CIB software

GPG4LIBRE: OPENPGP SIGNING & ENCRYPTION IN LIBREOFFICE

LIBREOFFICE CONFERENCE ROME
OCTOBER 12TH, 2017

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Bundesamt
für Sicherheit in der
Informationstechnik

LibreOffice
The Document Foundation

ROME - IT - MMXVII
CONFERENCE

GPG4LIBRE - MOTIVATION

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- we *don't* do enough crypto yet!
- put encryption and signing at user's finger tips
- use something that's
  - cheap
  - ubiquitous
  - peer to peer
  - stable, reliable, cross-platform, and comes with tons of features

ARCHITECTURE

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CIB software

GnuPG

⋮

GPG4WiN

Seahorse

⋮

IPC / execve

gpgme

LibreOffice
The Document Foundation

ODF™

SEQUENCE DIAGRAM

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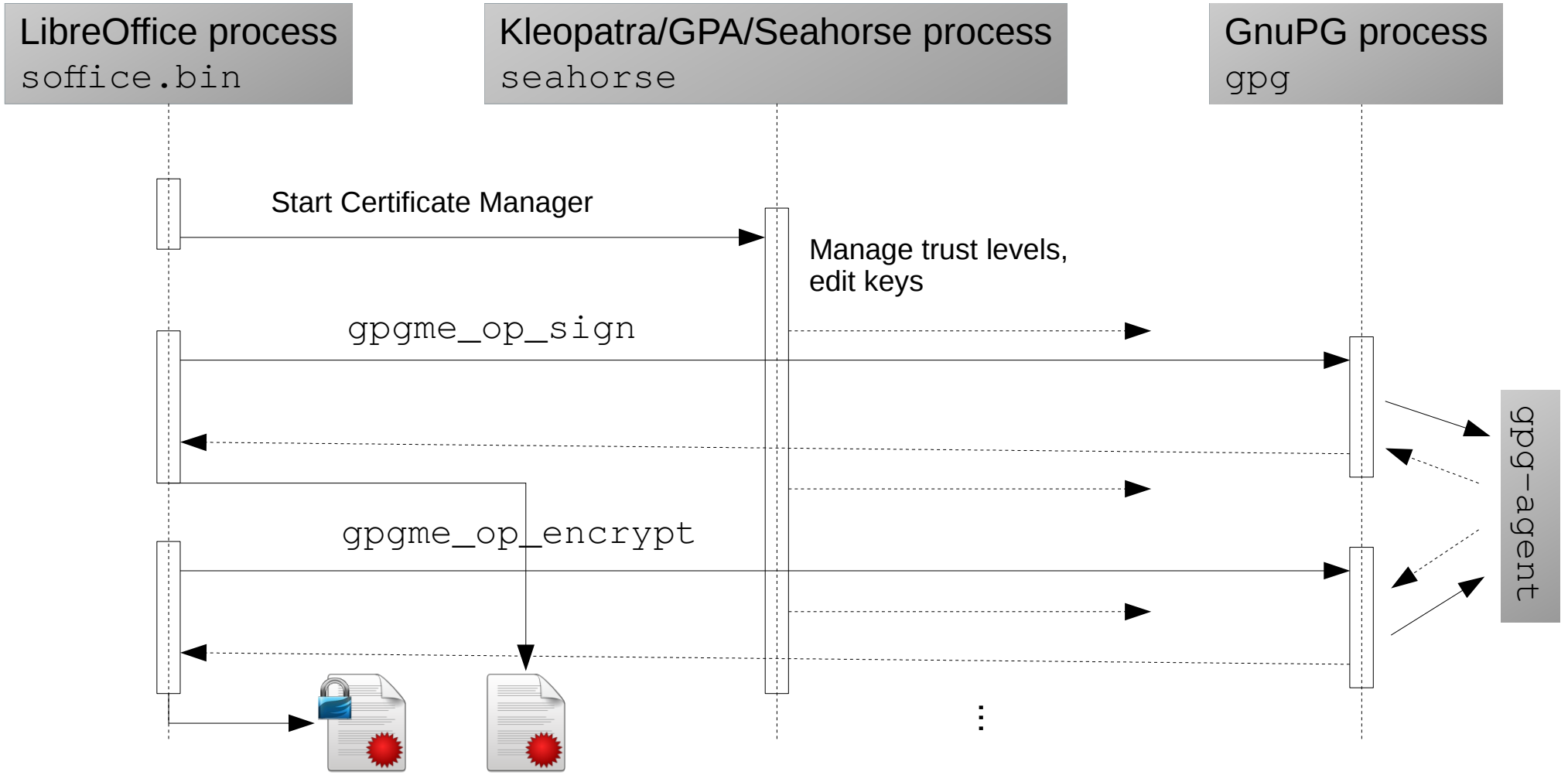

UI IMPROVEMENTS

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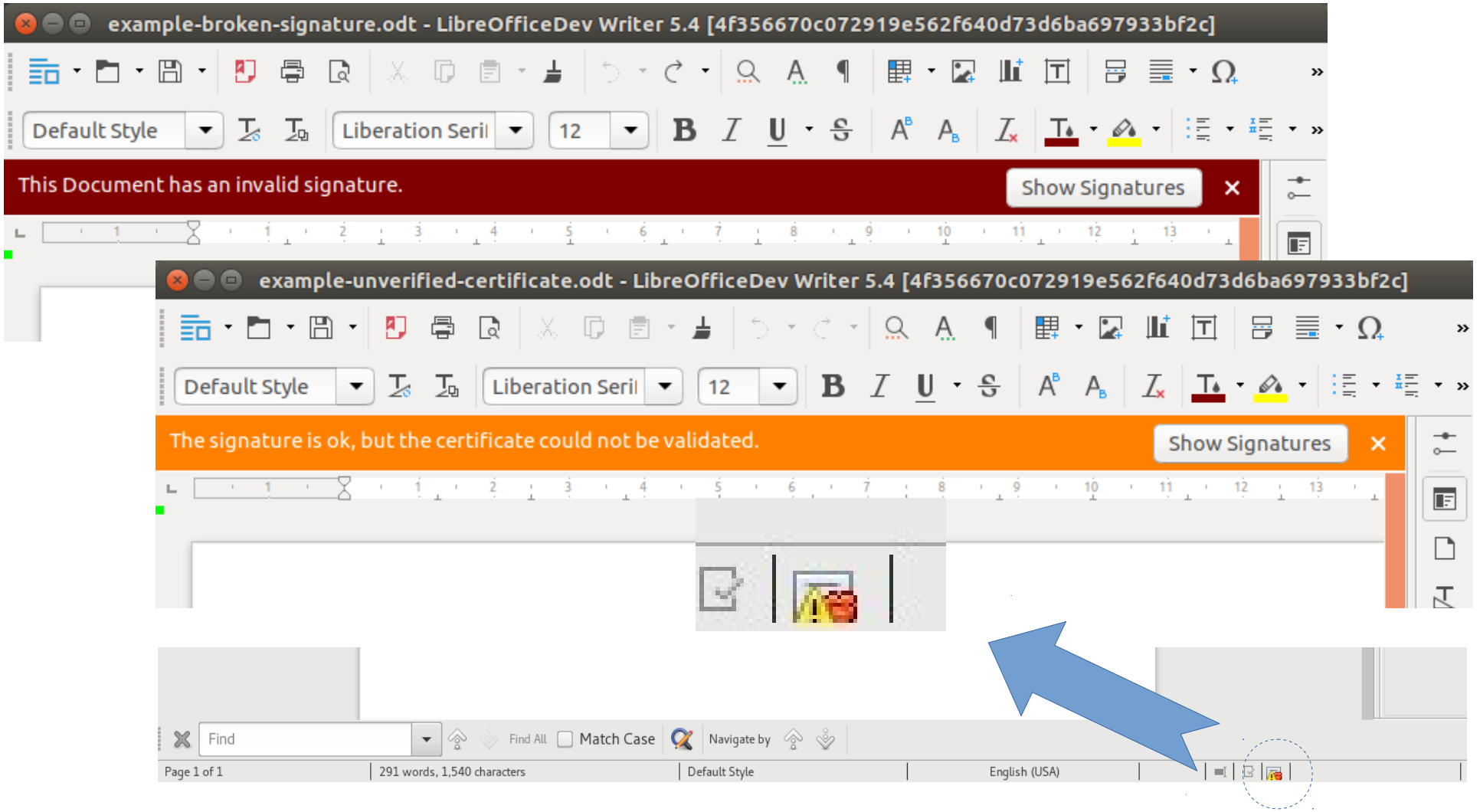

INTEGRATING ALL AVAILABLE KEYS

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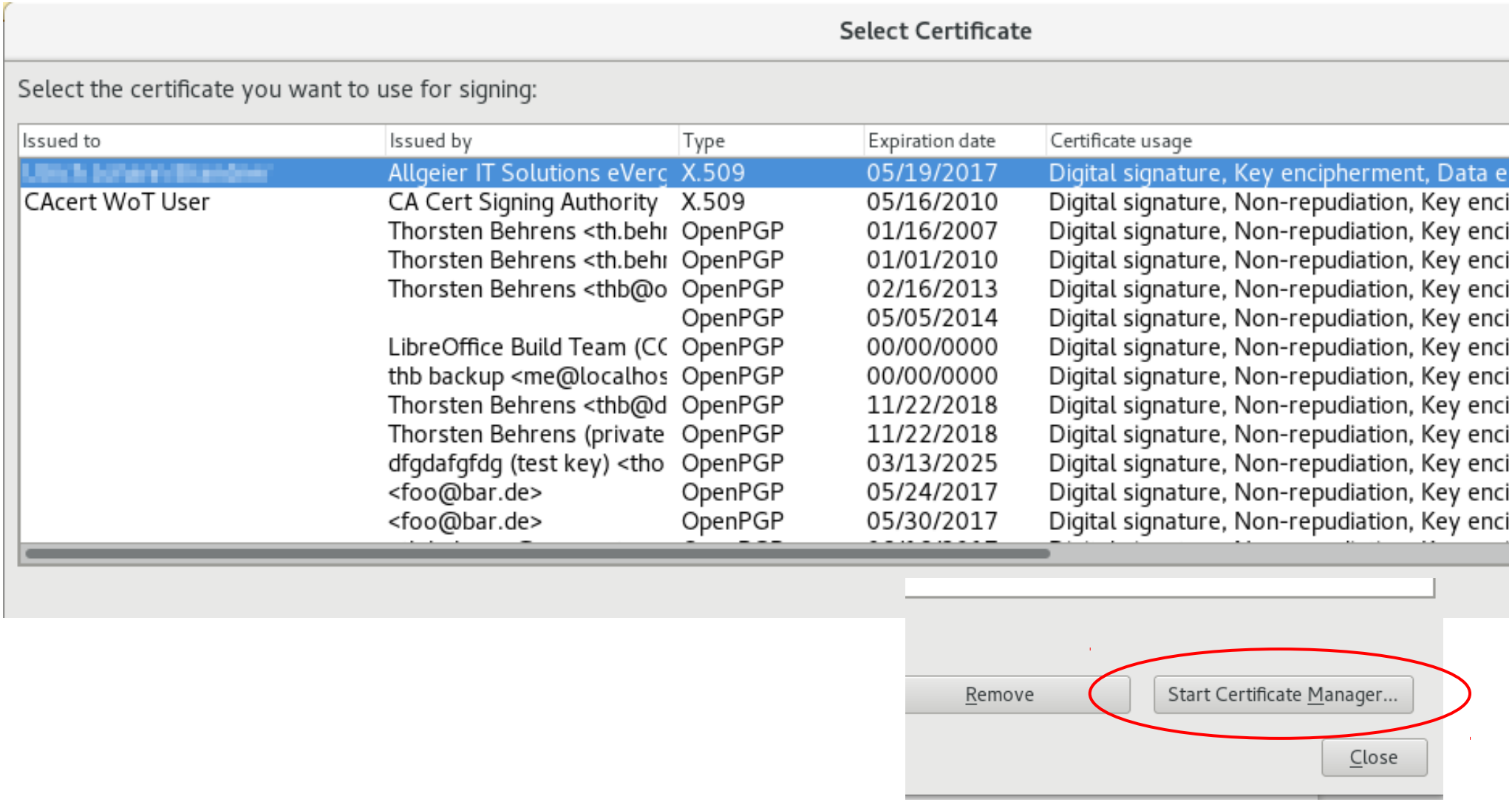

DEFER TO PLATFORM WHERE USEFUL

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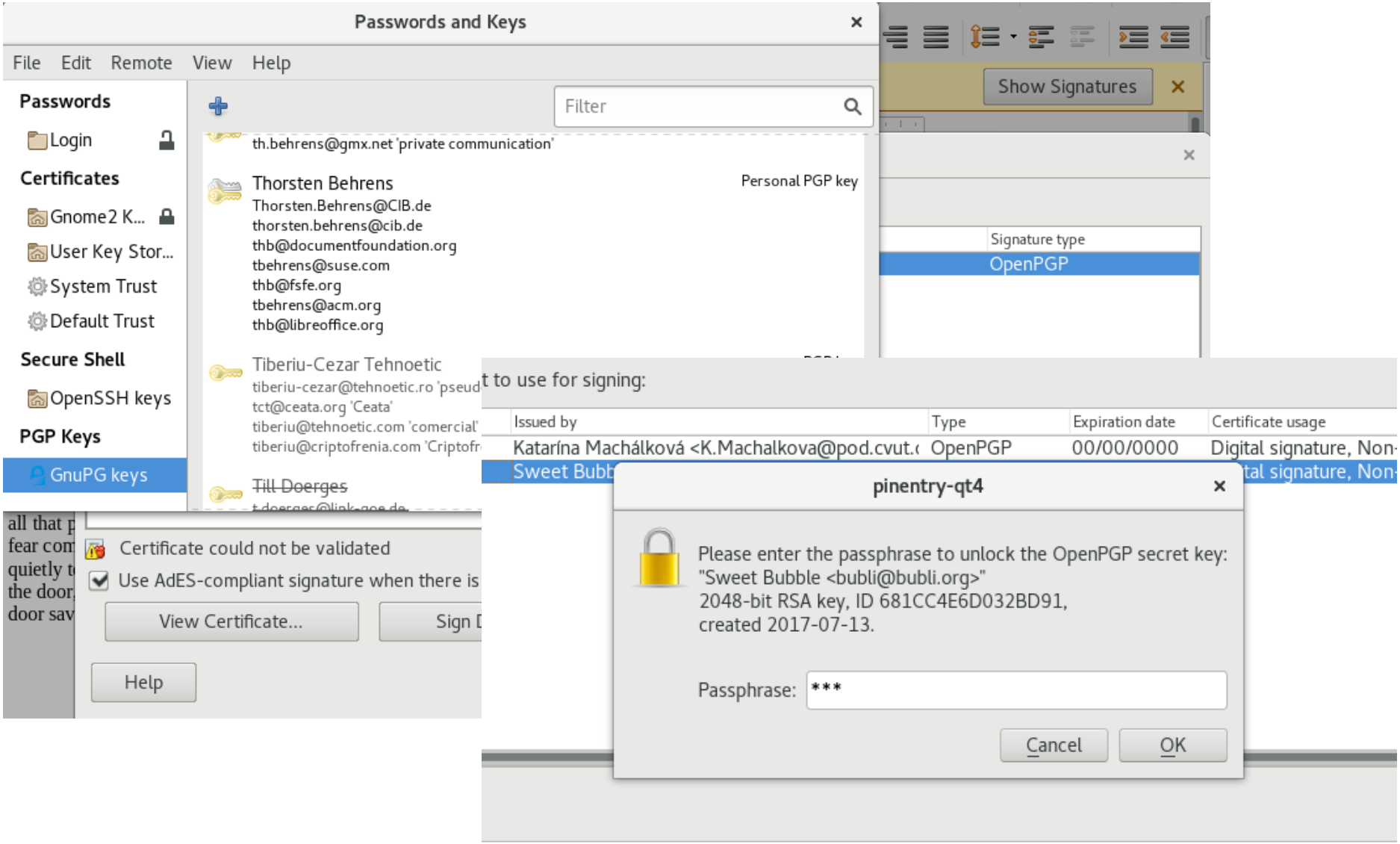

MARKUP: XML SIGNATURES

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Based on: https://www.w3.org/TR/xmldsig-core/

```
<Signature xmlns="http://www.w3.org/2000/09/xmldsig#"">
  <SignedInfo>
    <CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-
20010315"/>
    <SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#rsa-
sha256"/>
    <Reference URI="styles.xml">
      <Transforms>
        <Transform Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-
20010315"/>
      </Transforms>
      <DigestMethod Algorithm="http://www.w3.org/2001/04/xmlenc#sha256"/>
      <DigestValue>h8x5UxEL9t9W8UfYEHeLme1JOqpke+H7AaGGFD8qzFY=</DigestValue>
    </Reference>
```

MARKUP: XML SIGNATURES

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Actual OpenPGP-Signature:

```
<SignatureValue>LS0tLS1CRUdJ...tLS0tCg==</SignatureValue>
<KeyInfo>
  <PGPData>
    <PGPKeyID>OTA5QkUyNTc1Q0VEQkVBMw==</PGPKeyID>
    <PGPKeyPacket>LS0tLS1C...S0tCg==</PGPKeyPacket>
  </PGPData>
</KeyInfo>
```

GPG4LIBRE - ENCRYPTION

ENCRYPTION

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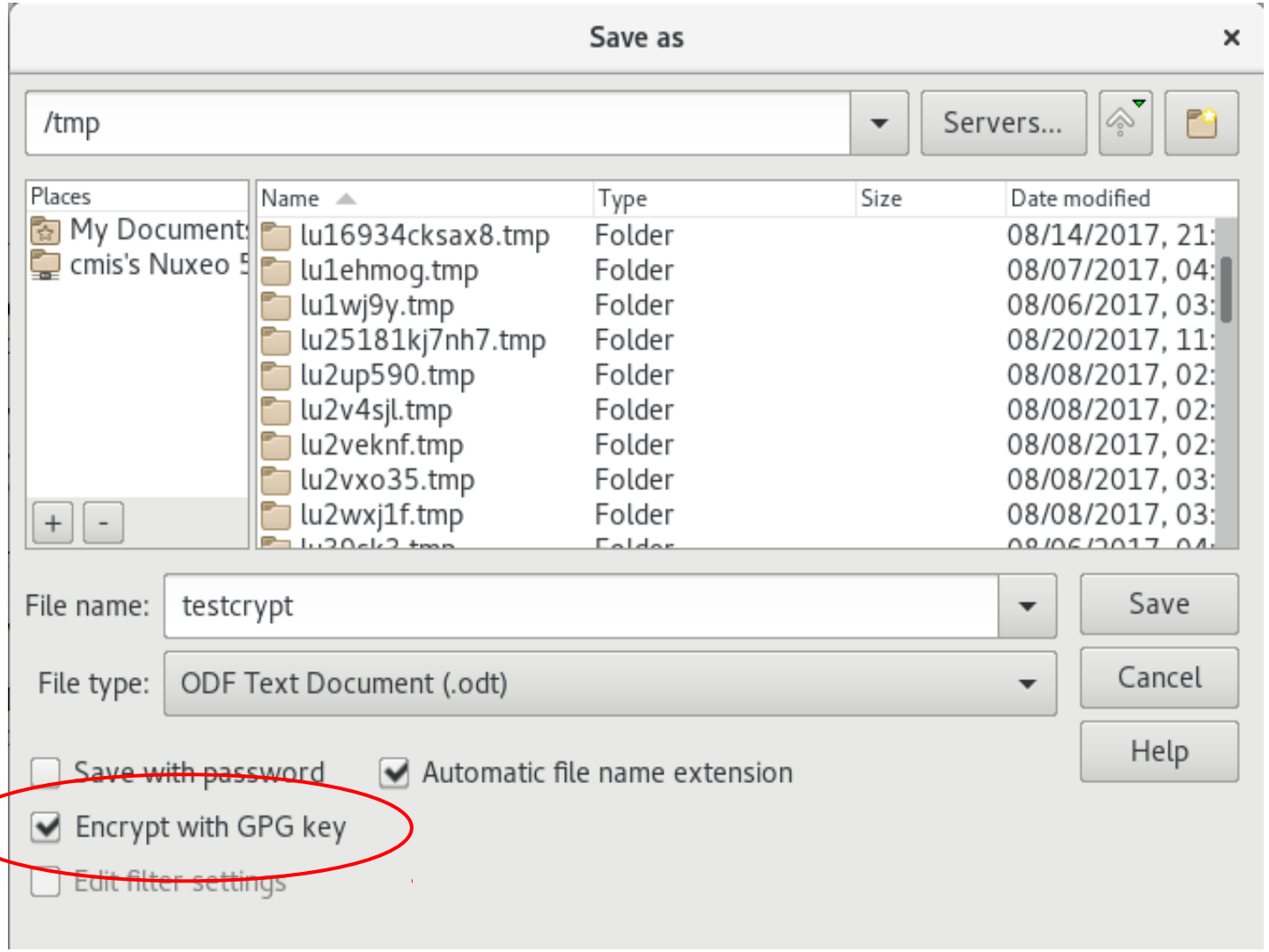
- extended save dialog



ENCRYPTION

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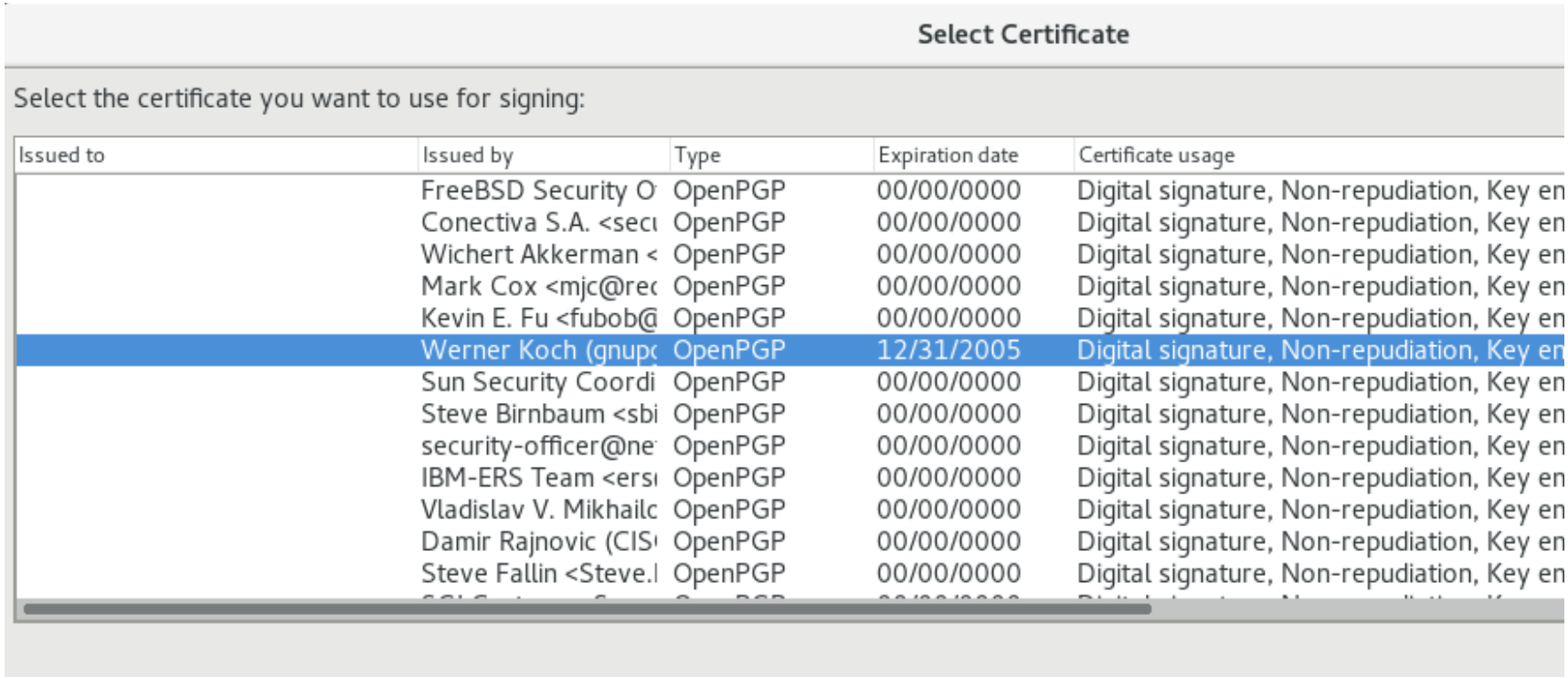
- pick recipient



MARKUP: XML ENCRYPTION

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Encryption based on: https://www.w3.org/TR/2002/REC-xmlenc-core-20021210

```
<manifest:manifest xmlns:manifest="urn:oasis..." manifest:version="1.2"
xmlns:loext="urn:org:do...">
 <loext:KeyInfo>
  <loext:EncryptedKey>
   <loext:EncryptionMethod loext:Algorithm="http://www.w3.org/2001/04/xmlenc#rsa-
oaep-mgf1p"/><loext:KeyInfo>
    <loext:PGPData>
     <loext:PGPKeyID>QjE3...5NA==</loext:PGPKeyID>
     <loext:PGPKeyPacket>LS0tL...LS0K</loext:PGPKeyPacket>
    </loext:PGPData>
   </loext:KeyInfo>
   <loext:CipherData>
    <loext:CipherValue>FAm4B...aB8=</loext:CipherValue>
   </loext:CipherData>
  </loext:EncryptedKey>
 </loext:KeyInfo>
 <manifest:file-entry manifest:full-path="/" manifest:version="1.2"
manifest:media-type="application/vnd.oasis.opendocument.text"/>
```

MARKUP: XML ENCRYPTION

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File entry (details might still change):

```
<manifest:file-entry manifest:full-path="content.xml" manifest:media-
type="text/xml" manifest:size="15781">
 <manifest:encryption-data manifest:checksum-
type="urn:oasis:names:tc:opendocument:xmlns:manifest:1.0#sha256-1k"
manifest:checksum="bbpZzvw+pOu+BAMI0wsxn0BbsOn3P3oABCd9IGxKqyg=">
  <manifest:algorithm manifest:algorithm-
name="http://www.w3.org/2001/04/xmlenc#aes256-cbc"
manifest:initialisation-vector="0jF3LtJHWJr/j9UvipYw0Q==" />
 </manifest:encryption-data>
</manifest:file-entry>
```

GPG4LIBRE – WRAP-UP AND Q&A

ROADMAP

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CIB software

- ODF-conformant signing on Linux
  - ships with LibreOffice 5.4
- ODF-conformant signing also on Windows
  - planned for LibreOffice 6.0 (Feb. 2018)
  - also planned for OS X – open for Android
- experimental encryption on Linux & Windows
  - planned for LibreOffice 6.0 (Feb. 2018)
  - needs ODF extensions
- ODF-next
  - proposing XMLSEC-extensions for OpenPGP encryption to OASIS ODF TC – GA around 2018 or 2019

THANK YOU!

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CIB software

OUR PRODUCTS:

HTTP://LIBREOFFICE.CIB.DE/

WE CAN HELP:

HTTP://LIBREOFFICE.CIB.DE/SUPPORT