



Outline Processor Markup Language

OPML 1.0 Specification

9/15/00 DW

About this document

This document describes a format for storing outlines in XML 1.0 called *Outline Processor Markup Language* or OPML.

For the purposes of this document, an outline is a tree, where each node contains a set of named attributes with string values.

Timeline

Outlines have been a popular way to organize information on computers for a long time. While the history of outlining software is unclear, a rough timeline is possible.

Probably the first outliner was developed by Doug Engelbart, as part of the Augment system in the 1960s.

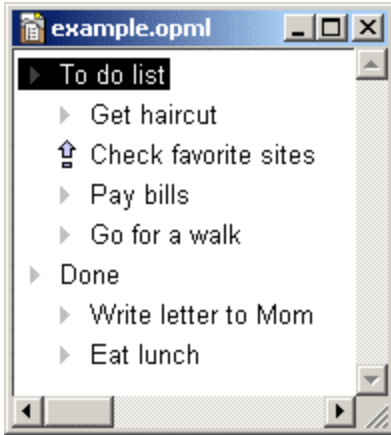
Living Videotext, 1981-87, developed several popular outliners for personal computers. They are archived on a UserLand website, outliners.com.

Frontier, first shipped in 1992, is built around outlining. The text, menu and script editors in Frontier are outliners, as is the object database browser.

XML 1.0, the format that OPML is based on, is a recommendation of the W3C.

Radio UserLand, first shipped in March 2001, is an outliner whose native file format is OPML.

OPML is used for directories in Manila.



Examples

Outlines can be used for specifications, legal briefs, product plans, presentations, screenplays, directories, diaries, discussion groups, chat systems and stories.

Outliners are programs that allow you to read, edit and reorganize outlines.

Examples of OPML documents: play list, specification, presentation. [See appendices]

Goals of the OPML format

The purpose of this format is to provide a way to exchange information between outliners and Internet services that can be browsed or controlled through an outliner.

The design goal is to have a transparently simple, self-documenting, extensible and human readable format that's capable of representing a wide variety of data that's easily browsed and edited. As the format evolves this goal will be preserved. It should be possible for a reasonably technical person to fully understand the format with a quick read of a single Web page.

It's an open format, meaning that other outliner vendors and service developers are free to use the format to be compatible with Radio UserLand or for any other purpose.

What is an <opml>?

<opml> is an XML element, with a single required attribute, version; a <head> element and a <body> element, both of which are required.

The version attribute is a version string, of the form, x.y, where x and y are both numeric strings.

What is a <head>?

A <head> contains zero or more optional elements, described below.

<title> is the title of the document.

<dateCreated> is a date-time, indicating when the document was created.

<dateModified> is a date-time, indicating when the document was last modified.

<ownerName> is a string, the owner of the document.

<ownerEmail> is a string, the email address of the owner of the document.

<expansionState> is a comma-separated list of line numbers that are expanded. The line numbers in the list tell you which headlines to expand. The order is important. For each element in the list, X, starting at the first summit, navigate flatdown X times and expand. Repeat for each element in the list.

<vertScrollState> is a number, saying which line of the outline is displayed on the top line of the window. This number is calculated with the expansion state already applied.

<windowTop> is a number, the pixel location of the top edge of the window.

<windowLeft> is a number, the pixel location of the left edge of the window.

<windowBottom> is a number, the pixel location of the bottom edge of the window.

<windowRight> is a number, the pixel location of the right edge of the window.

<head> notes

All the sub-elements of <head> may be ignored by the processor. If an outline is opened within another outline, the processor *must* ignore the windowXxx elements, those elements only control the size and position of outlines that are opened in their own windows.

All date-times conform to the Date and Time Specification of [RFC 822](#).

If you load an OPML document into your client, you may choose to

respect `expansionState`, or not. We're not in any way trying to dictate user experience. The `expansionState` info is there because it's needed in certain contexts. It's easy to imagine contexts where it would make sense to completely ignore it.

What is a <body>?

A `<body>` contains one or more `<outline>` elements.

What is an <outline>?

An `<outline>` is an XML element, possibly containing one or more attributes, and containing any number of `<outline>` sub-elements.

Common attributes

`text` is the string of characters that's displayed when the outline is being browsed or edited. There is no specific limit on the length of the `text` attribute.

`type` is a string, it says how the other attributes of the `<outline>` are interpreted.

`isComment` is a string, either "true" or "false", indicating whether the outline is commented or not. By convention if an outline is commented, all subordinate outlines are considered to be commented as well. If it's not present, the value is false.

`isBreakpoint` is a string, either "true" or "false", indicating whether a breakpoint is set on this outline. This attribute is mainly necessary for outlines used to edit scripts that execute. If it's not present, the value is false.

Compatibility

Before the 1.0 format was frozen the top-level element of the format was called `outlineDocument`. Radio UserLand will continue to read such documents.

Limits

There are no documented limits to the number of attributes an `<outline>` element can have, or the number of `<outline>` elements it can contain.

Notes

OPML is a file format, not a protocol. When you click on a link in an HTML document it doesn't in any way change the document stored on the server. OPML is used in much the same way.

Wayne Steele did a DTD for OPML 1.0. Thank you. [See Appendix D].

In general, the mimetype for an OPML document, when accessed over HTTP, is text/xml. This allows Web browsers to use XML formatting conventions to display an OPML document. Radio UserLand's built-in HTTP server looks at the Accept header of the request to determine how it processes an OPML document. If the Accept header says that the client understands text/x-opml, we return the unprocessed XML text. If it is not present, we return the text in the outline with the mimetype text/html.

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A. Playlist Example¹

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
= <opml version="1.0">
= <head>
  <title>playlist.xml</title>
  <dateCreated>Thu, 27 Jul 2000 03:24:18 GMT</dateCreated>
  <dateModified>Fri, 15 Sep 2000 09:01:23 GMT</dateModified>
  <ownerName>Dave Winer</ownerName>
  <ownerEmail>dave@userland.com</ownerEmail>
  <expansionState>1,3,17</expansionState>
  <vertScrollState>1</vertScrollState>
  <windowTop>164</windowTop>
  <windowLeft>50</windowLeft>
  <windowBottom>672</windowBottom>
  <windowRight>455</windowRight>
</head>
= <body>
= <outline text="Background">
  <outline text="I've started to note the songs I was
    listening to as I was writing DaveNet pieces." />
</outline>
= <outline text="The Last Napster Sunday?">
  <outline text="Heart of Glass.mp3" type="song"
    f="Blondie - Heart of Glass.mp3" />
  <outline text="Manic Monday.mp3" type="song"
    f="Bangles - Manic Monday.mp3" />
  <outline text="Everybody Have Fun Tonight.mp3"
    type="song" f="Wang Chung - Everybody Have Fun
    Tonight.mp3" />
  <outline text="She Blinded Me With Science.mp3"
    type="song" f="Thomas Dolby - She Blinded Me With
    Science.mp3" />
  <outline text="Rivers of Babylon (HTC).mp3" type="song"
    f="Jimmy Cliff - Rivers of Babylon (HTC).mp3" />
  <outline text="The Tide Is High.mp3" type="song"
    f="Blondie - The Tide Is High.mp3" />
  <outline text="Back to the Island.mp3" type="song"
    f="Leon Russell - Back to the Island.mp3" />
  <outline text="Lucky Man.mp3" type="song" f="Emerson
    Lake & Palmer - Lucky Man.mp3" />
  <outline text="Up on Cripple Creek.mp3" type="song"
    f="The Band - Up on Cripple Creek.mp3" />
  <outline text="Crackerbox Palace.mp3" type="song"
    f="George Harrison - Crackerbox Palace.mp3" />
  <outline text="Taxi.Mp3" type="song" f="Harry Chapin -
    Taxi.Mp3" />
```

¹ From <http://static.userland.com/gems/radiodiscuss/playlist.opml>

```
<outline text="Thick As A Brick.mp3" type="song"
  f="Jethro Tull-Thick As A Brick.mp3" />
<outline text="Riding With the King.mp3" type="song"
  f="B. B. King & Eric Clapton - Riding With the King -
  11 - Hold On Im Coming.mp3" />
</outline>
= <outline text="The Thrill is Gone?">
  <outline text="Shaft.MP3" type="song" f="Isaac Hayes -
  Shaft.MP3" />
  <outline text="Superfly.mp3" type="song" f="Curtis
  Mayfield -- Superfly.mp3" />
  <outline text="Rivers of Babylon (HTC).mp3" type="song"
  f="Jimmy Cliff - Rivers of Babylon (HTC).mp3" />
  <outline text="The Harder They Come.mp3" type="song"
  f="Jimmy Cliff - The Harder They Come.mp3" />
  <outline text="The Revolution Will Not Be Televised.mp3"
  type="song" f="Gil Scott Heron - The Revolution Will
  Not Be Televised.mp3" />
  <outline text="The Thrill Is Gone.mp3" type="song" f="BB
  King - The Thrill Is Gone.mp3" />
  <outline text="Hit Me with Your Rhythm Stick.mp3"
  type="song" f="Ian Drury & the Blockheads - Hit Me
  with Your Rhythm Stick.mp3" />
</outline>
</body>
</opml>
```


B. Specification Example²

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
= <opml version="1.0">
= <head>
  <title>specification.xml</title>
  <dateCreated>Thu, 27 Jul 2000 01:20:06 GMT</dateCreated>
  <dateModified>Fri, 15 Sep 2000 09:04:03 GMT</dateModified>
  <ownerName>Dave Winer</ownerName>
  <ownerEmail>dave@userland.com</ownerEmail>
  <expansionState />
  <vertScrollState>1</vertScrollState>
  <windowTop>146</windowTop>
  <windowLeft>107</windowLeft>
  <windowBottom>468</windowBottom>
  <windowRight>560</windowRight>
</head>
= <body>
= <outline text="It's XML, of course">
  <outline text="This page documents the file formats used
    by Radio UserLand." />
  <outline text="There are two formats, outlineDocument
    and songList." />
  <outline text="There's a simple XML-RPC interface that
    allows a user to register with an aggregator." />
  <outline text="All formats are open and public and may
    be used for any purpose whatsoever." />
</outline>
= <outline text="outlineDocument">
  <outline text="All playlists are outlineDocuments. This is
    the main file format for Radio UserLand. When you
    create a new file it's saved as an outlineDocument.
    Because users can save them into the www folder,
    they can be accessed over the Web, either from a
    script or a Web browser such as MSIE. (Of course
    they could be served by any HTTP server, not just the
    Radio UserLand server.)" />
  <outline text="The outlineDocument format is <a
    href="http://backend.userland.com/stories/storyRe
    ader$53">documented</a> on
    backend.userland.com. There will no doubt be
    changes and refinements to the format. One area that
    needs work is the format for the data attribute on a
    headline. Currently there are bugs in the way Radio
    UserLand uses this attribute. (Every headline gets a
    data attribute, whether or not it links to a song. We
    need to XMLize this and fit in data not as an attribute
```

² From <http://static.userland.com/gems/radiodiscuss/specification.opml>

```

    but as a legal sub-item. Shouldn't be hard to do, and
    with this caveat, breakage should be expected.)" />
<outline text="Radio UserLand can be used to write any
kind of document, not just a music playlist. Outlines
are great for all kinds of structured documents,
specifications, legal briefs, product plans,
presentations and stories." />
<outline text="Several examples of outlineDocuments
created with Radio UserLand: play list, specification,
presentation." />
</outline>
= <outline text="songList">
  <outline text="As you're listening to music, Radio
  UserLand keeps track of what you listen to. Here's a
  <a
  href="http://static.userland.com/images/radiodiscu
  ss/userPlaylistSongs.gif">screen shot</a> of the
  table, user.playlist.songs, that keeps track of the
  stuff." />
  <outline text="ctPlays is the number of times the song
  has been played. ctSeconds is the duration of the
  song, determined by a heuristic that's pretty
  accurate. f is the file that contains the MP3, on the
  local file system. whenFirstPlayed is the time/date
  the song was played for the first time,
  whenLastPlayed is the most recent time/date.
  whenLoaded is when Radio UserLand discovered the
  file in your MP3 folder." />
  <outline text="Every hour on the hour Radio UserLand
  generates an XMLization of this table and places it in
  the userland folder of your www folder, making it
  available over the Web. (There's no way to turn this
  feature off, there should be.)" />
  <outline text="Here's an <a
  href="http://static.userland.com/gems/radiodiscuss
  /songs.xml">example</a> of the XML file. The
  mapping between the table and the XMLization should
  be fairly clear." />
</outline>
= <outline text="Rules of the road">
  <outline text="Rules of the road will be determined later,
  since many of these files will be on users' machines,
  we want to provide guidelines for bots, aggregators
  and content systems; and whatever other kinds of
  applications people think of. Feel free to use the
  discussion group here to raise issues." />
</outline>
</body>
</opml>

```

C. Presentation Example³

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
= <opml version="1.0">
= <head>
  <title>presentation.xml</title>
  <dateCreated>Thu, 27 Jul 2000 01:35:52 GMT</dateCreated>
  <dateModified>Fri, 15 Sep 2000 09:05:37 GMT</dateModified>
  <ownerName>Dave Winer</ownerName>
  <ownerEmail>dave@userland.com</ownerEmail>
  <expansionState />
  <vertScrollState>1</vertScrollState>
  <windowTop>317</windowTop>
  <windowLeft>252</windowLeft>
  <windowBottom>514</windowBottom>
  <windowRight>634</windowRight>
</head>
= <body>
= <outline text="Welcome to Frontier 5!">
  <outline text="What is Frontier?" />
  <outline text="It's a Content Management System" />
</outline>
= <outline text="Why Manage Content?">
  <outline text="Form separated from content" />
  <outline text="Make it easy to change the look of a site"
  />
  <outline text="Keep the technical stuff out of the way of
  writers" />
  <outline text="Let designers work without having to deal
  with writers" />
  <outline text="Everyone works on what they do best" />
</outline>
= <outline text="Three groups">
  <outline text="Writers write" />
  <outline text="Designers design" />
  <outline text="Geeks keep everything working" />
  <outline text="Frontier is for the geeks" />
</outline>
= <outline text="How does Content Flow?">
  <outline text="Thru LANs, watched, shared folders" />
  <outline text="HTTP Put protocol" />
  <outline text="Email" />
</outline>
= <outline text="Cookie-cutter or workbench?">
  <outline text="No two organizations work the same way"
  />
</outline>
</body>
</opml>
```

³ From <http://static.userland.com/gems/radiodiscuss/presentation.opml>

```

    <outline text="You need a highly customizable
        environment to make it work" />
    <outline text="A cookie-cutter approach is a dead-end" />
    <outline text="Frontier is <i>designed</i> for
        customization" />
    <outline text="It's a website system workbench" />
</outline>
- <outline text="Frontier is an environment">
    <outline text="Everything is integrated" />
    <outline text="Much more powerful" />
    <outline text="Much higher performance" />
    <outline text="Key point!" />
</outline>
- <outline text="The Object Database is the Center">
    <outline text="Everything is built around a fast scalable
        object database" />
    <outline text="Millions of hours of burn-in" />
    <outline text="Hierarchical" />
    <outline text="It's also the symbol table for the
        language" />
</outline>
- <outline text="The scripting language">
    <outline text="Patterned after C, totally dynamic" />
    <outline text="No need for structure symbols, semicolons
        or curly braces" />
    <outline text="Because it's integrated with a
        revolutionary script editor" />
</outline>
- <outline text="The script editor">
    <outline text="Is an outliner" />
    <outline text="Expand a construct to see the detail" />
    <outline text="Collapse it to hide detail" />
    <outline text="When you move a statement, all the
        statements under it move too" />
    <outline text="This may be the single most revolutionary
        feature in Frontier" />
</outline>
- <outline text="Complete script debugger">
    <outline text="Set a breakpoint" />
    <outline text="Step into and out of procedure calls" />
    <outline text="Easily examine all data while a script is
        running" />
</outline>
- <outline text="Object oriented website framework">
    <outline text="Link management with hierarchical
        glossaries" />
    <outline text="Inherited and overridable attributes" />
    <outline text="Filter scripts also allow overrides and
        multiple content flows" />
    <outline text="All content is stored in database" />

```

```

</outline>
= <outline text="The runtime environment">
  <outline text="Full built-in TCP support via inetd" />
  <outline text="Fully supports client and server HTTP" />
  <outline text="Fully multi-threaded" />
  <outline text="Large comprehensive verb set" />
  <outline text="Background processes, agents" />
  <outline text="Semaphores" />
</outline>
= <outline text="Editing tools">
  <outline text="The object database editor is an outliner" />
  <outline text="Outlines are a great format for complex HTML" />
  <outline text="Simple text editor with easy HTML commands" />
</outline>
= <outline text="Key Components of Frontier">
  <outline text="Integrated database storage system" />
  <outline text="Object oriented website framework" />
  <outline text="Powerful scripting environment with development tools, debugger" />
  <outline text="Outliner and text tools" />
  <outline text="Link management" />
  <outline text="Multithreaded runtime" />
  <outline text="Comprehensive verb set" />
</outline>
= <outline text="Frontier is content management">
  <outline text="It's not an application development environment" />
  <outline text="It is a content management system" />
  <outline text="Suitable for a newspaper or magazine" />
  <outline text="A marketing department" />
  <outline text="A university department" />
</outline>
= <outline text="A brief history of Frontier">
  <outline text="Automated DTP production with Quark and PageMaker on Mac (1992-93)" />
  <outline text="Transitioned to the web in 1996" />
  <outline text="Ships 1/28/98 for Win32 and Mac" />
  <outline text="Websites are cross platform!" />
  <outline text="So are many utility scripts" />
  <outline text="It's the first truly cross-platform web scripting environment" />
</outline>
= <outline text="A brief future of Frontier">
  <outline text="Ease of use is our focus" />
  <outline text="Remote procedure calling" />
  <outline text="Sandboxes with scripted firewalls" />
  <outline text="Scalable content" />

```

```
<outline text="XML" />  
</outline>  
</body>  
</opml>
```

D. OPML DTD⁴

```
<!ENTITY % date-time "(#PCDATA)*" > <!-- conforming to the Date and
Time Specification of RFC 822.-->
<!ENTITY % number "(#PCDATA)*" >
<!ENTITY % string "(#PCDATA)*" >

<!ELEMENT opml (head, body) >
<!ATTLIST opml
version CDATA #IMPLIED> <!-- a version string, of the form, x.y, where
x and y are both numeric strings.-->

<!ELEMENT head ( title?, dateCreated?, dateModified?,
ownerName?, ownerEmail?, expansionState?, vertScrollState?,
windowTop?, windowLeft?, windowBottom?, windowRight? ) >

<!ELEMENT title (#PCDATA)* > <!--the title of the document.-->
<!ELEMENT dateCreated %date-time; > <!--a date-time, indicating when
the document was created.-->
<!ELEMENT dateModified %date-time;> <!--a date-time, indicating when
the document was last modified.-->
<!ELEMENT ownerName %string; > <!--a string, the owner of the document.
-->
<!ELEMENT ownerEmail %string; > <!--a string, the email address of the
owner of the document.-->

<!ELEMENT expansionState (#PCDATA)* >
<!--
a comma-separated list of line numbers that are expanded.
The line numbers in the list tell you which headlines to expand.
The order is important.
For each element in the list, X, starting at the first summit, navigate
flatdown X times and expand.
Repeat for each element in the list.
-->

<!ELEMENT vertScrollState %number; >
<!--
a number, saying which line of the outline is displayed on the top line
of
the window.
This number is calculated with the expansion state already applied.
-->

<!ELEMENT windowTop %number; > <!-- a number, the pixel location of
the top edge of the window.-->
<!ELEMENT windowLeft %number; > <!-- a number, the pixel location of
the left edge of the window.-->
<!ELEMENT windowBottom %number; > <!-- a number, the pixel location of
the bottom edge of the window.-->
<!ELEMENT windowRight %number; > <!-- a number, the pixel location of
the right edge of the window.-->
```

4

```

<!ELEMENT body (outline)+ >
<!ELEMENT outline (outline)* >

<!ENTITY % OtherAttributes " " >
<!ATTLIST outline
text CDATA #IMPLIED
type CDATA #IMPLIED
isComment (true|false) false
isBreakpoint (true|false) false
%OtherAttributes; >
<!--
text is the string of characters that's displayed when the outline is
being browsed or edited.
type is a string, it says how the other attributes of the <outline> are
interpreted.
isComment indicates whether the outline is commented or not.
By convention if an outline is commented, all subordinate outlines are
considered to be commented as well.
isBreakpoint indicates whether a breakpoint is set on this outline. This
attribute is mainly necessary for outlines used to edit scripts that
execute.

You can add whatever other attributes on the outline element you want.
-->

```