



An Enterprise 2.0 project management approach to facilitate participation, transparency, and communication

Andreas Auinger

University of Applied Sciences Upper Austria
Wehrgrabengasse 1-3, 4400 Steyr, Austria
www.shortbio.net/andreas.auinger@fh-steyr.at

Dietmar Nedbal

University of Applied Sciences Upper Austria
Wehrgrabengasse 1-3, 4400 Steyr, Austria
www.shortbio.net/dietmar.nedbal@fh-steyr.at

Alexander Hochmeier

Hofer KG
Hofer Strasse 1, 4642 Sattledt, Austria
www.shortbio.net/alexander.hochmeier@gmail.com

Abstract:

The use of current interactive and collaborative Web 2.0 concepts and technologies has great potential for flexible, loosely-coupled integration and ad-hoc information exchange within and between organizations. However, stakeholders' readiness, willingness and ability to participate need to be continuously factored in. The successful implementation of common strategies, systems and processes in the course of Enterprise 2.0 projects is crucial. To increase the probability of success and to enhance the intensity of cooperation and trust in such projects, the constructs of transparency, communication and participation need to be addressed through an integrated project methodology. To bridge the gap between existing scientific models and requirements for Enterprise 2.0 projects, this paper proposes and describes a project methodology to support the main objectives for Enterprise 2.0 implementations. Selected results from two pilot projects within Austrian companies are presented and matched with critical success factors, which are derived from the literature. These provide elaborative insights into key characteristics of certain Enterprise 2.0 tools and project management for Enterprise 2.0 projects.

Keywords:

social enterprise; enterprise 2.0; project management methodology.

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1. Introduction

The outsourcing of business processes and services has led to increased complexity and less transparency across organizational structures, activities and processes [1, 2]. As a consequence, the effective identification, generation and utilization of information and knowledge has become a top priority for organizations and has established itself as a unique selling proposition to secure competitive advantage, continuous growth and prosperity for them and all their partners [3]. Traditional concepts, methods and systems, are increasingly incapable of meeting these demands. Information technology (IT), as a crucial enabler, can help to move companies with hierarchical structures and enterprise-centric value chains to a decentralized and synchronized electronically connected global network [4]. Modern thinking organizations have realized the potential arising from flexible, loosely-coupled integration and ad-hoc information exchange by the use of current interactive and collaborative Web 2.0 concepts and technologies within and between enterprises, also defined as Enterprise 2.0 [5].

The paper focuses on *participation*, *transparency* and *communication* as the main objectives for the results of Enterprise 2.0 projects within organizations, as well as linking several organizational partners that share relevant information to increase the intensity of *cooperation* and *trust*. Project management is crucial for building trust in organizations, because without stakeholders that are willing and have the ability to cooperate, no common strategies, systems or processes can be successfully introduced [6]. Therefore, we see project management as an essential factor within such projects to enhance participation, transparency and communication that needs to be integrated into an overall project methodology.

The scope of this paper is to find evidence that certain Enterprise 2.0 tools support the improvement of communication among participants, the participation of users and positively influence the interaction transparency, which in turn enables trust and cooperation capabilities. The corresponding research question guiding this research was: What are the key methods in project management of Enterprise 2.0 projects and which Enterprise 2.0 tools tend to have a positive impact on transparency, communication and participation in these projects? The remainder of the paper is organized to answer the research question as follows: Section 2 strengthens the paper's theoretical background by defining the central terms and factors used in this paper and introduces the research methodology. Section 3 summarizes the overall project methodology created and used within a three-year research project. Section 4 provides insight into how the key aspects of the research methodology are addressed within the project methodology. Furthermore, the main results of two pilot projects to evaluate the methodology are presented and subsequently matched with the main objectives of the research methodology. Finally, Section 5 discusses the contribution of the findings, their limitations and avenues for future research.

2. Background and research methodology

2.1 Theoretical background and definition of central terms

The literature of the last two decades discusses successful project management from the viewpoint of different fields, including 'Organizational Development' [7], '(IT) Project Management' [8], and especially 'Enterprise 2.0' [9–11]. Kim and Pan [12] and Sirkin [13] indicate that two out of three such projects fail. Relevant barriers that were identified in the literature range from technical, organizational, and environmental barriers. Technical barriers, for example, include usability issues that lead to the rejection of the new system [14]. A lack of commitment from the executives, inappropriate specification of requirements, misalignment of project goals and enterprise goals, unrealistic milestones, insufficient resources, time or money resulting from concurrent projects, or volatility in customer requirements are examples of organizational barriers [13, 15–18]. The so-called "Not Invented Here" syndrome, the fear of the unknown, or apathy, are additional examples of barriers in the context of the organizational culture [19]. Environmental barriers result from the various actors involved in cross-organizational projects, like legal issues arising from governments [20].

Sutanto et al. [21] reviewed and consolidated relevant published studies dealing with change management's critical success factors for intra-organizational IT projects. They identified the following six common critical success factors (CSF): CSF1 "Need for Change and Feasibility Analysis of the New System", CSF2 "Top Management Support", CSF3 "Shared Vision for System-Related Change", CSF4 "Systematic Plan for Project and Change Management", CSF5 "Institutionalization of System-Related Change" and CSF6 "Energy for System-Related Change".

Another approach was introduced by Ibbs et al. [22] describing change management principles (CMP). These principles need to be addressed in the project methodology of change projects: CMP1 "Promote a Balanced Change Culture", CMP2 "Recognize Change", CMP3 "Evaluate Change", CMP4 "Implement Change" and CMP5 "Continuously Improve from Lessons Learned".

Enterprise 2.0 projects are different from common IT projects in their nature for the following reasons [11, 23, 24]:

- They always have a deep impact on organizational and cultural changes by enabling employees to pro-actively enlarge their own role;
- They mandatorily need a critical mass of user involvement;
- They are confronted with the fact that suitable best practices and reputation do not exist;
- They confront the users with unused ways of working with IT systems (e.g. the use of tagging, the syntax of enterprise wikis, etc.);
- They are not yet an established part of a company's state-of-the-art IT portfolio;
- Their value for organizations and their employees is - in contrast to an ERP system for example - still neither clear nor proven, but seems to address an increase of the enterprises' productivity by enabling the users to do their jobs more effectively and efficiently through better availability of resources including organizational knowledge.

A lot of scientific models and literature deal with these success factors and barriers mentioned above and provide strategies to succeed in project management (e.g. the DICE framework [13], Double Loop Learning [25], Scrum [26], XP [27], PRINCE2 [28], PMBoK [29], or the concept of Perpetual Beta). However, the discussion on how these factors and strategies can effectively be put into practice for Enterprise 2.0 projects is in its rather early stages and change approaches discussed in areas such as Organizational Development seem to underestimate the impact of many factors [7]. How to influence the barriers actively is addressed rather unspecifically [13]. Moreover, it is mentioned that it seems to be necessary to adapt existing frameworks to meet the requirements of organizations and projects [15] and pursue a best-of-breed approach taking advantage of lessons learned from traditional phase-oriented models and the agile world [30]. To meet the specific requirements of Enterprise 2.0 projects we need to identify strategies for successful Enterprise 2.0 implementations and match them with the project methodology. Compared to the project management disciplines mentioned, little literature discussing methods and strategies specifically for Enterprise 2.0 projects can be found. However, McAfee [9] described the following six organizational strategies of an Enterprise 2.0 roadmap to succeed in such projects (ERS): ERS1 "Determine Desired Results, Then Deploy Appropriate ESSPs" (emergent social software platforms), ERS2 "Prepare for the Long Haul", ERS3 "Communicate, Educate, and Evangelize", ERS4 "Move ESSPs into the Flow", ERS5 "Measure Progress, not ROI" and ERS6 "Show That Enterprise 2.0 Is Valued".

A project is broadly defined as "a unique process intended to achieve target outcomes" [31]. Specifically, an Enterprise 2.0 project in this context is defined as a process intended to achieve the target outcomes with the help of Web 2.0 concepts and technologies such as wikis for project documentation, blogs for top-down communication, tagging and rating of enterprise documents, or enterprise social networking within and across organizations. These concepts and technologies need to be integrated via a single interface to reach their full potential [32]. If Enterprise 2.0 projects are carried out without considering the aspects mentioned above, they often fail because of either lengthy implementation processes without delivering results accepted by the users, or concurrently realized projects of higher priority which consume available resources. To increase the success of Enterprise 2.0 projects, all the project's phases and tasks should be organization-driven to consider the increasing complexity of organizations. This includes a company's

organizational structure, its processes, its people and recent struggles and needs, as well as its organizational experience (e.g. projects that failed in the past). Consequently, Enterprise 2.0 projects, like any other strategic change project, are likely to affect the people, processes, structures, technologies, suppliers, and business partners that work both within and across these boundaries [16]. The so-called re-educational, normative approach discussed in the Organizational Development Theory substantiates this opinion by expressing the importance of the employees and their opinions, intrinsic values and cultural norms as well as general acceptance and personal advantage for the success of changes. Only if change projects alter knowledge structures as well as opinions, attitudes, values and norms, and educate employees to change from dependent to independent and responsible people, accepting the decentralized, participative decision, can such changes succeed [7].

However, transparency, information sharing and open communication require partners that trust each other. The importance of cooperation between different stakeholders and trust in partnerships have been identified in the literature as key factors for successful IT solutions involving several stakeholders [33–35]. However, cooperation and trust cannot be directly addressed; instead, it requires a self-reinforcing cycle of transparency, participation and communication [36]. In this research we follow this self-reinforcing cycle and define transparency, participation and communication as the three main objectives within our research methodology in order to stimulate trust and cooperation in Enterprise 2.0 projects.

Transparency is defined as publishing decentralized (structured) process and status information that can be used by other processes or to improve process controlling [6]. Providing real time information creates transparency across organizations and drops transaction costs, improves performance and speeds up metabolism [37]. This may include transparency regarding the actual situation within the organization and in the supply chain (e.g. inventory level or downtime), transparency regarding the relationships of stocks, lead times and cash ratios and transparency of responsibilities (e.g. who controls which process by which rules) [38]. Particularly in global business competition, greater transparency in supply chain operations is very important for success, because it brings accountability and responsibility [4]. Besides this, there is also pressure from other stakeholders, such as governments and consumers for more transparency [39]. The potential contribution of Web 2.0 concepts and technologies to enhance transparency across different stakeholders has been highlighted by several authors [40]. Therefore, we adopted transparency as one of the main objectives.

Web 2.0 concepts and technologies can be used to promote participation by opening a corporate dialog [40]. *Participation* hereby addresses cooperatively working on an issue and rating, commenting, changing or creating a business object or its attributes instead of only consuming content [41]. This involves updating purchase order lines, changing contact information as well as commenting and rating of innovative ideas. Integration into a user's daily workflow and streamlining the intra- and inter-organizational processes to avoid redundant work is important in this context [23]. Ferron et al. even denote user participation as one of the most important characteristics of Web 2.0 [42]. Hence, we consider this factor as highly relevant for this research.

Communication is used in this paper's context for vertically (top-down or bottom-up) and horizontally imparting, exchanging and seeking information [43]. Information systems across organizations are basically used to support communication and information exchange between partners as well as to coordinate certain activities [44]. This in turn enables cooperation within and between organizations [36, 44]. In the course of Web 2.0 concepts and technologies the term "collaboration" is currently often used instead of or as a synonym for "cooperation" [45]. In this paper, collaboration is considered as a special case of cooperation, in which certain activities on the same artifact are performed among distributed teams within and across organizations [46]. As a consequence, we see communication as another main objective that needs to be addressed, in order to benefit from it and increase cooperation as well as trust.

2.2 Research methodology

Fig. 1 condenses the research methodology and its elements. The identified CSFs, CMPs and ERSs are the prerequisites to be addressed by the developed project methodology. In two pilot projects the organizations were guided by the researchers in the process of diffusing Enterprise 2.0 concepts and technologies. The projects delivered Enterprise 2.0 tools that support the paper's main objectives. These main objectives (communication, participation and transparency) are said to positively influence the intensity of cooperation and trust across the project partners' which will ultimately lead to the projects' success.

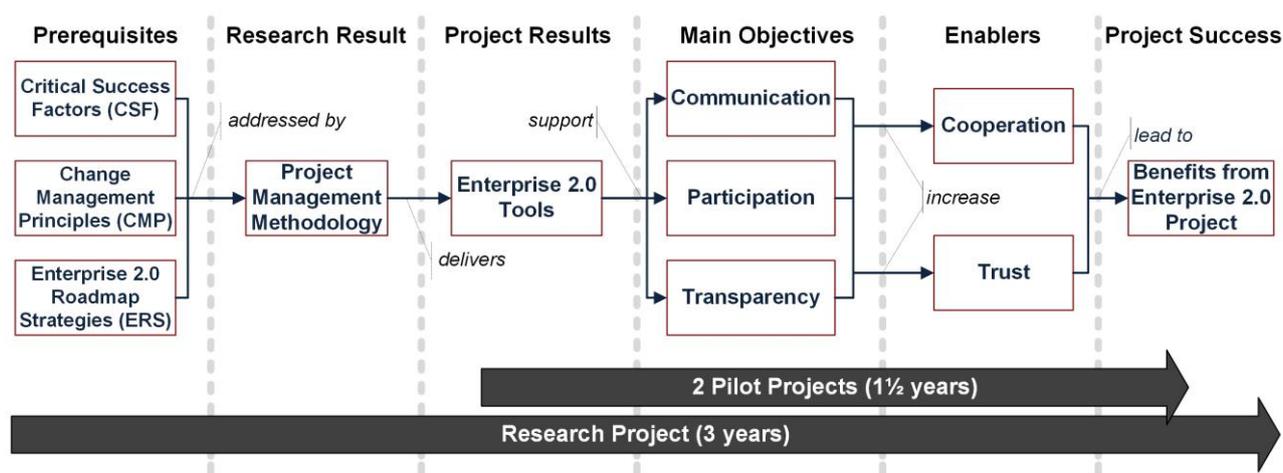


Fig. 1. Research Methodology

3. Project methodology overview

Literature can be found across different domains, dealing with proper methodology, processes and phases in project management. Following the analysis of Chroust [47] and Saha [48] in comparing phases of selected approaches in IT project management and software engineering, it can be stated that regardless of the domain, the process usually follows an: initialize ("whether"), analyze ("what"), design ("how"), implementation ("do"), deploy ("rollout") and operate ("support") sequence, comprising four to nine phases. In some models the first or last phases are not part of the process itself and other phases are split up or combined to emphasize certain issues in more or less detail. The phases do not necessarily follow a sequential order; they may overlap each other, may be fulfilled iteratively and usually have accompanying cross-phase activities like quality assurance, testing, documentation and project management.

In the course of a three year R&D project, the authors created a participative, evolutionary design especially for Enterprise 2.0 projects, which is a necessity for their success [11]. The methodology was practically evaluated in two separate projects with Austrian medium-sized companies. As already outlined in section 2, the first relevant success factors and strategies to increase the probability of success of Enterprise 2.0 projects were identified from the literature. After analyzing the key factors, a suitable methodology to address them within Enterprise 2.0 projects was developed. The resulting methodology is shown in Fig. 2. It includes the five phases: Assessment ("Whether to start the Enterprise 2.0 project"), Analysis ("What are the requirements?"), Design ("How can the requirements be realized?"), Realization ("Do the implementation and roll it out"), and Operation ("Support and evaluate the productive information system"). Within these IT projects, both common and well-established phases, the authors used specific methods to address the success factors especially within Enterprise 2.0 projects. An overview of the methods within the phases is given in the following subsections.

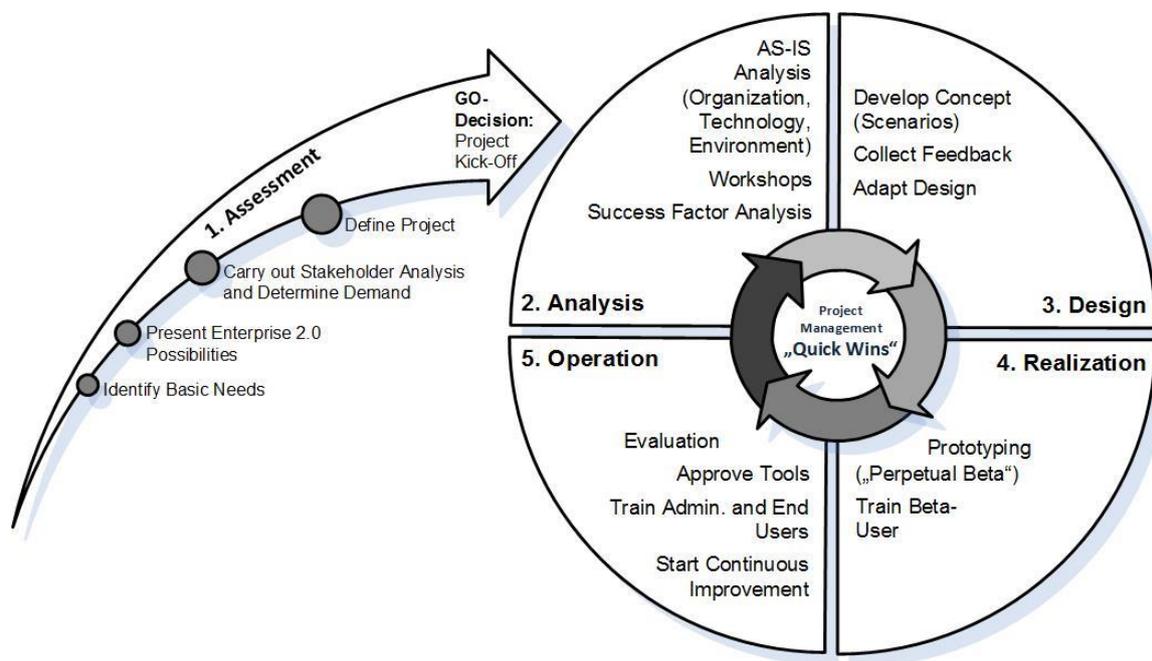


Fig. 2. Overview of the proposed project methodology

3.1 Phase 1: Assessment

The initial investigation to identify basic needs has to be done by the company itself. An internal project manager and promoter should present Enterprise 2.0 concepts and tools including possible scenarios where they could help to solve problems and make work more efficient for the top and middle management. The results of the discussions and feedback of the management team has to be aggregated to open issues that could be addressed by an Enterprise 2.0 project. Additionally, a stakeholder analysis should be carried out, as it helps to identify possible promoters and opponents of the project including their influence, power and possible reasons for their opinion towards the project. Via standardized questionnaires the basic needs and chances for supporting the company and its external partners with Enterprise 2.0 can be identified. These steps are important to find out the readiness and willingness for change, the underlying reasons and the urgency for the change [11, 16]. The identified promoters should be used as key players of the project and opponents should be persuaded of the benefits of the project.

The results of this first phase are taken as the basis for a project charter, containing the project's goals and vision, the resources, the milestones and the project methodology, and the negotiation of a contract. The last step of this phase is to decide whether to start the project or not (Go-Decision of the top management).

3.2 Phase 2: Analysis

After negotiating and signing the contract (Go-Decision), the project has to be set up and the as-is situation needs to be analyzed including the organizational setting, the involved business processes and the technical infrastructure. The first step is to form the project's core team (the top and middle management, the internal project manager and employees from the departments concerned e.g. R&D) and the process specific sub teams including external partners. The core team needs to agree on the project definition, the project plan and the project organization.

The stakeholder analysis carried out in the assessment phase is vital for the next step: conducting workshops in small groups (sub teams up to three people) using process cards to identify the most important process steps and getting more

insight via semi-structured interviews. Each workshop's aim is to identify and define one or two internal processes or processes involving external partners that can be supported by Enterprise 2.0 tools and concepts. It is essential to maintain an in depth focus on some important processes and not just on a broad overview of the entire company's processes. The workshops involve both the decision makers and the users, from the beginning. This is important because involvement of important influencers, decision makers and users is a necessity and enables one to identify the strategic drivers, goals, and critical success factors [16] but also increases the readiness for changes by procuring confidence [11].

Franken et al. [16] point out that organizations "have limited time and resources that they can devote to executing strategic change; hence, it is critical that change programs are prioritized. This requires an effective aligning and filtering process, as the number of suggested change programs is typically too great for an organization to pursue" [16]. To support this claim within the analysis, an additional questionnaire focusing on the priority of relevant processes and the recent satisfaction with its efficiency is issued. The completed questionnaires are the basis for an additional success factor analysis. To measure the success factors, techniques such as KnowMetrix [49], can be utilized. The aim of this step is to identify the most important processes and issues to be supported. According to the method, the average values of the two dimensions "performance" and "priority" arrange the matrix into four areas (quadrants). These resulting four clusters provide information on the need for action regarding the success factors:

- Quadrant I "Improve" has low performance and high priority;
- Quadrant II "Sub Relevant" has both medium-to-low priority and performance;
- Quadrant III "Well Done" has high performance and high priority;
- Quadrant IV "Exceeding Performance" has high performance and medium priority.

The main focus has to be laid on Quadrant I containing high priority factors that need to be examined in relation to the measures and whose performance has to be improved.

3.3 Phase 3: Design

The next step is to develop a concept for Enterprise 2.0 based tools for the important issues that have been identified during the analysis phase. Results from the workshops serve as a primary source for the design of tools. In addition, the results from the success factor analysis are useful in this phase especially for prioritization and the order of realization of tools.

Examples of tools to be designed are those such as "IdeaBoard" for innovation management, "CEO Blog" for top-down communication as well as project and team blogs for horizontal communication, "Market Factbook" wiki for product management, Social Networking functions including "Skills profile", etc. After presenting the concept to the project team, the feedback is collected and included in the concept.

3.4 Phase 4: Realization

The realization phase starts the implementation of the Enterprise 2.0 platform and its tools based upon the finalized concept in the way of perpetual beta implementation. In this rapid and agile software development method, the Enterprise 2.0 platform is rolled out ("beta release") and selected beta users are trained in an early phase. Feedback from the users is collected using a feedback blog and by conducting usability tests including eye tracking analysis and heuristic evaluation. Eye tracking is a reliable method in many studies [50] that has also been approved as appropriate in usability studies [51]. Furthermore, existing guidelines for usability need continuous reassessment with eye tracking technology [52] providing insights that would not have been possible with only one source of data [53]. Thus, eye tracking is useful as an additional method for evaluation in this multi-method approach.

The feedback and usability test results are essential input for continued improvement of each tool. Meeting the expectations of the users regarding functionality and usability is a key factor, considering the appraisal of IT systems [54]. The perpetual beta implementation method is a need because of the continuous change in organizations and the

possible on-going organizational and social structure's changes caused by the increasing use of the Enterprise 2.0 platform. Therefore, the solution might never be finished [11, 41]. Moreover, this process guarantees quick wins along with the active involvement of the users and is therefore a method that includes project marketing into the implementation process. These demonstrable improvements and realization of benefits are key for change projects [16]. Additionally, this method enables the project to quickly become part of daily work. This is an important success factor, as participatory technologies have the highest chance of success when incorporated into a user's daily workflow [23].

3.5 Phase 5: Operation

The project's aim is to get acceptance of each of the implemented tools and to start an on-going process of further improvement by the company itself. This is necessary because of on-going changes within a company and its environment [16]. To achieve this goal, admin users (e.g. system and platform administrators) have to be trained in addition to the conventional end user training. Involvement of the users including publication and rating of continuous feedback using a project blog is key for an Enterprise 2.0 project because it addresses the reputation and intrinsic motivation of the users and fosters participation [23].

4. Matching the methodology with the aspects of the research methodology

4.1 Addressing the prerequisites

This section shows how the proposed methodology meets the six critical success factors (CSF), the change management principles (CMP) and the Enterprise 2.0 roadmap's strategies (ERS) deduced from the literature in section 2. Addressing these aspects, the methodology shall increase the probability of success of projects applying it and therefore help to reach the projects' main objectives, which are transparency, communication and participation.

Table 1. Used methods and critical success factors (CSF)

	CSF1	CSF2	CSF3	CSF4	CSF5	CSF6
Initial Questionnaire / Presentation	X	X	X	X		
Stakeholder Analysis	X	X	X	X		
Workshops with semi-structured interviews	X	X	X	X		
Project Charter (Project definition, schedule, organization)		X	X	X	X	
Success factor analysis	X			X		X
Prototyping / Perpetual Beta				X	X	X
Training of beta-users, administrative department & end users				X	X	X
Usability evaluation using eye tracking	X	X		X		X
Heuristic usability evaluation	X	X		X		X
Collecting feedback with a blog	X			X	X	X

CSF1 - Need for Change and Feasibility Analysis of the New System | CSF2 - Top Management Support
 CSF3 - Shared Vision for System-Related Change | CSF4 - Systematic Plan for Project and Change Management
 CSF5 - Institutionalization of System-Related Change | CSF6 - Energy for System-Related Change

As shown in Table 1, the methodology provides different tools to identify the need for a change and the feasibility (CSF1). The initial questionnaires, the workshops, the success factor analysis, the usability tests and the feedback blog are used to collect requirements and identify problems to be solved. On top of this, the stakeholder analysis especially provides vital input for the feasibility of the project regarding readiness and willingness for change.

To ensure top management support (CSF2), the management team is involved from the beginning. They conduct or attend the first internal presentations, have to fill in the initial questionnaires, take part in the stakeholder analysis and in selected workshops. They also have to sign the project's contract and are part of the project's core team. The usability tests are used to measure and communicate progress to the users and the management team.

A shared vision and strategy (CSF3) are developed in the early stages of the project and are communicated directly in the project kick-off and mainly within the analysis phase. To be able to develop a systematic plan (CSF4) for the project and the change management, the input of all the aforementioned tools is used. To institutionalize the change (CSF5), the project team needs to be established; all users involved have to be trained and the feedback blog is used to enable all users to contribute to a process of continuous improvement.

To reach the necessary level of willingness and energy for a change (CSF6) and to keep this energy level high, it is important to identify the most critical issues using the success factor analysis. Moreover, the perpetual beta implementation enables the project to reach quick wins. Together with the training, it ensures that the project's results can be put into practice as soon as possible. Collecting feedback by using the blog, the trainings and the usability tests and using these inputs for further improvement, keeps the energy at a high level.

Table 2. Used methods and change management principles (CMP)

	CMP1	CMP2	CMP3	CMP4	CMP5
Initial Questionnaire / Presentation	X	X			
Stakeholder Analysis	X	X			
Workshops with semi-structured interviews	X	X			
Project Charter (Project definition, schedule, organization)	X				
Success factor analysis	X	X	X		
Prototyping / Perpetual Beta	X			X	X
Training of beta-users, administrative department & end users	X			X	
Usability evaluation using eye tracking	X				X
Heuristic usability evaluation	X				X
Collecting feedback with a blog	X	X			X

CMP1 - Promote a Balanced Change Culture | CMP2 - Recognize Change | CMP3 - Evaluate Change
 CMP4 - Implement Change | CMP5 - Continuously Improve from Lessons Learned

Table 2 shows that the methodology’s methods match the change management principles. Promoting a balanced change culture (CMP1) is supported by all of the methods used. Involving the management team right from the beginning, identifying the needs for change, developing a common vision and strategy and communicating them in workshops, blogs and trainings, supports this principle as well as collecting feedback and using it for further perpetual beta improvement.

The initial presentations and questionnaires, the stakeholder analysis, the workshops and the success factor analysis are valuable tools in recognizing the need for change (CMP2). The success factor analysis also helps to evaluate the change (CMP3) by identifying the priorities of the requested change issues.

To implement the change (CMP4) we use the concept of perpetual beta and the training of the different user groups. Perpetual beta, the feedback from the blogs and trainings and the results of the usability test ensure the collection of input for continuous improvement (CMP5).

Table 3. Used methods and Enterprise 2.0 roadmap strategies (ERS)

	ERS1	ERS2	ERS3	ERS4	ERS5	ERS6
Initial Questionnaire / Presentation	X	X	X			
Stakeholder Analysis	X	X				
Workshops with semi-structured interviews	X	X	X			
Project Charter (Project definition, schedule, organization)		X	X			
Success factor analysis	X	X	X			
Prototyping / Perpetual Beta			X	X	X	X
Training of beta-users, administrative department & end users			X	X	X	
Usability evaluation using eye tracking			X		X	
Heuristic usability evaluation			X		X	
Collecting feedback with a blog			X		X	X

ERS1 - Determine Desired Results, Then Deploy Appropriate ESSPs | ERS2 - Prepare for the Long Haul
 ERS3 - Communicate, Educate, and Evangelize | ERS4 - Move ESSPs into the Flow
 ERS5 - Measure Progress, not ROI | ERS6 - Show That Enterprise 2.0 Is Valued

Table 3 clarifies that the proposed methodology is aligned with McAfee’s roadmap for Enterprise 2.0 projects (ERS). Before implementing a system, the determined results using different tools and methods are identified (ERS1). Timelines were prepared and communicated, right from the beginning. Change management was explicitly included in the methodology to accommodate the complexity and long duration of change projects (ERS2) within Enterprise 2.0 projects. The need to communicate, educate and evangelize (ERS3) is addressed by using methods involving the management team and the user actively right from the beginning to the end of the project. The perpetual beta implementation and the training concept enable the moving of the tools into the flow as soon as possible (ERS4). This implementation method and the continuous collecting of feedback and evaluating the usability, facilitates progress measurement (ERS5) and assesses the solution to see if it is valued (ERS6).

4.2 Addressing the main objectives

This section initially provides insights into the main results of two pilot projects. These key results are presented because of their relevance to the main objective of the paper: to address transparency, communication and participation via Enterprise 2.0 tools with the help of a multi-method approach in project management. Pilot project 1 was carried out from January to December 2010 with an organization that is working with three key technologies in three strategic divisions: wire rope, fibre rope and fibres & plastics, exporting over 90% of its products. With 750 employees in total, the company operates production facilities in five locations in three countries (Austria, the Czech Republic, and the USA). Pilot project 2 was undertaken with a manufacturer of premium bearings with about 200 employees, main suppliers in China and India, and worldwide customers from April 2010 to May 2011. In the following, core consolidated implementation results (“Enterprise 2.0 tools”) from both pilot projects are presented.

Having identified communication (pilot project 1 + 2), innovation (pilot project 1), sharing of real time enterprise resource planning data (ERP) and Warehouse Management System data (pilot project 2) and knowledge management (pilot project 1 + 2) as the main areas of interest, the authors designed specific tools to support these areas. The tools were prioritized and implemented on the basis of Microsoft Sharepoint Server 2010 in an evolutionary prototyping process – related to Web 2.0 projects usually referenced as perpetual beta [55]. In accordance with McAfee [9] and related work of on-going projects like the EU funded project OrganiK [56], the SLATES criteria (Search, Links, Authoring, Tags, Extensions, Signals) were utilized to indicate the technical features of an Enterprise 2.0 platform. Despite these technical features, the specific tools need to address the main objectives of the research methodology: transparency, communication and/or participation and support and/or improvement of existing processes.

To improve knowledge management activities, enterprise wikis, document libraries, and enterprise search were used. The so called “Market Factbook” serves as a knowledge database wiki for the product management, the IT Docs (the user and system manual of the Enterprise 2.0 platform) are in use by the IT department, and the R&D departments use a wiki to manage their external contacts. In addition, we implemented an enterprise search to locate relevant information across the whole platform. A special people search (our so-called Skills Database) is in place to find contact information as well as to locate personal expertise, former employees and qualifications of other people.

Regarding communication, blogs are used to communicate interactive top-down information from the CEO (including information on innovation goals and strategy), cross-departmental communication (R&D blogs) and project-specific communication (such as a feedback blog for the Enterprise 2.0 project itself).

IdeaBoards are applied to improve innovation management. They use blogs with additional fields (e.g. the expected benefit of the idea) needed for the generation and evaluation of innovative ideas. This increases the transparency of the innovation process across the organization by making ideas explicit. Fig. 3 shows that information provided is always explicitly associated with the author and is transparent, including a picture, which is clickable and redirects to his/her user profile.

Providing relevant real-time information for customers and suppliers is an important functionality addressed by the Enterprise 2.0 platform. Sharing real time stock information taken from the ERP or warehouse management system with selected customers increases the order processing efficiency, because customers can immediately order goods in stock instead of asking for the availability of goods. To improve the collaboration with suppliers open inquiries, data and purchase orders taken from the in-house ERP system are published on the platform. This enables suppliers to get access to all inquiries and orders that are still not confirmed. Furthermore, status information can be shared and communication for a specific inquiry or order (e.g. negotiating delivery terms, prices, etc.) can be centralized on the platform, thus substituting email communication. The main advantage of this tool is that information is not dependent on individual employees, but it is transparent for all involved stakeholders.

Additional Enterprise 2.0 functions for tagging, rating and commenting are available for all relevant tools – for example, the rating of an idea in the IdeaBoard, tagging a blog post of the CEO with the predefined “I like it”-tag or individual tags, but also commenting on a wiki page. RSS feeds can be subscribed to for new blog posts, wiki pages, comments, and search results.

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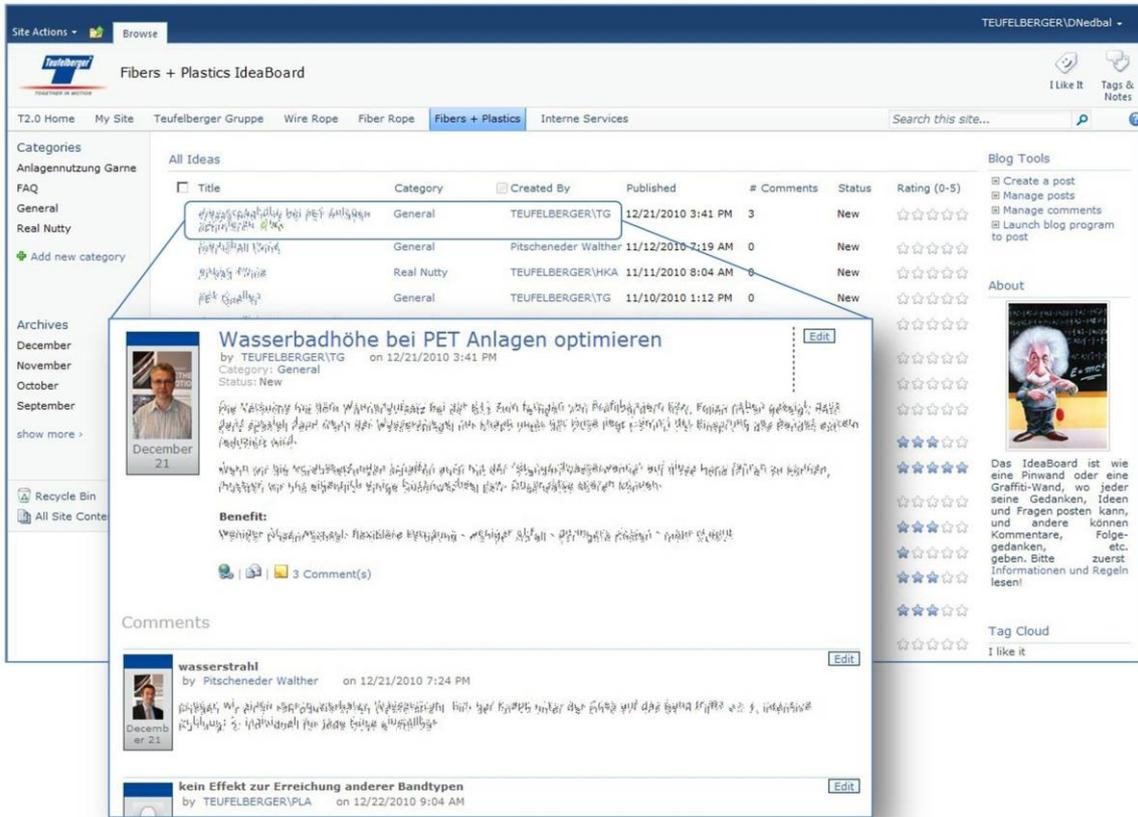


Fig. 3. Enterprise 2.0 platform: IdeaBoard overview and detail page

Table 4 contains a summary of all tools implemented using the introduced methodology and whether they contribute to the main objectives of transparency, communication and participation. The whole process was actively guided and methodologically supported by three researchers. The researchers were responsible for the overall project management including analysis, design, implementation and evaluation of the Enterprise 2.0 tools. After rollout of the tools, each of them was analyzed by the same three researchers as to whether it publishes decentralized process and status information (“transparency”), enables vertical and horizontal information exchange (“communication”), or supports cooperatively working on a business object (“participation”). Given the fact that three researchers were actively involved in the process, the opinions were based on the experiences from the project (including feedback from beta users, administrators, and end users from interviews, workshops and trainings according to the project methodology). Only if mutual agreement between the three researchers was achieved, does the table show a cross for the respective main objective. Enterprise Search, for example, lets users seek structured and unstructured information, therefore addressing transparency and communication.

Table 4. Implemented tools and their contribution to the main objectives

Tool	Transparency	Communication	Participation
Enterprise Search	X	X	
Skills Database	X		
Market Factbook Wiki		X	X
(IT) Documents Library (Wiki)		X	
External Contacts Wiki	X		X
IdeaBoard (Blog)	X	X	X
Blogs (R&D, CEO, Project)	X	X	X
Real Time Stock Information	X		
Supplier Inquiry & Purchase Order Portal	X		X
Customer Order Portal	X	X	X
Orders and Order Lines Negotiation Forum		X	
Order Status Tracking	X		
Engineering Drawings Exchange & Negotiation	X	X	X
Price List Information	X		
Delivery Date Update			X
Contracts and Supplier Agreements Library		X	
Document and Specification Library		X	
Tagging		X	
Rating		X	X
Commenting		X	X

5. Conclusion

The main contribution of this paper is to reflect the performed project management methodology to implement Enterprise 2.0 platforms with a special focus on the methods, activities and key results of the conducted phases. Furthermore, they are matched with the previously mentioned aspects deduced from the literature consolidated within the research methodology. Tables 1 to 3 in section 4 show how the proposed project methodology supports the requirements of change management and Enterprise 2.0 projects. Moreover, Table 4 in section 4 shows how specific Enterprise 2.0 tools were able to increase communication, participation and transparency in the pilot projects. The proposed structured and systematic approach targets both researchers and practitioners and allows itself to be applied to different, individual business contexts.

Utilizing the project methodology in the two pilot projects revealed several managerial implications. It was shown that the strength of Enterprise 2.0 resides in its ability to link well-defined processes and standardized information flows with unstructured communication and collaboration processes that have high priority but are insufficiently supported by existing enterprise solutions. The following examples underpin this claim:

- Blogs proved appropriate for different issues such as project marketing, team communication, as well as idea creation and selection;
- Wikis were useful for knowledge dissemination and project documentation;
- The integration of third party enterprise business solutions was easy to handle and enhanced the transparency of relevant information.

The main drawback in both pilot projects was a priority shift to focus on other issues with a higher contribution to business goals. This shift resulted in insufficient resources caused by daily business problems and strategic decisions. The social dimension and corporate culture in general are one of the biggest challenges within an Enterprise 2.0 project. This is why these challenges are addressed within the proposed methodology right from the beginning. This starts with the identification and motivation of key users and promoters that support and promote the project. Within the analysis phase the additional success factor analysis proved very helpful, as the results were made transparent in a participative way. The success factors were taken directly from the involved departments and the top-management was aware of the difficulties that came from the staff. The need for training and familiarization with the prototype was demonstrated by the comparison of the before and after results of this eye tracking study. Furthermore, during the beta test, additional usability flaws were discovered which confirmed the need for feedback and short improvement cycles via perpetual beta during the evaluation. In general, achieving quick wins and short-term effects to overcome internal and external barriers and building an “Enterprise 2.0 enabling” corporate culture is crucial.

As current research is limited to the pilot projects described, future research is needed to steadily consolidate the methodology and to elaborate it in further Enterprise 2.0 projects. The qualitative approach with the described pilot cases and experiences can only show preliminary examples of successful project outcomes. One specific challenge that needs to be better covered within the methodology is the priority shift of Enterprise 2.0 in favor of other business issues. To strengthen the validation of the research methodology, additional external experts should be involved. By reaching a statistically adequate number of projects, the methodology could be validated by established scientific empirical analysis techniques and methods. Currently there are three more projects with different organizations in progress. Experiences from these projects will be incorporated into the proposed methodology once they have been completed.

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Biographical notes**Andreas Auinger**

Andreas Auinger has been professor for Digital Business since 2006 and Vice-Dean for Research and Development at the University of Applied Sciences Upper Austria, School of Management in Steyr. He is founding Head of Studies of the master's degree program "Digital Business Management". Andreas is co-author of over 50 publications in international journals and conference proceedings. He earned a master's degree in Business Informatics at Johannes Kepler University of Linz in 1999 and a PhD in 2003. His main research areas are Enterprise 2.0, Innovation Management in Digital Business and Human Computer Interaction.

www.shortbio.net/andreas.auinger@fh-steyr.at

**Dietmar Nedbal**

Dietmar Nedbal has been researcher and lecturer at the University of Applied Sciences Upper Austria since 2008. He earned a Master's degree in Business Informatics at Johannes Kepler University Linz in 2000 and was CIO at RIS Software GmbH until 2008. He finalized his PhD in the field of B2B Integration and Enterprise 2.0 in autumn 2013. Dietmar is co-author of over 30 publications at international journals and conference proceedings. His main research areas are Enterprise 2.0, B2B Integration, Green IS, and Cloud Computing.

www.shortbio.net/dietmar.nedbal@fh-steyr.at

**Alexander Hochmeier**

Alexander Hochmeier is IT Manager S/E Europe at Hofer KG Austria. After numerous professional positions as an IT Consultant he earned his Bachelor's and Master's degree in Electronic Business and Supply Chain Management at the Upper Austria University of Applied Sciences, School of Management in 2011. Alexander worked as a researcher at the University of Applied Sciences from 2010 to 2012. His research areas are Enterprise 2.0 and Management Information Systems.

www.shortbio.net/alexander.hochmeier@gmail.com