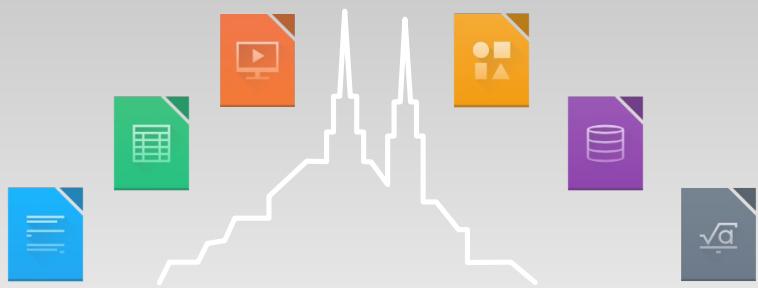


Improving LibreOffice usability: fixing symlink / hyperlink issues on Linux

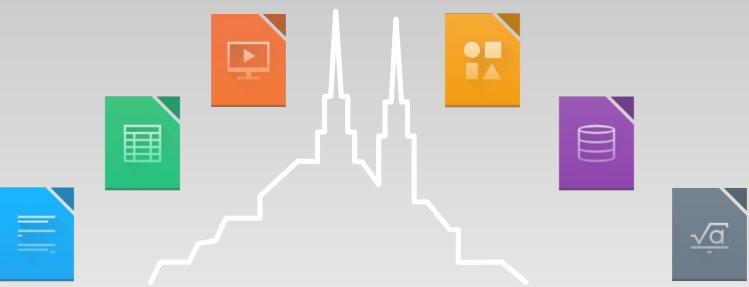
- ▼ Martin Nathansen
- ▼ IT Engineer @ LiMux project

agenda



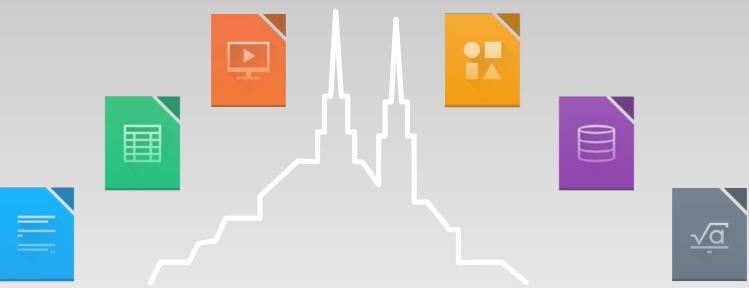
- ▶ About the speaker.
- ▶ Why this talk.
- ▶ Use cases which go wrong on Linux.
- ▶ Relative vs. absolute file URLs.
- ▶ Document import export.
- ▶ Why does it fail on Linux.
- ▶ 5 options to fix this.
- ▶ Make use of LinkResolver.
- ▶ 7 related bug reports.
- ▶ How to continue?

about the speaker



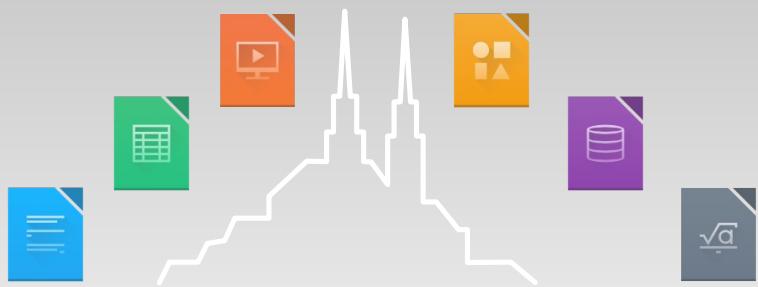
- ▶ IT engineer from Munich
- ▶ 16 yrs HW/SW R&D: CT, POTS/ISDN, (Optical) Networks
- ▶ 8 yrs as indie mobile and WebApp developer
- ▶ LiMux project since October 2015
- ▶ LibreOffice dev since March 2016

why this talk

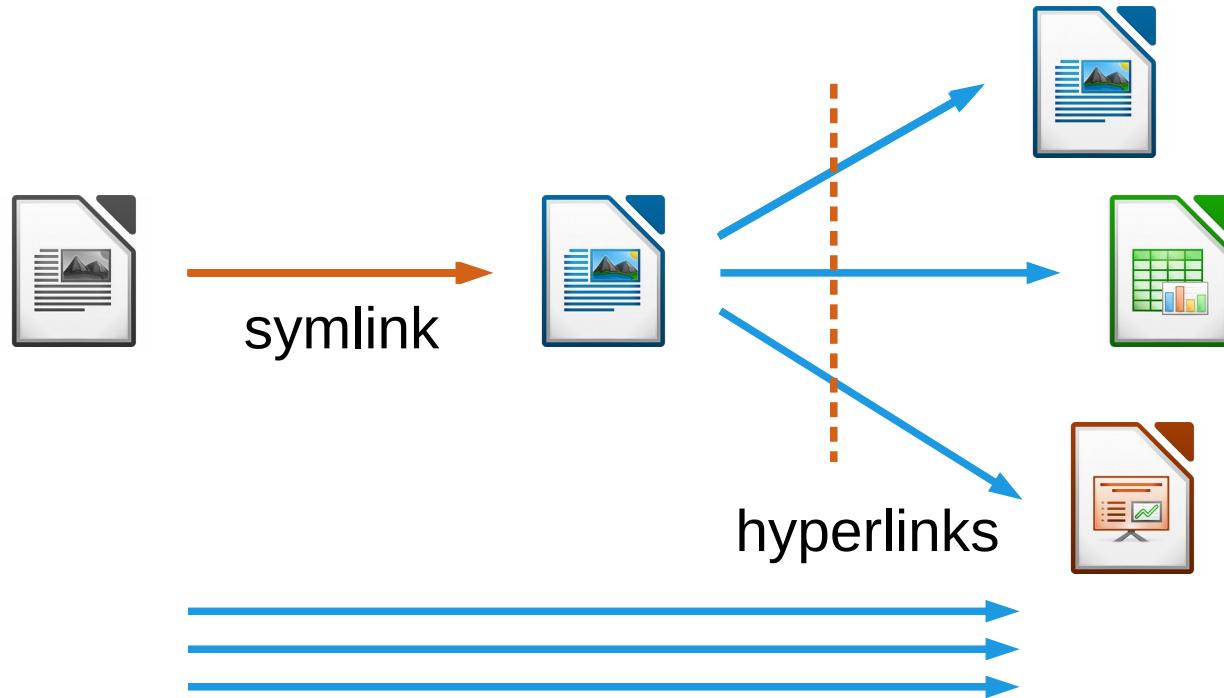


- ▼ Symlink / hyperlink related use cases which work on MS Windows but fail on Linux.
- ▼ User can choose between storing URLs as relative (1) or as absolute (2) file references.
- ▼ Both options can lead to broken links:
 - (1) when a document is opened via shortcut or a symlink or
 - (2) when the linked documents are moved to another folder.
- ▼ This talk analyzes the related failure scenarios and propose solutions.
- ▼ Goal: Fix open bugs and increase the usability of LibreOffice on Linux.

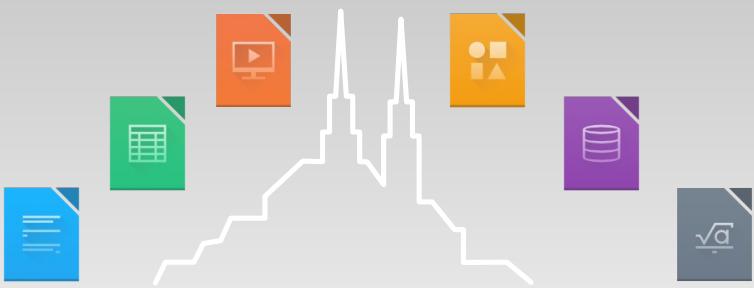
use cases (1)



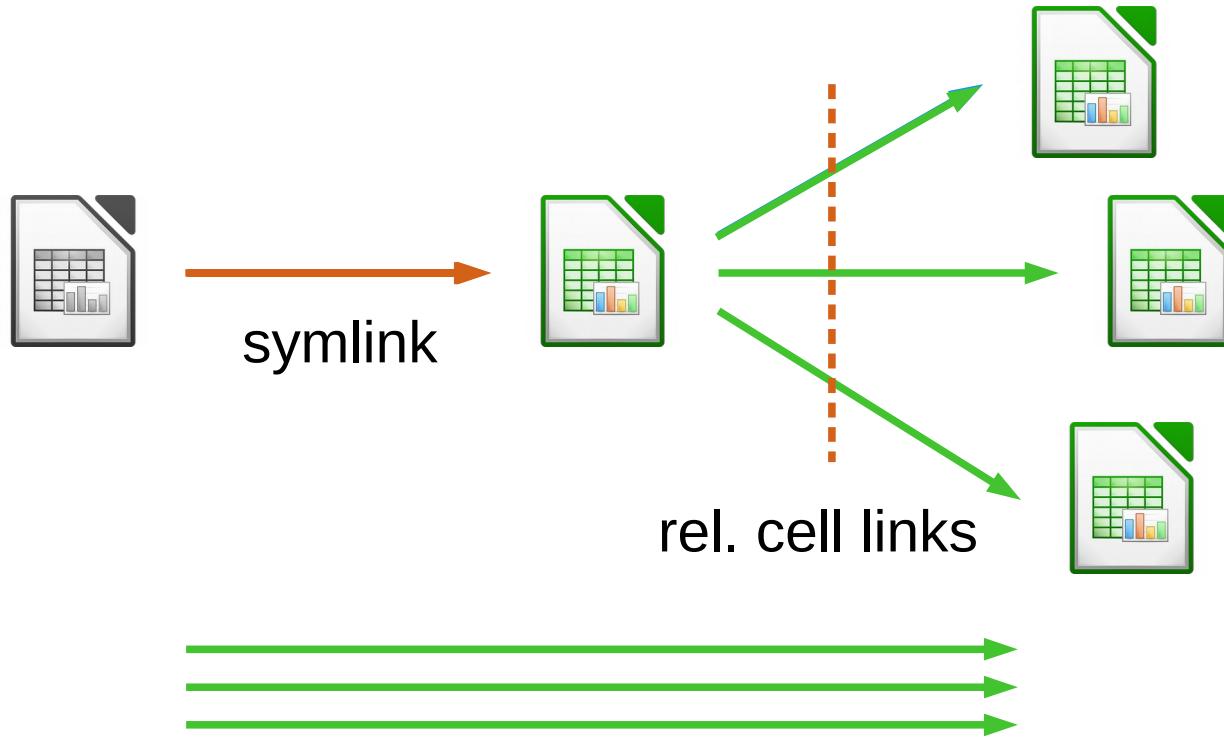
- ▼ Common sym/hyperlink use cases with Calc, Impress, Writer:
 - ▼ document with hyperlinks to other docs or media
 - ▼ desktop shortcut to the base document → all hyperlinks will break (Linux only)



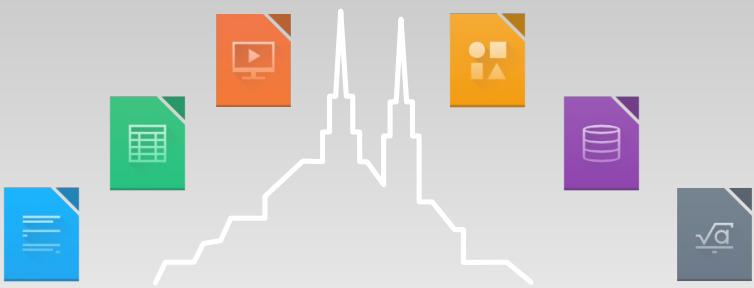
calc use case (2)



- ▼ Calc document with links to cells of other calc documents
- ▼ Desktop shortcut or symlink to the base document → cell links will break (Linux only)



relative vs. absolute paths (1)

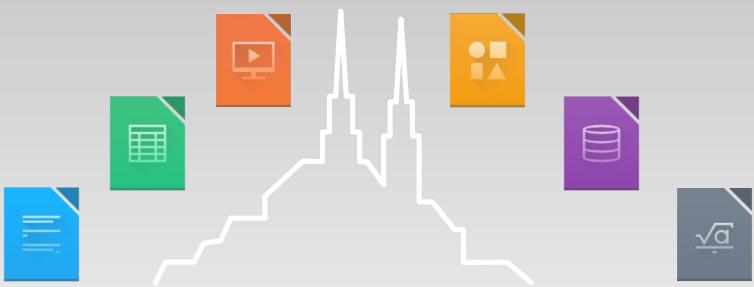


- ▼ The user can choose between relative or absolute URLs:

The screenshot shows the 'Options - Load/Save - General <@kvm-lobuild>' dialog window. On the left is a tree view of options under 'LibreOfficeDev' and 'Load/Save'. The 'General' option under 'Load/Save' is selected and highlighted in blue. The main pane contains the following settings:

- Load**
 - Load user-specific settings with the document
 - Load printer settings with the document
- Save**
 - Save AutoRecovery information every: 10 minutes
 - Edit document properties before saving
 - Always create backup copy
 - Save URLs relative to file system
 - Save URLs relative to internet
- Default File Format and ODF Settings**
 - ODF format version: 1.2 Extended (recommended)
 - Warn when not saving in ODF or default format
 - Document type: Text document
 - Always save as: ODF Text Document

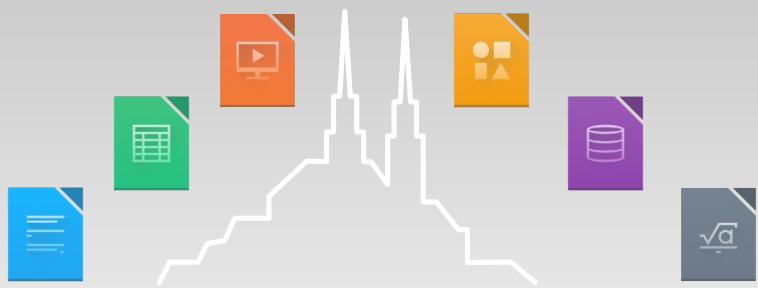
relative vs. absolute paths (2)



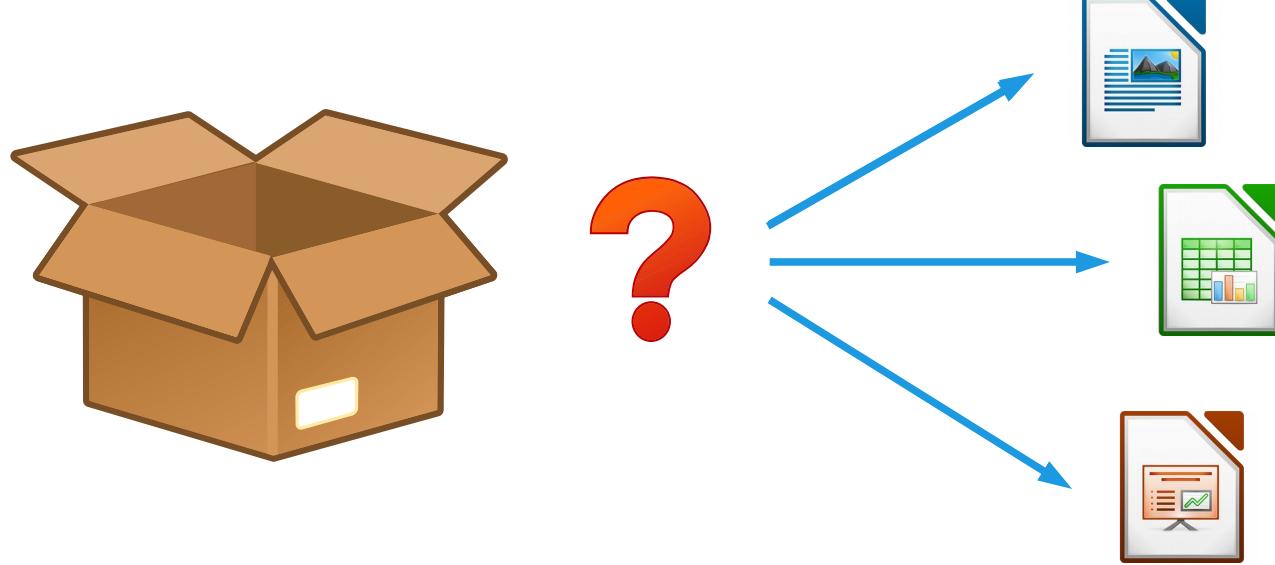
- ▼ The user always see absolute URLs (usability issue):

A screenshot of the LibreOffice Calc application window. The menu bar includes File, Edit, View, Insert, Format, Sheet, Data, Tools, Window, and Help. The toolbar contains various icons for file operations, printing, and data manipulation. The formula bar shows cell A1 and operators for sum and equality. The spreadsheet grid has columns labeled A through K and rows labeled 1 through 18. Cell A2 contains the text "relative link". A tooltip box appears over cell A2, containing the text "Ctrl-Click to follow link:file:///home/martin.nathansen/Tickets/tdf100137/acrobat01.pdf". The LibreOffice logo is visible in the bottom left corner.

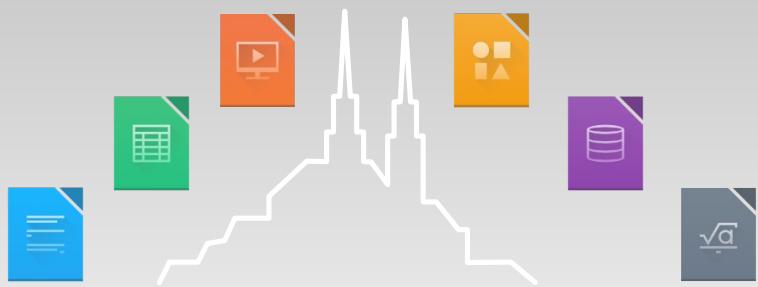
relative vs. absolute paths (3)



- Configuring absolute URLs internally is not a good option because other use cases will break:



doc import export



- ▼ Relative paths in content.xml are converted to absolute file URLs during document import:

.. / folder / doc . odt

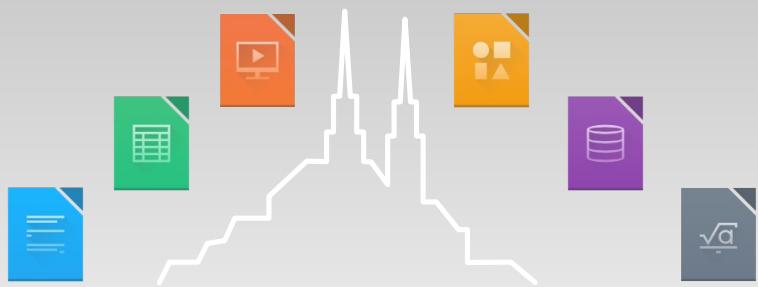
→ `file:///home/user1/folder/doc.odt`

- ▼ Absolute file URLs are converted back to relative paths during doc export:

`file:///home/user1/folder/doc.odt`

→ .. / folder / doc . odt

Why does it fail on Linux



- Base URL for the conversion is different on MS Windows and Linux:

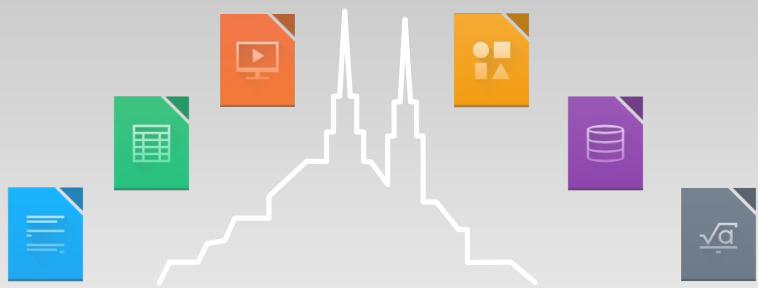


Base URL
(MS Windows)



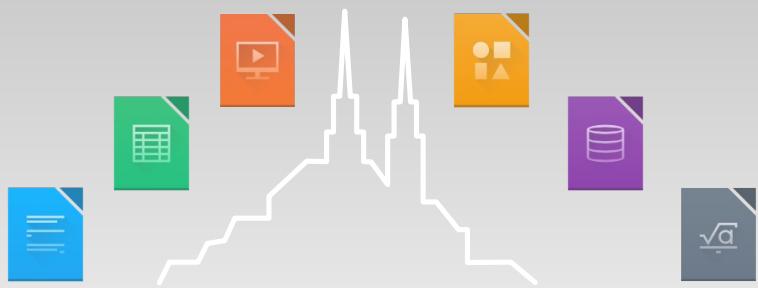
Base URL
(Linux)

Is this a bug or a feature?



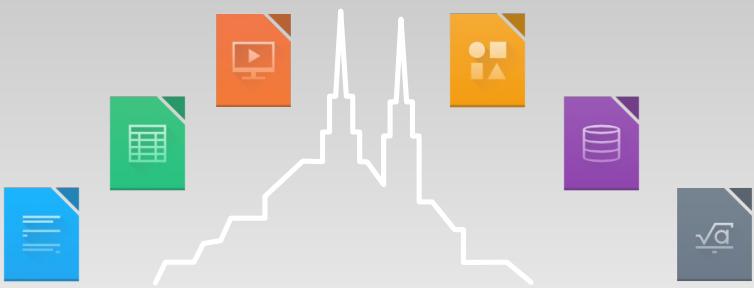
- ▶ “Expected behavior” on Linux for LO developers,
- ▶ but users expect same behavior as on MS Windows,
- ▶ or as with other applications like Firefox,
- ▶ so it is at least a user bug.
- ▶ Who do we develop LibreOffice for?

5 options to fix this



1. Tell the Linux user not to use desktop shortcuts or symlinks
→ bad usability
2. Tell the user to disable option “Save URLs relative to File system”
→ will break other use cases
3. Fix the problem optionally and ask the user to make a decision
→ user confusing pop up dialog
4. Fix the problem for desktop shortcuts only
→ some use cases will remain broken
5. Fix the problem in general
→ other (Linux only) use cases might break

make use of LinkResolver

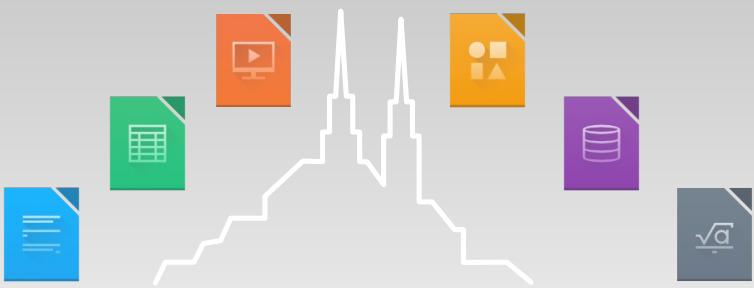


- ▶ Resolving the file path of the base document with the help of `salhelper::LinkResolver` (1)
- ▶ This resolved file path will be the base URL for converting the relative paths (2)

tools/source/fsys/urlobj.cxx

```
OUString INetURLObject::ResolveFilePath( DecodeMechanism eMechanism, rtl_TextEncoding eCharset ) const
{
    OUString rTheAbsURIRef(INetURLObject(*this).GetMainURL(eMechanism, eCharset));
    if (rTheAbsURIRef.endsWith("/content.xml"))
    {
        salhelper::LinkResolver aResolver(osl_FileStatus_Mask_FileName);
        osl::FileBase::RC eStatus = aResolver.fetchFileStatus(
            rTheAbsURIRef.replaceFirst("/content.xml", ""));
        if (eStatus == osl::FileBase::E_NOTDIR || eStatus == osl::FileBase::E_None)
        {
            rTheAbsURIRef = aResolver.m_aStatus.getFileURL(); // (1)
            rTheAbsURIRef += "/content.xml";
        }
    }
    return rTheAbsURIRef; // (2)
}
```

fix document import



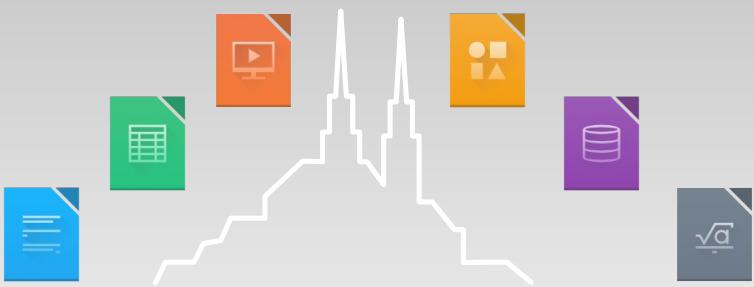
- ▼ Resolve file path of the base document (1)
- ▼ Convert relative to absolute file path (2)

include/tools/urlobj.hxx

```
inline INetURLObject
INetURLObject::smartRel2Abs(OUString const & rTheRelURIRef,
...
{
    ...
    if (rTheRelURIRef.startsWith("../"))
    {
        OUString rTheResolvedURIRef( INetURLObject(
            m_aAbsURIRef.getStr()).ResolveFilePath()); // (1)

        bResolveBaseURI = INetURLObject(rTheResolvedURIRef, eMechanism, eCharset).
            ConvertRelToAbs( rTheRelURIRef, aTheAbsURIRef, rWasAbsolute, // (2)
                eMechanism, eCharset, bIgnoreFragment, true,
                bRelativeNonURIs, eStyle);
    }
}
```

fix document export

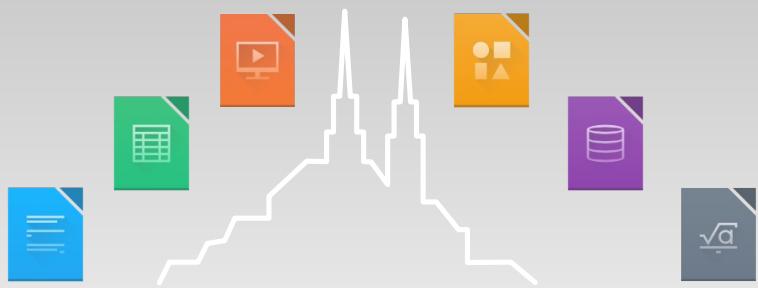


- ▼ Resolve file path of the base document (1)
- ▼ Convert absolute to relative file path (2)

include/tools/urlobj.hxx

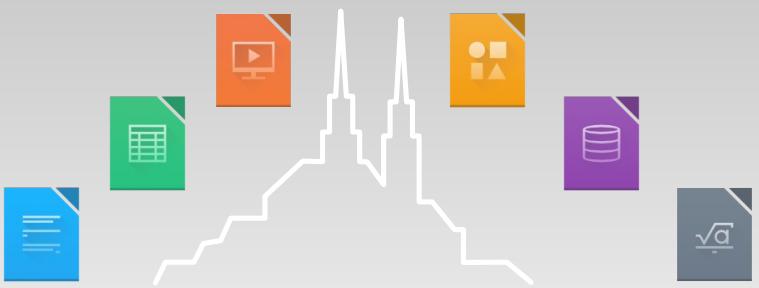
```
inline OUString INetURLObject::GetRelURL(OUString const & rTheBaseURIRef,  
...  
{  
    ...  
    if (bResolveBaseURI)  
    {  
        OUString aTheResolvedURIRef(rTheBaseURIRef);  
        aTheResolvedURIRef = InetURLObject(rTheBaseURIRef).ResolveFilePath(); // (1)  
        bResolveBaseURI = InetURLObject(aTheResolvedURIRef,  
                                         eEncodeMechanism, eCharset).  
                           convertAbsToRel(rTheAbsURIRef, aTheRelURIRef, eEncodeMechanism, // (2)  
                                         eDecodeMechanism, eCharset, eStyle);  
    }  
}
```

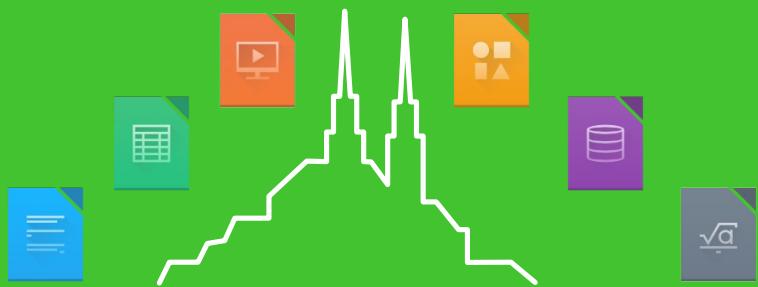
related bug reports



- ▶ Bug 100137 - Wrong Hyperlinks in Calc when opening the Calc document over a Symlink
- ▶ Bug 56137 - LO uses absolute pathes to other document, even with "use relative pathes"-option checked
- ▶ Bug 86087 - FILESAVE FILEOPEN VIEWING: Can't open or save relative links in docx
- ▶ Bug 64431 - FILESAVE: Broken hyperlink to another file in PPT
 - ▶ Bug 51940 - : Relative path are not well managed in ppt files
- ▶ Bug 45435 - XSLX format breaks relative hyperlink path when document is moved
 - ▶ Bug 97509 - Path of inserted linked image breaks after file is moved

how to continue





Thank you ... for listening!



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