„Making it Their Idea“ -- A Case Study: Customer Participation and Commitment in BPR

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Abstract

We present a case study on a BPR project within a German agency, carried out in co-operation with Siemens Nixdorf. The project covers AsIs analysis, weakness analysis, ToBe process design and test implementation of improvements. We focus on a systematic methodology for information retrieval, process modeling and structuring, weakness analysis, development and testing of concepts for improvements and change. Furthermore, we report on our tactics for coping with psychological barriers of our client's employees, and our way of motivating them to identify themselves with improvements and change.

Keywords: business process, business reengineering, process analysis, process design, user participation.

1. Project Goals and Starting Point

In the BPR project described here, the objective was to prepare an existing department for new, additional responsibilities in the management of usage and maintenance of technical equipment in a safety critical area. In order to ensure an adequate execution and result quality in spite of severe financial and personnel restrictions, the business processes for carrying out the department's old tasks had to be improved in efficiency and transparency. In addition, for the new tasks, new business processes had to be introduced. Finally, the introduction of information technology for the best possible support of the business processes, as well as a process oriented restructuring of the organization had to be prepared.

Our work being watched closely by other government agencies who also made severe restricitions on change possibilities, was an additional challenge. Also, we were restricted by existing legislation. Furthermore, the workers' council keenly observed our work, to ensure that workers' rights would not be infringed. They also issued several restrictions on the type of information we were allowed to obtain. For example, the questionnaires that we wanted to hand out to the employees were subject to authorization by the wokers' council. Moreover, we were denied to measure time aspects of process performance.

Before we got involved in this BPR project, several teams of external consultants had already tried their skill on the task described above. However, none of these teams succeeded in producing a process concept that satisfied the customer. To a considerable extent, these failures were due to the fact that the external consultants required the aid of the client's employees on the executive level for modeling AsIs processes, but excluded them from the development of improvement concepts. As a consequence, they produced an improvement concept that was of high quality if measured with abstract theoretical principles, but that did not take into consideration the specific situation within the organization and its business domain to an adequate extent. Therefore, application of the suggested improvements was not feasible in the specific project context. In addition, some of the client's employees felt passed over in the improvement of their processes and therefore blocked the new process concepts rather than being able to identify with them.

Due to those previously failed BPR efforts, many of the client's employees on the executive level had already lost their belief in our potential success and their possiblility to influence anything before we even started, and consequently were rather unwilling to spend any more time on BPR. Therefore, one of our most important tasks at the beginning of the project was to gain back the

employees' confidence that BPR would really bring about changes for the better. Consequently, we had to come up with a BPR strategy that, on the one hand, would let our client's employees get involved in the development of improvement concepts to a fairly high extent, and, on the other hand, would show visible improvements at a very early stage and after rather little time spent on the project.

2. Embedding BPR in a Global Reengineering Process

In our approach, we embed BPR in a global reengineering methodology to ensure an integrated realization of both quick, continuous improvements and more radical, complex changes in process and organization structure. Both is necessary: early improvement results keep employees motivated for the change effort, and radical changes enable innovation [3].

- immediate strategic change (ISC), and
- extended strategic change (ESC).

Task domains are symbolized by rectangles with rounded corners in columns at the left of Figure 1. Each task domain is realized by one or more processes, depicted by rectangles. Arrows visualize dependencies between processes [1].

Tactical improvements concentrate on detailed business activities and deal with local technological and operational changes, without impact on the business organization as a whole. By *immediate tactical changes*, we categorize small scale improvements, tackling any problem where both its cause and a possible solution are somewhat obvious, and the solution is easy to implement. Usually, these are off the shelf solutions that can be realized within a short timeframe. In contrast to this, *extended tactical changes* tackle problems that are mostly cross-functional. They cover long-term

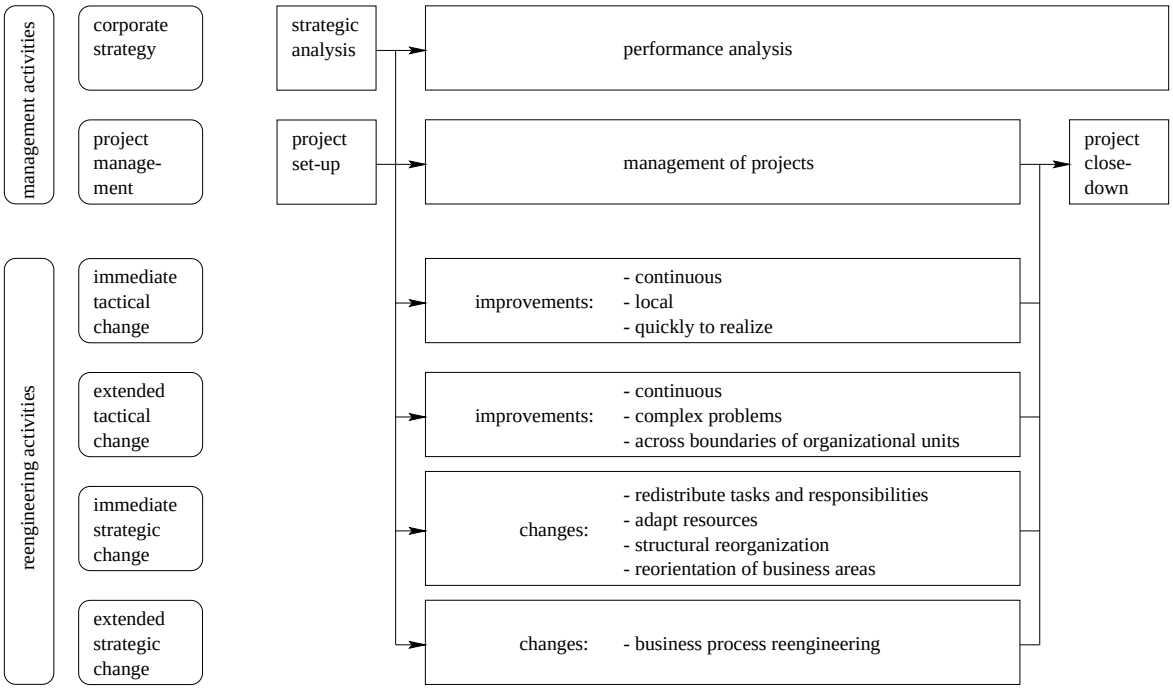

Figure 1: Embedding BPR in our Methodology for Business Reengineering

To achieve this, we structure our reengineering activities into four task domains (cf. Figure 1):

- immediate tactical change (ITC),
- extended tactical change (ETC),

improvements, which require a higher degree of error recovery and problem solving. Here, more complex problems that are difficult to solve, or whose possible solution takes some time and effort to be successfully implemented, are dealt with.

Strategic improvements are closely related with business objectives and a business's strategy of achieving them. Consequently, strategic improvements deal with global organizational and process problems. *Immediate strategic changes* are targeted at problems arising from flaws in the organization of an enterprise, e.g. due to the existing distribution of competence, responsibility and tasks. Finally, the task domain of *extended strategic changes,* focussing mainly on processes, is the most complex of the four; it incorporates and triggers all other reengineering tasks. All changes that extend over a rather long period of time and that globally affect either the business organization, or the structure of its processes, or both, are dealt with here.

3. Business Process Reengineering

Figure 2 gives an overview of our methodology for business process reengineering, detailing the BPR process of Figure 1. Phases structuring the process chain are depicted by rounded rectangles that are aligned horizontally in a row. In the following, we focus on process analysis, weakness analysis, design of improvements and test implementation, referring to the involvement of our client's employees in each of these steps.

Methodology: For modeling, we employ a combination of different methods, depending on the surrounding circumstances of the reengineering project. Ideally, we would develop our process model hierarchically in a top-down fashion, starting from system and process boundary diagrams, adding level by level more detailed process information until the system behavior were well understood and documented in reasonable detail. However, in practice this procedure usually is inadequate for several reasons.

For one thing, information is often incomplete and usually comes across in an unstructured way. From our experience, most business organizations can fairly easily provide information on a fairly coarse grain, strategic level, as well as on a rather detailed level close to the execution of every day business. What's usually missing, however, is an intermediate layer connecting the abstract strategic and the much more specific execution level.

For another thing, information gathered from different sources may be inconsistent. In many business organizations, the awareness of the global context of a specific working position with respect to the business system decreases rapidly towards the

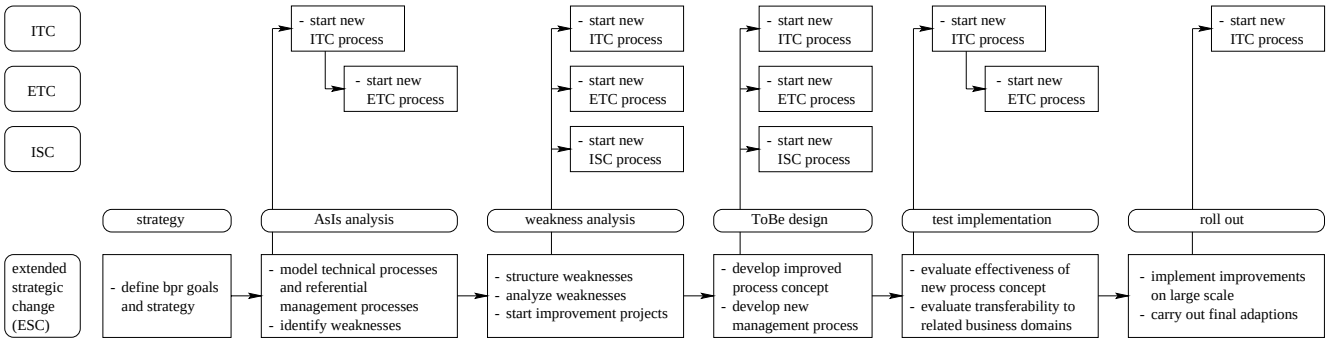

Figure 2: Overview over Methodology for Business Process Reengineering

Process Analysis

Starting from the major goals of the business system, we identify the system's major processes, specify which of these processes will be subject to detailed modeling, and correspondingly define the boundary of that part of the business system to be analyzed in more detail. Embedded into this system context, we model the relevant processes down to the required level of detail.

lower levels of the organizational hierarchy. As a consequence, a single person's process knowledge on the execution level is usually limited to a very local working area. Connections to predecessor and successor activities in a process chain are only rarely understood. Thus on the execution level, process information comes in separate fragments, leaving at first numerous holes and inconsistencies.

Therefore, for modeling we employ a hybrid approach, integrating both top-down and bottom-up

steps to ensure adequate granularity and consistency. The first version of some part of the process model will be subject to review and change in an iterative process, as gradually further information on the system's behavior is gained and the model becomes more stable and more and more complete. Whenever substantial additions to or changes of the process model (and, especially, its structure) are carried out, those levels of the model adjoining the changed or modified part are reconsidered. Thus changes that are local to some specific part of the model may propagate both top-down and bottom-up throughout the whole model hierarchy.

Documentation: To document a business process model, we use text as well as graphical notations derived from data flow diagrams [4] and the specification language GRAPES [6]. As tool support, we employ GRADE by Siemens Nixdorf [5].

In a process diagram, we visualize activities and their causal relationships. Causal relationships manifest themselves in the exchange of material and/or information between activities, thus defining client-server relationships. Furthermore, in our process diagram we specify which business unit is responsible for carrying out a process or an activity.

We structure our process diagrams according to a two-dimensional grid, where time extends horizontally and is partitioned into phases. Along the vertical axis, we arrange tasks. Each task is carried out by one or more processes. Note that we separate value creating and supporting management activities related to a task, to visualize whether activities contribute directly to the value creation, or deal with organizational aspects that are not directly part of a process product. Within a single process, we visualize communication between different actors by aligning activities that are executed by different actors along differing imaginary horizontal lines. Furthermore, processes are structured hierarchically by refinement.

Customer Participation: The most accurate and up to date knowledge of processes and execution practices usually lies with application experts from different levels of the organizational hierarchy of the business system. Consequently, the customer's employees are the most effective source of information on a business organization and its processes, and should be included in the modeling process in an adequate way.

In the reengineering project described here, after having received a condensed introductory training on the modeling techniques used in our methodology, our client's employees were involved in modeling not only as „information sources". Instead, they were guided to model their own process sections, first on their own and later on in integration groups. Thus, employees themselves produced their own business process model, which somewhat naturally lead to a high degree of commitment.

Weakness Analysis

In the phase of weakness analysis, we examine both general and process specific weaknesses. Whereas general weaknesses are global to the system, process specific weaknesses are connected with certain activities or process structures. This set of weaknesses is then structured, and chains from problem symptoms to problem causes are derived.

General Weaknesses: All along with process modeling, any weaknesses in the existing system that are touched in interviews or discussions are collected and documented. To ensure confidentiality, named problems are transformed into general weaknesses that are independant of specific persons.

Generally, the most pressing problems are named in the first few minutes after the subject of weaknesses is explicitly touched. The employees' prioritization of process and general weaknesses in the system indicates where the design of improvement measures should be started. Quick treatment of those aspects that impede employees most in their every day work document at an early stage that the reengineering team takes the employees' concerns seriously, and can bring about effective relief. Visible success at an early stage again motivates the customer's employees. As a side effect, an increase of efficiency due to first improvement measures helps overoccupied employees to find the time for getting deeper involved in the reengineering project.

In a next step, the collection of individual weaknesses is analyzed and structured into weakness domains, grouping similar and related weaknesses. On the basis of this set of problem domains, and of the process model previously developed, the

collection and analysis of weaknesses that are specific to processes is carried out.

Process Specific Weaknesses: Process specific weaknesses supplement the collection of general weaknesses. They are detected by structured process evaluation and evaluation workshops. Typically, process specific weaknesses are interface problems, as well as frequently occuring difficulties with the production of some specific intermediate result of a process.

In our process evaluation, we consider a diversity of criteria. Structural aspects focus weaknesses that can be detected from an analysis of the graphical process representation as a whole, without looking into details of single activities. For example, process complexity and the number of communications are considered here. Furthermore, results that are created in a process chain but not used any further indicate potential for optimization. Finally, the differentiation of technical and management processes in the process model helps to detect delays in the overall process performance that are due to organizational and management overhead, rather than technical complexity.

Other aspects are analyzed on a more detailed level, incorporating the internal realization of activities. Here, the adequate usage of information technology is a key aspect. In addition, we look for work that is performed more than once in the system. As well, we detect activities which do not contribute to value production, i.e. which do not transform a process result.

All these aspects point out improvement potential, both in single activities, and in the overall process and organization structure.

For a quantitative process analysis, queueing theory is useful for analyzing processing times as well as the load on resources. Due to a project restriction that time should not be measured, we did not employ this technique in our process analysis.

Analysis of Weaknesses: In a next step, these weaknesses are structured into related groups. The structure of the set of weaknesses is project specific, as it reflects the existing situation within an organizational unit to a certain extent. In the reengineering project described here, on the coarsest level our structure differentiated between structural aspects of the organization, internal communication, communication with external partners, technology and infrastructure, processes and process regulations, training and education, and different aspects of project management.

Complex weaknesses are then analyzed to separate mere symptoms from problem causes, using creative problem solving techniques derived from [7], to render possible solutions that tackle problems at their roots, rather than treating mere symptoms. Setting up the link between symptoms and problem causes helps us focussing on problem solving instead of symptom fixing. Thus we could boil down our orignial collection of about 360 weaknesses to about 15 % thereof, which included the major problem causes.

Design of Improvements and Test Implementation

According to our methodology, design and testing of changes and improvements are integrated in an iterative process. Closely linking design and testing of improvement concepts allows even roughly sketched concepts to be evaluated to a certain extent, before they have to be worked out in detail. For all improvement suggestions, it is evaluated wether the expected chance of their success and estimated gain is worth the cost of the improvement project. Measuring the progress of improvement projects supports early discovery of problems in improvement concepts, and thus is the basis for decisions on the further realization of improvement projects.

A vital precondition for improvements to be successful is the commitment of a large number of those employees who are directly engaged in or concerned by the change. Therefore, we involve our client’s employees strongly in the improvement process by cooperatively setting up a number of improvement projects for developing and realizing a selected set of improvement concepts. In these improvement projects, the roles of team leader, patron and mediator are of high importance.

The *team leader* holds the main responsiblity for team building, ensuring the necessary flow of information and for the results of an improvement project. Not regarding the „usual“ organizational structure, the team leader directly reports to the project patron on difficulties and results in the improvement project. Thus team leaders are endowed with both more responsibility and possibility to achieve changes than in every day

business, which motivates them to take their job on the improvement team very seriously although it often means extra work.

The *patron*, usually a higher official in the business organization, backs the team leader and helps the improvement team to overcome difficulties in carrying out their improvement task that are due to the existing hierarchical organization structure. To execute this kind of support, the patron must have both the ability and the authorization to take decisions on budget, resources, infrastructure and so on.

The *mediator*, the role taken by the external consultants, accompanies the improvement team throughout the whole project, providing experience and giving advice on aspects such as project planning and measuring of progress, as well as the execution of the different project tasks. In addition, the mediator supports communication between and interaction of team leader and patron.

4. Gathering Information

For gathering information from our client's employees, we use a combination of interviews and workshops.

At the beginning of each project phase, a kick-off workshop informs the employees on goals and methodology of the new phase and motivates them to cooperate.

Afterwards, we carry out a number of interviews, which allows us to deal with insecurities on the employees side on a more private basis than a group workshop would allow. Although these interviews are very time consuming, they usually prove to be worth the effort as they render information and results that are less dominated by peer pressure and „political" aspects than most workshop results, but rather closer to the personal opinion of the interviewee.

During process modeling, the minimum results to be obtained from an interview are the identification of local activities, and their positioning in a global process context. Therefore, predecessor and successor activities due to input/output relations are to be defined, as well as dependencies concerning other processes on a coarse-grain scale. Furthermore, a local working area is structured according to tasks and phases.

Towards the end of each project phase, we switch to workshops again to present, compare and unify the different results and to achieve a consensus on process concepts and measurements to be taken. Thus we are able to achieve a commitment even of diverse groups of employees on change and improvement programs, which is a vital precondition for successfully putting them into practice.

From our experience, neither questionnaires nor existing written documentation are very informative in most cases. Written documentation of processes and organizational structures tends to be out of date and not applied by the people on the job. Questionnaires produce rather low-quality, superficial information. Especially during weakness analysis, many employees are not ready to document their criticism in writing. Here, interviews produce a greater openness.

For weakness analysis, development of improvement measures and design of optimized processes, best practices and quasi-standardized processes are viewed as referential processes [2]. Furthermore, in the reengineering project described here, processes working on similar tasks within the same organization were studied and analyzed as well, to support the development of a new management process.

5. Dealing with Psychological Barriers

According to our experience, the success of a business reengineering project to a large extent depends on the engagement and commitment of those people who have to put reengineering and improvement measures into practice in their every day working life. Here, difficulties occur and have to be overcome, which have little to do with technical or economical aspects of reengineering. Rather, they come from the psychological domain and are often somewhat fuzzy or on a subconscious level. Thus, they usually are only poorly tangible and much harder to detect and to deal with than any of the „technical" problems, needing a mixture of intuition, experience and strategy to cope with.

In the following, we describe some of the more frequent problems originating from the psychological level, and sketch our basic principles in approaching them.

Starting Point

Quite often, a reengineering project that involves external consultants is initiated by the organization's top management, which consequently is highly interested in the success of a reengineering project. However, although the top management is competent on the global context, they only have a vague idea, or none at all, of the details of business processes and their execution.

Information on the more detailed process level is best obtained from expert users, and to a certain extent from middle management, which also has a fairly good understanding of the more global context of processes and activities. However, although these two groups are essential for successfully accomplishing a reengineering project, they often oppose more or less openly for a number of reasons.

First, interviews and workshops in the reengineering project are often seen as an extra strain in addition to the regular business. Second, if there is little or no belief in the success of the reengineering project, the willingness to cooperate or get involved decreases even more. More subtle problems arise from insecurities due to the fear of loss of face, or even one's job. Quite often, the reengineering project is not understood as a means of improving the quality of one's work and working surroundings. Rather, the fear dominates that the detection of improvement possibilities automatically insinuates that previously, one did not perform one's job as well as possible.

Consequently, the modeler often moves in opposing surroundings, pending between insecurity, hidden or open resistance, or simply indifference. To obtain the necessary information despite of this situation, the customer's employees have to be motivated for cooperation. As well, it is essential to establish confidentiality and trust between the customer's employees and the reengineering team to ensure that critical information is not withheld on purpose due to insecurity.

Strategy for Motivation

One major step towards motivating the customer's employees is to show them that they will benefit from the results of the reengineering project. Here, it is important to quickly establish positive examples. Even if they are only improvements on a rather small scale, they highly increase the credulity of the reengineering team among the employees. Furthermore, they increase the trust towards the reengineering team, as these positive examples document that the reengineering team does not work *against* the employees' interests, but rather endeavours to work *with* them and, as a catalyst, in favor of an improvement of the employees' every day working surroundings. Thus, the employees are given the chance to achieve improvements they desire with the help of the reengineering team.

When the first insecurities are coped with, efforts are made to gain the customer's employees for cooperation. Here, we again emphasize that the information provided by the employees is decisive for the quality of the achieved results and improvements, and that the reengineering team sees itself in a supporting role. Thus, the responsibility for the quality and extent of improvement measures, as well as the merit of successful implementations, is partly transferred to the customer's employees.

In addition, we target at achieving benefits for those employees who spend time and energy on the reengineering project. For example, we train them in our methodology and the usage of the supporting modeling tool. When the global organization attempts to establish the practice of continuous improvements in their every day working processes, employees with an introductory training and first experience on process modeling and reengineering have a favourable starting position for good performance. Also, employees who show a quick-sightedness in the detection of improvement possibilities, and a sensitiveness in the design and realization of improvement measures, establish for themselves a better positioning within their departments as well as chances for further career moves.

Furthermore, it is important to determine the internal leaders, and to win their involvement for the reengineering effort, as their attitude is likely to influence the position of their colleagues. When an internal leader is convinced of the advantages of supporting the reengineering project, he or she can propagate this as an insider of the organization, who usually can reach more people, and is more likely to be trusted, than a representative from an external company.

Finally, both to increase the employees' trust in the reengineering team, and to enable employees to

achieve part of the reengineering tasks by themselves, we openly explain our modeling and reengineering methodology. Thus we make sure that the expert users understand what is going on both in the modeling project and in the enterprise as a whole. In addition, we regularly present the project's results that were worked out by different groups of expert users in cooperation with and with support of the reengineering team.

Confidentiality

Throughout the whole project, and especially during weakness analysis, it is important to maintain confidentiality when desired by our client's employees. Critical information will often be provided only when it is ensured that its conveyance can not be sanctioned negatively by colleagues or superiors.

Furthermore, the employees involved in the reengineering project are usually sensitive towards improvement suggestions and criticism connected with their work. It is important to keep and protect the personal integrity of all participants in the project over all levels of the organizational hierarchy. If this is kept in mind, criticism can be discussed openly without endangering the employees' identification with goals and results of the improvement project.

Commitment

To ensure that developed improvement measures will be applied and put into practice by the employees, rather than blocked and ignored, it is vital to obtain their commitment. Commitment is closely related to the chance for identification, and thus may be achieved via co-operation and participation. We prevent sneaking out of one's responsibility by requiring each expert user who participates in the modeling project to sign in commitment his or her processes and suggested improvement measures.

Finally, we always give away our knowledge, to make sure that in the future our customer and the employees would be able to support themselves.

6. Conclusion

To be successful on the long run, business reengineering has to incorporate systematically various aspects, such as visioning, continuous improvements, radical change or the introduction of new technology. Because the people who have to put reengineering suggestions into practice are the organization's employees, they should be integrated and involved in the entire reengineeing process not only as sources of information on existing practices, but also in the design of reengineering measures. In order to enable these employees to actively participate in the reengineering project, they are introduced to the reengineering methodology and share both part of the responsibility and the merit for its results with the professional reengineering team.

Acknowledgements

We thank Günther Klementz and his consulting group at Siemens Business Services for continuous support. Especially, we are highly indebted to Michael Adler and Andre De Leeuw for the possibility of joining their business reengineering team, and for many fruitful discussions.

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