

# CONEWS: A COLLABORATIVE APPROACH TO ONLINE NEWS STORIES

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Abstract: In this paper we present the CoNews framework, a hybrid approach to publish online news stories, consisting of the combination of news entries extracted from authoritative sources - retrieved from news search engines - with blog articles and user-submitted less-authoritative stories. Some of the goals of this research include experimenting with new forms of mass communication and editorial control as well as improving users' access to the ever-expanding news information available to them. By creating an appropriate environment, we encourage users not only to become a more active audience for news stories and other issues, but also to contribute with his/her own articles to the body of knowledge.

## 1 INTRODUCTION

In 1997, Molina reported that online newspapers were embarking on the journey towards multimedia. The vision for the end of the journey was “*a personalized interactive electronic news system making fully-integrated use of text, audio, still-image, animation and video*”. Several problems were identified as well as uncertainties facing media companies experimenting with steps towards the multimedia vision. They include profitability, copyright, and organization of production of the new media (Molina, 1997).

Today, a large number of online newspapers disseminate a variety of news reports to Internet users through a Web Browser. At many news sites, online readers can do more than merely select information - they also can add comments, engage in discussions, or even suggest a story or topic. However, editors of major online newspapers may be concerned of losing control or even their credibility by allowing users to become a source of communication messages. For this reason, and because newspapers companies are business oriented, they have failed to create an appropriate environment to engage users in media communication.

News search engines such as *Google News* have been an answer to this, in that they integrate diverse journalistic sources. They provide links to several articles on the same story so that readers can choose

what subject interests them and consider a rich variety of perspectives on any given story. Despite offering a wider range of stories, personalized news and other facilities, readers are still seen as passive consumers.

In the recent years, open publishing initiatives and journalism told by “common people” began to emerge, enabled by new technologies such as blogs, wikis, social networks and mobile computing. Mobile blogging has also been transforming the way people collaborate as they begin to use their cell phones and other devices to send updates to their blogs. Some authors consider these technologies part of a social phenomenon embracing an approach to generating and distributing Web content itself, characterized by open communication, decentralization of authority, freedom to share and reuse (Web 2.0, 2006).

In this research, we are investigating new forms of mass communication - open and multi-directional, instead of one-way - where the goals of journalists and readers may be optimally aligned. The main target of this paper is presenting the CoNews framework, a hybrid approach to publish online news stories. By creating an appropriate environment, we encourage users not only to become a more active audience for news stories and other issues, but also to contribute with his/her own articles to the body of knowledge.

The rest of the paper is organized as follows. The second section presents some key background

concepts and the most relevant work; the third section presents the CoNews framework, its main concepts and describes the prototype implementation; and the fourth section the final considerations and future work.

## 2 BACKGROUND AND RELATED WORK

In this section, we begin addressing the main problems related to online newspapers. Secondly, we discuss news search engines and show that they provide an answer to some of these problems. In the following, we describe some rich technologies that emerged in the recent years, including blogs, wikis and social networks. And finally, we present the most relevant work related to our research.

### 2.1 Online Newspapers

A long time before the dissemination of online newspapers, Brown and Duguid (1994) claimed several advantages of a printed newspaper over its electronic news counterparts. The three advantages for print included its uniformity of information - because everybody got the "front-page news", compared to everybody getting their own different front-page - the juxtaposition of news through layout in the paper, giving information about news value and relatedness, and finally, the constrained physical space of a printed paper, demanding a selection of news.

On the other hand, the advantages to online newspapers are many: their ability to be up-to-the-minute, their flexibility, and their customizability. But these same features are their downfall: readers of online media don't all see the same news; stories may change from time to time, so different readers will see different versions of stories. According to McElhearn (2006), while newspapers based on paper offer a fixed, daily dose of news that everyone shares, online newspapers tend to fragment the news into only what catches the eye.

Pavlik (1997) claims that online content is evolving through three stages. The first stage involves repurposing print content for the online edition. In stage two, content is augmented with interactive features, such as hyperlinks and search engines. Stage three is characterized by the creation of original news content designed specifically for the new medium.

However, stage three has not completely been reached. Newspaper companies are businesses oriented, and they are unable to understand the autonomous nature of communication on the Net, and to meet users' needs and expectations. As a matter of fact, the majority of online newspapers remediate important features of their paper-based counterparts. Their online services, layout and communication patterns are largely influenced by established practices in publishing the paper version. In most cases, articles posted are exactly the same as those printed in regular newspapers (Johnson, 1997), but in the majority of cases, they are narrower articles. Sometimes they are augmented with multimedia features like hyperlinks and images, but only a handful of sites include content designed specifically for the Web as a new medium of communication (Pavlik, 1997). For this reason, except for major breaking news events, readers spend a small portion of their time retrieving news from online sources (Fidler, 1997).

It could be argued that a growing number of online newspapers allow users to comment on news articles, engage in discussions or even suggest a story or topic. However, a major problem that rises is that contributions are fragmented in many news sites, and readers may feel uncomfortable with the idea of having to comment in various sites that publishes articles on the same story. In most cases, readers may even give up the idea of collaborating because they just cannot find the right place and the right persons to collaborate with. Furthermore, concerns about possible loss of credibility by editors of major online newspapers may prevent users from becoming a source of communication messages. By not creating an environment that offers advantages over traditional newspapers and that engages users in a more participatory experience, online newspapers fail to create significant audiences of their own.

### 2.2 News Search Engines

With the goal of placing as much information as possible on their main pages - to fit around the ads - online newspapers tend to shut out their readers.

News search engines like Google News have been a partial answer to this problem. Their stories show introductions, the first few words of stories, allowing readers to have more context. News search engines extract news information from both the Web and news feeds, group related articles together in "news stories", cluster the stories in categories, and finally display results in personalized pages.

In Google News portal, as advocated in (McElhearn, 2006), stories are selected by computer algorithms, without human intervention, which is why Google News is considered the antithesis of any newspaper. Google claims that "*news sources are selected without regard to political viewpoint or ideology, enabling you to see how different organizations are reporting the same story*" (About Google News, 2006). In fact, this site creates a space for the presentation of diverse journalistic voices, although its diversity and quality depends both on the availability and reliability of its professional sources (Ananny and Strohecker, 2002).

Although they offer a wider range of stories, advanced search, recommendations and many others value-added services such as news alerts and searching in news archives, readers are still seen as passive consumers, and the emphasis remains upon a one-way flow of information.

### 2.3 Blogs and Wikis

Blogs represent online journals for a particular person, where people periodically post news stories on a certain subject - such as politics – and users are invited to comment on the stories. They usually combine text with images or even streamed video, contain links to other related sites, and entries are displayed in a reverse chronological order.

In the recent years, they have emerged as a phenomenon of great impact, not just because of the millions of blogs that exist but because of the large numbers of people interested in what bloggers are saying (Raynsford, 2003). They represent the antithesis of the values articulated by objective journalism: they are personal, passionate, subjective, and not subject to editorial oversight (Gill, 2005).

Some authors consider blogs a useful supplement to online newspapers in that it may give readers greater insights into what's happening on the ground. But others remain sceptical about considering blogging as a new form of journalism. They state that two things separate blogging from journalism: the personalisation of the voice of the blogger and the lack of a workflow for publication that one expects for any publishing system. In fact, no editor comes between the author and the reader.

However, as mentioned before, online newspapers have failed to create audiences on their own and, as a result, many online readers have chosen to eschew traditional sources of news in favour of blogs. As happens with news stories indexed by news search engines, there are many blog search engines available on the Web - such as

*Google Blog Search* - dedicated to retrieving, indexing, clustering and delivering blog articles.

A wiki is a tool for collaborative authoring in the Web that can also be used to publish news stories. It allows visitors themselves to add, remove, and easily change content available in a Web page. Wikinews, for instance, is a free-content initiative that allows anyone to report news on a wide variety of subjects.

### 2.4 Social Networks

Social networks have become an emergent subject in the communications field. They allow people to share relevant information and media with one another, self-organize, and easily form alliances to engage constructively with our neighbors. Readers are linked to other readers directly, creating smaller audiences who share much in common.

According to Kollock (1999), users that contribute in online communities that implement social networks are motivated by three factors: anticipated reciprocity, increased recognition and sense of efficacy. As will be discussed in Section 3, CoNews is a social network specifically designed for collaboration over news stories.

### 2.5 Related Work

Currently, we are aware of a few systems that provide functionality similar to *CoNews*.

*Digg* is a framework for publishing news stories submitted by users. The stories are ranked through a user-based ranking system and then promoted to the front page. Should the story not receive enough "diggings", or if enough users make use of the problem report feature to point out issues with the submission, the story will remain in the "digg all" area, where it may eventually be removed. Articles are categorized by topic - similar to topic categories for major online newspapers - but not per region. So, there are Digg versions in many countries around the World.

Concerns have been raised over Digg's growing influence as a news source. It has been criticized for spotlighting false, misleading and poorly-written information (Digg, 2006). Not offering a workflow machine to support the collaborative creation and publishing of news stories could be pointed as a major lack of opportunity in Digg framework. In fact, despite the recent wave of Digg-like services provided by commercial companies, few scientific publications are devoted to studying online communities dedicated to news stories.

*Indymedia* is a good initiative that also relates to our project. It consists of a global network of independent journalists that was founded with the



goal of facilitating the publishing of news media, as directly as possible - by people themselves. By January 2006, there were over 190 Independent Media Center (IMC) outlets spread between many countries around the world (Indymedia, 2006).

Although they produce both print and electronic content, they are most well known for their blogs where media is created and edited by its participants - both the users who post content and members of the local outlets who administer the site. Editing is done by a system of layered contributors for each site, by participating on open email lists and attending meetings and real-time communication done via the Indymedia IRC network. Policies for removing undesired articles generally are chosen locally by IMC collectives, which are also expected to have an editorial policy for determining features for the center column of the local site.

Another initiative that relates to our research is SilverStringers: a community-centric approach to news coverage and presentation intended to train and equip its members to be reporters, photographers, illustrators, editors, and designers of a localized Web-based publication (Silver Stringers, 2006). Perhaps the most important contribution in SilverStringers is that, in contrast to pyramid-like organizational structures typically found in corporate newspapers, SilverStringers operate without any hierarchy. *"A rotating coordinator runs the meetings, and all decisions are made by the group. Stories are essentially assigned with the entire group being kept informed of who is doing what. Within minutes after being cleared, stories are published"* (Driscoll and Turpeinen, 1997).

The core of the system is a simple workflow machine where stories are submitted, published and archived. Articles are always in one of the four possible states: reporter, editor, published, archived.

### 3 THE CONEWS FRAMEWORK

An appropriate environment to publish news stories must exploit the Internet medium properties: multimedia, speed for updating information, horizontal distribution, decentralization, accessibility, no hierarchy, no censorship and interactivity (Lasica, 1996). We have envisioned a system where users are active and questioning audience for news events and issues, and are involved in a collaborative experience. In this sense, a central idea in our framework is that innovative and well-written stories are created as people collaborate and creatively experiment with relationships among different opinions, and this

process might be supported by everyday news stories published by authoritative and non-authoritative sources. The main characteristics of our framework are described below:

- *Hybrid approach* – As mentioned before, our approach combines news information extracted from online newspapers, blogs, and also submitted by users of CoNews Portal – which acts as an active and central repository that stores both news articles and contributions over news information.

- *Social networking* – CoNews portal can be seen as a social network. As such, users of the system can find others with whom they share affinities, and "add" those persons in the circle of collaborators. Eventually, users of some of these "circles" may self-organize and engage in communities that can be created in the system, as will be discussed in the following topic. They can also recommend news stories to other users. Every user has a "newsbook" in the system where stories are either suggested by CoNews recommendation system or by users in the circle of collaborators.

- *Community-centric approach* – In our framework, users are encouraged to create communities and define relevant roles in the community for publishing news stories. For instance, we may define an editor, a reporter and a contributor role in a certain community. Every community publishes its own articles – that are published with the stamp of the community. Tools for collaborative creation and edition of news stories are provided, and everything is done through a Web browser. Rules that manage the control of article flow can also be created and are enforced by a workflow machine. It is important to mention that a user in the Portal is not forced to engage in any community to publish a story, but it's highly recommended for increased recognition.

- *Open publishing* – Our framework supports the open publishing approach. The main principles advocated are non-hierarchy, public participation, minimal editorial control, and transparency (Open publishing, 2006). Users are encouraged to contribute with his/her own stories. In addition, articles are filtered as little as possible to help the readers find the stories they want. Readers can also see the editorial decisions being made by others. Finally, news stories can be distributed in other open publishing sites.

- *Collaboration over news stories* – For engaging users in a collaborative experience, our framework supports an annotation module that allows users to contribute with comments over fine-grained

elements of a news article. It is also possible to reply to other user’s contributions, creating discussion threads. In similar way to Digg comment system, we allow users to rate comments, which ensures that, much like what happens with news stories, undesired comments can also be eliminated from the Portal. The ideas behind the collaboration and workflow of publishing components of CoNews framework are mainly an extension of CEJ Project proposals, targeted at offering an environment for flexible definition and execution of scientific publication processes (Schneider et al, 2005).

- *Other collaboration features* – There are many opportunities for collaboration in CoNews system. For instance, users can find new collaborators based on their membership of groups of users with whom they share commom interests. They are also encouraged to invite others to collaboratively publish a story or even to suggest a topic for a chat based on the reading of a published story. To help remove undesired articles – for instance, spam or offensive stories – we allow users to report such posts. In similar way to Digg framework, when an article has been reported enough times, it is automatically buried by the system.

- *Recommendation* – Our framework includes a recommendation system based on collaborative filtering techniques. The idea is to group users with similar interests together, presenting the same news stories to all the group members.

- *Searching news stories* – A major problem for online newspapers is that users often have to read stories that the newspaper has selected to him, or the stories retrieved by searching in the newspaper archives. In our system, we aim to provide the full range of stories collected from diverse sources and also submitted by the users themselves.

- *User interfaces* – User interfaces for creating and editing content, and also for the delivering of news articles, including "front-page news" and customized pages, are still under investigation. We aim to provide specific “news pages” per community and per user, but some issues still need to be worked out.

In CoNews portal, users play an active role in argumentation. By encouraging a collaborative dialogue with other users, we believe our framework helps the delivering of news stories of interest to their users.

### 3.1 System Description

A high-level perspective of CoNews System is shown in the Figure 1. In the server side, CoNews

system provides specific components to communicate with a news search engine (in order to retrieve news entries from authoritative sources) and also with a blog search engine (in order to retrieve blog articles). Also, it provides a Web application that handles the submission of news stories; the searching function; the delivering of news stories; the delivering of value-added services to CoNews users; and all the collaboration of users of CoNews social network.

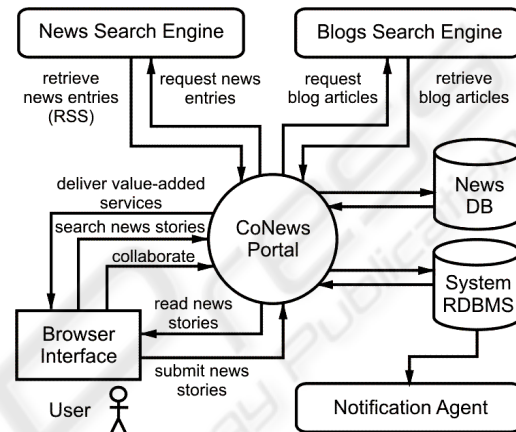


Figure 1: CoNews System.

Our service collects news stories and blog articles and stores them in a dedicated machine (News DB). We are currently using *Google* engine for both the news and blog search components, but we may soon provide an interface that allows users to suggest other news and blog sources. The server-side application also interacts with a RDBMS that stores all the relevant objects, including user profiles. Finally, there’s also a notification agent that periodically retrieves information from the System RDBMS and notify users of new events.

### 3.2 Prototype Implementation

The software prototype environment is being implemented by a group of graduate students and this work will soon produce a final project for the graduate level course. For the implementation of CoNews social network and the Web application services provided to users of CoNews portal, we are extending the technology built in CEJ environment (Schneider et al, 2005).

Java is the primary programming language for system implementation - to provide platform independence - and we are working with the same frameworks for Web development used in CEJ, including Resin (as the container), MVC-based

Struts (for the application control) and Hibernate (for the persistence). We are also reusing the workflow machine of CEJ Environment for implementing the publishing module of CoNews, including the facilities to create, manage the editorial control and publish the news stories.

Finally, the two server-side components responsible for retrieving news and blog articles from the respective search engines have been implemented as Java-based agents that periodically update the *News DB* component.

## 4 CONCLUSIONS

We are moving towards a multi-directional, collaborative and democratic experience of mass communication, currently represented by blogs, diggs and social networks. As users assume a larger role in news publishing, including collaboration on the editing process, the power of journalists and editors is significantly reduced and users become an active voice.

In this paper we presented the CoNews framework, an approach where users are encouraged to collaborate with each other and publish online news stories. As mentioned before, CoNews is a social network specifically designed for collaboration over news stories.

We are currently working on the implementation of the system prototype and we aim to conduct some experiments as soon as we finish a stable release of the system. Future work will include investigating new opportunities for collaboration and news delivery that could be provided by mobile computing. Given the success of wireless services built on top of mobile networks, we also aim to integrate applications such as mobile blogging into the CoNews framework. The results of the investigation of these topics will be reported in follow-up papers.

The development of social networks aimed at creation, sharing and distribution of news stories electronically may be an opportunity for engaging users in a more participatory and collaborative form of mass communication. The analysis of the CoNews framework presented here has shown that the potentials of improvement are large, and that established practices for online news publishing may be transformed positively. However, it seems clear that we have a long road to travel and it is still unclear where this journey of change will take us.

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