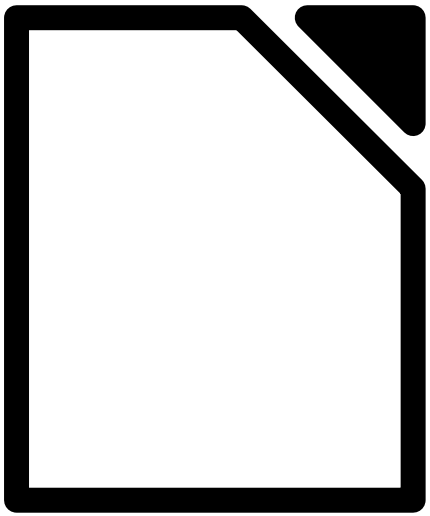

Improved digital signat handling in LibreOffi

By Miklos Vajna

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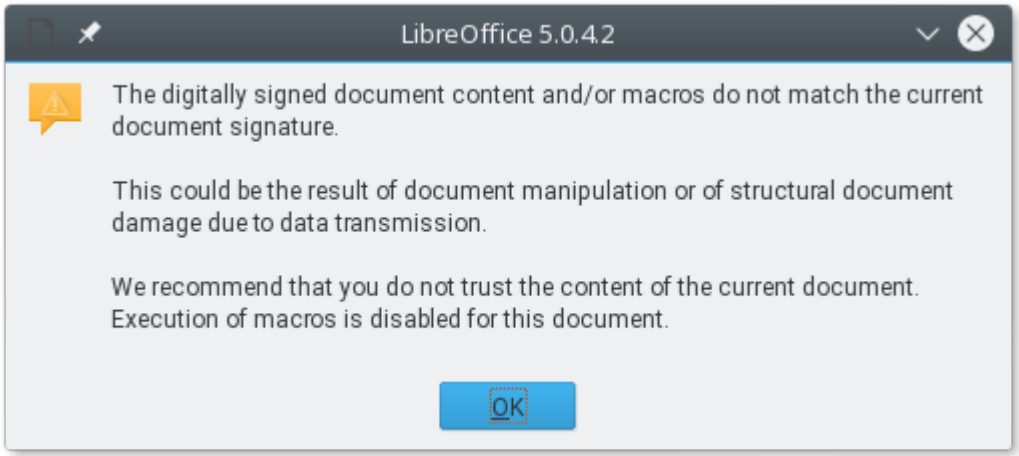
About Miklos

- From Hungary
  - More blurb: http://vmiklos.hu/
- Google Summer of Code 2010/2011
  - Rewrite of the Writer RTF import/export
- Writer developer since Feb 2012
- Contractor at Collabora since Sept 2013

Digital signature handling

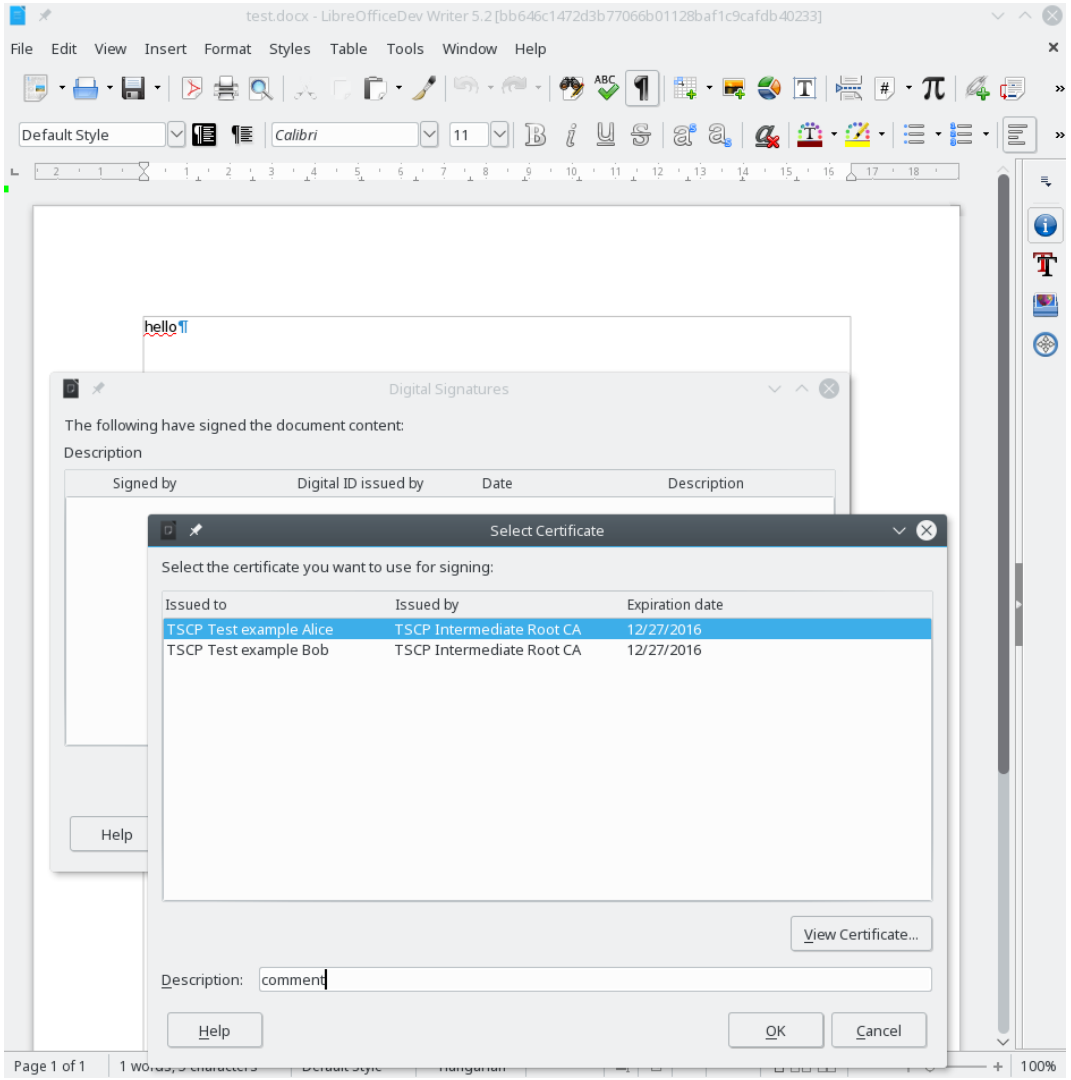
The feature: digital signing

- a mathematical way
- demonstrates the authenticity of a document



Results #1
Signature descriptions

- Use-case: want to sign with the same certificate multiple times
- Only makes sense if role / comment / description is provided



Results #2
SHA-256 support

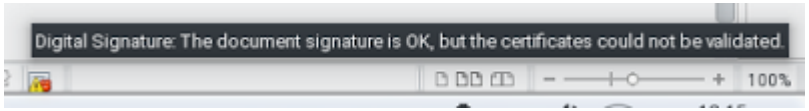
- Only SHA-1 was supported previously
- Can now read SHA-256/ODF
- Can now read and write SHA-256
- Motivation: SHA-1 based operations must be rejected since 2012-01-01 in a legal case in the EU

Results #3
OOXML signature import

- Used inside DOCX/XLSX/PPTX files
- Need to count the same hashes as MSO
- Verify that the expected and the actual ones match
  - Report good/bad signatures exactly when MSO does so
- Badly documented in ECMA-376
- Better in ISO/IEC 29500

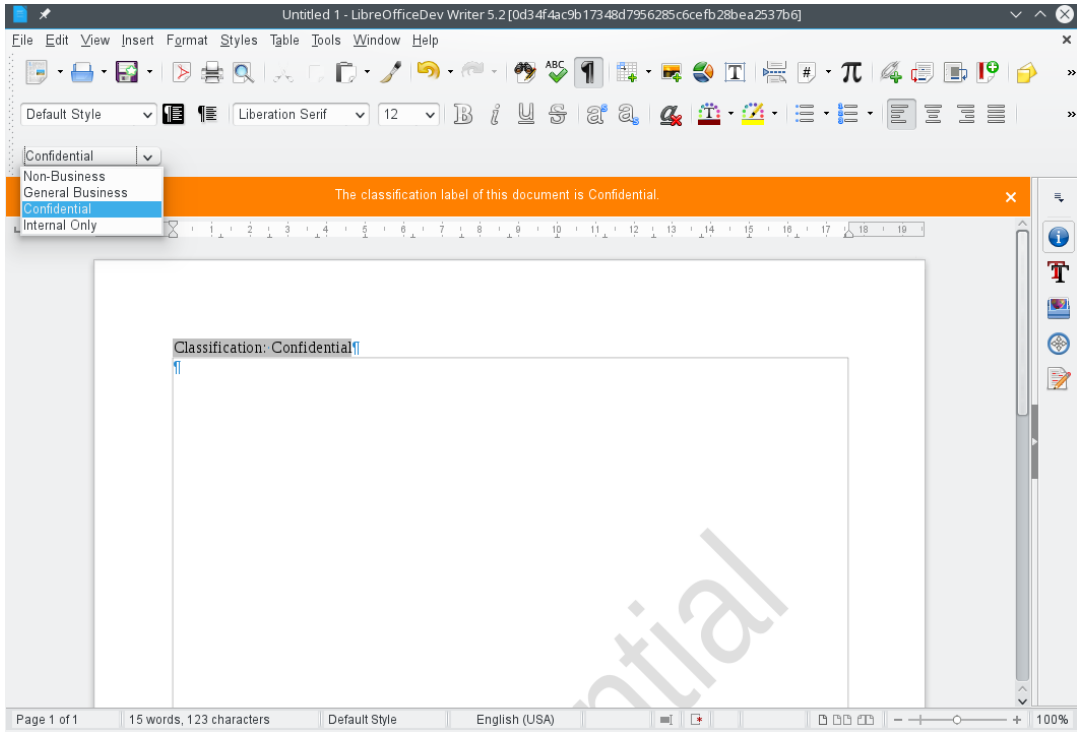
Results #4
OOXML signature export

- Write an OOXML signature that’s accepted by MSO
- Preserve existing ones
- Remove one or all of them
- Privacy problems around HW details
- OOXML signature is inherently less secure (metadata)



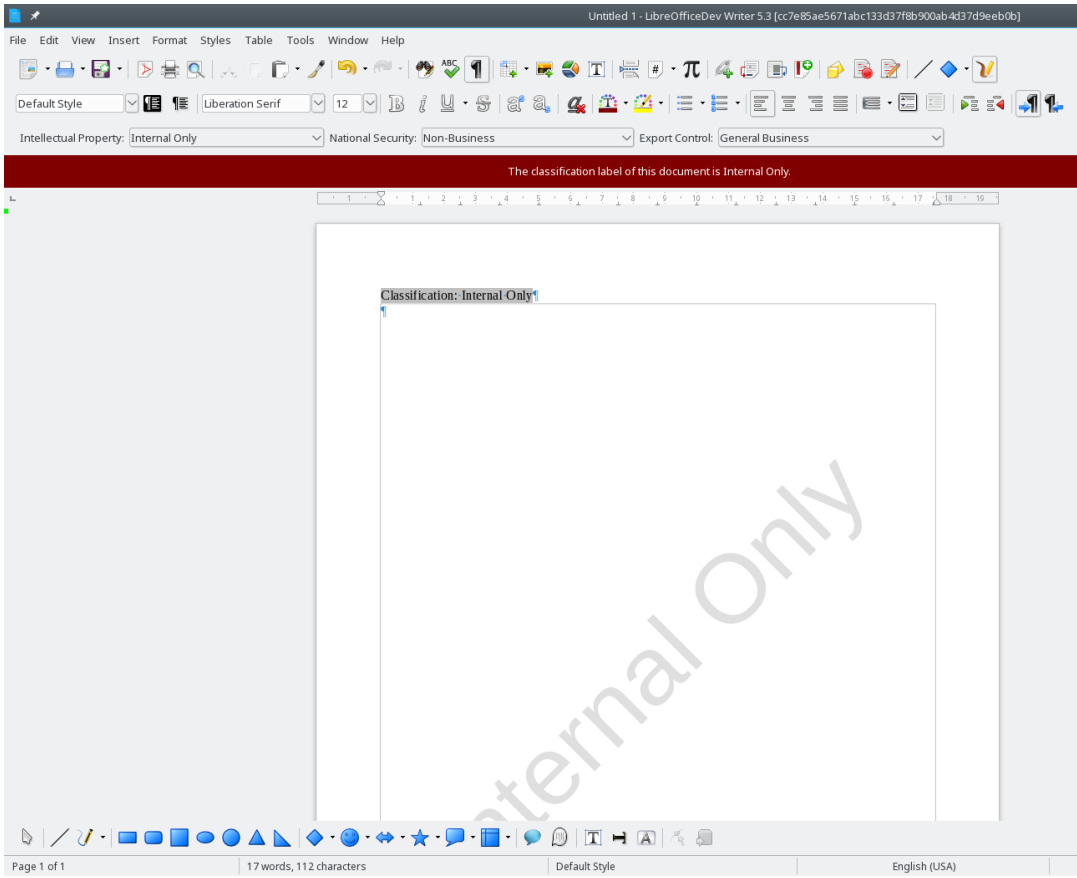
Results #5
Classification toolbar

- Not strictly related to signing, but the two features can be used together
- Use-case: In case the user is required to follow a policy when editing a document
- Help the user respect these rules



Results #6
Multi-category classification

- 3 different policy types (IntellectualProperty, NationalSecurity and ExportControl)
- Different classification categories for different policy types



How is this implemented?

Signing XML content

- Base: [xmldsig-core] from W3C
- Then:
  - OpenDocument v1.2 part3, section 5: Digital Signatures File
  - ISO/IEC 29500-2:2012, section 13: Digital Signatures
- W3C does not define how to store multiple signatures → different markup

libxmlsec

- LibreOffice uses libxmlsec for signature creation / verification
- The bundled libxmlsec is configured to use:
  - Mozilla/NSS on Linux/macOS
  - Native OS APIs on Windows

Updating and extending libxmlsec

- Implement OOXML Relationships Transform Algorithm
- win32 configure: adapt to renamed autoconf configure
- Fix Visual Studio 2015 build
- win32: fix undeclared XMLSEC_DEFAULT_CRYPTO
- Now we bundle the latest libxmlsec
- All patches I added are upstreamed

Signing non-ODF documents

- Code in xmlsecurity/ assumed that only ODF can be signed
- New filter flag: SfxFilterFlags::SUPPORTSSIGNING
- We still expect zipped XML everywhere

Description

- ODF: just another optional property, similar to the signing timestamp
- If empty, we don’t write it, this way existing signature hashes are not broken
- OOXML mandates it

OOXML import/export

- Signature list markup uses the normal OOXML relation format
  - Existing parser/serializer in comphelper/
  - Can reuse that here without problems
- Individual signatures:
  - Import: OOXMLSecParser in xmlsecurity/, a SAX handler
  - Export: OOXMLSecExporter in xmlsecurity, works on a css::sax::XDocumentHandler

Classification toolbar

- “Just” a GUI: works with the user-defined properties available at File → Properties
- Transglobal Secure Collaboration Program (TSCP):
  - Business Authentication Framework (BAF)
  - Business Authorization Identification and Labeling Scheme (BAILS)
- Legal text → BAF policy → LO embeds BAILS key-value pairs into documents

Thanks

- Collabora is an open source consulting company
  - What we do and share with the community has to be paid by someone
- Dutch Ministry of Defense sponsored this work

Summary

- Improved digital signature handling provides better ODF and initial OOXML support
  - Available in LibreOffice 5.2
  - Both reading and writing OOXML signatures
  - First non-ODF file format that supports signing
- Thanks for listening! :-)
- Slides: http://vmiklos.hu/odp