The second Mac revolution

The Mac introduced the creative people in society to computers, changing forever the perception of what these machines could achieve. Could Apple's switch to a UNIX foundation be part of a second radical shift, leaving the PC to play catch-up once again?

Daniel James

The Apple machines of the 80's turned computers from dull counting machines and glorified typewriters into creative tools, forcing a revolution in the design, publishing and music industries through accessibility and mass participation. If you wanted to produce - let's say - a magazine in those days, all of a sudden you didn't need a lot of money, you didn't need to have a particular job or be a member of the union, and you didn't even need to have served an apprenticeship or have been to college.

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The new tools were good enough that talented people could figure them out for themselves, and a creative explosion was the result.

Just as the Mac opened up those businesses to a new generation, now open source software (or in the terms some people prefer, "free" or "libre" software) is doing the same for the development of computer systems. Participation is based on ability, not who you are or where you come from. If you are talented enough, you can join a peer group of the world's best programmers and get respect for your contribution - even though you may be just a teenager from some remote land without a penny to your name. The converse is also true; you may have looks, money and a massive ego, but without a clear contribution to make you will probably be ignored. Free software is a harsh but ultimately fair meritocracy.

The great advantage

Given that the Mac platform is now taking advantage of this mass participation, by moving to a UNIX family kernel and picking up the source code of software like KHTML to create Safari, there's a resonance with the GUI computing revolution of the 80's. OS X can run XFree86, the version of X11 used on nearly all Linux desktop systems. The cross-pollination between OS X, UNIX and Linux means that Apple users, for the first time, can participate in the development of their operating system of choice at the deepest level.

There's a positive feedback loop between users and developers which can only improve the software that we rely on. It's not by accident that UNIX family systems have a reputation for stability and efficiency - it's a direct consequence of active input from countless users over thirty years and more. When there's a problem or someone figures out an improvement, users with source code don't just moan or sit waiting for an upgrade - they get involved. And having fixed the problem, they share the information so other users can fix their systems.

This participation is denied to Windows users, who are stuck in the one-way supplier to customer relationship created by the proprietary approach to software. Even if they wanted to understand Windows, fix or improve it, they aren't allowed to. Windows source code isn't generally available to individuals, and is only rarely

available to institutions - and then under very restrictive terms.

So the previously untapped creative potential of the world's computer users has been unleashed on free software - just look at the statistics of the http://sourceforge.net site for an example. Sourceforge is the largest site hosting open source projects, offering server space and collaborative tools. It currently hosts over 71,000 individual software development projects, with more than ten times that number of registered users.

No single company can employ enough software developers to compete with these massive collaborative projects - not even Microsoft. To give just one example, 2003 has seen the launch of the 64-bit Apple G5 hardware, the semi 64-bit Panther and new Linux distributions for the AMD64 CPUs. Windows users can buy a 64-bit Opteron or Athlon64 chip from AMD today, but they can only run a 32-bit legacy operating system until at least next year - so much for the supposed technical lead of Microsoft. But then they were late to the table with the graphical desktop too.

Catching those 64 bits

UNIX family operating systems have several advantages in the migration to 64-bit platforms, not least that the technology has been around for quite a while. Linux has been available for the 64-bit Alpha CPU since 1995, and some of the proprietary UNIX variants have been 64-bit for much longer. But the key advantage over Windows is in source code availability. You can't port to 64-bit without it, and if source code is distributed among many thousands of users and developers then that makes the considerable effort of porting and testing that much more likely to happen.

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When Microsoft finally has its 64-bit Windows ready for launch, it will have to go to each and every significant application developer and ask them to commit resources to developing a 64-bit version of their product. The answer is likely to be that the application companies will wait and see if 64-bit Windows becomes popular - a chicken and egg problem if ever there was one.

UNIX family systems already have the free software GCC compiler, which as of version 3.3 supports the optimisations which allow programs to take advantage of 64-bit features on the G5 platform. Other critical tools and libraries are well established, thanks in part to IBM's use of a 64-bit PowerPC CPU, known as the POWER4+, in its pSeries server range.

Conclusions

But that talented and yet unknown teenager working on the next killer application is hardly likely to have access to a machine like an IBM pSeries.

Apple's G5 desktop machines are built and priced for the mass market, and so along with machines based on the new AMD chips, we'll see them adopted by the next generation of 64-bit developers.

They can cost tens of thousands of pounds, and are usually only found in enterprise IT departments. By contrast, Apple's G5 desktop machines are built and priced for the mass market, and so along with machines based on the new AMD chips, we'll see them adopted by the next generation of 64-bit developers. Given that all the tools are in place and plenty of source code is available to anyone who wants it, tomorrow's systems will be likely to be created with free software.

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