policy making processes, we turn to the field of *collaboration engineering*. Essentially, this field revolves around the use of *information and communication technologies* to enable the collaboration between people. Although organizations have tried to collaborate in their organizational processes to achieve maximum value from their efforts, achieving effective team collaboration still remains a challenge. Collaboration is the degree to which people in an organization can combine their mental efforts so as to achieve common goals [11]. What is needed is the design of effective collaboration processes. This can be achieved by following the collaboration engineering approach which is defined [12] as "the design of re-usable collaboration processes and technologies meant to engender predictable success among practitioners of recurring mission-critical collaborative tasks".

The choice for developing a collaborative IT policy-making process to achieve Business-IT alignment using a collaboration engineering approach is based on a number of reasons. The major reason for us to take this approach, is that creating policies is a searching and iterative problem-solving collaborative work; this may require external support from professional policy developers / facilitators. These are commonly found to be expensive and scarce. CE seeks to bring the value of facilitated interventions to people who do not have access to facilitation.

Collaboration engineering researchers have identified five general patterns of collaboration to enable a group to complete a particular group activity [12]: i) *Diverge* – to move from a state of having fewer concepts to a state of having more concepts. The goal of divergence is for a group to create concepts that have not yet been considered; ii) *Converge* – to move from a state of having many concepts to a state of having a focus on, and understanding of, fewer concepts worthy of further attention. The goal of convergence is for a group to reduce

their cognitive load by reducing the number of concepts they must address; iii) *Organize* – to move from less to more understanding of the relationships among the concepts. The goal of organization is to reduce the effort of a follow-on activity; iv) *Evaluate* – to move from less to more understanding of the benefit of concepts toward attaining a goal relative to one or more criteria. The goal of evaluation is to focus a discussion or inform a group's choice based on a judgment of the worth of a set of concepts with respect to a set of task-relevant criteria; v) *Build Consensus* – to move from having less to having more agreement among stakeholders on courses of action. The goal of consensus building is to let a group of mission-critical stakeholders arrive at mutually acceptable commitments.

The patterns of collaboration do not explicitly detail how a group could conduct a recurring collaboration process, especially with teams who do not have professional facilitators at their disposal. This can be achieved by the key collaboration engineering concept: *the thinkLet*. A thinklet is defined by [12] as *"the smallest unit of intellectual capital required to create a single repeatable, predictable pattern of collaboration among people working toward a goal"*. ThinkLets can be used as conceptual building blocks in the design of collaboration processes. Some examples of thinkLets are provided in table below. More examples of thinkLets can e.g. be found in [13].

ThinkLet Name	Pattern	Purpose
DirectedBrainstorm	Generate	To generate, in parallel, a broad, diverse set of highly creative ideas in response to prompts from a moderator a moderator and the ideas contributed by team mates.
BucketSummary	Reduce & clarify	Remove redundancy and ambiguity from generated items.
BucketWalk	Evaluate	To review the contents of each bucket (category) to ensure that all items are appropriately placed and understood.
MoodRing	Build Consensus	To continuously track the level of consensus within the group with regard to the issue currently under discussion.

3 Design and evaluation of policy-making process

In this section, we present how our research was conducted and evaluated. We will do so in terms of a description of the research approach and cases involved. We also present a description of the generic collaborative Business-IT policy-making process, and relate this to the results of the case studies.

The aim of our research was to establish how to realize a "good Business-IT policy" in a collaborative process and how this process can be improved by support of collaboration engineering in order to achieve Business-Business-IT alignment. To develop and evaluate our collaborative policy-making process, we followed the *action research* methodology process proposed by [14] where four activities that can be carried out over several iterations (in our case two) are involved. The 'Plan' activity is concerned with the exploration of the research site and the preparation of the intervention. The 'Act' activity involves actual interventions made by the researcher. The 'Observe' activity is where the collection of data, enabling evaluation, is done during and after the actual intervention. Finally, the 'Reflect' activity involves analysis of collected data and infers conclusions regarding the intervention that may feed into the 'Plan' activity of a new iteration.

We used action research because it is an applied research method that can be tested in the field. Better still, it addresses the "how to" research questions as seen in our research aim. More so, the continuous design and evaluation of collaborative processes may not be easy to study in a constructed setting. Lastly, action research allowed us to evaluate and improve our problem-solving techniques or theories during a series of interventions.
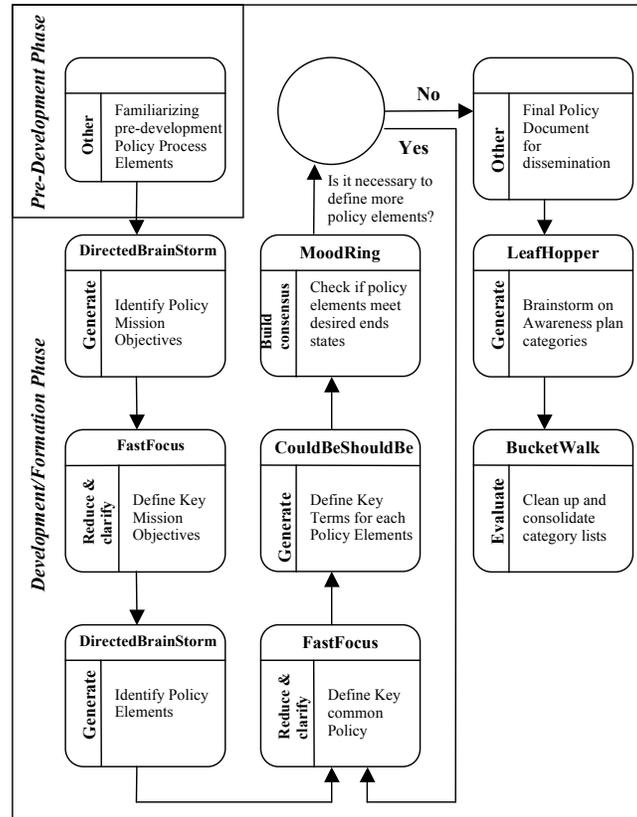
Fig. 1. Collaborative IT Policy-Making Process Design

Two Business-IT policy development workshops using the collaboration process were run. The experiences from each workshop resulted in changes to the design of the final collaboration process. In the *first case*, a team of five experienced Business-IT workers and involved in making policies for the Business-IT Department of the Ministry of Finance, Planning and Economic Development (MOFPED), Uganda used the process to develop an Business-IT policy. The *second case* involved a team of sixteen people comprised of two experienced Business-IT workers involved in Business-IT policy-making and fourteen Master's Students (2nd year, Computer Science) at Radboud University Nijmegen

(RUN), the Netherlands, used the process to develop an Business-IT policy in form of architectural principles for the student portal information system for RUN.

To evaluate the performance and perception of the collaborative process by the participants, we collected and analyzed explorative data using three kinds of instruments: observations, interviews and questionnaires comprising of qualitative and quantitative questions. In particular, we investigated the effectiveness; efficiency; and policy stakeholders' satisfaction with the collaborative Business-IT policy process and its outcomes; policy elements identification; the degree of applicability of the Business-IT policy process. The need to realize a quality IT policy from a collaborative effort to achieve Business-IT alignment is the basis for the design of the collaborative IT policy-making process (Figure 1). The collaborative process was designed following the collaboration engineering approach described in Section 2. Even though this approach comprises several design steps, the ones relevant to our research study included decomposing the process into collaborative activities, the classification of these activities into patterns of collaboration, selection of appropriate thinkLets to guide facilitation of the group during the execution of each activity as well as making the design process more predictable and repeatable. Below we give a description of the criteria we followed to evaluate the performance of the process, and a presentation of the final design of the process, respectively.

The design of the collaborative process was derived from two iterations based on a selected design criteria. The criteria selection was derived from the goal of the collaboration process. The collaboration process goal aimed at addressing how to realize a quality Business-IT policy using a repeatable collaborative process. The following four criteria were considered by us: (i) *effectiveness* – the collaborative Business-IT policy-making process should enable Business-IT policy-making stakeholders to achieve their goal, (ii) *efficiency* – the collaborative Business-IT policy-making process should take stakeholders less time for attainment of the Business-IT policy than without the use of a collaborative approach, (iii) *degree of applicability* – the extent to which the collaborative policy process can be applied to varying Business-IT policy types and (iv) *perceived policy elements identification* the collaborative Business-IT policy-making process should enable stakeholders to have a common understanding of the Business-IT policy elements (and their definitions).

The collaborative policy process underwent two iterations prior to deriving the final process design. The two iterations of the earlier versions of the process were applied in the two cases described above. The final process design is shown in Figure 1 in which we present the steps required to develop/form an IT policy document, the patterns of collaboration with related thinkLets used to guide the group to execute each step. The identification and choice of thinkLets to enable us evaluate and achieve the process goal can be seen in [13].

The process is divided into two main phases: a *pre-development phase* and a *development phase*. The first phase starts with the participants familiarizing themselves with and agreeing on the pre-development elements gathered in sev-

eral earlier pre-meetings. Actual development of the policy is based on these elements. The elements comprise the problem to be solved; the relevant information to be used to develop the policy; a legal framework to support the policy to be developed; the ownership of the policy; leadership positioning i.e. who is to spearhead the process; who are the stakeholders (internal and external); technical resources to facilitate the process.

The next brainstorm activity, guided by the DirectedBrainstorm thinkLet, involves participants identifying relevant policy objectives. The result from this activity is a brainstormed list of Policy Mission Objectives. In the ensuing activity, using the FastFocus thinkLet, participants organize the brainstormed list by extracting only the key policy Mission Objectives. They do this by grouping ideas and eliminating any redundancies. The result from this activity is a cleaned list of Key Policy Mission Objectives.

In the activity that follows, guided by the DirectedBrainstorm thinkLet participants are asked to identify and agree on common policy elements definitions that suit the Key Mission Objectives. The result of this activity is a brainstormed list of policy elements. Using the FastFocus thinkLet, the participants organize (clean-up) the resulting brainstormed list by extracting only the common elements. The result of this activity is a cleaned list of Key Policy Elements.

The activity that follows involves defining the Key terms for each of the policy elements defined. Using the CouldBeShouldBe thinkLet, participants brainstorm terms that they 'could' consider as appropriate for each policy element. Later, participants are then propose a term that they 'should' take as Key to each policy element.

The activities above result into a Policy document. Using the MoodRing thinkLet, participants are required to reach consensus. They do this by voting on a YES/NO basis, where a YES is voted if the elements definitions and terms meet the desired end states and a NO if it does not. A verbal discussion is held until some sort of consensus on the final policy document is reached.

Finally, the policy stakeholders need to plan how they will communicate the policy document to its intended users/owners. In this activity, they are required to draw up a policy awareness plan. Two ways are pre-determined that can be used, i.e. communication and education. Using the LeafHopper thinkLet, participants brainstorm about ways in which each of these can be addressed. The brainstormed lists are evaluated to remove any redundancies. This is achieved by using the BucketWalk thinkLet.

The evaluation of the collaborative policy-making process design was implemented following a manual procedure. We used the Microsoft Word (MSWord) tool, an LCD projector, removable disks and voting sheets (paper-based) to implement the process. Results from the cases are presented in the section below.

To measure the *efficiency* construct, we considered the execution duration of each stage of the process; also how well the participants understood the process tasks for successful execution; and on the whole also considered the time it took the participants to come up with the final policy document and the awareness plan.

Based on our observations, we concluded that the policy process execution time was efficient. It took about an hour and fifteen minutes to execute the process in each of the workshops. That is, the participants managed to execute the process within the duration that was assigned to each stage. Even though the majority of the participants felt that the process execution was efficient, not all were happy with this time length; some required that more time should have been assigned to particular activities such as policy elements identification.

We measured the *policy formation effectiveness* construct by how well the participants managed to come up with a policy at the end of the policy process execution. From our observations, it was noted that the participants effectively managed to form policies with respective awareness plans. This was demonstrated during the consensus stage of the process. Based on the feedback from the voting sheets, it was observed that the participants achieved fairly satisfactory results. This produced the following results:

	Yes	No
Case 1	4 (80%)	1 (20%)
Case 2	12 (75%)	4 (25%)

Having arrived at a complete policy document during the consensus stage, the participants also perceived it as having a common understanding of the policy elements identification.

To measure the *degree of applicability of Business-IT policy process*, we applied the policy process to two cases with different policy types. These included formation of an Business-IT policy, and Architectural Principles for an Information System. It was observed that the policy process was flexible in terms of its applicability in formation of two different types of policies.

To measure the *policy stakeholders' satisfaction* construct, we used the 7-point Likert scale general meeting survey questionnaire where participants can strongly disagree to strongly agree. The instrument validation and theoretical underpinnings can be seen in [15]. The results provided below, indicate that the participants were reasonably satisfied with the policy process outcomes, and the process by which the policies were formed.

Satisfaction with process	1	2	Satisfaction with outcome	1	2
Score	4.800	3.838	Score	5.160	4.363
Standard deviation	1.376	0.995	Standard deviation	1.310	1.094

4 Conclusions and further research

This paper focussed on the the application of *collaboration engineering* to improve the quality of business-IT alignment related *policy-making processes*. We presented the results of two case studies conducted, regarding the use of collaboration engineering in the context of a policy making processes for business-IT alignment purposes. Based on the results, the quality of the generic policy making proces, in terms of its effectiveness, efficiency and applicability, proved to be a success. As such, the collaborative process has indeed the potential to support organizations in developing quality policies.

As a next step, we aim to more explicitly rationalize design decisions taken in policy making processes. We aim to do so by explicitly relating the goals of the policy making process (its *why*, such as improved Business-IT alignment), the requirements on the process following from these goals (its *what*), the situation in which it needs to be executed (its *within*), to the construction of the policy making process (its *how*). In doing so, we will draw on past results concerning modeling processes [16, 17] since a policy making process can essentially be regarded as a collaborative modeling process.

References

1. Henderson, J., Venkatraman, N.: Strategic alignment: Leveraging information technology for transforming organizations. IBM Systems Journal **32** (1993) 4–16.
2. Keen, P.: Shaping the Future – Business Design Through Information Technology. Harvard Business School Press, Boston, Massachusetts (1991).
3. Tapscott, D., Caston, A.: Paradigm Shift – The New Promise of Information Technology. McGraw–Hill, New York (1993).
4. Robbins, S., Bergman, R., Stagg, I.: Management. Prentice Hall Australia Pty Ltd., Prentice–Hall, Sydney (1997).
5. Sabatier, e.: Theories of the Policy Process. West view Press, Boulder, Co. (1999).
6. Rose, R.e.: Policy Making in Great Britain. Macmillan, London, UK (1969).
7. Friedrich, C.: Man and His Government. Wiley, New York (1963).
8. Anderson, J.: Public Policy–making. Praeger, New York (1975).
9. Eulau, H., Prewitt, K.: Labyrinths of Democracy. Bobbs–Merrill, Indianapolis (1973).
10. Schneider, A., Ingram, H.: Policy Design for Democracy. University Press of Kansas, Lawrence, Kansas (1997).
11. Nunamaker, J., Briggs, R., Vreede, G.d.: From Information Technology To Value Creation Technology. In Dickson, G., DeSanctis, G., eds.: Information Technology and the Future Enterprise, Piscataway, New Jersey, IEEE Comp. Soc. Press (2001).
12. Briggs, R., Vreede, G.d., Nunamaker, J.: Collaboration Engineering with Thinklets to Pursue Sustained Success with Group Support Systems. Journal of MIS **19** (2003) 31–63.
13. Vreede, G.d., Fruhling, A., Chakrapani, A.: A Repeatable Collaboration Process for Usability Testing. In Dickson, G., DeSanctis, G., eds.: Proceedings of the 38th HICSS, Piscataway, New Jersey, IEEE Computer Society Press (2005).
14. Zuber-Skerritt, O.: Action research for change and development. Gower Publishing, Aldershot (1991).
15. Briggs, R., Reinig, B., Vreede, G.d.: Meeting Satisfaction for Technology Supported Groups: An Empirical Validation of a Goal-Attainment Model, Small Group Research, in Press (2006).
16. Hoppenbrouwers, S., Proper, H., Weide, T.v.d.: A Fundamental View on the Process of Conceptual Modeling. In: Conceptual Modeling – ER 2005 – 24 International Conference on Conceptual Modeling. Volume 3716 of Lecture Notes in Computer Science. (2005) 128–143.
17. Hoppenbrouwers, S., Proper, H., Weide, T.v.d.: Towards explicit strategies for modeling. In Halpin, T., Siau, K., Krogstie, J., eds.: Proceedings of the Workshop on Evaluating Modeling Methods for Systems Analysis and Design (EMMSAD'05), held in conjunctiun with the 17th Conference on Advanced Information Systems 2005 (CAiSE 2005), Porto, Portugal, FEUP, Porto, Portugal (2005) 485–492.