CIB software

LOOK!
IT'S LIBREOFFICE ON KDE PLASMA

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LIBREOFFICE CONFERENCE TIRANA

LOOK WHO'S TALKING

- LibreOffice squirrel @CIB
- GSoC mentor
- Qt widget charmer
- WITch, feminist

„PORTING“ KDE4 VCL PLUGIN TO KF5

1. VCL PLUGIN ARCHITECTURE ON LINUX
2. WHY ~~PORT~~ WRITE FROM SCRATCH?
3. CHALLENGES
4. FILEPICKER
5. NEW STUFF

VCL PLUGIN ARCHITECTURE ON LINUX

VCL ? VCL!

CIB software

- Visual Component Library
- Visual Class Libraries
- Very Complete Library
- Vastly Clueless Library
- Very Confused Library

PLATFORM-DEPENDENT BITS

CIB software

- Widget look‘n‘feel
  - Windows and mac OS X
  - gtk and gtk3
  - generic X11 („Windows 95“)
  - kde4, qt5 and kf5
- Menus
- File/folder picker dialogs
- Printing

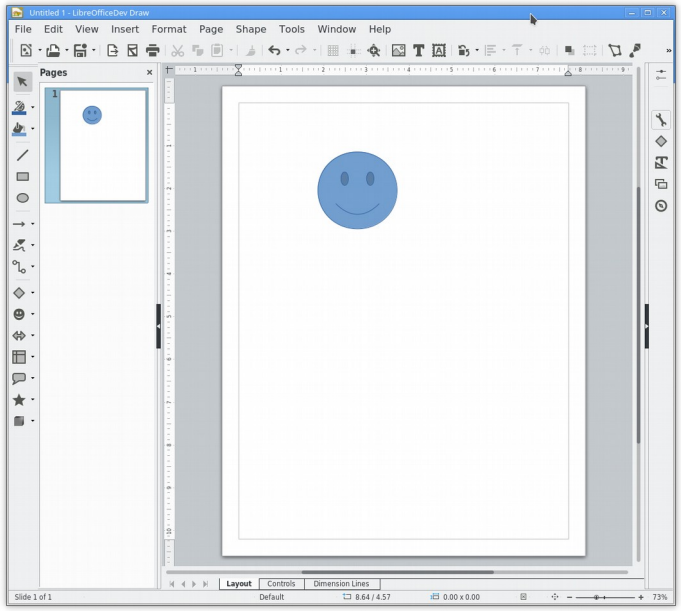
SALINSTANCE, SALFRAMES

CIB software

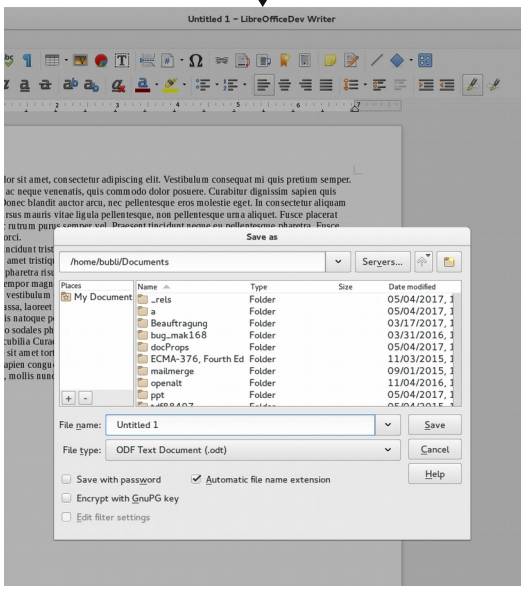
- SalInstance
  - every platform/vcl plugin implements one
  - create and destroy: SalFrames, SalPrinters, SalVirtualDevices
- SalFrame
  - system window (main window, dialog etc.)
  - [undocked] floating window
  - tooltip
  - non-native [context] menu
  - listbox | toolbox dropdown

Sally Instance

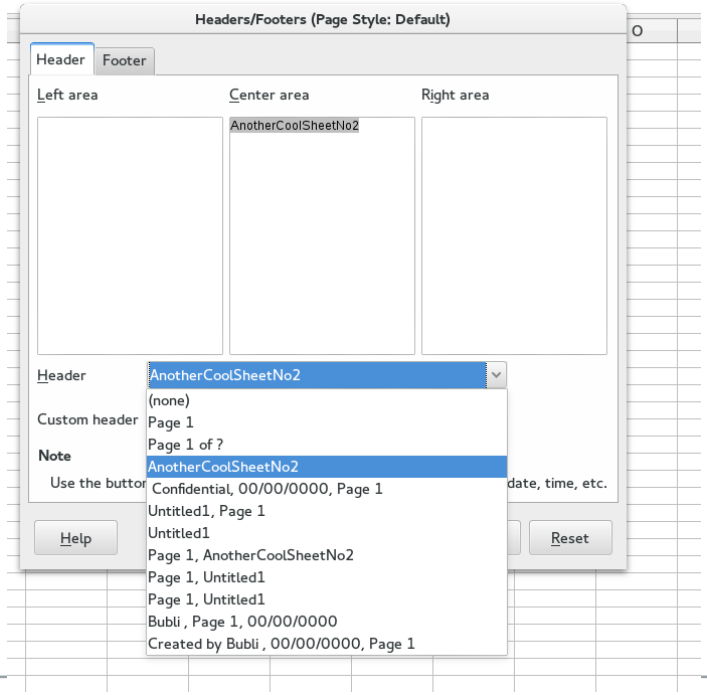
CreateFrame
(main window)



CreateFilePicker



CreateFrame
(dialog, dropdown)

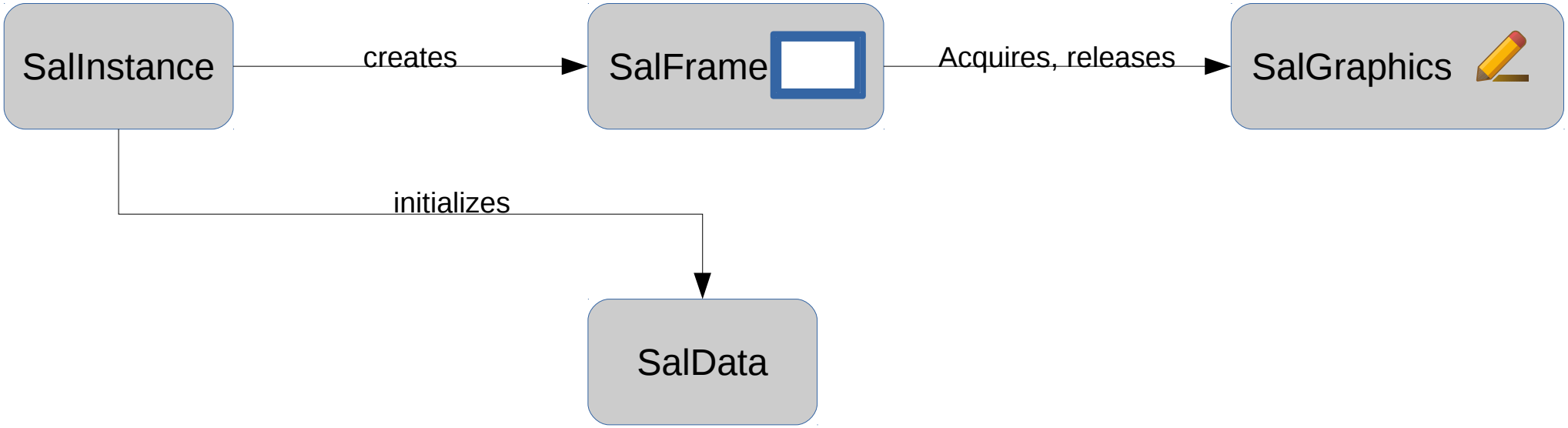


SALFRAME, SALGRAPHICS

CIB software

- SalFrame
  - every platform/vcl plugin implements one
  - Acquire/ReleaseGraphics returns SalGraphics
- SalGraphics
  - enables drawing to SalFrame
  - APIs such as drawRect, drawLine
  - drawNativeControl (draws widgets!)

IN A NUTSHELL



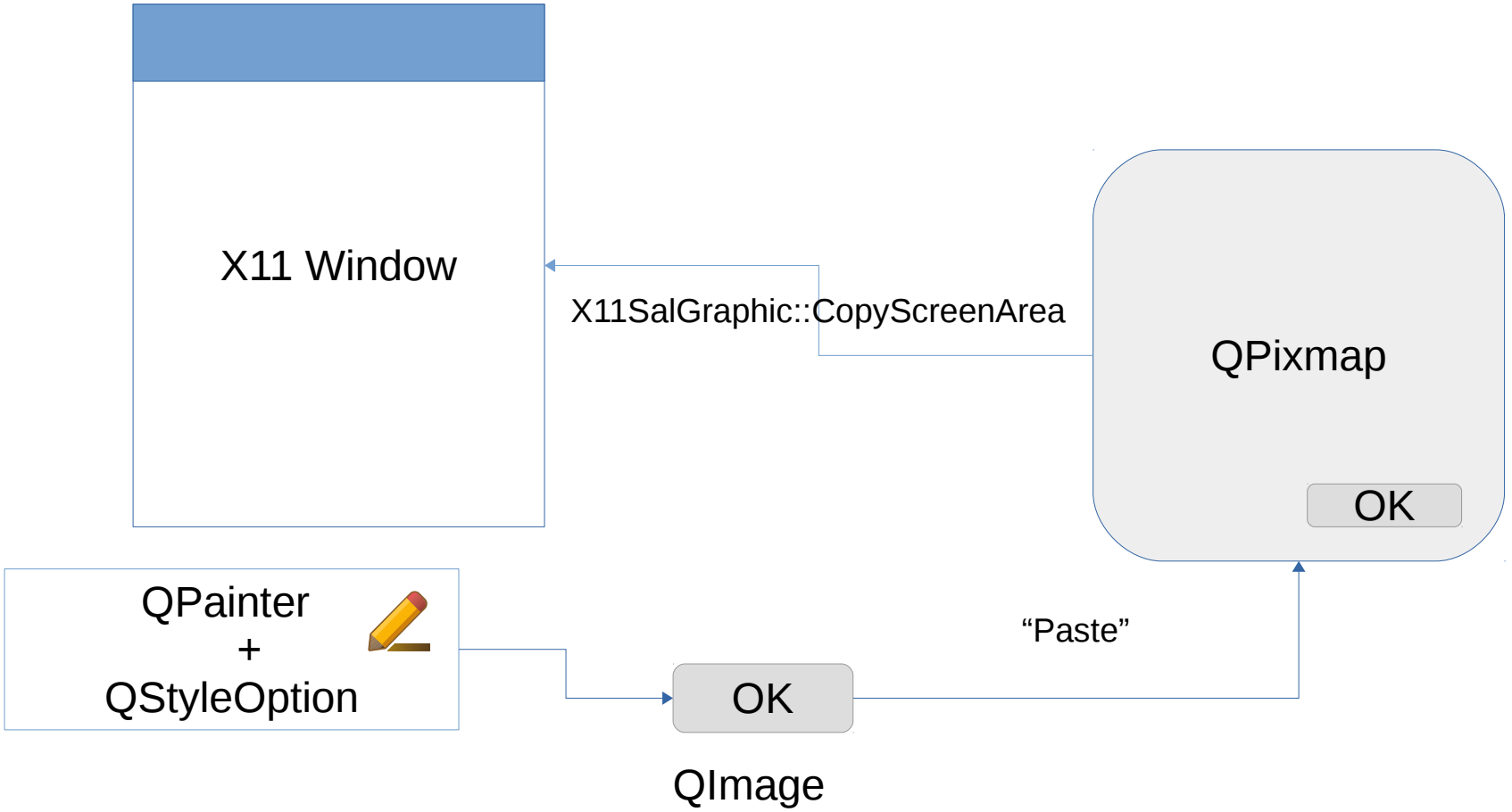
WHY ~~PORT~~ WRITE FROM SCRATCH?

KDE4 VCL PLUGIN HAS AGED

CIB software

- KDE4 becoming legacy on most Linux distributions
- Thin layer around X11/XLib VCL plugin
- Only emulates KDE look'n'feel
  - no native widgets, QPainter with QStyle* to render widgets
  - combined into QPixmap
  - copied directly into X11 window (X11SalGraphics::CopyScreenArea)
  - slow painting, no image caching

„NATIVE“ LOOK‘N‘FEEL WITH X11



KDE4 VCL PLUGIN HAS AGED EVEN MORE

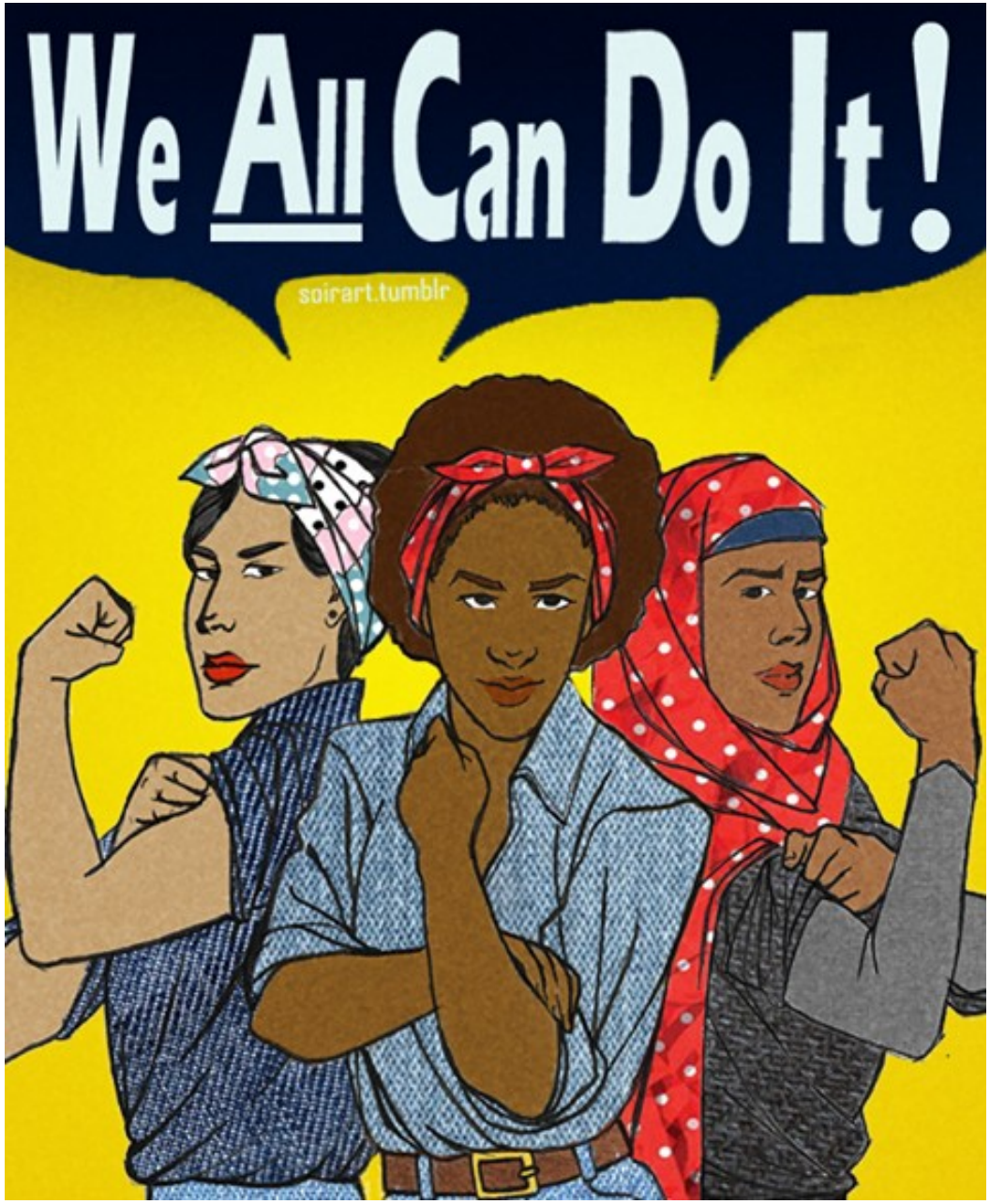
CIB software

- XLib way of processing the events (QApplication::x11ProcessEvent)
- No modal native dialogs
  - as LibO Widgets are not wrapped in QWidgets
- No Wayland support

DIRECT PORT TO KF5 NOT POSSIBLE

CIB software

- No way to access internal X11 pixmap anymore
- Similarly, no more X11 event filtering and processing


We All Can Do It!
soirart.tumblr

CHALLENGES

CHALLENGE: X11-LESS WINDOWS

CIB software

- Replace X11 windows with native QWindows, QWidgets
  - 1 SalFrame ⟺ 1 QWidget (QMainWindow respectively)
- Side effect: natively modal dialogs now possible
  - pop-up dialogs centered over its parent, grey background overlay
  - Qt API: setModality, setTransientParent

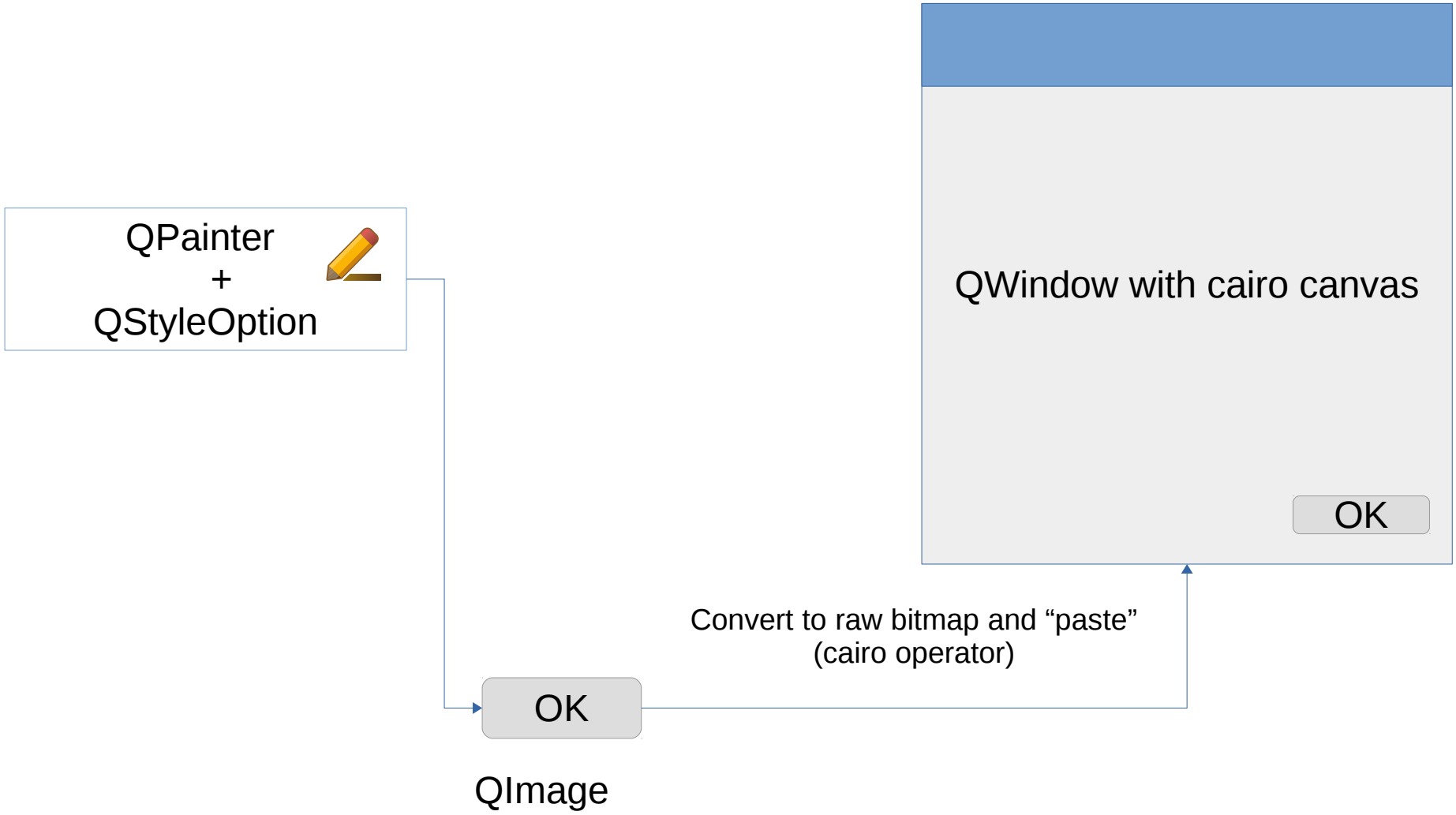
CHALLENGE: X11-LESS PAINTING

CIB software

- Variant 1 (plain Qt5): clean-room implementation of QPainter-based SalGraphics
  - 2nd rendering path on Linux (aside headless)
- Variant 2 (KF5): integrate with headless SalGraphic
  - custom QWidget with cairo canvas inside
  - QPainter (+QStyle[Option]) to paint widget bitmaps and yield QImage
  - Raw bitmap extracted from Qimage and „pasted“ to cairo canvas (BitBLT of a kind)

X11-LESS PAINTING

CIB software



CHALLENGE: X11-LESS PROCESSING OF EVENTS

CIB software

- SalFrames are now QWidgets
- Side effect: they receive Qt events
- So we can map them to SalEvents (in re-implemented event handlers)
- Additional QAbstractEventDispatcher for non-user driven events

FILEPICKER

HOW IT WORKS

- „Agnostic“ C++ core code (e.g. print to file)
  - „Open a file dialog“ (letting user to pick file to print to)
- SalInstance (UI manager)
  - „Okay, opening a file dialog“
  - ::CreateFilePicker, ::CreateFolderPicker respectively
- KDE5FilePicker
  - „I’m implementing XFilePicker interface and providing the necessary functions“

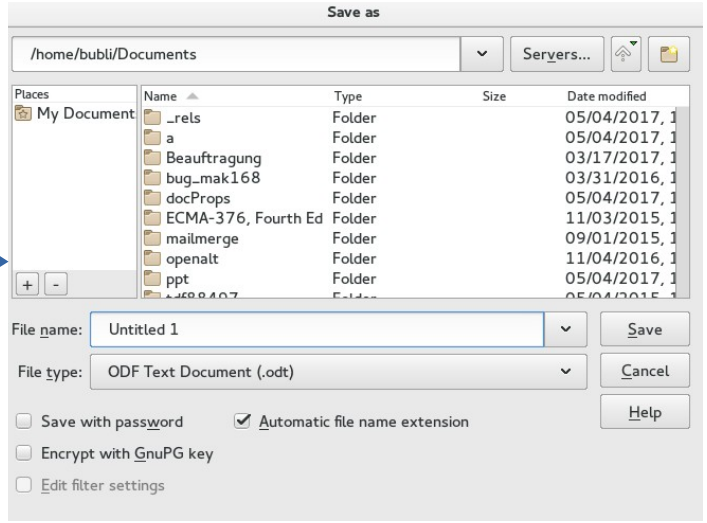
HOW IT WORKS II

I implement XFilePicker
and
XFolderPicker interfaces

Print to file:
Open a file picker

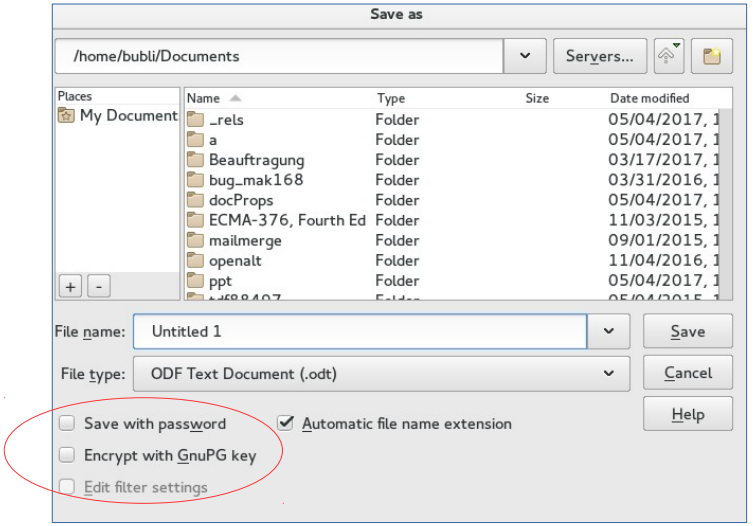
Joe KF5 Picker

Sally Instance



WHY SO COMPLICATED?

- Why do we need all those interfaces?
  - get/setDisplayDirectory
  - get/setCurrentFilter
  - enableControl
  - get/setLabel etc.
- Because of custom LibO functionality
  - encrypt with password/GPG key
  - edit filter settings
  - enable/disable custom controls as needed



(SMALLER) CHALLENGE: MIGRATE GTK3_KDE5 FPICKER TO PLAIN KF5

CIB software

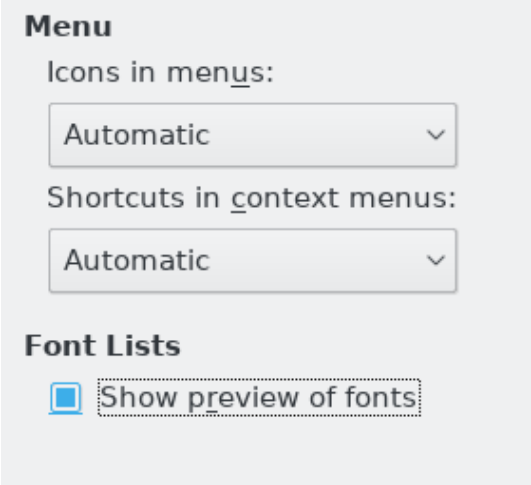
- Original work by Milian Wolff (KDAB)
- Ships with LibreOffice 6.1
- Gtk3 UI + Plasma filepicker as a separate binary
- Communicating over stdin/stdout
- Most of XFilePicker interface funcs implemented
- Kill I/O with fire and open KFileDialog directly

NEW STUFF

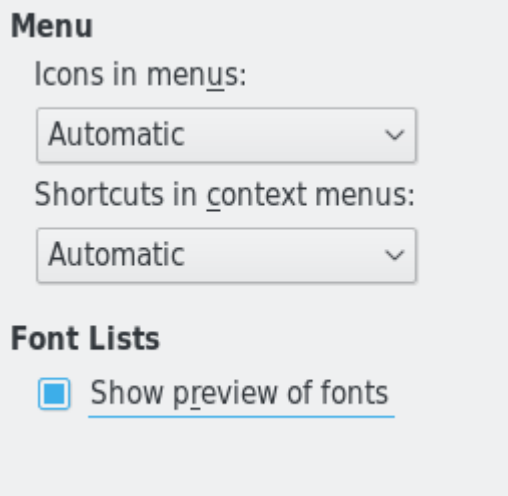
NATIVE FOCUS RECTANGLES FOR [RADIO]BUTTONS AND CHECKBOXES

CIB software

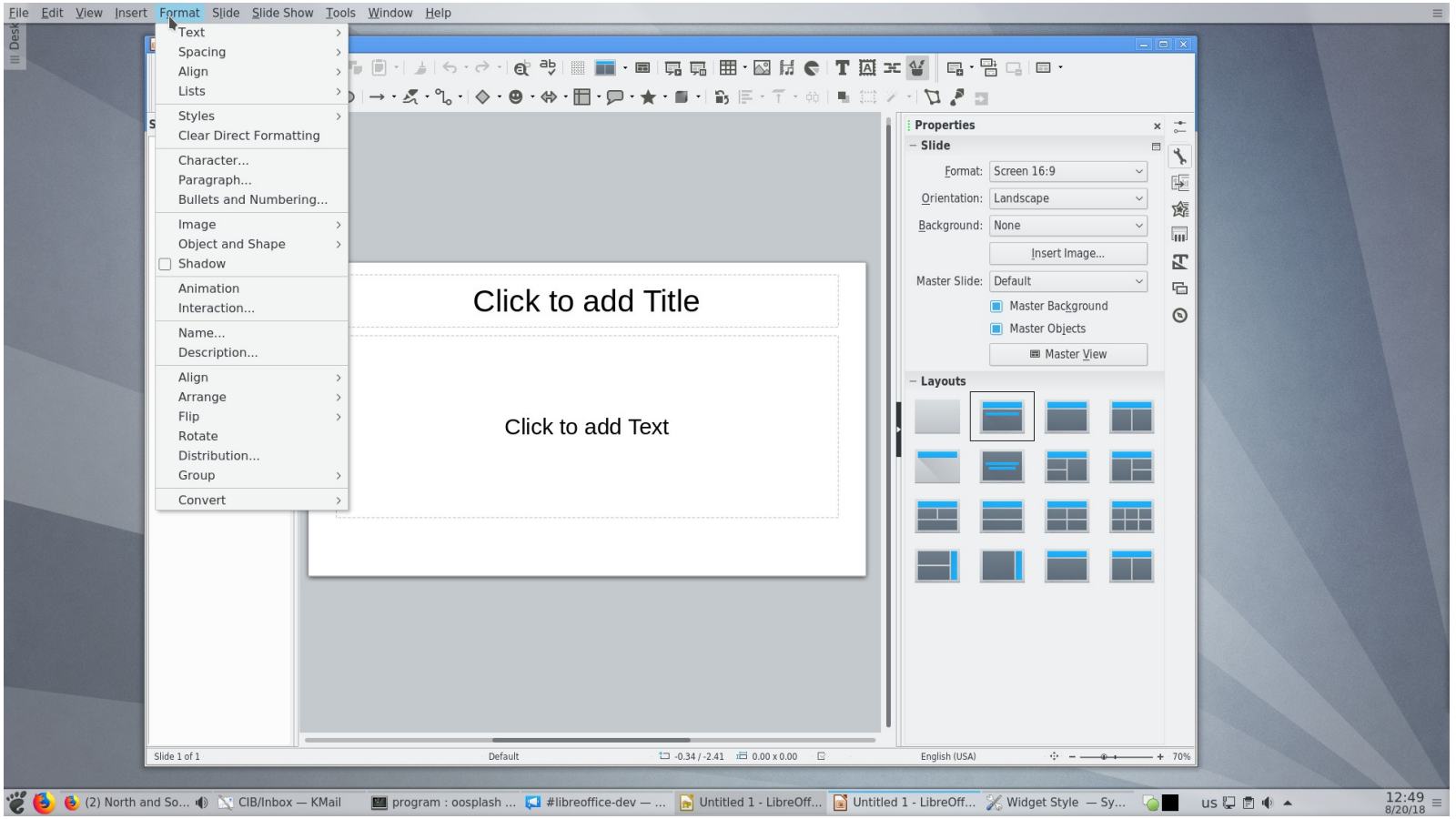
Before:



After:

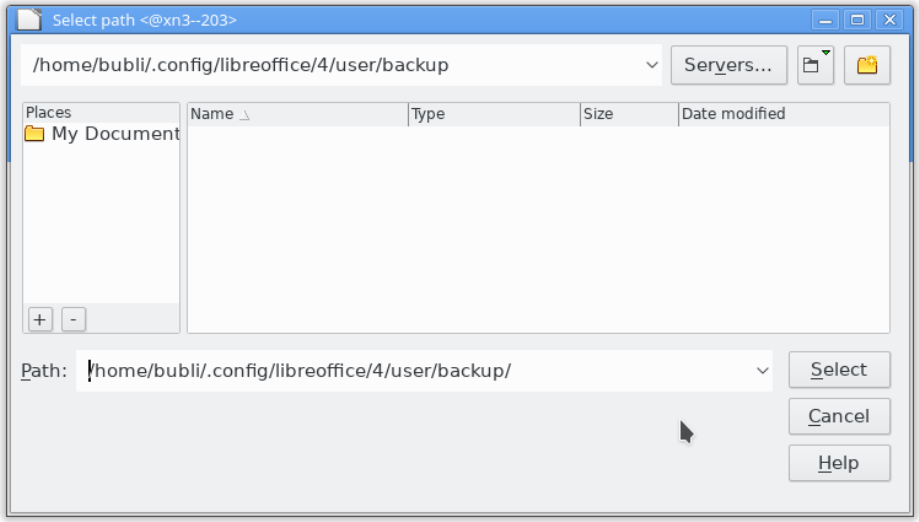


NATIVE MENUS
(INCL. GLOBAL MENU SUPPORT)

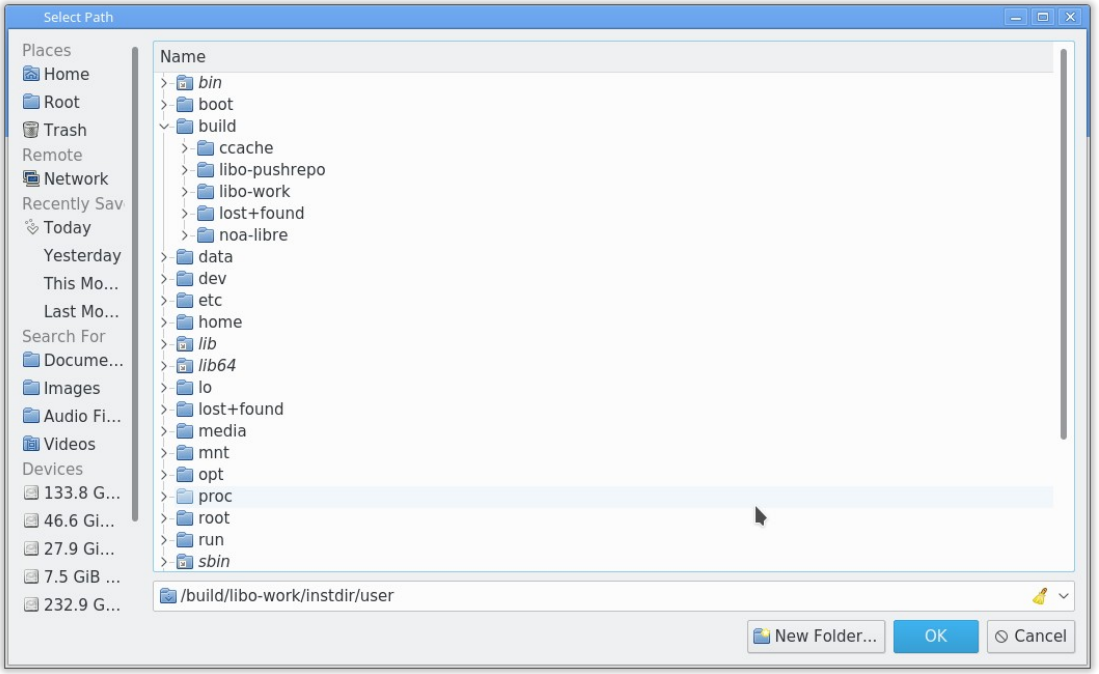


REAL FOLDER PICKER

Before:



After:



THE CODE

- In LibreOffice master
- Build with –enable-qt5 and –enable-kde5
- Not yet enabled for daily builds – needs baseline upgrade
- (tentatively) shipped with LibreOffice 6.2
  - First beta in November 2018
  - Released in February 2019

ANY QUESTIONS, COMMENTS, PRAISE, CRITICISM, OFFERS (OF BEER)?

THANK YOU!