

MTD_LabVIEW_Matlab

Where To Find This Example

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Or in Version 13 or higher you can open the project directly from this page using this button. Make sure to select the **Enable Guided Help** before clicking this button.

Open Install Example

Design Notes

VSS/LabVIEW Integration Example

This example illustrates co-simulation with LabVIEW and MATLAB® in VSS. Co-simulation with LabVIEW is achieved by implementing the required functionality into a LabVIEW Virtual Instrument (VI); the Matlab implementation is done through a .m file.

In this example, a Moving Target Detector (MTD), used in Radar systems, is implemented as described below and the results are compared:

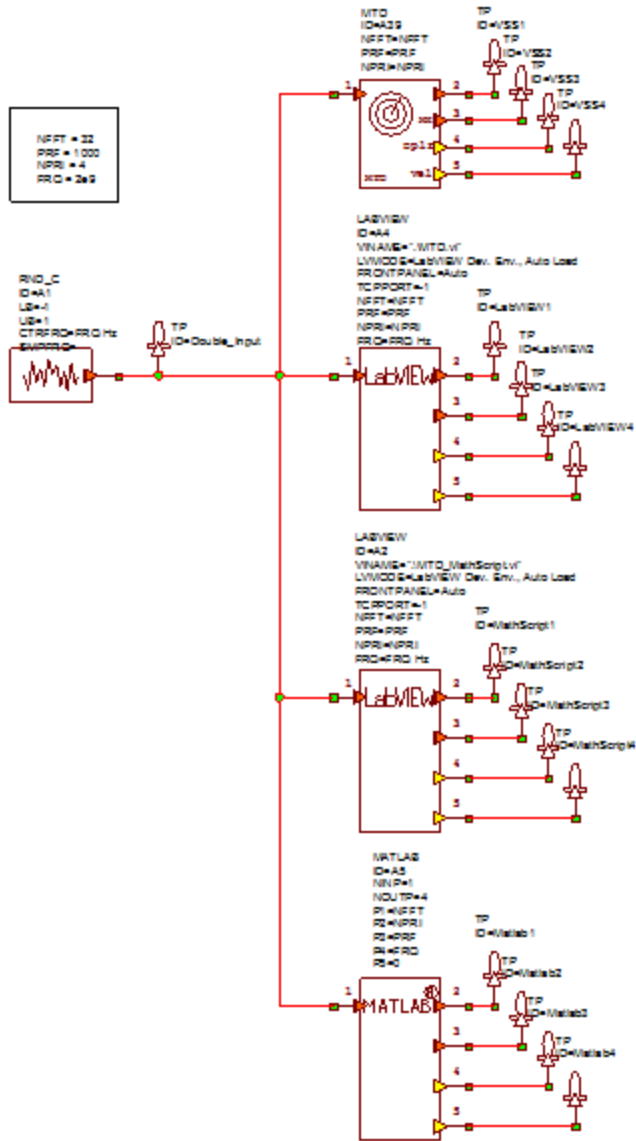
- The VSS implementation: uses the VSS native block MTD. This block is part of the VSS Radar Library.
- LabVIEW implementation: uses MTD.vi. This VI is implemented by using basic LabVIEW functionality. Requires an installation of LabVIEW Development Environment (32- or 64-bit).
- LabVIEW Mathscript implementation: uses MTD_MathScript.vi. Requires an installation of LabVIEW 32-bit Development Environment with the LabVIEW MathScript RT add-on module (the latter is available only for 32-bit installations of LabVIEW). Mathscript is a native compiler for .m files developed in MATLAB® or GNU Octave software.
- MATLAB implementation: uses MTD.m. This implementation requires an installation of MATLAB® software.

In this project, the same input signal is passed through the VSS MTD block, the LABVIEW block running the MTD.vi, the LABVIEW block running MTD_MathScript.vi and the MATLAB block calling the MTD.m function. The outputs are plotted and compared to verify they are all identical.

Note 1: This example will not run using the LabVIEW Run-Time Environment since the LabVIEW MathScript RT add-on module is not compatible with it.

Note 2: To link to the appropriate LabVIEW version, the variable TCPSPORT in the LABVIEW blocks should match the setting of TCP/IP Port in LabVIEW Tools/Options.../VI Server.

System Diagram - System Diagram 1



Graph - MTD Output

Re(WVFM(TP.VSS1, 128.0,1,0.5,0,0,0)) (ns) System Diagram 1 Time	Re(WVFM(TP.VSS1, 128.0,1,0.5,0,0,0)) System Diagram 1 y Values (No Data)	Re(WVFM(TP.MathScript1, 128.0,1,0,0,0,0,0)) (ns) System Diagram 1 Time	Re(WVFM(TP.MathScript1, 128.0,1,0,0,0,0,0)) System Diagram 1 y Values (No Data)	Re(WVFM(TP.Matlab1, 128.0,1,0,0,0,0,0)) (ns) System Diagram 1 Time	Re(WVFM(TP.Matlab1, 128.0,1,0,0,0,0,0)) System Diagram 1 y Values (No Data)	Re(WVFM(TP.LabVIEW1, 128.0,1,0.5,0,0,0)) (ns) System Diagram 1 Time	Re(WVFM(TP.LabVIEW1, 128.0,1,0.5,0,0,0)) System Diagram 1 y Values (No Data)
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Graph - MTD Max

Re(WVFM(TP.VSS2, 4,0,1,0,5,0,0,0)) (ns) System Diagram 1 Time	Re(WVFM(TP.VSS2, 4,0,1,0,5,0,0,0)) System Diagram 1 y Values (No Data)	Re(WVFM(TP.MathScript2, 4,0,1,0,0,0,0,0)) (ns) System Diagram 1 Time	Re(WVFM(TP.MathScript2, 4,0,1,0,0,0,0,0)) System Diagram 1 y Values (No Data)	Re(WVFM(TP.Matlab2, 4,0,1,0,0,0,0,0)) (ns) System Diagram 1 Time	Re(WVFM(TP.Matlab2, 4,0,1,0,0,0,0,0)) System Diagram 1 y Values (No Data)	Re(WVFM(TP.LabVIEW2, 4,0,1,0,5,0,0,0)) (ns) System Diagram 1 Time	Re(WVFM(TP.LabVIEW2, 4,0,1,0,5,0,0,0)) System Diagram 1 y Values (No Data)
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Graph - Doppler Offset

Re(WVFM(TP.VSS3, 4,0,1,0,5,0,0,0)) (ns) System Diagram 1 Time	Re(WVFM(TP.VSS3, 4,0,1,0,5,0,0,0)) System Diagram 1 y Values (No Data)	Re(WVFM(TP.MathScript3, 4,0,1,0,0,0,0,0)) (ns) System Diagram 1 Time	Re(WVFM(TP.MathScript3, 4,0,1,0,0,0,0,0)) System Diagram 1 y Values (No Data)	Re(WVFM(TP.Matlab3, 4,0,1,0,0,0,0,0)) (ns) System Diagram 1 Time	Re(WVFM(TP.Matlab3, 4,0,1,0,0,0,0,0)) System Diagram 1 y Values (No Data)	Re(WVFM(TP.LabVIEW3, 4,0,1,0,5,0,0,0)) (ns) System Diagram 1 Time	Re(WVFM(TP.LabVIEW3, 4,0,1,0,5,0,0,0)) System Diagram 1 y Values (No Data)
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Graph - MTD Output Comparison

