

Rendering Barcodes through Smart-Tags in WordML File

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Overview

Smart-tag support

Smart-tag support feature has been added to WordML2FO style sheet set through plugged-in style sheets ([you can learn more about smart-tags here](http://msdn.microsoft.com/library/default.asp?url=/msdnmag/issues/03/11/xmlfiles/toc.asp)

[<http://msdn.microsoft.com/library/default.asp?url=/msdnmag/issues/03/11/xmlfiles/toc.asp>]). So you can add supplied XML scheme to WordML document, insert smart-tags for specific feature (e.g. barcode) and render PDF file with XEP formatter.

Smart-tag support is implemented by "SmartTags.xml" style sheet. It is docking place for style sheets to process specific smart-tags (e.g. for barcodes). This style sheet is plug-in for WordML2FO style sheet set. For now only smart-tags for barcodes are supported. But list of supported xml-tags can be populated by developer himself. Third party developers can use proposed approach to add processing of their own smart-tags with self-developed XML schemes.

We have added code into "SmartTags.xml" to process smart-tags for barcodes generation in output PDF file. Matching template calls appropriate template to render barcode.

Installation

Software requirements

To prepare WordML documents with smart-tags to generate barcodes Microsoft Word 2003 has to be installed on your computer.

To render PDF files with barcodes from WordProcessingML, using WordML2FO stylesheets, you need to have XSL-FO formatter. Please refer to WordML2FO stylesheets user documentation for installation details.

Inside the package

Besides the main and auxiliary stylesheets of WordML2FO, for barcode generation you will need XML scheme file, Word document template and plugged-in stylesheets for core generation. All of these are placed into Plugins\Barcodes subfolder in folder where WordML2FO package was extracted.

Stylesheets for barcode generation

All of the stylesheets, listed below can be used separately. In this case download them from [RenderX site](http://www.renderx.com/demos/barcodes.html) [<http://www.renderx.com/demos/barcodes.html>].

See below detailed description of stylesheets:

- **2of5i.xsl** contains main logic for encoding to interleaved barcode 2 of 5.
- **2of5i-svg.xsl** contains templates for rendering encoded value of interleaved 2 of 5 to SVG.
- **3of9.xsl** contains main logic for encoding to barcode 3 of 9.
- **3of9-svg.xsl** contains templates for rendering encoded value of barcode 3 of 9 to SVG.
- **4state-au.xsl** contains main logic for encoding to 4-state barcode Australia Post.
- **4state-au-svg.xsl** contains templates for rendering encoded value of 4-state barcode Australia Post.
- **BarcodeUtility.xsl** contains common service templates for other stylesheets.
- **codabar.xsl** contains main logic for encoding to "codabar" barcode.
- **codabar-svg.xsl** contains templates for rendering encoded value of "codabar" barcode.
- **code128.xsl** contains main logic for encoding to code128 barcode.
- **code128-svg.xsl** contains templates for rendering encoded value of code128 barcode.
- **upc-ean.xsl** contains main logic for encoding to upc/ean barcode.
- **upc-ean-svg.xsl** contains templates for rendering encoded value of upc/ean barcode.

Other files

- **SmartBarcode.dot** serves for inserting XML scheme for barcodes and offers convenient way to insert smart-tag.
- **SmartBarcode.xsd** contains XML scheme for barcodes.

Examples

In the subfolder "CodeSamples" you can find example of stylesheet with templates for dynamic rendering of barcodes. E.g. on the moment of preparing your document you do not know concrete values, but you have some information inserted as smart-tags into document. Thus, you can build values for barcodes dynamically if you create templates for processing these smart-tags (with data) by provided example.

How to generate barcode with smart-tag feature

To generate barcode you have to repeat the following.

First of all, add into your MS Word document XML scheme (SmartBarcode.xsd supplied with style sheet set). (See figure 1.)

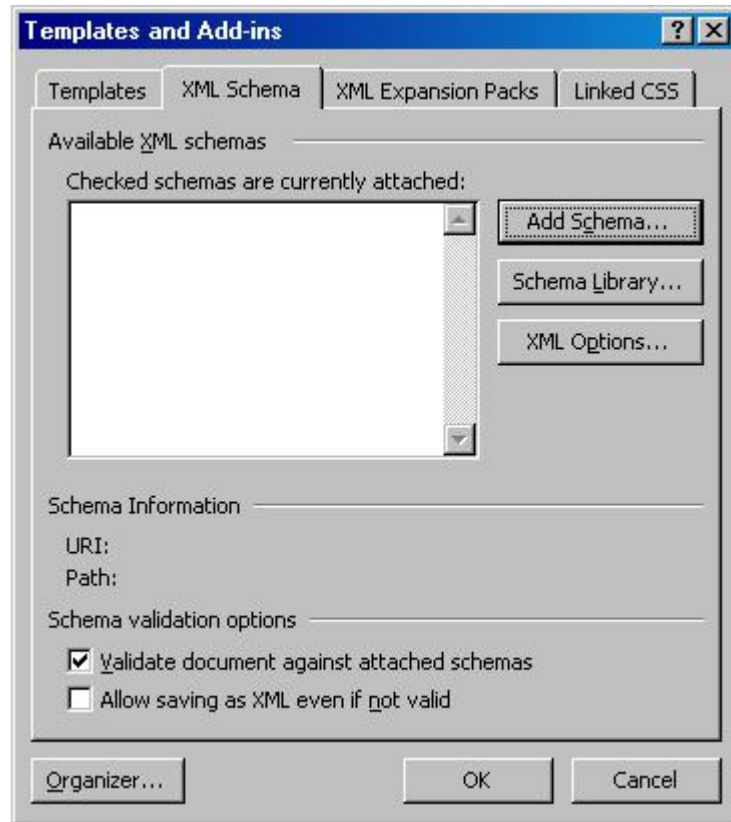


Figure 1. Add XML Scheme to your document

Insert smart-tags in your document where you want to render barcode (use context menu, see figure 2.)

barcode 978 0-444-50515	978 0-444-50515 Proceedings of the WWW9 Conference, Amsterdam (EAN 13)
4 605664 00005	4 605664 00005 German beer <u>Holsten</u> , brewed in <u>Kaluga</u> , Russia (EAN 13)
	3 014260 11553 Gillette shaving foam (EAN 13)
	8 020187 30001 My son's roller skates (EAN 13)
	8 076809 51345 Italian spaghetti sauce. Barilla al <u>basilico</u> (EAN
	3 155250 00138 French whipped cream (ah, c'est délicieux EAN
	US006,971,062B1 nt number "US 6,971,062 B1"
	0 74100 14661 Polaroid photo film (UPC A)
	0 42528 91217 Children color pens (UPC A)

Figure 2. Add smart-tag into your document

Add correct value for element "barcode" and its attributes. Draw your attention: to render smart-tags correctly, you should always place your smart-tag into text paragraph.

Note. Thus there was implemented principle of plugged-in modules, included modules do not "know" about structure of document with barcode. So templates in main style sheets do not contain any processing instructions for smart-tags as well. As a result, if smart-tag appears on the same level with table cell, it will be ignored or even will cause an error.

It has been caused by MS Word feature: smart-tag can be placed in WordML file on the same level of XML tree with paragraph or table cell, or even can contain them. See below figures with smart-tags examples placed correctly and placed wrong. As you can see it's easy to distinguish them visually. To fix the wrong placed smart-tag you can type and then delete space before it.

It is recommended practice to format barcode wrapped with text, place them into different table cells. Also you should not place smart-tag for barcode into lists. Due to specifics of rendering barcode, text of "human readable" barcode will be shifted.



Example of smart-tag placed wrong in text (the second one). Second smart-tag will be saved in WordML on the same level of XML tree with previous paragraph. As a result formatting properties of paragraph will be ignored.

barcode barcode	8013·546¶ Nutella·chocolate·spread·(EAN·8)¶
-----------------	------------------------------------------------

Example of smart-tag placed wrong in table. Smart-tag is placed on the same level with table cell and it contains paragraph. As a result tag will be ignored (or even will trigger an error).

barcode ¶
Nutella·chocolate·spread·(EAN·8)¶
¶

Example of smart-tag placed correctly in text.

barcode ¶	0·50332·12701¶ Olympus·photo·camera·(UPC·A)¶
-----------	-------------------------------------------------

Example of smart-tag placed correctly in table.

Save your document as WordML XML. Attention! If the document contains smart-tags which can not be validated by attached XML scheme, it can not be saved as WordML XML. In this case save it as Word document (.doc), fix an error (tag underlined with red wavy line) and then save it as WordML XML. Now you can render your PDF file.

How to render barcodes dynamically

Sometimes it is necessary to form barcode from several parts which are taken from different places in WordML document. Template for rendering barcodes has been modified to support this feature. After adding your own XML Schema and specific tags, you should provide template to process data. Result of template should be passed to barcode processing one. E.g.

```
<xsl:template match="pdc:product" mode="barcode">
  <xsl:value-of select="pdc:value"/>
  <xsl:text> </xsl:text>
  <xsl:value-of select="pdc:serial"/>
</xsl:template>
```

It is better to place such code in separate stylesheet and include it into SmartTags.xml. Also there can be another situation, when tag inside <barcode/> element is formed from another XML branch of your document. E.g.

```
<xsl:template match="pdc:product" mode="barcode">
  <xsl:variable name="part-1st">
    <xsl:choose>
      <xsl:when test="string(pdc:value) != ''">
        <xsl:value-of select="pdc:value"/>
      </xsl:when>
      <xsl:otherwise>
        <xsl:apply-templates select="pdc:value">
          <xsl:with-param name="item-id" select="@item-id"/>
        </xsl:apply-templates>
      </xsl:otherwise>
    </xsl:choose>
  </xsl:variable>
  <xsl:variable name="part-2nd">
    <xsl:choose>
      <xsl:when test="string(pdc:serial) != ''">
        <xsl:value-of select="pdc:serial"/>
      </xsl:when>
      <xsl:otherwise>
        <xsl:apply-templates select="pdc:serial">
          <xsl:with-param name="item-id" select="@item-id"/>
        </xsl:apply-templates>
      </xsl:otherwise>
    </xsl:choose>
  </xsl:variable>
  <xsl:copy-of select="$part-1st"/>
  <xsl:text> </xsl:text>
  <xsl:copy-of select="$part-2nd"/>
</xsl:template>

<xsl:template match="pdc:value">
  <xsl:param name="item-id"/>

  <xsl:variable name="product-id" select="/descendant-or-self::stk:item[
    @item-id=$item-id]/@product-id"/>
  <xsl:value-of select="/descendant-or-self::stk:product-info[
    @id = $product-id]/descendant-or-self::stk:item-cost"/>
</xsl:template>
```

See also sample of WordML document and XSL stylesheet (from folder **.\examples\CodeSamples\Plugin4DynamicBarcodes**) to demonstrate use of dynamic rendering. The example is fictitious, and it is intended to show dynamic rendering of barcodes only. To include stylesheet for processing tags inside "barcode" element copy it (**SmartProducts.xml**) to subfolder **.\stylesheets\Plugins\Products** and add the following line

```
<xsl:include href="Plugins/Products/SmartProducts.xml"/>
```

into source code (**SmartTags.xml**).

References & Links

- [Smart-tags in MS Word](http://msdn.microsoft.com/library/default.asp?url=/msdnmag/issues/03/11/xmlfiles/toc.asp) [http://msdn.microsoft.com/library/default.asp?url=/msdnmag/issues/03/11/xmlfiles/toc.asp].
- [Stylesheets and examples for rendering barcodes](http://renderx.com/demos/barcodes.html) [http://renderx.com/demos/barcodes.html].
- Refer to **WordML2FOUserDocumentation.pdf** for related information.