

# Publishing for Everyone

## Using Accessibility Features and Techniques in Adobe FrameMaker 7.2

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### The Challenge of Accessibility

With the rise of electronic publishing and the World Wide Web, new possibilities have emerged for authoring and distributing information. A single source document can now be distributed in myriad forms across multiple media to a wide range of users.

As technology advances, it is important to remember those authors and information consumers with special needs, and use the new capabilities of publishing tools and technologies—such as Adobe® FrameMaker®, Extensible Markup Language (XML) and Adobe Portable Document Format (PDF)—to make information accessible to everyone.

#### Overview

Making content accessible is, in many cases, a legal requirement. There is an increasing array of federal and state regulations, as well as industry-specific standards, for accessibility.

There is significant overlap between the work involved in making content accessible and that involved in making content semantically rich; in many cases, these are the same thing. When you author a structured FrameMaker document with a well-developed XML Document Type Definition (DTD) or XML Schema, you are well on the way toward making your content accessible to a wide target audience.

To create truly accessible content, you must also provide alternative text for graphic objects, add metadata relevant to specific output formats, and design multiple templates for the same content as required by different output formats. By following such accessibility-conscious authoring techniques, and by leveraging the rich output capabilities of FrameMaker for print, PDF, and XML, you can deliver the highest quality accessible content possible.

Accessibility increases the number of people who can contribute to and benefit from your content. With accessible authoring and collaboration tools, you can involve your organization's full talent base; with accessible content delivery, your information will reach the widest possible market share and target audience.

#### Publishing for everyone: what you need to know

It is estimated that, in some populations, at least 20% of the people have some form of disability, such as impaired vision or blindness, impaired hearing or deafness, mobility limitations, or cognitive or learning disabilities. As the average age increases in some countries, such as the United States, the percentage of people with disabilities also increases.

Fortunately, awareness of the range of special needs has grown, prompting the increasing availability of techniques and tools to make information accessible to all. Still, work remains in the development of accessible technology and in spreading awareness of accessibility issues.

#### Regulatory measures for accessibility

In the United States, probably the most well-known accessibility legislation is Section 508 of the Rehabilitation Act, which establishes requirements for any electronic and information technology developed, maintained, procured, or used by the federal government. Section 508 defines technical and functional performance criteria necessary for electronic and information technology to be accessible. However, Section 508 is by no means the only legislation related to accessibility. There are an increasing number of other laws in the United States and in other countries requiring accessibility in many contexts.

## **Meeting consumer demand for accessibility**

In cases where there is no legal mandate for accessible content, a strong business advantage may often be gained by providing it. Companies that fail to deliver accessible content also fail to reach potential customers, and risk potential harm to their public image.

Companies that provide accessible content have a greater opportunity to reach a wider audience and prove themselves socially responsible in the process. They tend to stay ahead of the game, and are ready to meet further legislative requirements and take advantage of future technologies that leverage content reuse to meet accessibility needs.

## **Meeting accessibility needs within your organization**

Distribution of information within an enterprise (such as company policies) is often just as critical as communication to the public. It is important to apply the same accessibility procedures to the development of internally distributed content (for example, a large internal knowledge base), that you would apply to the development of externally distributed content.

In addition to access to information distributed within the organization, employees need to be able to author content and collaborate on content creation. Authoring tools such as FrameMaker provide both accessibility features for content creation and XML import/export capabilities for interfacing with systems that meet specific accessibility needs.

## **Providing the capability to author and access information**

With a publishing framework built around FrameMaker, XML, and PDF, you can provide a solution that not only meets internal and external demands for accessibility, but also involves the full strength of your work force in content development and reaches the widest possible audience.

## **Accessibility for authors and contributors to content**

Content development often involves many participants collaborating on a single source document, which will then be published in multiple formats. Both the authoring environment and the tools used for review and collaboration should be accessible.

### **The authoring environment**

An accessible authoring environment allows users who have impaired vision or other forms of disability to effectively author documents. Authors must be able to edit in an environment that is comfortable for them, which may not be the same format of the final content (for example, a visually impaired user may use a template with large type for editing, while a template with small type is used for output).

### **Mechanisms of review and collaboration**

In today's organizations, the production of a single document can involve many people in many roles. A document project may include multiple authors, as well as reviewers and those who approve the content. Accessibility is just as important for reviewers as it is for authors. Review and approval processes can be made more accessible by leveraging technologies such as XML and PDF.

XML provides standards for defining document structure and exchanging structured information. With applications such as FrameMaker, which supports XML import and export, collaboration can include exchange of content in its XML form, with XML-based tools (for example, VoiceXML browsers) used by those authors and reviewers with special needs.

PDF provides a number of accessibility features, which can be leveraged in both the process of content development and review, and in the delivery of content. Applications such as FrameMaker that provide strong integration with PDF enable truly accessible collaboration.

### **Accessibility for end users of published content**

Once content has been created and has gone through the review and approval process, you deliver that content to your target audience or market. Delivery can include a wide range of media and format, and can be customized, personalized, or both.

As with the authoring and collaboration process, content delivery should be accessible, so your content can reach the widest possible audience and conform to any legal requirements for accessibility.

## **The expanding range of media types and output formats**

With the advent of the World Wide Web, organizations find themselves faced with the need to provide content electronically as HTML and PDF files in addition to traditional formats. With advances in wireless technology, delivery to wireless devices is becoming an increasingly common need.

As publishing technology has advanced, there has been a steady proliferation of output formats. XML—by providing separation of content from presentation—facilitates publication to multiple media from a single source. FrameMaker can produce high-quality print, PDF, HTML, and XML output; the XML output from FrameMaker can additionally be stylized for a wide range of XML-based forms of delivery.

## **The personalization of content**

A document may be tailored for many users or for a single person. Demand for flexibility in customizing documents is increasing. Such functionality also benefits accessibility.

Once an organization has the capacity to provide personalized content, it also has the capacity to make that content accessible. Personalizing content entails maintaining user profiles that reflect each user's special needs, and providing content in the correct media with the appropriate presentation characteristics for each user. FrameMaker allows you to structure your content to fully support such accessible personalization.

## **Accessibility Features of FrameMaker for Authoring**

FrameMaker offers powerful features for document authoring and collaboration. The FrameMaker authoring environment can be made more accessible by leveraging its new integration with operating system-specific accessibility features. Collaboration efforts benefit from the built-in collaboration features as well as the complete XML support provided with FrameMaker.

### **Authoring**

FrameMaker provides basic accessibility features such as keyboard shortcuts and zoomed document views. You can also customize FrameMaker to meet specific accessibility needs by using the free Frame® Developer's Kit (FDK).

### **Support for Windows 2000 and Windows XP accessibility features**

FrameMaker has tight integration with the accessibility features built into Microsoft® Windows 2000 and Windows XP. With these features, users can leverage a zoomed and/or high-contrast view of the document on which they are working, use keyboard shortcuts, or have the FrameMaker screen read to them with a screen reader.

### **Document collaboration**

FrameMaker has strong accessibility features that enhance document collaboration, including its ability to summarize changes between document versions and deliver this summary in accessible form, as well as its ability to import, edit, and export XML.

### **Using the Summarize Changes feature**

In the course of collaborative authoring, it is often useful to see what has changed between revisions of a document. For that reason, change bars (indicating changes between revisions) are a standard method of providing authors and reviewers a quick view of what has changed in the document.

However, for visually challenged authors and reviewers, change bars may not provide an adequate solution. FrameMaker has a Summarize Changes feature that creates a distinct, accessible document describing in detail all of the changes between versions of a particular document.

### **Using XML capabilities of FrameMaker in a collaborative environment**

The powerful XML capabilities of FrameMaker provide other ways to involve users with special needs in the collaboration process. FrameMaker 7.0 and later include support for importing, editing, and exporting XML. Because content can be exchanged as XML, collaborators with special needs can participate in the collaboration process by accessing content through an expanding range of applications and devices that support XML (for example, VoiceXML applications can allow interactive access to information through speech).

## Accessibility Features of FrameMaker for Publishing

When it comes to publishing from a single source to multiple channels, FrameMaker provides powerful capabilities. Because FrameMaker provides tight integration with PDF, print output from FrameMaker is high quality. Because FrameMaker provides a truly structured authoring environment with complete control of XML output, you can leverage XML technology (including Extensible Stylesheet Language Transformations [XSLT]) to deliver to formats such as Extensible Hypertext Markup Language (XHTML), Wireless Markup Language (WML) and VoiceXML, or to feed XML output to Braille or audio processors. FrameMaker also creates other forms of output such as HTML, Cascading Style Sheets (CSS), and text. These advanced multichannel publishing features work together to facilitate accessibility.

### Single-source, template-driven authoring

FrameMaker provides single-source authoring capabilities. A single document can be published in many different media and formats, including XML, HTML, print, and PDF.

For print and PDF output, FrameMaker stylizes contents using templates, which are extremely powerful for publishing accessible content. You can use different templates to define the style of presentation for different target audiences, including those with special needs.

### Different templates for different text size requirements

One of the most basic uses of templates is to create print versions of documents that are accessible to those with impaired vision. Rather than creating two completely different documents, and facing the problems of maintaining multiple versions of the same content, FrameMaker lets you set up multiple templates that can be used with the same content (that is, you can create one template with smaller type and one with larger type, while maintaining the source content for both templates in one place).

### Multiple versions and alternative text for graphic objects

One of the main challenges in providing accessible content is working with graphics. It is important to remember that not all users will be able to see or fully appreciate the nuances of graphics. For such users, it is important to provide an alternative text equivalent for all graphic objects. This can be done either by creating multiple templates (that is, one with graphic objects and one with text substituted for the graphics) or by providing metadata that includes alternative text for graphic objects.

The conditional text feature in FrameMaker is useful if you are creating multiple templates (for example, one with graphics and one without). Conditional text lets you maintain alternative versions of sections of the same document, and turn them on or off for different document versions. You can use conditional text to turn on or off the display of anchored graphics.

The Object Attributes dialog lets you specify alternative text for graphic objects. The text you enter into the Object Attributes dialog can persist in XML, HTML or tagged PDF output, providing an alternative text description of graphic objects.

### Templates for color-blind readers

In many cases, color can powerfully enhance content. However, there is a significant percentage of the population that has trouble differentiating colors. Generally, it is best not to rely on color as the sole means of highlighting important information.

You can use the template-driven architecture of FrameMaker to provide color and black-and-white versions of the same document. Using the rich autonumbering capability of paragraph styles, information that is emphasized using color in one version of a document can instead be emphasized with auto-inserted text in a black-and-white version of the document.

### XML metadata in the structured environment of FrameMaker

Because FrameMaker lets you import, edit, and export XML, a structured FrameMaker document can include far more information than is presented in a specific output version. Within a single FrameMaker document, you can maintain metadata that provides alternate versions of text for particular output formats or target audiences, links to other data and document sources, and information that can control the behavior of specific presentation applications such as VoiceXML browsers.

## Controlling output based on intended audience

Metadata can help you customize content for a particular target audience. For example, you might set an attribute value in a particular document section that indicates the range of users for whom that section is useful. When you export XML from FrameMaker, this metadata will be available to your delivery application, which can then determine whether to include or exclude that section of the document based on the profile of a particular user.

## Controlling output to different media

Metadata can also help you control the output to different media. Different output formats (such as HTML, WML, and VoiceXML) can have special capabilities or unique qualities that are enhanced by authoring with an awareness of the ultimate delivery formats. In some cases, it is helpful to specify the behavior of an output format by using attribute values in the FrameMaker document. You may have an attribute, for example, indicating that when output to VoiceXML, a particular section should be read by a particular voice.

As access-enabling technologies (such as screen readers) develop greater XML support, metadata in FrameMaker documents will play an increasing role in supporting accessibility.

## Accessibility techniques for specific types of output

FrameMaker lets you maintain a single source document, from which you can deliver content to a wide range of output formats such as PDF, HTML, and many forms of XML. Specific output types provide different possibilities and require different techniques for ensuring accessibility.

### Print

Print output is static; a page will not change once it is printed. Compared to creating accessible content for the various web formats, creating accessible print output is simple.

FrameMaker makes the maintenance of multiple stylistic versions of the same documents easy, as its template-based layout tool set allows you to keep content distinct from presentation. With FrameMaker, you can apply multiple templates to the same content, providing multiple versions of the same document to users with different needs.

### Adobe Acrobat

Adobe Acrobat 7.0 includes many accessibility features:

- Read PDF documents.
- View documents in high contrast mode.
- Navigate documents using the keyboard.
- Zoom in on text and reflow to fit any size view when working with tagged Adobe PDF files.

These features are available in both the full versions of Acrobat 7.0 and in Adobe Reader 7.0.

Tagged Adobe PDF is particularly helpful in making content accessible:

- Save your PDF files to output formats such as Rich Text Format (RTF) or XML.
- Reflow your documents' content into devices with variable screen font sizes.
- Make use of a screen reader for Windows, enabling readers with motion and vision challenges to access your content.

Tagged PDF enables screen readers and other browsers and devices to intelligently access your document. With tagged PDF, the screen reader will not mistake artifacts (such as page numbers and running headers) for content. Since tagged PDF lets you define the proper sequence of the document, the screen reader can read multiple flows in the sequences intended by the author.

You can automatically create tagged PDF files when you use FrameMaker to convert documents to PDF by selecting Generate Tagged PDF in the PDF Setup dialog box (for more information, see the FrameMaker Help). In the PDF Setup dialog box, you can also define the mapping between your document's structure and the structure of the resulting tagged PDF file.

## Raw text

While raw text is generally a less-than-ideal format for output, there are still some accessibility tools that will only accept raw text as input. The Save as Text option lets you save any FrameMaker document as raw text for such tools.

## HTML

The World Wide Web Consortium (W3C) defined and maintains the HTML specification, and has created a Web Accessibility Initiative (WAI) to ensure that web content, including HTML, is accessible to everyone. For more information, see [www.w3.org/WAI](http://www.w3.org/WAI).

You can output HTML from FrameMaker using the included WebWorks® Publisher 8.0 Standard Edition from Quadralay. FrameMaker can also output XML, either with WebWorks Publisher or with its Save as XML command. This XML can be transformed to HTML with XSLT. If necessary, you can edit HTML output from FrameMaker using Adobe GoLive®.

While there is more than one way to generate HTML from FrameMaker, the processes for making such web content accessible are the same and make the same demands on the authoring process. Some of the main points of accessibility defined by the WAI at [www.w3.org/WAI/References/QuickTips](http://www.w3.org/WAI/References/QuickTips) include:

- Images and animations: Use the alt attribute to describe the function of each visual element.
- Image maps: Use the client-side map and text for hotspots.
- Multimedia: Provide captioning and transcripts of audio, and descriptions of video.
- Hypertext links: Use text that makes sense when read out of context (for example, avoid “click here”).
- Page organization: Use headings, lists and consistent structure; use CSS for layout and style where possible.
- Graphs and charts: Summarize or use the longdesc attribute.
- Scripts, applets, and plug-ins: Provide alternative content in case active features are inaccessible or unsupported.
- Frames: Use the noframes element and meaningful titles.
- Tables: Make line-by-line reading sensible; summarize.

Assuming you’ve structured your content in FrameMaker, the main point to remember for HTML output is that any object that is not text (that is, graphic objects, multimedia objects, graphs, charts, and tables) should have a text equivalent. You can define a text equivalent for anchored frames in the Object Attributes dialog, and generally include alternative text anywhere in a structured FrameMaker document as attribute values.

In a similar manner to the way that FrameMaker templates can present the same content with different styles, HTML presentation style can be defined with CSS. You can present the same content with different CSS tailored to the needs of particular users, including those with special needs.

## XML

XML is a metalanguage (a language for creating languages). An XML-based language is called a “document type,” and its structure and syntax are defined by a DTD (document type definition) or XML Schema. Anyone can create an XML document type, but only a handful of document types for presentation formats have enjoyed widespread use so far. These include:

- XHTML: The XML version of HTML.
- Scalable Vector Graphics (SVG): An XML format for vector graphics.
- WML: An XML language for web-enabled wireless devices.
- VoiceXML: An XML language describing audio dialogs.
- Speech Synthesis Markup Language (SSML): An XML language for generating synthetic speech via a speech synthesizer.

You can use an XSLT processor or other method for processing XML output from FrameMaker to produce XML with these or other XML document types. With FrameMaker 7.2, you can automatically apply XSLT stylesheets when opening or saving XML documents.

When authoring in FrameMaker, preparing for output to a specific document type requires sensitivity to the particular methods of presentation available for that document type. You include metadata for such output-specific functions as the division into “cards” of a WML “deck,” the inflections of particular words in a VoiceXML dialog, or parameters to scripts that provide alternate text for SVG graphic objects.

XML already provides great power for providing accessible content. Over time, the capabilities of XML are likely to make information even more accessible.

### Braille

Braille is a system of raised dots, that enables people with visual disabilities to read with their fingers. There are a number of ways that Braille can be created from FrameMaker, including post-processing of XML output.

Assuming you’ve maintained your FrameMaker document with a consistent structure, output to Braille can be a very straightforward process. The two types of document object that are handled differently in Braille (compared to print output) are acronyms and abbreviations. It is very important that the structure of your FrameMaker document provides a means for identifying acronyms and abbreviations, and provides their expanded versions as metadata.

### Audio

If your FrameMaker document conforms to a consistent structure, you can easily create an audio version of the document through XML output from FrameMaker. As with Braille, it is important to indicate acronyms and abbreviations in your document structure, and provide their expanded versions as metadata.

XML document types such as VoiceXML and SSML continue to evolve, providing ever greater potential for presenting documents in audio format. There is also growing support for XML input to speech-generation applications.

## Appendix: Resources

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| <a href="http://www.w3.org/WAI">www.w3.org/WAI</a>                                       | The W3C WAI home page                      |
| <a href="http://www.w3.org/TR/xag.html">www.w3.org/TR/xag.html</a>                       | XML accessibility guidelines from the W3C  |
| <a href="http://access.adobe.com">http://access.adobe.com</a>                            | Accessibility resources for Adobe products |
| <a href="http://access.adobe.com/booklet.html">http://access.adobe.com/booklet.html</a>  | Guide to creating accessible PDF           |
| <a href="http://www.adobe.com/products/framemaker">www.adobe.com/products/framemaker</a> | FrameMaker product page                    |
| <a href="http://www.section508.gov">www.section508.gov</a>                               | Information on Section 508                 |
| <a href="http://www.microsoft.com/enable">www.microsoft.com/enable</a>                   | Microsoft Windows accessibility info       |



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