

BOF Session

New Toolkit/Canvas
for
OpenOffice.org

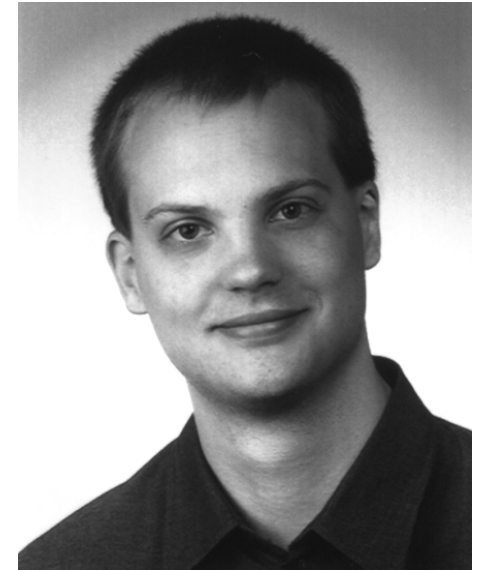
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- Motivation
 - Why a new toolkit?
 - Why a new canvas?
- Requirements
 - For the toolkit
 - For the canvas
- What's already there (and can be reused)?
 - Inside OpenOffice.org
 - Outside (other open source projects)
- Migration paths
- Wrap-up/conclusions

About the speaker

Thorsten Behrens is a software engineer at Sun Microsystems.

He is working full-time on the Star|OpenOffice project, mostly in the gsl and graphics modules.



We (OOo) need a new toolkit, because

- System integration is lacking
 - Look&Feel is old-fashioned and hard-coded
 - Accessibility must be mapped to all platform APIs
 - VCL was designed as “everything in one native frame”
- Maintaining and extending UI code is hard
 - No auto-layouting
 - Unflexible resource format
 - Tight coupling and heavy build dependencies

We need a new canvas, because

- Core functionality is missing
 - Anti-aliasing
 - Transformations
 - Color management

- For a new toolkit
 - Platform-native look&feel
 - Auto-laying out
 - Better threadability
 - Clear separation of concerns
 - UNO API
 - **Unify code**
- For a new canvas
 - Affine transformations
 - Ubiquitous curves
 - Color management
 - Alpha compositing
 - UNO API
 - **Unify code**
 - **Complex/BiDi text layouting**

What's already there?

- Inside OpenOffice.org
 - Well-tested system abstraction layer
 - Code snippets and algorithms spread across various projects
 - UNO environment, existing APIs
- Outside (in other open source projects)
 - Toolkits
 - Canvases
 - Algorithms and data structures
 - **If taken from the outside: must be**
 - **Actively developed**
 - **cross-platform/multi-platform**
 - **Licensing must be compatible with LGPL/SSSL**

- Toolkits available
 - FLTK
 - Fresco
 - Rebol
 - Wasabi
 - Fitz
 - AeKit
 - Fox
 - VCF
 - SWT
 - Swing
 - WxWindows
 - XUL
 - Cocoa (MacOS X)
 - Windows controls (MS)

- Canvases available
 - imlib/**evas**
 - GGI
 - SDL
 - Antigrain geometry
 - Chaco
 - Charcoal
 - Libart
 - Java2D/3D
 - **GDI/GDI+**
 - **Carbon/Quartz (MacOS X)**

- **Native platform GUI toolkit**
 - Toolkit recommended by the platform vendor for GUI applications
- **Multi-platform GUI toolkit**
 - GUI toolkit attempts to build on the higher-level widgets/controls of the platform toolkit (StarView, AWT)
- **Cross-platform GUI toolkit**
 - Toolkit that is built on the lowest-level graphical capabilities of the platform (VCL, Swing, Qt, etc.)
- **Platform-aware GUI toolkit**
- **Cross-platform GUI toolkit that uses platform-sensitive themes**

Preferred: multi-platform or cross-platform + themes + platform-awareness

• Multi-platform

- Platform look & feel by creating system widgets (++)
- All dialogs must be newly implemented (--)
- Order of event notification might differ on different platforms (-)
- Toolkit accessibility is for free (++)
- The document accessibility has to be provided, which might pose some interfacing problems when switching between the two worlds (--)

• Cross-platform

- We already have that with VCL, no application code changes (++)
- Same order of event notification on all platforms, same application behavior on all platforms (+)
- Removal/refactoring of VCL not required -> will probably not happen, then (--)
- Lots of work to implement look&feel for all platforms and flavours (--)
- Changes to platform widgets (new OS version, window manager or special tools like Windows Blinds) can not be used automatically (--)

1. Use something in existence

- Java2D/3D

2. Implement from scratch

3. Reuse implementations from other projects

- libart
- XRender
- Imlib
- Antigrain

4. Adoption/cooperation with other projects

- Little by little 1
 1. New toolkit/canvas
 2. Reimplement dialogs
 3. Reimplement remaining UI (menus, toolbars, etc.)
- Little by little 2
 1. New toolkit/canvas
 2. New application code uses new Toolkit/Canvas
 3. Old code gets phased out gradually
- All in one big effort

- What can we agree upon?
- What's still open?
- What's next?
 - Evaluate toolkits in detail
 - Contact people for collaboration
 - Have one or the other prototype, to actually try things out.

- OpenOffice.org <http://www.openoffice.org>
- Projects <http://gsl.openoffice.org>
<http://graphics.openoffice.org>
- Further info <http://graphics.openoffice.org/pgra/links.html>