What OS is best For a Medical Device?

Laird Technologies

According to Alan Cohen, the director of systems engineering at Logic PD, Android is a good operating system (OS) choice for some medical devices. Cohen's column [1] in Medical Electronics Design states that Android "stacks up well against" traditional mainstream OS competitors such as Microsoft Windows Embedded Compact (CE) and Linux.

Medical device makers often choose CE or Linux because:

- These OSs support the rich interfaces preferred by users
- Software engineers have experience with using these OSs and related tools on desktop PCs and servers
- Because it is a fully-integrated development platform, CE makes it easy to get a project started, but CE has a royalty for use and has a code base controlled by Microsoft. Linux is free and open source, but getting Linux to work in an embedded device can be challenging, especially if the device offers a sophisticated user interfaces.

Android

Designed for ARM-based processors, Android leverages Linux to provide a full-featured embedded systems framework without license fees. With Android, the Linux kernel remains under the GPL, but other components are released under the Apache license, which allows Android to be used in both proprietary and open-source endeavors. This dual-license design provides some protection against the "viral nature" of the GPL.

Can Android provide the reliability, including a low risk to patients and users, demanded by many medical devices? Cohen contends that Android, like other heavyweights OSs, is appropriate for use in many Class I and Class II devices. With Android in use on tens of millions of handsets worldwide, the OS boasts an enormous pool of users finding bugs and a large developer community dedicated to fixing them.

The Future of CE

CE is not only a standalone operating system but the core of two other Microsoft operating systems: Windows Embedded Handheld (WM) and Windows Phone 7. The latter is specifically for phones, so the choices for medical devices are CE and WM.

While CE is available to any device manufacturer, WM requires special Microsoft approval and licensing. A device manufacturer chooses CE when it needs a highly customizable platform from system-level software to user interface to display size. WM is the choice when the device maker needs a consistent application programming interface (API) set to provide application portability across devices

and a familiar and consistent user experience delivered on specified display sizes.

For more information on CE and WM, see this Summit newsletter article [2].

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