

Automatic Content Syndication in Information Science: A Brazilian Experience in the Creation of RSS Feeds to e-journals

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Abstract

This paper reports the partial results of an exploratory study which intends to develop a methodology for a Web feed-based aggregation content service to electronic journals in Information Science. Ten scientific e-journals were chosen as sample to demonstrate the potential of the Web syndication technology. These e-journals are supported by the Brazilian Electronic Journal Publishing System (SEER), adapted from the Open Journal Systems (OJS), an open source software for the management of peer-review journals, developed by the Public Knowledge Project (PKP). In this context, the present study describes the concepts of aggregation and content syndication in Web environments. Moreover, it discusses the possibilities, advantages and eventual barriers to the implementation of RSS applications concerned with electronic journals in Information Science, specially the ones supported by the OJS Systems.

Keywords: metadata aggregation; content syndication; electronic journal; RSS; web syndication

1 Introduction

With the advent of the so-called Technologies of Information and Communication (TICs), particularly the Internet, which stands out as its main exponent, a significant raise in the amount of information can be observed, and we are exposed to them in our daily life. These pieces of information, when they are not useless, end up leading to a real overload, which is harmful to the absorption of the contents that really interest us. This also causes a sense of discomfort to the majority of people.

In the early 90's, with the advent of World Wide Web – the graphic and multimedia part of the Internet – information started to be even more easily disseminated. Because of that, new contents have been added to the web disorderly. Nowadays, the raising amount of Internet-generated information is not an object for information scientists only, but also for researchers from several different areas of study. They have also been attentive to the effects caused by every kind of information overload.

It is true that the simplicity of the existing web publishing tools has been useful not only to those who produce but also to the ones who acquire information, offering dynamic and low-cost mechanisms in order to communicate new ideas. The expansion of the blogosphere phenomenon [1] is a proof of that. On the other hand, the fast dissemination of digital information has demanded close attention in relation to the quality of the content which is about to be published, and also discernment concerning its use; otherwise, we run the risk of having our precious time drastically wasted.

Although this problem can be considered a natural consequence of our “Information Society”, historically, in the 50's, the first systems able to select relevant information to a certain user, considering his/her profile of interest, appeared. This concept is called Selective Dissemination of Information (SDI), created by Hans Peter Luhn, from IBM Corporation, in order to improve the alert services offered by libraries, documentation centers and specialized centers of documental information.

From this perspective, and considering the current Web chaos, we intend to deal with the concepts of “content syndication” and “content aggregation”, which has become popular from an Internet technology standard that allows users to receive updates to Web-based content of interest, simply called RSS.

The use of RSS began about ten years ago, meeting Internet user's information needs, keeping people up to date with new and revised information without making them feel lost facing Web content overload.

The present study intends to comment on the possibilities of how this resource can be used by electronic journals, especially the ones which already count on resources which make the implementation of RSS feeds [2] easier. In addition, it discusses the advantages to content publishers and to readers/users, and also the possible barriers to this implementation. Finally, this paper describes the progress of the first RSS feeds created by the author from a sample of Information Science e-journals supported by the Brazilian Electronic Journal Publishing System (SEER/OJS).

2 What is RSS?

Basically, the RSS format can be understood as a dialect or part of vocabulary from the XML family [3], meant for automatic capturing and website content distribution, used to publish frequently updated digital content, such as blogs, news feeds or podcasts. RSS allows Internet users to subscribe to websites that provide RSS feeds; these are typically sites that change or add content regularly. However, its applicability is not strict to these domains, once everything which is possible to be described by means of <tags> can be integrated by RSS.

The popularity of RSS technology is due to the agility which this format provides to the reading of new contents, since it does not need any access to websites where the information was originally published. In fact, the main feature of the RSS pattern is to allow a website's frequent reader to track updates on the new issues of an e-journal, for example. Moreover, another advantage to the user is the facility of finding, in one single place, the current summaries of the main publications in the particular area. These characteristics called our attention to a deeper investigation concerning its use in Brazilian scientific journals on Information Science.

The most practical way of benefiting from this technology is having a news aggregator software, a type of application that retrieves syndicated Web content that is supplied in the form of Web feed. Such softwares are generally free, easy to install, and the great majority resembles an e-mail reader. Figure 1 presents a typical screen with one of these applications. It is possible to see in the left column all the chosen and added feeds, which can be read in the right column. On top of the right column, there is a list of headlines; while at the bottom, we can observe part or the complete post text. When double clicked in the headline title, the full content will appear in the inferior window, exactly as it was originally published in the Web. These headlines may be stored or deleted. There is also the possibility of filtering them by subject or date.

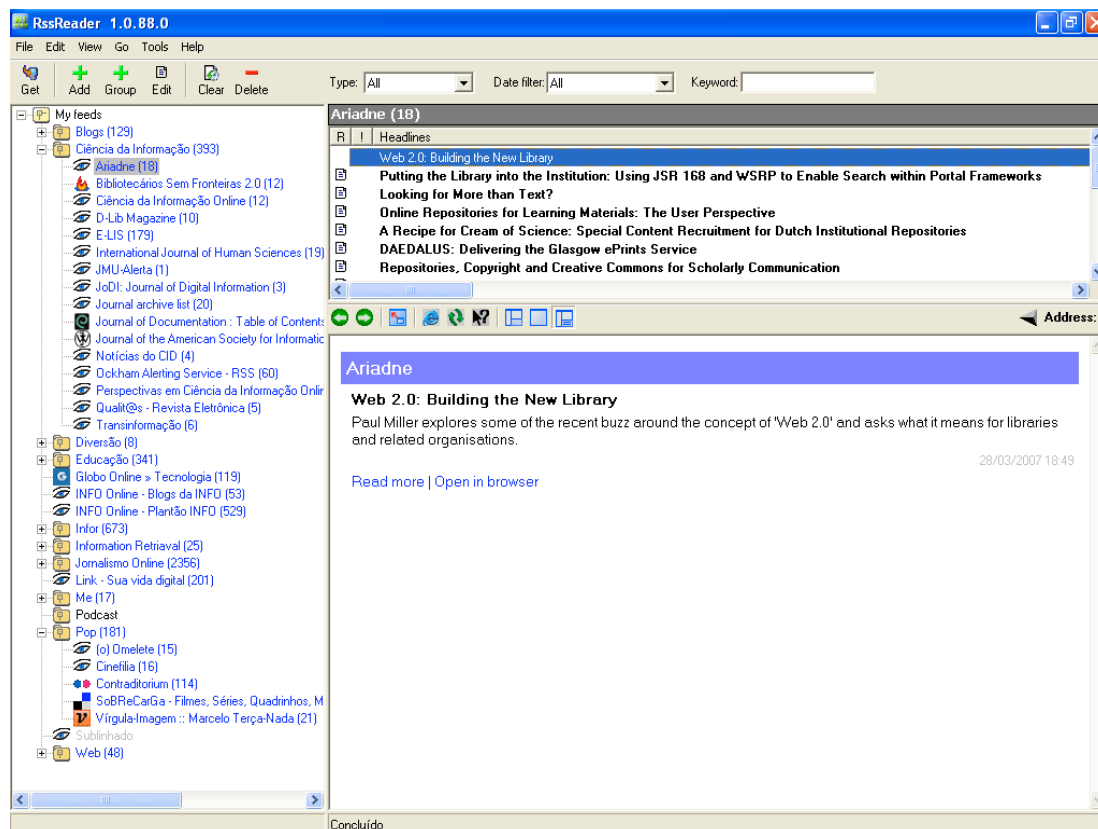


Figure 1: screenshot of RSS Reader, an stand-alone client aggregator

Another way of getting the same function without having to install or configuring any kind of software is by using Web-based aggregator – a remote-hosted service offered by a third party that allows you to subscribe to and read feeds. To use this kind of free service, the user creates an account and then logs in to perform all feed-related activities, like reading a set of news sources in several XML-based formats. The user can find the news bits and display them in reverse-chronological order on a single page.

By means of these RSS “readers”, it is possible to make a kind of subscription of the contents of different sources by themes, and quickly examine the title of the news articles and the summaries of a new issue in a condensed way. When the user finds some information which arouses his/her interest, the only thing he/she needs to do is to click on the title of the article to read its full content.

The name “RSS” is an umbrella term for a format that spans at least two different (but parallel) formats. Then, RSS could stand for “Rich Site Summary”, “RDF Site Summary” or “Really Simple Syndication”, depending on which version you are using. Regardless of what they are called or the version number, feeds are all XML-based languages. That is to say they are written to conform to the XML rules. For those who are familiar with HTML (Hypertext Markup Language) code, the structure of feeds will look familiar as we can see in figure 2. However, differently from HTML, which is limited to provide a universal format to represent information, without making reference concerning the structure and semantics of the data, RSS, as an XML-based language, is able to represent information about resources in the Web. It is intended to represent metadata about Web resources, such as the title, author, date of a webpage, copyright and licensing information about a Web document.

```
<?xml version="1.0" encoding="UTF-8"?>
<rss version="2.0">
  <channel>
    <title>Example e-Journal </title>
    <description>Short description of the journal </description>
    <link>http://www.cid.unb.br/</link>
    <language>pt-br</language>
    <lastBuildDate>Wed, 27 Mar 2007 14:02:11 -0300</lastBuildDate>
    <managingEditor>rlalmeida@unb.br</managingEditor>
    <pubDate>Wed, 17 Jan 2007 15:47:50 -0200</pubDate>
  <item>
    <title>Title of Article 1</title>
    <link>http://www.cid.unb.br/ e-journal/article_1</link>
    <description>
      Abstract of article 1
    </description>
  </item>
  <item>
    <title> Title of Article 1</title>
    <link>http://www.cid.unb.br/e-journal/article_2</link>
    <description>
      Abstract of article 2
    </description>
  </item>
</channel>
</rss>
```

Figure 2: Example of a RSS feed (2.0 version)

The use of specific tags, such as <title>, <link> and <description> allows us to treat each information unit (the title, the place where the information can be found and the summary) as a distinct object. This enables us to structure information so that it is interpreted and treated by means of computer resources, such as scripts or special softwares. This procedure turns data into qualified objects, such as attributes. This way, there is a possibility of automatic reusing of the information, making easier to share it with users and with other information systems (interoperability), and also organize it into database and do automatic research.

This way, it is simple to create a website reply to the content of another one which has an RSS feed. To do this, it is necessary to insert, in a page of the intended site, a script which points to an original website XML archive. These codes can be easily found in the Internet itself.

3 A Brief History of Web Syndication

In the late 90's, some experiences began, intending to provide required information to the Internet user in the Web context, such as Crayon [4]. Another initiative which was successful at that time was the resource called "Active Channel", developed by Microsoft to its browser Internet Explorer 4.0.

These two projects had in common the mission of joining in one place (aggregating) varied and scattered contents in the Web, by means of a technology called "push", since the idea was to send customized information to their users, instead of waiting for them to visit the websites to "pull" the desired contents. Specialized companies, such as the North American PointCast were pioneers in this type of syndication format, but the problem is that they were not interoperating; in fact they worked independently. Moreover, the softwares were too complex to users who were still getting familiar with the recently-created Web environment. At that time, Ramanathan Guha and other researchers from Apple Computer developed the Meta Content Framework (MCF), a specification of a format for structuring metadata about websites and other data.

At the beginning of March, 1999, when the research project was discontinued, Guha left Apple for Netscape Corporation, where he adapted MCF to use XML. He created the first version of the Resource Description Framework (RDF), which turned to be the basis for the creation of the first Web syndication format, called RSS (RDF Site Summary), 0.90 version.


In July, 1999, Dan Libby, also from Netscape, improved the format and produced a prototype tentatively named RSS 0.91 (RSS standing for Rich Site Summary) to be used in the "My Netscape" portal, as a pattern to the construction of headlines publishing systems in webpages, working as a summary of the content of a site with its respective links to the original information sources.

In the following year, as the group of developers from Netscape decided to leave the portal business, a lower-sized company called UserLand decided to keep on developing the RSS in order to apply it to their virtual electronic diaries tools, which, later, would become popular as weblogs or just blogs.

In August, 2000, another group of independent programmers (RSS – DEV Working Group), led by Rael Dornfest from computer book Publisher O'Reilly and Associates, proposed a new specification named RSS 1.0, according to the RDF metadata format. This one joined most of the preceding versions of RSS.

However, the group from UserLand, led by Dave Winer, continued their work, developing other versions of RSS, such as the 0.92 and 0.93, until they reached the version 2.0, in September, 2002. The abbreviation RSS had, then, another meaning: Really Simple Syndication, once its focus was on the simplicity in content syndication. Nowadays, this version is widely used by thousands of websites, including blogs and podcasts.

As Winer left UserLand, Berkman Center to Internet and Society, from Harvard University, was, then, in charge of the development of RSS 2.0, making this technology available to public domain, under a Creative Commons license, in 2003. In this same year, a group of leadering service providers, tool vendors and independent developers, worried about this problem of the development of the RSS specifications, decided to create a new format to content distribution: Atom [5] (originally called Echo). Its aim was to be 100% neutral, open and easily implemented by any developer. Atom is also based on the XML format, but its development is considered more sophisticated. According to specialists, it consists of a proposal of unification of RSS 1.0 with RSS 2.0, and it might be its natural substitute, since it counts on the support of great corporations, such as Google, which has adopted this format to its blog service. The final draft of Atom 1.0 syndication format was published in July, 2005, and was accepted by the IETF (Internet Engineering Task Force) as a "proposed standard" in August of 2005. The work, then, continued on the further development of the publishing protocol and various extensions to the syndication format.

In December, 2005, the Microsoft Internet Explorer team and Outlook team announced that they would be adopting the feed icon  first used in the Mozilla Firefox browser, effectively making the orange square with white radio waves the industry standard for both RSS and related formats such as Atom.

In February, 2006, Opera Software announced they would also add the orange square to their Opera 9 release. Also in 2006, Microsoft decided to incorporate the RSS 2.0 extensions in its operational system Windows Vista, while Google announced the launch of a new content syndicated reader tool – the Google Reader – with support to RSS. Seven years later, the technical developments related to Web syndication seemed to be just beginning, with companies investing in new applications. But what stands out in the moment is the fact that the content

providers and readers have found in Web syndication technology a fast and practical way of distributing and receiving updated contents through the Web [6].

4 Methodology

The sample chosen to carry out this research was the collection of Brazilian electronic journals in the area of Information Science which use the Brazilian Electronic Journal Publishing System (SEER), a tool applied to the administration of the editorial process of electronic journals, adapted from Open Journal System (OJS) to Portuguese language by the Brazilian Institute of Information in Science and Technology (IBICT/MCT), in 2004.

The preference for journals based on OJS is due to the fact that this is a consolidated system for publication and managing of peer-reviewed publishing. In March, 2007, over 900 titles were using OJS [7], including the main titles in Brazil, thanks to the effort of IBICT in offering specialized training to the editors. Another important factor determined the choice for these journals based on OJS: the system already has an RSS/Atom plug-in that produces Web feeds from articles that have been published in journals since the 1.x version. However, this feature is already included in recent releases of OJS 2.x.

Ten of these journals, having met the required criteria, were the object of several analyses, during the months of January and February, 2007. These analyses intended to investigate the main characteristics of the journals, according to the way of divulging its content, and, mainly, if they made Web feeds available to their clients by means of incorporating the RSS format in the publishing OJS tool, or even if it had at least an alert service, through electronic mail to notify the updating of the current edition.

Once the journals selected in this study did not present any kind of feeds, they were hand-created by means of an authorship tool called FeedForAll (<http://www.feedforall.com>) and were, later, hosted by the author's webserver. The initial idea was to create a basis with the contents of those feeds, so that they could easily syndicate.

Although none of the sample journals presented feeds to their users, we could identify that there is at least one national journal that uses the OJS feed plug-in to generate RSS/Atom feeds automatically. It is called Qu@litas, an electronic journal edited by The Center of Applied and Social Sciences of the University of Paraíba.

After a testing period, these journal's feeds were included into a content aggregator application specially created, using Netvibes service (<http://www.netvibes.com>), which provides a personalized page in which the author can manage several modules created from RSS/Atom feeds. Creating this "prototype" was a way of demonstrating the potential of a content aggregator application, starting from the simple process of creating Web feeds.

5 Results and Expectations

The RSS feeds created by the author to the 10 selected journals had as basis the last edition available in the website. The task of creating every feed lasted about 15 minutes, once it counted on the help of an RSS feed creation tool (FeedForAll), which made the creation of documents easier, without being necessary to write down codes which are particular of the RSS format.

Once the software is installed, it was quite simple to create RSS feeds. First, it is necessary to fill in the channel's basic information: title, link (the URL of the webpage that corresponds to the channel) and description (a brief description of the content of the feed). Once the feed is created, it is necessary to add items. This task corresponds to the addition of metadata related to the articles. The indispensable information of each item are the same for creating a feed: the title of the article, the link (location of the page where the article can be found) and description (a summary of the article), as shown in Figure 3, which illustrates the filling of the required fields from "Items".

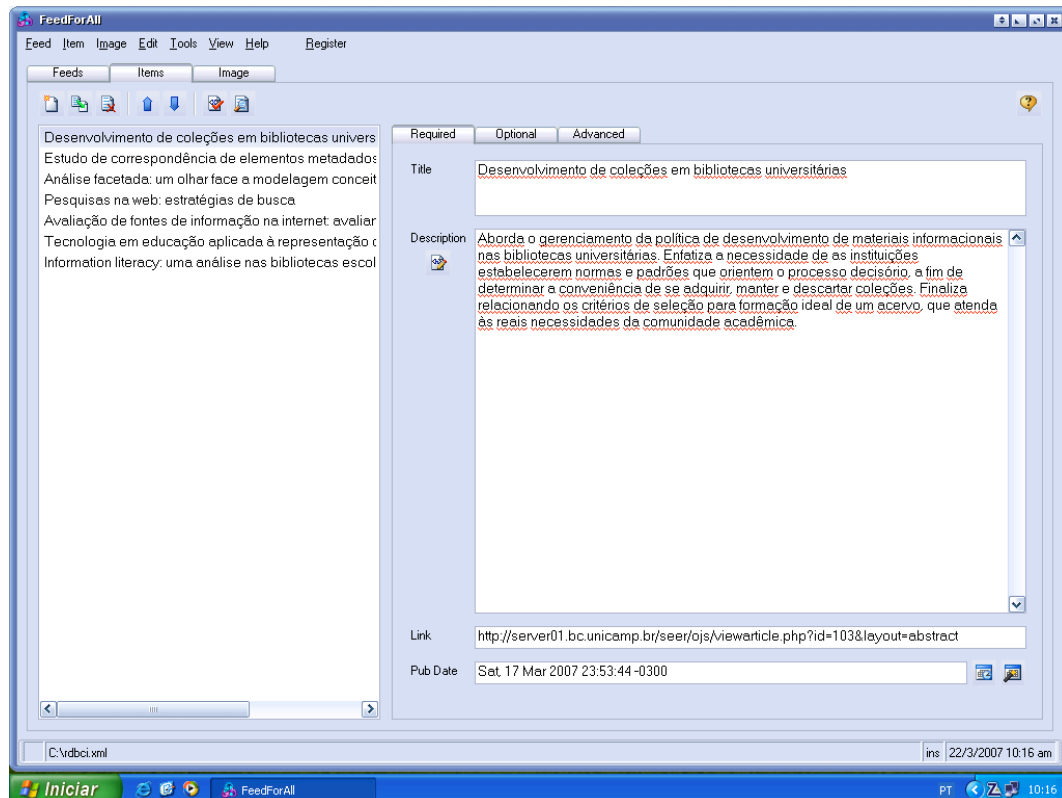


Figure 3: Screenshot of RSSForAll tool

In a second moment, we created a directory list containing the RSS feeds of all the periodicals being worked with, summarized in Table 1.

Journal	Created RSS feed
Arquivística.net	http://www.rlalmeida.correiovip.com.br/arqnet/arqnet.xml
Ciência da Informação	http://www.rlalmeida.correiovip.com.br/cionline/ciinfo.xml
Em Questão	http://www.rlalmeida.correiovip.com.br/emquestao/emquestao.xml
Informação e Sociedade	http://www.rlalmeida.correiovip.com.br/ies/ies.xml
Informação e Informação	http://www.rlalmeida.correiovip.com.br/iei/iei.xml
Perspectivas em Ciência da Informação	http://www.rlalmeida.correiovip.com.br/pci/pci.xml
Pesquisa Brasileira em Ciência da Informação e Biblioteconomia	http://www.rlalmeida.correiovip.com.br/pbcib/pbcib.xml
Revista ACB	http://www.rlalmeida.correiovip.com.br/acb/acb.xml
RDBD	http://www.rlalmeida.correiovip.com.br/rdbci/rdbci.xml
Transinformação	http://www.rlalmeida.correiovip.com.br/transinfo/transinfo.xml

Table 1: Information Science Journals under SEER/OJS and its respective RSS feeds

As a final result of this study, we propose a model of aggregation service on the specific content of Information Science e-journals based on Netvibes, a free service which uses the Ajax technology (Asynchronous Javascript And XML), in order to make the browser more interactive with the user, allowing him/her to create and manage models whose content come from Web feeds. It consists of an online service which was developed by means of XML and JavaScript. Once the feed(s) is(are) added, the application harvests the specific content and brings about, as a result, the titles and summaries of the updated articles. If the user wishes to access the whole content of any article, he/she will be sent to the correspondent page in the periodical itself, accessing the source or the document directly. The screen with all the aggregated periodicals can be seen in Figure 4.

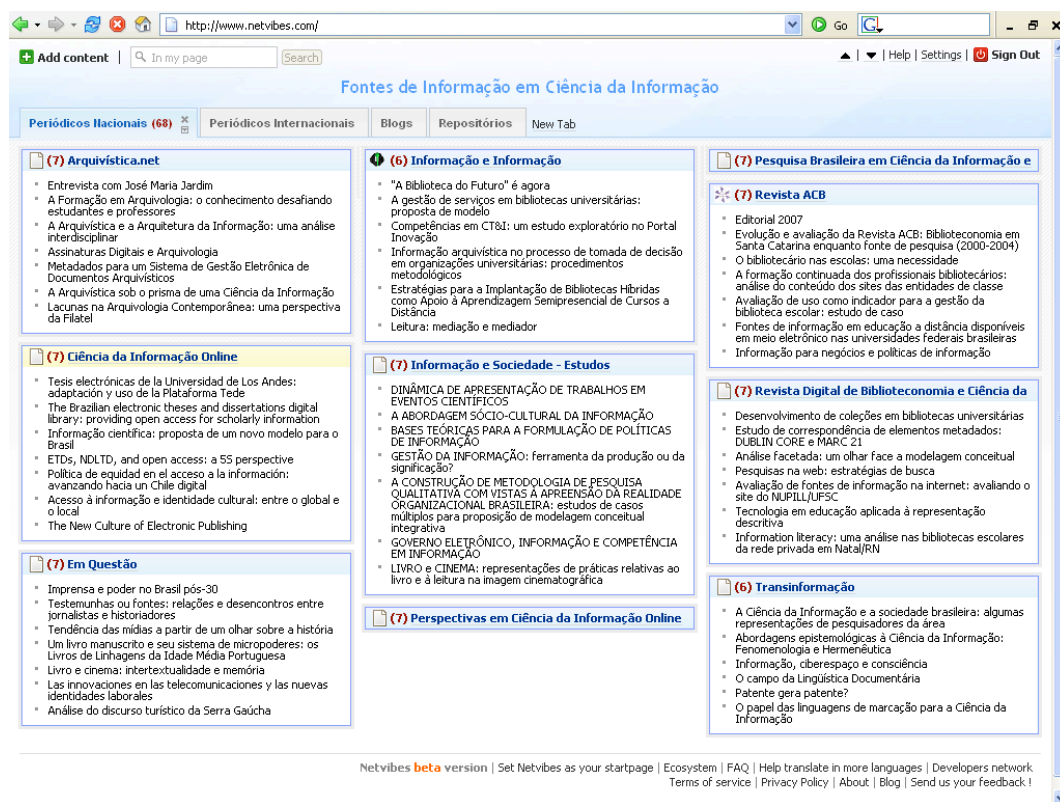


Figure 4: Screenshot of Netvibes application joining the 10 Brazilian Information Science Journals

The model for this service shows one of the main applications for Web feeds nowadays. In this case, we present the dynamics of a mechanism which is able to gather, in one single Web page, the indication of the Brazilian journals articles in Information Science (with their respective summary), by the use of Web Syndication. Since then, this service could be advertised to the community of potential users, mainly researchers, professors and people engaged in post-graduation courses on Information Science. Through these feeds provided by the directory, these users will be able to locate easily or, if they want, to subscribe to receive the updates of the publications they wish by means of the aggregation service they prefer.

Once all this content is gathered, it is possible to search every journal of this collection simultaneously. This way, if the user wishes to research the word “ontology”, for instance, he/she will have as a result all the articles which contain the word “ontology” in its title or in the summary, no matter which journal that may be.

6 Discussion

6.1 Advantages

According to our perception, the advantages to the reader are great. We will be able to count on a powerful tool with which we will be able to keep ourselves up-to-date in relation to several sources of information and, at the same time, make simultaneous researches on relevant content, which enables us to refine this search, raising the relevance of the recovered terms.

Saving time reading practically personalized information is a great advantage of using these kind of services which are able to join, in one single environment, a variety of contents produced by several different sources, with no need to access each site individually. Another characteristic of this system is that when a certain topic is selected by the user, the RSS technology offers the possibility of showing the full content of the document, with direct access to the source. That is, there is no copy of information or inappropriate seizure. The publishers, however, will aggregate value to the content of their publication and, consequently, will gain visibility to their publication, once RSS feed allows their users to read their content without going out of their way to visit. While this may seem a flaw at a first glance, it actually improves the visibility by making it easier for users to see it the way they want to. Because there are so many sources on the Web, most viewers won't come to the same site

every day. By providing a feed, publishers are in front of them constantly, improving the chances for them to click through to an article that catches their attention.

Nowadays, most journals which use OJS publishing system have a notifying service which offers the user the possibility of enrolling to receive, by e-mail, a notice with the summary of the new editions as they are published. If the user wishes to follow publications in a certain area, he/she will have to repeat this procedure for each journal. This means that he/she will receive several different notifications for each updating. Through a Web syndication service, the user does not need to enroll to keep updated, with the advantage of not having his/her mail box full.

6.2 Barriers

The main barrier for the implementation of this type of service seems to be the publishers' and users' lack of knowledge about the Web syndication technology. In Brazil, only the great newspapers which circulate around the country and some other specialized websites make feeds available to their users. Even in the academic context, with the exception of the courses on Computer Science, there is still ignorance of terms such as "feeds", "syndication" or "aggregator". In other countries, the adoption of RSS in information services is more common. However, we notice some resistance from the scientific editors. Even the group responsible for the development of the OJS admits that Atom/RSS feed plug-in is not a very well-known feature for their users, and few OJS e-journals make Web feeds available in their editions.

Differently from reading an e-mail, for instance, the current method of subscribing to a feed – copying the URL from the link (normally with .xml or .rss extension), and pasting it into a reader application – is not obvious to the new user. When doing this, the user normally sees XML codes on the screen. These are, at first, incomprehensible. It is normal for lay users to be confused with such information and, instead of subscribing the channel, they end up not doing that because they think they have committed some kind of mistake.

In the case of the feeds generated automatically through OJS plug-in, the subscription process is even more difficult. Once the desired format is chosen (Atom or RSS 1.0/2.0) with a click on the respective icon on the main page, the browser will ask the user to indicate an application to open an unknown document format. In order to avoid this discomfort, it is necessary to click the right button of the mouse on the icon which represents the chosen format, and select the option "Copy Link Location" (Figure 5) to, later, paste it into the reader application. This important piece of information, however, is not available in the journals analyzed. These are pretty user unfriendly and, probably, will be a barrier to widespread the adoption of RSS by 'non-techies'.

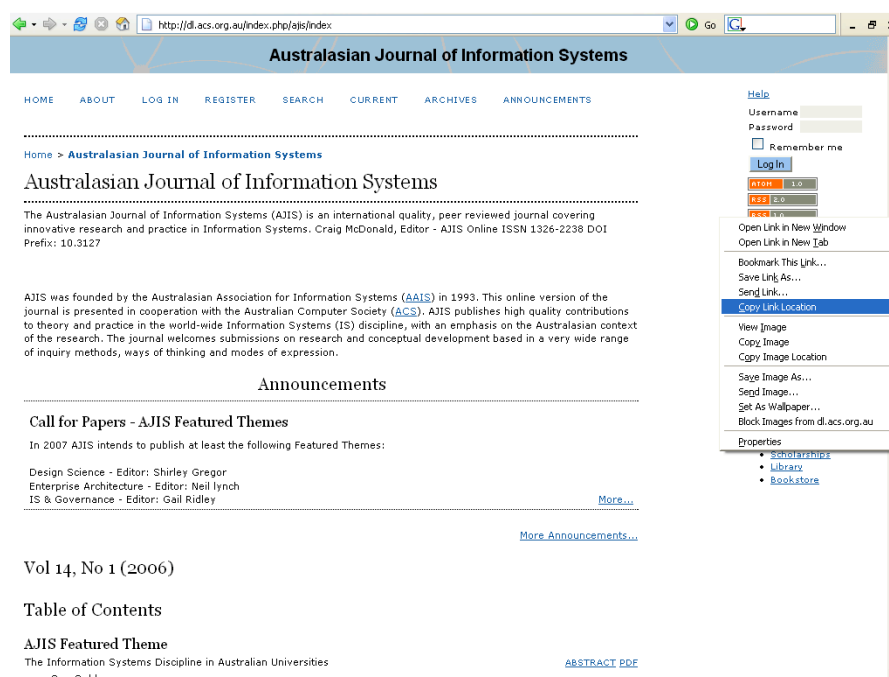


Figure 5: Screenshot of an OJS Journal which makes Web feeds available. The procedure for subscribing the channel is not informed in the website.

6.3 In the Future

In a near future, the Web Syndication technology might be widely known and broadly used by the ones who publish and the ones who acquire information in the Web. The availability of Web feeds in the periodical publications, no matter its nature may be, will be so natural that the user will not find it strange to meet indicative icons that a certain website or blog has an RSS channel. The process of subscription of a feed might be an extremely simple task and also transparent to the user. It will not be necessary to do copy&paste from the link which corresponds to the XML file, once the browsers will have efficient mechanisms to read feeds [8].

Independently of its format and version (RSS, Atom or even another one which may be created), the reader will learn, little by little, how to deal with a “power” that is hard to be imagined up to now: personalize the content of the information he/she wants to acquire, as well as produce new contents, through the use of resources offered by syndication technology, without the intervention of intermediates.

This way, when reading an article about “Semantic Web”, for instance, the user may, if he/she wants to, subscribe to the Web feeds about the same theme and the ones which are syndicated from other articles, data base, repositories, and so on. Everything turns out to be interoperating, thanks to the compatibility provided by the applications based on the XML language and its derivatives. From the user’s point of view, there will not have distinction among journals A, B or C in a certain area anymore. To him/her, it is as if there were one single source of information, easily available in his/her “personal digital library”.

In the next five years, there may be an explosion of new Information Retrieval Systems (IRS), with Web feed resources. This way, once the results have been recovered from a research in a database, users have the option of subscribing the feed related to that expression for search, and, so, keep themselves updated in relation to that specific matter. One of the existing services which follows this model is the one offered by the Agência Brasil (<http://www.agenciabrasil.gov.br>), the Brazilian government news agency which allows the user to create new channels based on their searches, more than offering RSS feeds for more than 120 different subjects.

The scope of this type of service is great and it is a good example that its potential is being tested by Ockham Alerting Service (<http://alert.ockham.org>), a current awareness service based on the National Science Foundation Digital Library content. According to their website, it demonstrates a standard-based method for collecting content, providing access to it and disseminating it on a regular basis in the form of an alerting service. The method includes: a) identifying OAI repositories with content of interest; b) using OAI to harvest content and store it in a central pile; c) indexing the content of the central pile; d) providing an SRU interface [9] to the index; e) allowing users to save the SRU URL's as "profiles" (RSS feeds); f) allowing users to have the profiles executed on a regular basis; g) making the results of searches available as HTML, e-mail, RSS, etc.

7 Conclusions

Despite the barriers identified in this study, we believe that the Web syndication technologies are viable to the integration of any Web-based information system, from search engines to publication systems, such as the case of OJS, presented in this study.

The reach of the Web syndication resources goes beyond the management of Internet content. It can also be a useful way of marketing, for instance, or even serve to notify users of the status of projects, monitor web statistics or otherwise replace the "notifications" that are now sent out as e-mail alerts.

Concerning the electronic journals, this type of technology seems to be welcome, once the simple inclusion of an RSS feed may aggregate a great value to the publication, not only as an intelligent way of divulging, but mainly because of the possibility of integrating with other contents, thanks to the interoperability which exists among the formats compatible with XML language.

This way, it seems that the new products and information services will have even more relationship with RSS/Atom feeds. The OJS feed plug-in is a proof of that. Before, it was available as an external archive to the OJS 1.x, and nowadays it includes recent releases of OJS 2.x.

Finally, after this investigation about Web syndication and the possibility of its use as resource for electronic journals, it is possible to summarize our conclusions based on the following topics:

1. The group of resources based on the Web syndication standards constitutes a technological innovation in the field of new reference services for information units, as well as for the development of potentialities of electronic journals;
2. It can be ascertained that the RSS is a meaningful tool for warning and automation of the content in the Web;
3. The publishers' commitment is essential for the dissemination of new products that use the technology of content syndication;
4. This technology is easily applied to the systems of information backup and of selective distribution;
5. New studies are necessary to widen the discussion about this issue, through new approaches and applications;
6. This technology is based on the information sharing paradigm. Therefore, it contributes to the generation of new knowledge.

Notes and References

- [1] According to Wikipedia, Blogosphere is the collective term encompassing all blogs as a community or social network.
- [2] A "RSS feed" is a XML-based document that usually ends in .xml or .rss and is a slimmed-down version of a website created to be easily syndicated. It contains a list of items or entries of content metadata. News websites and blogs are common sources for RSS feeds, but feeds are also used to deliver structured information, such as articles from periodicals.
- [3] The eXtensible Markup Language (XML) is a W3C-recommended general-purpose markup language for creating specion-purpose languages, capable of describing many different kinds of data.
- [4] Crayon (<http://crayon.net>) is the abbreviation of Create Your Own Newspaper, a personalized information service that offers users the possibility of creating its own journal with links for more than 100 sources of news available in the Web.
- [5] "What is Atom?" (<http://www.atomenabled.org>)
- [6] For a full discussion of the history of web syndication, see Wikipedia. History of web syndication technology: http://en.wikipedia.org/wiki/History_of_web_syndication_technology
- [7] A selected list of OJS journals is available on the PKP website: <http://pkp.sfu.ca/ojs-journals>
- [8] Nowadays, the Firefox browser identifies if a webpage uses RSS showing the feed icon in the browser's status bar. However, it is not an RSS complete client, being necessary the installment of extensions to make its support even more powerful.
- [9] SRU (Search/Retrieve via URL) is a standard search protocol for Internet search queries, utilizing CQL (Common Query Language), a standard query syntax for representing queries. Standards for SRU are promulgated by the United States Library of Congress.