MedBiquitous
Content Syndication Guidelines

Version 2.0

11 June 2008
MedBiquitous Technical Steering Committee

Revision History

Date	Version	Description	Author
14 October 2005	1	Initial version	Joel Farrell joelf@us.ibm.com Cheryl Cohen cheryl.cohen@medbiq.net Peter Greene peter.greene@medbiq.org Valerie Smothers valerie.smothers@medbiq.org
11 June 2008	2	Revised to recommend Atom for new instances of syndication.	Valerie Smothers valerie.smothers@medbiq.org

MedBiquitous Consortium XML Public License and Terms of Use

MedBiquitous XML (including schemas, specifications, sample documents, Web services description files, and related items) is provided by the copyright holders under the following license. By obtaining, using, and or copying this work, you (the licensee) agree that you have read, understood, and will comply with the following terms and conditions.

The Consortium hereby grants a perpetual, non-exclusive, non-transferable, license to copy, use, display, perform, modify, make derivative works of, and develop the MedBiquitous XML for any use and without any fee or royalty, provided that you include the following on ALL copies of the MedBiquitous XML or portions thereof, including modifications, that you make.

1. Any pre-existing intellectual property disclaimers, notices, or terms and conditions. If none exist, the following notice should be used: "Copyright © [date of XML release] MedBiquitous Consortium. All Rights Reserved. http://www.medbiq.org"
2. Notice of any changes or modification to the MedBiquitous XML files.
3. Notice that any user is bound by the terms of this license and reference to the full text of this license in a location viewable to users of the redistributed or derivative work.

In the event that the licensee modifies any part of the MedBiquitous XML, it will not then represent to the public, through any act or omission, that the resulting modification is an official specification of the MedBiquitous Consortium unless and until such modification is officially adopted.

THE CONSORTIUM MAKES NO WARRANTIES OR REPRESENTATIONS, EXPRESS OR IMPLIED, WITH RESPECT TO ANY COMPUTER CODE, INCLUDING SCHEMAS, SPECIFICATIONS, SAMPLE DOCUMENTS, WEB SERVICES DESCRIPTION FILES, AND RELATED ITEMS. WITHOUT LIMITING THE FOREGOING, THE CONSORTIUM DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY, EXPRESS OR IMPLIED, AGAINST INFRINGEMENT BY THE MEDBIQUITOUS XML OF ANY THIRD PARTY PATENTS, TRADEMARKS, COPYRIGHTS OR OTHER RIGHTS. THE LICENSEE AGREES THAT ALL COMPUTER CODES OR RELATED ITEMS PROVIDED SHALL BE ACCEPTED BY LICENSEE "AS IS". THUS, THE ENTIRE RISK OF NON-PERFORMANCE OF THE MEDBIQUITOUS XML RESTS WITH THE LICENSEE WHO SHALL BEAR ALL COSTS OF ANY SERVICE, REPAIR OR CORRECTION.

IN NO EVENT SHALL THE CONSORTIUM OR ITS MEMBERS BE LIABLE TO THE LICENSEE OR ANY OTHER USER FOR DAMAGES OF ANY NATURE, INCLUDING, WITHOUT LIMITATION, ANY GENERAL, DIRECT, INDIRECT, INCIDENTAL, CONSEQUENTIAL, OR SPECIAL DAMAGES, INCLUDING LOST PROFITS, ARISING OUT OF ANY USE OF MEDBIQUITOUS XML.

LICENSEE SHALL INDEMNIFY THE CONSORTIUM AND EACH OF ITS MEMBERS FROM ANY LOSS, CLAIM, DAMAGE OR LIABILITY (INCLUDING, WITHOUT LIMITATION, PAYMENT OF ATTORNEYS' FEES AND COURT COSTS) ARISING OUT OF MODIFICATION OR USE OF THE MEDBIQUITOUS XML OR ANY RELATED CONTENT OR MATERIAL BY LICENSEE.

LICENSEE SHALL NOT OBTAIN OR ATTEMPT TO OBTAIN ANY PATENTS, COPYRIGHTS OR OTHER PROPRIETARY RIGHTS WITH RESPECT TO THE MEDBIQUITOUS XML.

THIS LICENSE SHALL TERMINATE AUTOMATICALLY IF LICENSEE VIOLATES ANY OF ITS TERMS AND CONDITIONS.

Table of Contents

Content Syndication Guidelines

1. Acknowledgements

These guidelines are based on a submission from Joel Farrell of IBM. Other members of the MedBiquitous Technical Steering Committee and the MedBiquitous Journal Working Group contributed to this as well, including:

- Alan Bell, HighWire Press
- Cheryl Cohen, MedBiquitous
- James Fiore, American Board of Surgery
- Peter Greene, MedBiquitous
- Scott Hinkelman, IBM
- Darin McBeath, Elsevier
- Ellis Pritchard, Wiley
- Andy Rabin, CECity
- Howard Ratner, Nature Publishing Group
- Dan Rehak,
- Valerie Smothers, MedBiquitous
- Craig Van Dyck, Wiley
- Bill Witscher, HighWire Press

2. Introduction

Medical and scientific content is being developed at a rapid rate, and authors and publishers are looking for ways to make their content increasingly accessible to their audiences. Several syndication technologies exist to facilitate web-based syndication. Syndication is not only useful for readers trying to stay on top of the latest developments in their field of interest, it is also a useful web publishing tool that allows website developers to aggregate data from multiple sources and bring them together in a central place.

Atom Syndication Format is an XML standard for web feeds developed by the Internet Engineering Task Force (IETF). Atom emerged as a result of incompatibilities with existing syndication formats based on different versions of RSS or Real Simple Syndication. The Atom standard is available at: http://tools.ietf.org/html/rfc4287 . A wide variety of content management systems, browsers, and newsreaders support the atom format. Because Atom has gone through a formal standards development process, it is both well specified and well documented.

RSS is a dialect of XML that is used as a standardized format for distributing (feeding) information over the Internet to a variety of systems. RSS has a complex history resulting in numerous versions. Version 0.9 was adopted and promoted by Netscape in 1999 as the underlying technology for My.Netscape.com. The 0.91 version that followed simplified the XML format and removed references to Resource Description Framework (RDF), a framework for applying metadata to Web resources. The 1.0 version implemented RDF and continues to enjoy support from many RDF advocates. Version 2.0 uses the non-RDF XML approach and is managed by the Berkman Center for Internet & Society at Harvard Law School.

Publishers use syndication technologies to enable end users to discover, retrieve, and view fresh content and draw readers to their sites. Primarily, web feeds have been used by website publishers to distribute information such as news headlines and article summaries to their readership. More recently feeds have been used to draw readers to weblogs and podcasts, audio broadcasts distributed via the internet. Website publishers also harvest feeds from other publishers and display content summaries on their sites. This cross-pollination brings traffic to the both the authoring publisher and the aggregator.

Web feeds are simple to create. Publishers can use XML editors, text editors, or feed writer applications to create and validate feeds. In addition, publishers can automate feed creation and publication via content management systems or other applications.

Individuals can subscribe to and view web feeds using Internet browsers or newsreader software. The figure below shows the message that Internet Explorer displays to facilitate subscribing to web feeds.

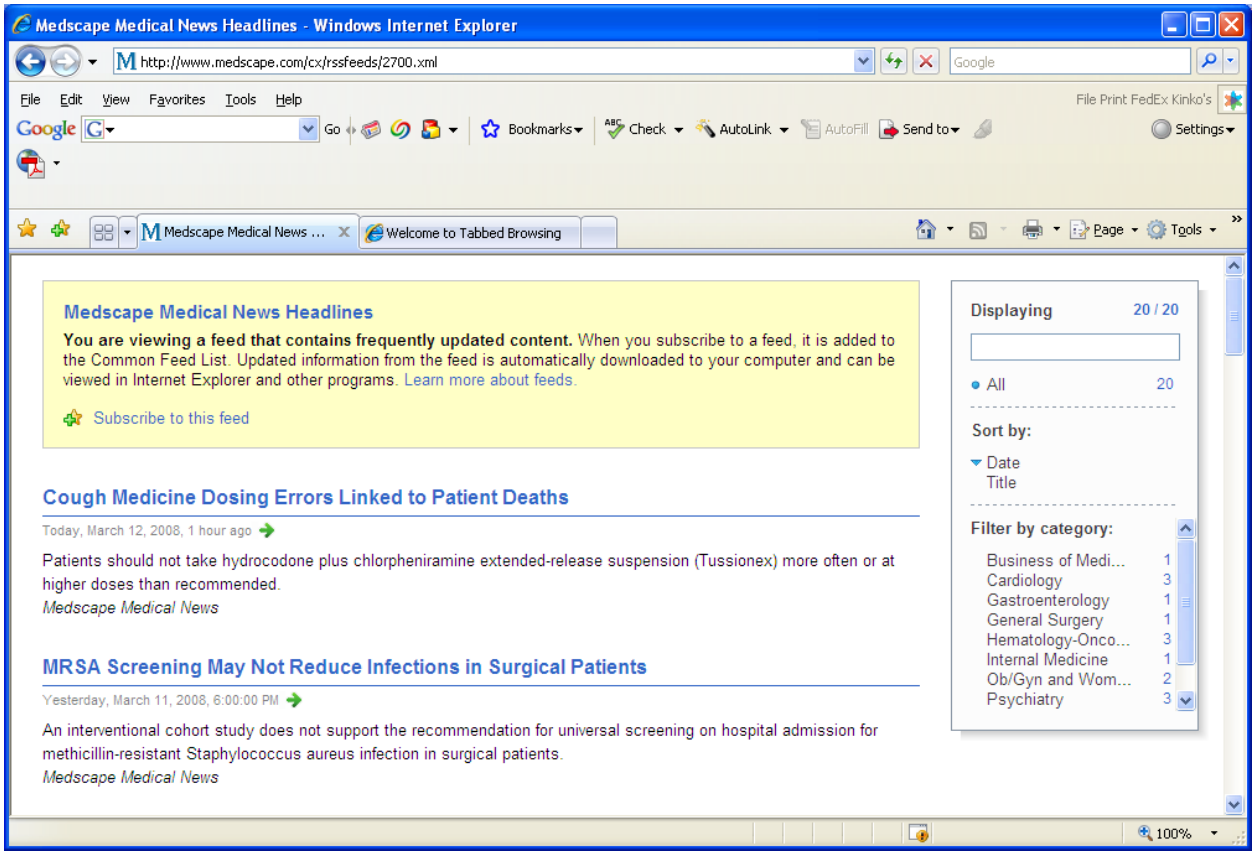

Figure 1. Internet Explorer's Feed Subscription Interface

External news readers often are preconfigured with feeds, but it is easy for an end user to pick up specific feeds by adding them to a news reader. In addition to desktop news aggregators, there are online aggregators, which allow users to search for, subscribe to, publish, and share feeds. Web feeds are usually identified by an orange broadcast symbol (see figure 2).

Figure 2. Web Feed information on the BBC

Some feeds use a rectangle containing the letters XML or RSS (see Figure 3, which follows).

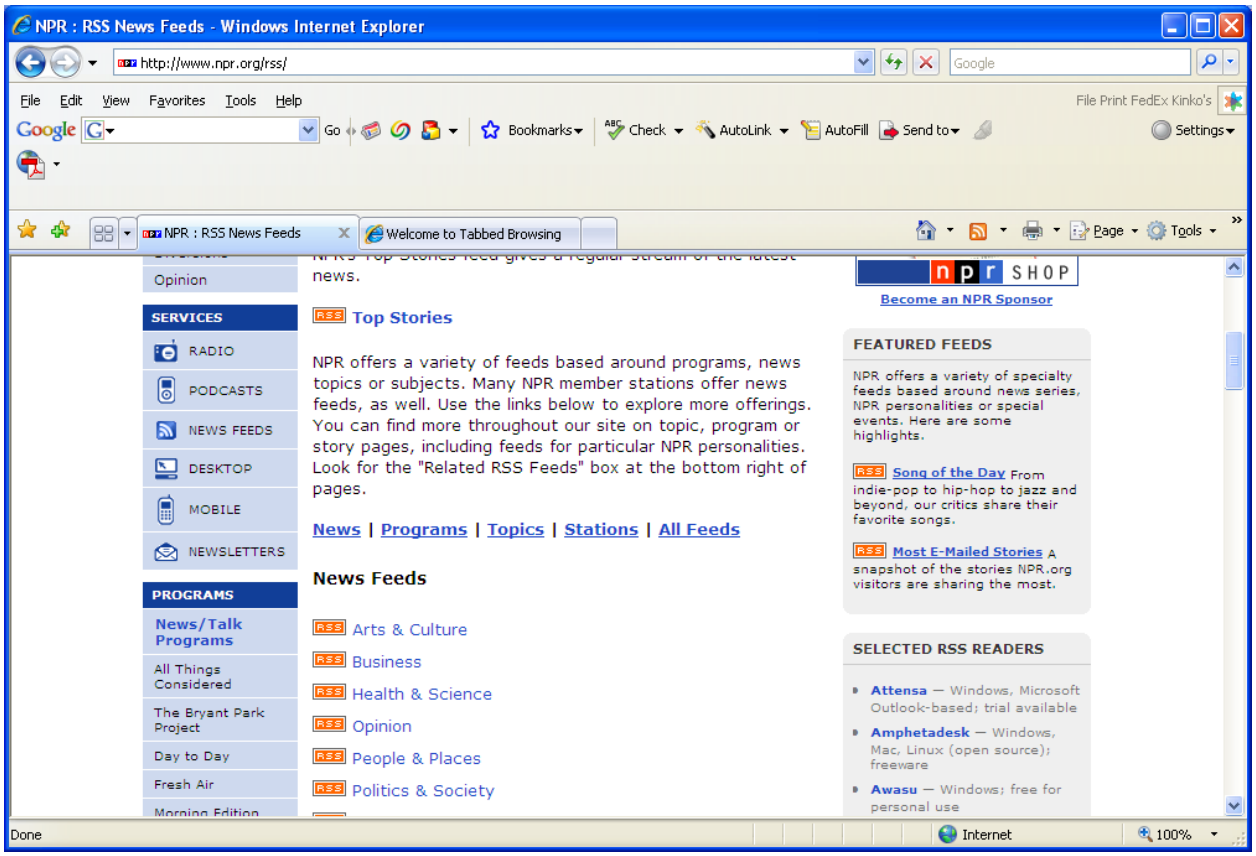

Figure 3. NPR News and Program Feeds

3. Recommendations

3.1 Use Atom for Basic Content Syndication and Publishing

The MedBiquitous Technical Steering Committee has conducted research into web feed solutions and recommends that healthcare educators implementing new feeds use the Atom Syndication format. Atom is closely related to RSS 2.0 and can be viewed as an enhancement to its syndication format. Atom is a fuller specification and it more completely defines aspects of the format that were ambiguous in RSS 2.0. A prime example is that Atom allows for the content type of entry content (an item in RSS 2.0) to be specified, so the reader can tell if it is HTML, XHTML, XML, text or something else. Atom also includes a mechanism for the consumers of the feed to update the feed source. This is done through a REST API whose XML payloads are based on the syndication format. This API, known as the Atom Publishing Protocol or APP, supports the standard Create, Read, Update and Delete operations.

Members who already have an investment in RSS 2.0 can continue to use it and will find a subsequent change to Atom relatively simple. Such a change should be considered if non-HTML content is to be syndicated or if the client needs to write back to the syndication source.

Like RSS 2.0. Atom supports the use of elements from other namespaces to extend the Atom specification. The Atom Syndication Format IETF standard is available at: http://www.ietf.org/rfc/rfc4287. General information about Atom is available at: http://www.atomenabled.org/.

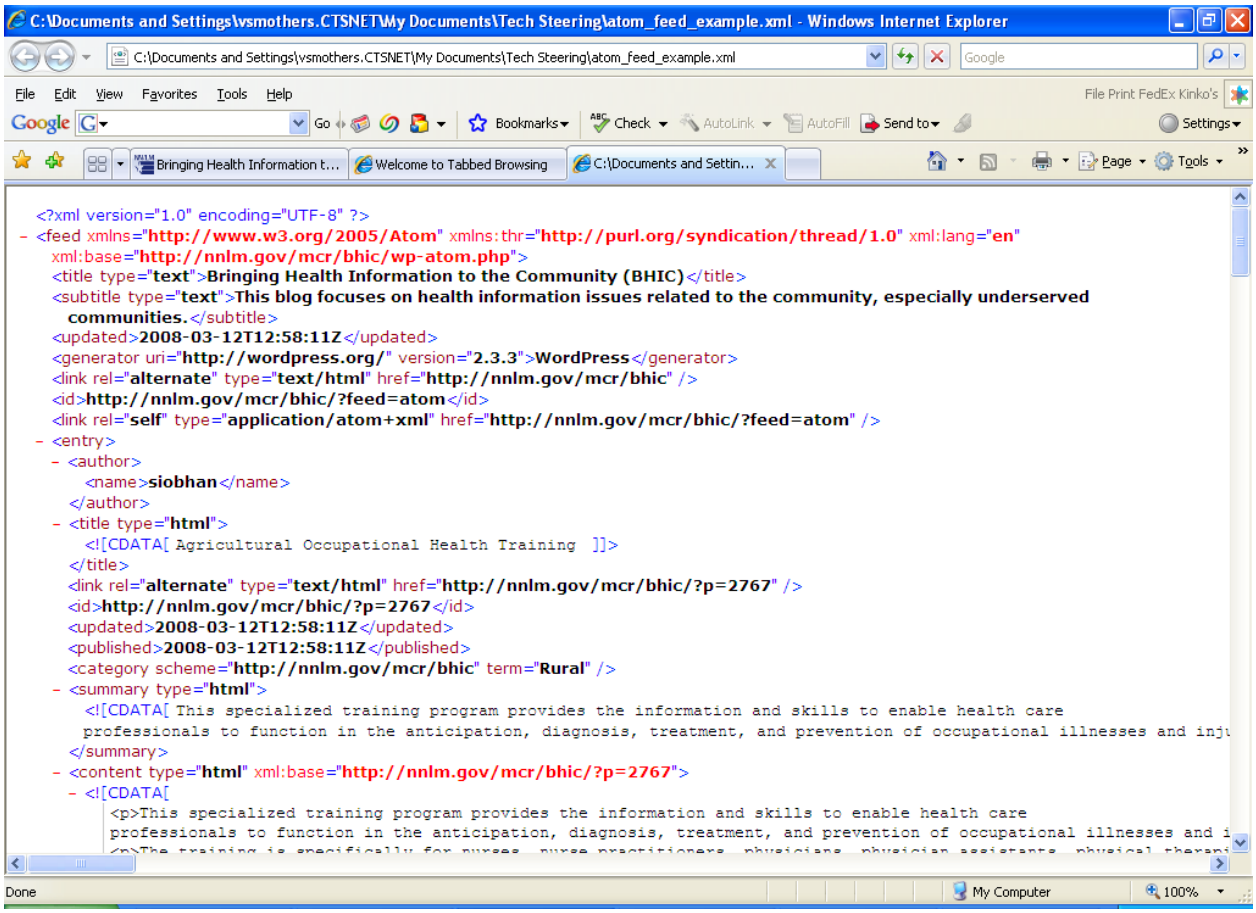

Figure 4: National Networks of Libraries of Medicine Atom Feed

3.2 Required and Recommended Atom Elements

MedBiquitous recommends using the following Atom feed and entry elements and subelements when creating an Atom document for disseminating the contents of a website, or circulating journal or learning content.

Table 1. Feed Element Information

Element	Description	Required	Multiplicity
feed	Feed is the root element that contains subelements describing metadata and content items.	Required	1
title	The title of the content feed. For example, Surgery Newsfeed. Title may have a type attribute that indicates the text formatting. Text may be of type text, html, or xhtml. Text titles are recommended.	Required	1

Element	Description	Required	Multiplicity
link	Link defines a reference to a Web resource. Link has attributes that provide information about the Web resource. The following attribute is recommended: *href* The URL for the associated website.	Recommended	0 or more
updated	The date the feed was last modified. Use the xml date time format. For example: 2003-12-13T18:30:02Z	Required	1
author	Author is a container element. Use the name subelement to identify the author of the feed.	Author is required unless all entries contain an author.	0 or more
logo	Logo identifies the resource identifier of an image for the feed. The image should have an aspect ratio of 2 (horizontal) to 1(vertical).	Recommended	0 or 1
id	A globally unique and permanent resource identifier identifying the feed. Use the URL of the feed document as the id.	Required	1

Table 2. Entry Element Information

Element	Description	Required	Multiplicity
entry	Entry contains information related to the individual entry within the news feed.	Recommended	0 or more
title	The title of the entry. For example, Physician Practice Information Survey. Title may have a type attribute that indicates the text formatting. Text may be of type text, html, or xhtml. Text titles are recommended.	Required	1
id	A globally unique and permanent resource identifier identifying the entry. Most feed authoring tools will create the id for the entry.	Required	1
updated	The date the entry was last modified. Use the xml date time format. For example: 2003-12-13T18:30:02Z	Required	1
author	Author is a container element. Use the name subelement to identify the author of the entry.	All entries must contain an author unless the feed author is indicated.	0 or more

Element	Description	Required	Multiplicity

content	Content contains or links to the content of the feed entry.
	
	Content may have a type attribute that indicates the text formatting. Text may be of type text, html, xhtml, XML media type, or Base64 encoding. If type is other than text, use the type attribute to indicate the format. For example:
	
	`<content type="xhtml">`
	
	xhtml is recommended for markup.
	
	If xhtml is used, the xhtml div element must be the child element, with any text and markup tags contained within the div element. For example:
	
	`<div xmlns=`
	`"http://www.w3.org/1999/xhtml">`
	`  Annual conference attendees must`
	`claim CE credit by <b>March 31</b>.`
	`</div>`
	
	Including the text in the content element is recommended. We do **not** recommend using the src attribute to reference remote content.
		Recommended	0 or 1

3.3 Using Atom for Podcasting

Atom is designed to be used for podcasting as well as text-based feeds. For podcasting, include link elements in the entry that identify the media file to be included in the feed. Use the following attributes of link.

rel
The relation of the link. The value of rel should be “enclosure” , which indicates that the link is a potentially large file which may require special handling.

type
The MIME type of the media resource being referenced.

title
A title for the media resource being referenced.

href
The URL for the media resource.

length
The length of the linked resource in octets (bytes).

Example:

```
<link rel="enclosure" type="audio/mpeg" length="1337"
  href="http://example.org/audio/ph34r_my_podcast.mp3"/>
```

3.4 Extending Atom for Continuing Education

One of the advantages of Atom is the ability to include XML namespaces for controlled extensibility. To describe learning content feeds, use the Healthcare Learning Object Metadata (Healthcare LOM) specification. Healthcare LOM allows feed publishers to describe continuing education credits for learning content.

To use Healthcare LOM to describe continuing education learning content, set the type attribute of the content element to XML as in the following example.

```
<content type="xml">
```

Include the following as namespace qualified subelements of content:

description
This subelement of content provides a text description of the CE course. Example:

```
<description xmlns:"http://ltsc.ieee.org/xsd/LOM">
   <string language =”en”> Provides a general introduction to arsenic
    toxicity in the environment.</string>
</description>
```

The course description may be duplicated in the entry description element.
credits
This subelement of content contains information about the number and type of credit hours available for the learning activity. Example:

```
<credits xmlns="http://ns.medbiq.org/lom/extend/v1/">
  <accreditingBody>ACCME</accreditingBody>
  <activityCertification>AMA PRA category 1
   </activityCertification>
  <creditType>CME</creditType>
  <creditUnit>Credit</creditUnit>
  <accreditedProvider>Centers for Disease Control and
   Prevention</accreditedProvider>
  <releaseDate>2005-10-30</releaseDate>
  <expirationDate>2006-10-30</expirationDate>
  <numberOfCredits>1.5</numberOfCredits>
</credits>
```

The full Healthcare LOM specification is available at:
http://www.medbiq.org/working_groups/learning_objects/HealthcareLOMSpecification.pdf

The XML schemas for Healthcare LOM are available at:
http://ns.medbiq.org/lom/extend/v1/healthcarelom.zip

3.5 Use RSS 1.0 for Journal Content Syndication

The flexibility and technical strength of Atom Syndication Format make it the natural choice for most MedBiquitous members and other healthcare educators. However, some wishing to syndicate content are adamant that the formalisms available through RDF in RSS 1.0 allow greater capability for interconnecting resources. This capability is important to the much-anticipated semantic web, an effort to apply semantic meaning to web resources in a machine-readable way. A number of scientific journal publishers have preferred the 1.0 format to allow this flexibility, and there are XSLT transforms available that can convert RSS 1.0 elements to Arom. HighWire Press currently uses RSS 1.0 for many of its journals (see http://thorax.bmjjournals.com/rss/current.xml as an example). Most RSS newsreaders and aggregator systems can process RSS 1.0, 2.0, and Atom feeds.

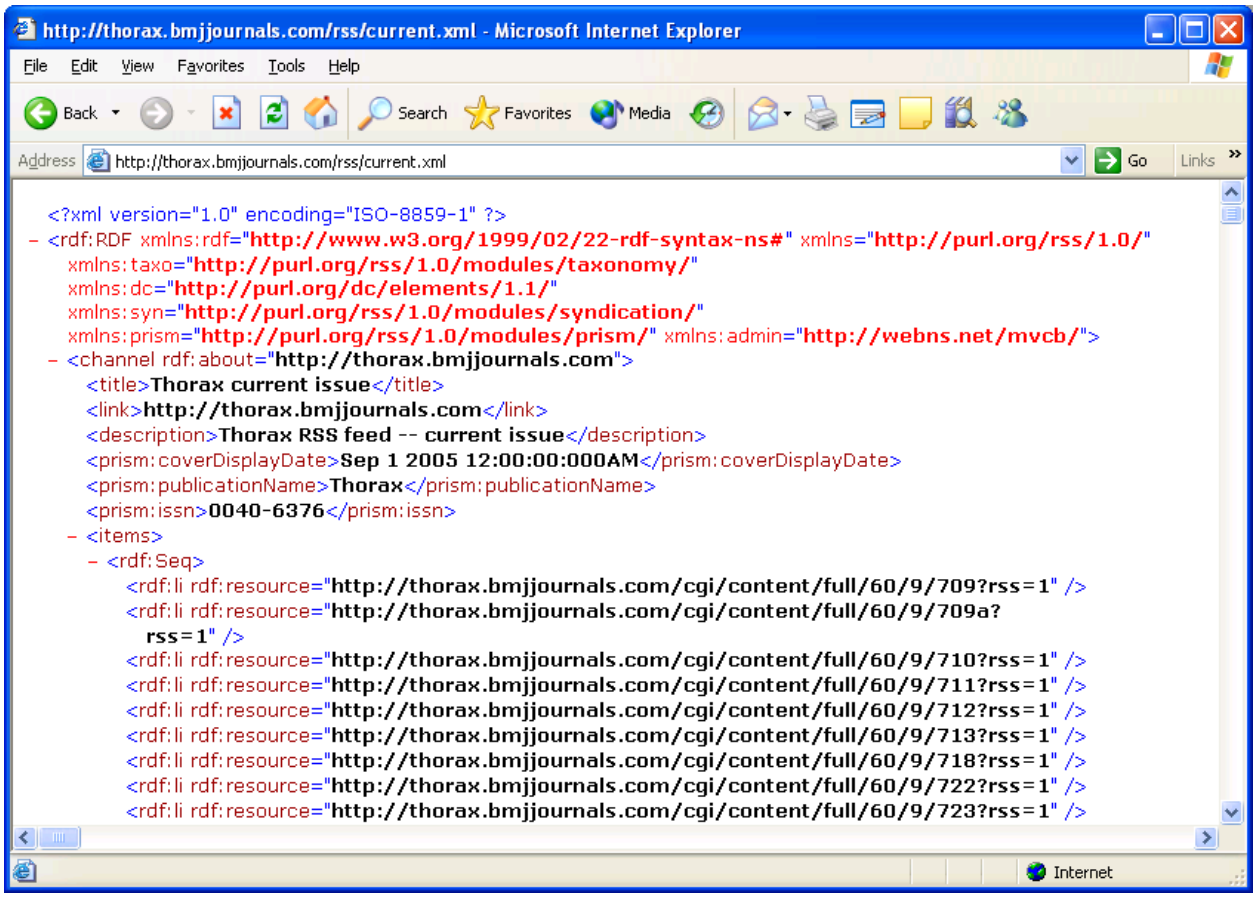

Figure 5: HighWire Press RSS Feed for the Journal Thorax

3.6 Extending RSS for Journal Content

Publishers using RSS 1.0 may wish to include Dublin Core metadata elements or publishing specific metadata described by PRISM, the Publishing Requirements for Industry Standard Metadata.

Specifications for extending RSS 1.0 with Dublin Core metadata elements are available at the following location: http://web.resource.org/rss/1.0/modules/dc/

Specifications for extending RSS 1.0 with PRISM are available at the following location: http://nurture.nature.com/rss/modules/mod_prism.html

3.7 Extending RSS for Podcasting

Podcasting requires the use of the `enclosure` RSS element to specify the location, size, and type of the audiofile used for the podcast. Example:

```
        <enclosure url=
"http://jama.ama-assn.org/content/vol299/issue11/images/data/DC1/pcastmar1908.mp3"
length="8727310" type="audio/mpeg" />
```

The Apple iTunes Music Store requires the use of specific RSS 2.0 extensions developed by Apple. These extensions include elements to describe the duration of the podcast, the artist, category, keywords, and more.

The specifications for extending RSS 2.0, Making a Podcast, are available at the following location: http://www.apple.com/itunes/store/podcaststechspecs.html

4. Syndication Software

Feed writers are often included in content management, portals, and other types of Web publishing software. In addition, there are many standalone writers available. Some popular feed writers are listed below:

- Tristana Writer (http://www.tristana.org/writer)
- FeedForAll (http://www.feedforall.com/)

Feed readers are integrated with Web browsers such as Internet Explorer and Firefox, but standalone news readers are available as well.

5. Innovative Uses of Feed Content

Atom feeds are designed to work with Atom Publishing Protocol which allows for the publication and update of web resources. The Atom Publishing Protocol also provides a set of technologies that can empower the end user and enable innovative uses of feed content.

5.1 Communities of Practice

The success of a community of practice is based on its ability to engage the individuals that comprise the community. Many healthcare educators are seeking to develop communities of practice for different groups, ranging from classes, to departments, to geographically dispersed healthcare professionals.

Atom Publishing Protocol can facilitate posting new content to community blogs, calendars, or even content repositories. Client software can be developed that allows a user to easily post an image to her professional society's "Image of the Day" blog without having to go to the blog website. Using the client on her computer or mobile device, the user can select an image and post to the blog of her choice. Or she may be able to right click on a calendar event in her personal calendar and add it to the community calendar.

Some groups have developed repository management software that uses Atom Publishing Protocol for adding and removing content from repositories. This facilitates sharing learning resources in common repositories. For more information, see the SWORD APP Profile at:
http://www.ukoln.ac.uk/repositories/digirep/index/SWORD_APP_Profile_0.4

For more information on the Atom Publishing Protocol, visit http://atomenabled.org/ .

5.2 Combining Feeds

Yahoo Pipes enables developers to combine Atom feeds and other content into a single feed that can be sorted or filtered. For example, one Pipe combines feeds from The Lancet and Lancet Infections Diseases, filtering out the non-research items (http://pipes.yahoo.com/pipes/pipe.info?_id=jso1qDDe2xGN2vZwyjUFzw). Another searches multiple journals for recent emergency medicine content (http://pipes.yahoo.com/pipes/pipe.info?_id=b91110824c813513d19d656fdb27cce5). Such pipes could also be useful for aggregating feeds from chapters or subspecialty organizations affiliated with a larger organization. Other pipes enable the display of events on a map (see http://pipes.yahoo.com/pipes/pipe.info?_id=gGThvN_62xG2JH50ZoQMOQ). These types of could be used for displaying medical conference locations.

For more information on Yahoo Pipes, visit http://pipes.yahoo.com/pipes/ .

6. Sample Atom Newsfeed

```
<?xml version="1.0" encoding="UTF-8"?>
<feed xmlns="http://www.w3.org/2005/Atom">
  <title>MedBiquitous E-learning News </title>
<link href="http://groups.medbiq.org/medbiq/" />
<updated>2008-03-20T19:38:10Z </updated>
<logo>http://www.medbiq.org/images/medbiq88.gif </logo>
  <id>http://groups.medbiq.org/medbiq/</id>
  <entry>
    <title>New Portal Educates Prescribers about Pharmaceutical Marketing
Practices</title>
    <id>
http://groups.medbiq.org/medbiq/display/ELN/2008/03/24/New+Portal+Educates+Prescribers
+about+Pharmaceutical+Marketing+Practices</id>
    <updated>2008-03-24T14:44:41Z </updated>
    <author>
      <name>Valerie Smothers</name>
    </author>
    <content type="xhtml">
        <div xmlns= "http://www.w3.org/1999/xhtml">News Item
            <p>The US Federation of State Medical Boards Research and Education
Foundation has developed and implemented the Online Prescriber Education Network
(OPEN), a Web-based portal that will provide educational programs to practicing
physicians about pharmaceutical industry marketing techniques and their effect on
prescribing practices. OPEN provides accredited continuing medical education courses
developed by grantees of the Attorney General Consumer and Prescriber Education Grant
Program. In cooperation with the FSMB 70 member state medical boards, these modules
are offered to enhance the protection of the public and improve the quality of health
care.</p>
       </div>
</content>
  </entry>
  <entry>
    <title>Medical Education Repository Expands to Include Dental Resources</title>
        <id>
http://groups.medbiq.org/medbiq/display/ELN/2008/03/20/Medical+Education+Repository+Ex
pands+to+Include+Dental+Resources</id>
    <updated>2008-03-24T14:44:41Z </updated>
    <link
href="http://groups.medbiq.org/medbiq//display/ELN/2008/03/20/Medical+Education+Reposi
tory+Expands+to+Include+Dental+Resources" />
    <author>
      <name>Valerie Smothers</name>
    </author>
    <content type="xhtml">
        <div xmlns= "http://www.w3.org/1999/xhtml">News Item
         <p>The American Dental Education Association (ADEA) and the Association of
American Medical Colleges (AAMC) have formed a partnership that will allow the AAMC to
expand its <a href=http://www.aamc.org/mededportal>MedEdPORTAL</a>  repository to
include dental education resources. MedEdPORTAL is a collection of peer-reviewed
medical education resources. MedEdPORTAL begins accepting submissions from dental
professionals April 15, 2008. Dental Educators will submit their materials directly to
```

```
MedEdPORTAL and go through the same screening and peer review process as their medical
colleagues. </p>
        </div>
    </content>
  </entry>
</feed>
```

7. References

Hammersly B. Content syndication with RSS. Sebastopol: O'Reilly Media, Inc.; 2003.

Hammond T, Hannay T, Lund B. The role of RSS in science publishing. D-Lib Magazine. December 2004. [Web page]. Available at: http://www.dlib.org/dlib/december04/hammond/12hammond.html. Accessed April 1, 2005.

Nottingham M, Sayre R. The Atom Syndication Format. December 2005. [Web page] Available at: http://tools.ietf.org/html/rfc4287. Accessed March 24, 2008.

Snell, J. An Overview of the Atom 1.0 Syndication Format. August 2, 2005. [Web page] Available at: http://www.ibm.com/developerworks/xml/library/x-atom10.html. Accessed March 24, 2008.