

## ZeZame – a web site collaboration and annotation system

### Successful internet communities

The most successful internet communities to date have several things in common which are desirable attributes for anyone working in an organization consisting of more than a handful of people. When I talk about a “successful community” here I generally mean one where the participants in the community actively contribute, show long term loyalty to the community and actively strive to better the community. Something anyone who manages an organization would be looking for from its members.

The success of Slashdot, an online news site which goes under the moniker “News for Nerds. Stuff that matters.”, is partially because of the news selection of the editors, but primarily because it allows the readers to actively participate in creating the main content on the site. The editors at Slashdot post short news stories, mostly based on suggestions from the readers, with links to more substantial information somewhere on the web. Anyone who reads Slashdot can then contribute a comment, anonymously or whilst showing varying amounts of information about themselves. The comments are ranked, or moderated, anonymously by registered Slashdot readers who are selected from the active community members. The sum of the moderations push interesting and informative content towards the metaphorical top of the comments (and noise towards the bottom). Other users then rank whether the moderation was relevant or not, so called “meta-moderation”. This system takes a small amount of moderation participation from the registered readers, but produces a surprisingly good system for filtering the “good” reader contributions from the “bad”. The Slashdot model of discussing news has proven very popular with hundreds of thousands of registered Slashdot users and hundreds of other web sites running news sites with software directly based on Slashdot or derivatives.

### What makes Slashdot successful?

I believe that the Slashdot model is successful because it embodies a few basic concepts which most successful internet communities share. Any successful internet community centers around some core content. In the case of Slashdot it is the news reporting, the actual topics picked by the Slashdot editors. The core content is completely controlled by the Slashdot editors, even though they take most of the news from suggestions from the community. The community contributes the next level of content which is the comments, questions, discussions and further references around the core content. And finally the community polices itself with moderation and meta-moderation to ensure that the community contribution doesn't drown in useless noise. Interestingly enough, the community contribution turns out to be the most valuable

**zezame**

**What is wrong  
with web publishing?**

content in the end and this is what most people who read Slashdot spend any significant time reading.

To sum it up, Slashdot is core content elaborated on by a self-moderating community where the premium content is what the community contributed.

This model can also be seen in other internet communities which have a completely different purpose, but show strong loyalty, active contribution and participation. Online gaming is one such set of internet communities. A games publisher produces a gaming platform where the gamers themselves can contribute their own content. The gamers often play these games for years and it is nearly always the strong community which keeps them interested for years, where weeks or months were the norm for computer games in the past.

This type of commitment and engagement can of course be found in companies and other organizations already. People often spend many years in their job. But there are many areas where a bit of internet community spirit wouldn't come amiss. Internet and intranet web publishing is one such area.

The internet and the web has revolutionized the way we are able to communicate, of this there is no doubt. However, web publishing still has a lot in common with traditional paper publishing. It is still essentially a broadcast medium. The predominant model is that one person or entity publishes and many people read what is published. There is no true community in "web publishing". On most sites there is no real possibility for interactivity, like the Slashdot model described above, which holds many attractions over the traditional publishing model.

At the same time, the traditional paper publishing model still holds some advantages which are intriguing. I am thinking particularly about how I can keep a paper article for as long as I want, make notes in the margin of the article and share it with others either by showing it to them or make some copies on a photo copier and take a whole stack of copies to a meeting, and have all copies include my notes. But, what if the meeting is not in person? What if we are having a virtual discussion between several sites worldwide, perhaps even on different times of the day?

Of course, I can just send the URL to whoever I want to see it. But who hasn't sent a URL to someone only to have them reply a week later, saying that the content isn't there anymore, has changed or the page or site has disappeared entirely?

Some web browsers allow me to store web pages locally on my hard disk, but there is no easy way to share them with others and there is no way to put notes on them. The easiest way to



## Early attempts at bringing community to web publishing

share the information locally is often to print the web page and give it to the person, or create an Adobe Acrobat PDF file and send it by email – both methods which do a reasonable job of keeping the page integrity whilst getting the content across.

However, both these methods have many shortcomings. Printing brings the web page offline, paper has no hyperlinks and is hard to send by email. Creating a PDF file implies that I have a PDF capable system and that the recipient can read the file. Both of us need an Acrobat US\$ 400 user license to put notes on the PDF version of the web page and we cannot simultaneously make notes on the page. Furthermore, if the page has any dynamic content, say some animated GIF file, this goes missing entirely.

In 1999 it was clear to me that there was an opportunity here to make the web better by bringing together the benefits from a true internet community with the tools to allow people to save web pages, share them, put notes on them and discuss them, all within the context of the web page itself.

I worked with electronic document annotation systems whilst at Interleaf in the early 90s where Interleaf WorldView, an Adobe Acrobat competitor, was being developed at about the same time as Adobe Acrobat. So, naturally I took interest when I first read about web site annotations in 1997. Ka-Ping Yee, funded by the Foresight Institute, created CritLink: the world's first public annotation system for the Web. The system had potential, but I had some reservations regarding the modification of the original web page to achieve the annotations. At that time, the technology did not exist in the browser to layer information on top of other information. NCSA Mosaic, the first widely available web browser, was even earlier with web site annotation. However, these annotations were private and saved on the local computer. The idea was that it should be possible to share the notes in the future, but this never happened and these features didn't make it into Netscape when this browser was developed.

Two years later, in 1999, I recalled the CritLink project and wondered what had happened to it. After a quick search it was clear that nothing much had happened with it beyond a working prototype. At this point we knew of no other efforts to create web site annotation and collaboration products, so we, (myself, Ulf, Stellan, Gabriel and Mark) decided to start ZeZame to address this opportunity in the market.

We later learned about ThirdVoice, who announced their public, plug-in based, annotation service in May 1999. We didn't hear about it until later in the autumn. ThirdVoice shut its doors in April 2001<sup>1</sup>. ThirdVoice is interesting because they tried to



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<sup>1</sup> Other "plug-in" based annotation tools have since appeared and disappeared, notably: E-Quill, closed and later purchased by Microsoft and iHarvest, purchased by Interwoven.

address the idea of community and web publishing head on. The ThirdVoice annotation service allowed anyone who had downloaded their software to put their annotations on any web site. The annotations were then visible to anyone who used ThirdVoice. The problem with this, as I see it, was two-fold: there was no “quality checking” on the annotations and they tried to address the whole of the web at the same time. Slashdot is successful in its community building because they let everyone who wants to, participate, but they also have moderation of the content that people contribute. But Slashdot is also only about news for a certain segment of readers: they are not trying to be the news source for the whole world. ThirdVoice tried to be something for everyone and did not build critical mass in any particular area before they ran out of money. But what ThirdVoice became infamous for during its brief lifetime was the fact that people considered it as graffiti on their web sites. You had to use ThirdVoice to see this graffiti, but many web site owners didn't like it. Websites such as Say No To Third Voice noisily voiced this opinion. Maybe if there had been some Slashdot like moderation feature in there they would have fared better.

### ZeZame, what is it?

ZeZame is a web site collaboration system which allows you to capture web pages, share them with users in a project and annotate the pages with notes. We like to think of the notes as “yellow stickies on steroids”. Captured pages are stored by ZeZame until you delete them. So if they disappear from the web site where you captured them, they are still available in ZeZame. ZeZame stores the captured web pages just as you saw them, with banner advertising and all. The ZeZame notes do not interfere with the page and sit on a separate “transparent layer” on top of the web page.

ZeZame is a server application which you install inside your firewall. This allows you to store content in ZeZame which you don't want to make available outside your organizations internet boundaries. We do not want to burden the system administrator with management of people or projects so specially assigned “user administrators” are able to perform day to day management. Anyone who has a user account in ZeZame can set up a project, private or shared with other users, to capture and annotate web pages. ZeZame should function as a true collaborative tool where anyone who is part of the system can decide to start a project which they can allow others to participate in.

ZeZame is a major step forward from previous attempts to tackle the issue of how to review and annotate web pages at two levels. First, it requires no special client-side software apart from an IE5+ browser for Windows. Second, the web pages and annotations are captured and collated on the server-based application. The approach is akin to fixing ‘sticky notes’ to web pages on a collaborative ‘wall’ within your own office. The

The logo for ZeZame, featuring the word "zezame" in a bold, lowercase, sans-serif font. The text is white and is set against a yellow, rounded rectangular background with a black border.

**ZeZame, a tool for building  
community around your  
web site development**

product is designed for any team working with information held on web pages. As well as design and creative teams, it is expected to be popular in market research, competitive analysis and document review applications. Built on standard HTML, it is simple to roll out to a large audience with no impact on the computer desktop infrastructure. Use of ZeZame should cut site development times through faster and more controlled review processes. It can also enable people to tap a wider group of experts and capture their feedback in a simple, intuitive way.

As opposed to ThirdVoice, when we designed ZeZame we didn't design it to be a web site annotation tool for the masses, but rather a tool to bring the positive aspects of an internet community to bear on the process of creating and maintaining web sites. The core content which the community forms around is the web site, in this case a company web site or an intranet site. The users who collaborate and annotate the content are people inside or outside the organization who have interest in the creation or the upkeep of the web site (and have access to it). The real value of what gets created is what the community creates together, where the sum of the parts of all the feedback on the creation of the web site is better than all the pieces on their own.

A truly good information source, like an intranet, is "owned" by everyone who uses it. Every area of an organization can benefit from a shared information resource. But the collaboration between dozens or hundreds of people to create and maintain the content can become very cumbersome. Using traditional tools — such as email, faxes, printouts and screen captures — it is difficult, time consuming and inefficient way to create a web site which has content that will be of real value across the whole organization.

Before starting working on ZeZame we were well aware that there were many activities where annotation technology could make life easier. For example, in online research where several people are collecting web based information, such as market research or competitive intelligence gathering, where you need to ensure that the information can be viewed in context, long after it has disappeared off the source web site or for document review where today's most commonly used tools, such as Word's "track changes" or Adobe Acrobat's note fail to provide an adequate solution to the problem of multiple reviewers and parallel review processes. However, to be successful in the market, we had to concentrate on one area first and this was web site creation and maintenance.

**Annotations without  
a plug-in**



One of the critical things we had to know before we started ZeZame was whether web page annotations could be achieved with the then current browser technology (Microsoft Internet Explorer 4 or Netscape 4) without using any additional client side software. The rationale behind this decision was that the only web browser plug-in, which wasn't distributed by Microsoft,

has actually achieved any wide-spread use on the corporate desktop is Adobe Acrobat Reader. And it took Adobe many years and many millions of dollars to achieve this, whilst many other companies failed to distribute their products this way. It was clear to us that unless we were able to implement client side web page annotation and collaboration within just a standard browser we had no future.

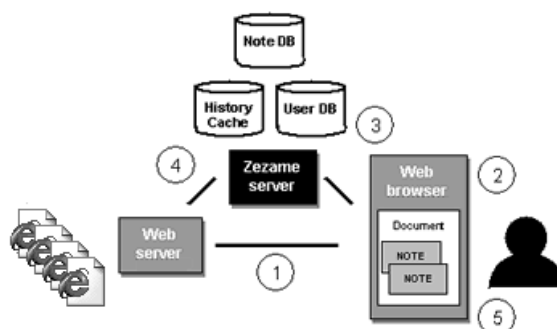
It took the team one month in the summer of 1999 to convince us that we had the technical know-how to make it work and that the actual technology in Internet Explorer 4 actually was sufficient to support us. Netscape 4 did not have sufficiently advanced style sheets (CSS), Javascript, layer and Document Object Model (DOM) support to actually allow what we needed to do. The critical test was to be able to associate an item, a note (on a layer), with a picture or a piece of text (an object) on the web page in a way which allowed us to resize the web page and still have the note sit on top of the associated layer. We knew that inserting any note on the page itself in a way that it reformatted the page was completely out of the question. Due to the nature of web design this would affect and break the design of many pages. A tool which is to help you point out web pages that have layout problems can not create layout problems itself.

It may seem obvious now that one can do this, but at the time it was not at all obvious. One of the people who created the CSS Core Styles in use today saw our prototype demo and said "Can you actually do this?", expressing doubt over what he saw with his own eyes.

### So how does ZeZame work?

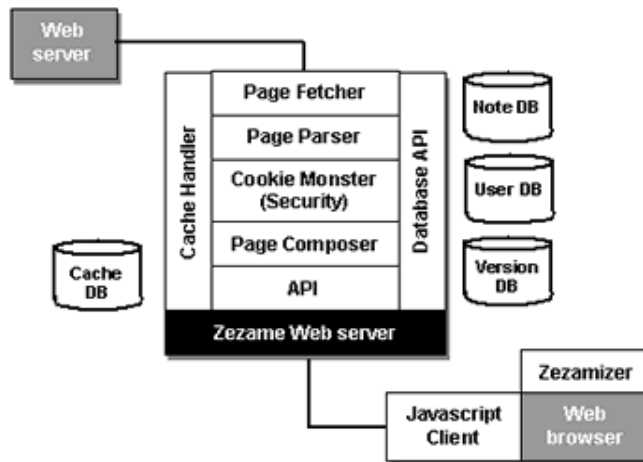
The central concept behind ZeZame is that users should be able to collaborate on web documents without having to acquire permissions or rights at the web document source location. As long as a user has access rights to a web page, they should be able to annotate and collaborate around that page. The user's notes and a cached version of the annotated web document are stored on the ZeZame server.

A simple scenario for sharing a page and putting notes on it for other ZeZame users to see is:



1. A user retrieves a page from a web server.
2. The user decides he would like to share this document together with some notes with other ZeZame users. The user can do this by clicking on the Open ZeZame button in the browser (a favorite/bookmark which contains one line of Javascript) for the document to be made available via the ZeZame system.
3. The browser requests the page from the ZeZame server. The user is presented with an authentication dialog from the ZeZame server. The user logs into the system.
4. The ZeZame server retrieves the requested page from the web server, rewriting the page on the fly to allow for the ZeZame infrastructure to support any notes which the user would like to add. It also rewrites any URLs in the page so they may pass through the ZeZame server, adds hooks for the Javascript client, and then sends the ZeZamized page on to the user's browser.
5. The user views the page, which looks exactly as it would do outside the ZeZame environment. The user can now save the page into shared project folders and add notes to the page for other users to see and comment on.

**ZeZame server / client relationship**



The ZeZame Javascript client runs in the browser. The client runtime code is dynamically integrated with any HTML page that has been retrieved via the ZeZame server. The client adds the user interface and event handler which make possible the display and manipulation of notes on HTML pages. Each page becomes integrated with the ZeZame server which retrieved it. A special bookmark/favorite, "ZeZamizer" can be installed on the browser to allow a user to bring the current page into the ZeZame system with one click.

Since our first prototype, our server side technology has developed dramatically to allow for proper handling of pages



which are brought into the ZeZame server. To be able to do its “magic” the ZeZame server has to parse HTML and Javascript, rewrite both the HTML and Javascript to not break our environment as well as allowing for us to “hook in” our own Javascript and HTML in the pages, whilst not changing the way the pages look or behave. The server also has to capture URLs that “break out” of the ZeZame environment and make sure that the expected content is delivered to the user. All this turned out to be quite a lot more complex than we anticipated, primarily because one can create web pages which are totally non-standard compliant and which uses “atrocious programming behavior” whilst still rendering correctly in web browsers.

## Conclusion

We firmly believe that web site collaboration in the form of annotations is part of the future of the internet and we are not alone in this belief. The World Wide Web Consortium (W3C), the gate keeper of web standards, have an active “Live Early Adoption and Demonstration” project called Annotea and an ongoing-discussions about web site annotation which goes back to before 1996.

We also believe that the future of web site annotations is standards based to allow for interoperability between different annotation stores. The true potential of this technology will come when information annotation tools for the web are a natural extension of the tools and systems you use in your everyday work.

We believe ZeZame is a genuine advance. No system has existed until now that allows groups to share notes and comments about web pages using a standard browser in a manner that can be commercially deployed on a large scale. We know that ZeZame addresses a real need in the market and truly brings “community” to the web site building and maintenance process.

Thomas Bjelkeman-Pettersson – CEO, ZeZame, Inc.

