# How to use XML documents?

XML is often used to separate data from presentation (HTML/CSS). XML does not carry any information about how to be displayed. The same XML data can be used in many different presentation scenarios. Because of this, with XML, there is a full separation between data and presentation.

## XML and XSLT

Raw XML files can be viewed in all major browsers but XML files will not be displayed as HTML pages.

With XSLT you can transform an XML document (input) into HTML or any other result document.



## Displaying XML with XSLT

XSLT (eXtensible Stylesheet Language Transformations) is more sophisticated than CSS. With XSLT you can add/remove elements and attributes to or from the output file. You can also rearrange and sort elements, perform tests and make decisions about which elements to hide and display, and a lot more.

# XSLT Introduction

XSLT is used to transform an XML document into another XML document, or another type of document that is recognized by a browser, like HTML and XHTML. Normally XSLT does this by transforming each XML element into an (X)HTML element.

With XSLT you can add/remove elements and attributes to or from the output file. You can also rearrange and sort elements, perform tests and make decisions about which elements to hide and display, and a lot more.

A common way to describe the transformation process is to say that **XSLT transforms an XML source-tree into an XML result-tree**.

# XSLT - On the Client

In the transformation process, XSLT uses XPath to define parts of the source document that should match one or more predefined templates. When a match is found, XSLT will transform the matching part of the source document into the result document.

## Start with a Raw XML Document

This is the *Hello World* of XSLT. A simple example named *doc.xml* that runs in all processors.

<?xml version="1.0" encoding="UTF-8"?>
<doc>
 <doctitle>A document title</doctitle>
 <para>My very first transformed paragraph</para>
</doc>

Viewing XML Files in IE, Chrome, Firefox, Safari, and Opera:
Open the XML file - The XML document will be displayed with color-coded root and child elements (except in Safari). Often, there is a plus (+) or minus sign (-) to the left of the elements that can be clicked to expand or collapse the element structure.
**Tip: To view the raw XML source, right-click in XML file and select "View Source"!**

## Create an XSL Style Sheet

## Then you create an XSL Style Sheet ("hello.xsl") with a transformation template

<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0"
 xmlns:xsl="http://www.w3.org/1999/XSL/Transform">

 <xsl:template match="/doc">
 <html>
 <head><title>Test Document</title></head>
 <body>
 <xsl:apply-templates/>
 <i>Some additional content from the stylesheet</i>
 </body>
 </html>
 </xsl:template>

 <xsl:template match="doctitle">
 <h1><xsl:apply-templates/></h1>
 </xsl:template>

 <xsl:template match="para">
 <p><xsl:apply-templates/></p>
 </xsl:template>

</xsl:stylesheet>

With one exception this looks like any other XML document. The namespace *xsl:version="1.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform"* tacked onto the outer element of the document lets the processor know that this is a stylsheet document. The impact of this is that the processor looks for elements in that namespace, i.e. which look like <xsl:....> and does something special with them. Since this document has three rules, one for the doc, the doctitle, and the para element respectively, those basic rules are used. The second rule for processors is that anything which is not in that special namespace is passed straight through to the output, which in this case are all the HTML tags and their text content!

## Link the XSL Style Sheet to the XML Document

Add the XSL style sheet reference (bolded line below) to your XML document ("doc.xml")

<?xml version="1.0" encoding="UTF-8"?>
**<?xml-stylesheet type="text/xsl" href="hello.xsl"?>**
<doc>
 <head>A document title</head>
 <para>My very first transformed paragraph</para>
</doc>

If you have an XSLT compliant browser, the XML content will nicely **transform** into XHTML when opening the file.

# XSLT - On the Server

In the previous section you saw how XSLT can be used to transform a document from XML to XHTML in the browser.

To make XML data available to all kind of browsers, we can transform the XML document on the server and send the output back to the browser as XHTML.

That's one advantage of XSLT. One of the design goals for XSLT was to make it possible to transform data from one format to another on a server, returning readable data to all kinds of browsers.

If you run the original XML document through your favorite XSLT processor you will have created a simple stylesheet that produces HTML! For example using [James Clarks XT](http://www.jclark.com/xml/xt-old.html) processor from the command line, using the file *hello.xsl* above, and you want the output to be *output.html*, then the command

**xt** doc.xml hello.xsl output.html

produces output which has both literal stuff from the stylesheet and input from the source document.