Layout-true Representation of OOXML Documents:
Use Case 5.2 Report

Font Embedding in OOXML and ODF

SUSE

Assignment

Both OOXML and ODF have support for font embedding, in the ODF case using SVG annotation embedded in the ODF files. SUSE has already implemented reading and writing of embedded fonts in OOXML as part of Use Case 3 (report is available upon request), yet the ODF part was missing, and there were some follow-up issues that need to be solved too.

Considering that OOXML font embedding was already mostly implemented in LibreOffice, to finish the work we proposed:

- Implementation of ODF import and export

- Propagation of the loaded font into the user interface

- User interface to embed font into a document

Work Description

This work has several parts – in addition to the description in Assignment, we had to make sure that the embedded fonts are used in all the LibreOffice applications, that means Writer, Calc, and Impress.

Implementation of OOXML import and export

Basic support was implemented for docx documents (wordprocessing) already previously as a part of Use Case 3. This support was further improved, such as improved compatibility with MS Office, or the ability to embed additional system fonts that weren't embedded in the document when opened.
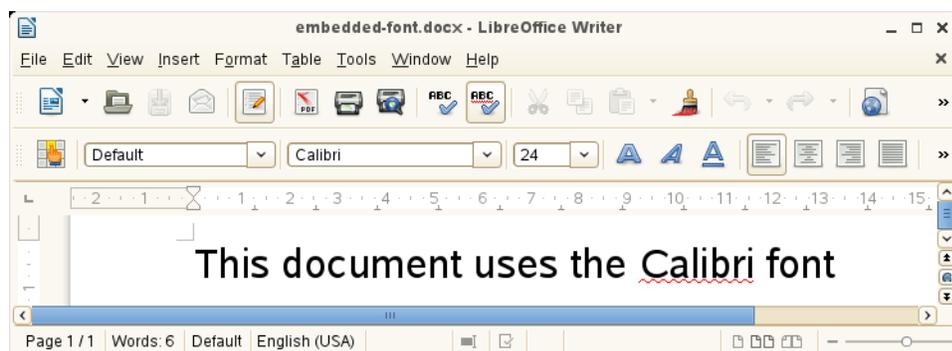
The OOXML import and export stayed docx-only from the following reasons:

- xslx documents do not support embedded fonts at all in the specification (and as such MS Excel does not support them either)

- pptx documents embed fonts in EOT (Embedded OpenType) format, which is a font format developed by Microsoft primarily for use as web fonts for use with its Internet Explorer (IE) browser. In other words, this is incompatible with the OOXML specification of docx.
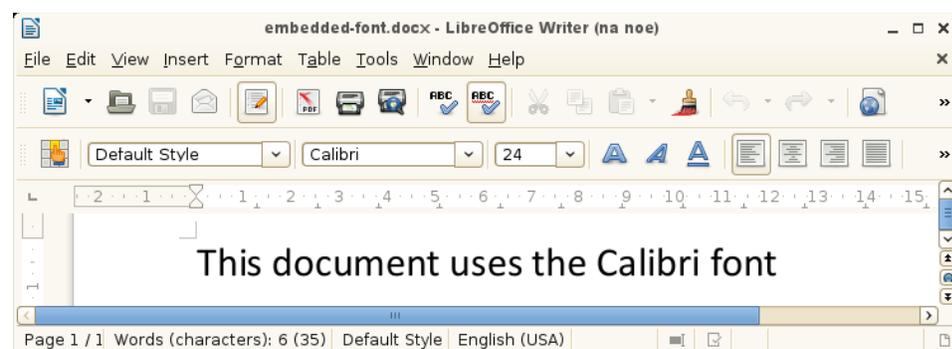 Although the EOT format has been submitted for W3C for acceptance, no other browser than IE supports it, there is no support for it in font libraries used on Linux, and not even Windows API seems to support it. Implementing support for font embedding in pptx would therefore presumably require implementing support for the EOT format in underlying libraries, which was out of scope of this work.

It has been tested that LibreOffice can open docx documents with embedded fonts created by MS Word 2013 and vice versa.

Before the implementation (LibreOffice 3.6). As you can see, the statement about used font is not true:

After (current development version, to be in LibreOffice 4.1):

Implementation of ODF import and export

We implemented support for embedded fonts in the entire ODF family of formats – in odt (wordprocessing), ods (spreadsheet) and odp (presentation). We made sure that the files written by LibreOffice (when the font embedding is turned on) can be read in LibreOffice again.
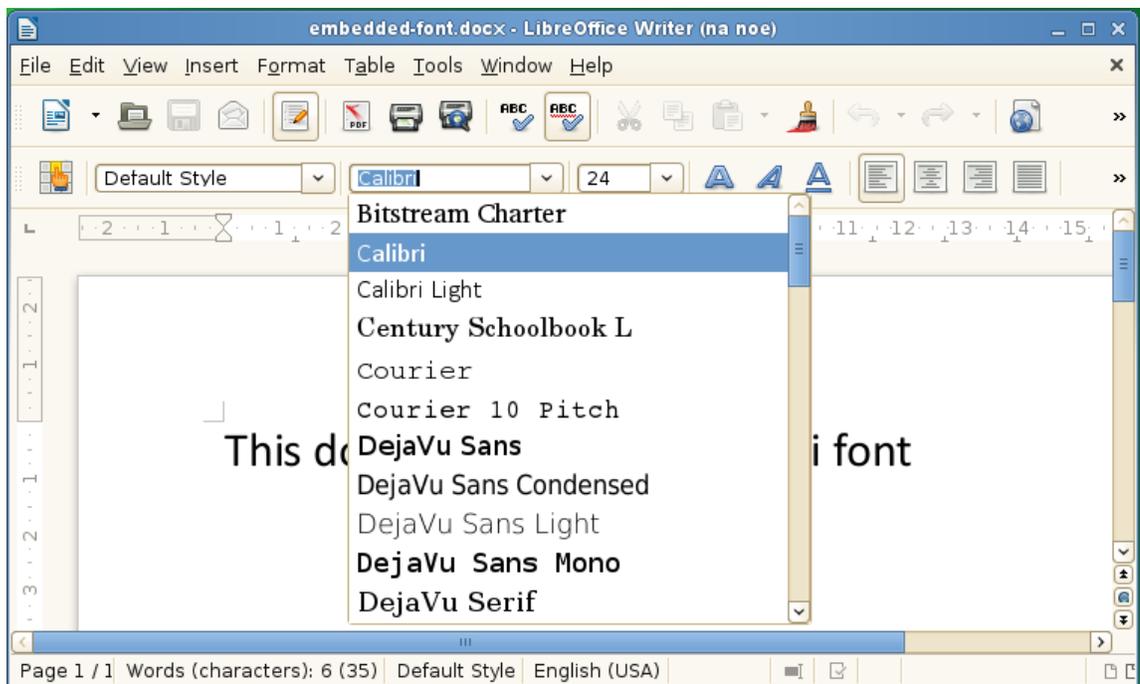
Unfortunately, the testing with other ODF implementations was impossible:

- MS Office 2013 supports ODF, but not the font embedding in odt/ods/odp (neither in export nor in import).

- The only other known implementation with support for font embedding is Calligra Suite (import only), which however locks up when reading a document created by LibreOffice. As the document embedding in the document does not cause any ODF validation errors, this is most likely a problem of Calligra Suite.

As a consequence of the above, we assume that testing in LibreOffice only is sufficient for the purposes of this tender.
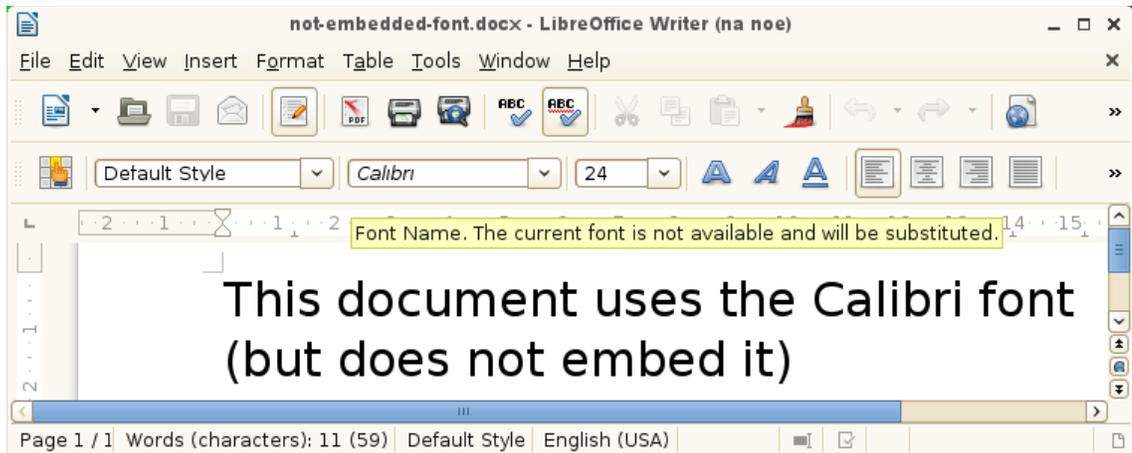
User interface changes

After the work done for Use Case 3, the propagation of loaded fonts into the user interface was still problematic. We have fixed that, and embedded fonts are now shown in the user interface normally alongside system fonts.

The document properties dialog (accessible via File → Properties...) now offers a checkbox controlling the per-document setting for whether fonts used in the document should be embedded or not.

Moreover, if a document uses a font which is not available, the combobox with the active font shows the font name in italics to highlight this fact, and a tooltip further explains that the font is not available and will be substituted (this case should happen only with documents that do not have the font embedded).

In the tender proposal, we wrote that if the time permits, we would implement on-demand installation of missing fonts. This hasn't happened unfortunately, the changes described above took the entire 20 mandays.

Embedding licensing rights of fonts

TrueType fonts can specify rights granted to the user of the font, allowing the font to be embedded in documents for further editing, or only for viewing and printing, or not allowing embedding at all. The implementation correctly obeys these rights both when embedding system fonts into a document and when opening a document with embedded fonts – if a document contains a font that allows only viewing/printing, the font is discarded when opened in LibreOffice in order not to violate the rights.

In a follow-up work, we might improve the situation so that we would open such documents in read-only mode, warn about the problem, and offer the user to discard those fonts manually in order to switch to editing mode, similarly like MS Office does.

Conclusion

We have extended the implementation of OOXML font embedding so that both import and export works flawlessly not only internally, but from the user point of view too. We implemented ODF font embedding in all the LibreOffice applications. We introduced several user interface improvements so that the user can control the font embedding from LibreOffice.

All the code we delivered is committed to the LibreOffice repository, please see the Appendix A for a full list.

Appendix A: Code changes (from newest to oldest)

http://cgit.freedesktop.org/libreoffice/core/commit/?id=e99d502df6561949fe34af42c7910d24455d3ba6

http://cgit.freedesktop.org/libreoffice/core/commit/?id=e2cd75f005dd5bf57336f39abd8820ecac0b048e

http://cgit.freedesktop.org/libreoffice/core/commit/?id=8fcc60bee755b812489ef652ab2fa779babddeac

http://cgit.freedesktop.org/libreoffice/core/commit/?id=5c1c0a4eef933816685364feef93dfb090ff391d

http://cgit.freedesktop.org/libreoffice/core/commit/?id=3fbc15ce456d0112700e1832e860e06f01eb5c03

http://cgit.freedesktop.org/libreoffice/core/commit/?id=595f954424a5b99f0a9d396b77d2d5b89b5ae664

http://cgit.freedesktop.org/libreoffice/core/commit/?id=25a5ee2aebebe9e175ad3b1c770bba9826fe4d48

http://cgit.freedesktop.org/libreoffice/core/commit/?id=b40bcde076f9fabf24810d2520e878d604d99637

http://cgit.freedesktop.org/libreoffice/core/commit/?id=8ad5c064190084cb46ce8847bfa306ce3cb01987

http://cgit.freedesktop.org/libreoffice/core/commit/?id=80475eca9fc63c15f0ba49a1e585190dee7affe2

http://cgit.freedesktop.org/libreoffice/core/commit/?id=1bb6cd6e56ea0932868cba0ec9fe9736a5b8066e

http://cgit.freedesktop.org/libreoffice/core/commit/?id=6e3ee49a91bdace7f41364e5dee966ca044f2f51

http://cgit.freedesktop.org/libreoffice/core/commit/?id=788293959f53861de5bb32ade06870f494b0968d

http://cgit.freedesktop.org/libreoffice/core/commit/?id=381154356c15128255e313f37641f0e50145f965

http://cgit.freedesktop.org/libreoffice/core/commit/?id=eb451cbc1aa2f96b1a913d85823ef27275ad367b

http://cgit.freedesktop.org/libreoffice/core/commit/?id=f0cd6fe9075cd0aa00162474784ad804a07ed138

http://cgit.freedesktop.org/libreoffice/core/commit/?id=64cdf8072a79491903c5d1b107c6486b33da04d3

http://cgit.freedesktop.org/libreoffice/core/commit/?id=895dc882c451bcc03236267d3ce33be218451721

http://cgit.freedesktop.org/libreoffice/core/commit/?id=712b33cdbbad997db327115145110fbdee09f2f8

http://cgit.freedesktop.org/libreoffice/core/commit/?id=db28ed792e08d3eef3e901eaedb255bdc66d1db1

http://cgit.freedesktop.org/libreoffice/core/commit/?id=c4a8e6b62e80d79d98743af022b3d5e5d1f22f51

http://cgit.freedesktop.org/libreoffice/core/commit/?id=1d0f45ee2efb5dc8d3c40f33ba1494807c117729

http://cgit.freedesktop.org/libreoffice/core/commit/?id=55dda63b297a287c9abc6ba2f19946817e8744e7

http://cgit.freedesktop.org/libreoffice/core/commit/?id=e0210c3ef0ed56a6b45934e2ecb5b42b99808199

http://cgit.freedesktop.org/libreoffice/core/commit/?id=b88fe998ce8c80d7629fe70118311096615d959d

http://cgit.freedesktop.org/libreoffice/core/commit/?id=a12286cf81b2483e1585b2c45c40fa507fdd3136

http://cgit.freedesktop.org/libreoffice/core/commit/?id=fe8bfb201e79c31de1b692931a0e9ee6c7ff1d25

http://cgit.freedesktop.org/libreoffice/core/commit/?id=fd44b28e6880b3a976b876a03bb4bc0280b47eae

http://cgit.freedesktop.org/libreoffice/core/commit/?id=17d86df23e7be3ab0a161f69ff0f703728e0e135

http://cgit.freedesktop.org/libreoffice/core/commit/?id=0376a4c13ccffa64c938c6361a337264ad8f2b67

http://cgit.freedesktop.org/libreoffice/core/commit/?id=1a04fbd30825ebceae5209ada9d4e0726fbd00c9

http://cgit.freedesktop.org/libreoffice/core/commit/?id=c2d14df725768ec9c3b6b65a4e02baa0faf41676

http://cgit.freedesktop.org/libreoffice/core/commit/?id=f337125b41ed8aef52d2847cce258c3202b83e0a

http://cgit.freedesktop.org/libreoffice/core/commit/?id=989d0953a4d69bef3c8aba8e9dc7758194adcdc4

http://cgit.freedesktop.org/libreoffice/core/commit/?id=4a4c5f331b495d758aaad4e7253b13883dc863a9

http://cgit.freedesktop.org/libreoffice/core/commit/?id=805fc4bf039e011591d29f8a75e53c0b1b3a3c6b

http://cgit.freedesktop.org/libreoffice/core/commit/?id=73a24e709396e4dd906b8cfbd7719e51f29dd3a7

http://cgit.freedesktop.org/libreoffice/core/commit/?id=d28f0bfda55eebc34bbe5aab22f430ee37ef7e9b

http://cgit.freedesktop.org/libreoffice/core/commit/?id=32e3ede97ec6bad1b3c19545709b54eff29eafc6

http://cgit.freedesktop.org/libreoffice/core/commit/?id=65e294e618e077ad6999ef24f9e6047c2a838b7d