

# DeforaOS & pkgsrc



pkgsrcCon 2013  
Berlin, Germany

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Saturday, March 23<sup>rd</sup> 2013



# Summary

- 1.Introduction
- 2.Probably talk about DeforaOS
- 3.Probably also talk about pkgsrc
- 4.With luck share a personal problem or two
- 5.Picture of a cat
- 6.Conclusion
- 7.Cake, ice cream, whatever is there to be eaten



# Introduction

- Where babbling about oneself is done
- Freelance IT-Security Consultant
- Based in Berlin, Germany
- Thinks he's funny
- Likes to work on NetBSD and pkgsrc between a silly pun and the next one
- Can be serious too



# About DeforaOS (1/2)

Open Source project since 2005

Born from my frustration with the existing stuff:

- I just wanted to synchronize IRC chat logs between my two computers!
- Rinse, repeat, apply (RSS, bookmarks, playlists, SCM, documents... possibly running programs)

Really:

- Ubiquitous computing
- Seamless networking



# About DeforaOS (2/2)

Three parts:

## **Self-hosted capability**

kernel, libc, assembler, compiler...

## **Distributed framework**

RPC, interfaces, services...



## **Desktop environment**

desktop, embedded devices...

Portable, also meant to run on today's systems

Not fully implemented...



# About pkgsrc

- No need to tell you much here
- So I'll just skip to the next slide



# What's relevant in pkgsrc

audio/deforaos-mixer

comms/deforaos-phone

databases/deforaos-libdatabase

devel/deforaos-coder

devel/deforaos-libsystem

editors/deforaos-editor

graphics/deforaos-camera

mail/deforaos-mailer

meta-pkgs/deforaos-desktop

multimedia/deforaos-player

print/deforaos-pdfviewer

sysutils/deforaos-browser

sysutils/deforaos-terminal

time/deforaos-todo

www/deforaos-surfer

x11/deforaos-keyboard

x11/deforaos-libdesktop

x11/deforaos-locker

x11/deforaos-panel

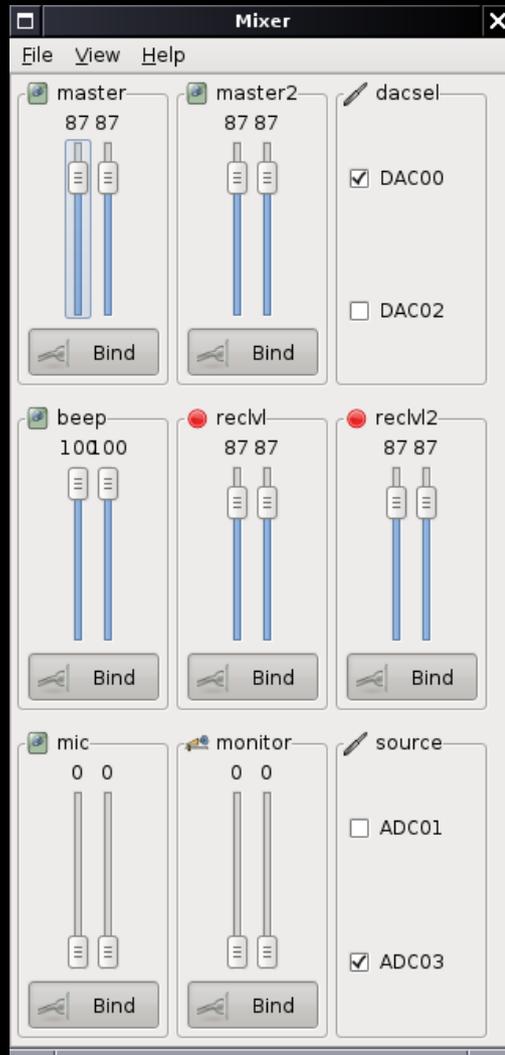


# What works

- The desktop environment, featuring:
  - Meta-package
  - A lot of the functionality expected already there
  - A special mode for embedded devices (as a compile-time option)
- A couple development tools:
  - Embedded development simulator (needs Xephyr from wip though)
  - SQL console
- So, in no particular order...

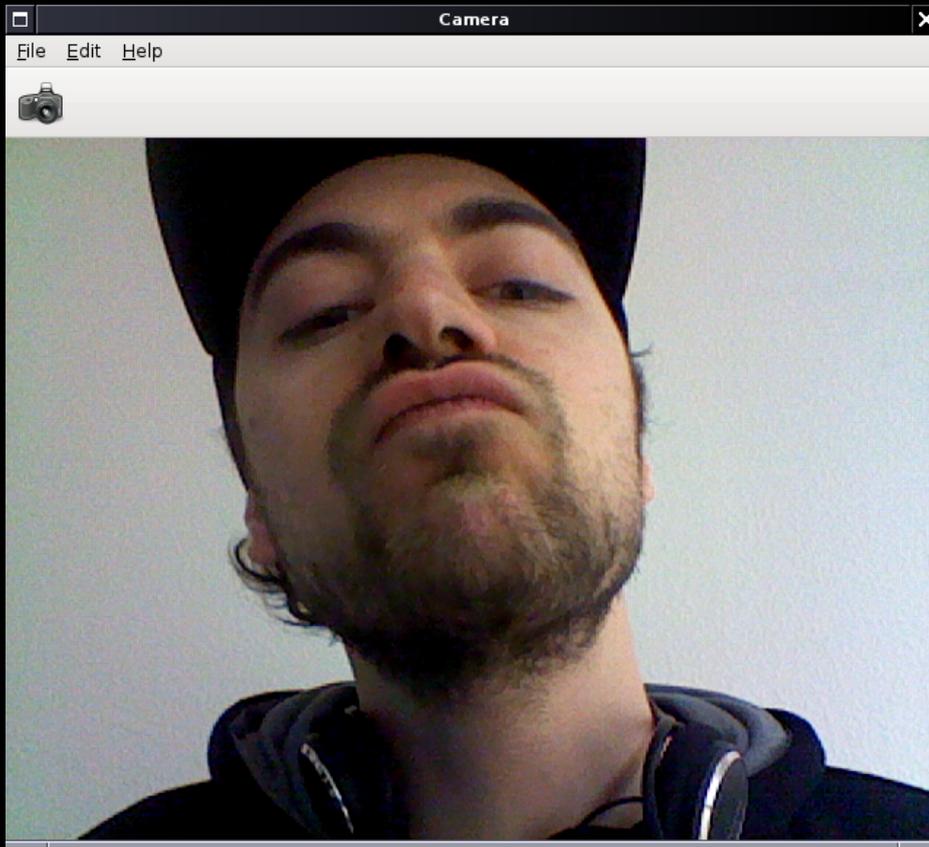


# The desktop: volume mixer



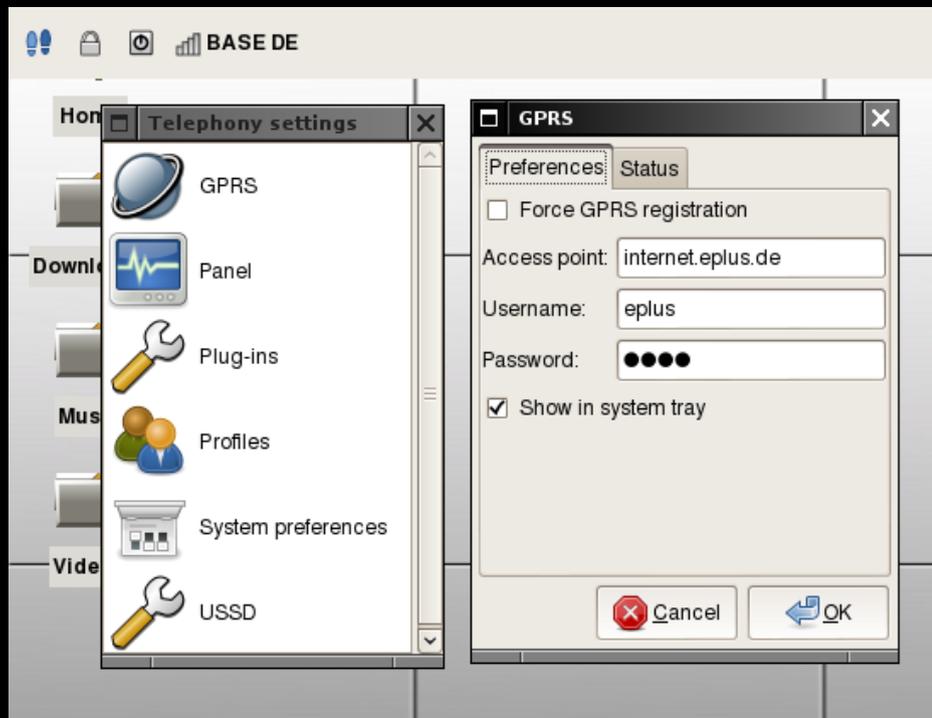
- audio/deforaos-mixer
- This is the vertical mode
- Has tabbed and horizontal modes too
- Defaults to OSS on other platforms

# The desktop: video camera



- graphics/deforaos-camera
- Can take pictures
- Meant to be used as a camera application on a phone
- Yes I have a boring office wall on this side
- I don't care, I don't see it when I work

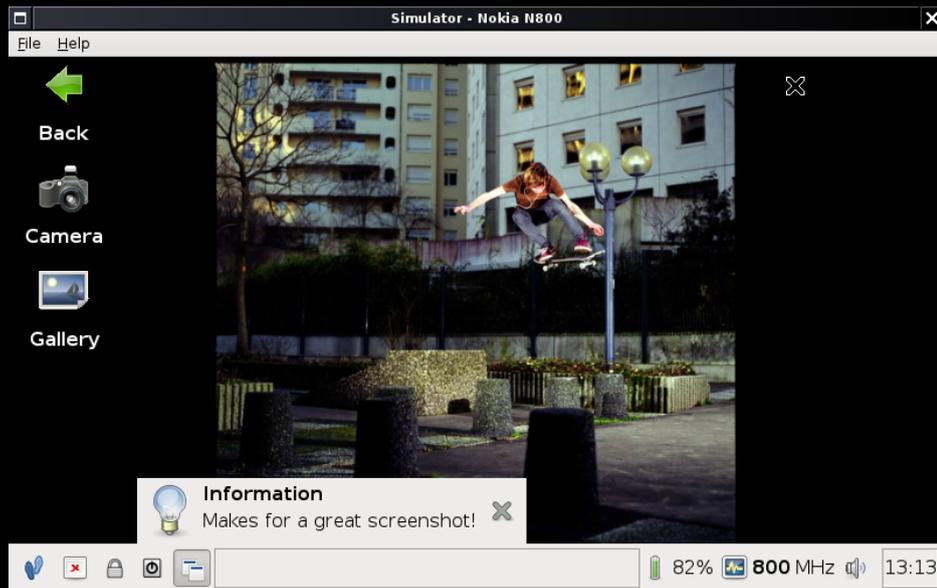
# The desktop: UMTS modems



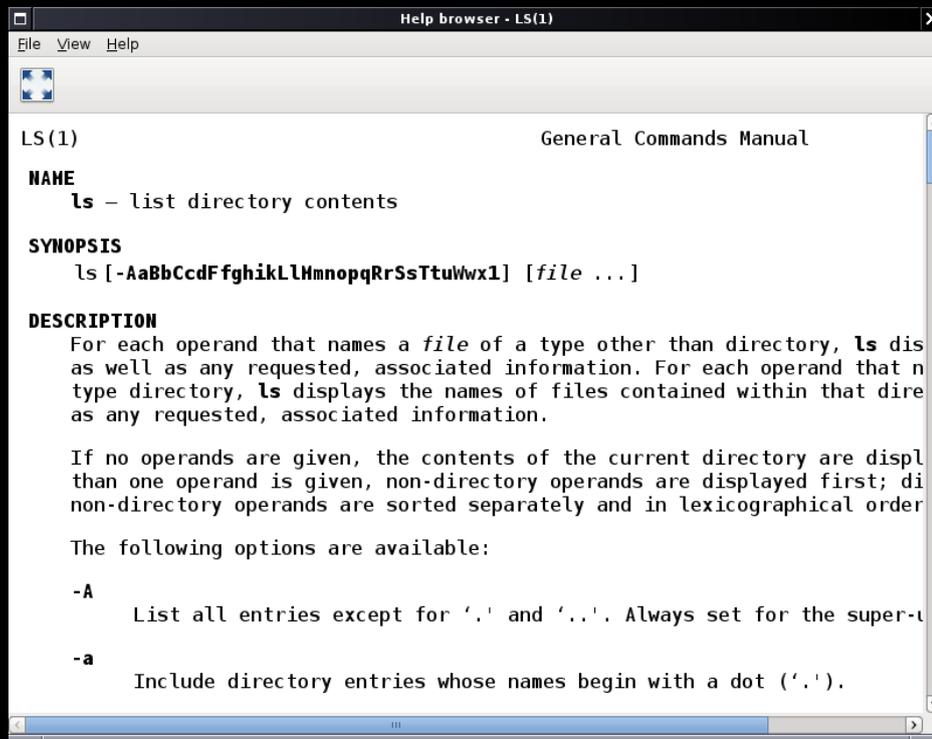
- comms/deforaos-phone
- Interfaces with pppd
- Works unprivileged
- No need for chat
- Full telephony on the Openmoko Freerunner
- Beginning of VoIP support

# The desktop: panel

- x11/deforaos-panel
- Lots of applets available
- Some XDG support
- Integrates a virtual keyboard



# The desktop: online help



The screenshot shows a window titled "Help browser - LS(1)". The window contains the following text:

```
LS(1)                                General Commands Manual

NAME
  ls - list directory contents

SYNOPSIS
  ls [-AaBbCcDfghikLLHmnoPqRrSsTtuWwx1] [file ...]

DESCRIPTION
  For each operand that names a file of a type other than directory, ls displays
  as well as any requested, associated information. For each operand that names
  a type directory, ls displays the names of files contained within that
  directory, as any requested, associated information.

  If no operands are given, the contents of the current directory are displayed.
  If more than one operand is given, non-directory operands are displayed first;
  then directory operands are displayed, sorted separately and in lexicographical
  order.

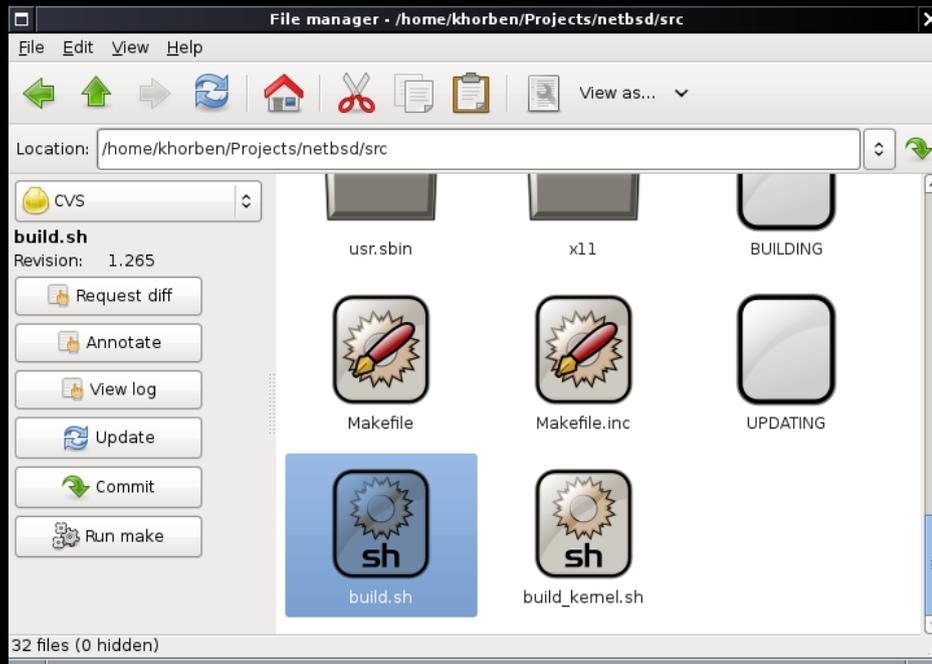
  The following options are available:

  -A      List all entries except for '.' and '..'. Always set for the super-user.
  -a      Include directory entries whose names begin with a dot ('.').
```

- [www/deforaos-surfer](http://www.deforaos-surfer)
- Also meant to read NetBSD manuals (as HTML) and more
- I need help myself
- Not implemented yet



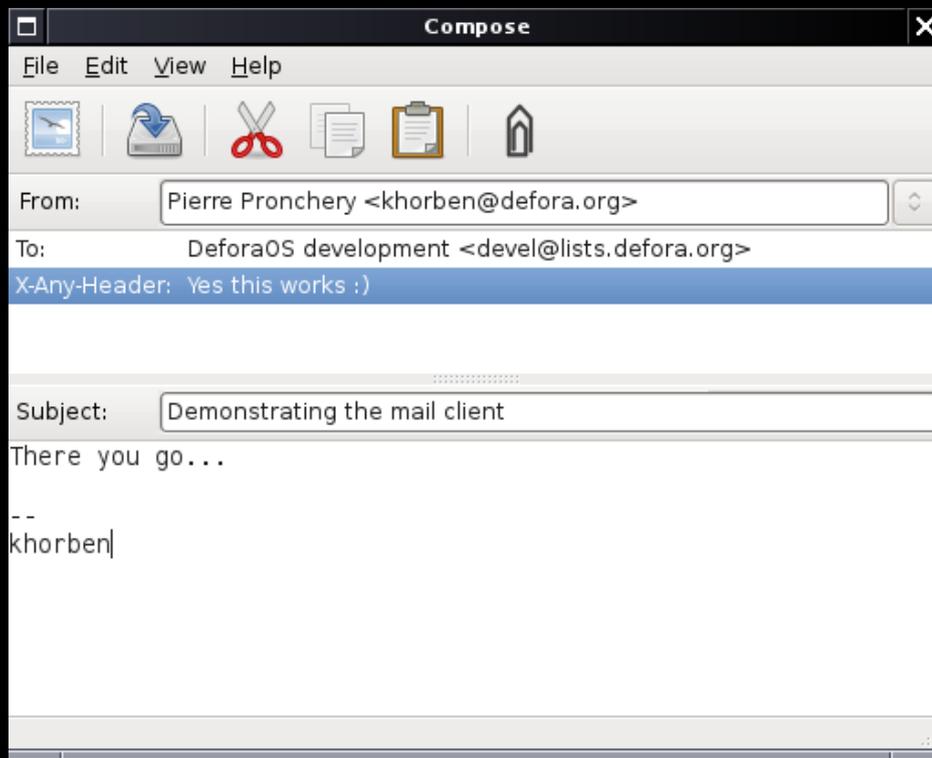
# The desktop: kick-ass file manager



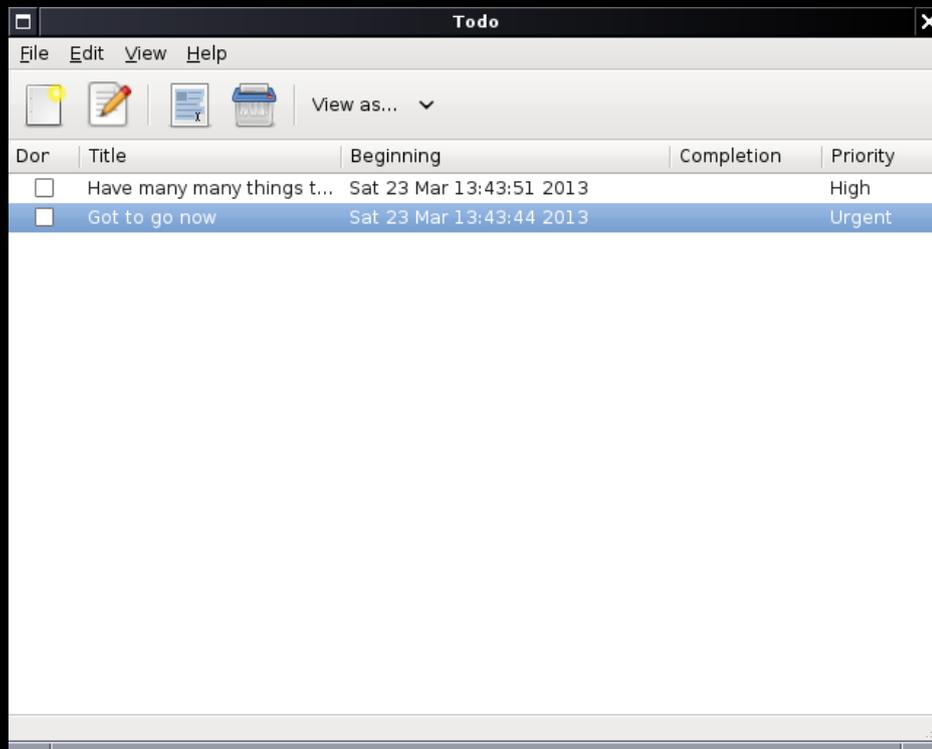
- sysutils/deforaos-browser
- Plug-in system:
  - CVS, Subversion, Git
  - Gtk+ favorites
  - Makes coffee
  - Saves the world from white sharks
  - My only finished project to date
  - (not all of this is true)

# The desktop: mail client

- mail/deforaos-mailer
- Read-only access to mbox, POP3 and IMAP4 mailboxes
- A couple plug-ins



# The desktop: PIM applications

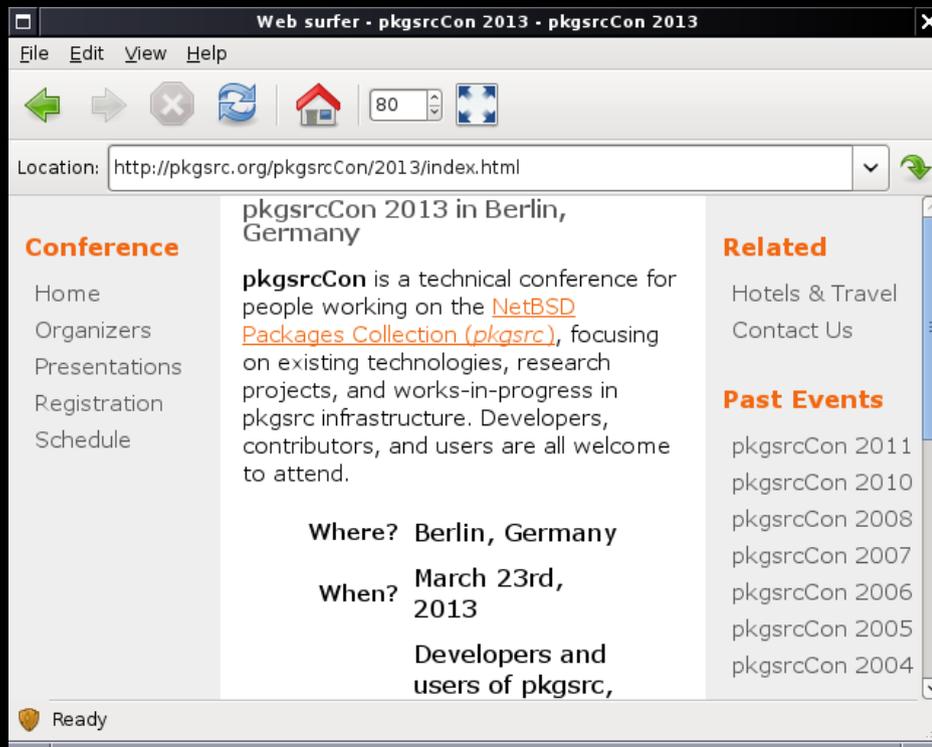


- time/deforaos-todo
- A Todo list (and a calendar once packaged)
- Available as plug-ins for the mail client

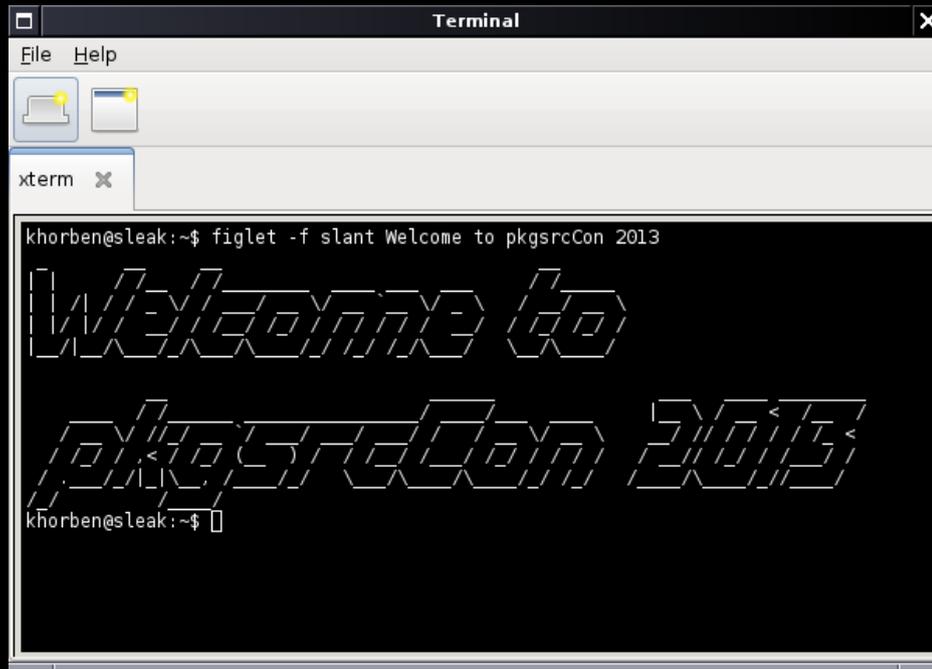


# The desktop: web browser

- Supports multiple HTML rendering engines: WebKit, Gecko, libgtkhtml2, home-grown text-only...



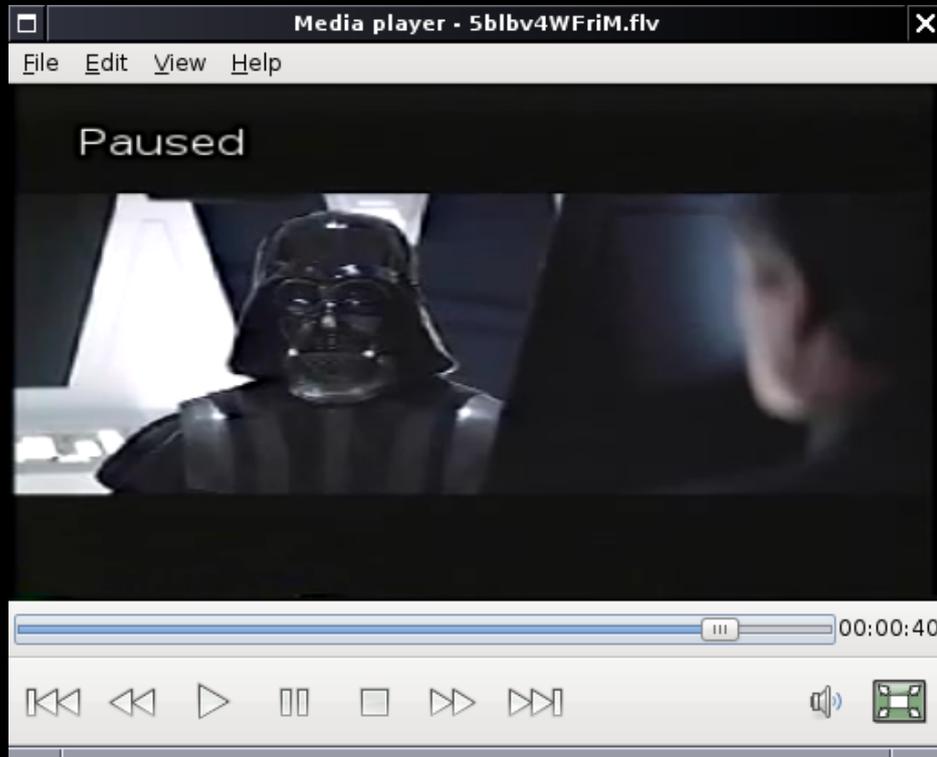
# The desktop: terminal emulator



- sysutils/deforaos-terminal
- Really embeds xterm
- Supports multiple tabs
- Very young code



# The desktop: media player



- multimedia/deforaos-player
- Really embeds mplayer (rather painful unfortunately)
- Slowly getting it to be actually usable



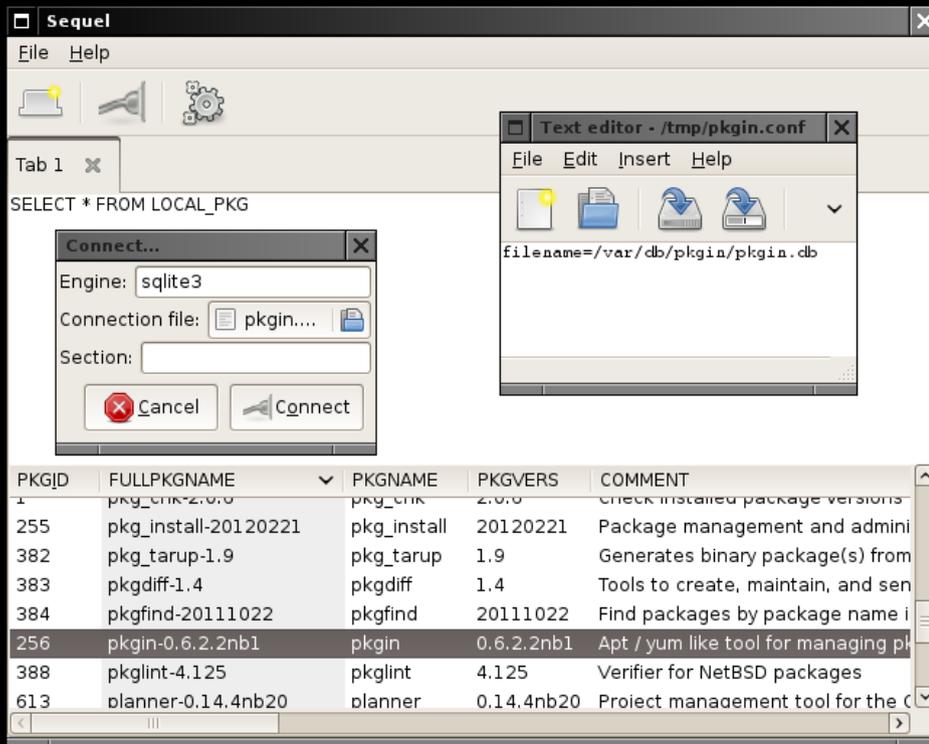
# Development tool: simulator

- devel/deforaos-coder
- Simulates the display of embedded devices, here the Nokia N800 tablet (much like wip/xoo does)



# Development tool: SQL console

- devel/deforaos-coder
- Connects to a SQL database (SQLite 2 & 3, PostgreSQL are supported)



# Embedded mode

- It is exactly the same code for the logic
- Slight modifications of the user interface:
  - No more menu bar
  - Missing functionality added to the toolbar
  - Missing keyboard shortcuts handled explicitly
- Otherwise some default values may change
- Compile-time option: `CPPFLAGS=-DEMBEDDED`
- In `pkgsrc`, the “embedded” option
- Meant to be used on touchscreens

# My personal problem (1/2)

- I have big fingers
- I will spare you the second one

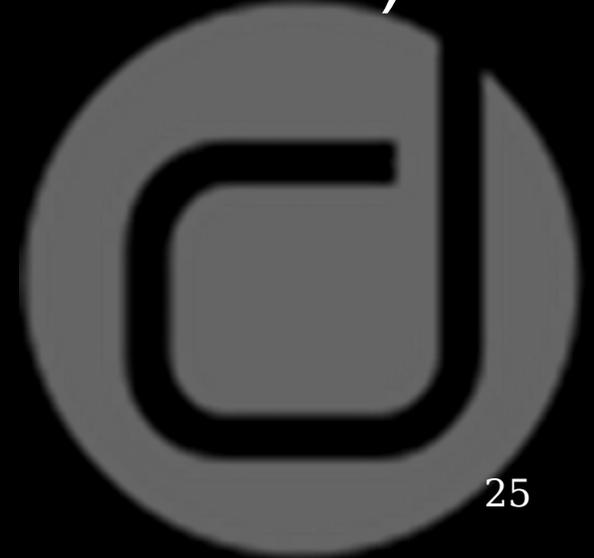


# What doesn't work

- Building on Linux, MacOS X, probably more:
  - The Makefiles are meant to be very portable
  - They are automatically generated through the “configure” tool
  - Unfortunately some differences cannot be fully helped through Makefiles (libossaudio, libdl...)
  - Some packages need either re-running configure, or special handling code depending on the target platform
- The window manager is not nearly good enough (wip/deforaos-framer)

# What's coming

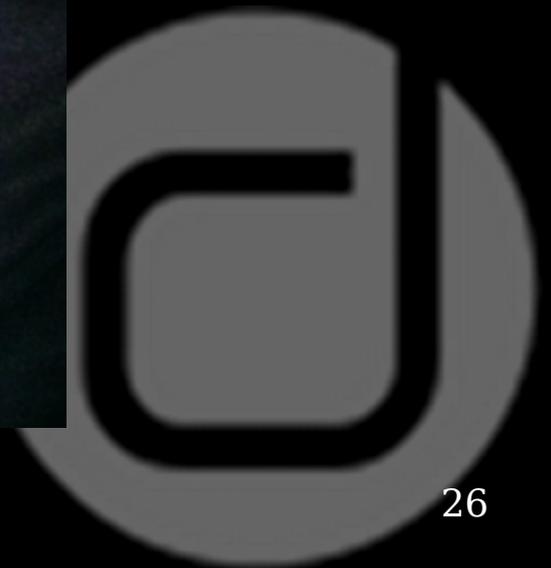
Behold...  
(and this happened to me in real life before)



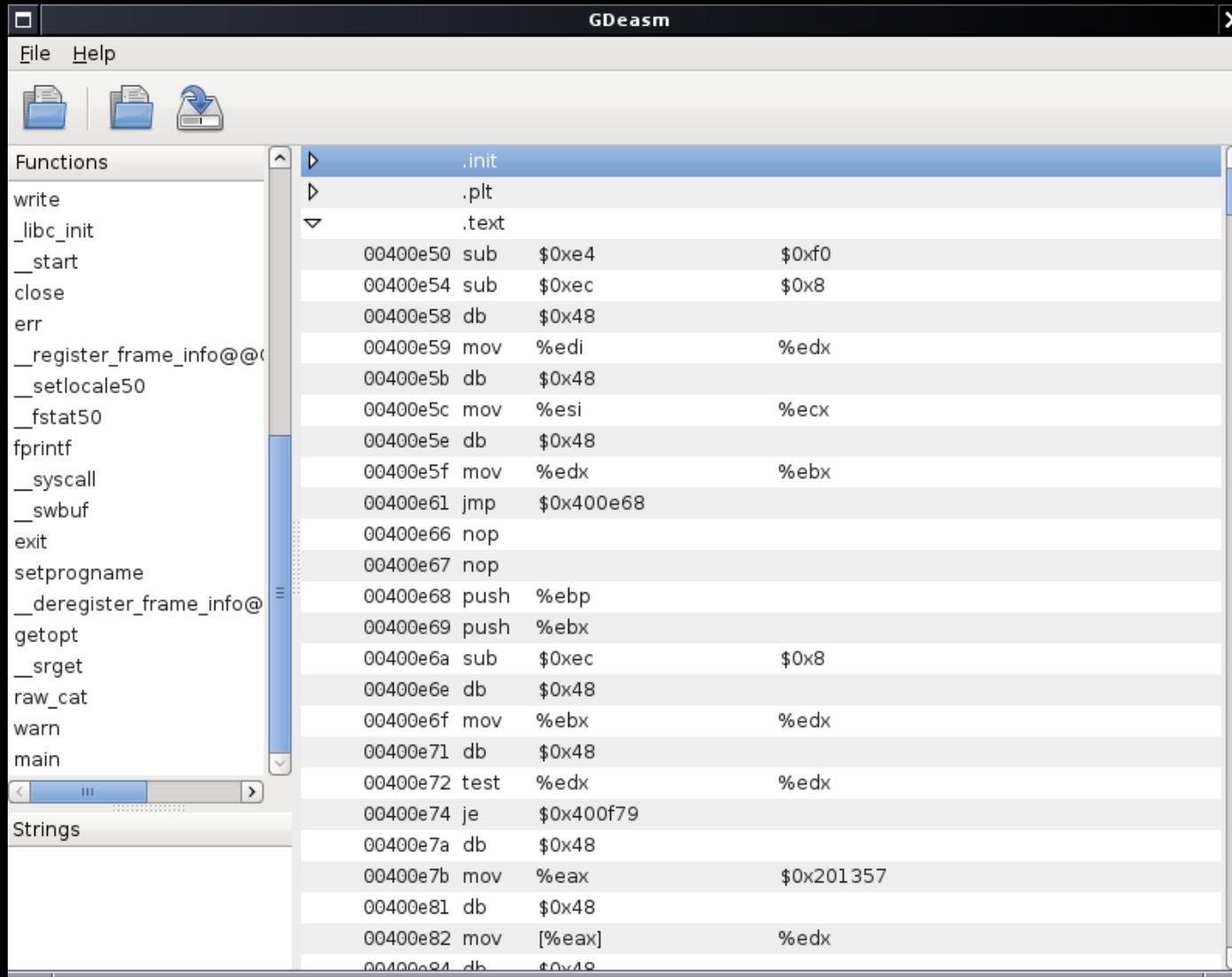
# My cat (1/2)



(courtesy of  
my sister)



# My cat (2/2)



The screenshot shows the GDeasm disassembler window. The title bar reads "GDeasm". The menu bar includes "File" and "Help". Below the menu bar are icons for file operations. On the left, there is a "Functions" list with entries like "write", "\_libc\_init", "\_start", "close", "err", etc., and a "Strings" section below it. The main area displays assembly code for the ".text" section, with the following instructions:

Address	Instruction	Operand 1	Operand 2
00400e50	sub	\$0xe4	\$0xf0
00400e54	sub	\$0xec	\$0x8
00400e58	db	\$0x48	
00400e59	mov	%edi	%edx
00400e5b	db	\$0x48	
00400e5c	mov	%esi	%ecx
00400e5e	db	\$0x48	
00400e5f	mov	%edx	%ebx
00400e61	jmp	\$0x400e68	
00400e66	nop		
00400e67	nop		
00400e68	push	%ebp	
00400e69	push	%ebx	
00400e6a	sub	\$0xec	\$0x8
00400e6e	db	\$0x48	
00400e6f	mov	%ebx	%edx
00400e71	db	\$0x48	
00400e72	test	%edx	%edx
00400e74	je	\$0x400f79	
00400e7a	db	\$0x48	
00400e7b	mov	%eax	\$0x201357
00400e81	db	\$0x48	
00400e82	mov	[%eax]	%edx
00400e84	db	\$0x48	

# (Dis-)Assembly framework

- Supports:

Available architecture plug-ins:

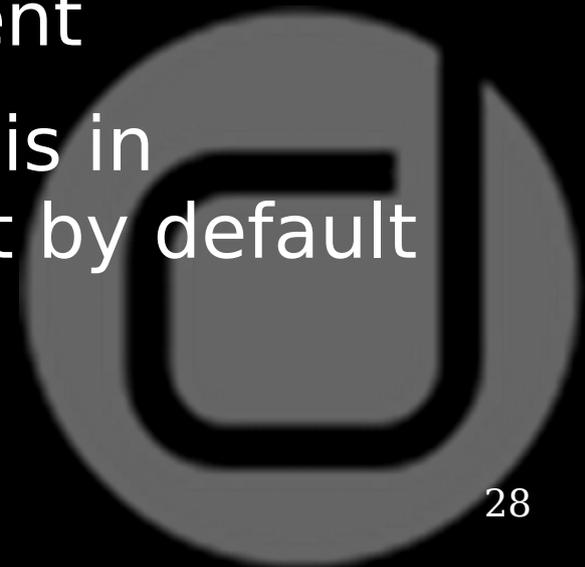
amd64, arm, armeb, armel, dalvik, i386,  
i386\_real, i486, i586, i686, java, sparc,  
sparc64, yasep, yasep16, yasep32

Available file format plug-ins:

dex, elf, flat, java, pe

- In wip/deforaos-asm for the moment

- The GDeasm tool aforementioned is in devel/deforaos-coder, but not built by default



# Compilation framework

- Likewise, very much work in progress
- Cannot do much besides generating call graphs at the moment
- Not even found in pkgsrc-wip yet



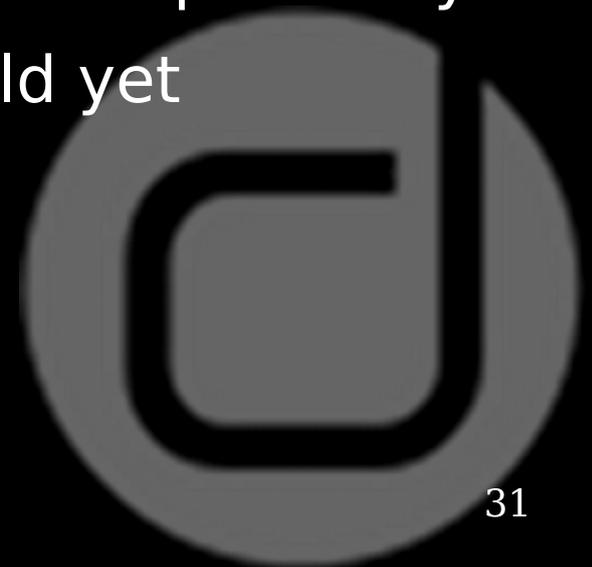
# Distributed framework

- First prototype way too experimental
- Current rewrite too far from being ready
- Potential for:
  - Remote filesystem access (VFS)
  - Transparent, user-land VPN (much like net/tsocks)
  - OpenGL-based replacement for X
- Too soon to promise anything : (



# A little more about the desktop

- Will package nodm soon:
  - It efficiently replaces gdm as a graphical auto-login program
  - Will be very useful on embedded targets
- The packages in pkgsrc-wip target Gtk+ 3:
  - deforaos-browser fails to build the “desktop” binary
  - A couple more packages may not build yet



# How much time do I have?

- What about some more demos:
  - Rewrite of the “progress” tool in Gtk+
  - Integration inside the panel
  - Desktop notifications (volume, power management, system events...)



# Conclusion

- Hope it has piqued your interest
- Would love to see it running on more devices
- Patches welcome!
- Or any kind of feedback anyway
- As for food, help yourself (but you do know already)



# Contact information

- Usual suspect:  
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yes I can do that too <[info@duekin.com](mailto:info@duekin.com)>  
<http://www.duekin.com/>

