

New approach to combining open source and proprietary software models

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QNX has introduced a new hybrid software model in an effort to improve how embedded software is developed and distributed. The aim is to provide the benefits of open source while allowing embedded developers to profit from their derivative works.



The Foundry27 web portal allows developers to participate in the development of QNX products and to share code with other community members.

■ Today the rate of change to software and hardware is so rapid, and software so complex, that vendors and customers alike struggle to keep up. Often, software vendors are their own worst bottleneck, as they work to enhance their existing products while also attempting to satisfy new, and often divergent, customer needs. Meanwhile, the embedded developers who use these software products often know exactly what features they want; many would make the modifications themselves if allowed to do so. Many of these developers would also welcome opportunities to share the results of their development efforts — just as they would in an open source project.

For me, open source is usually part of the answer. I have been involved for a long time in the open source community, and have served as a lawyer for organizations like the Open Source Initiative and the Apache Foundation. The goals of open source — built upon licences that promise freedom to use, copy, modify, and distribute software — are part of my nature. They are also becoming part of the nature of the entire software industry.

However, a pure open source approach does not work in all cases. A case in point: QNX Software Systems. Like many commercial software vendors, QNX does not believe that relinquishing all control over its intellectual property and giv-

ing it away for free would best serve the interests of its customers. Thus the company has introduced a new software model that integrates open source and proprietary software products in new ways. This model represents a step forward toward openness of embedded software development, and it gives customers significantly greater flexibility to adapt QNX technology for their own purposes.

Technology companies implement their fundamental business strategies through licensing their intellectual property. It is a subtle task. If a company gives too much away through overly generous grants of copyrights or patents, then its competitors and customers get a free ride on its products. But if the company makes restrictions on use too tight and complicated, it discourages customers from taking full advantage of its products. This is where QNX is looking to innovate, with a new blend of transparent development and accessible licences for embedded developers. It is an enablement strategy that combines the benefits of an open source development model with the sustainability of a royalty-based business model for commercial projects.

QNX already serves as a major contributor to open source software projects, including the Eclipse C/C++ Developer Tools (CDT), which is based on code that QNX donated to Eclipse.

In fact, QNX runtime technology and development tools contain a variety of open source components, many of which are available for free use. The company has also released board support packages (BSPs) under the Apache License, Version 2.0 (Apache 2.0). This license gives developers the option of offering their derivative works — BSPs in this case — for free or for a fee. It does not force developers to publish their derivative source code, yet it provides a framework for open, cooperative development.

Meanwhile, key components of the copyrighted and patented technology at the heart of QNX runtime software remain available only to QNX licensees, as are certain value-added features of the QNX developer tools. Nothing in this new QNX business model changes that rule.

However — and this is what is new — the new model offers more visibility into the QNX development process and it grants developers more freedom to modify and share licensed copies of QNX software. Building on its Eclipse experience, the company has started to publish source code for key parts of its runtime products, including the QNX Neutrino microkernel, and will develop those products in the open, for anyone to follow. Non-commercial development licences for the full version of the QNX development suite, which includes the QNX

Momentics development tools and the QNX Neutrino RTOS, are available for free. Partner licenses are also available at no charge for anyone looking to add their products to the QNX ecosystem.

The company is, in effect, creating an open source community within its community of RTOS, middleware, and development tool licensees. As a result, anyone interested in QNX technology can now cooperate on development for the benefit of the community as a whole. At the same time, by publishing its QNX Neutrino RTOS source code, the company is inviting others to take QNX technology down new open or commercial development paths. It has even created opportunities so that commercial developers can implement QNX technologies on target operating systems other than the QNX Neutrino RTOS.

Traditional open source communities are, in some sense, open to anyone who wants to follow community rules of behavior and licensing. This QNX community is very similar, but the laws of intellectual property — and the limitations that the company places on the use of its copyrighted and patented software products — give this community more of a commercial feel.

Anyone can join, and they can become QNX licensees (for free) as long as they promise not to license their QNX or derivative work software to third parties who are not also QNX licensees, or unless they get a commercial distribution licence from QNX.

This community consists only of QNX licensees. That is not open source, but it is a realistic modification of open source rules to create an open development community for QNX software, which is used in commercial products worldwide. Outside this community of licensees, QNX proprietary software is published but it is not open. Within the QNX community, developers enjoy the benefits they would find in an open source development environment while being able to leverage advantages associated with proprietary products.

Open source software thrives when a community of users and developers cooperates to develop new solutions for the entire community to share. To help encourage the growth of such a community, QNX is launching a web portal called Foundry27. Using this portal, anyone can access information from the company and from others in the community about QNX products and services (including all published

source code). As with most open source development projects, free registration is required to get write privileges for wikis and forums.

The company does not mandate that Foundry27 be the only development and distribution vehicle for QNX-related products. Licensees may participate in other academic development labs or commercial and non-commercial projects, as long as all the participants are themselves licensed to use the QNX development suite. Coordination at the development portal is encouraged but not required.

By downloading the development suite and applying for a license key, developers will gain access to a free copy of most QNX development tools and runtime software — including repository download rights for published source code. Depending upon the software licence(s) that they qualify for, developers can use that software to prototype target systems, extend hardware support for the QNX Neutrino RTOS, develop new applications, and many other purposes. Members of the QNX community can also exchange their software solutions with any other QNX licensees, as specified in the new software licences.

The new hybrid software model divides software products into three classes: 1. A small (and growing smaller) class of patented or copyrighted proprietary software that is based on unpublished source code. Soon this will be limited to certain value-added tools and some middleware products. 2. A large (and growing larger) class of published source code for proprietary software components that are available for the creation and sharing of derivative works. 3. A large (and hopefully growing much larger) collection of source code published under open source licence terms, or that has been made available for free from other members of the QNX community.

Deciding what software goes into what class is a balancing act. If the company claims too many intellectual property rights, it will limit the ultimate success of the community that it hopes to empower. The balance will be maintained by the commitment to publish more and more of its software over time, and by its promise to allow its customers and the development community greater licensing freedom with

QNX software. QNX Neutrino RTOS runtime technologies and the QNX Momentics development tools are not open source in the way that the open source definition requires, and do not claim to be. But the QNX approach to enabling the sharing of derivative works within the community is open source, and is familiar to anyone who has used open source software. This shared source code will help developers create new applications and share them with others. It will also help companies that build target systems, and companies that create new tools for the QNX development suite, to make even more capable products.

When developers download the QNX Momentics development suite, they can choose from one of three QNX licences, the first two of which are free of charge. Non-commercial end users — Licensees may receive the QNX development suite, which includes the QNX Momentics development tools and the QNX Neutrino RTOS software, under a royalty-free Non-Commercial End User Licence Agreement (EULA), for certain evaluation and

limited development purposes, including prototyping. The EULA is also designed for academic faculty to train their students. Community partners — for companies who wish to offer their own products and services to QNX customers, the company now offers its technology partners the Partner Software Licence Agreement (PSLA) at no charge. Commercial customers — for companies that create commercial products with QNX Neutrino RTOS software, the company provides the Commercial Software Licence Agreement (CSLA).

This licence is not free. It includes important warranties and indemnities appropriate for commercial software. Licensees will need to execute a separate OEM Licence Agreement or Runtime Licence Agreement to manufacture and distribute target systems that embed the QNX Neutrino RTOS software. All these licences allow developers to develop derivative works of QNX software that can be distributed to other licensees, and they enable a community where each developer can benefit from the efforts of other developers. ■