

Open Web Technologies

A love letter to XML

Why XML

- Extensible Markup Language
- markup language and file format for storing, transmitting, and reconstructing arbitrary data
- human-readable && machine-readable
- Open Standard
- First Published: February 10, 1998

- XML is analogous to a **lingua franca** for **representing information**

XML Example #0

```
<Note>  
  <to>norayr</to>  
  <from>antranigv</from>  
  <subject>Reminder</from>  
  <body>Don't forget to setup the server tomorrow</body>  
</Note>
```

XML Example #1

```
<Menu>
  <food>
    <name>Pizza</name>
    <price>$6.99</price>
    <calories>1600</calories>
    <description>
      Awesome Pizza!
    </description>
  </food>

  <food>
    <name>Wine</name>
    <price>$4.99</price>
    <calories>800</calories>
    <description>
      Amazing Wine!
    </description>
  </food>
</Menu>
```

XML Example #2

```
<bookstore>
  <book category="cooking">
    <title lang="en">Everyday Italian</title>
    <author>Giada De Laurentiis</author>
    <year>2005</year>
    <price>30.00</price>
  </book>
  <book category="children">
    <title lang="en">Harry Potter</title>
    <author>J K. Rowling</author>
    <year>2005</year>
    <price>29.99</price>
  </book>
  <book category="web">
    <title lang="en">Learning XML</title>
    <author>Erik T. Ray</author>
    <year>2003</year>
    <price>39.95</price>
  </book>
</bookstore>
```

XML Example #3

```
<Note date="2022/02/18" priority="high">  
  <to>norayr</to>  
  <from>antranigv</from>  
  <subject>Reminder</from>  
  <body>Don't forget to setup the server tomorrow</body>  
</Note>
```

XML Common Issue #1

```
<table>  
  <on>  
    <el>Apples</el>  
    <el>Bananas</el>  
  </on>  
</table>
```

```
<table>  
  <name>African Coffee Table</name>  
  <width>80</width>  
  <length>120</length>  
</table>
```

XML Simple Fix #1

```
<root>

<h:table xmlns:h="http://www.w3.org/fruites">
  <h:on>
    <h:el>Apples</h:el>
    <h:el>Bananas</h:el>
  </h:on>
</h:table>

<f:table xmlns:f="https://www.w3.org/furniture">
  <f:name>African Coffee Table</f:name>
  <f:width>80</f:width>
  <f:length>120</f:length>
</f:table>

</root>
```


Where is XML

- Everywhere!
- Common XML-based standards
 - HTML
 - RSS
 - KML
 - Atom
 - XUL
- Many more!

HTML

```
<!DOCTYPE html>
<html lang="en-US">
  <head>
    <meta charset="utf-8" />
    <meta name="viewport" content="width=device-width" />
    <title>My test page</title>
  </head>
  <body>
    
  </body>
</html>
```

Keyhole Markup Language

```
<?xml version="1.0" encoding="UTF-8"?>
<kml xmlns="http://www.opengis.net/kml/2.2">
<Document>
<Placemark>
  <name>Yerevan</name>
  <description>Yerevan</description>
  <Point>
    <coordinates>40.177200,44.503490,0</coordinates>
  </Point>
</Placemark>
</Document>
</kml>
```

RSS

```
<?xml version="1.0" encoding="UTF-8"?>
<rss version="2.0"
  xml:base="https://rubenerd.com/"
  xml:lang="en-SG">

<channel>
  .   .   .
</channel>
</rss>
```

RSS

```

<channel>
  <title>Rubenerd</title>
  <link>https://rubenerd.com/</link>
  <category>Weblog</category>
  <description>By Ruben Schade in s/Singapore/Sydney/. 🌻</description>
  <copyright>© 2004–2023 Ruben Schade.</copyright>
  <language>en-SG</language>
  <generator>Hugo, Vim</generator>
  <lastBuildDate>Thu, 16 Feb 2023 10:55:54 +1100</lastBuildDate>
  <pubDate>2023-02-16T10:50:33+11:00</pubDate>
  <docs>http://cyber.law.harvard.edu/rss/rss.html</docs>
  <ttl>30</ttl>
  .
  .
  .
  <item>
  .
  .
  .
  </item>
</channel>

```

RSS

```

<item>
  <title>Caught Covid</title>
  <link>https://rubenerd.com/caught-covid/</link>
  <guid isPermaLink="true">https://rubenerd.com/caught-covid/</guid>
  <category>thoughts</category>
  <category domain="https://rubenerd.com/tag/covid/">covid</category>
  <category domain="https://rubenerd.com/tag/health/">health</category>
  <pubDate>Thu, 16 Feb 2023 10:50:33 +1100</pubDate>
  <description>
    <![CDATA[<p>We avoided it for three years, but I suppose it was our turn.
      We're 4x vaccinated, so thanking my lucky stars it could be a <em>lot</em> worse.</p>
      <p>It hurts to look at a screen and type, so logging off for now. See you again soon. 🙌</p>
    ]>
  </description>
  <dc:creator>Ruben Schade</dc:creator>
  <derived:code
    type="text/markdown"
    url="https://gitlab.com/rubenerd/rubenerd.com/-/tree/trunk/content/post/2023/caught-covid.md"/>
</item>

```

RSS

```

<item>
  <title>Caught Covid</title>
  <link>https://rubenerd.com/caught-covid/</link>
  <guid isPermaLink="true">https://rubenerd.com/caught-covid/</guid>
  <category>thoughts</category>
  <category domain="https://rubenerd.com/tag/covid/">covid</category>
  <category domain="https://rubenerd.com/tag/health/">health</category>
  <pubDate>Thu, 16 Feb 2023 10:50:33 +1100</pubDate>
  <description>
    <![CDATA[<p>We avoided it for three years, but I suppose it was our turn.
      We're 4x vaccinated, so thanking my lucky stars it could be a <em>lot</em> worse.</p>
      <p>It hurts to look at a screen and type, so logging off for now. See you again soon. 🙌</p>
    ]>
  </description>
  <dc:creator>Ruben Schade</dc:creator>
  <derived:code
    type="text/markdown"
    url="https://gitlab.com/rubenerd/rubenerd.com/-/tree/trunk/content/post/2023/caught-covid.md"/>
</item>

```

Cool XML-based Standards

BeerXML

```
<FERMENTABLE>
  <NAME>Fustons Hopped Amber</NAME>
  <VERSION>1</VERSION>
  <AMOUNT>0.50</AMOUNT>
<NOTES>Hopped amber extract suitable as a base for english ales.
  </NOTES>
  <YIELD>78.0</YIELD>
  <TYPE>Extract</TYPE>
  <COLOR>13</COLOR>
  <IBU_GAL_PER_POUND>16.6</IBU_GAL_PER_POUND>
</FERMENTABLE>
```



Common Alerting Protocol

```
<alert xmlns = "urn:oasis:names:tc:emergency:cap:1.2">
  <identifier>TRI13970876.2</identifier>
  <sender>trinet@caltech.edu</sender>
  <sent>2003-06-11T20:56:00-07:00</sent>
  <status>Actual</status>
  <msgType>Update</msgType>
  <scope>Public</scope>
  <info>
    <category>Geo</category>
    <event>Earthquake</event>
    <urgency>Past</urgency>
    <severity>Minor</severity>
    <certainty>Observed</certainty>
    <senderName>
      Southern California Seismic Network (TriNet) operated by Caltech and USGS
    </senderName>
    <headline>EQ 3.4 Imperial County CA</headline>
    <description>
      A minor earthquake measuring 3.4 on the Richter scale occurred near Brawley, California
      at 8:30 PM Pacific Daylight Time on Wednesday, June 11, 2003.
      (This event has now been reviewed by a seismologist)
    </description>
    <web>http://www.trinet.org/scsn/scsn.html</web>
    <parameter>
      <valueName>Magnitude</valueName>
      <value>3.4 M1</value>
    </parameter>
    <parameter>
      <valueName>Depth</valueName>
      <value>11.8 mi.</value>
    </parameter>
    <area>
      <areaDesc>
        1 mi. WSW of Brawley, CA;
        11 mi. N of El Centro, CA;
        30 mi. E of OCOTILLO (quarry);
        1 mi. N of the Imperial Fault
      </areaDesc>
      <circle>32.9525,-115.5527 0</circle>
    </area>
  </info>
</alert>
```



DCML

```
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:dcml="http://www.dcml.org/ns/dcml/1/core#"
  xmlns="http://www.dcml.org/ex/dcml/1/exampleSchema#">
  <dcml:Header rdf:about="">
  <rdfs:comment>Example DCML instance document.</rdfs:comment>
  <rdfs:label>Example</rdfs:label>
  <dcml:author>DCML Framework Working Group</dcml:author>
  <dcml:createDate>2004-04-22T01:08:30.711Z</dcml:createDate>
  </dcml:Header>
  <LogicalServer rdf:ID="myServer">
  <dcml:name>MyServer</dcml:name>
  <os rdf:resource="#myOS"/>
  </LogicalServer>

  <CIMOperatingSystem rdf:ID="myOS">
  <dcml:xmlData>
  <CIM CIMVERSION="2.0" DTDVERSION="2.0">
  <INSTANCE CLASSNAME="OperatingSystem">
  <PROPERTY NAME="MaxProcessesPerUser">
  <VALUE>32</VALUE>
  </PROPERTY>
  </INSTANCE>
  </CIM>
  </dcml:xmlData>
  </CIMOperatingSystem>
</rdf:RDF>
```

```
<?xml version="1.0"?>
<package version="2.0" xmlns="http://www.idpf.org/2007/opf" unique-identifier="BookId">
  <metadata xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:opf="http://www.idpf.org/2007/opf">
    <dc:title>Pride and Prejudice</dc:title>
    <dc:language>en</dc:language>
    <dc:identifier id="BookId" opf:scheme="ISBN">123456789X</dc:identifier>
    <dc:creator opf:file-as="Austen, Jane" opf:role="aut">Jane Austen</dc:creator>
  </metadata>

  <manifest>
    <item id="chapter1" href="chapter1.xhtml" media-type="application/xhtml+xml"/>
    <item id="appendix" href="appendix.xhtml" media-type="application/xhtml+xml"/>
    <item id="stylesheet" href="style.css" media-type="text/css"/>
    <item id="ch1-pic" href="ch1-pic.png" media-type="image/png"/>
    <item id="myfont" href="css/myfont.otf" media-type="application/x-font-opentype"/>
    <item id="ncx" href="toc.ncx" media-type="application/x-dtbnex+xml"/>
  </manifest>

  <spine toc="ncx">
    <itemref idref="chapter1" />
    <itemref idref="appendix" />
  </spine>

  <guide>
    <reference type="loi" title="List Of Illustrations" href="appendix.xhtml#figures" />
  </guide>
</package>
```

EPUB

Extensible Messaging and Presence Protocol

```
<message from='juliet@example.com'  
  to='romeo@example.net'  
  xml:lang='en'>  
<body>Art thou not Romeo, and a Montague?</body>  
</message>  
<message from='romeo@example.net'  
  to='juliet@example.com'  
  xml:lang='en'>  
<body>Neither, fair saint, if either thee dislike.</body>  
</message>
```

FicML

```
<story
  title="Goldilocks and the Three Bears"
  narration="third"
  narration-type="omniscient">Once there was a little girl named
  <char firstname="none" surname="none" nickname="goldilocks">Goldilocks</char>.
  She was a precocious little girl and would go wandering in the
  <setting>woods</setting>. One day she came upon a
  <setting contained-in="woods">house</setting> and decided to go in. It was the house where
  <char-group type="family" surname="bears">the three bears
    <char-group> lived. At first, in the
      <setting contained-in="house">kitchen</setting>,
      she discovered that there were three bowls of porridge.
      <dialogue type="internal-monologue">How strange</dialogue>, she thought.
      She decided to try to biggest bowl of ... it was just right.
</story>
```

```
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<gpx xmlns="http://www.topografix.com/GPX/1/1">
  <metadata>
    <link href="http://www.garmin.com">
      <text>Garmin International</text>
    </link>
    <time>2009-10-17T22:58:43Z</time>
  </metadata>
  <trk>
    <name>Example GPX Document</name>
    <trkseg>
      <trkpt lat="47.644548" lon="-122.326897">
        <ele>4.46</ele>
        <time>2009-10-17T18:37:26Z</time>
      </trkpt>
      <trkpt lat="47.644548" lon="-122.326897">
        <ele>4.94</ele>
        <time>2009-10-17T18:37:31Z</time>
      </trkpt>
      <trkpt lat="47.644548" lon="-122.326897">
        <ele>6.87</ele>
        <time>2009-10-17T18:37:34Z</time>
      </trkpt>
    </trkseg>
  </trk>
</gpx>
```

GPX

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<!DOCTYPE score-partwise PUBLIC
    "-//Recordare//DTD MusicXML 4.0 Partwise//EN"
    "http://www.musicxml.org/dtds/partwise.dtd">
<score-partwise version="4.0">
  <part-list>
    <score-part id="P1">
      <part-name>Music</part-name>
    </score-part>
  </part-list>
  <part id="P1">
    <measure number="1">
      <attributes>
        <divisions>1</divisions>
        <key>
          <fifths>0</fifths>
        </key>
        <time>
          <beats>4</beats>
          <beat-type>4</beat-type>
        </time>
        <clef>
          <sign>G</sign>
          <line>2</line>
        </clef>
      </attributes>
      <note>
        <pitch>
          <step>C</step>
          <octave>4</octave>
        </pitch>
        <duration>4</duration>
        <type>whole</type>
      </note>
    </measure>
  </part>
</score-partwise>
```



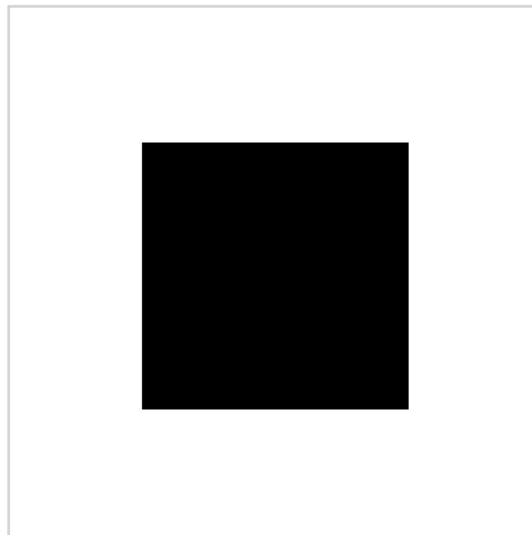
MusicXML

OPML

```
<?xml version="1.0"?>
<opml version="2.0">
  <head>
    <title>Systems We Love</title>
    <dateCreated>Sat, 18 Feb 2023 16:38:14 GMT</dateCreated>
    <ownerName>Antranig Vartanian</ownerName>
    <ownerEmail>antranig@vartanian.am</ownerEmail>
    <dateModified>Sat, 18 Feb 2023 16:40:24 GMT</dateModified>
    <expansionState>1</expansionState>
    <lastCursor>6</lastCursor>
  </head>
  <body>
    <outline text="A talk about XML" created="Sat, 18 Feb 2023 16:38:14 GMT">
      <outline text="I hope you like this" created="Sat, 18 Feb 2023 16:38:41 GMT"/>
      <outline text="XML is REALLY awesome" created="Sat, 18 Feb 2023 16:38:46 GMT"/>
      <outline text="Here's a life example" created="Sat, 18 Feb 2023 16:38:53 GMT"/>
      <outline text="Click on this element!" created="Sat, 18 Feb 2023 16:38:57 GMT" type="link"
        url="https://github.com/antranigv/communities.am/blob/main/index.opml"/>
      <outline text="OPML is awesome!" created="Sat, 18 Feb 2023 16:40:13 GMT"/>
      <outline text="Thank you!" created="Sat, 18 Feb 2023 16:40:21 GMT"/>
    </outline>
  </body>
</opml>
```

SVG

```
<!-- sample rectangle -->  
<svg width="200" height="200" xmlns="http://www.w3.org/2000/svg">  
  <rect width="100" height="100" x="50" y="50" />  
</svg>
```



So... Why XML?

Awesome things to do with XML

- XPath
 - Select nodes based on your needs
 - `/title[@lang='en']`
 - Selects `title` elements where `lang` equals `en`
 - `/bookstore/book[1]`
 - Selects the first `book` element that is the child of `bookstore`
- XSLT
 - Extensible Stylesheet Language Transformations
 - Transform from one XML to another XML!

```
<?xml version="1.0" encoding="UTF-8"?>
<catalog>
  <cd>
    <title>Empire Burlesque</title>
    <artist>Bob Dylan</artist>
    <country>USA</country>
    <company>Columbia</company>
    <price>10.90</price>
    <year>1985</year>
  </cd>
  <cd>
    <title>Hide your heart</title>
    <artist>Bonnie Tyler</artist>
    <country>UK</country>
    <company>CBS Records</company>
    <price>9.90</price>
    <year>1988</year>
  </cd>
</catalog>
```

My CD Collection

Title	Artist
Empire Burlesque	Bob Dylan
Hide your heart	Bonnie Tyler

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0"
  xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
  <xsl:template match="/">
    <html>
      <body>
        <h2>My CD Collection</h2>
        <table border="1">
          <tr bgcolor="#9acd32">
            <th style="text-align:left">Title</th>
            <th style="text-align:left">Artist</th>
          </tr>
          <xsl:for-each select="catalog/cd">
            <tr>
              <td><xsl:value-of select="title"/></td>
              <td><xsl:value-of select="artist"/></td>
            </tr>
          </xsl:for-each>
        </table>
      </body>
    </html>
  </xsl:template>
</xsl:stylesheet>
```

RSS Demo

Thank you!

<https://antranigv.am/>

<https://անդրանիկ.հայ/>