Microsoft® Auto 3.0

An Adaptable, Extensible Platform for the Automotive Industry

Microsoft Auto 3.0 is designed to allow carmakers and Tier One suppliers to more quickly and easily implement state-of-the-art infotainment systems. With Microsoft Auto, applications are developed for the platform rather than for a specific device model, so development costs can be amortized through easy design portability.

Microsoft Auto 3.0 provides an integrated middleware stack and hardware reference design. Built on the proven Windows® Embedded CE 6.0 operating system, Microsoft Auto also boasts an open architecture that allows developers to easily extend functionality with their own custom solutions. To help ensure solutions remain current, the system architecture and tools allow for easy system updates after installation.

Platform

Microsoft Auto 3.0 is a robust development platform providing a rich programming environment on which developers can build. Developed on the core platform provided by Windows Embedded CE 6.0, Microsoft Auto 3.0 features the standard application architecture defined by Windows CE.

In addition, Microsoft Auto provides several automotive-specific features, including reliability services that help monitor applications, in addition to GPS capabilities.

You also have access to:

- A Win32 (API) subset, including file and memory management, device and service management, threads and process management, and networking stacks

- Multilanguage support

- The Microsoft.NET Compact Framework

- Microsoft Internet Explorer® Web Browser for Windows CE (based on Internet Explorer 6), with an OEM-replaceable user interface

- Rich multimedia support through the MicrosoftDirectShow® API, with support for a variety of formats such as Windows Media® Audio, MP3, and DVD

- Rich networking protocols, security and encryption technologies, Internet client technologies, Wi-Fi, video, support for hard disks, XML, Internet servers, graphic displays, and file system and database support

Middleware Stack Highlights

Bluetooth 2.0 EDR

Standardized Bluetooth pairing functionality is provided by Microsoft Auto. In addition, Microsoft Auto implements rich integration of Bluetooth-enabled mobile phones. Following the latest Bluetooth standards, Microsoft Auto provides complete command and control of phone calls as well as access to the contacts in the phonebook. On newer Bluetooth-enabled mobile phones (or portable media players) that can stream music over Bluetooth, Microsoft Auto also contains support to listen to this music over the car's stereo system. Microsoft Auto also allows carmakers the ability to create applications that bring useful data into the car using the mobile phone as an Internet connection.

Microsoft® Auto

Media

The included middleware also supports rich digital media device integration, including support for most media players on the market including Microsoft Zune®, Apple iPod, Creative ZEN, and Sansa, as well as inexpensive mass storage devices such as USB flash drives and SD cards. Mobile phone users with data plans may also listen to Internet radio.

A media index can also be created from all players (except A2DP devices), enabling a carmaker or Tier One supplier to create rich voice access to the media library, as well as visualization of the library on an in-car display.

Microsoft Auto 3.0 includes support for multiple audio zones as well as WMA, MP3, AAC, and WAV codecs for development purposes. Thanks to a pluggable architecture, additional codecs may also be enabled.

Phone

In addition to the previous Bluetooth benefits mentioned, Microsoft Auto enables rich call control and handling, including caller ID, conference calling and call waiting, custom ring-tones sent by a Bluetooth phone, and transferring of active phone calls to/from the Bluetooth handset and the system.

Retrieval and notification of new SMS messages upon arrival allows a carmaker or supplier to implement the display of the SMS to the in-car system, to "read" the SMS to the driver using Text-To-Speech, and reply to or forward messages using pre-programmed text.

Human-Machine Interface Layer

The Microsoft Auto application model enables a clear separation of Human-Machine Interface (HMI) from the core application logic. This lets automakers differentiate their applications by creating a different look and feel for different brands or car models within their product ranges, while re-using lower level components between brands and models.

Device Management

Updates applied from a USB device brought into the car can save time and money for the car owner and carmaker. Both Ford and Fiat have shown that updates can be easily and conveniently applied by the vehicle owner. Other methods of transferring of updates to a Microsoft Auto 3.0 device can also be implemented.

This capability allows a more secure and stable installation and uninstallation of new applications, as well as updates to the system, for compatibility with new consumer devices, functionality updates of the system, service updates for the system, and other types of updates.

Development Environment

Microsoft Auto 3.0 provides an intuitive development framework that application developers can use. The toolset and framework are familiar and approachable. Familiar, best-in-class development tools include Visual Studio®, Platform Builder 6.0, and, for development purposes, multiple speech engines.

Hardware Reference Design Highlights

For development purposes, Microsoft Auto 3.0 provides a hardware reference design, including the following automotive-grade specifications:

- *400-MHz ARM11 processor*
- *64-MB DDR*
- *256-MB NAND flash*
- *Vehicle bus microprocessor*
- *Support for multiple audio zones (mic input and two-zone output)*
- *Debug interfaces (JTAG, Ethernet, serial)*
- *Bluetooth*
- *USB connectivity*
- *DVI output*

For more information on how Microsoft Auto 3.0 can help meet your customers' demands for a rich, interactive experience in their vehicles, visit us on the Web at **www.microsoft.com/ windowsautomotive.**

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