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Brainstorming +: Towards a tool for decision-making In the Web 2.0

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Abstract

Web 2.0 to democratize access to information by providing a platform fairly comprehensive, free, open and often gratuitous, which allows players with little technical knowledge to participate and take ownership of the new features of the web. It is in this context where this article is positioned being part of a series of scientific research conducted by our research team, which focuses on Web 2.0 and collaborative decision-making on the net. It aims to propose a new social tool that is based on the method thereby providing a brainstorming technique for generating ideas that stimulates creative collaborative thinking done by users of the web to find the maximum ideas in a minimum time with differed opinion. In this context, we will rely on the participation of users to contribute to the accumulation and sharing of information thereby creating social communities. Our tool combined the features of a blog and a social network in addition to brainstorming techniques, it will be powered by the meeting of a set of investments classified according to decisions themes to achieve the end result in the end with a blog of decisions made in these virtual meetings. For its implementation, we propose a unified modelisation using the language UML to model its various processes.

Keywords: Web 2.0, brainstorming, decision, collaboration communautaire, UML.

1. Introduction

Since 2004, the web enters a new collaborative phase, indeed, the last known web 1.0 only allowed to display static pages whose content was not always updated. Today since its creation by Dale Dougherty of O'Reilly Media [3], all converging communication technologies come together, provide the image, the sound link, localization.

The web is no longer thought of as a collection of sites to visit, but this time as a platform for exchange between users, services and online applications [4].

The concepts of Web 2.0 have led to the development and evolution of web communities, in fact, hosted services and applications, such as sites of social networks, video sharing sites, wikis or blogs have made changes in society on a massive scale, BIRDSALL (2007) [5] calls a social revolution. O'REILLY (2005), described the characteristic of web 2.0 by valorizing the user as part of the contents of the site, the user becomes the creator and consumer of information. The Web 2.0 tools facilitate the sharing, networking and dissemination of information among friends and other groups.

Support for decision making is an area that aims to develop tools to help a decision maker to analyze a problem or situation, and provide solutions. Brainstorming is a creative technique for decision support among the others that accelerates the production of ideas of an individual or group. Alex Osborn [6], observed that most of the energy deployed during the meetings went by destructive critics to the others ideas, has banned any criticism during the first phase of researching ideas.

In the following we will present the tools of Web 2.0 followed by brainstorming techniques in the second paragraph, then and in the third paragraph, I will introduce the new tool Brainstrorming + which is the core of our work to help make decisions based on the technique of brainstorming before concluding with a conclusion and a set of perspectives.

2. Web 2.0 Tools

The popular social tools of Web 2.0 are many and their number is increasing day by day. in addition to new functionalities and new uses at a rhythm exceeding our ability to grasp. The following paragraph presents the most used tools of Web 2.0 in sharing information and ideas which are respectively, blogs, wikis and social networks.

2.1 Blogs

Blog (from the term web-log) is a simple website usually issued by a single individual, focusing on a particular subject and regularly updated (blogging), so we can define blog as a simple web page consisting of a brief paragraph about an opinion, information or link [7].

The blog is considered to be the first tool most used among the tools of Web 2.0, because of its ease of use and frequency of comments published regularly in this tool there are about 1500 to 3000 blogs a day on the internet.

2.2 Wiki

Second powerful tool of Web 2.0 it's a special type of website that allows a community to create and edit collectively a content published online. It is used for the development, in a collaborative mode of reference materials.
Term has appeared in 1995 by Ward Cunningham, for the section of a site on computer programming he called WikiWikiWeb, currently the wiki is experiencing a maturity level, they are used by a growing number of associations of enterprises or public authorities [8].

2.3 Social Network

To define the social networks two main axis are presented:
Sociological axis: a social network is a set of relationships between social entities (individuals). The contacts between these individuals can be, for example, collaborative relationships, friendship, or bibliographic citations
Technological Axis : the network defines a set of interconnected equipments used to deliver a flow of information. It allows to connect thousands of individuals around the same interests or not, have them exchange information or to have them participate in events, all at a distance without actual contact. Social networks provide tools that facilitate the process of connecting around a common center of interest and allow the contact line [9]

2.4 Fil RSS

RSS (Really Simple Syndication) is a format for describing data that facilitates the dissemination of information, in an automated way, for Internet users, and promotes content syndication by allowing other sites to republish easily all or a part of the data.
Syndication: RSS allows to track automatically the content of a website and put the contents of its site available to others: it is the content syndication.
Monitoring tool: RSS is a remarkable technological tool as well. The ability to conduct effective watch is now crucial for companies in the context of a globalized economy and network.
Interoperability of applications: RSS is a great format for the electronic exchange and interoperability between Web sites and / or applications, compatible or not [10]

2.5 Podcast

A series of multimedia files (usually MP3 audio files) encapsulated in an XML distributed over the Internet using subscription services.
Podcasts are already being used in medical school curricula [11].

the benefits expected from these different tools are already being used as or plans to do that. Among current users, it is primarily to improve internal communication and collaboration which is highlighted.
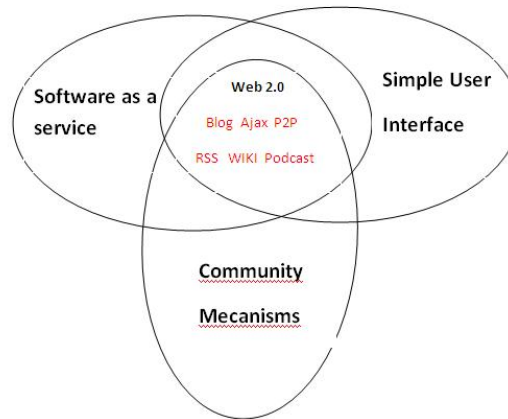

Fig1-Web 2.0 Tools.

From this figure, the web 2.0 tools are considered as services that use simple interfaces and community mechanisms.

3. Brainstorming:

To find original interesting ideas, and develop innovative solutions to make decisions, it is necessary to apply a specific process of creative research of ideas or solution. It is in this context that the brainstorming take part which is in this long process and can be reused repeatedly throughout the process of looking for ideas and solutions [12].

3.1 Individual Brainstorming

Collaboration and the focus group is often more efficient to generate ideas than a normal group of problem solving. A series of studies [13] showed that when people reflect on their own, they come with more ideas (and often better quality ideas) than groups of people who think together
partly because this product in groups of people are not always strictly follow the rules of group behavior and thinking of poor creep, importantly, this happens because people are paying much attention to the others ideas which are not any ideas of their own - or they forget these ideas while they wait their turn to speak. This is called "blocking".
when you reflect on your own, you will tend to produce a wider range of ideas than a brainstorming group, you do not have to worry about people or opinions, and can therefore be more freely creative

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You cannot, however, to develop ideas as fully as you reflect on yourself that you do not have more experience than other group members to help you

3.2 Group Brainstorming

When it works, think tank can be very effective to get the full experience and creativity of all members of the group to focus on a group of members individual issue. When stuck with an idea, another member BEYOND creativity and experience can take the idea to the next stage. Group brainstorming can therefore develop ideas in more depth than individual brainstorming. [14]

Another advantage of the focus group is that it allows each participant to feel they have contributed to the end solution, and it reminds people that other people have creative ideas to offer. In addition, the brainstorming is fun, and it can be great for team-building.

You can often get the best results by combining individual and group brainstorming and managing the process of care and in accordance with rules.

3.2-Process Brainstorming

The process of finding solutions is presented in different phases. For most, there is the problem analysis, new ideas research new ideas and implement the best solution. These main phases revolve steps that include variations depending on the application context or authors. Here is a model of a systematic approach to finding solutions that present the usual steps.

Table 1: Steps of Brainstorming

PHASE1: Analysis of the issue	
Step1	Ask or search problems.
Step2	Description of the situation (based on the facts).
Step3	Understand the situation (problem definition).
PHASE2: Search for new ideas	
Step4	Find ideas according to the creativity technique (brainstorming)
Step5	Examine the ideas according to the known criteria
Step6	Improvement of ideas and selecting the most appropriate solutions to the situation.
PHASE3 : Implement the best solution	
Step7	Plan and implement the most feasible ideas.
Step8	Monitoring results.
Step9	Develop new strategies, products or services improved.

It should be noted that during the whole process of finding solutions, it is possible to return to a previous step or skip a step.

The technique of brainstorming has the main advantage of finding ideas without blocking the flow of thought of the individual. In addition, it can prevent us from blocking the flow of our ideas or to destroy the ideas of others in a group situation. A good application of the technique is to lay a lot of ideas and ensure suspending judgment initially. Only in a second step, after finding as many ideas as possible then we can criticize the ideas and care for them into solutions to the situation.

4. Brainstorming +:

Decision support systems (DSS) are intended to facilitate decision making at the enterprise level [15]. A well-designed system for decision support is an interactive software that helps decision makers to extract useful information from raw data, documents, personal knowledge and business models, to identify and solve problems and take decisions.

These tools are used to help decision makers make decisions within companies, brainstorming + fits into this philosophy but not in the business this time it is for web users and all those who consult the Internet and want to find an optimal solution for their problems.

Brainstorming + is a client server type that DSS is designed to help web users to make decisions by using the creative brainstorming, it also inspired the great advantage of Web 2.0 is collaboration between users system.

4.1 User authentication in Brainstorming+

For a user accesses the system Brainstorming + it must pass through a policy of secure authentication like finger print reader. Each user will be identified in the sphere of brainstorming + with a single login for all the treatments that will make in the system as well as each user is assigned a profile that determines the rights and roles of that user in the new systems.
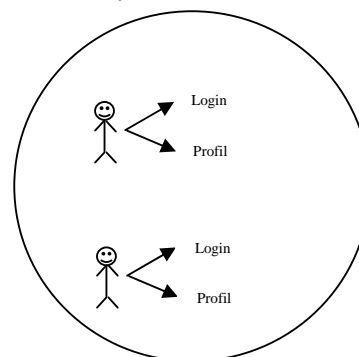

Fig 2 Sphere Brainstorming+

4.2 Classification of the decision in the Brainstorming +

The decision produced in this new system Brainstorming + can be in multiple formats: text, image, podcast and videocast. It can be divided into four classes:

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Table 2: Ranking of information in the Brainstorming +

Symbole	Détail	Signification
GD	Good Decision	right decision
MD	Medium Decision	Average decision
LD	Low Decision	Decision has corrected
ED	Erroneous Decision	wrong decision

This classification is made by the profiles in the sphere of advanced brainstorming +.

4.3 Category of users Brainstorming +

To manage this new system that helps make the decision in the web 2.0 using the method proposed a brainstorming team of validators decisions of users, and a team of experts to be responsible for choosing decisions validators among simple users and administration of the platform. We represent the categories of users of this platform Brainstorming + in the following table:

Table 3: Category of Braistorming + users [1]

Actor	Role
USER	Readings and production of decisions
VALIDATOR	Validate the decisions produced
EXPERT	Administration platform

In this new platform making the user can perform several simple tasks: reading of the proposals, produce proposals, correction and monitoring.
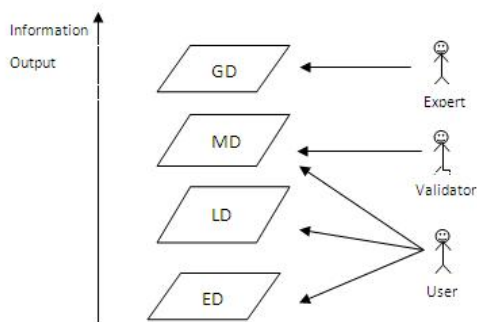

Fig 3 Architecture Brainstorming+

In the brainstorming + there will be four levels of decisions produced by three categories of user.

4.3 Steps Brainstorming+

Brainstorming + system is a bit like the most used tool in the Web 2.0 Blog, a user of the sphere brainstorming+

puts a problem to find an optimal solution by the technique brainstorming. After the other users of the sphere give solutions and suggestions to this problem, at the end of this stage the proposed solutions are raised to be classified by the brainstorming + validators.

An expert from the field chooses + Brainstorming two validators to classify each proposed solution, if both validators do not agree on a proposal a third validator is involved to decide but this solution will be classified LD (Low decision) or MD (Medium decision). At the end of the classification of all proposed solutions, the taken solutions are those of GD (Good decision) will be compiled by an expert to be published at the end as the final solution to the problem.

5. UML modeling of brainstorming +

Computerization is the most important phenomenon of our time. Now it interferes in most objects of everyday life, whether in the object itself, or in the process of design or manufacture of the object.

The description of the object-oriented programming has highlighted the extent of necessary conceptual work: defining classes, relationships, attributes and methods, interfaces....

To program an application, it is not appropriate to embark headlong into writing code: it is necessary to organize ideas, document them and then organize the implementation by defining modules and stages of implementation. It is this approach which is prior to writing and so-called modeling, and its product is a model.

UML is a graphical language for representing, communicating the various aspects of an information system, uml has 12 standard diagrams representing as many "views" of an information system These diagrams are a useful according to cases and if they are not all necessarily produced on the occasion of modeling [16].

after I will introduce the three basic diagrams of UML modeling tool brainstorming +.

5.1 Use cases of brainstorming+

Use cases are an essential part of the object oriented modeling. They occur very early in the design, and should in principle allow to design and build a system tailored to user needs. They should also serve as a common thread throughout the development, during the design phase, implementation and testing. They thus serve both to define the product to be developed and to model the product to test the product produced.
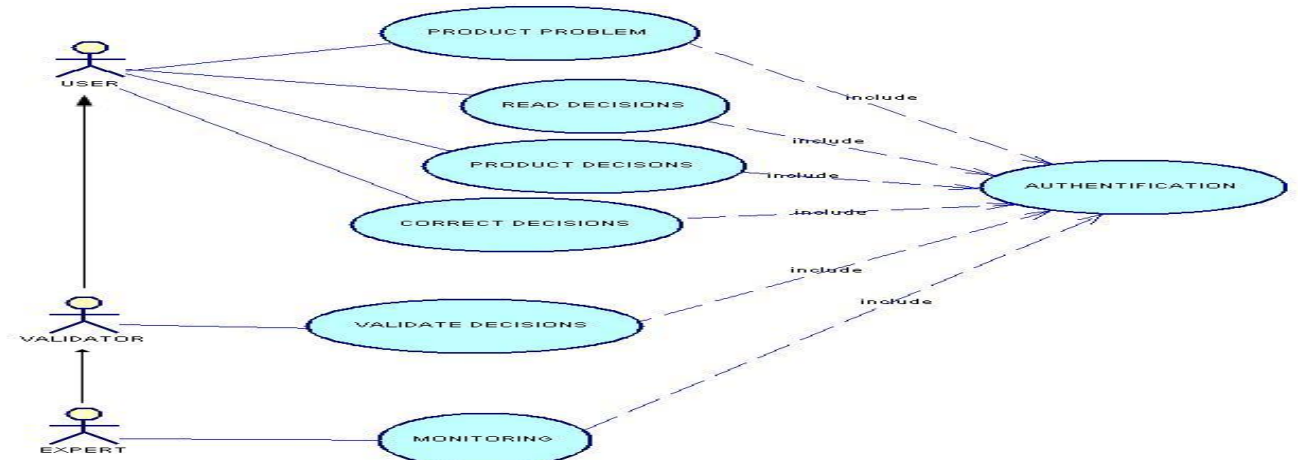
Fig4 : Use Cases of Brainstorming+

From the diagram, the user has four actions in the system brainstorming +: reading information, information producting, correction of these proposals and finally monitoring. The Validator's primary role is the validation of the proposals made by users and it inherits the roles of the single user. The Expert inherits all the roles and actions of other users of the system in addition to administration of the platform.

A sequence diagram is an interaction diagram that details how operations are carried out: what messages are sent and when. Sequence diagrams are organized according to time. As time passes as you browse the page. The involved objects in the operation are listed from left to right according to when they take part in the sequence of messages.
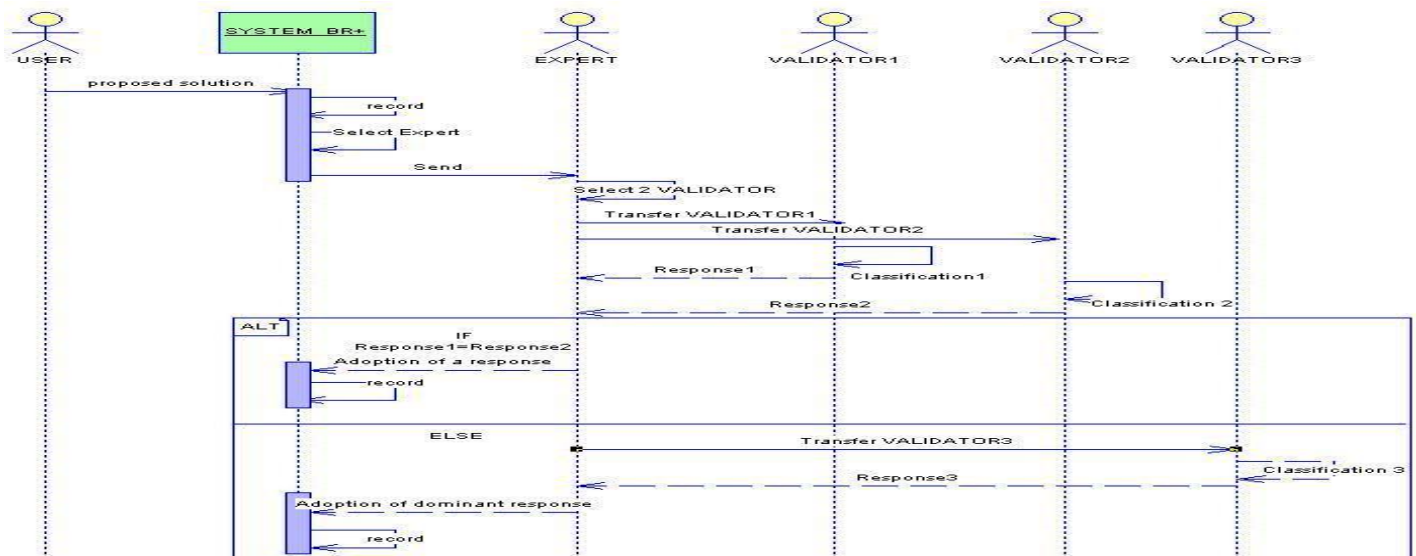
5.2 Sequence Diagram brainstorming+

Fig 5 Sequence Diagram brainstorming+

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This diagram allows us to detail the action of validating and classifying a proposed solution in time. First a user of the sphere reads the problem to solve then he gives his opinion, the system records the notice and send it to the expert to select two Validators to classify this proposal, if do not agree it is sent to a third validator to treat.

5.3 Class Diagrams

A class diagram describes the type of system objects and data and the various forms of static relationships that connect them. A properly performed class diagram is used to structure développement workvery efficiently, it also, in the case of work done in groups, separates the components so as to divide the development work between the members of group. Finally, it helps build the system correctly.
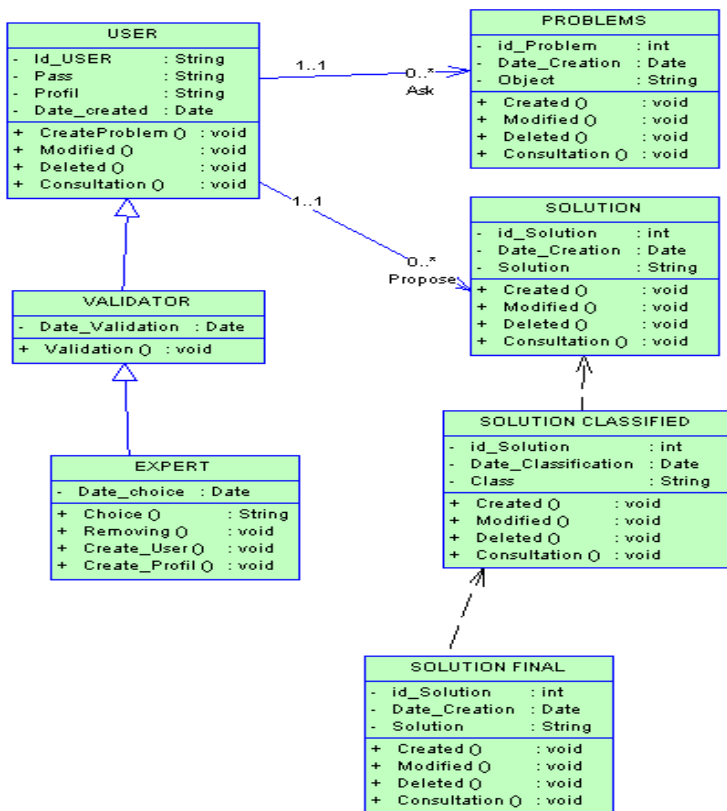

Fig 5 Class Diagrams Brainstorming+

The class diagram represents the core of the system, it describes the different classes of the system and the relationship between them, according to the class diagram brainstorming+.

6 Conclusions

Web 2.0 is an evolution of the Web to simplicity, interactivity and collaboration among web users regardless of their level. Web 2.0 contains many tools that are social activists, they allow the user to simply share and publish content (photo-commentaire..), But we do not find tools for collaborative decision support to help users the web to find a collaborative solution using known and effective techniques. This new tool is part of this philosophy is to find solutions using the creative technique brainstorming and collaborative tools web2.0.

References

[1] Boubker Sbihi, Kamal Eddine El Kadiri and Noura Aknin: The Vblogs: Towards a New Generation of Blogs. IJCSI International Journal of Computer Science Issues, Vol. 7, Issue 3, No 2, May 2010

[2] Chrayah Mohamed, Boubker Sbihi and Kamal Eddine El Kadiri :Towards an instrument for a new generation of blog. EMSCE 2011 May 19_20 2011 ISBN:978-84-694-4025-4.

[3] O'Reilly, T. (2005). What is Web 2.0. Design patterns and business models for the next generation of software. , available at:. http://oreilly.com/web2/archive/what-isweb-20.html

[4] O'Reilly, T. (2006). Web 2.0 compact definition: Trying again. Available at:http://radar.oreilly.com/archives/2006/12/web 20 compact.html.

[5] Birdsall2007 :Web 2.0 as a Social MovementReceived January 17, 2007; Accepted February 6, 2007

[6] Osborn, Alex Faickney (1940, 19635):AppliedImagination:Brainstorming

[7] Blog. (b.t.). Retrieved September 25, 2008 from http://en.wikipedia.org/wiki/Blog

[8] Bower, M., Woo, K., Roberts, M., and Watters, P. (2006). Wiki Pedagogy - A Tale of Two Wikis. Proceedings of the Information TechnologyBased Higher Education and Training Conference, (ITHET06). Sydney, Australia, 191-202.

[9] Social Networks, Volume 29, Issue 2, May 2007,Pages 173-191 Garry Robins, Pip Pattison, Yuval Kalish, Dean Lusher

[10] The application rss andxml Media Type". Network Working Group. May 22, 2006. Retrieved 2007-08-16.

[11] Podcast Production. President and Fellows of Harvard College. Retrieved 2009-08-21.

[12] Building on the ideas of others: An examination of the idea combination process Nicholas W. Kohn,Paul B. Paulus, YunHee Choi Volume 47, Issue 3, May 2011, Pages 554–561

[13] A new dynamical model of brainstorming: Linear, nonlinear, continuous (simultaneous) and impulsive (sequential) cases Hamit Coskun, Oguz Yilmaz Volume 53, Issue 4, August 2009, Pages 253–264

IJCSI International Journal of Computer Science Issues, Vol. 9, Issue 2, No 2, March 2012
ISSN (Online): 1694-0814
www.IJCSI.org

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[14] Productivity is not enough: A comparison of interactive and nominal brainstorming groups on idea generation and selection
Eric F. Rietzschela, Bernard A. Nijstada, Wolfgang Stroebeb Volume 42, Issue 2, March 2006, Pages 244–251

[15] A design of a DSS intermediary for electronic markets
Karl R. Langa, Andrew B. Whinstonb Volume 25, Issue 3, April 1999, Pages 181–197

[16] Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and the Unified Process ISBN: 978-0130925695, July 13, 2001

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