An Introduction to GNOME 3.0

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Introduction

The document is intended as a handout accompanying the presentation "An Introduction to GNOME 3.0". This handout and presentation give an overview of the GNOME Project, including:

- An overview of the GNOME Project
- History of GNOME
- GNOME development goals and principles
- GNOME 3.0 overview, including how it came to be, benefits for users, and benefits for developers

This handout and presentation attempt to be as factual as possible, but errors may be present, and the opinions given in this handout and presentation represent those of the author, and not the GNOME Foundation.

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1http://creativecommons.org/licenses/by-sa/3.0/

What is GNOME?

GNOME is free software[2] with three specific projects:

1. GNOME Desktop Environment
2. GNOME Developer Platform
3. GNOME Mobile

GNOME's mission is to provide a free desktop accessible to everyone regardless of their physical ability, financial ability or the language they speak. GNOME accomplishes this mission through a focus on accessibility, by providing GNOME under free software licensing, and is translated in over 180 languages, with over 50 of those being fully translated.

GNOME Desktop Environment

The GNOME Desktop Environment is a graphical user interface and full featured set of applications to help you use your computer. The GNOME Desktop Environment provides a window manager (Metacity) and applications such as games, a web browser in Epiphany, instant messaging client in Empathy, and more.

The GNOME Desktop Environment also provides a number of applications built using GNOME tools and hosted on GNOME infrastructure, but are not be included in the default desktop. Some examples of these applications include the Banshee Media Player, Sound Juicer for transcoding music CDs, Conduit for syncing data between applications and PiTiVi for editing videos.

Accessibility support for disabled users is a key value in GNOME. GNOME supports a number of accessibility features by default, such as the Orca screen reader for those with visibility disabilities. From the GNOME Accessibility Project website[3]:

> *In GNOME, accessibility is a core value that touches all aspects of the system. With a model of "built in" versus "bolted on", the GNOME Accessibility project has helped lead the industry in accessible design. From the infrastructure, to the graphical toolkit, to the applications, to the assistive technologies, accessibility has been a central consideration from the very early days. As a result, GNOME not only has compelling accessibility today, but it also provides a rich and stable base for future accessibility work.*

The GNOME Desktop Environment is available for Linux and other Unix-like operating systems, including Solaris and BSD.

GNOME Development Platform

The GNOME Development Platform provides software developers with project hosting, tools, and libraries to build applications for both the GNOME Desktop Environment and other platforms and operating systems including Microsoft Windows ® and Mac OS ® X.

GNOME hosts over 600 different projects, the majority of which are not included in the Desktop Environment by default. GNOME provides developers with project hosting, distributed version control using git, a bug tracker, mailing lists, a wiki and more.

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2   http://www.gnu.org/philosophy/free-sw.html
3   http://projects.gnome.org/accessibility/

Most GNOME software is built using GTK+, hosted by GNOME. GTK+, as described on its website[4]:

> *GTK+ is a highly usable, feature rich toolkit for creating graphical user interfaces which boasts cross platform compatibility and an easy to use API. GTK+ it is written in C, but has bindings to many other popular programming languages such as C++, Python and C# among others. GTK+ is licensed under the GNU LGPL 2.1 allowing development of both free and proprietary software with GTK+ without any license fees or royalties.*

GNOME Mobile

GNOME Mobile[5] is dedicated to advance the use, development and commercialization of GNOME components as a mobile and embedded user experience platform. It brings together industry leaders, expert consultants, key developers and the community and industry organizations they represent.

The GNOME Mobile Platform is a subset of the GNOME Platform, and uses key technologies from GNOME as well as other free software projects, including:

- Telepathy for instant messaging and presence
- GConf for configuration
- GVFS file system
- GStreamer for multimedia
- GTK+ for building user interfaces
- ..and more

Devices built using GNOME Mobile technologies include a phone and internet tablets from Nokia; One Laptop Per Child and it's operating system Sugar, the OpenMoko phone, GPS devices, and the Vernier LabQuest, a scientific tool for students to use for data collection and experiments.

GNOME History

Miguel De Icaza, along with Federico Mena and other community members who spent time in the #linux channel on the LinuxNet IRC network, created the GNOME Project in August 1997. Prior to starting the project, Miguel approached Trolltech about re-licensing its software to make KDE and its libraries GPL compliant, but was rebuffed.[6]

GNOME quickly grew, and GNOME 1.0 was released in March 1999, with Red Hat 5.0 shipping GNOME 1.0.x as its default desktop for the first time.

In 2000, three notable incidents occurred: in March, GUADEC (GNOME User and Developer European Conference) was held for the first time in Paris, France, the GNOME Foundation was created in August, and in September, Sun created the GNOME Accessibility Lab to help improve GNOME for people with disabilities.

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4   http://www.gtk.org/
5   http://www.gnome.org/mobile
6   http://primates.ximian.com/~miguel/gnome-history.html

GUADEC

GUADEC has been held every year since 2000, each year in a new city in Europe. GUADEC is the single largest annual gathering of GNOME users and developers, and features keynote speakers, presentations, birds of a feather meetings and a little hacking. The most recent GUADEC was held in Gran Canaria, Spain in 2009, and was held jointly with KDE for the first time.

The GNOME Foundation

The Foundation coordinates releases of GNOME and helps determine which projects are part of GNOME. It also serves as the official voice for GNOME, and gives organizations, companies, and the press a contact for GNOME. The GNOME Foundation's seven board members are elected annually, and serve for a year from July to the following June. The Foundation does not set technical direction for GNOME or applications and projects hosted by GNOME.

All contributors to GNOME are eligible to become Foundation members. Any non-trivial contribution to GNOME including code, translations, documentation, marketing and more qualify an individual, and all contributors are encouraged to apply to become a Foundation member.

GNOME 2.0

GNOME 2.0 was released in June 2002, and featured an updated look and feel, a focus on accessibility, and the introduction of the Human Interface Guidelines (HIG)[7]. The HIG is a subset of the GNOME Usability Project[8], whose mission is to make the user's GNOME experience as pleasant and efficient as possible. The HIG helps developers, user designers, and artists by providing guidelines on how to create applications that look right, behave properly, and fit into the GNOME user interface as a whole.

GNOME 2.2 was released in February 2003, and GNOME 2.4 was released in September 2003. The GNOME 2.4 release became the first release to feature a time based development cycle, with every version of GNOME since 2.4 released every 6 months in March and September.

The most recent release of GNOME, 2.28, was released September 23rd, 2009. GNOME 2.28 features updates to Empathy adding geolocation support, new help, theming and desktop sharing; GNOME's web browser, Epiphany, switched from a Gecko based renderer to Webkit; Cheese, a webcam photo application added wide mode support for netbooks and a burst mode; gnome-bluetooth was added as an official module for the first time adding Bluetooth support for hundreds of devices such as mice and keyboards as well as the ability to share internet connectivity from supported mobile phones and more.

Some of the current applications included in the GNOME Desktop are:

- GNOME Archive Manager for handling zipped and compressed files
- Utilities such as a Calculator, Text Editor (Gedit), GNOME Terminal, and an image

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7   http://library.gnome.org/devel/hig-book/stable/
8 http://live.gnome.org/UsabilityProject

viewer (Eye of GNOME)
- Brasero, a disc burning tool
- A number of challenging games
- GNOME Movie Player (Totem) for watching videos, including YouTube
- Evolution, a fully featured email and calendaring application
- Empathy Instant Messenger, with support for popular IM protocols such as Jabber, AIM, MSN and Google Talk, as well as IRC and desktop sharing

GNOME 3.0

The Road to GNOME 3.0

In 2005, discussion about a possible GNOME 3.0 release started to happen, and was code named "Project ToPaZ", topaz being an acronym for Three Point Zero. Project ToPaZ was presented at GUADEC 2005 by Jeff Waugh[9] in an effort to kick start discussion and brainstorm ideas. GNOME 3.0 discussions over the years discussed "Project Soylent", making people and their actions central to the GNOME experience "GNOME Online Services" also known as Mugshot, originally developed by Red Hat, and the Gimmie Project, which re-imagined the way users interact with the panel, launching applications and the file manager.

Three years passed.

In April 2009, Vincent Untz, on behalf of the GNOME Release team sent an email[10] to the GNOME developer mailing list officially kicking off GNOME 3.0 development and challenging the GNOME community to define what GNOME 3.0 should be. He summed up the current challenges around GNOME 3.0:

> *"If you look closely at our community, it'd be wrong to say that people are lacking a vision; but the project as a whole does indeed have this issue. What we are missing is people blessing one specific vision and making it official, giving goals to the community so we can all work together in the same direction."*

At the end, he proposed three focus areas for GNOME 3.0:

- *Revamp our User Experience*
- *Streamlining of the Platform*
- *Promotion of GNOME*

With the Release Team challenging the GNOME community to define what GNOME 3.0 could be, the community sprang into action and many teams within GNOME now have specific plans for GNOME 3.0. The GNOME Release Team will make a decision in November 2009 if GNOME 2.30 or 2.32 will become GNOME 3.0 based on a number of factors, including usability, stability, accessibility and more.

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9   http://2005.guadec.org/schedule/gnometalks.html#topaz

10   http://mail.gnome.org/archives/desktop-devel-list/2009-April/msg00004.html

GNOME 3.0

GNOME 3.0 will be more than just the user interface that is GNOME Shell. GNOME 3.0 will feature improvements in accessibility, documentation, the user interface, file management, updates to the Developer Platform, and marketing.

GNOME Developer Platform

The GNOME Developer Platform has seen numerous improvements in moving to newer and more current libraries, removing support for Bonobo, gvfs, and libgnomeprint to name just a few. GTK+ itself has seen over two hundred symbols deprecated over the last two release cycles.[11]

The benefits for developers and downstream distributions include:

- Less disk space used benefitting downstream distributions and mobile developers
- Less linking and faster compiling for developers
- Faster application start-up time for users
- Overall cleaner stack, making it easier for new developers and contributors to get started creating GNOME applications
- Potential for easier implementation of automated testing

Accessibility

The focus on cleaning up the Developer Platform has also impacted the GNOME Accessibility Project in a positive way. With the removal of the Bonobo (and CORBA) libraries, AT-SPI, the Service Provider Interface for Assistive Technologies, will be replaced by D-Bus. This will significantly help mobile developers in including accessibility support as CORBA was too large, as well as KDE which uses D-Bus.

GNOME Speech, which was also CORBA based, will be replaced by Speech Dispatcher, which has been under development for some time. Canonical is also helping with Speech Dispatcher development.

GNOME Shell will include a magnifier by default, allowing GNOME Mag, another CORBA based application, to be removed. The magnifier is being re-written from scratch by the Adaptive Technology Resource Centre at the University of Toronto and will include a D-Bus API that can be used by Orca, the GNOME Screen Reader.

WebKit, an open source browser engine, is also being worked on to improve accessibility support.

Documentation

GNOME 2.28 saw the first release of Mallard, a new XML schema for writing documentation and displaying it on the web or in Yelp, the GNOME Help Browser. The GNOME Documentation Project is working on re-writing the GNOME User Guide and GNOME Accessibility Guide for 3.0. The re-write is needed for three reasons:

1. GNOME Documentation is moving to a Creative Commons Share-alike 3.0 license from the GNU Free Documentation License

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11 http://library.gnome.org/devel/gtk/stable/api-index-deprecated.html

2. GNOME Documentation will be topic based, instead of task based.
3. Documenting features and functionality new to the GNOME Desktop.

Mallard features better support for linking pages within help than Docbook does today. This will allow GNOME's help to cross-link better within GNOME documentation, as well as make it much easier for downstream distributions to add custom content and pages in the current GNOME documentation. Moving to a CC license for GNOME documentation will also make it easier for these distributions to modify the content.

GNOME Documentation today is task based, helping you to perform a specific action, such as how to open or close an application. Using Docbook, the help is linear is nature taking you from one action to the other. One of the advantages in Mallard is the ability to write documentation that is topic based, almost like a mini how-to, such as "Adding Contacts" in Empathy. The layout structure is improved showing all the available topics in the home page for the applications help. Mallard also lets you cross-link documents, and using the previous example, the "Adding Contacts" page could also have a "See Also: Removing Contacts" linked directly in the same help page. In addition to re-writing the User and Accessibility Guides to cover the new functionality in GNOME 3.0, moving to topic based documentation will assist in finding the right help when needed.

Tomboy Online

Tomboy Notes is a note taking application that is currently included in the default GNOME Desktop. Tomboy has limited functionality currently to sync notes between computers using SSH or WebDAV. The process to setup sync isn't necessarily intuitive and Tomboy Online aims to fix this.

Tomboy Online will allow you to sync, share and edit your notes online or to multiple computers using a new web service.

Tomboy Online's server, code named Snowy, is written using Django and Python, and uses CouchDB to store the notes data. Tomboy Online is licensed under the GNU Affero General Public License[12], and wilil allow you to run your own server to sync your notes or use Tomboy Online's service instead.

Marketing & Promotion

Marketing is another area GNOME would like to focus on. With the GNOME 3.0 release there are plans to release a new GNOME website built on Plone. The new website will provide more timely information as well as add the ability for the translation teams to translate the website into their native language, using the same tools and process as translating an application.

The GNOME Marketing team is also planning to create a "GET GNOME" sub-site, creating new marketing materials such as brochures and posters, reaching out to universities, and launching a new GNOME store to buy shirts, stickers and more.

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12 http://www.fsf.org/licensing/licenses/agpl-3.0.html

GNOME Activity Journal

The GNOME Activity Journal is a new way to easily browse and manage the files on your desktop. The GNOME Activity Journal is the user interface to managing your files and is managed by the library "Zeitgeist".

The Zeitgeist library manages all the events on your desktop, including recently browsed web pages, tracking each time a file or document was opened or saved, or chatting with friends in your instant messaging application.

Zeitgeist is not a replacement for metadata databases such as Tracker or Beagle. Zeitgeist only monitors traces of applications, where a database like Tracker is keeping a much more thorough database and indexer. Zeitgeist is expectedto have integration with Tracker sometime in the future.

One interesting use case for Zeitgeist is parental controls, something not found in most Linux desktops today. As Zeitgeist monitors events, it is possible to monitor, for example, web pages you are trying to visit, and based on a blacklist, could automatically close Firefox if you try to visit a website that has been blacklisted.

The GNOME Activity Journal will provide an easy to view journal of your files, allowing you to sort or filter depending on the type of data, the source, time, name, tags or geolocation.

GNOME Shell

At GUADEC 2008, a number of GNOME developers, including Owen Taylor, started to discuss and brainstorm around improving the user experience and the GNOME panel. These discussions led to a hackfest in October of 2008 around the time of the Boston Summit. The hackfest split into four different groups:

- Applet & Desktop Widgets
- Themes & Animations
- File Management
- Application Launching and Window Management

GNOME Shell was an output of the Application Launching and Window Management team. One of the considerations was that both computers and the way people use them have changed in the last twelve years since GNOME was started. GNOME Shell is built to be flexible to run on multiple devices, including desktop and laptop computers, netbooks and mobile internet devices.

GNOME Shell is built on both new and existing GNOME technologies. The core of GNOME Shell is written in Javascript and calls Clutter and Mutter. Clutter is an open source software library for creating fast and animated graphical user interfaces. Mutter is a replacement for Metacity, GNOME's window manager. Mutter utilizes all of the core logic of Metacity, such as where windows should be placed, sized or focused and incorporates Clutter as a compositing manager. Using Mutter, you would no longer need to use Compiz as a window manager, which also uses 3D effects in its window manager.

In July 2009, William Jon McCann and Jeremy Perry published a design document for GNOME Shell[13]. They published the following goals for GNOME Shell:

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13 http://www.gnome.org/~mccann/shell/design/GNOME_Shell-20090705.pdf (CC-SA-BY)

- Address problems of Focus, Attention, and Interruption
- Address problems of Storing, Finding and Reminding
- Manage Complexity and Encourage Flexibility
- Delight the user

GNOME Shell is made up of four major components, the Menubar, Activies, the Windowing Area and Notifications.

The Menubar, similar to the default GNOME Panel in 2.28, runs along the top of the screen, and presents you with the Activities button, the current open application, the time, and the notification area where icons, such as Tomboy, Power Manager or Bluetooth are displayed.

The Activities button in the upper left hand corner also features a "hot corner" next to it. By either pressing the Super key, clicking on the Activities button, or moving the mouse to the hot corner the Activities menu opens.

The Activities menu uses the Applications Well to display icons for recently run applications, the ability to search for an application to run, and the Favorites well that displays Application Icons that are added as favorites or frequently run. The Application Well also displays all running applications that are open, and highlights them.

Below the Applications Well, Recent Items and History are displayed. This will show recently used files for easy access to re-open them. There are plans to integrate this functionality with the Zeitgeist engine as a way to keep the list up to date.

To the right of the Activities menu is the Workspace View. The current default setup is one active workspace and you can add additional workspaces by clicking the plus sign in the bottom right hand corner. You can also drag and drop applications from one workspace to another or bring a specific application to focus by clicking on it.

The Windowing Area is the logic around window decorations, moving and resizing windows and organizing application windows.

Notifications are currently a work in progress, and the current goal is integrate notification into the bottom central area of the workspace. Notifications you may receive from applications like X-Chat, Empathy or Gwibber will be displayed there and it is not dissimilar to the notification program used by Ubuntu, notify-osd.

GNOME Shell is currently available for beta testing via jhbuild. To learn more visit http://live.gnome.org/GnomeShell.

Summary

The decision to ship GNOME 3.0 will be made by the GNOME Release Team in November 2009. The Release Team is committed to shipping GNOME 3.0 when it's ready, and build on the reputation GNOME has worked hard to achieve over the years by providing a usable, stable and accessible desktop.

GNOME 3.0 features exciting new features, including a new user interface, a new way to manage and browse files, updated help and enhancements for users with accessibility needs.