Towards a Process Framework for Managing Mass Collaboration Projects

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Abstract. The developments of new technologies, the new scientific initiatives and the new global market are giving rise to new phenomenon of collaboration, referred to as *mass collaboration*, which is mainly derived by communities and self-organizing, and is based on the new Internet and Web 2.0 technologies, services and tools. To date, this new phenomenon has been researched from strategic perspectives lacking to address the managerial practices to be applied for its adoption. This paper presents this new phenomenon of collaboration and the concept of Web 2.0, and its technologies, services and tools. The paper then proposes a process framework to be used for managing projects and initiatives that specifically aim to adopt such collaboration form. The proposition of the framework is based on an illustration of a case study of a Danish municipality that applied mass collaboration on one of its development projects.

Keywords: Mass collaboration, Web 2.0, Process framework, Idémarken project.

1 Introduction

Collaboration which is a common nature of both teams and organizations is becoming more propagated and more narrowly applying to every day's life activities. And this is very powerful for solving problems, building consensus and helping in the decision making process (Straus and Layton, 2002). However, if this collaboration is restricted by authority or power; its significant impacts on building trust and firming relationships will be cut down. And this has been actually applied by traditional organizations, where they restrict their collaborative activities by the adopted hierarchical models which are based on responsibilities, authorities and tasks. In such hierarchies, every member is controlled and superintended by other higher members; employees controlled by managers, customers controlled by organizations, and societies controlled by the economic systems (Tapscott and Williams, 2006).

Whilst the traditional way of collaboration is not vanishing, and is broadly adopted by managers and practitioners, and praised by researchers and authors, such as Shafritz and Ott (1996). The developments of new technologies, the new scientific initiatives and the new global market are giving rise to new phenomenon of collaboration, which is mainly derived by communities and self-organizing, and based on the new Internet and Web 2.0 technologies and services, that creates a new sense of creativity, ingenuity and innovation.

This new phenomenon of collaboration, referred to as *mass collaboration*, led organizations to rethink about their methods of managing and distributing information and creating of business values, it also encourage many mature firms, such as, BMW, Boeing, Procter & Gamble and others to rethink about their own traditional collaboration activities and how they can be altered and improved (Tapscott and Williams, 2006). Mass collaboration is also transforming the way people do business, and companies begin to realize that the more people and stakeholders one collaborates with, the greater breakthrough thinking results will be achieved (Archer, 2009), and this was actually emphasized by the increasing and surprising number of firms adopting mass collaboration and its related technologies and services (Libert and Spector, 2008), where it helps organizations create new and unique collaborative environments (Mcafee, 2006), its adoption is expanding especially for corporate affairs (Grossman and McCarthy, 2007; Heidi and Shinichi, 2007) in which many organizations adopt this new phenomenon of collaboration to improve their products and services, or solve an intractable problem (Tapscott, 2008). However, the reviewed body of literature showed a lack of studies that investigate the management practices of such new collaboration phenomenon which is significant to its growth, success and adoption. And the impacts of such deficiency or absence was emphasized in a recent study by Gartner Research which has predicted– with 80 percent certainty- that despite the fact that by 2010, more than 60 percent of Fortune 1,000 companies will adopt mass collaboration, half of these companies will poorly manage their adopted mass collaboration projects which will do more harm than good (Libert and Spector, 2008).

Thus, the main aim of this paper is to study this subject by proposing a process framework for managing projects and initiatives that specifically aim to adopt such collaboration form, which answers the research question that is formulated as follows: '*How can Mass Collaboration projects and initiatives be managed in organizations?*'. This process framework considers three main phases in the adoption process: the pre-adoption, adoption and post-adoption, and is illustrated by a case study of a mass collaboration project of a municipality on the Jutland Peninsula in central Denmark.

The rest of the paper is structured as follows. I start by introducing the phenomenon of Mass Collaboration, followed by a description of the concept of Web 2.0, its technologies, services and tools in which mass collaboration based on. Thereafter are research method and the presentation of the case study. After that I present the process framework and discussed its different tiers by illustrating the studied case. And I finally end the paper with a discussion that is followed by conclusions.

2 Mass Collaboration

Tapscott and Williams (2006) introduced the new phenomenon of collaboration in their book, *Wikinomics: How Mass Collaboration Changes Everything*, and referred to as *mass collaboration*. They showed how individuals and groups already started acting globally in a collaborative manner by the means of information and communication technologies in order to co-produce goods and services.

Mass collaboration is mainly based on collective actions that occur while large numbers of participants work independently but collaboratively in a single project, often modular in its nature, holding the purpose of performing tasks, generating solutions or creating innovative knowledge. Such collaborations take place on the Internet by the means of Web 2.0 technologies and services that shift users' role from being information receivers and stand-by users to becoming knowledge and content generators (Archer, 2009). Mass collaboration is also playing a significant role in unleashing the creativity and knowledge of groups and individuals, encouraging them to act globally, share their information and interact with peers in an open atmosphere (Tapscott and Williams, 2006).

The decentralized model of mass collaboration is behind its success and uniqueness over the traditional collaboration paradigm where central control is applied (Brafman and Beckstrom, 2006) and its decentralizations is characterized by four main principles that were introduced by Tapscott and Williams (2006): peering, sharing, openness and acting globally. Those four principles are changing the way how individuals, groups and organizations innovate, differentiate and creating their competitive advantage, as they stated "*In an age where mass collaboration can reshape an industry overnight, the old hierarchical ways of organizing work and innovation do not afford the level of agility, creativity, and connectivity that companies require to remain competitive in today's environment. Every individual now has a role to play in the economy, and every company has a choice—commoditize or get connected*" (p.31).

While traditional collaboration paradigm is mainly dedicated to people possessing common interests, goals, abilities and areas of expertise, mass collaboration finds its path and is empowered by the large numbers of individuals coming from various knowledge areas, holding different interests, and possessing a diverse range of expertise and specializations (Tapscott and Williams, 2006; Panchal and Fathianathan, 2008; Libert and Spector, 2008). This has been emphasized by various illustrated examples of successful mass collaboration projects, such as, *Wikipedia*, the online collaborative encyclopedia that attracts millions of internet users from all over the world enabling them to view, create, amend, edit or remove articles in different subjects. This mass collaboration project, currently has about "*10 million volunteers collaborate over the web to create an encyclopedia which consists of about 9.5 million articles in 256 languages*" (Panchal and Fathianathan, 2008, p.1). According to Tapscott and Williams (2006) this collaboratively created encyclopedia, which is owned by no one and authored by millions of enthusiasts, has recently walked over Britannica the oldest English-language encyclopedia. Moreover, it became one of the top 100 popular and visited websites worldwide (Voss, 2005) where it is not uncommon nowadays to see Wikipedia's articles pages cited as references in media, educational and even scientific articles (Viégas et al, 2007).

Another mass collaboration project is *InnoCentive*, a mass collaboration project that is specifically created for the global community, with a main goal to allow researchers, scientists, engineers, inventors, R&D groups and companies to collaborate in order to achieve solutions for research and development problems in a broad range of disciplines, such as, chemistry, biology, engineering, math, computer science, entrepreneurship, as well as other fields (Tapscott and Williams, 2006; Harrison and Sullivan, 2006; Lakhani

et al.,2007; Dodgson et al., 2008; Libert and Spector, 2008). This mass collaboration project attracts more than 80,000 independent and globally dispersed problem solvers, coming from more than 150 countries (Lakhani et al., 2007) helping more than 34 mature firms, including Proctor & Gamble, Dow AgroSciences and Eli Lilly (Brown and Boulderstone, 2008) these firms pay problem solvers from $10,000 to $100,000 per solution, in addition to subscription fees (Ahonen and Lietsala, 2007). Here it is worth mentioning a statement –attests the powerful of mass collaboration- by vice presidents working for Proctor & Gamble as they said "*We've had problems solved by a graduate student in Spain, a chemist in India, a freelance chemistry consultant in the United States, and an agricultural chemist in Italy. About a third of the problems we've posted through InnoCentive have been solved*" (Huston and Sakkab, 2006, p.6). Other mass collaboration examples are provided in Table 1.

Mass Collaboration Topic	Example(s)
Open Source Software	- Linux - Apache Web Server - MySQL Database - Firefox Browser
Open R&D	- Goldcorp Inc. - Innocentive - Barrick Gold - NineSigma - YourEncore
Collaborative Authoring	-Wikipedia -Current -Collaborative books -Collaborative novels
Biology	- Open Source Biology - CAMBIA
Social Networking	- MySpace - Orkut - LinkedIn - Facebook
Finance	- Marketocracy mutual fund
Product CoDesign	- Lego Mindstorms - Open Source Car - Open Prosthetics Project - Threadless
Virtual World	- Second Life
Person-Person Marketplaces	- eBay - Craigslist
Community Projects	- TakingITGlobal
Governments	- IntelliPedia - Diplopedia

Table 1: Examples of Mass Collaboration projects – (*modified after Panchal and Fathianathan, 2008, p.2*)

3 Web 2.0

The concept of Web 2.0 was firstly coined and came into vogue in 2004, during a conference brainstorming session between O'Reilly Media and MediaLive International, discussing the future of the Web. Dale Dougherty, web pioneer and O'Reilly VP noted that despite of the 'Dot-com bubble'[1] in 2000, the web became more important than ever, with numerous new and exciting applications, services and sites popping up. In addition, it was noted that the companies that had survived the collapse during the 'Dot-com bubble' seemed to have things in common. This turned to be a sign for a new Web trend, which was agreed to identify that new phenomenon as Web 2.0 (O'Reilly, 2007; Anderson, 2007). After the expression of this phenomenon, the term Web 2.0 has subsequently been criticized by some as meaningless, others argue that it is just a marketing buzzword or a catchingphrase, and the majority accept it as a new 'conventional wisdom' (O'Reilly, 2007).

The widely accepted, used and academically cited definition of Web 2.0 is coming from Tim O'Reilly, the founder of O'Reilly Media and one of the main contributors in the term's creation (Grossman and McCarthy, 2007; Lee and Lan, 2007; Thompson, 2007; Macaskill and Owen, 2006; George and Scerri, 2007; Murley, 2007; Black and Kilzer, 2008; to name a few) which stated that Web 2.0 is:

> *" the network as platform, spanning all connected devices; Web 2.0 applications are those that make the most of the intrinsic advantages of that platform: delivering software as a continually-updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others, creating network effects through an "architecture of participation," and going beyond the page metaphor of Web 1.0 to deliver rich user experiences."* (O'Reilly, 2005)

A thorough look at the definition reveals various fundamental correlated inherent concepts in this new phenomenon of Web. The concepts '*network as platform*', '*Web 2.0 applications*' and '*continually-updated service*' refer to the new shift in the delivery and run of web applications; which support and are supported by the collective actions of users. These collaboration-based technologies enable users to establish their social communities where they can openly interact with each other, and share their knowledge in various formats and produce new, innovative and competitive goods and services (Tapscott and Williams, 2006).

In Table 2, I illustrated the most common Web 2.0 technologies, services and tools, which enhance the collaborative actions and activities, and establish a new environment where the outcome of those activities and actions are maintained to be reused, updated and modified. They also encourage users to gain benefit from every generated piece of data in various ways.

[1] Dot-com bubble: A stock market and a speculative bubble that popped in 2000, in which stock markets in the West witnessed a rapid increase in the values of Internet stocks which was followed by a rapid fall in the prices afterwards.

Web 2.0 technologies, tools and services	Description	Authors
Wikis	Web pages content that can be viewed, edited, mixed and even removed by users.	Lee and Lan (2007), Dearstyne (2007)
Blogs	User-generated web dairies or journals where users share information and opinions about particular topics, and may include images, videos and links to other blogs or web-pages. Most blogs allow reactions and comments from readers.	Wood (2005), Dearstyne (2007)
RSS	RSS which stands for Really Simple Syndication is a service that allows users to find updates of RSS supported websites, blogs or podcasts without visiting the actual site. The recovered information usually consists of the story's title, synopsis and the originated site's name.	Anderson (2007)
Forums	Discussion services that allow users to participate and interact with each other forming their views around a particular topic of discussions. Forums maintain features that may increase the likelihood of effective discussions taking place.	Guzdial and Turns (2000)
Content Sharing	Services and tools that allow users to share their different format contents, such as, images, videos, audios, slideshows and presentations, and documents. The shared contents can be either completely private or completely public.	Hart et al. (2007)
Podcasts	A service that allows users to share and distribute their audio or video media files syndicated download, through web feeds. This is considered as a way for users to create and contribute ideas to large conversations, and it is a way for archiving contributions for future audience to use.	Richardson (2006)
Mashups	Mashups are Web applications which are generated through combining applications, contents, presentations and services from one or more disparate Web sources. The aim behind them is to create new applications that provide more powerful services to users.	Kulathuramaiyer (2007)
Social Networking	Web services focus on building online communities of users. Users usually have profiles where they share their information, interests, activities, digital photographs, video clips, favorite music, and much more. They provide a variety of ways for users to interact and communicate.	Farnham et al. (2004), Boyd and Heer (2006), Boyd and Ellison (2007)
Social Bookmarking	Services allow users to store, organize, search,	Millen et al. (2006).

	and manage their bookmarks (links to preferable websites). Bookmarks are usually public, can be saved privately or shared only with specified users. These services are enhanced by the use of keywords or tags that are entered explicitly by the user for each bookmark.	
Social Tagging (Folksonomy)	This Web 2.0 technology enables users to collaboratively creating and managing tags "keywords" in order to annotate and label Web contents. These tags usually convey meaning about the content.	Soloman and Schrum (2007).
VoIP	VoIP or Voice over Internet protocol is another Web 2.0 technology that enables users to conduct voice conversations over the Internet. VoIP is free or costs less than traditional equivalent sources.	Soloman and Schrum (2007).

Table 2: A list of most common Web 2.0 technologies, services and tools

4 Research Method

This reserach study employed an interpretive case study (Walsham, 1993) based on a qualitative reserach method (Klein and Myers, 1999; Yin, 2003; Creswell, 2003; Silverman, 2005) to obtain and analyze qualitative data. Multiple data collection methods were applied; four of the several methods described by Yin (1994, 2003) were adopted: interviews, documentation, archival records and direct observations. While the main primary data source is kept to be the interviews which according to Walsham (1995) is the most significant method which should be adopted for interpretive case studies and particularly in the field of Information Systems.

Motivations behind adopting various data gathering techniques in this research study is to possess the quality of the research and support the discussion points (Seale, 1999). They also create valid generalizations forms, which improve the construct validity and research's instrumentation (Creswell, 2007), and according to Soy (1997), they strengthen the conducted research by providing opportunities for triangulation during the analysis.

Data collection took place during a period of three months and the conducted interviews were all semi-structured, where the 'realistic interview' approach was applied (Pawson and Tilley, 1997) and informants treated not only as 'answering machines' or databases but also as 'knowledge holders'. In this approach the 'teacher-learner' technique was applied; As a researcher I took the role of a teacher, and the informants took the learners' role and have been taught the study's perspectives pushing them toward clear understandings of the overall and conceptual structure of the study. In so doing, the

informants thoughts will be delivered directly to the context of the study and to the researchers own theory.

A total number of six interviews were conducted. Each interview lasted for almost two hours, was recorded, and digital notes were taken. The interviews were conducted with people possessing different key roles in the investigated project. Each of the informants was engaged in at least one particular project's phase, and all informants together covered all phases. See Table 3 for the interviews plan.

Informant's Name	Roles	Purpose
Kim Nissen	Technology Coordinator	The main aim behind this interview was to get access to the project and get an overview of the project and key people within
Kim Nissen		Investigating the adopted technology, training and implementation phases.
Mette Vildbrad	Project Supervisor & Co-initiator	Investigating the studied project's pre-adoption process.
Mette Vildbrad		Investigating the adoption process.
Mette Vildbrad		Investigating the post-adoption process.
Johannes Larsen	Business Consultant	Investigating knowledge management practices for the studied project.

Table 3: Interviews Plan

5 Case Description

5.1 Background

Hedensted Kommune is a municipality on the Jutland Peninsula in central Denmark. The municipality which takes care of citizens' services of all kinds has a total population of 45,000 and its public services spread over a long and narrow area along the Peninsula East Coast. In January 2007 and due to a 'municipal reform', two smaller municipalities were merged into Hedensted municipality. This reformation created a challenge for the new formed municipality, putting more pressure under its shoulders; mainly regarding the developments of citizens and municipal services and activities (RES, 2008). Thus, the municipality's main aim formulated to put the Danish government development visions into practice while engaging citizens in the anticipated development activities. This engagement reflects the municipality's vision that stated '*Citizens need to be close to democracy, leisure and municipal services. And the municipality should be close to citizens too*'.

In Autumn of the same year the municipality announced the formation of its 'development council' taking responsibility of municipal development activities, and debating developments' suggestions and ideas submitted from multiple collaborators that includes municipalities departments, external associated consultants and citizens. After

holding several meetings, the 'development council' announced its proposition of adopting a web-based project in order to broaden the participation base and to be accessed by a large number of collaborators regardless their physical place. This project which was characterized as a mass collaboration project was lately called 'Idémarken'[2]. Idémarken is a combination of two Danish terms, 'Idé' which stands for 'idea' and 'marken' that stands for 'field' together 'idea field' which reflects the nature of the project as a place where shared ideas, comments and suggestions grow as plants.

The 'development council' then set out the project's properties and features, and drew its core work environment. Idémarken is an open accessed to users worldwide, the collaboration activities are anticipated to come from citizens, firms, educational institutions, neighbouring municipalities, the state authorities and any others who can collaborate with ideas, solutions, comments, and suggestions for more agile developments, as well as to collaborators who can take a practical role in a development phase.

The Process Framework

5.2 The pre-adoption module

5.2.1 Identification

Identification is mainly the phase that approves a project for initiation by the validation of its goals, needs and limitations. It usually provides base information for commitments to projects. And this phase works for mass collaboration projects where organizations are required to identify their needs of such project and the goals of adopting it as well as the limitations that they may face during its adoption, implementation and launch.

1. Needs: Organizations and managers have to identify their needs to adopt mass collaboration, which is mainly based on their needs of generating solutions and ideas that could not be achieved without the engagement of external users and collaborators. For Idémarken their main needs were engaging the residents in the development processes and especially after the 'municipal reformation' took place, and applying their vision of being more close to residents and their suggestions and ideas. After conducting several meetings with different residents groups, the municipality figured out that there is a pool of ideas that can strengthen their development and fulfil the Danish government development visions.

2. Goals: Goals are of high-levels that provide the context of what mass collaboration projects are trying to accomplish and achieve based on the stated needs. They usually help organizations and managers look ahead and plan where the project goes on. For mass collaboration, goals may extremely vary depending on the nature of the project, for example the main goal behind Wikipedia was to develop a free access worldwide encyclopaedia, and the main goal behind Innocentive was to solve complex problems

[2] Idémarken official website: http://www.idemarken.dk/

that couldn't be solved before. For Idémarken project the main goal was to add new policies for the development. Policies for Danish municipalities are the main source of actions that are guided by the government, and in order to generate a new policy; long-term negotiation between various authorities are needed, which can be facilitated by the adoption of mass collaboration where a huge number of residents can take place and support the decision making process.

3. Limitations: Limitations can be seen as restrictions or obstacles on the ability of a mass collaboration project to achieve its goals. And many mass collaboration projects failed because of the lack of identifying limitations. For example, *A Million Penguins* mass collaboration project aims to write a novel in a collaborative form, failed because of various limitations that were not identified by the initiator (Mason and Thomas, 2008) and one of its main obvious limitations was that a novel cannot be written in a collaborative way as in Wikis. And for Idémarken project there were three identified limitations. Firstly, the municipality is governed and supported by the state authority where it would be very unusual to get a budget for a new type of project that is promoting a new concept which has never been used before. Secondly, a huge number of the municipality's residents are farmers who do not access the internet. And finally, the new nature of the project will make it harder to be promoted among residents and will require extra efforts and time.

5.2.2 Planning

Planning Technology: As it is mentioned earlier in this paper, mass collaboration is mainly based on Web 2.0 technologies, services and tools. While there are several Web 2.0 technologies that vary in functionalities, services and properties; it becomes essential for a firm planning to adopt mass collaboration to choose among those several technologies. A firm will be able to choose one or more technology depending on their: (1) desired outcomes and objectives, (2) the format of contents the firm is planning to share with users, (3) user's constraints, (3) level of participation, (3) number of expected users, and (4) other internal organizational factors that can be affected by the choice itself.

For Idémarken project, the adopted Web 2.0 technology was a customized Blog integrated into a dynamic web site, where the main objective is to share ideas, comments, solutions, and recommendations about particular topics of interest for the development of the municipality and its citizens. This formulated the main shared content to be only 'text' which blogging services can handle. Blog has the ability to handle the municipality's regulations where users can not edit other users' contributions as in Wikis. And finally choosing the Blog technology enables Idémarken coordinators to write their daily memos, comments and news in separate sections accessible by all users.

Technology's Source: There are usually three different sources for a firm to acquire a Web 2.0 technology, service or tool:

1. **Private Vendors**: Those vendors that develop and customize applications upon customers' requests, and the development of such applications are mainly costly

depending on the requirements, support, training, maintenance and other related services. The private vendor was the municipality's choice, where they choose a Copenhagen based development firm called "Social Square"[3]. The motivations behind choosing this firm for this particular project are illustrated in Table 4.

Concern	Motivation
Experience in Mass Collaboration and Web 2.0 applications	Social Square is considered as one of the most specialized Danish firms in mass collaboration projects. And this is clearly indicated in the description of their services' nature: "*We help organizations humanizing their approach to markets and marketing- and having dialogues with their customers. And while we help working out the strategy and implementing the software solutions, they transform into more caring, listening and conversational organizations. And in exchange for their community support they get new ideas, better feedback, more agile development - and a very strong sense of their own market and their own innovative power*." They also developed a set of Web 2.0 applications for other municipalities and firms adopting mass collaboration, such as, the implementation of both *idéoffensiv*[4] and *Anna Amalia*[5] mass collaboration projects for Skanderborg municipality and Midt organization respectively.
Offered Package	Social Square did not only offer training, maintenance and support for the developed application, but it also helped the municipality and the project's team to understand the nature of such mass collaboration project from different angles.
Development Cost	The development cost fits the municipality's budget for the development of Idémarken.

Table 4: Motivations behind choosing a private vendor

2. **Free Vendors**: Many software development firms are providing open source Web 2.0 applications for the community. Organizations which are looking forward to adopting mass collaboration can obtain any of these free Web 2.0 applications and run them by their own. However, and despite all the benefits of open source applications for organizations in general and for governments in particular (Hemphill, 2005), for the municipality, this choice was not at all in their agenda, and this is due to two main reasons: Firstly, government authorities in general and Danish ones in particular do not prefer to obtain free and open source applications as a kind of preventive measure, where open source applications seem to have lack of trust and confidentiality for such organizations. Secondly, if the municipality was to obtain such service, they would face a problem in customizing the application into Danish, where most Web 2.0 open source applications are English-based ones.

[3] Social Square official website: http://www.socialsquare.dk/
[4] Idéoffensiv official website: http://www.ideoffensiv.dk/
[5] Anna Amalia official website: http://www.annaamalie.dk/

3. **In-house development**: In-house development is another development choice. Developers are working under the same corporate roof of the organizations which is to adopt the developed application. This method of development is widely visible in Europe, where developers are very close and they have direct connections with the anticipated eventual owner of the application (Grudin, 1991). However, the municipality could not take on this choice; obviously because at the time of the project initiation, the municipality had no IT department that can fulfil the requirements of such task. Regarding to this, two of the interviewed informants commented:

Mr. Nissen:

"I am the only person in the municipality who is familiar with the Web 2.0, internet applications and users needs. However, I am not a developer or programmer, originally I am a librarian but I have my own web and internet skills, though I was chosen as a web coordinator for Idémarken project. Thus, we do not have the ability to develop the application by our hands".

Mrs. Vildbrad:

"We are a small municipality, and we can't do everything by ourselves, so we have to ask for help from outside. And for the technology issue, I can only use it, I really don't do anything technically. We have the needs for the project and the consultant informed us about the company that can help us in its implementation, then we sat with them and finally provided us the needed application".

Planning Properties: Earlier in this paper the four main principles that characterized the decentralizations form of mass collaboration were touched upon. Here these four principles will be discussed aligned with illustration of the case study. These four principles: peering, sharing, openness and acting globally are to be considered as properties of mass collaboration projects in view of the fact that they form the overall project's trait.

A. Sharing: Sharing is considered as one of the distinctive features of mass collaboration projects. As it allows users to share and view others knowledge. It creates new opportunities for the developments, and this is clearly emphasized by the acts of huge numbers of firms sharing not only their resources but even their invaluable intellectual properties for the sake of themselves, their users, suppliers and even competitors (Tapscott and Williams, 2006). It was Tim Bray, the director of Web technologies at Sun Microsystems, who said "we genuinely believe that radical sharing is a win-win for everyone. Expanding markets create new opportunities." (ibid, 2006, p.27).

The municipality was aware of this, and they made all contributed information in Idémarken available for all users with no restrictions. Ideas, comments, votes and feedbacks were all made available and even with no traditional registration on the web service. The municipality also shares all its activities which are related to Idémarken and all related ideas, such as, archival documents, presentations slideshows,

conferences working papers and materials, schedules of events, video and image galleries, newest activities, e-newsletters and even contact information of all people behind the project to make it easier to be in touch with them.

B. Openness: According to Tapscott and Williams (2006) firms that make their boundaries porous to external solutions, ideas and knowledge, and become open to the outside human capital outperform companies that ultimately rely on their internal resources and capabilities. They also stated that this type of openness is associated with "candour, transparency, freedom, flexibility, expansiveness, engagement and access"(p.21). In so doing, complex problems will be solved, customers can pretend the value of the products and services in a better manner, employees will become more aware of their firms' strategies, challenges and opportunities, partners will have intimate knowledge about operations that they can collaborate in, and finally yesterday's competitors may become today's collaborators aiming for their own success.

Moving to the main object of the case, Idémarken successfully applied the openness principle within its own environment and under the condition of its own context. The municipality applied 'freedom' by allowing users to express their opinions without restrictions and even users have the ability to criticize the municipality, its services or laws. They applied 'transparency' by being clear about all processes and actions they take towards users' ideas and generated content. They applied 'flexibility and engagement' by allowing users not only to contribute via Internet, but also to call by phone or come in person to the municipality asking about their ideas and comments. They applied 'freedom' by allowing users to keep anonymous and not publishing their contact information, and allowing them to participate in any topic for unlimited number of ideas, comments and suggestions. And finally they applied 'access' by enabling users to access Idémarken and all its contents anytime. Concerning this issue, Mrs. Vildbrad the project supervisor and co-initiator said:

> *"We consider our project to be very very open. We do not have anything to hide, and we accept all contributions, even sometimes people come and criticize our services, and we do care about them and further negotiate their problems. And I think if we would not act this way, there was no need for such project".*

C. Peering: Peering is simply allowing users not only to participate in the creation and development of products and services, but also coactively share, classify and rate contents that enhance the production, and is mainly known as 'peer production' (Tapscott and Williams, 2006; McKercher and Mosco, 2007 ;Wilkinson, 2008). And this actually was one of the focal motivations for the municipality to initiate Idémarken project. They were looking for citizens to help them in the creation of development activities, and promote the ability of users to take advance roles when ideas are applied in real, as one of the informants commented by saying:

> *"We want to be more close to the citizens and most of all bring them to help us in solving our and their problems for the benefits of all of us. People can tell us what*

suggestions they have and also they can help when we develop suggestions inside the county".

D. Acting globally: Basically, the nature of mass collaboration projects -its availability based on Web 2.0 technologies on the Internet- facilitates its spread all over the world. This enables firms to gain access to new ideas and solutions through the engagement of more innovated and open minded users sitting in different corners in the world. For the municipality's case, the nature of Idémarken compels that mass collaboration project to work locally and to some extent nationally. This nature can be exemplified as it serves a specific society (the municipalities' citizens) and is using a language that is not globally used (Danish). However, this does not precisely indicate that the project cannot gain contributions from the outside community, as the following comment by one of the informants clarifies:

"We have actually several Danes who are living outside and are participating, so we consider it to be international. But most of contributors (99 percent) are from Denmark and others are welcome. We were surprised when we noticed that there are many users from Spain who are visiting the site regularly, maybe they are Danes who are living there and interested about the idea".

Planning The Team: In general, it is very significant for firms planning to implement and take on a project to form a team that can face challenges and walk through project's phases smoothly. It becomes focal to follow criteria for the formulation process. However, there is no one ultimate or general criteria that fit all projects and drive them to success. Authors such as Tuckman (1965) presented an example of a simple team's formation strategy, where Jensen et al. (2000) presented an example of a complex strategy for forming and assessing design teams. And this is actually applied for mass collaboration projects, where it is a key activity to build a team leading the project, which will be faced by a shortage of such specialized criteria. Thus and in order to cope with different mass collaboration projects, it is preferable to base the formation on the requirements and conditions of such projects and the behind environments, although the formation unit can still be inspired by various established and general criteria. Taking in considerations that there should be members who possess experiences and skills in:

1. Web 2.0 technologies, services and tools.
2. Collaboration network.
3. Stakeholders' management.
4. New created knowledge management.

For Idémarken project, the team formation took a simple form; the municipality split the team into permanent and short-term members. The permanent members are those members acquiring main roles, and performing technical, managerial and administration tasks. Kim Nissen the technology coordinator who is responsible for administrating the web application, configurations, user needs and contacting the development company, and Mette Vildbrad project supervisor and co-initiator are considered as the two main

players in the permanent team. The short-term team can be any party from the mayor office, the municipality's different departments and even local councils who wish to contribute to the project for a limited period of time. Johannes Larsen who is a short-term member commented on his role by saying:

"I am not a full member in the project; I am only responsible for business related ideas. Now I do not have any responsibilities since the business theme that takes care of all business ides was terminated. But when it will be opened again I have to take back my responsibilities"

Planning The Structure: Mass collaboration projects are usually based on specific structures. Wikipedia, InnoCentive and other projects that are mentioned in this paper have their own way of implementing their collaborative activities and obtaining knowledge from users under specific conditions and rules. The structure of Idémarken is based on 'Themes', which is mainly referred to various topics of the municipality's concern, where ideas can be categorized and listed under. Each theme has a topic, description and a limited active period of time. For example, a 'Tourism' theme is concerned with ideas, suggestions and comments for any related topic of tourism, these topics may include ideas about: hotels, restaurants, tourist services, and so forth. It is worth mentioning here that terminated themes can be reactivated after a specific period of time, and suggestions for new themes can be done not only by Idémarken's team but also by the county council, the municipality different departments, consultants and by any other user.

5.3 The adoption module

After walking through 'identification' and 'planning' phases, it was very significant for the municipality to conduct two main stages before the full adoption and deployment of the project. These two phases are described below.

5.3.1 Scope Observation: Similar scoped projects observation is a highly followed practice in business. It provides firms and associated personnel with intrinsic overview of what others have done, and it produces a set of learned lessons that aids in saving time, effort and budget. This is actually what the municipality applied by observing the scope of two similar mass collaboration projects based in Denmark. The first project was Idéoffensiv, a mass collaboration project of Skanderborg municipality, and the second project was Anna-Amalia mass collaboration project of Midt organization. Mrs. Vildbrad commented on both projects:

Idéoffensiv project *"We observed two projects, one of them was the Skanderborg, and we noticed that they did it, and it was easy, so we said if we implement that project it will succeed and the main thing for us is to have a system that works and is easy to use, so from Skanderborg we can say it was easy. But in case of Skanderborg they are using it for large projects and plans, and they*

don't list ideas in themes. They have many too many functions, we will ask to have the same, but we need themes for the ideas".

Anna-Amlia project "*we observed Anna-Amalia, 24 women trying to get ideas from citizens online, but their efforts were more directed to arrange conferences and workshops to get ideas from people in villages, towns and cities. But we got overview of how these projects work online, so we can do something similar".*

5.3.2 Testing: Another traditional practice for developed applications that assures quality, functionality, efficiency, effectiveness, and the adaptability of the application within the environments and surroundings conditions. The municipality threw all previously mentioned measurements behind the shoulders of the developed company except measuring the adaptability of the applications and which is error free. Thus, the municipality proposed two stages: Firstly, they performed a one-day testing in order to assure that the application is error free and all requirements were met, and this task was executed by 12-15 employees. Secondly, they performed a multiple weeks testing in order to check out the adaptability of the application as employees, consultants, the mayor's office all were engaged; they submitted ideas, comments and were involved in different collaborative activities.

5.3.3 Marketing: After the execution of testing stages and assuring that the project is in a healthy status, the munciplpity fully deployed the application and moved to the marketing stage where it is considered very challengable, and this was due to the nature of the project. Thus, the municipality followed several marketing strategies to assure that they reached every user that would be able to collaborate and get involved. Here I will illustrate those marketing strategies with practical examples:

1. Online video marketing: This is in fact a new marketing strategy (Miller, 2008) that was introduced simultaneously with the popular Web 2.0 service for video sharing 'YouTube'. The municipality broadcasted a video on YouTube where the mayor of Hedensted 'Jørn Juhl Nielsen' appeared working on a field and saying "*As we dig in the field and plant the corps; they will grow, and same thing are ideas, come to idemarken.dk in order to help ideas grow and grow*".
2. Online forum marketing: Another online method for marketing, which was used by the municipality to market Idémarken. Internet forums, which were discussed in section (3), usually receive many visitors and covers topics in various areas of interest. The municipality used 'Kommunikationsforum'[6] - one of the popular forums service in Denmark- to market their project.
3. Online blog marketing: This strategy which was considered by Wright (2006) as a new revolutionary way to build brands, increase sales of goods and services, and exceptional outcomes; was also used by the municipality, where

[6] Kommunikationsforum official website: http://www.kommunikationsforum.dk/

different employees of the municipality, consultants and stakeholders promoted Idémarken in their personal blogs.

4. Traditional marketing strategies: The municipality also used the traditional marketing strategies, such as, local newspapers, and promoted it during conferences, workshops and speeches.

5.4 The post-adoption module

After the full adoption of the project took place and users started visiting Idémarken, and collaborating in submitting ideas and comments. Various actions and strategies were set up in order to maintain and evaluate the project.

5.4.1 Maintenance

In mass collaboration projects, there are a huge number of users who are collaborating in interconnected network to produce streams of new knowledge. In order to meet the projects' goals, satisfy the users and makes the best of their knowledge, there should be practices that are implemented before, during and after the collaboration activities taking place. The municipality was aware of this and proposed a set of strategies in order to maintain: (1) the users, (2) the collaboration networks, and (3) the new created knowledge.

A. **The New Created Knowledge**: As the main output of mass collaboration projects are knowledge, there should be proper strategies to maintain and manage this created knowledge. The maintenance practices may differ from one organization to another depending on the nature of the mass collaboration project and the collaboration topic. The municipality has followed a three-stage strategies in order to maintain ideas and contributions received from users:

    1. Receiving Ideas and Contributions: During this stage, ideas will be submitted by users which are followed by a discussion and comments. As mentioned previously ideas are categorized in themes with specific active duration status. Consequently, ideas will be active for discussion within the themes duration time, and as soon as the theme time runs out all submitted ideas and their related discussions will be gathered by the theme's responsible.

    2. Internal Debating: A theme's responsible is a group of limited number of employees that is responsible for a specific theme, and its main responsibility after gathering all themes ideas and discussions, is to debate these ideas and discussions internally through several meetings to be held in the municipality. In those meetings, it will be decided whether a submitted idea is feasible and can be implemented on real or not. Then all feasible ideas will be categorized together and sent to the municipal council for external debate.

3. External Debating: In this stage the municipality's main council will receive a categorized list of all feasible ideas and their related discussion, comments and notes. This will be followed by actions whether to apply and implement the discussed idea immediately, afterwards or reject the idea. After the council takes it decisions, it will inform the themes' responsible. And in case of that ideas to be implemented; the themes' responsible will start developing implementation plans which will be sent back to the municipal council for reviewing and final notifications.

B. **Users:** Users are considered as one of the main cornerstones of mass collaboration; they collaborate, bring ideas and solutions, and generate new knowledge. Therefore, it is very significant for organizations to implement and maintain strategies that help in the management of users. However, the municipality did not have any planned strategy to fulfil this purpose and to fill the gap between the organizations and the users taking place and acting in the collaboration network. The municipality was satisfied by collecting basic information about engaged users, such as, user's name, e-mail and physical addresses. Other information remains optional. Mrs. Vildbrad commented on this:

"We really don't ask too much information about contributors, we mainly need the name and e-mail, and sometimes people supply a fake name or email, and for this we care more about ideas and suggestions. But if people supply their real information it will help us contact them if we need more information regarding a subject or a matter. Sometimes we contact people using phones if we really need them or ask them to come to the Kommune for a meeting if there is something urgent and they can help"

C. Collaboration Networks: The collaboration network of Idémarken consists of: (1) users, (2) project's team members, (3) the mayor office, and (4) municipal council. In this network users interact directly with the project's team members whom relied on their decision on the municipal council that takes its authority and power from the mayor office. However, it was noticed that there is no adequate maintenance strategy to handle the entire network, and strategies followed are seen as powerless; given that they concentrate on handling two nodes of the network rather than the entire network as one unit.

6.3.2 Evaluation: Evaluation is a typical and traditional practice that has been around for a long-time. The ancient Chinese had their own functional evaluation system as long ago as 2000 B.C.E. Evaluation in general provides information to help improve a project; this information indicates how projects' aspects are working and states whether goals are met. In addition, evaluation provides information for communicating to a variety of stakeholders and gives managers the data they need for decision making purposes (Frechtling, 2002). And since the evaluation of projects may vary from one organization or a project to another (Phillips *et al.*, 2000) it was intended to illustrate Idémarken's

performance evaluation through three main strategies: (1) the effectiveness and (2) the efficiency strategies, to evaluate the performance of the Web 2.0 tools and services used in the mass collaboration project, and through (3) Project's results, to evaluate the performance of the project as a whole unit.

1. Effectiveness: According to Preece et al. (2002) the effectiveness refers in general to how good a system is at doing and performing what it is supposed to, and how efficient it is in carrying the needs of different users and its capability in allowing them to learn well. The municipality applied this strategy by evaluating the process of handling users' contributions. Results showed that the adopted system is good at handling users who were satisfied. In addition, the results showed that the system encourages learnability, since it was developed in a simple way, where users at most require walking through two steps to perform a task.

2. Efficiency: According to Preece et al. (2002) the efficiency is about the way a system supports its users in carrying out their tasks and the level of productivity the users can sustain. In general, Idémarken is considered by the municipality as a supportive system where users are provided with detailed guidance for every task they wish to perform.

3. Results: Evaluating projects based on their results vary from one project to another based on the project's nature and the anticipated outcome. And for mass collaboration there are several types of results that managers can rely on. Firstly, the number of online visitors and explorers, for Idémarken 4041 users visited the project in the period of November 2007 to April 2008. Secondly, the number of submitted ideas and comments, for Idémarken the total number of ideas was 388 and comments were 209 for the same period. And finally the number of feasible or applicable ideas that will be implemented, for Idémarken 70% of the submitted ideas are feasible but their implementation depends on the approval of county council and the municipality's budget.

6 Discussion

As stated in the introductory section, the main aim of this paper is to propose a process framework for managing projects and initiatives that specifically aim to adopt mass collaboration. And this proposition will be based on a single case study of a Danish municipality that applied mass collaboration on one of its development projects.

The proposed framework which is described and illustrated in the preceding sections turned to be consisted of three main modules:

1. The Pre-adoption module: This is concerned with actions to be taken and phases to be accomplished before the adoption of mass collaboration and the related technological tools and services. This module consists of two main phases; the *Identification* phase in which managers approve the project based on the needs of the organization, goals to be achieved and limitations on the ability of the project to achieve the stated goals, followed is the *Planning* phase which is used to determine actions and processes for achieving the

organization's goal. During the planning phase, the organization should focus its concern on four main aspects which are very critical to the success of the mass collaboration project in general, and to collaboration activities in particular: (a) type of Web 2.0 technology, tools and services to be used and implemented and the sources of this technology, (b) the properties of the project and the collaboration activities, in which four main properties should be clarified; peering, sharing, openness and acting globally, (c) team formation and activities assigning, and (d) the structure of the project.

2. The Adoption module: this module concerned with practices to be accomplished during the adoption of the project and after the execution of the pre-adoption module. The first phase to be executed in this module is the *Scope Observation* where similar projects within the same scope to be observed, which can provide managers and associated personnel with intrinsic overview of what others have done, and a set of learned lessons can be obtained. Next, is the *Testing* phase which is dedicated to the adopted technology, tools and services. It is suggested to perform two types of testing, the *error-free test*, where bugs and errors can be located and reported, and the *adaptability test*, where the organization tests the adaptability of such new collaboration phenomena on real based on the acquired application. Once the project and related technologies, services and tools are adopted, it becomes essential to turn to the *Marketing* phase, where the project is marketed to stakeholders and all concerned users using online and offline marketing tools.

3. The Post-adoption module: This is the final module in the process framework, which is to be implemented as soon as the collaboration network becomes active and collaboration practices start running. The first phase in this module is the *Maintenance* phase where the newly created knowledge, the users (collaborators) and the collaboration network are maintained through rules and plans that are set by the organization itself depending on the nature of the mass collaboration project and the collaboration activities which are taking place via the network. After that, organizations need to evaluate the performance of the managed mass collaboration project, in this *Evaluation* phase, the effectiveness and efficiency of the acquired technologies, tools and services are evaluated, and the collaborations' results are assessed by different methods, such as, the number of users (collaborators), the number of suggested ideas, comments and new created knowledge, and finally the number of feasible and applicable ideas that can be performed by the organization.

The proposed process framework is introduced in a way to help managers identify, state, directs and walkthrough different phases and processes in order to manage their mass collaboration projects. It is primarily concerned in identifying the needed modules and phases, and does not concerned too much on showing how to implement those specified modules and phases; it rather gives recommendations based on the illustrated case study. This implies that organization and managers can follow the framework's modules and phases while applying their own perspectives and performing solutions that can work for their mass collaboration projects under the working environment. The proposed framework is also considered as an iterative one, where modules, phases, processes or actions can be performed iteratively and managers can perform a backtrack plans as

many details may become known as they progress in the project's adoption, and some of the new learnt lessons invalidate the management practices of such collaborative based projects. Figure 1 below presents the proposed process framework.

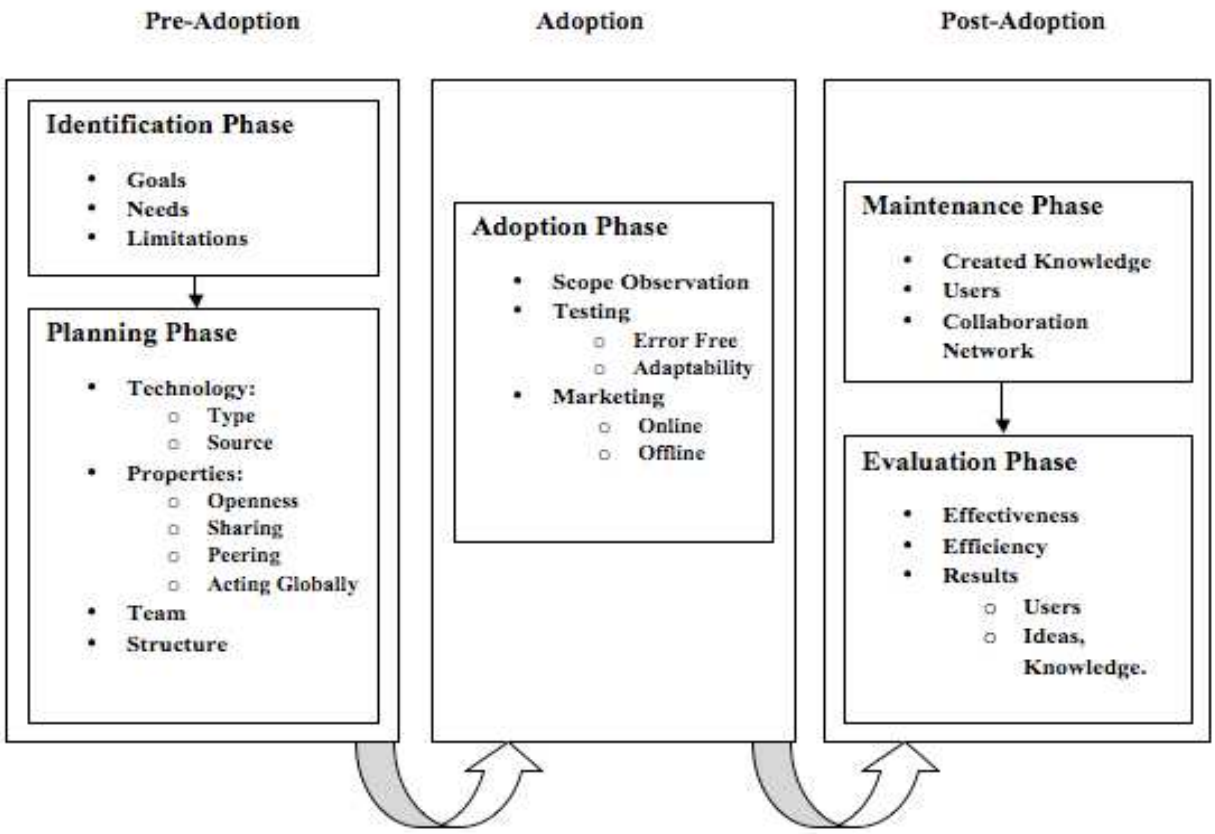

Figure 1: The Proposed Process Framework for Managing Mass Collaboration Projects

7 Conclusion and Further Research

In this paper the new phenomenon of collaboration has been explored, referred to as *mass collaboration* and its significant roles in unleashing the creativity and knowledge of groups and individuals, encouraging them to act globally, share their information and interact with peers were discussed. This was followed by a description of the Web 2.0 concepts, its technologies, tools and services. After that the paper focused on proposing a process framework to be used for managing projects and initiatives that specifically aim to adopt such collaboration form, and this proposition was based on a case study of a Danish municipality that applied mass collaboration. The proposed framework consisted of three main modules, pre-adoption, adoption and post-adoption where set of practices and activities are integrated to facilitate the management practices to be applied while adopting this new collaboration form.

Further studies will be necessary in order to test and evaluate the proposed framework in different mass collaboration projects that are adopted in various environments and contexts. These studies can support the generalizability of the framework and enhances its adoption in a broad manner. Further studies are also needed to build upon the framework with practices that might be necessary to accomplish a task or perform an operation in particular projects that the framework might pass over.

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