SOME COST-BENEFIT ANALYSIS ON THE USE OF ENTERPRISE 2.0 FOR BUSINESS PROCESSES

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ABSTRACT

Enterprise 2.0 is about the use of social software for communication and collaboration in and between companies. Consulting firms market the idea as more efficient and effective than "classical" tools like email. But many companies are very reluctant in replacing email as the main tool for communication and collaboration because they don't see the advantages. It is the main objective of this article to give some recommendations based on real figures of cost- and-benefit estimations in selected German companies. This is done by presenting two case studies which show that Enterprise 2.0 has two possible positive impacts for business processes: (1) business processes can be redesigned to be more efficient and effective and (2) even already optimized business processes can benefit from improvements in productivity, execution time and information quality by Enterprise 2.0.

Keywords: Business Process, Enterprise 2.0, Social Business Software, Social Network

ENTERPRISE 2.0 AND SOCIAL BUSINESS SOFTWARE

When McAfee published his book (after his first post on the idea in his blog in 2006) about the use of social software (Bächle, 2006) he defined Enterprise 2.0 as "the use of emergent social software platforms by organizations in pursuit of their goals" (McAfee, 2009, p. 73). In short he means the use of wikis, blogs and social business software like Jive or Yammer for the communication between employees, suppliers, customers etc. of a company.

Table 1 shows the difference in the social system between a conventional company (called "Enterprise 1.0") and Enterprise 2.0. Enterprise 2.0 is not a new release of the old idea of organizing and managing a company (Bächle, 2008). Vision and mission statements are still the same but the way of managing information and knowledge is different. A company that follows Enterprise 2.0 is more focused on encouraging and enabling the employees to ask for and share knowledge whereas Enterprise 1.0 would see this more as a problem they have to fix by further standardizing tasks and processes to get the "human factor" under better control. Enterprise 2.0 sees people not as a human resource they have to control but as an intangible asset they can trust and rely on.

[†] This paper is dedicated to Dr. Stephan Kruppa, inspiring friend and colleague (1964 – 2013).

Table 1. Social System of Enterprise 2.0

Enterprise 1.0	Enterprise 2.0
Knowledge as property	Knowledge sharing
Unidirectional communication	Bidirectional communication
Organisational units	Social networks
Employee as resource	Employees/Humans as objective
Mechanical organisation	Learning organisation
Manager and assistents	Knowledge manager and knowledge workers
Supervision	Trust and autonomy
Functional-oriented	Process-oriented
Authoritarian leadership style	Participative management style

This different perspective on employees and management leads to a different need for technical tools to support the social system of Enterprise 2.0, as can be seen in Table 2 (Bächle, 2006; Bächle, 2008).

Table 2. Technical System of Enterprise 2.0

Enterprise 1.0	Enterprise 2.0
Content is generated by the company and officially controlled	Content is generated and controlled by employees
Focus on content	Focus on collaboration
Read-only	Create, read, update and delete (CRUD)
Monolitic	Loose coupling
CMS, DMS, E-Mail	Social Software
Taxonomies	Taxonomies and folksonomies
Standard: no access to information/content	Standard: full access

Trust in employees, for example, means more user management rights for the individual employee. Of course this doesn't mean full access to everything but limited access to more information and knowledge they need without having to search/ask along the "chain of command." Social Software, like wikis etc., is the main tool for the technical system of Enterprise 2.0. Social Business Software comprises these tools under one portal platform. Gartner (2013) shows many examples, like Yammer (acquired 2012 by Microsoft), Jive or SAP Jam (based on SuccessFactors, acquired 2012 by SAP) comprise several social software tools under "facebookish" looking user interfaces. The benefits of Enterprise 2.0 are manifold, as can be seen in Table 3 (Bächle, 2006; Bächle, 2008).

Table 3. Benefits of Enterprise 2.0

Objectives and Benefits	Explanation
Improve access to information and knowledge	The use of social software supports all phases of the knowledge cycle., but in particular generation, storage and distribution of knowledge.
Increase productivity and team performance	Social software can improve communication and collaboration in (spatially and temporally distributed) project teams.
Improve networking with business partners and other stakeholders	Communication and collaboration can be improved by tools like social networking platforms.
Increase agility and innovation	Social software supports fast response to changes in the corporate environment, eg in corporate communication, viral marketing. It strengthens the ability to capture innovative ideas from the customer environment.
Reduce costs	Social software can, for example, help to reduce travel expenses and training costs.
Reduce e-mails / information overload	Social software can help to reduce the e-mail flood, for example by centralized knowledge wikis.
Increase reputation	View as attractive business partner / employer by social software.
Development of new distribution channels (and new business)	Social software can be used to open up new channels of distribution, such as social commerce. It can also be used for new business models if a company can use it to define new products.

In 2012, the news magazine TIME (Wolverson, 2012) published an article about the use of Enterprise 2.0 in companies. The starting point of this article was an announcement by Thierry Breton, CEO of the French-based consultancy ATOS with 75,000 employees, of a "zero email" policy: Employees should use less emails and more blogs, wikis, internal social networking platforms and so on to communicate and collaborate. In fact, he hit a real problem in our daily style of business communication via the excessive use of emails. When email became more and more popular for business communication it started to be kind of a multi-purpose tool, even for things it never was intended for.

The reasons seem to be clear: cost, time and usability of email. At first glance, emails are free for companies, at least in comparison to the classic mail. But emails are often time-wasters, which want to be read and deleted because they contain no relevant information or work orders. In addition, they often interrupt the workflow because new mails are announced via a popup window or tray icon. Relevant emails will have to be read, sorted and stored. A British-Australian study from 2011 estimated costs in companies with 3,000 to 6,000 email users to US$ 5,000 to US$ 10,000 a year per employee. According to Inderscience (2011) the study also says that 13% of received emails were irrelevant and 41% were used for information only. Radicati and Hoang (2011) report in their annual email statistic report an average number of 72 daily received business emails in 2011 and 84 of daily received business emails in 2015. This means an increase of 17% in four years, only for receiving business emails. Already in 1996 Whittaker and Sidner (1996) observed the phenomenon of "email overload" because people use email software for personal information management tasks it never was intended for. The authors suggested some improvements like viewing by conversation thread. In Whittaker, Matthews, Cerruti, Badenes, and Tang (2011) the phenomenon of email overload is restudied once again. Nearly nothing changed between the first study in 1996 and the second study in 2011 – except the fact that the amount of received and sent emails increased significantly.

METHODS

This article is based on two case studies which were conducted in German companies. Each company is anonymous and presented briefly by its industry characteristics. In each case study, a business process has been identified, which is characterized by intensive use of emails. This business process is analyzed to see how it can be improved through social software. For this, a rough cost-benefit estimate is also done to get a first impression of the cost saving potentials.

Participants

The first case study comes from a mid-sized company (Company A) in the electronics industry with approximately 6,000 employees. It is one of the world's leading suppliers for the household appliance industry. It produces electromechanical and electronic components that facilitate cooking, baking, washing, drying and dishwashing. At the same time, new products are developed in cooperation with industrial customers.

The second case study is from a German services provider (Company B) with approximately 28,000 employees. The company is one of the leading auditing and certification institutions in Europe. The case study was conducted for a project group that develops and maintains a service portal of the company. This service portal is used by clients to query the service results.

Procedures

The empirical research on the economical effects of Enterprise 2.0 is still in its infancy and characterized by case studies, mainly in the form of success stories. Therefore, we chose to do – as a first step into deeper scientific analysis of Enterprise 2.0 – some case studies on the

economic effects by the method of cost-benefit analysis. The case studies are based on a common analysis scheme: First, a particularly communication- and/or collaboration-intensive business process was identified which uses email for communication. In the next step the email communication was analyzed and examined as to how these emails could be replaced by social software. In the last step, a cost-benefit estimate was conducted to determine whether, and if so, what the potential savings could be through social software.

CASE STUDIES

Case Study #1 – Company A

Business Process Analysis. In Company A we found a very conservative business process that could benefit from social software (see Fig. 1). This business process deals with the information of the employees by top management in the headquarters of the company. If an executive wants to inform the employees about, for example, new developments then he or she has to write a letter, transform it into PDF and send it via email to all department managers. Those managers have to send the PDF via email to all employees of their departments. Where employees don't have access to email, the department manager has to print the PDF and pin it on the blackboard. This is a very traditional way of information about more or less important news. Typical newsletters of this kind inform the employees for example about organizational changes, new hired staff or changed/new policies. Of course this business process is labor-intensive, costly, time-consuming and not very reliable because you can't be sure whether people really have access to the news or not.

It's interesting to see that in Company A the IT department already installed sophisticated components for social software: IBM Lotus (email), IBM Lotus Notes (instant messaging), IBM Connections (Social Business Platform with wikis, blogs and other community building features) and IBM Lotus Quickr (document sharing and management). The analysis of the business process under investigation showed clear potential for optimization by the use of social software. Only minor changes would be necessary as shown in Figure 2.

Cost-Benefit Analysis. Based on experiences with the old business process we calculated with three emails/week for newsletters and five minutes to read and archive the newsletter and go back to work. This adds up to 200 hours/week for all 800 employees of the headquarters for the old business process. This is about 9,200 hours/year for the old business process via email and without calculating the costs for the "black-board branch." We calculated for the new business process with IBM Connections that the 800 employees at headquarters could get the same information in 3,067 hours/year. Therefore savings would be 6,133 hours/year or 306,650 EUR (424,404 US$) if you multiply this time effort with the average hourly wage of 50 EUR (69 US$).

Figure 1. Company A – Old Business Process

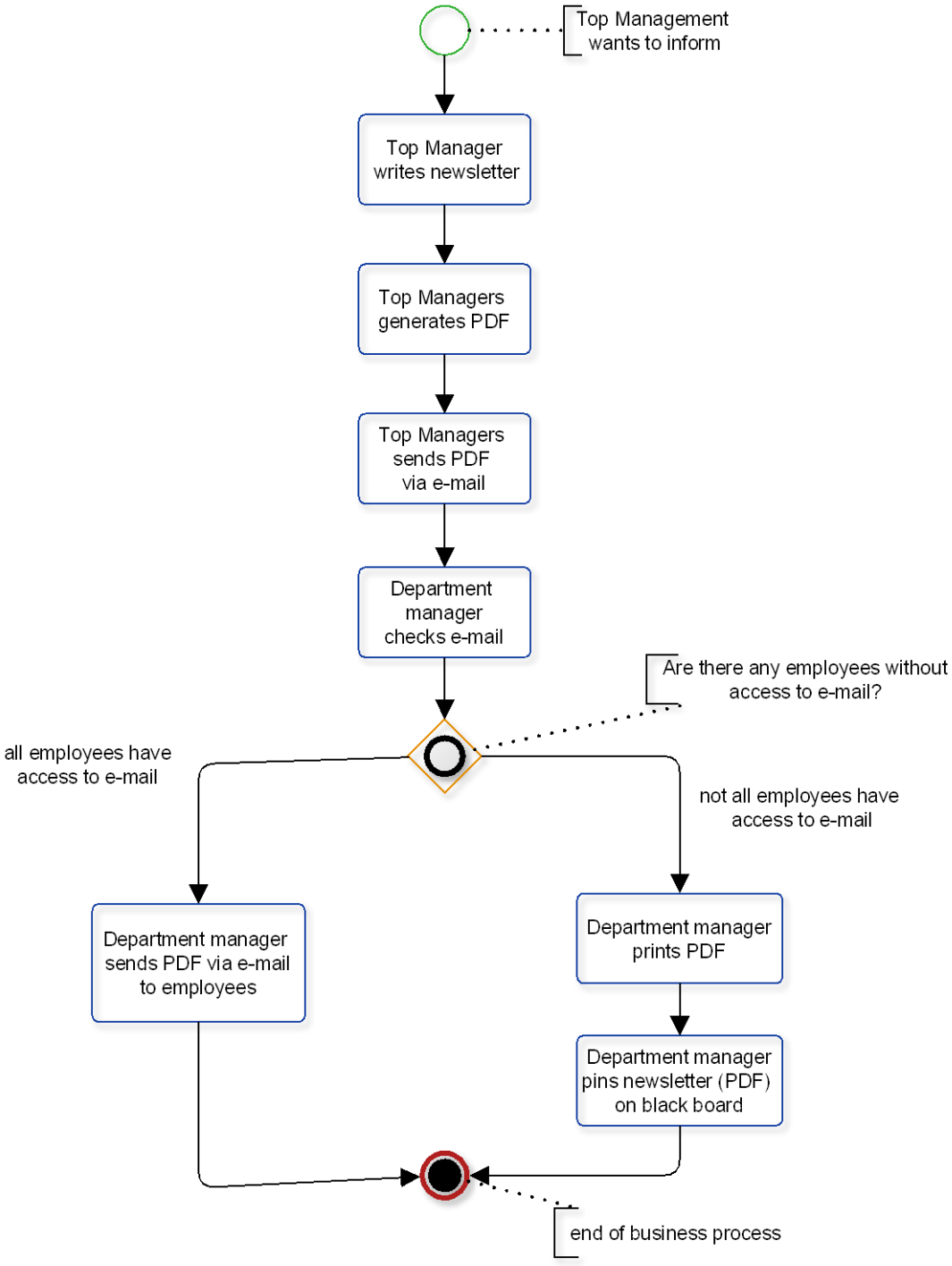


Figure 2. Company A – Optimized Business Process

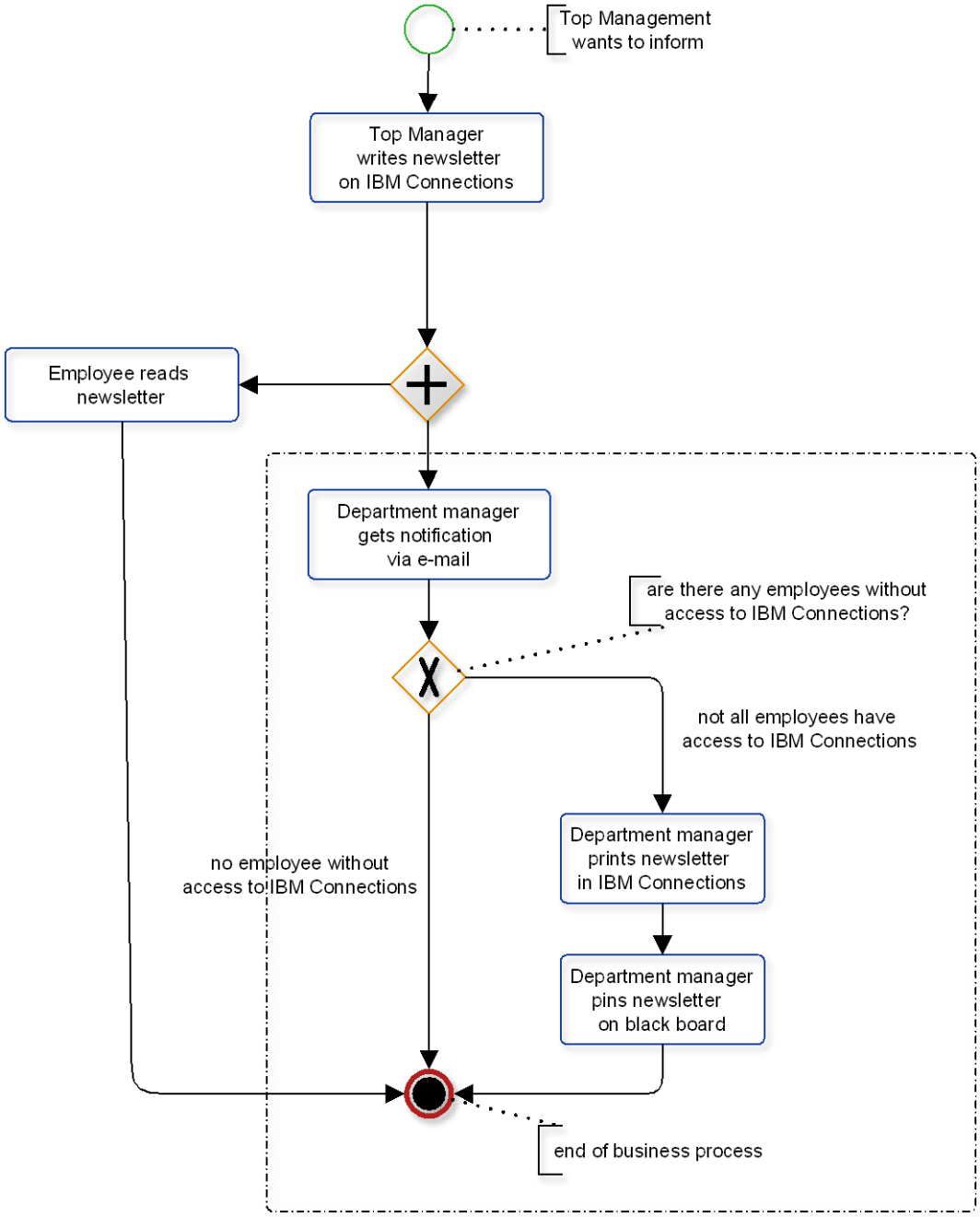


Figure 2 could be further optimized by eliminating all tasks in the dotted box. This could be reached by giving access to IBM Connections to all employees. Because this is not possible at the moment, we only calculated the cost-benefit analysis for the headquarters of Company A with its 800 PC, where all employees have access to a PC and to IBM Connections. This means that we did a very conservative and exemplary calculation because we ignored the "black-board branch" in the business process with its high proportion of manual tasks.

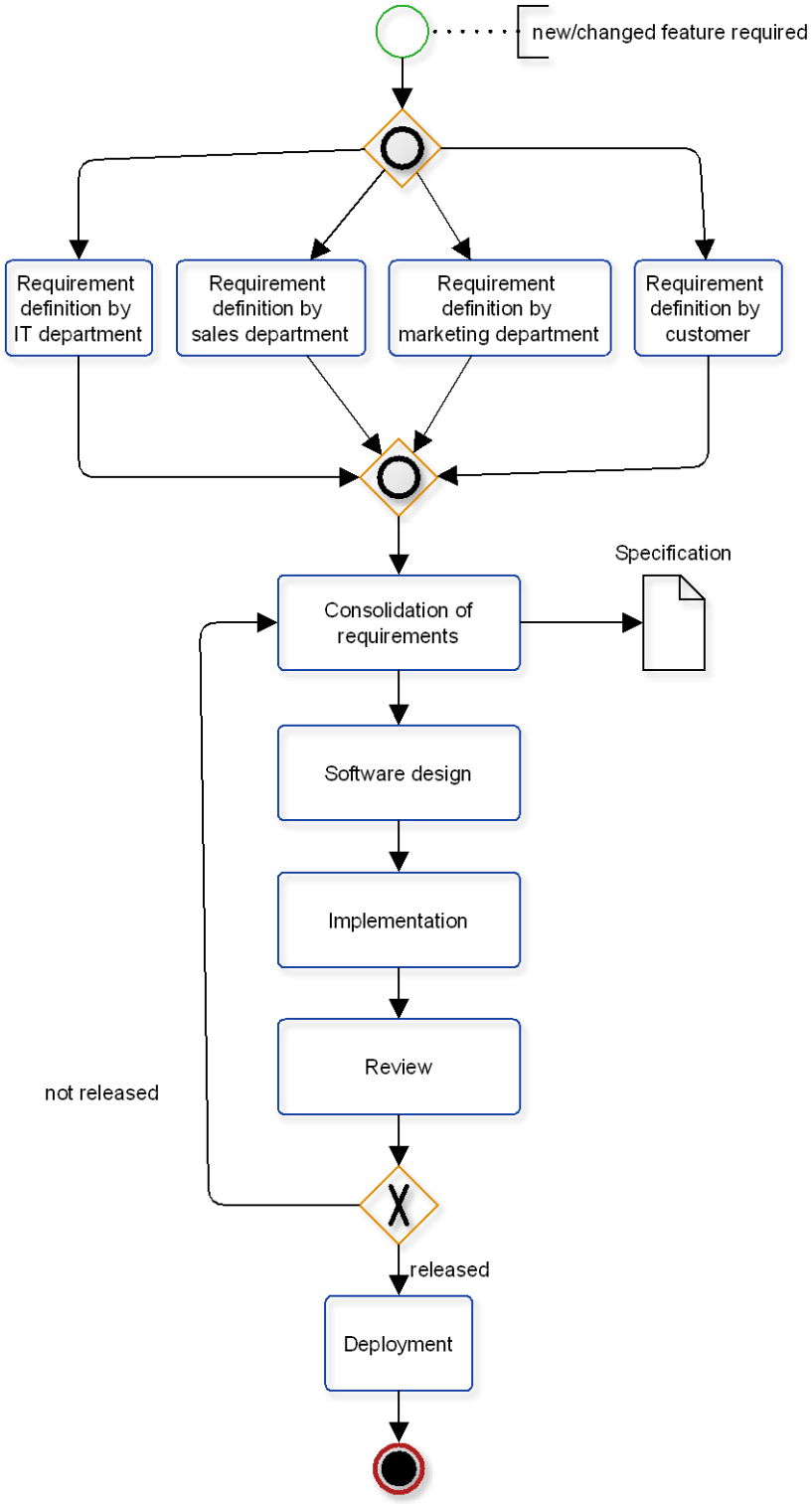
Case Study #2 – Company B

Business Process Analysis. The second case study shows that even an already optimized business process can benefit from the use of social software instead of email for communication and collaboration.

The department under investigation of Company B develops a service portal for the customers of the company. Figure 3 shows the business process for the implementation of new features or changes. Typically this complex process needs a lot of collaboration between all stakeholders – development team, sales, marketing and customers. It's interesting – but not really surprising – that the necessary communication for this complex collaborative work is mainly done via email. Especially the tasks "Software design," "Implementation." and "Deployment" generate huge amounts of email traffic between the stakeholders. We therefore analyzed how this could be avoided by social software and how this could also improve information quality.

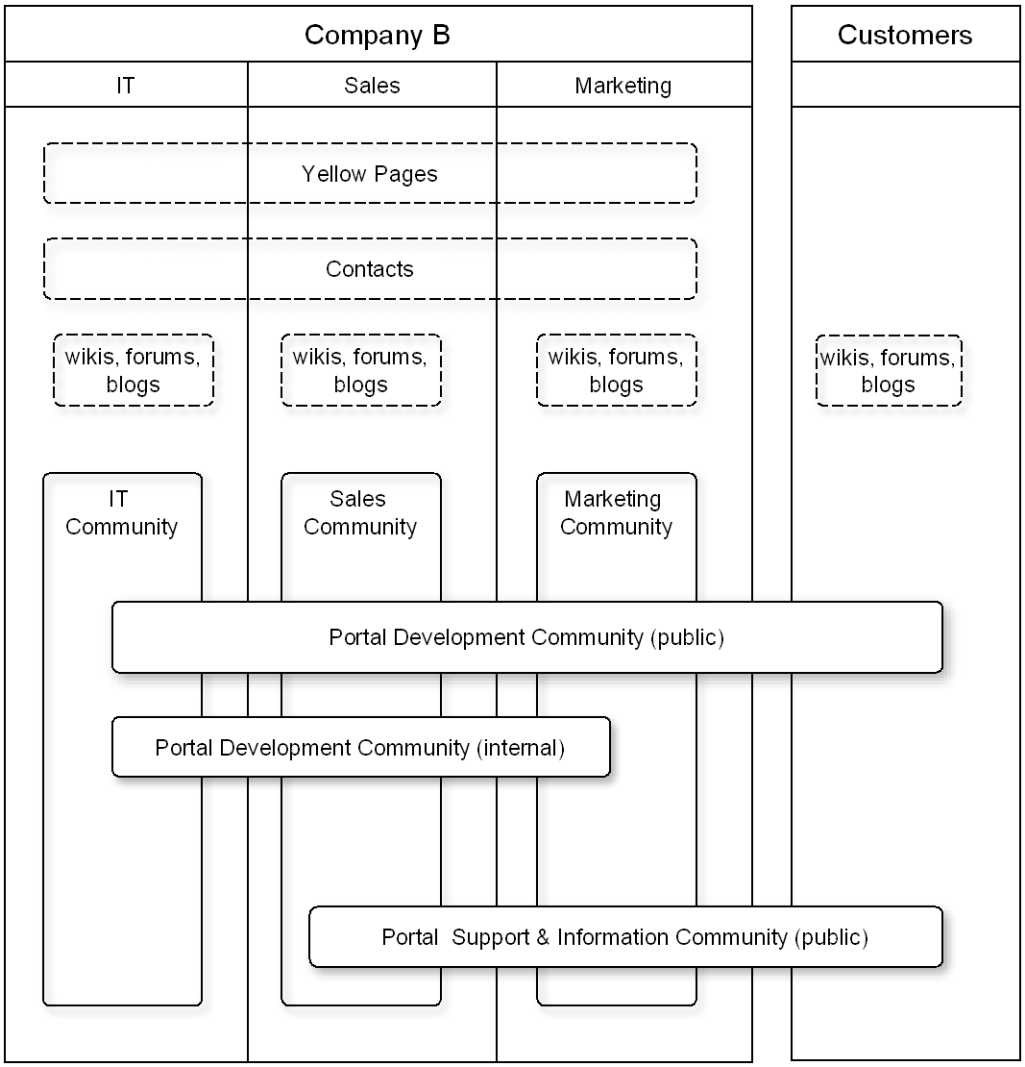
We suggested a Social Business Platform to build communities. In this business process, communities should be set up for each department (IT, Marketing, Sales). In this way, ideas can be discussed and refined, without exchanging information by email. This would lead to more transparency, better solution quality and higher stability of the requirements. As platform a web-based system can be selected, like IBM Connections, Liferay Enterprise Portal, Jive or Yammer, which are all already licensed by the company or under investigation for future use. The "facebookish" design and features would make it very easy for all stakeholders to work with the system without much training or support. Even mobile devices can be supported with such a solution. Yellow Pages with profiles and contact data as third component would enhance the quality of solution finding in such communities. A search feature in these Yellow Pages for experiences, skills, interests, project roles and organizational affiliation could further optimize the expert search. By using contact lists, and concepts such as "Following" all members of the community could see activities and contributions of the experts they are interested in.

Figure 3. Company B – Already Optimized Business Process



Wikis and blogs could be used to share, store and search information. Figure 4 shows the suggested substitution of email by social software.

Figure 4. Company B – Suggested Social Business Platform for Business Process



Cost-Benefit Analysis. As Figure 4 shows the Social Business Platform could support internal and external communities with several tools (dotted boxes). Of course this would lead to a substantial reduction of emails.

We therefore first calculated the actual costs of the business process and then estimated the possible improvements in productivity to get a cost-benefit analysis.

Actual Costs for Definition and Analysis of Requirements:

- Resources: 5 persons (from IT, Sales, Marketing)
- Effort: 25 person days

Actual Costs for Design and Implementation:

- Resources: 5 persons (from IT)
- Effort: 93.75 person days

Actual Costs for Review:

- Resources: 5 persons (from IT, Sales, Marketing)
- Effort: 12.5 person days

Actual Costs for Deployment:

- Resources: 5 persons (from Sales and Marketing)
- Effort: 12.5 person days

The actual costs for the whole business process are 80,985 EUR (112,077 US$); based on the effort per activity, department and average labor costs). The next thing was more difficult and is – of course – only a "best guess" about the possible improvements in productivity by reducing the amount of emails with the proposed new Social Business Platform: We expect the proposed platform to enhance productivity by 10%. This would lead to a reduction of the total process costs to 72,886 EUR (100,876 US$). It is worth mentioning that – as a nice side effect – even the process execution time could be reduced by this 10%. The positive side effect of the reduction in execution time was not further analyzed by us but is surely another big benefit.

DISCUSSION

The two case studies show that our business communication styles are significant cost drivers in business processes. Especially the widely used multi-purpose tool "email" shows substantial potential for improvements.

The first case study is a good example of how processes are designed around email, regardless that there are better communication tools which enable faster and cheaper business processes with higher information quality. This reminds us of the times when telephone was introduced. Of course one still was able to write a letter or walk by for a meeting. That worked of course. But over time the economic rules of efficiency and effectiveness ruled them literally out for many purposes. Following Markus (1987) this will happen sooner or later also with all business processes that are designed around email, as in Company A.

The second case study shows that even optimized business processes show potential for improvements in productivity, execution time and information quality if social software is carefully chosen for the different purposes of communication and collaboration instead of email.

In both companies we presented the results of our analysis to the management. Both companies decided to wait with the implementation of the suggested new solutions to optimize their communication flows and the respective business processes. The main problem is more or less cultural: People are used to email as the normal style of communication. Another point is that both companies were surprised of the saving potentials shown in our analysis by "only" changing communication styles and flows. This means that there is some more work to do for us to convince management that communication is a significant factor to improve business

processes. Over the last 20 years the literature on Business Process Management (BPM) stressed the fact that work flows have to be improved but systematically underestimated or even ignored the influence of communication flows for the optimization of business processes and even new methods like BPMN 2.0 (OMG, 2011) lack an analysis of communication flows. Fortunately there is now some work on the combination of BPM and social software like Bruno et al. (2011) or Erol et al. (2010) that supports our findings by discussing the usefulness of Enterprise 2.0 for business processes.

To change communication behavior companies have to keep in mind several success factors, as shown in Figure 5. The model in this figure is comprised from several research projects and consultancy by the author. In short the success factors can be described as follows:

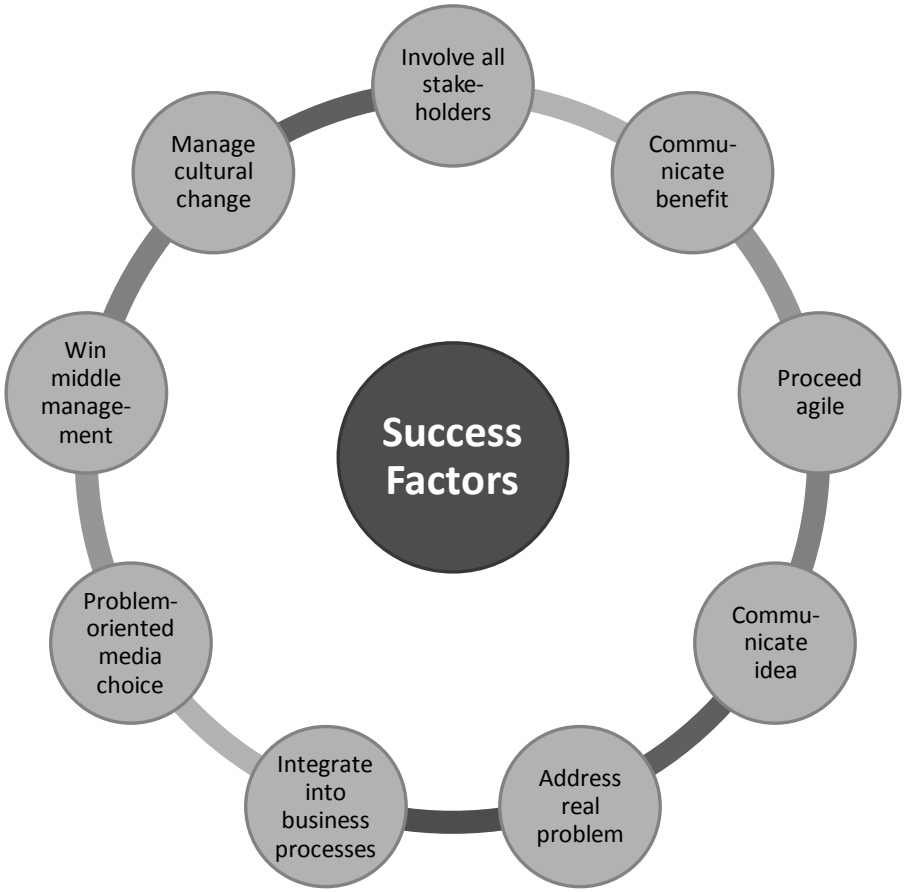
- *Involve all stakeholders*: A stakeholder analysis will show which groups or persons are more or less important in which ways for the success of an Enterprise 2.0 project.
- *Communicate benefit*: Make clear that Enterprise 2.0 is not just another tool on top of all other tools but will address a real problem by substituting an inappropriate tool (email).
- *Proceed agile*: Do not be intimidated by the apparent size and complexity of the overall problem. Break the tasks down into manageable units. Concentrate on executing the individual tasks. When the individual tasks are done, the problem will have gone away.
- *Communicate idea*: Social Software is no automatism and no "silver bullet". That means you should inform, train and walk ahead ("walk the talk").
- *Address a real problem*: Take a real problem and solve it with Enterprise 2.0 by (1) integrating the solution into the business process, (2) avoiding a tool discussion in the first place and (3) using already accepted/known/installed IT tools of the company.
- *Integrate into business processes:* Problems in business processes are well suited for a first solution, if (1) the business process is clearly defined (no discussions about how, who etc.), (2) the problem is a poorly structured decision problem (= high need for communication) and (3) email is used for problem solution.
- *Problem-oriented media choice:* In the first step you should understand process and problem. In the next step you should analyze the need for a solution and define the requirements. In the third step you should select and install a technical solution. Usability is more important than the number of features!
- *Win middle management:* Most barriers and ideas for social software come from middle management, where operational problems and business strategy meet. Their communication problems are typical for Enterprise 2.0 solution: (1) high volume of communications to the "top" and "bottom" of the organization; (2) "information overload" by email but (3) at the same time also fears of losing control of communication.
- *Manage cultural change:* What kind of company and leadership do we have? What cultural adaptations are necessary regarding openness of communication, trust, etc.?

Finally, Enterprise 2.0 is not a technical revolution but a question of Change Management to get people to adapt their personal communication style to the best and most

appropriate (and not the easiest one at hand) communication tool for the specific communication purpose (Schütt, 2013).

In the future it would be very interesting to combine Enterprise 2.0 with Social Network Analysis (SNA). As the case study for Company B showed even optimized business processes can benefit from the creation and management of online communities. We should also keep in mind that business is about networking, even in highly standardized business processes. Informal communication and collaboration networks should not be hindered but enforced and supported by social software.

Figure 5. Success Factors for Enterprise 2.0



Therefore the analysis of such existing informal networks would prove – as already shown in Cross and Parker (2004); Cross and Thomas (2009); Easley and Kleinberg (2010) – very helpful to improve not only the quality of communication and collaboration but knowledge management in total (Matschke, Moskaliuk, Bokhorst, Schümmer, & Cress, 2014). Cross & Thomas (2009) for example identified two different archetypes of networks which fit perfectly to our findings in the two case studies:

- *Customized response networks*: These networks can be found mainly in development teams who have to frame a problem and find an innovative solution, like in the case study of Company B.

- *Routine response networks*: These networks operate best in stable environments with fairly well defined problems and solutions, where work is standardized, like in the case study of Company A.

Both archetypes show specific characteristics that need different support by social software. Customized response networks have a dense and redundant internal connectivity within and across boundaries. They also have diverse external connectivity to sense and respond on opportunities, as was the case in Company B. Their culture is collaborative within and across organizational lines. Culture and leadership of routine response networks show centralized decision making and a focus on standardization and task accountability, like it was the case in Company A for the newsletter process.

With the classical centrality measures of SNA (degree, betweeness, and closeness), it would be possible to identify the most important "players" (Borgatti, 2006; Burt, 2004)) the social software should support, like people who can bridge gaps between sub teams who otherwise would never talk with each other or people who have a high social rank (which often has nothing to do with their position in official organizational charts). Matthews et al. (2013) suggest some additional metrics that can help to monitor the health of communities of practice. In the next step Enterprise 2.0 projects could make use of this knowledge by adapting on these informal networks. This would not only improve acceptance but the success of social software by giving it the chance to show its potential for business processes beside its well-known use for leisure activities and marketing (Krogh, 2012).

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