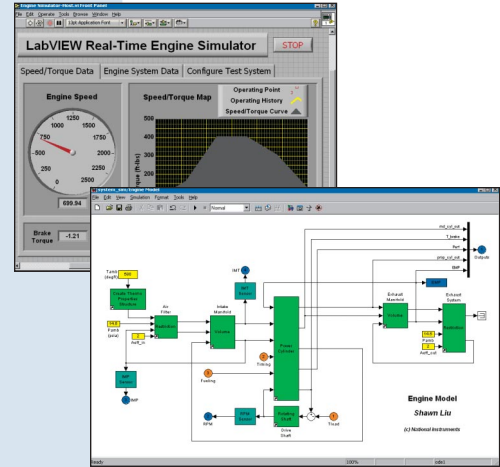


# LabVIEW Simulation Interface Toolkit

## NI LabVIEW™ Simulation Interface Toolkit

- Use patented LabVIEW technology for viewing and controlling data in Simulink
- Automatically import your Simulink model into LabVIEW with built-in scripting utility
- Integrate your dynamic system with a wide variety of modular hardware
- Seamlessly deploy real-time control prototypes and hardware-in-the-loop test systems

**NEW**



## Overview

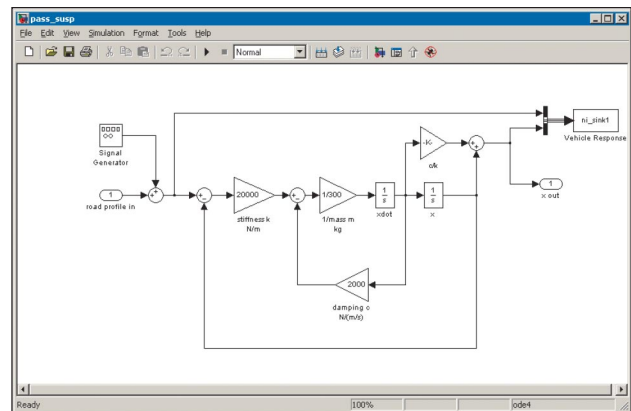
The LabVIEW Simulation Interface Toolkit seamlessly links LabVIEW and The MathWorks Simulink® software to speed your control development. With these integrated tools, engineers can quickly take a product from software simulation to real-world prototyping. The toolkit delivers patented LabVIEW technology for viewing and controlling data within Simulink. In addition, the toolkit provides a plug-in to The MathWorks Real-Time Workshop to import Simulink control models into LabVIEW. By importing these control models into LabVIEW, you can then integrate them with a wide variety of I/O. With these features, you can easily transition from software algorithm verification to real-world prototyping using the same user interface. The toolkit includes tools for you to:

- Easily build custom LabVIEW user interfaces to interactively verify Simulink models
- Import Simulink models into LabVIEW with a plug-in to the Real-Time Workshop
- Seamlessly download Simulink models to LabVIEW Real-Time hardware

With these capabilities, you have one consistent set of tools to help you transition from modeling to verification to prototyping.

## Verify Models with a LabVIEW User Interface

The LabVIEW Simulation Interface Toolkit gives you tools to build custom user interfaces for Simulink models. The built-in SIT Connection Manager offers a high level utility to connect a custom LabVIEW user interface with Simulink models, eliminating the need for any programming. With the custom user interface you can easily simulate, analyze and verify your control model on a desktop PC. With this utility, creating custom user interfaces for your Simulink model is now a simple four-step process.



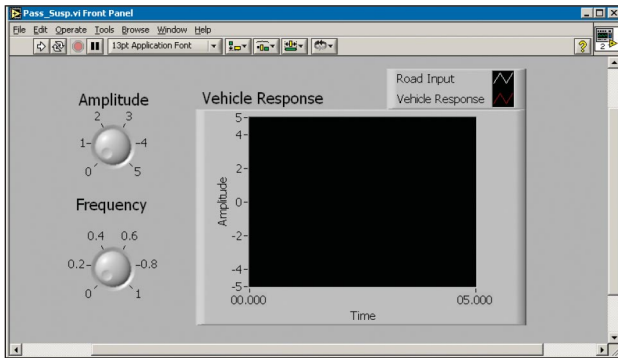
## Connect LabVIEW to Simulink



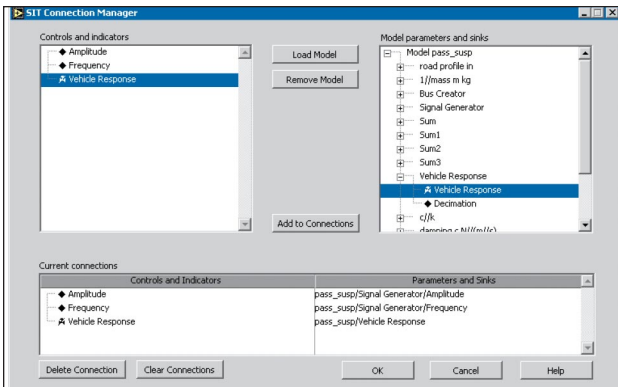
Figure 1. Simulink and LabVIEW in the simple control design process

**Step 1.** The Simulation Interface Toolkit adds an NISink to the Simulink Explorer window. Add the NISink to any location where you would like to view data.

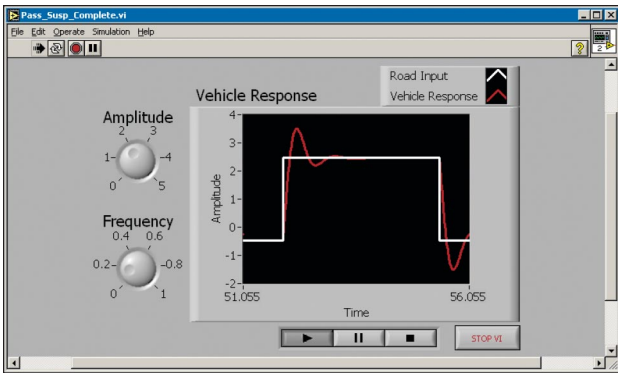
# LabVIEW Simulation Interface Toolkit



**Step 2.** Next, you create a custom LabVIEW user interface using the extensive library of built-in controls and indicators available in LabVIEW.



**Step 3.** Using the SIT Connection Manager, you connect the control and indicators on the LabVIEW user interface to the parameters and NISinks of the Simulink block diagram.



**Step 4.** Run the LabVIEW application and analyze the behavior of the model.

## Advanced Features for Model Verification

The SIT Connection Manager works seamlessly over the network so you can connect a LabVIEW user interface to Simulink models running on a different machine. This allows you to keep all Simulink models on one desktop PC or to easily verify multiple Simulink models from one user-interface location.

Users can also access the SIT User Interface API directly to easily automate custom batch test sequences. For instance, you can create a batch simulator that automatically runs a Simulink model with various parameters and records the response. With the hundreds of analysis functions in LabVIEW, you can generate complex input signals for the model and analyze the results of the batch simulation. This capability dramatically reduces the amount of manual testing required during the algorithm verification stage.

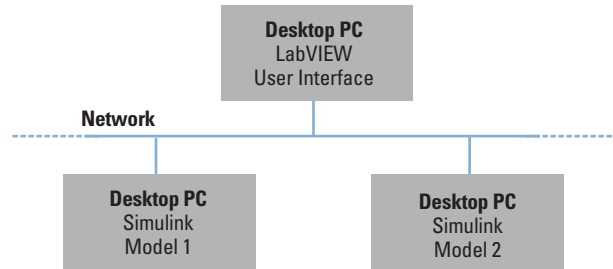


Figure 2. LabVIEW interfaces to Simulink over the network

## Importing Simulink Models into LabVIEW

You can also import the control system model into the LabVIEW environment with the LabVIEW Simulation Interface Toolkit. The toolkit includes a plug-in for Real-Time Workshop that automatically compiles the Simulink model into a DLL and builds several LabVIEW examples of how to interface with the DLL.

The example VIs built by the toolkit are specific to the Simulink model and speed development time by providing basic interfaces to data acquisition hardware. You can modify the interfaces to data acquisition hardware and replace them with interfaces to CAN I/O or motion control. With a variety of built-in libraries to interface to I/O, you can start with the examples and make minimal modifications to build your custom application.

## Deploying to Real-Time Hardware

With the architecture of the LabVIEW Simulation Interface Toolkit, you can seamlessly go from desktop verification of the Simulink model to real-world prototyping. By simply selecting a menu option to target a real-time system, you automatically download the necessary files for running the model while maintaining the custom LabVIEW user interface you previously created. This seamless transition preserves the work used to create the user interface while providing a solid real-time architecture for your system.

Choose from a variety of LabVIEW Real-Time targets to download the Simulink model to. Build stand-alone systems with real-time PXI systems or distributed CompactFieldPoint systems. You can also integrate a real-time system into your desktop with the PCI-7041/6040E plug-in board. With the model running real-time hardware, you can easily create control prototypes and hardware-in-the-loop test systems.

# LabVIEW Simulation Interface Toolkit

## System Requirements

The LabVIEW Simulation Interface Toolkit requires that you have a proper license for the following products:

- MATLAB® version 6.0 or later
- Simulink version 4.0 or later
- Real-Time Workshop® version 4.0 or later
- Microsoft Visual C++ version 6.0 and
- LabVIEW version 7.0 or later

## Ordering Information

LabVIEW Simulation Interface Toolkit .....	778552-03
Upgrade, from version 1.0 .....	850552A-03
LabVIEW Development System	
Professional .....	776678-03
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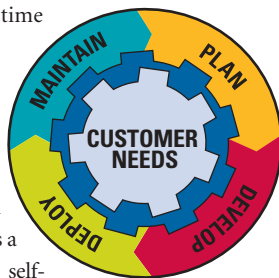
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