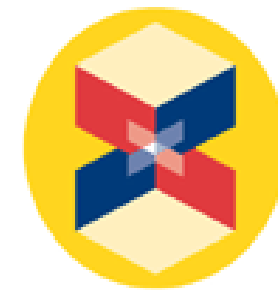


FPGA Design with Matlab & Simulink



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XILINX
SYSTEM
GENERATOR™
For DSP

Section 1. Installing Matlab/Simulink and Xilinx VIVADO/ISE Design Suit

Lecture 1 : Downloading and Intalling Matlab/Simulink and Xilinx ISE

Lecture 2 : Version Compatibility for Matlab/Simulink and ISE/VIVADO

Topic 1: Installing Matlab/Simulink and Xilinx VIVADO/ISE Design Suite

- a. Version compatibility solution following Xilinx user guide, we have list on next slide.
- b. Downloading Matlab and Xilinx ISE from [Mathworks.com](https://www.mathworks.com) and [Xilinx.com](https://www.xilinx.com) according to version compatibility.
- c. Necessary Forums and User guide for Designing FPGA with System Generator and Xilinx ISE Design Suite.

Version Compatibility Between MATLAB, System Generator and VIVADO/ISE Design Suite

- System Generator for DSP 14.7
 - ISE Design Suite 14.7 System Edition
 - MATLAB 2012a, 2012b, 2013a and 2013b
- System Generator for DSP 14.6
 - ISE Design Suite 14.6 System Edition
 - MATLAB 2012a, 2012b and 2013a
- System Generator for DSP 14.5
 - ISE Design Suite 14.5 System Edition
 - MATLAB 2012a and 2012b
- System Generator for DSP 14.4
 - ISE Design Suite 14.4 System Edition
 - MATLAB R2011a, R2011b, 2012a and 2012b

Version Compatibility Between MATLAB, System Generator and VIVADO/ISE Design Suite

- Vivado System Generator for DSP 2017.3
 - Vivado Design Suite 2017.3 System Edition
 - MATLAB Versions: 2016a, 2016b and 2017a
- Vivado System Generator for DSP 2017.2
 - Vivado Design Suite 2017.2 System Edition
 - MATLAB Versions: 2016a, 2016b and 2017a
- Vivado System Generator for DSP 2017.1
 - Vivado Design Suite 2017.1 System Edition
 - MATLAB Versions: 2016a, 2016b and 2017a
- Vivado System Generator for DSP 2016.4
 - Vivado Design Suite 2016.4 System Edition
 - MATLAB Versions: 2015a, 2015b, 2016a and 2016b

Version Compatibility Between MATLAB, System Generator and VIVADO/ISE Design Suite

- For more detailed version compatibility among other versions you can check following links:
- For Vivado Design Suite:
<https://www.xilinx.com/support/answers/55830.html>
- For ISE Design Suite:
<https://www.xilinx.com/support/answers/17966.html>

Downloading Matlab

- To download Matlab goto <https://www.mathworks.com/>
- Click on Products
- Then on Products page Click Trial Software.
- Fill the form and submit to download the Matlab

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Downloading Xilinx ISE/VIVADO

To download Xilinx ISE Suite

- go to <https://www.xilinx.com>
- Click on Developer Zone
- Then from the Hardware Zone section click on ISE Design Suite
- From there we can download ISE Design Suite

To download VIVADO is a similar process

- We select VIVADO Design Suite – HLx Editions option on Hardware Zone instead of ISE.
- From there we can download 30 Day VIVADO design suite evaluation or buy a license according to our need.

System Generator for DSP

- To use System Generator for DSP add-on we need VIVADO HL System Edition or ISE System Edition
- Other versions will not include the system generator for DSP add-on.
- While downloading the VIVADO or ISE Design suite we have to make sure that we have the correct version of MATLAB installed that is supported by corresponding version of VIVADO or ISE Design Suite.

Integrating MATLAB and System Generator

- Before integrating MATLAB and System Generator make sure you download the correct version of MATLAB which supported by the corresponding System Generator version.
- First install the MATLAB.
- After installing the MATLAB, make sure you have installed it correctly.
- After Checking, close all the instances of MATLAB before installing VIVADO/ISE Design Suite System Edition.
- Now install the VIVADO/ISE Design Suite.
- In System Edition of VIVADO/ ISE Design Suite you will get a pop-up option for System Generator integration with MATLAB.
- Choose the correct MATLAB version you want to integrate with and click apply.

Integrating MATLAB and System Generator

- System Generator can also be integrated after installing VIVADO/ISE Design Suite using System Generator MATLAB Configurator.
- In Windows, run System Generator MATLAB Configurator from start menu.
- System Generator MATLAB Configurator should be run with administrator privileges.
- This can be done by right clicking on System Generator MATLAB Configurator and choosing run as administrator.

System Generator Integration with Matlab/Simulink

goto: Start menu → All Programs

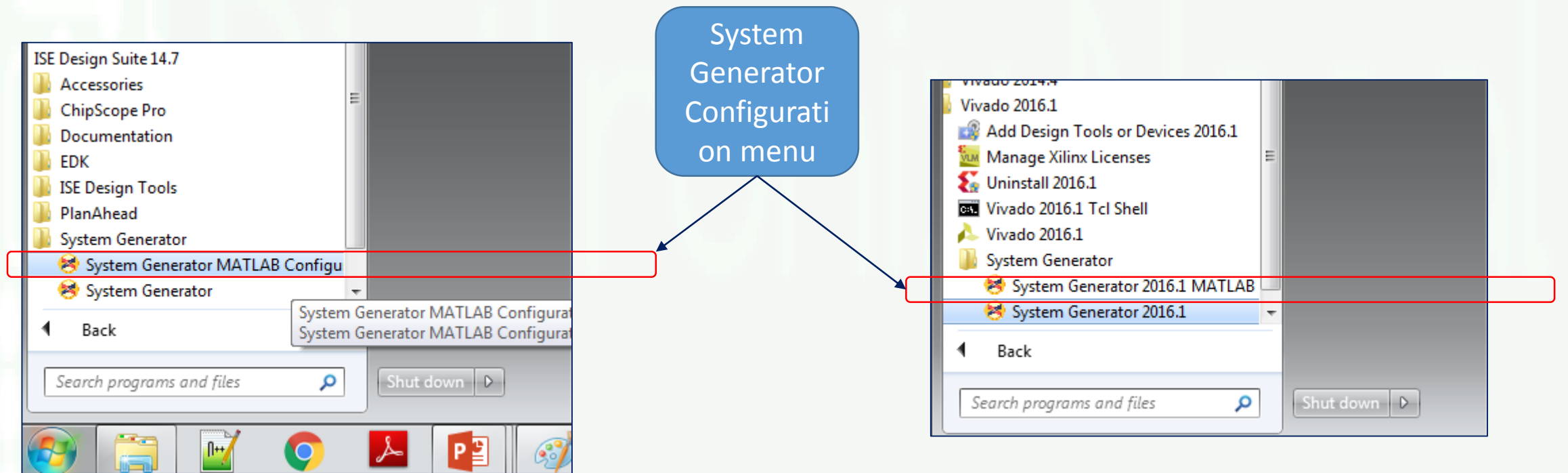
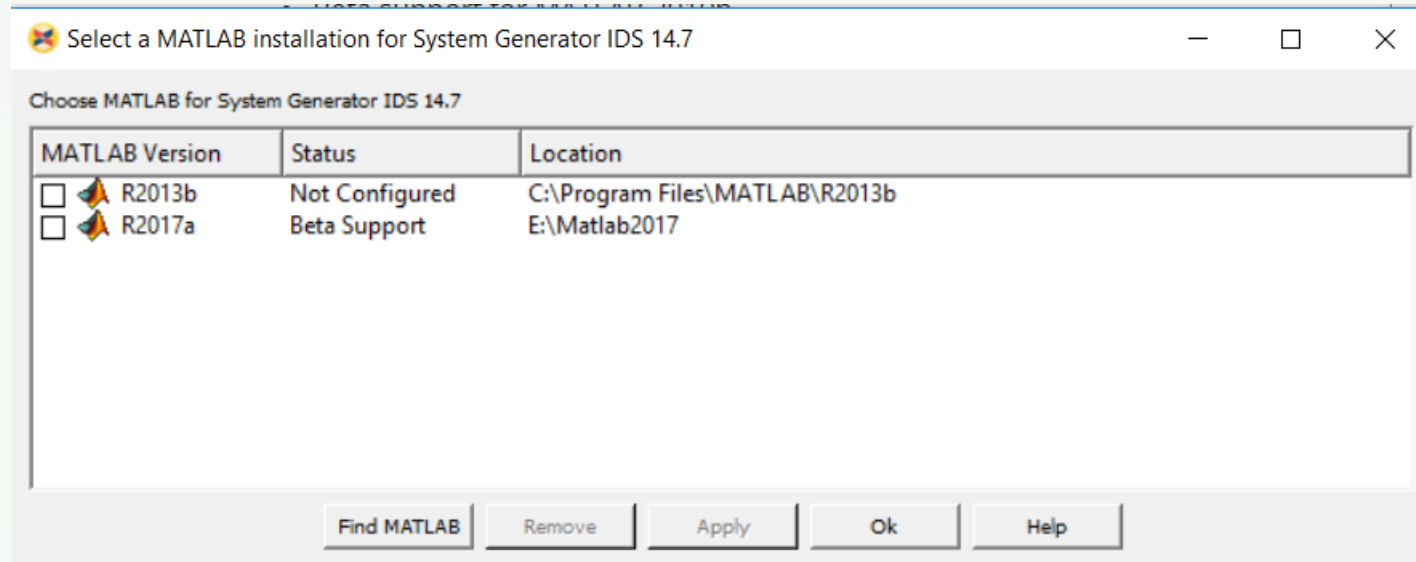


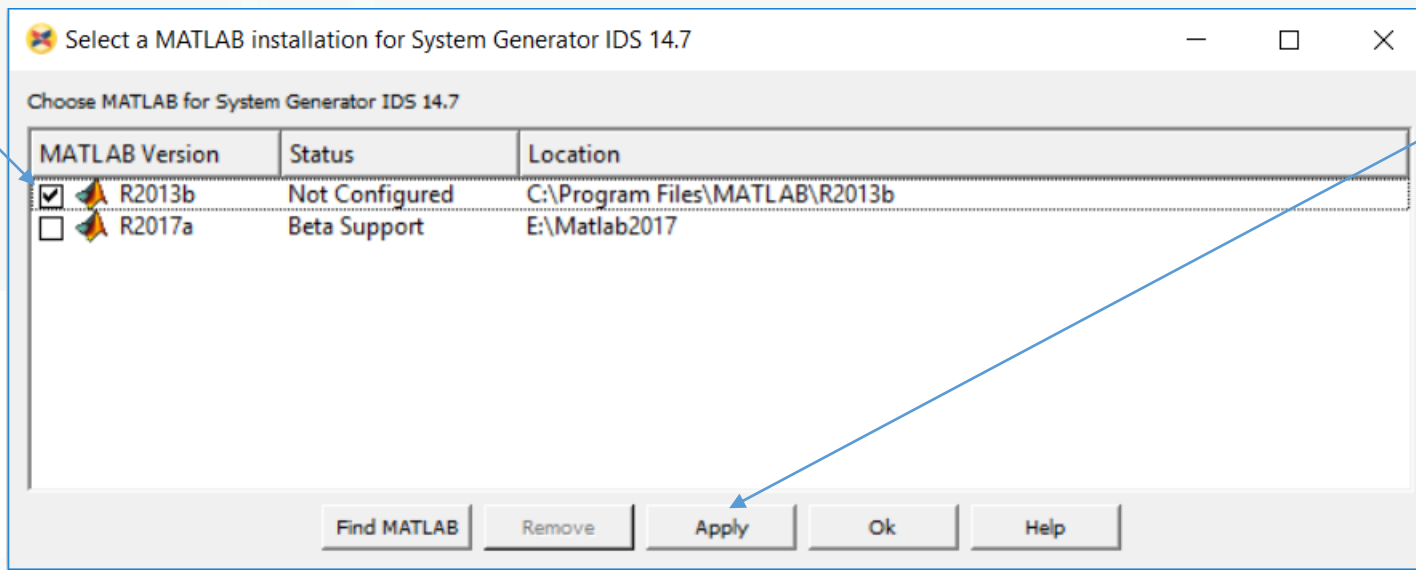
Figure: System Generator with ISE Design Suit
In Windows 7 O.S

Figure: System Generator with VIVADO
Design Suit, In Windows 7 O.S

Integrating MATLAB and System Generator

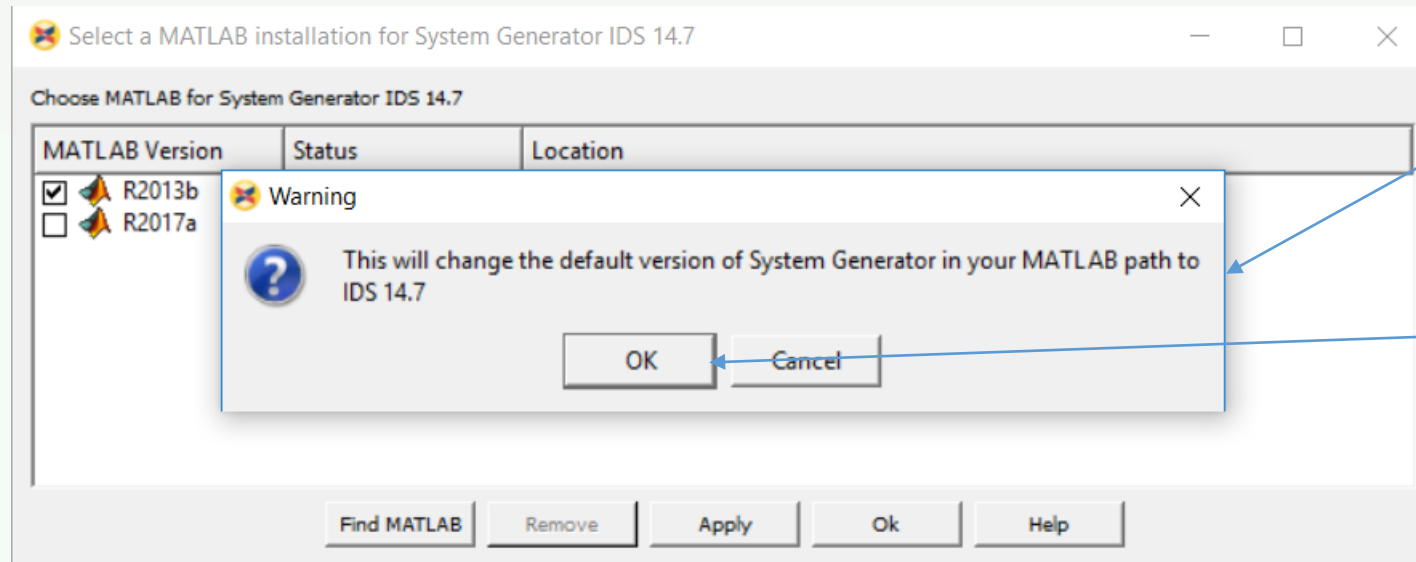


Tick the correct MATLAB version



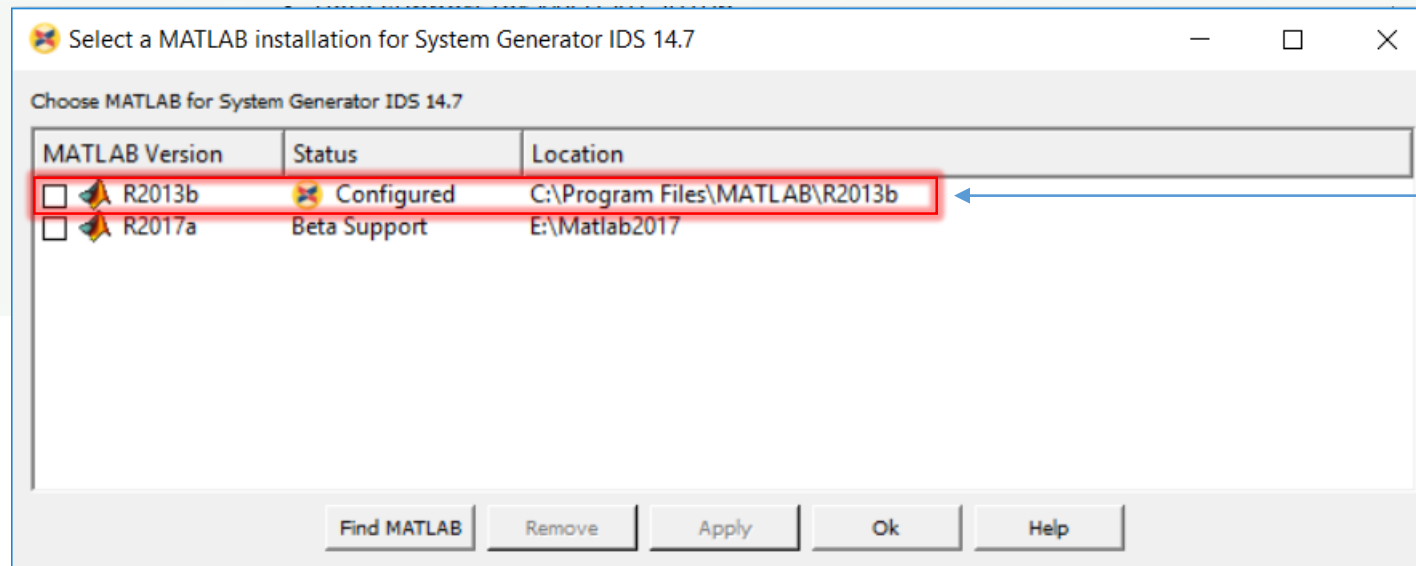
After clicking the checkbox, press apply

Integrating MATLAB and System Generator



After pressing apply, you will see this dialog box.

Press OK to continue.



Now the System Generator is configured. Press ok to close the dialog box.

Some Necessary Forums

- There are various forums and discussion boards to get help while designing FPGA with System Generator and Xilinx VIVADO/ISE Design suite.
- Some of them are listed here:
- Xilinx Forum: <https://forums.xilinx.com/>
- MATLAB Forum: https://www.mathworks.com/matlabcentral/answers/index/?s_tid=gn_mlc_an
- EDAboard: <http://www.edaboard.com/>
- FPGARelated : <https://www.fpgarelated.com/forums>

User Guides

- Xilinx Provides various user guides for each of its Design Suite.
- These user guide contains in depth knowledge to get started using its design suite along with licensing, installation and compatibility solutions.
- Download VIVADO user guides from here:
<https://www.xilinx.com/products/design-tools/vivado.html?resultsTablePreSelect=documenttype:User%20Guides#documentation>
- For System Generator with Vivado user guide, download user guide number:**UG897**
- Download ISE user guides from here:
<https://www.xilinx.com/support/documentation-navigation/development-tools/hardware-development/ISE-design-suite.html?resultsTablePreSelect=documenttype:User%20Guides#documentation>
- For System Generator with ISE user guide, download from this link:
<https://www.xilinx.com/support/documentation-navigation/development-tools/hardware-development/system-generator-for-dsp.html?resultsTablePreSelect=documenttype:User%20Guides#documentation>



Thank You!

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