

Linux Desktop Update

October 2008

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“Stand at the crossroads and look; ask for the ancient paths, ask where the good way is, and walk in it, and you will find rest for your souls...” - Jeremiah 6:16

Novell®

Overview

- Hardware
 - getting things working out of the box
- Virtualisation
 - Fun new stuff on it's way
- Interoperability
 - getting your data in & out
- Polish
 - Making it all gorgeous
- Applications
- The future ...

Hardware: using it effectively

Drivers; the issue ?

- “Linux supports more devices 'out of the box', than any other operating system ever has.” - GregKH
 - <http://linuxdriverproject.org/>
- But we can do better – when pre-loading with OEMs:
 - Loads of preloads at the moment
 - OEMs beating a path to our door, instead of vv.

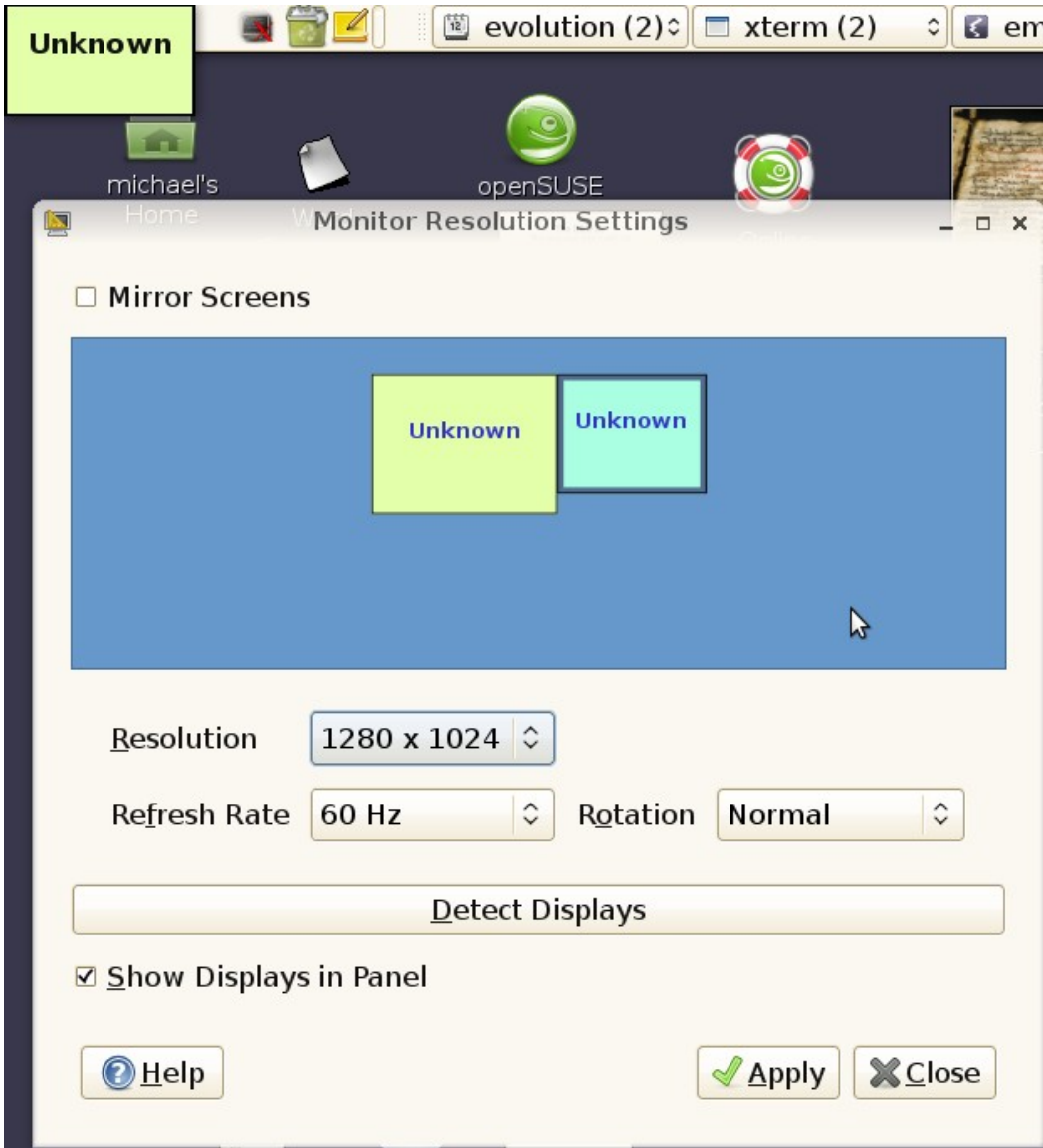
Sometimes it's just knowing you need a new driver:



X.org improvements:

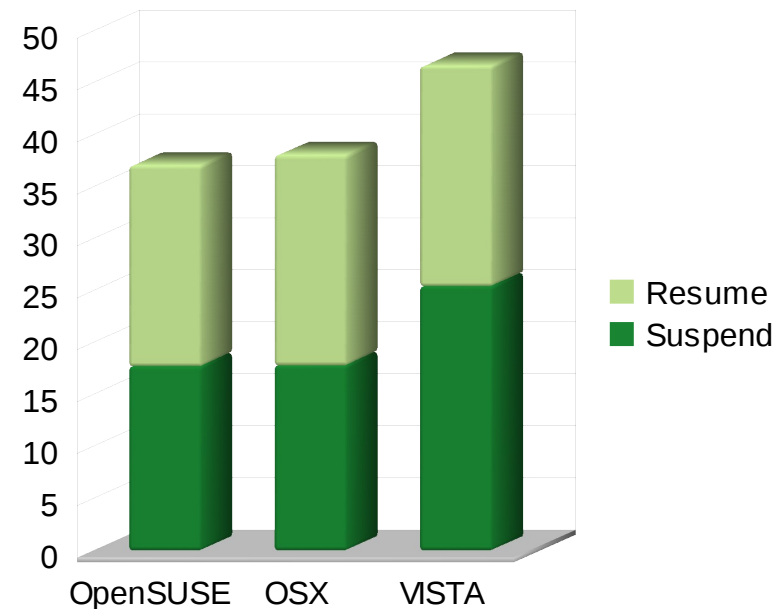
- X.org Drivers, the graphics workhorse
 - Intel – doing a great job across the board;
 - > sadly no specs. (ie. only they can fix it)
 - Novell / AMD / Ati
 - > New RadeonHD driver, with 3D support – working out of the box.
 - VIA – working on open-source drivers
 - Nvidia – where are they ? *sad*: binary-only drivers

Multi-screen & kernel mode code



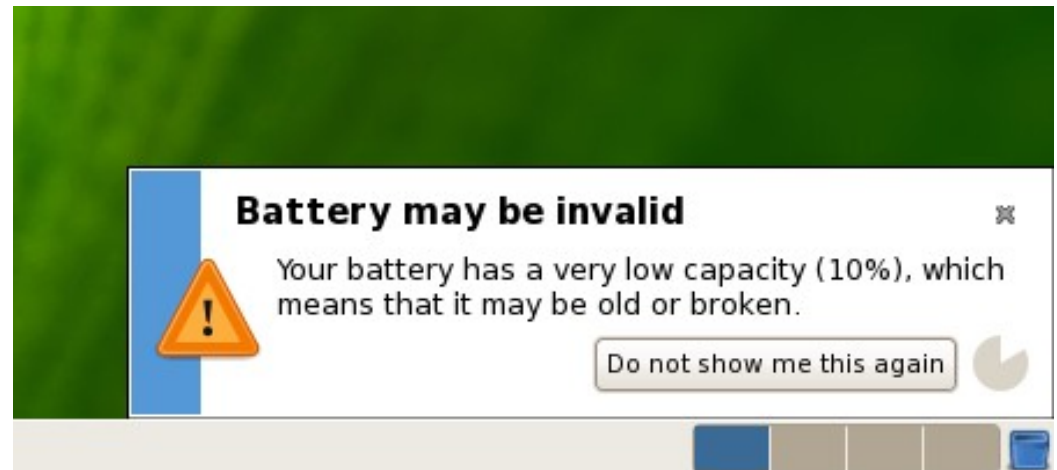
Laptop improvements #1

- More drivers
 - Wireless connectivity – UMTS support
 - Fingerprint reader support
- Suspend / Resume to disk
 - faster than OSX/Win32 with applications running
- Docking support:
 - Fn-F9 / software un-docking



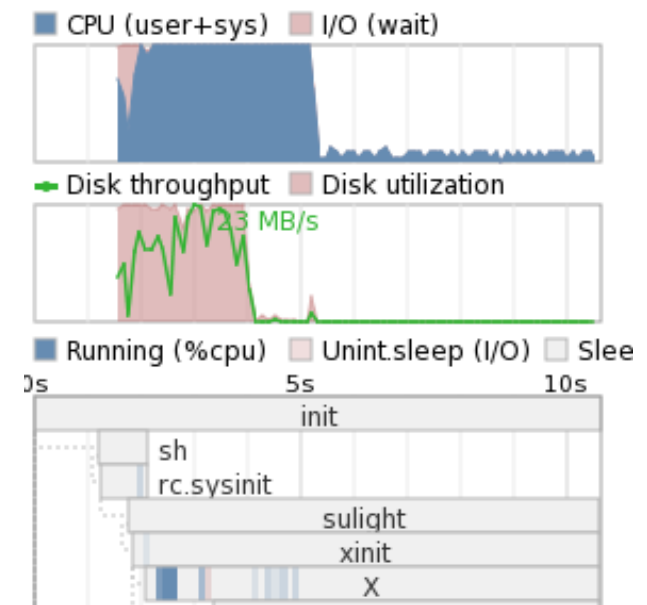
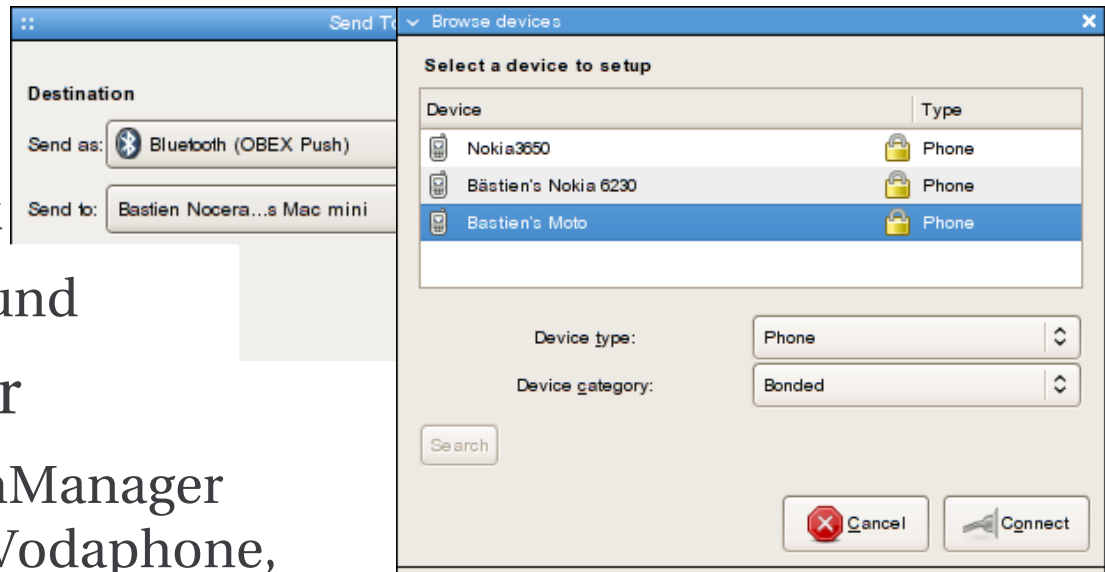
Laptop improvements #2

- Power Management
 - CPU – ACPI P & C states, race-to-idle, application fixing, powertop, throttling when on battery
 - > synchronize those blinking cursors ..
 - Let devices get more rest:
 - > Wireless, SATA link, Sound cards, misc. USB devices
 - Some machines a 20% win in the last year
- Battery status
 - When all else fails and your battery dies:
 - Knows about some recalled models.



Laptop improvements #3

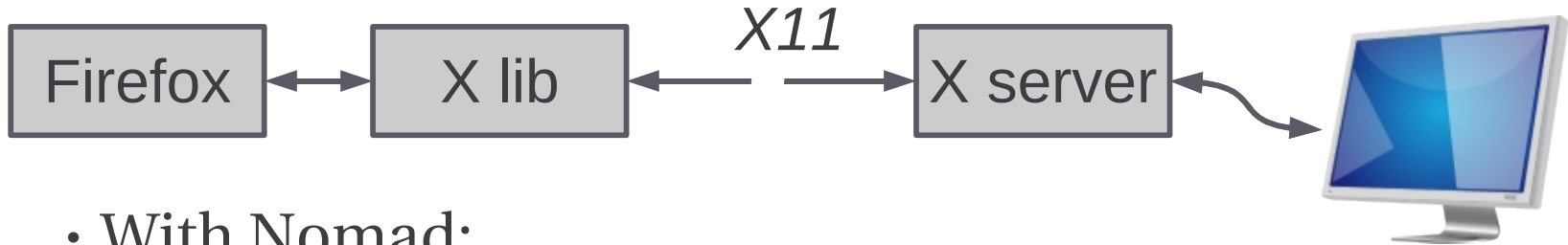
- BlueTooth
 - Certified 2.1 stack
 - Input, printer, sound
- Network Manager
 - 3G Cards; ModemManager unified interface Vodaphone, Telefonica & DSL modems
 - Custom routing, cnx. sharing
- Faster booting ... (WIP)
 - Intel / Moblin guys touting **five** second boot
 - The rest of the world will have to try to catch up.



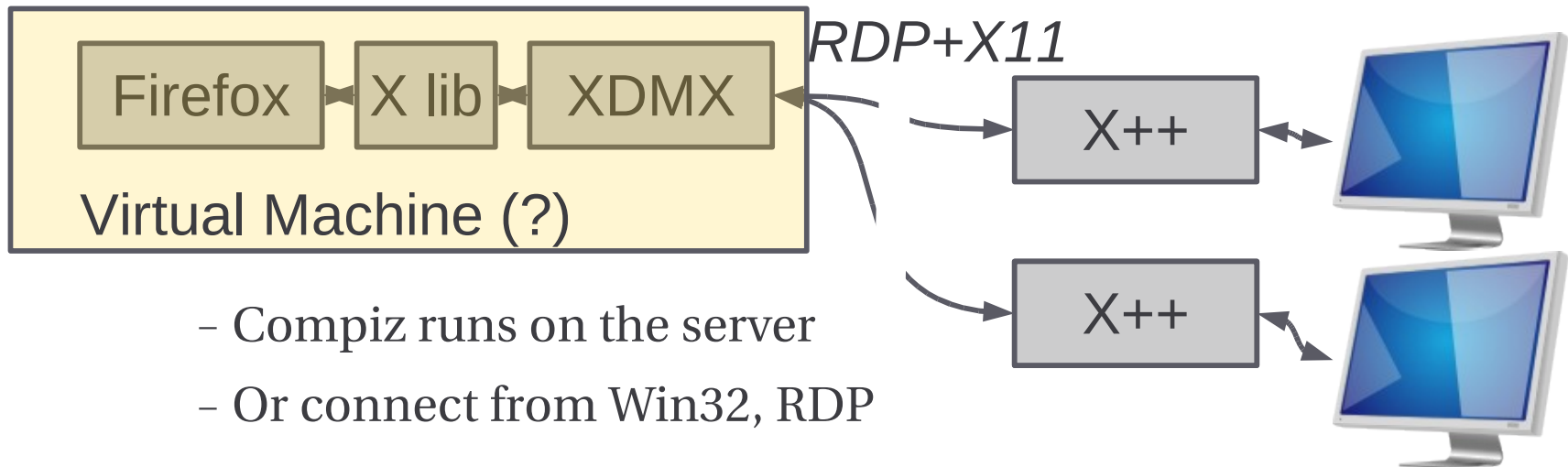
Virtualisation: on the desktop ?

Nomad

- The traditional problem with X:
 - storing state in the server; dis-connect your server & bang!
- The old world:



- With Nomad:



- Compiz runs on the server
- Or connect from Win32, RDP

The background is a solid green color with a pattern of diagonal lines in various shades of green, creating a sense of movement and depth. The lines are most prominent on the right side, where they appear to radiate from a point, and become more horizontal towards the left.

**Interoperability: getting
people productive**

OpenXML import ...

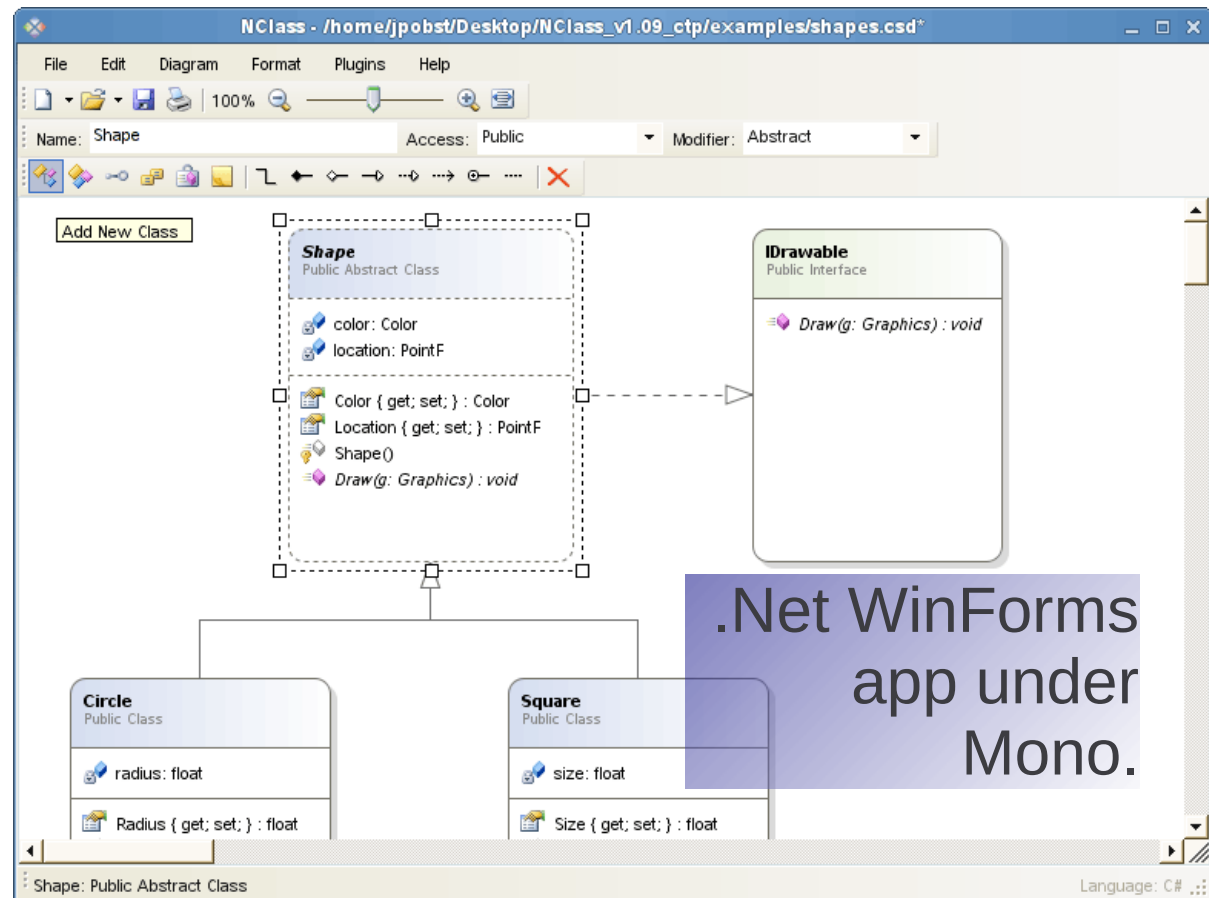
The screenshot displays three overlapping OpenOffice windows:

- OpenOffice.org Writer:** Shows a document titled "Agenda_Elegant_Style_EN.Level1". The left sidebar contains a table with columns for "Date:", "Time:", "Location:", and "Topics".
- OpenOffice.org Impress:** Shows a presentation titled "go-oox - OpenOffice.org Impress". The "Slides" pane shows two slides:
 - Slide 1: "Savings for libsvx (2)" with two bar charts comparing "before" and "after" states.
 - Slide 2: "Conclusion:" with a bulleted list and a pie chart.
- OpenOffice.org Calc:** Shows a spreadsheet titled "cellFormatGen1 - OpenOffice.org Calc". The active cell is E5. The spreadsheet content is as follows:

	A	B	C	D	E	F
1	CELL FORMAT TEST DOCUMENT					
2						
3	1 - FONT					
4						
5	1.1 - FONT NAME AND SIZE					
6		Calibri	Cambria	Consolas		
7	8 points	Calibri	Cambria	Consolas		
8	10 points	Calibri	Cambria	Consolas		
9	12 points	Calibri	Cambria	Consolas		
10						
11	1.2 - FONT ATTRIBUTES					
12	Bold	Italic	Strikeout	Subscript	Superscript	
13	Bold	<i>Italic</i>	Strikeout	S _{ubs} cript	S ^{ups} cript	
14	Single ul	Double ul	Single acc ul	Double acc ul		
15	Single	Double	Single Acc	Double Acc		
16	Red	Green	Blue			
17	Red	Green	Blue			
18	Richtext					
19	Calibri	Consolas	8point	14point	bold italic	strikeout _S ^S <u>underline</u> red
20	Consolas-14pt bold-italic strikeout _S ^S <u>underline-red</u>					
21						
22	1.3 - ESCAPEMENT AND LINE BREAKS					
23	All	Line 1	Line 2	Line 1 Start	Line 1 End	Line 2 Start
24	S _{ubs} cript	S _{ubs} cript	Text	Text	Text	Text

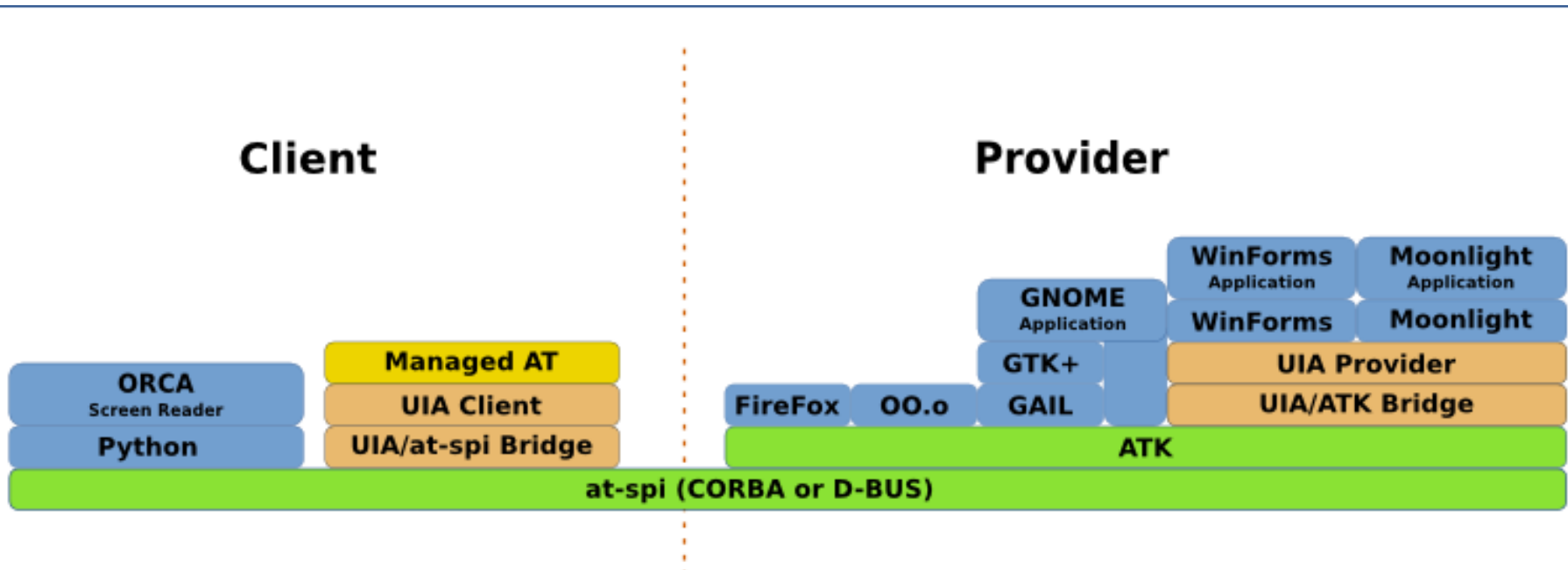
OpenJDK 1.6.0 / Mono 2.0

- Incredibly rich & wide cross-platform development experience, keep getting better.
- Java open-source now – and deployed
- .Net developers can be rescued too from lock-in.
- Use '*moma*' to analyse tools
- Port to Linux:



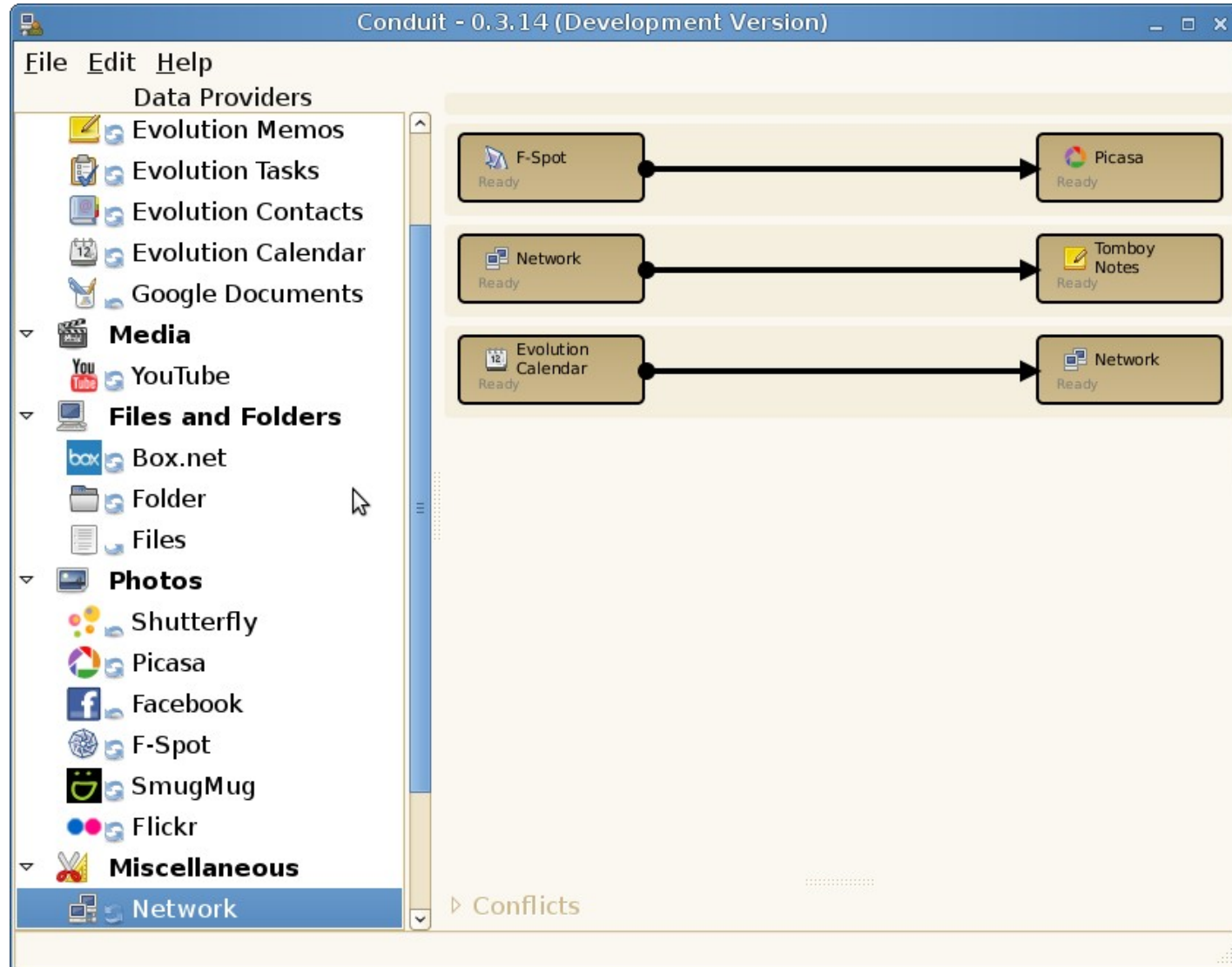
UI Automation / Accessibility

- Making Mono / Winforms apps Accessible
 - Great integration into the existing Linux ally stack.
- Possibility of cross-platform screen-reading
 - Orange sections are new:



Conduit - synchronisation

- Backup and share your desktop data across the LAN, and the Cloud.
- Drag-and-drop, python-powered UI.



DICE - integrated collaboration

- Off-line synchronisation & editing for:
 - Sharepoint Server 2007
 - Novell Teaming v1.0 (or Kablink)
- Cleaner UI flow, integrated with desktop applications
 - Gtk+ file selector => all applications, inc. OpenOffice.org
 - Nautilus integrated locking & versions.
 - No tiresome web barriers / browser up-loads
 - Works dis-connected, no WebDAV performance issues.
- Workspace calendaring integrated with Evolution.

Banshee - interop.

- iPod, generic mp3 players
 - Video
 - Podcasts
 - LastFM
 - Artwork
 - Play queue
 - DAAP
- & lots more.

**Demo iPod
vs. ALBA**

The screenshot shows the Banshee music player interface. The main window displays the album "Margery Dreams Of Horses" by Counting Crows. The playback control bar at the top shows the album cover and the track "Margery Dreams Of Horses" by Counting Crows from the Deluxe Edition - August & Everything After, with a progress indicator at 1:17 of 4:15.

The left sidebar shows the Library (2940) and Last.fm sections. The Library section lists various artists and albums, including "As Blood Runs Black", "Almost Here", "America Town", "And Don't Forget To Breathe", and "Are You Experienced".

The main area displays a table of tracks from the album "Margery Dreams Of Horses" by Counting Crows. The table has columns for Track, Artist, Title, Album, and Duration.

Track	Artist	Title	Album	Duration
13	Counting Crows	Mean Jumper Blues	Deluxe Edition - August & E...	4:27
14	Counting Crows	Love And Addiction	Deluxe Edition - August & E...	4:23
15	Counting Crows	Omaha	Deluxe Edition - August & E...	3:23
16	Counting Crows	Shallow Days	Deluxe Edition - August & E...	4:46
17	Counting Crows	This Land Is Your Land	Deluxe Edition - August & E...	3:50
1	Counting Crows	Anna Begins	Deluxe Edition - August & E...	5:24
2	Counting Crows	Omaha	Deluxe Edition - August & E...	3:46
3	Counting Crows	Jumping Jesus	Deluxe Edition - August & E...	3:07
4	Counting Crows	Margery Dreams Of Horses	Deluxe Edition - August & E...	4:16
5	Counting Crows	Perfect Blue Buildings	Deluxe Edition - August & E...	5:25
6	Counting Crows	Round Here	Deluxe Edition - August & E...	11:46
7	Counting Crows	Rain King	Deluxe Edition - August & E...	4:55
8	Counting Crows	Time And Time Again	Deluxe Edition - August & E...	6:24
9	Counting Crows	Ghost Train	Deluxe Edition - August & E...	5:43
10	Counting Crows	Children In Bloom	Deluxe Edition - August & E...	5:27

The bottom status bar shows "2940 songs, 8.3 days, 12 GB" and "Repeat None". The system tray at the bottom right shows the date and time as "23:24".

**Polish: making things
pretty and usable**

Login screen (gdm+)

- Using cleaner new infrastructure
 - PolicyKit, ConsoleKit, gconf configuration
 - moving towards better multifactor authentication
 - Accessibility and power-management at login screen
- Password / Fingerprint / Active Directory inc. UPN, Smart cards (for AD too)
 - will unlock gnome-keyring as you log in.
- gnome-session re-work
 - Improved progress feedback
 - Simpler autostart management, using .desktop files

Package Kit: swamp drained ...

Richard Hughes Wed Aug 22, 1:52 AM

Security Updates Available

The following important updates are available for your computer:

- kernel** - The Linux kernel (the core of the Linux operating system)
- gtkhtml2** - An HTML widget for GTK+ 2.0

Update system now Don't warn me again

Update System

The following updates are available:

- 6 security updates
- 4 important updates

Last refresh: A few days ago Refresh

Last update: Over a week ago View History

Help Review Update System Close

Software Update Preferences

Update Settings

Check for updates: Hourly

Automatically install: Nothing

Check for major upgrades: Weekly

Display Notification

When updates are available

When long tasks have completed

Help Close

Richard Hughes Sat Oct 13, 6:23 PM

Request to hibernate

Software Update Applet has stopped the hibernate from taking place : *A transaction that cannot be interrupted is running.*

Policy Kit

- Reducing authentication pain ...
- Isolating privilege escalation
- Granular access control
- Cross desktop integration

The screenshot shows the 'Authorizations' window in GNOME. The left sidebar lists the org tree with 'org > gnome > policykit > gconf > clockapplet > mechanism' selected. The main area shows the 'Change system time zone' policy with the following details:

- Action:** Identifier: org.gnome.clockapplet.mechanism.settimezone; Description: Change system time zone; Vendor: The GNOME Project
- Implicit Authorizations:** Anyone: No; Console: No; Active Console: Admin Authentication
- Explicit Authorizations:** A table with columns Entity, Scope, Obtained, How, Constraints. Below the table are buttons for '+ Grant...', 'Block...', and 'Revoke...'. A checkbox 'Show authorizations from all users...' is at the bottom.

The screenshot shows the 'Locations' and 'Appointments' panels. The 'Locations' panel displays a world map and three locations:

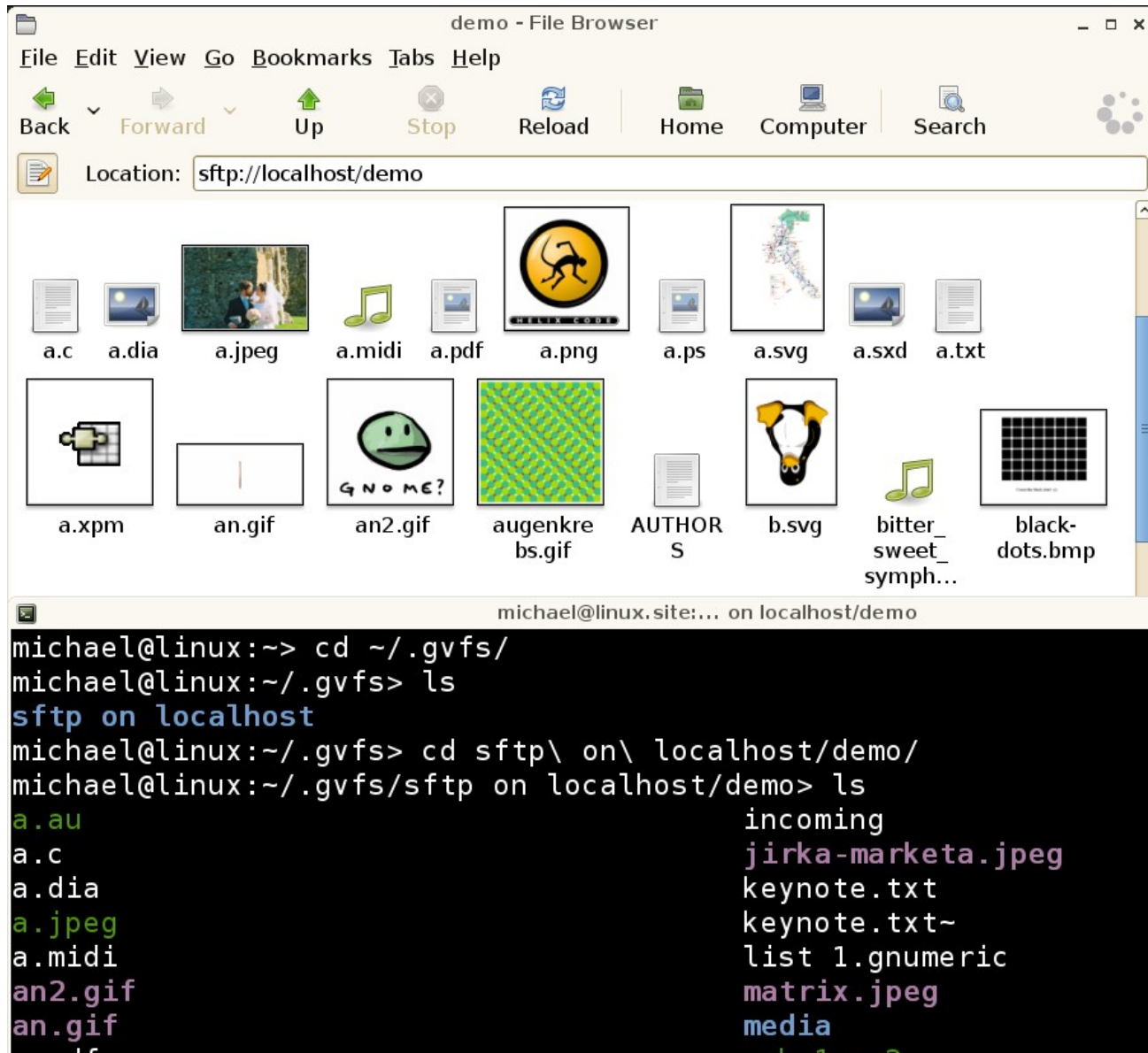
- Hamburg:** 10:46 CEST +1
- Boston:** 04:46 EDT -5
- Cambridge UK:** 04:16 VET -5:30

Below the locations is a text box: 'Set location as current location and use its timezone for this computer'. The 'Appointments' panel shows a list of tasks:

- 10:30 Hack on talk
- 16:30 SLED Beta Call-New Dial I...

The 'Tasks' panel shows a task: '100% New Voice of the Cus...' and '0% Voice of the Custome...'. At the bottom is a calendar for October 2008, with the 22nd highlighted.

GVFS & FUSE - legacy support



The image shows a file browser window titled "demo - File Browser" with a menu bar (File, Edit, View, Go, Bookmarks, Tabs, Help) and navigation buttons (Back, Forward, Up, Stop, Reload, Home, Computer, Search). The location bar shows "sftp://localhost/demo". The main area displays a grid of file icons with labels: a.c, a.dia, a.jpeg, a.midi, a.pdf, a.png, a.ps, a.svg, a.sxd, a.txt, a.xpm, an.gif, an2.gif, augenkrebs.gif, AUTHOR S, b.svg, bitter_sweet_symph..., and black-dots.bmp.

Below the file browser is a terminal window showing the following commands and output:

```

michael@linux:~> cd ~/.gvfs/
michael@linux:~/.gvfs> ls
sftp on localhost
michael@linux:~/.gvfs> cd sftp\ on\ localhost/demo/
michael@linux:~/.gvfs/sftp on localhost/demo> ls
a.au                               incoming
a.c                                 jirka-marketa.jpeg
a.dia                               keynote.txt
a.jpeg                              keynote.txt~
a.midi                             list 1.gnumeric
an2.gif                             matrix.jpeg
an.gif                              media
a.pdf                               ...

```

Search & Gnome-Do

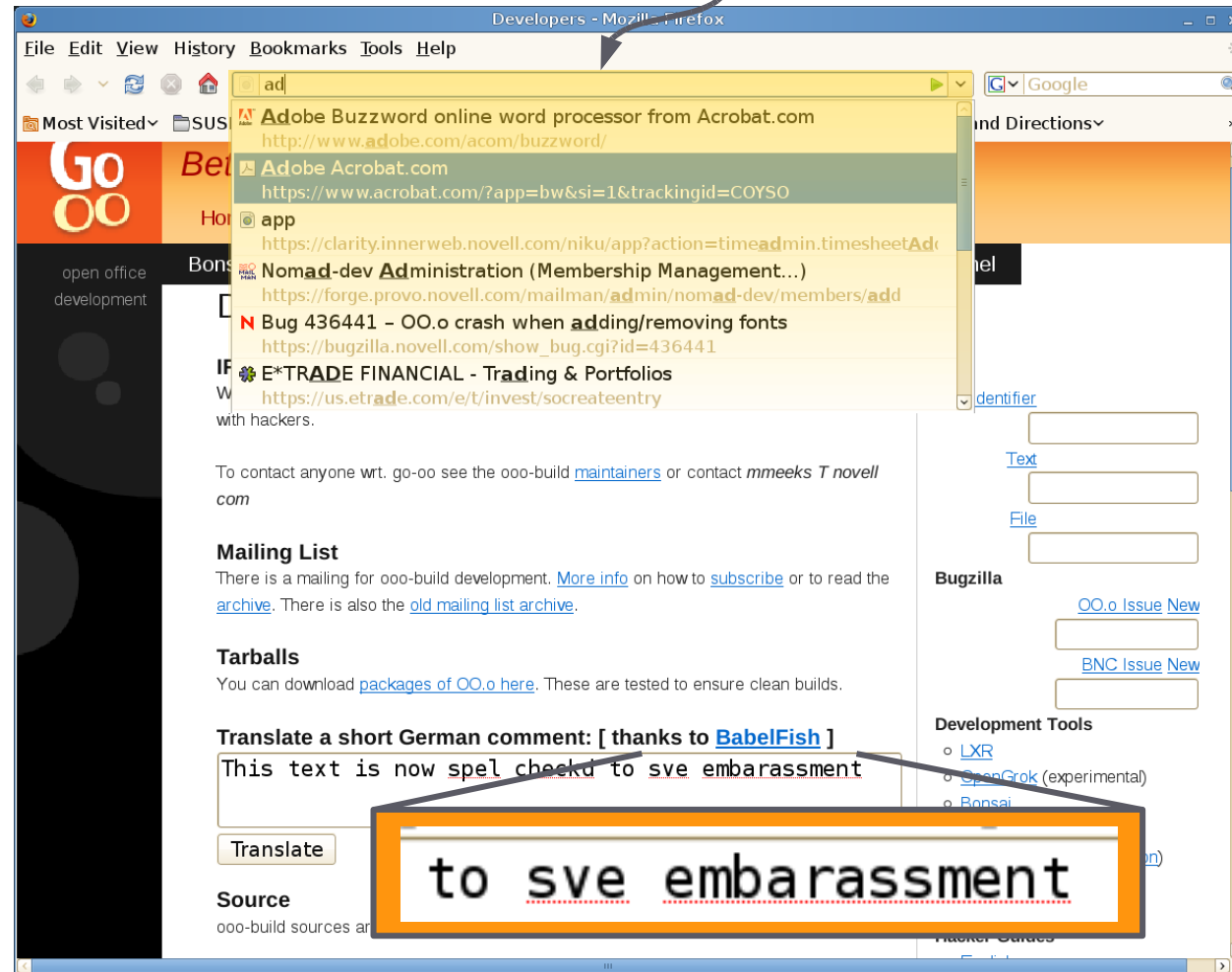
- Beagle 0.3.8
- Speed, memory and disk use improvements
 - Text caching
- Improved and new backends
 - Firefox, Thunderbird, Epiphany, Opera, Nautilus
- Improved configuration
 - Enhanced white/black list
 - Backend enable/disable
 - System config and crawl /etc/beagle/
- Better stemming and text analysis

Applications: key features

Firefox - 3.0

- Security
 - anti-phishing,
 - anti-malware
- Native widgets
 - print, vfs
- Accessibility
 - zooming,
 - screen readers

“Awesome Bar”



Spell-checking ...

Evolution - key new features

- Interop

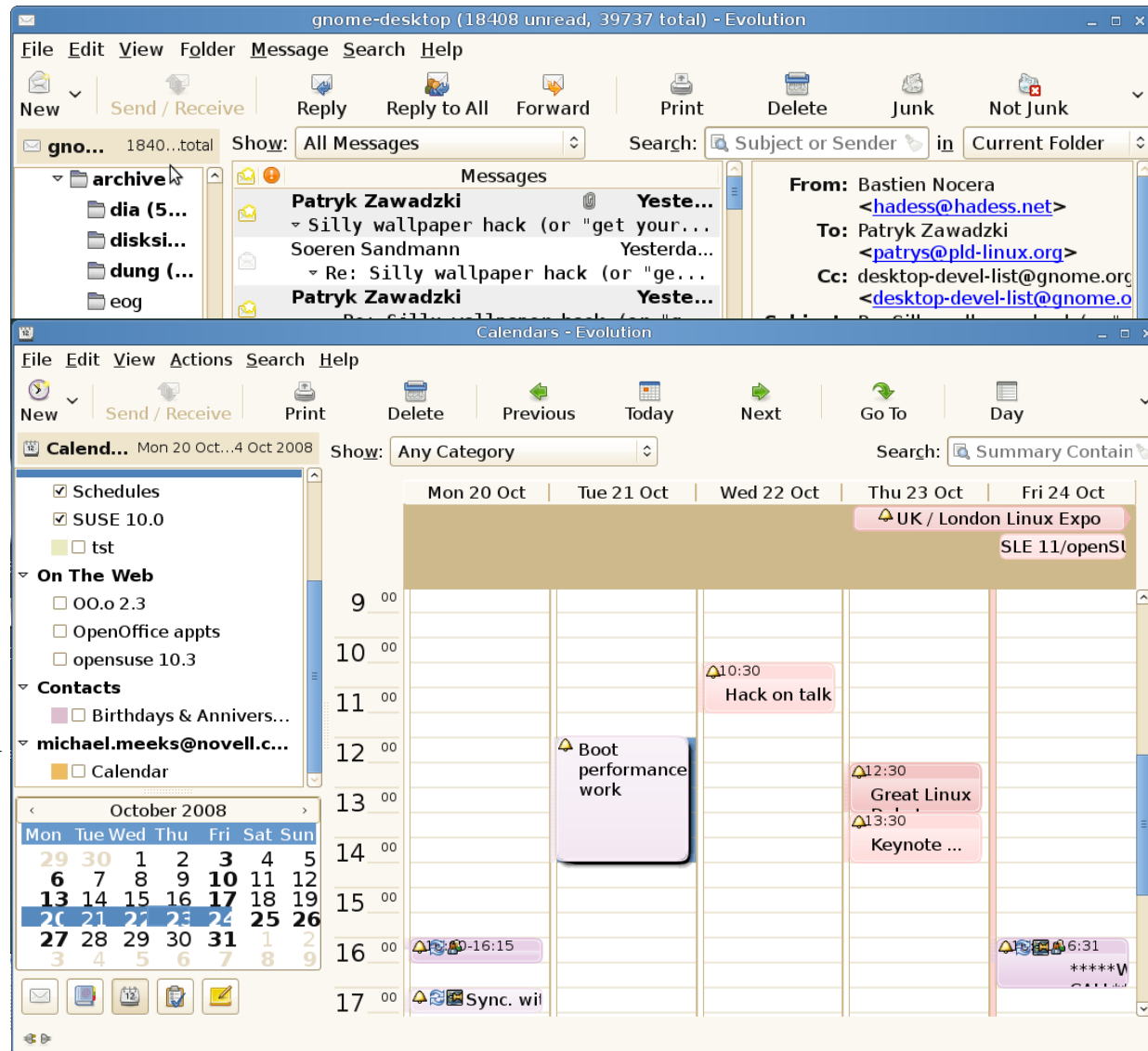
- Exchange 2007 / MAPI
- Google Calendar / Contact

- Smaller / Faster

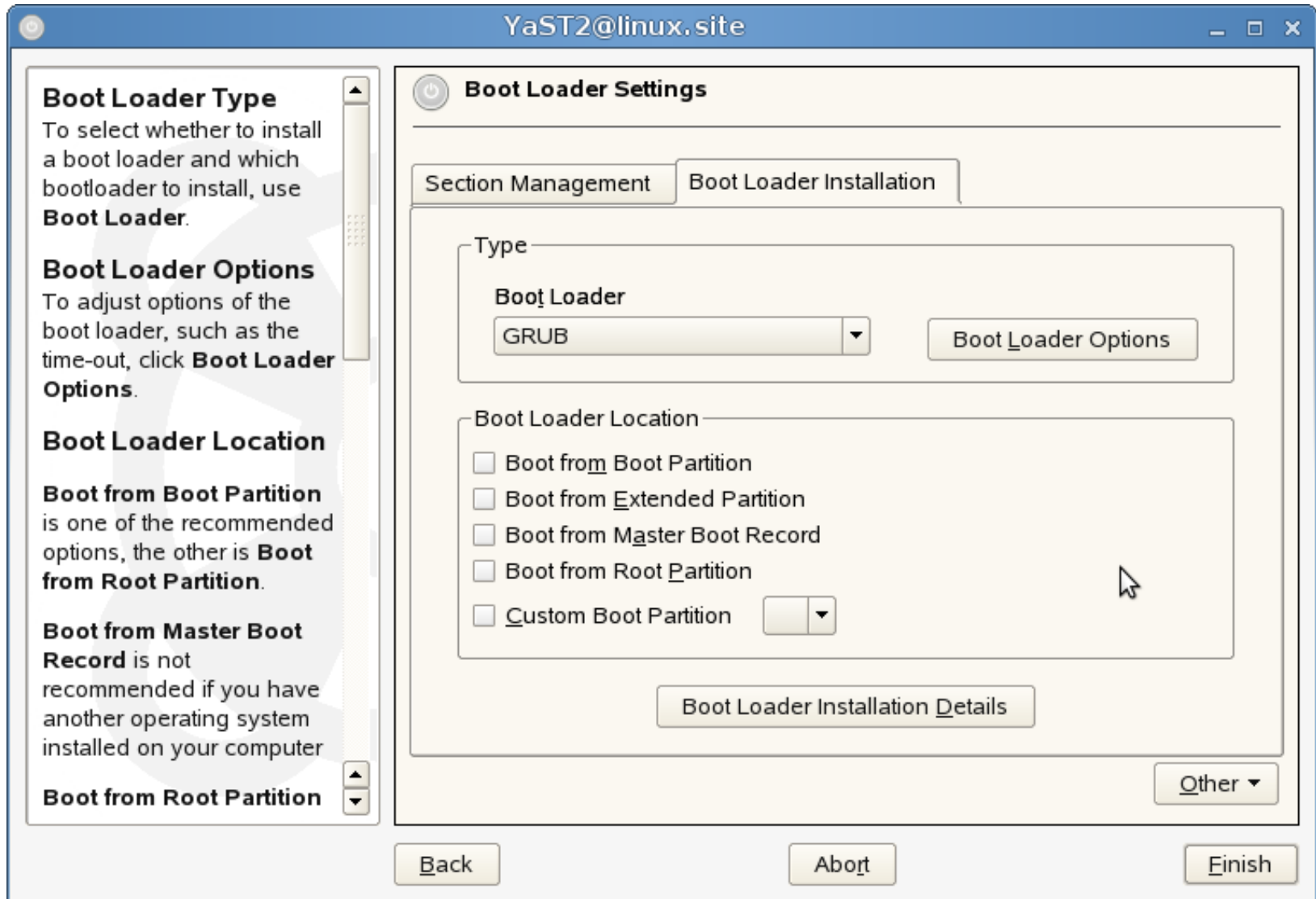
- Shared calendar model
- Sqlite msg summary
- Faster composer
- shrunken iCal

- Mail

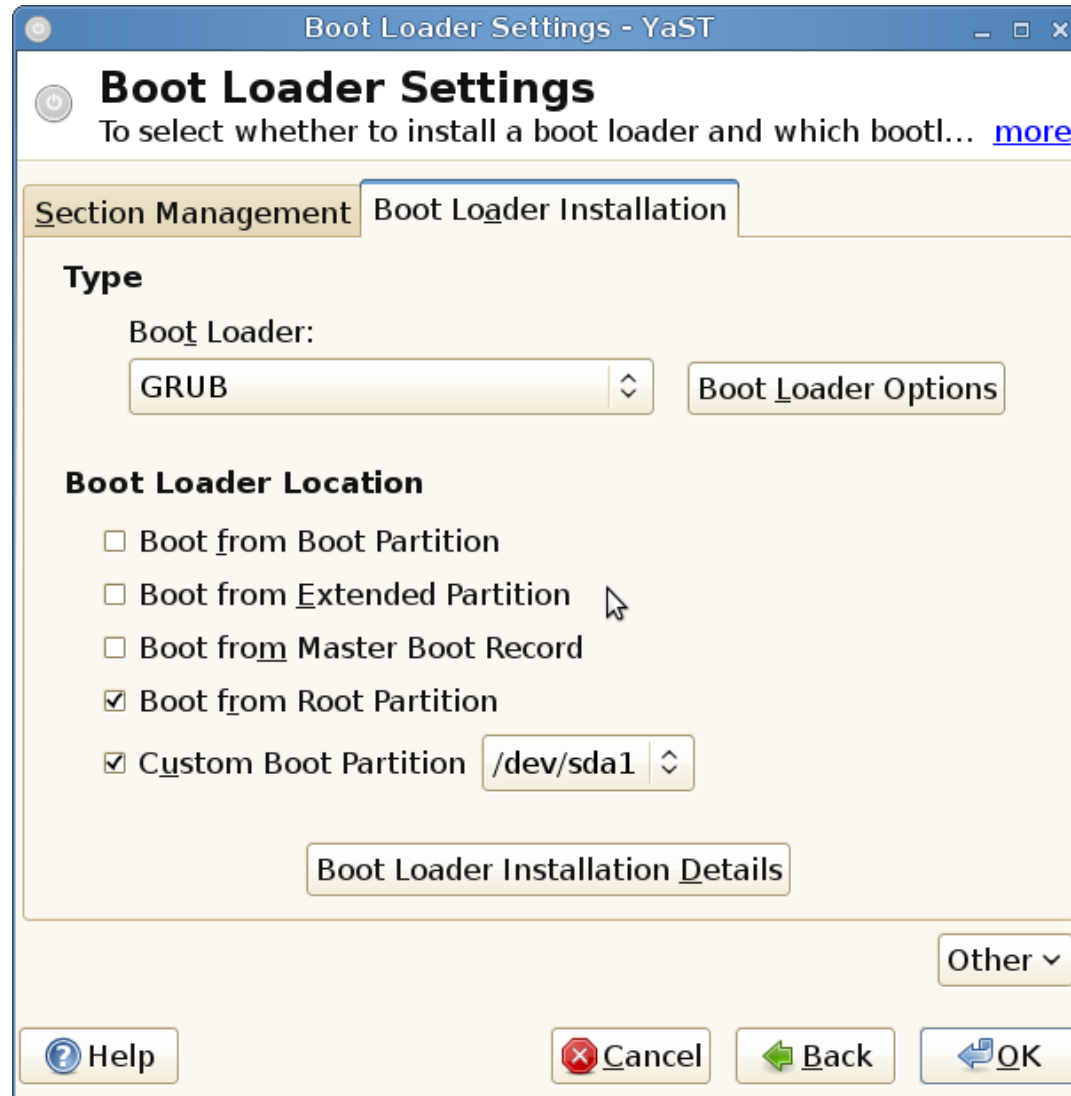
- Message templates and custom headers
- Quota for IMAP/POP
- faster/better spam filtering
- Message tagging etc ...



Yast2 - gtk & cleanup ...

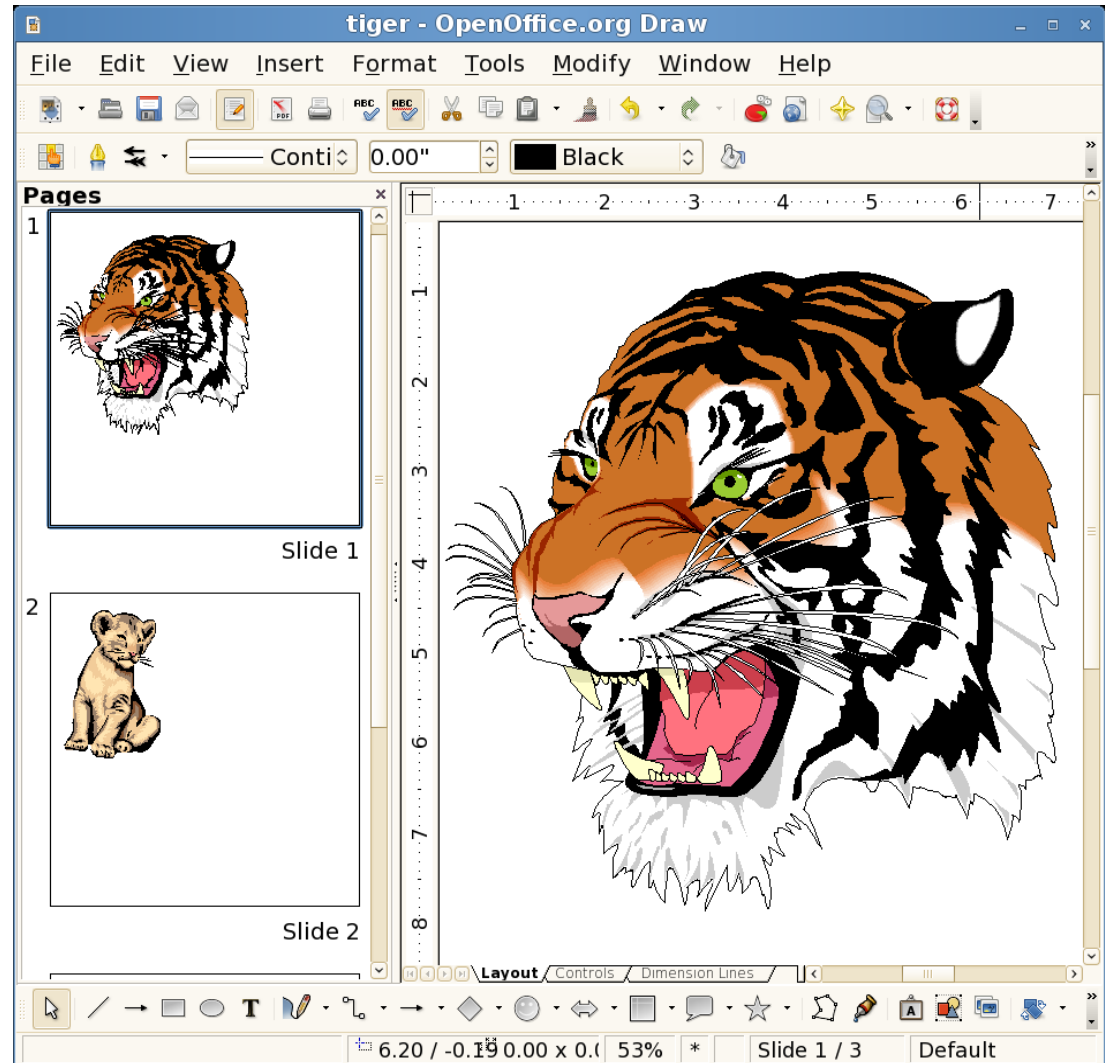


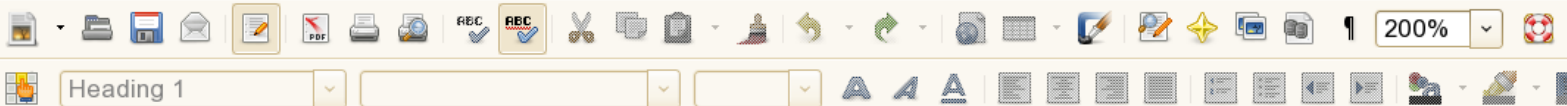
Yast2 - gtk & cleanup ...



General OpenOffice improvements

SVG import





Form C1



INWARD REPORT (SHIPS AND BOATS OTHER THAN SM)

Powerful & inter-operable fields support

Te Mana Arai o Aotearoa

PART A: ARRIVAL DETAILS

Name of ship <input type="text"/>		Port of arrival <input type="text"/>
Date of arrival <input type="text"/>	Time of arrival <input type="text"/>	Port arrived from <input type="text"/>
Name of person in charge <input type="text"/>		Name and address of ship's agent in New Zealand <input type="text"/>
IMO number <input type="text"/>		
Gross register tonnes <input type="text"/>		
Period of stay in New Zealand <input type="text"/>		

IF CARRYING CARGO, BRIEF DESCRIPTION

<input type="text"/>
<input type="text"/>
<input type="text"/>

LIST SUBSEQUENT PORTS OF CALL WITHIN NEW ZEALAND (Please record on a separate sheet and attach if additional space is required.)

Next New Zealand ports	Estimated date and time of arrival
1. <input type="text"/>	<input type="text"/>
2. <input type="text"/>	<input type="text"/>
3. <input type="text"/>	<input type="text"/>
4. <input type="text"/>	<input type="text"/>

Multi-page view & notes...

report.odt - OpenOffice.org Writer

File Edit View Insert Format Table Tools Window Help

Heading 7 Albany AMT 10.5

2 4 6 8 10 12 14 16 18

OpenOffice.org resource footprint analysis

Michael Meeks, Tor Lillqvist
2006-12-08

Overview

OpenOffice.org is a source intensive, and the largest OpenOffice.org application on Linux is source intensive. This is due to the complexity of the application and the fact that it is a multi-platform application. This document provides an overview of the resource footprint of the application on Linux. The document is intended for developers and system administrators. All analysis was performed on a Pentium 4 2.6 GHz machine with 2 GB RAM.

Memory breakdown

Overall memory analysis

Size	RAM	RSB	RAM	Memory	RAM
total	200,000,000	200,000,000	200,000,000	200,000,000	200,000,000

So - we require 200MB of process memory. This is not too much for a desktop application, and since a few characters of this, only 10MB (5%) is heap space. This is a reasonable amount of memory for a desktop application. This is a reasonable amount of memory for a desktop application.

RSB breakdown

Code breakdown analysis

We have 41MB of code (RSB) from 40MB (RAM). The complete RSB code size is 125MB, so clearly a combination of on-demand loading, and the compact nature of the code. This is a reasonable amount of code for a desktop application. This is a reasonable amount of code for a desktop application.

Library Breakdown

DSO breakdown

C++ optimization

There are however several sub-optimizations in the C++ compiler, mainly the excessive retention of global variables. This is a reasonable amount of code for a desktop application. This is a reasonable amount of code for a desktop application.

- DSO installation to simple binary informed copies of `so` from their parents. This is a reasonable amount of code for a desktop application. This is a reasonable amount of code for a desktop application.
- `so` instead of PLT (Procedure Linkage Table) installation. When implementing virtual methods, sharing to parent implementations is a very common occurrence. It is not clear how to implement this in a way that is efficient. This is a reasonable amount of code for a desktop application. This is a reasonable amount of code for a desktop application.

Startup performance issues

The total wait time from the 120MB of code is around 100ms, so perhaps a bit of optimization is required. This is a reasonable amount of code for a desktop application. This is a reasonable amount of code for a desktop application.

Downgrading Cold Start problems

The difference between cold and warm start times is substantial on older hardware. This is a reasonable amount of code for a desktop application. This is a reasonable amount of code for a desktop application.

Cache warmup

CPU time on the left and 3D time on the right are a proportion of total cold start up time. This is a reasonable amount of code for a desktop application. This is a reasonable amount of code for a desktop application.

Some substantial work has been done to reduce the amount of DSO performed at startup, but this work needs to be continued on old hardware. This is a reasonable amount of code for a desktop application. This is a reasonable amount of code for a desktop application.

Customarily, reliable cold start profiling is extremely difficult to perform, or generate any reliable data from. This is particularly true for the execution of `so` and `so`.

More work is required - implementing `so` and `so` to generate memory (or `so`) from, combined with `so` DSOs would be a good first step - 4 days

Conclusion

This document is a program for debugging and profiling Linux on a multi-processor system. This is a reasonable amount of code for a desktop application. This is a reasonable amount of code for a desktop application.

```

$ ./tools/analyze.pl --lib=/usr/lib --lib64=/usr/lib64 --dump=/tmp/so \
--lib=/usr/lib --lib64=/usr/lib64 --dump=/tmp/so \
--lib=/usr/lib --lib64=/usr/lib64 --dump=/tmp/so \
--lib=/usr/lib --lib64=/usr/lib64 --dump=/tmp/so \

```

Page 4 / 7 Default English (UK) STD * Level 7 49%

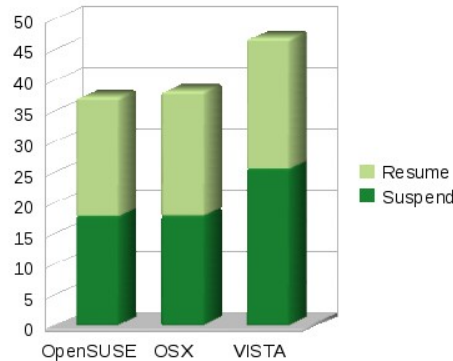
Presenter / notes view ...

Current Slide (7 of 57)

Next Slide

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Where are we going ?

Conclusion / Q&A

- The Linux desktop is 'here' now
 - And it just keeps getting better
 - Almost everything I showed has arrived in the last year or so.
 - The applications are extremely functional
- The swamps are getting drained, the drivers are arriving, and the OEMs are knocking
- Get involved
 - there's fun to be had, and money to be made
- Thanks – to all the people that did the work.



Oh, that my words were recorded, that they were written on a scroll, that they were inscribed with an iron tool on lead, or engraved in rock for ever! I know that my Redeemer lives, and that in the end he will stand upon the earth. And though this body has been destroyed yet in my flesh I will see God, I myself will see him, with my own eyes - I and not another. How my heart yearns within me. - Job 19: 23-27