SharePoint and LibreOffice interoperability through CMIS

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Introduction

- Open Source experts and consultants
- 14 years of experience
- Contributors to:
  - Client-side web tecnologies: WebKit, Chromium
  - Compilers: V8, JavaScriptCore, Guile
  - Multimedia: GStreamer, Grilo
  - Accessibility: ATK, Orca
  - Open documents: LibreOffice, Poppler
  - ...

- Backed by The Document Foundation
- Healthy mix of volunteer and corporate contributors
- Around 100 monthly committers and 2000 commits
- 7M lines of code
- >20 years of history

> "Exact history was lost before Sept. 18th, 2000, but old source code comments show that Writer core dates back until at least November 1990."

The CMIS protocol

- Stands for Content Management Interoperability Services
- Abstraction layer for interoperability across enterprise content management systems (ECM) using web protocols
  - ECMs store unstructured data

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- Provides:
  - Common data model for typed files and folders with properties that can be get/set
  - Services for adding and retrieving documents
- May provide:
  - Access control system
  - Version control
  - Relations
  - Queries

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- Bindings:
  - SOAP (WebService)
  - AtomPub (RESTful)
  - JSON (from CMIS 1.1)

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Domain model

- Repository
  - Topmost object
  - Any number, minimum one
- Objects
- Types
  - Folder, document
  - More can be added
  - Types have properties
  - Hierarchies can be built

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Domain model: objects

- Folders
  - One root folder per repository
  - Define a hierarchy
  - Standard properties: name, access date, etc.
- Documents
  - Standard properties: name, modification date, etc.
  - Have a content stream with a MIME type

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Services

- Repository service
  - List and get properties of repositories
  - Expose available types
- Navigation service
  - Browse folder hierarchy
- Object service
  - CRUD of documents and folders
  - Access by object ID or by path

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Services

- Versioning service
  - Create and access versions
  - Only documents are versionable
    - Determined by the document type

Some server implementations

- Alfresco
- IBM Content Manager
- Magnolia CMS
- Nuxeo
- SharePoint 2010, 2013

Some client implementations

- Drupal
- LibreOffice
- Liferay
- Salesforce.com
- SharePoint 2010, 2013

A common interaction

- Get repositories from the server
- Get root folder for some repository
- Navigate through the folders
- Check out a document
- Check in modified document

Writing your own client: the libcmis project

What is libcmis

- C++ client library for the CMIS protocol
  - Enables client applications to connect servers like SharePoint
- Open source project
  - GPLv2, MPL 1.1
  - LGPLv2, link from proprietary software
- Brought to you by the LibreOffice community
- http://libcmis.sourceforge.net/

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What libcmis provides

- C++ and plain C APIs
- Classes abstracting CMIS entities
- Specific implementation for selected servers, including SharePoint
- Command line client tool

Code examples

```
// Get repositories from the server
libcmis::Session* session = libcmis::SessionFactory::createSession(
        url, username, password, repoId, noSslCheck,
        oauth2Data, verbose );
vector< libcmis::RepositoryPtr > repos =
        session->getRepositories( );
for ( vector< libcmis::RepositoryPtr >::iterator it =
        repos.begin( ); it != repos.end(); ++it )
{
    ( *it )->getName( );
    ( *it )->getId( );
}

// Get root folder for some repository
session->setRepository( repoId );
libcmis::FolderPtr root = session->getRootFolder();
```

Code examples

```
// Navigate through the folders
std::vector< libcmis::ObjectPtr > children = root->getChildren( );
for ( vector< libcmis::ObjectPtr >::iterator it = repos.begin( );
        it != repos.end( ); ++it )
{
    ( *it )->getName( );
    ( *it )->getId( );
    if ( ( *it )->getBaseType( ) == "cmis:folder" )
    {
        libcmis::Folder* childFolder =
                dynamic_cast< libcmis::Folder* >( ( *it ).get() );
        childFolder->getChildren( );
        // ...
    }
}
```

Code examples

```
// Check out a document
libcmis::ObjectPtr cmisObj = session->getObject( objectId );
if ( cmisObj->getBaseType( ) == "cmis:document" )
{
    libcmis::Document* doc =
            dynamic_cast< libcmis::Document* >( cmisObj.get() );
    libcmis::DocumentPtr pwc = doc->checkOut( ); // private working
                                                 // copy
    // pwc->cancelCheckout( );

    boost::shared_ptr< istream > in =
            document->getContentStream( /*streamId*/ );
    ofstream out( document->getContentFilename().c_str() );
    out << in->rdbuf();
    out.close();
}
```

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Code examples

```
// Check in modified document
bool major = false;
string comment = "Fix minor spelling issues";
libcmis::PropertyPtrMap newProperties; // populate with any new
                                       // properties
boost::shared_ptr< ostream > stream; // fill it in with the new
                                     // document contents
string contentType = "application/vnd.oasis.opendocument.text";
string filename = "document.odt";

libcmis::ObjectPtr cmisObj = session->getObject( objectId );
libcmis::Document* doc =
        dynamic_cast< libcmis::Document* >( object.get() );
libcmis::DocumentPtr newDoc = doc->checkIn(
        major, comment, properties, stream, contentType, filename );
```

Alternative CMIS libraries

- Apache Chemistry (OpenCMIS) on Java platforms
- NCMIS or VB.CMIS on Microsoft platforms

Connecting to your SharePoint server from LibreOffice

Enable CMIS in your server

- CMIS connector is part of the *SharePoint 2010 Administration Toolkit*
- Includes a *consumer web part* (client) and a *producer* (server)
- Follow documentation instructions to install and configure

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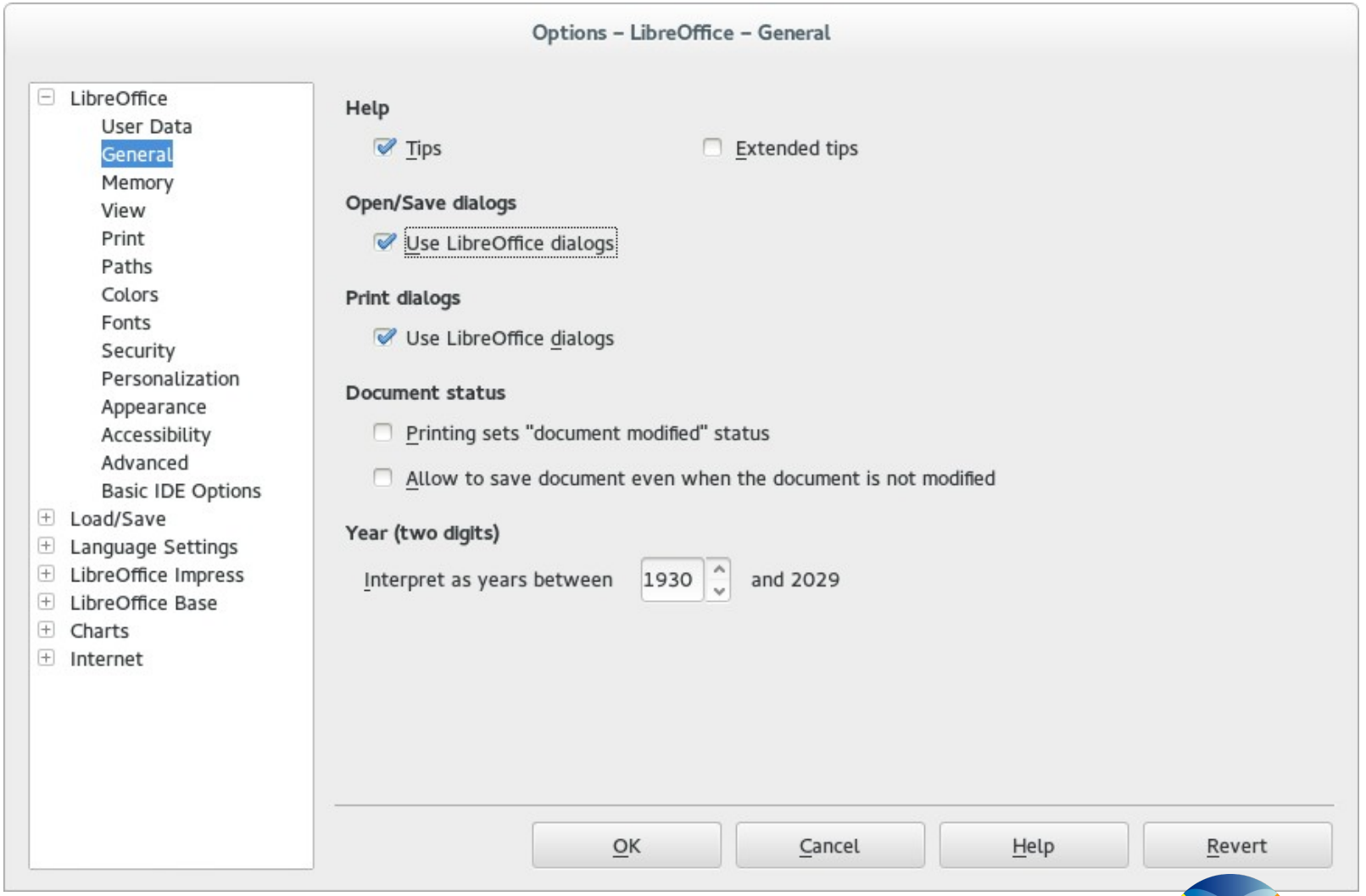
Connect from LibreOffice



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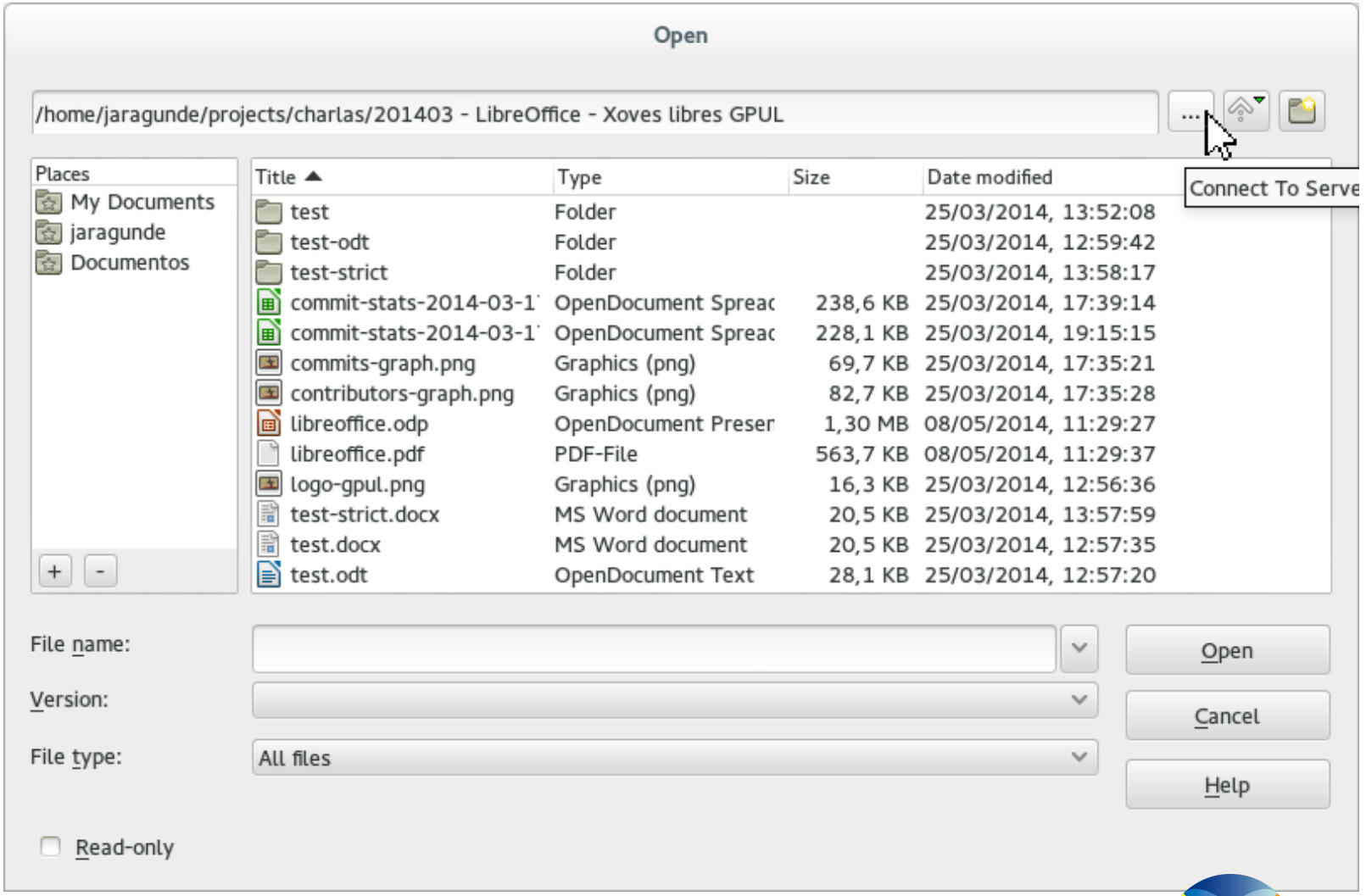
Connect from LibreOffice



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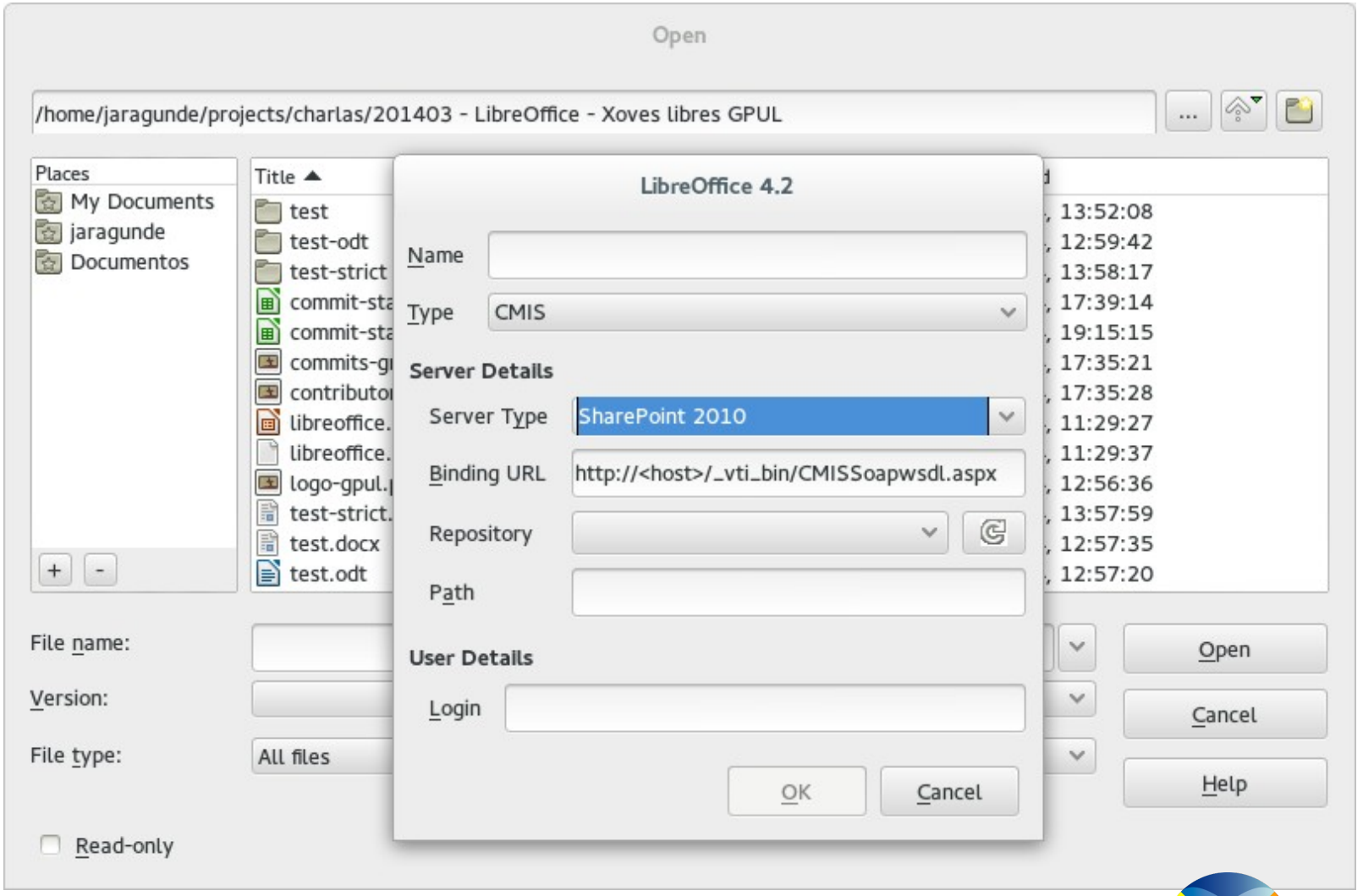
Connect from LibreOffice



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Problems

- Feature not visible to average users
  - Only accessible through LO custom file dialogs
    - May be visible or not depending on default dialog configuration
    - Default configuration in most LO providers hides it!
  - Lack of users means under-average testing and maintenance

The future of CMIS integration in LibreOffice

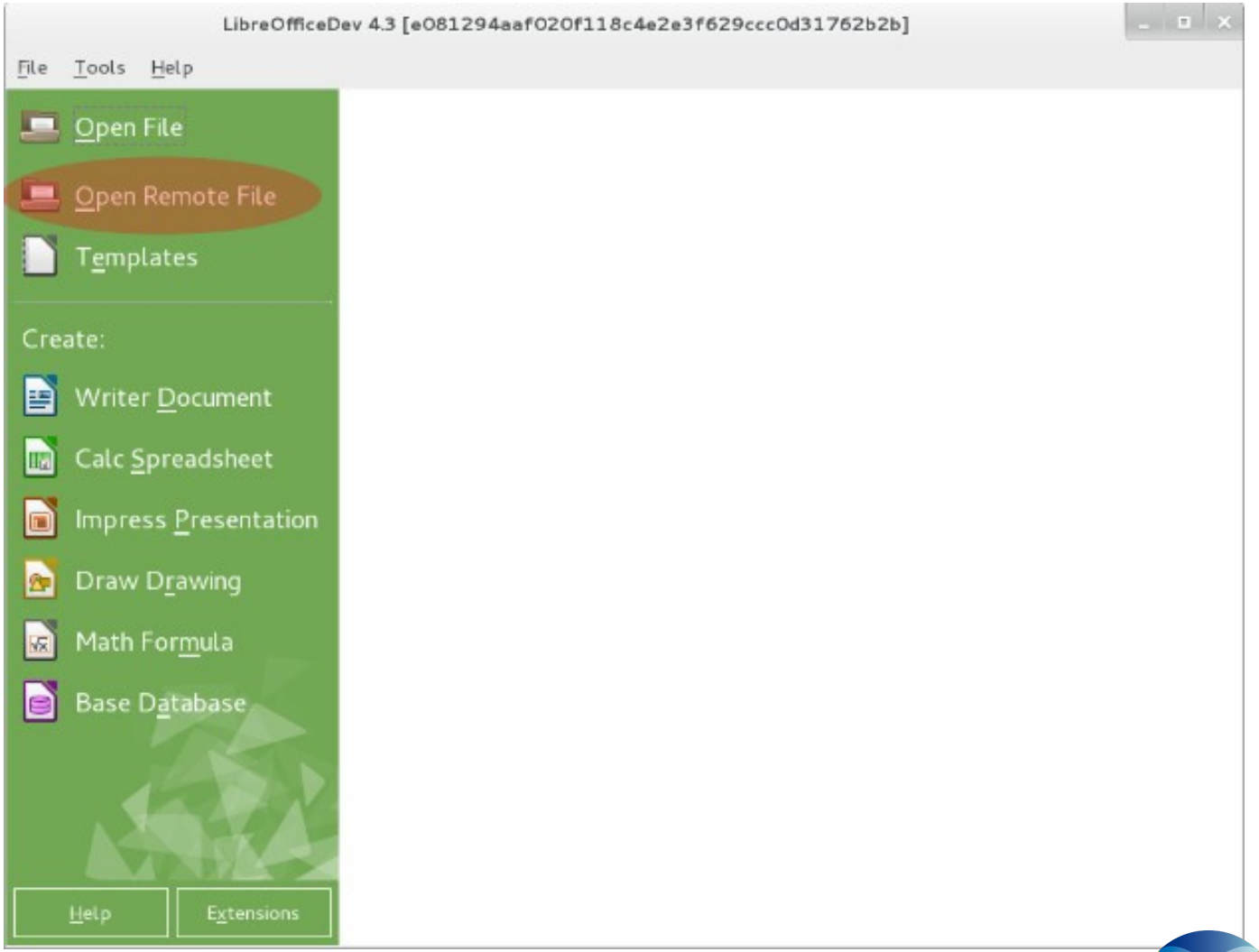
Goals

- Increase visibility of the feature
- Integrate in standard LibreOffice workflow
- Ease access to popular storage services
- Expectation: LibreOffice 5.1 early 2016

Increase visibility

- Specific entry in Start Center
- *Open from remote*, *save to remote* menu options and/or toolbar buttons

Start Center entry



Mockups from LibreOffice Design Session: CMIS improvement - User Prompt GmbH

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Integrate in standard workflow

- *Open from remote*, *save to remote* menu options and/or toolbar buttons
- Specific dialog to open and save from remote locations
  - Not part of the LibreOffice file dialogs any more
  - Make feature independent from dialog configuration

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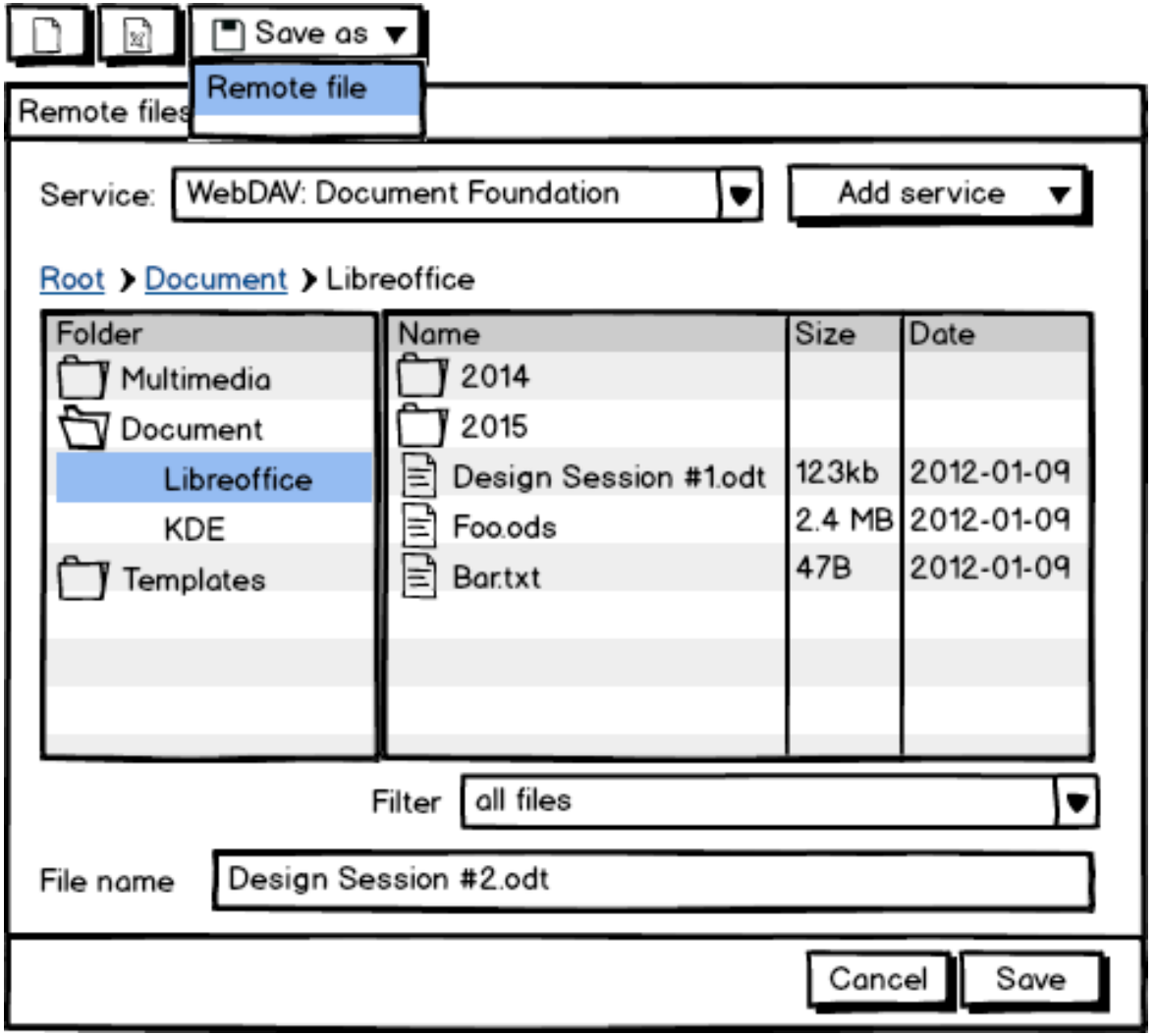
Dialog for remote operations



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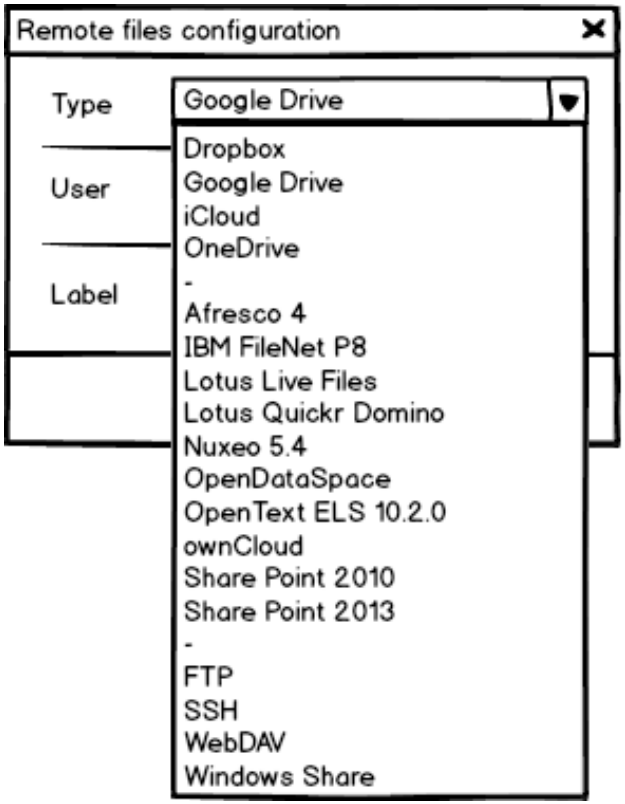
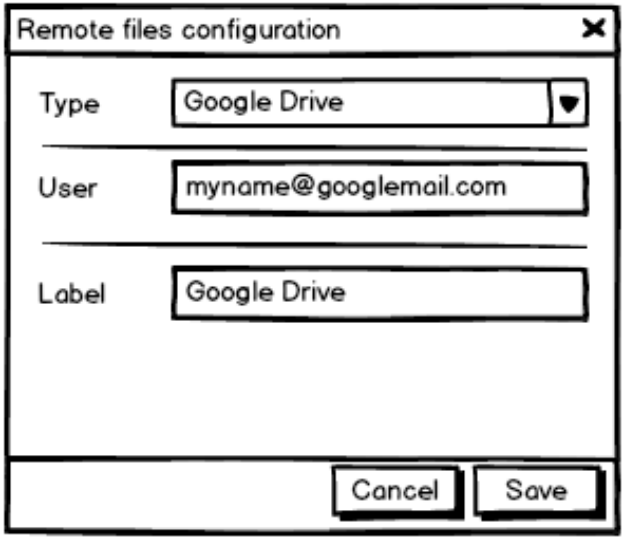
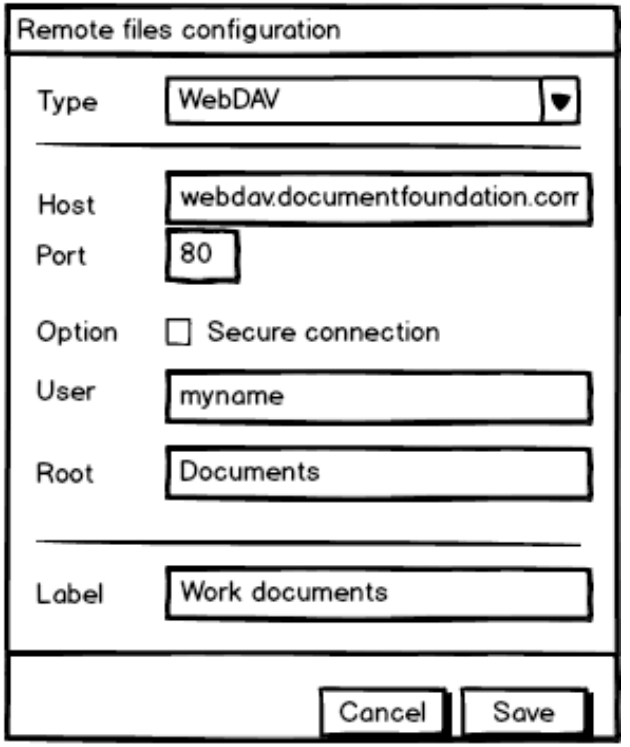
Ease access to popular storage services

- Dialogs to manage different services
  - Entries for most popular services
  - Dialog complexity depending on the service

Dialogs for service configuration







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Summary

- CMIS protocol for interoperability with ECMs like SharePoint
- You can use *libcmis* to develop your own C/C++ client
- LibreOffice can connect to CMIS servers including SharePoint
  - Usability is not great right now
- CMIS support in LibreOffice is being improved as we speak

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Thank you!

References

- CMIS - Wikipedia
- CMIS standard specification - OASIS
- What’s this thing called CMIS? - Jens Hübel
- CMIS connector overview – Microsoft Technet
- LibreOffice Design Session: CMIS improvement - User Prompt GmbH

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