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Introducing "2.0" functionalities in an ERP

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Abstract. Companies and ERP editors show an increasing interest for the Web 2.0 technologies, aiming at involving the user of a web site in the creation of content. We summarize in this communication what these tools are and give an overview of recent examples of their use in companies. We show on the example of the most recent ERP of SAP, Business By Design, that if "2.0 tools" are now available in some ERPs, their integration in the business processes is not yet fully done. We suggest in that purpose the first draft of a methodology aiming at developing "2.0 business processes" using an ERP 2.0.

Key words: Web 2.0, ERP 2.0, business processes.

1   Introduction

The use of "Web 2.0" tools (including wikis, forums and social networks), which give an active role to Internet users, has dramatically increased during the last few years, creating a great interest from companies and organisations (including governments), all looking for new ways to better involve their stakeholders in their daily activities. Therefore, new paradigms like "Government 2.0" or "Enterprise 2.0" have been suggested for describing organisations re-structured in order to take full benefit of the "2.0" technologies. At the operational level, the idea of "ERP 2.0" (Enterprise Resource Planning 2.0) has been introduced, and several software editors have launched new version of their ERPs that include "2.0" functionalities.

In this quickly evolving context, the first objective of this communication is to make a panorama on recent applications of the 2.0 technologies in industry, illustrated on the example of the new version of the SAP ERP "Business By Design". We also show that existing applications only loosely integrate the 2.0 aspects to the existing business processes and we suggest guidelines for allowing to really design "2.0 processes" using an "ERP 2.0".

2   The "Web 2.0" tools

The term "Web 2.0" refers to the new generation of Internet, characterised by innovative applications that break the barrier between creators and users of web sites. The Web 2.0 mainly include wikis, blogs, tagging, syndication, mashups and social networks:

Wikis: A wiki is a web site which content can be edited by any user.

Blogs: A blog is a Web site containing inputs (posts) written on a specific subject by an individual or a group.

Social bookmarking (tagging): A tag (or bookmark) is a key word added to a numerical object, which can be stored on a distant server and shared with other users [Millen et al., 2005].

RSS and syndication: Syndication is the process that allows to make accessible information coming from a web site on another web site.

Social networks: A social network is composed of people or organisations interacting in order to share mutual interests, contents, knowledge, etc.

Mashups: A "mashup" is a new applications, data or web page built on the base of multiple and heterogeneous sources.

These tools are of course of interest for companies, which permanently seek for new ways to more efficiently involve into their business processes their employees, but also their customers and suppliers. Especially, these new applications could address some of the problems linked to the use of ERP systems, often considered as creating social tensions within the companies by an increased centralized control and by imposing a standardised communication between employees, based on external "best practices" [1].

3   "2.0" functionalities in companies: some examples

Different uses of Web 2.0 tools can be noticed in companies:

The Web 2.0 as a tool to improve the relationships with the partners. An already classical use of the social networks in companies is to create links with potential customers [2], using the web site of the company, or existing social networks like Facebook, or blogs and topics in Twitter [3]. Web 2.0 tools can also be used for supplier support [4] and market places can be complemented with "chat" facilities [5], or by adding 2.0 functionalities to CRM tools [6]. In a context close to B2B (Business To Business), the Web 2.0 can also allow to gather partners for creating a "social" supply chain [7]. Adebanjo [8] underlines the interest of these tools for creating "e-clusters" of SMEs.

The Web 2.0 as a mean to create an employees' network. The goal is here a better interactivity between employees [9-10], like at Lockheed Martin for sharing purchase practices [11] or at EDF (Electricité de France) for allowing knowledge exchange

[12]. At Dassault Systèmes, a platform of internal blogs has been implemented for facilitating the information transfer [9]. At HP, a "2.0" platform including bookmarking, tagging, RSS and social network allows employees to contact people with useful expertise. In [13] is presented an application in a company manufacturing flavours for the agro-food industry: the SocialText software, including microblogging, social networks and widgets, is used for creating networks allowing a fully decentralised management of tests of flavours by employees.

The Web 2.0 as a tool for knowledge coproduction. Content management tools are of specific interest for knowledge coproduction [14-15]. A wiki dedicated to the creation of "trade encyclopaedia" has been implemented at Atos Origin [9] while Emerson Process Management and IFS North America use 2.0 tools for transferring knowledge from a generation of employees to another [14]. The improvement of an on-line support is mentioned in [15]. Carbone et al. [16] also describe results obtained in several Spanish companies on knowledge structuration through 2.0 tools, but Passant [12] emphasizes on the EDF case the problem of making exploitable the information recorded in a wiki.

The Web 2.0 as a way to open the company on its environment. Some applications aim at creating a link between the company and external entities, outside formal working relations: at IFB, the access to "external users' wisdom" allows the employees to be aware of the practices promoted by other companies [15]. This need is also mentioned in [17].

The Web 2.0 as a tool for collaborative work. Web sites can be turned into collaborative working platforms using Web 2.0 functionalities [18]. At Ford, the factory manager can publish the planning and may authorise on line improvements by other users [19]. In an operational way, social bookmarking tools like del.icio.us or "My Web 2.0" from Yahoo may allow users to share their bookmarks, and associated notes [20].

The Web 2.0 as a mean to increase individual productivity. In [21], an annotation system applied on the IBM Intranet is suggested for improving the performance of the search engines.

The Web 2.0 as a social experiment in the company. 4000 employees of British Telecom were participating to a FaceBook group called "BT". The company decided to create internally a similar initiative, without any precise idea on its finality. A comprehensive set of tools including wiki/blog/social network was opened, and was massively adopted by the employees, with 1500 blogs opened in few days [22]. Nevertheless, no link seems to have been created with the existing information system of the company. A similar experience is described in [23], with the implementation of Taolin, a 2.0 platform, in the FBK research foundation in Italy.

In 2011, according to the ChessMedia survey [24], the 2.0 tools currently used in the organizations were Blogs (70%) and microblogs (58%), Full-feature collaboration

platforms (60%), Videos (53%), Forums (51%), RSS feeds (34%) and Mashups (22%), in all the departments of the companies. In next section will be investigated more precisely how 2.0 functionalities could be introduced in companies, and more specifically in their main information systems: the ERP.

4   The "ERP 2.0"

4.1   From Enterprise 2.0 to ERP 2.0

The flexibility that could be given to an the ERP by the Web 2.0 is often discussed in blogs. For Andersson [25], the integration of tools like wikis and blogs to an ERP is firstly useful for "canalising" a tendency that may lead to a loss of productivity of the employees and to security breaches if not correctly addressed. For Botta-Genoulaz et al. [26], the "2.0" functionalities should participate to re-create the social links damaged by the standardisation of the exchanges between actors which may follow the ERP implementation, while Hawryszkiewycz [27] suggests an evolution of the corporate information systems towards a real "2.0" version for allowing "knowledge workers" to permanently update their social work connections. Kimberling [28] wonders whether these two technologies can really be aligned: on the one hand, 2.0 technologies (and especially social networks/wikis) group informal and unstructured social media tools allowing anyone to say anything without any real control or structure. On the other hand, ERPs are large, structured, enterprise systems with controls surrounding master data, security profiles, and standard workflows.

Few ERPs have at the moment publicized on the term "2.0". The example of "Business By Design", edited by SAP, is taken in next section for giving operational illustrations of what could be an "ERP 2.0".

4.2   The example of "Business By Design"

Business By Design (ByD) has been launched by SAP in 2007 as a SaaS product (Software as a Service); it includes several functionalities of the Web 2.0:
RSS, allowing to have access to external information.
Mashups: Pre-configured mashups include communications with Google Map, Bing, Route planners (Google and Bing), search for a person (Tweeter, Facebook), and search for a company (Tweeter).
Tagging and bookmarking: Tags can be associated to each object (customer, materials, customer order...). Other users will be able to access the tagged object via hyperlinks.
Web services: ByD can create links with external Web services.
Collaboration tools: a new tool, "Feed", allows group discussions and instant messaging.
Groupware integration: a special add-on has been developed for Outlook for creating a direct link with ByD.

4.3 Examples of use

Even if these functionalities have only been recently added, some real applications can already be listed:

Mashup Embedded Map: maps provided by Google Map have been used by several users in order to get information on their customer's environment.

Web Services: Web Services are often used for getting information on order delivery from other systems (Freight Forwarder). Such links have also been used for creating orders in a remote Online Sales service (an Internet based company linking retailers and consumers), the order being then automatically created in ByD.

Tags: some project managers have tagged their Projects with the technology that has been implemented. It is then easy to find people who have a comparable experience for other projects based on same technology.

RSS feeds: users often select and filter feeds according to a customer name or product. Each time the user opens the "customer screen", RSS feeds are selected according to the on-line customer and sent to him. A SAP customer has also created two RSS feeds in order to inform his employees on IT maintenance and on company events.

In spite of several interesting applications, no clear methodology for developing 2.0 applications within Business by Design has yet emerged, and only "local" developments have been performed. The draft of a more systematic approach supporting the development of more comprehensive applications is suggested in next section.

5 Guidelines for development of 2.0 applications in an ERP

Some basic questions should be considered:

1. What is the main target of the project in the ERP context?
ERP systems can be considered according to (at least) two dimensions: the functions they address (broadly speaking: Customer Relationship Management, Logistics, Finances, Human Resource Management, Business Intelligence) and the steps of their life cycle (project organisation, training, process modelling, tests, go-live, optimisation). Additionally, an ERP has close connections with peripheral functions like Enterprise Modelling, Knowledge Management and Product LifeCycle Management. The goal is here the identification of a couple (step of implementation, function), called "Target" in what follows; for instance: CRM function in the Activity modelling phase.

2. What are the stakeholders involved in the Target?
The answer should be a list of roles for the people involved in the Target. For instance: customers and employees for the Marketing area, logisticians and suppliers in the "Logistic" function, key users and consultants in the "Optimisation phase" of the implementation, etc.

3. Inside the Target and between these Stakeholders, what are the objectives of the project?
The points listed in section 3.1 are examples of such objectives.

4. Which 2.0 tools should be relevant for meeting these objectives?

A decision tree has been developed for summarizing the criteria that should orientate on a given tool rather than on another, the objective of the introduction of the 2.0 tools being the root of this decision tree (see a part of the tree in Figure 1).

5. In reference to the pre-selected tools, what are the roles of the Stakeholders?

Example: in the "CRM" function, the goal is to disseminate news from the Marketing employees to the Customers. Marketing employees may so be the producers of one or several blogs, while the Customers will be the readers. If a formal group has to be built, a Social Network may encapsulate the process.

6. Develop the application inside the ERP, or choose external software.

In that purpose, it will be necessary to specify precisely what type of information or knowledge should be coproduced by each stakeholder according to his role.

7. Model the business processes based on the use of the "2.0" application.

The development of the "2.0" application should allow to reformulate the concerned business process and activities.
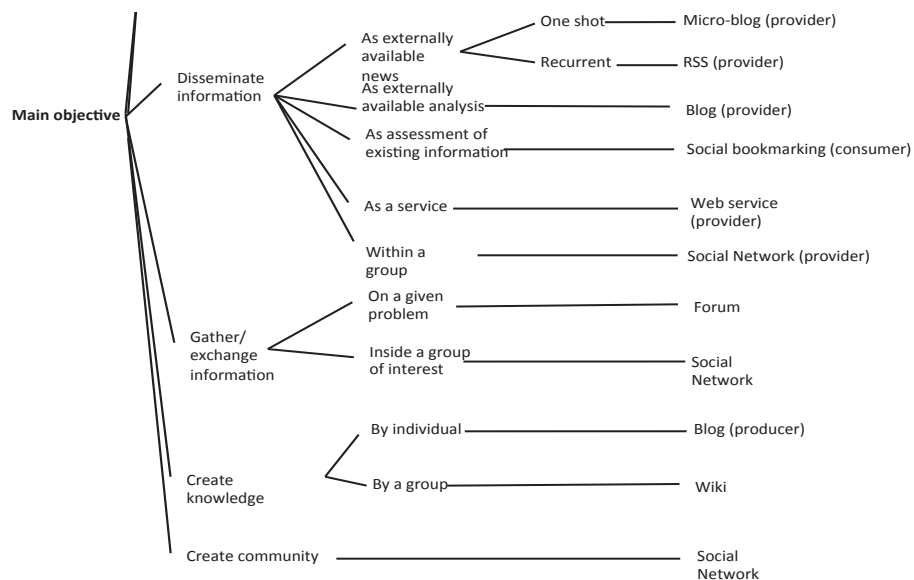

Fig. 1. Decision tree for the choice of a "2.0" tool (partial)

The validation of this step-by-step approach on real implementations of Business By Design is now in progress, promising initial results having already been obtained.

6   Conclusion

"2.0" tools, and especially Social Networks, pushed by their outstanding success in private uses, are nowadays "fashion" tools which utilisation gives a high-tech image

to the companies. Many "minimal" implementations, often highly publicised, are a consequence of this "high-tech" image. Nevertheless, many interesting applications have also shown that these tools have a real potential for improving business processes, especially those related to coproduction of information or knowledge, which is a critical issue for the companies. In order to maximize the impact of these tools, it is therefore important to integrate them into the existing information system of the companies, the ERP. In that purpose, ERP editors begin to include "2.0" functionalities in their products, but a clear methodology for the definition of "2.0" business processes, supported by the ERP, is still missing. On the base of real applications using the new version of the ERP "Business by Design", edited by SAP, we suggest in this article to consider two dimensions in which the "2.0" tools could support ERP-based processes: the implementation project of the ERP, and the functions addressed by the ERP. This approach only provides some guidelines, and should be adapted to specific cases but we think that such methodology could allow to increase the use of these promising tools in industrial applications.

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