Windows Embedded Standard 7

Aiming at High-end and Interactive Devices Development

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For industrial PCs and purpose-built devices, Microsoft releases an exclusive version of their embedded operating system—Windows Embedded Standard 7 (WES 7). It's worth noting that the upcoming WES 7 OS adopts the same kernel technologies as the latest Windows 7 which was launched at the end of 2009 and is very popular in the consumer PC market. As a result, the new version of WES 7 OS provides the complete functions of Windows 7 and embedded devices with WES 7 can take advantage of those features creating new business opportunities.

In accordance with established rules, the original name of the new OS should be Windows Embedded Standard 2011. Based on the overall strategy, Microsoft decided to rename it, so as to share some of the success of its big brother Windows 7. Moreover the new name, WES 7 can be easily associated with Windows 7. WES 7 can deliver many of the significant technologies of Windows 7 because the core programs of WES 7 were re-written by Microsoft as Windows 7 was being developed.

Dazzling features based on Windows 7

From a functional point of view, the most direct beneficial functions are the multi-touch and gesture capabilities. For applications which need interactive touch solutions such as self-checkout machines in the supermarket, the self-service KIOSK for the library or education market, WES 7 can support touch features in the operating system layer. The interactive User Interface (UI) can reduce the development times for Original Equipment Manufacturers (OEMs) who develop Windows 7 applications.

In order to use the hardware resources flexibly or reinstall the system, WES 7 offers the Virtual Hard Disk (VHD) Boot feature to directly boot from the virtual disk image so that the same software can operate on a different system or reduce inconvenience if the system crashes and needs to be reinstalled.

Another new feature of WES 7 is the sensor and location platform. This function can obtain location information through GPS or triangulation. The operating system can identify the device location through location data and deliver that data to applications in geographical information systems. Embedded OEMs can create more value-added applications in location-based services (LBS) using WES 7 by means of this function.

For remote connection or terminal equipment for remote branch offices, WES 7 with Windows Server 2008 R2 can support remote access to meet process equipment development and deployment demands.

Modular architecture shortens development learning curve

Although WES 7 supports many capabilities and features the same as Windows 7, the OS is designed specifically for the embedded market. Embedded devices have diverse needs and the demands depend on the developers' expertise as well as their requirements. In common with the previous versions of Microsoft embedded operating systems, WES 7 also incorporates the latest features for the embedded market that are different from general PC operating system functions.

For example, the warning message window or dialog box on regular PC OS are designed to protect the system and remind the user to re-consider, but this may become an unnecessary user experience in an embedded device. For that reason, the UI design has avoided these extra steps in WES7 dialog boxes.

In order to offer comprehensive functionality, general PC OS install many features which occupy a large chunks of hard disk space because the system does not know each individual users' needs. But bigger is not better for embedded designs which have specific objectives, and embedded designs and applications require the individual operating system features and components. The original PC operating system must be divided into several functional components and integrate them on the basis of each OEMs' demands.

This kind of design enables the OEMs to have better control to choose their components for their embedded applications which may result in longer development and testing times. Due to tight schedules, this process may not be a problem for the experienced manufacturer who already has invested a lot of time in WES framework, but it may result in a longer learning curve for new embedded manufactures who need to train their engineers.

The modular architecture of WES 7 offers another significant benefit from more the thousands software drivers or software drivers available. For the new players in the embedded market, it can reduce the learning curve and accelerate the product to achieve a faster Time to Market.

Enhanced security increases gambling applications

Because Microsoft has such a high reputation in the PC market it becomes a high profile target for hackers who seek system vulnerabilities. To counter this, Microsoft has focused intensely on security since Windows Vista development which has greatly increased security. Although Microsoft software vulnerabilities still exist, large-scale attacks through those vulnerabilities have been fewer and the occurrence of attacks greatly reduced. With the enhanced security design features in Windows 7, WES 7 also benefits from advanced secure design.

For instance, WES 7 enables devices to upgrade through the Windows Update mechanism just like the regular version which further increases stability and security. In addition, WES 7 also supports hard drive encryption, BitLocker and BitLocker-To-Go, which has been provided since Vista. They allow OEMs to provide certain embedded devices with higher security features.

On the other hand, BitLocker Drive Encryption and BitLocker-To-Go encryption for portable storage devices empowers the gambling industry to enlarge their potential. For example, gaming machines with BitLocker-To-Go allow the gambling manager or players to use a USB flash drive to replace the traditional membership cards.

WES 7 follows in the footsteps of Windows 7. It offers many of the functions and features of its bigger consumer grade sibling that will appeal to application developers in the Digital Signage, KIOSK, and Retail sectors.

Microsoft Windows Embedded