



Fork it!

Forks have created some of the best projects in Free Software, but their origins are usually controversial and messy.

Mike Saunders investigates.

Imagine you've been using a certain program for years. You absolutely love it, and you can't live without it. You know every feature, menu item and keybinding like the back of your hand. Then suddenly the development team announces a major change: they're redesigning the interface, or removing features to make the program more accessible to newcomers.

You're incensed. You join the hordes of angry users on forums and IRC, and complain bitterly about the program's sudden change of direction. You're deeply disappointed, and while you may be able to understand the argument from the developers' perspective, it doesn't stop the fact that the program you use every day and may even depend on for your livelihood is about to change drastically.

Now, if this were a closed source program, you're up a certain creek without even a Starbucks coffee stirrer for a paddle. If you're a programmer, you might be able to

gather together some fellow hackers to begin work on an open source version of your beloved app – but it could take years to reach the same level of functionality. In other words, you're stuck.

Fortunately, we users of free and open source software don't have this problem. At any point we can

take a program's source code and split it off – or "fork" it – into another project. It happens all the time, sometimes for good reasons, and sometimes for bad ones, but without

question the ability to fork a program is one of the Free Software community's great strengths.

Many of the most popular and famous programs we use began as forks, often in controversial or unpleasant circumstances. So over the next few pages we'll explore why forks happen, look at some of the most notable, and talk to developers who've forked projects to see if they can reunite their codebases further down the line.

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When development paths diverge

The most common catalyst for a fork is when the development team behind a project decides to redesign the software, or focus on a different type of user or platform. A great example of this is Gnome 3, which is one of the most controversial overhauls in the history of Free Software. Previous versions of Gnome 2.x had been rather conservative in their approaches to the desktop – you had a familiar taskbar-like panel, a software menu, and so forth.

Then the Gnome team announced a major redesign, which featured a completely different way of working with and managing windows. There was going to be more focus on touch interfaces, while some advanced features and customisation options were removed in the name of simplicity and consistency. As expected, there was uproar among many Gnome users. Here are some classic quotes from the internet as Gnome 3 was released:

“A thank you is in order from the Xfce team, as the release of Gnome 3 has urged me (and many others) to switch to Xfce.”

“Gnome 3 does put you into the driver’s seat – that of a train on a single track.”

“If Gnome 3 happens to coincide with the ways of working that you find most efficient, then congratulations: you are a very lucky person. Enjoy the productivity while it lasts – you have

about three years before they start the next ground-up rewrite that will replace the interface you love with something you will almost certainly consider an unwieldy abomination, and you will suddenly find yourself begging for configuration options.”

That last quote, in particular, reflected much of the sentiment from long-time Gnome users. It had taken many years and releases for Gnome 2.x to reach a state of maturity and completeness – and now the developers wanted to rewrite major chunks of it from scratch? What’s the point of getting used to Gnome 3 when Gnome 4 could just change everything once again?

Flexing the muscles

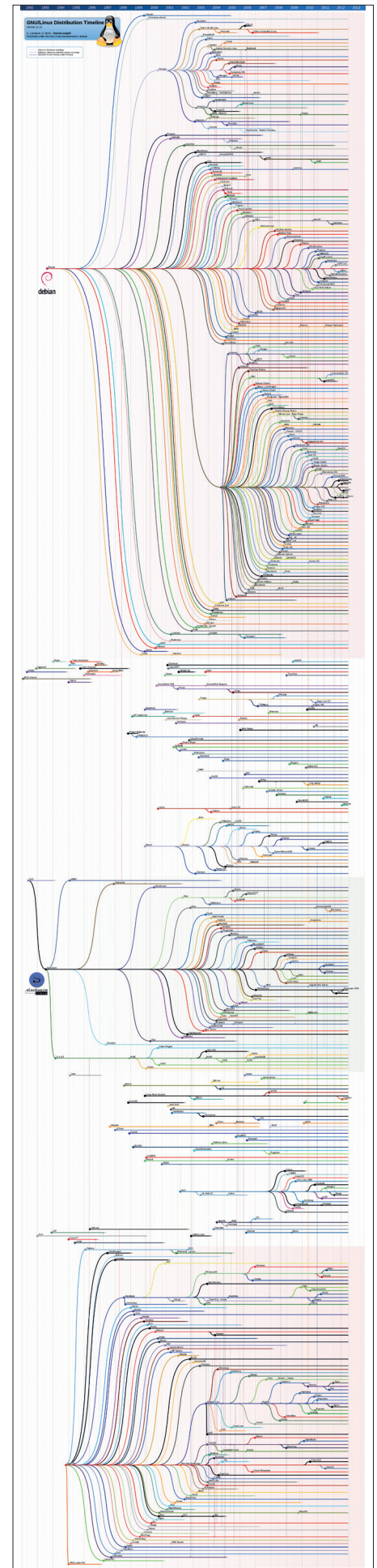
Incidentally, this is one of the by-products when a largely unpaid community develops a project. Maintaining feature-complete and stable software is boring: you can’t show off your awesome programming skills. Many of the original Gnome 2.x developers moved on to other things as the years went by, while newer hackers wanted to make more aggressive changes.

Some people loved Gnome 3, and it brought some fresh approaches to the table of UI design. And even though the first few releases were pretty rough around the edges, new (or previously existing) features have been added over time.

Anyway, as expected, it didn’t take long for a fork of Gnome 2.x to arrive. An Arch Linux user known as Perberos set up the Mate project (www.mate-desktop.org), which intended to keep Gnome 2’s codebase up to date. That is, it would be updated to fix bugs, close security holes and work better with modern libraries. Initially Mate was dismissed by many on the net: comments like “it’s doomed to fail” or “nobody wants to maintain it” were common.

Yet Mate development ramped up; distributions started to include it in their repositories, and now we have an attractive and modern Gnome 2.x-like desktop environment that’s a great alternative for those who dislike the Gnome 3 style. In the end, everybody has won – but it was a painful process getting here.

You can’t see the details here (full version at <http://tinyurl.com/linuxforks>), but this graph shows the hundreds of distributions forks since Linux came to life.



Proprietary forks

Closed source forks of Free Software are rare, thanks to the GNU GPL licence, which prohibits them. But not all projects use the GPL, and other licences let companies take an originally open source project and create a proprietary fork. Orbis OS, the operating system that’s used on the PlayStation 4 is a good example: it’s based on FreeBSD 9, but Sony is under no obligation to release its modifications back to the community.

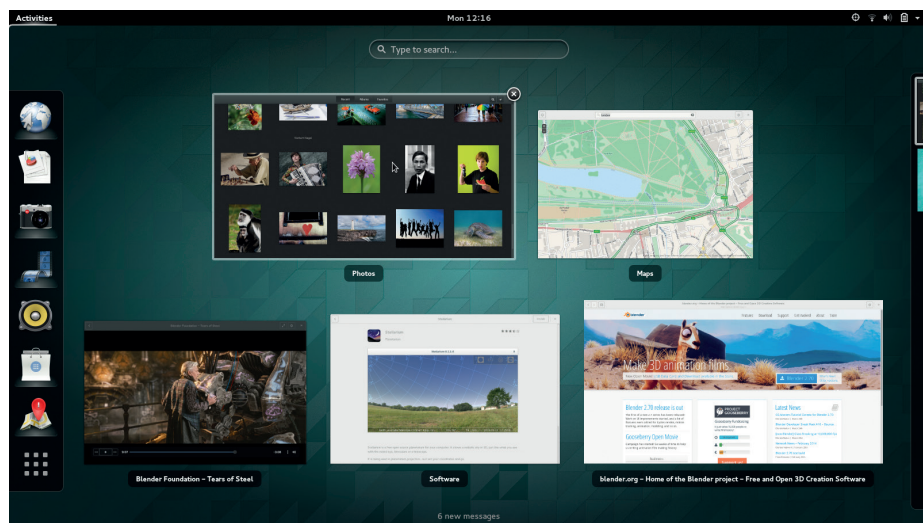
Wine, the Windows compatibility layer that’s famously not an emulator, used to be released under the X11 licence, which allowed a few proprietary forks, such as Cedega, but later on the Wine team switched to the GNU LGPL. And this is why the GPL vs BSD licence debates never stop: BSD supporters claim to have the most “free” licence because there are very few restrictions, whereas GPL fans say they are more free because their restrictions enforce freedom down the line.

When developers just don't get on

Developers can be a prickly bunch, and while the best code should always win, personalities often get in the way of progress. Many projects have forked because of spats between developers, such as when Theo de Raadt was ejected from the NetBSD operating system team for “a long history of rudeness towards and abuse of users and developers” of the project. De Raadt went on to make OpenBSD, which brought us OpenSSH and LibreSSL – both essential tools.

But the most notable fork involving developer personality clashes was XFree86 and X.Org. In 2003, XFree86 had been the standard X Window System implementation on Linux for many years, and development was sluggish. The “core team” was regarded as an old boys club, hindering progress, and Keith Packard, one of the most experienced and respected of the X Window System developers, started to look into starting a new project.

David Wexelblat, a member of the XFree86 core team, launched a scathing attack on Packard via the mailing lists, accusing him of doing one of the most “low-class, unprofessional, and tactless things I have ever experienced in my



Gnome 3's redesign was both loved and hated, but thanks to Mate the old 2.x codebase stays alive.

professional career”. Packard was booted off the XFree86 project – but that didn't stop him. He created **xwin.org**, a meeting place for X developers who wanted to work in a more progressive and transparent project, which eventually led to the X.Org server used in virtually all Linux distributions today.

XFree86's popularity declined rapidly, and by 2009 it was effectively dead. Meanwhile X development picked up pace as it moved

away from XFree86, with the source code becoming more modular and easy to compile, while the need to edit the dreaded configuration file became rarer thanks to auto-configuration.

Many other forks have become the “standard” versions after a while. EGCS split off from the GCC compiler suite in 1997, providing various experimental new features, and GCC development stalled. Then in 1999, the Free Software Foundation “blessed” EGCS as the standard compiler, and the projects merged. Similarly, LibreOffice forked from OpenOffice.org, and has become the most used flavour of the office suite in major distros today.

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Recent Changes to XFree86

Below is a recent extract from the XFree86 change log. The full change log can be found in the XFree86 source tree (`xc/programs/Xserver/hw/xfree86/CHANGELOG`) and at our [CVSWeb server](#).

XFree86 development code can be accessed directly from the CVS repository. Information about this can be found on our [CVS page](#).

Change log extracts are also available for the following branches: [3.3](#), [4.0.2](#), [4.1](#), [4.2](#), [4.3](#), [4.4](#), [4.5](#).

XFree86 4.8.99.1 (?? February 2009)

7. Deal with a build issue introduced by “security” update 2007-004 to MacOSX. This update, present in MacOSX 10.5, by default disables the use of the `DYLD_LIBRARY_PATH` environment variable that supplemented the run-time library search path. To overcome this, change the build to link `bdftopcf`, `fc-cache`, `mkfontdir`, `mkfontscale`, `xcursorgen` and `xkbcomp` utilities against static versions of the libraries generated by the build. Although this is currently only done for Darwin 9 and later, this is written in such a way that this can be done on any other platform should the need arise (Marc La France).
6. Fix links against `libGL` that arises on MacOSX Jaguar due to its confusion over whether to use the build-generated library or a system-provided one (Marc La France).

Here's the latest update to the XFree86 changelog – from 2009! The project effectively became dormant after it kicked out Keith Packard, one of its most talented and respected developers.

When forks are encouraged

There's something I'd like to share from my own personal experience of running a Free Software project. From the outset, MikeOS (<http://mikeos.sf.net>) was designed as a learning tool to show how a simple 16-bit assembly language operating system works. Over the years I've had countless patches thrown at me from developers around the world, often incorporating brilliant new features, but usually I've turned them down. They add layers of complexity and support for things that I don't know inside-out, making the project lose track of its goal.

One developer was submitting so many great new features and additions that I said: “OK, because we can't fit all these into the project, please fork into a super-MikeOS and share your work with the world.” And TachyonOS (<https://code.google.com/p/tachyon-os>) was born. I was delighted to see this fork – it meant that MikeOS stays true to its focus, while new features can be added elsewhere.

From the horse's mouth

Projects are still splitting today. This is especially common in the distribution world: someone takes distro A, changes a few packages and the desktop theme, and releases distro B. Fair enough – FOSS is all about freedom and choice – but our community often ends up with many distros doing almost exactly the same thing, and duplicating a lot of effort.

With this in mind, we contacted a bunch of distros that began life as forks, and asked them if they could consider merging with the original (or very similar) projects. For instance, Mageia and OpenMandriva both started as forks of the newbie-friendly (and now defunct) Mandriva distro. Kate Lebedev of OpenMandriva told us: “We know some contributors from Mageia team, some are friends, and we often meet at events and conferences, exchange ideas, experience and expertise, but so far contacts are not that regular.”

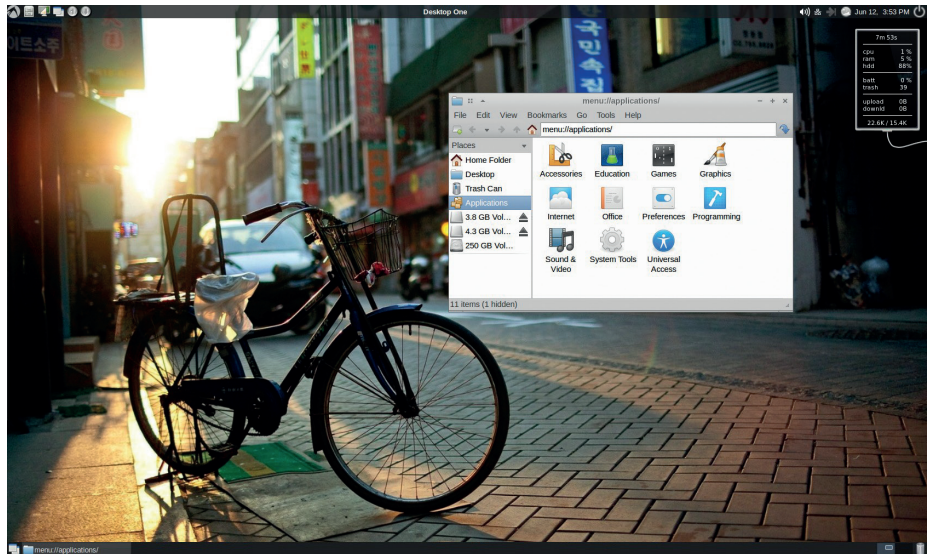
When asked if she could ever see the two distro merging, she responded with: “We are fully open for discussing collaboration options with all responsible open source communities and persons – everybody is welcome to join.” Mageia and OpenMandriva have some technical differences, but it'd be good to see the distros working together more closely in the future, and it's a good thing that neither party rules it out.

Mageia/OpenMandriva

When we asked Mageia the same question, their press contact told us: “There are certainly no current plans to merge the two projects, as they are probably quite diversified now, but I don't think we would ever say never.” Developer David Walser provided a more thorough response:

“Some have cited technical reasons for not merging when this question has been raised in the past, but those concerns are overblown, and not at all insurmountable if the two communities really did want to merge the distributions... However, for the two to merge, they'd have to agree on a shared philosophy for what they're trying to develop, and both communities would have to see value in merging.

“There currently are enough philosophical differences to make it hard to imagine happening in the near future, though there would be obvious value on both sides of sharing development resources and reducing duplication of effort. What's more



LXLE (www.lxle.net) is a fork of a fork of a fork, but it's still a jolly good lightweight distro.

likely, and likely to be more valuable, would be some collaboration, in packaging in particular, to achieve those benefits without having to completely merge the projects.”

The *buntu variants

Next, we asked Ronnie Whisler of LXLE (a distribution based on Lubuntu (which is based on Ubuntu (which is based on Debian))) if he considers his project a fork, or a distro in its own right. He gave us an insight into the frustration that can grow inside developers, which leads to new projects being born.

us: “I don't consider it a fork, nor really a distro for that matter. It's an eclectic respin, and while it can be argued that most distros are essentially respins, I think LXLE is probably the poster child as such.”

Whisler explained that he got tired of installing Lubuntu and making the customisations that he needed each time. But instead of making his own distro to solve this, couldn't he have tried working with the Lubuntu team to get his modifications and proposals integrated?

“I made a few of my ideas known on mailing lists and such, but they were mostly ignored or I was told why they weren't good ideas, by the moderators mostly. The actual 'Lubuntu Team' never contacted me directly – a couple of their 'social servants' did though, after LXLE became available, and that proved to be difficult at best. They seemed only interested in telling me what I should do and what I should learn. Outside of that however there was little actual

technical help. That was fine with me because I had no intention of changing my ideas because someone claimed to have a 'title/role/association' with the Lubuntu project. It's an old saying: those looking for power/authority are the very ones that should never have it... I have very little contact with them outside of bug reports.”

Linux Lite

Finally we talked to Jerry Bezencon of Linux Lite, an Ubuntu-based distro featuring the Xfce desktop. We asked him if having multiple distros with very similar aims (given that Xubuntu already exists) helps Linux adoption, or it just leaves newcomers to the operating system feeling confused. He said:

“Newcomers are a lot smarter than some give them credit for. They're quite capable of choosing a distribution that exactly meets their everyday needs. Social media, online articles and reviews, magazines and YouTube videos provide a wealth of information on which they can base their decision. 'Distro hopping' also enables people to find what they are looking for.

Choice is empowering; people react badly when that is no longer available to them. That is directly evident from reading our feedback page where people have stated that after X number of distributions, they have finally found one that they can settle on: www.linuxliteos.com/feedback.html. I'm not against pooling resources – that's simply not our focus at the moment, but one day it may be. For now, the end user has our undivided attention.”