Microsoft® ROBOTICS STUDIO

Microsoft Robotics Studio – Community Technical Preview

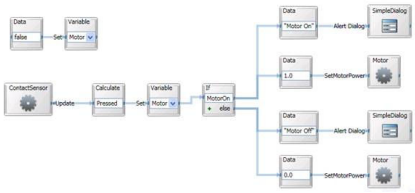
Making Robotics Easier.

Microsoft® Robotics Studio makes it easy for hobbyist, academic and commercial developers to create robotic applications for a variety of hardware platforms. The Microsoft Robotics Studio software development kit includes a lightweight services-oriented runtime, a set of visual authoring and simulation tools, as well as tutorials and sample code to help you get started.

End-to-End Development Platform

The Microsoft Robotics Studio software development kit enables developers to create services for a wide-variety of robot hardware.

- **Non-programmers can easily create robot applications using a visual programming environment.** The Visual Programming Language enables anyone to create and debug robotics programs very easily. Just drag and drop blocks that represent services, and connect them up. You can even take a collection of connected blocks and reuse them as a single block elsewhere in your program.

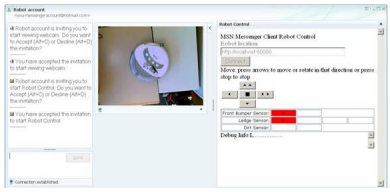


VPL makes it easy to create robot applications

- **Simulate robotics applications in 3D physics-based virtual environments.** Simulate your robotics applications using realistic 3D simulated models. The Microsoft Robotics Studio simulation tool integrates in the PhysX™ engine from AGEIA™, a pioneer in hardware-accelerated physics, enabling real-world physics simulation for robot models. PhysX simulations can also be accelerated using AGEIA hardware.

Microsoft Robotics Studio simulation tool enables testing applications in a realistic physics-based 3D virtual environment.

- **Interact with robots using Windows or Web-based interfaces.** Create applications that enable you monitor or control a robot remotely using a Web-browser and send it commands using Jscript; or control your robots using MSN® Live Messenger. Mount cameras on the robots and control them via IM to survey a remote location.



With Microsoft Robotics Studio you can interact with robots through MSN Live Messenger.

Lightweight services-oriented runtime

Microsoft Robotics Studio includes a .NET-based services-oriented runtime.

- **Makes asynchronous programming simple.** The Concurrency and Coordination Runtime (CCR), makes it simple to write programs to handle asynchronous input from multiple robotics sensors and output to motors and actuators.
- **Real-time monitoring of robotic sensors and response to motors and actuators.** The services, message-based architecture makes it simple to access, and to respond to a robot's state, using a Web-browser or Windows-based application.
- **Reuse modular services using a composable model.** Build high-level functions using simple components, providing for reusability of code modules as well as better reliability and replaceability. For instance a lower-level sensor service could be integrated into a navigation service.

Scalable and extensible platform

The Microsoft Robotics Studio programming model can be applied for a variety of robot hardware platforms, enabling users to transfer their skills across platforms. The programming interfaces can be used to develop applications for robots using 8, 16 or 32-bit processors, either single or multi-core.

- **Easily extend Microsoft Robotics Studio functionality.** Third parties can extend the functionality of Microsoft Robotics Studio by providing additional libraries and services. Hardware or software vendors can make their products easily compatible with Microsoft Robotics Studio.
- **Supports both remotely connected (PC-based) and robot-based (autonomous) application scenarios.** Remotely connected scenarios enable you to communicate from a PC to the robot through a serial port, Bluetooth®, 802.11, or RF. Programs can also execute natively on PC-based robots running Windows XP, enabling fully autonomous operation.
- **Develop using a wide range of programming languages.** With Microsoft Robotics Studio, robotics applications can be developed using a selection of programming languages, including those in Microsoft Visual Studio® and Microsoft Visual Studio Express languages (C# and VB.NET), as well as Jscript and Microsoft Iron Python. Third-party languages that support the Microsoft Robotics Studio services-based architecture are also supported.

For More Information

Visit the Microsoft Robotics Studio Web site at **microsoft.com/robotics** to learn more about more about Microsoft Robotics Studio.

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Systems Requirements

Supported Operating Systems: Windows Server 2003 R2 Standard Edition (32-bit x86); Windows Server 2003, Web Edition; Windows XP Home Edition; Windows XP Professional Edition; Windows XP Tablet PC Edition.

To use **Microsoft Visual Programming Language** included in our Community Technical Preview Release, you **MUST** install the specific Microsoft .Net Framework 3.0 CTP available as an additional download in the section "Files in this Download"

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