Generating "FAST_SFunc.mexw64" Kumara Raja E

This document is prepared keeping OpenFAST-2.2.0, may be valid for other versions of OpenFAST also. Unlike in the FASTV8, the OpenFAST -2.2.0 does not have precompiled FAST library and MEX files need to run OpenFAST through MATLAB (Simulink).

Generating "FAST_SFunc.mex64" requires the OpenFAST library files built prior to it. The procedure for the same is given below.

1) Generating Compiling OpenFAST for generating OpenFAST compilation

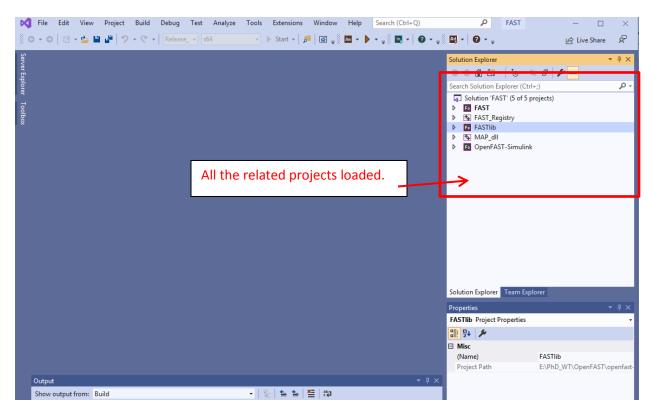
Notice that "E: \OpenFAST\openfast-2.2.0 \build\bin" is empty. Because, files are added here automatically after successful compilation.

Step01)

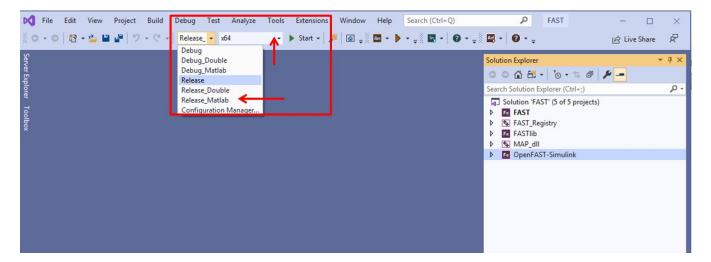
Open "FAST.sln" file located in "E:\OpenFAST\openfast-2.2.0\vs-build\FAST".

Note that "FAST.sln" is a Visual Studio solution file, so you need Visual studio installed on your machine. I have used Visual Studio 2019 with Intel Parallel Studio_XE2019.

In the "Visual studio", you should see a screen like below.

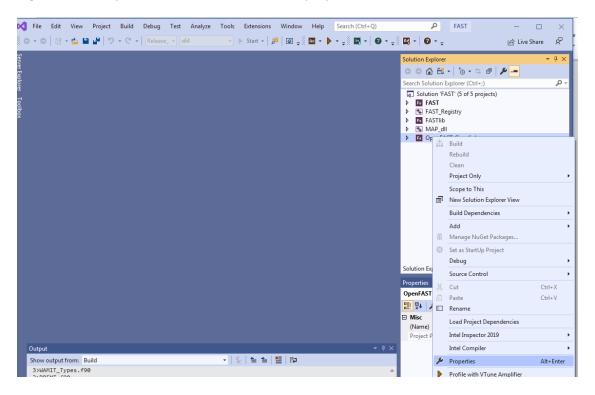


Step02) Chose "Release_MATLAB" from the drop-down menu and "x64" as shown below.



Step03)

Right click on "OpenFAST-Simulink" and select "properties" as shown below.



Step04)

A new dialogue box as shown in the below will popup.

Configuration Properties \rightarrow Linker \rightarrow Input \rightarrow Additional Dependencies \rightarrow Choose the right path for the libmex.lib file based on your matlab installation

Configuration: Release_Matlab	Platform: Active(x64) Configuration Manager
 Configuration Properties General Debugging Fortran Linker General Input Manifest File Debugging System Optimization Embedded IDL Advanced Command Line Resources MIDL Manifest Tool Build Events Custom Build Step 	Additional Dependencies Ignore All Default Libraries Ignore Specific Library Module Definition File Add Module to Assembly Embed Managed Resource File Force Symbol Reference Delay Loaded DLLs "C:\Program Files\MATLAB\R2019b\extern\lib\win64\microsoft\libmex.lib"
	Additional Dependencies Specifies additional items to add to the link line (ex: kernel32.lib); configuration specific.
	OK Cancel Apply

Step05)

$Build \rightarrow Build Solution$

KI File Edit View Project ∅ ~ ∅ 12 2 2 2	Build Debug Test Analyze	Tools Extensions Ctrl+Shift+B	Window Help Search (Ctrl+Q)	P FAST	- 🗆	× P
Serv	Rebuild Solution Clean Solution Run Code Analysis on Solution	Alt+F11		Solution Explorer	-	д х
er Explorer Toolbox	Build OpenFAST-Simulink Rebuild OpenFAST-Simulink Clean OpenFAST-Simulink	Ctrl+B		Search Solution Explorer (Ctrl+;) Solution 'FAST' (5 of 5 projects) G FAST		ρ.
box	Project Only Batch Build Configuration Manager	<u> </u>		FAST_Registry Fo FASTIib MAP_dll GopenFAST-Simulink		

Step06)

As already mentioned in the step01 new files are created in "E: \OpenFAST\openfast-

2.2.0_Test\build\bin"

Registry.exe	21-Mar-20 4:35 PM	Application	243 KB
🚳 MAP_x64.dll	21-Mar-20 4:35 PM	Application extens	377 KB
OpenFAST-Simulink_x64.dll	21-Mar-20 4:53 PM	Application extens	51,488 KB
d ^週 MAP_x64.exp	21-Mar-20 4:35 PM	Exports Library File	7 KB
引 OpenFAST-Simulink_x64.exp	21-Mar-20 4:53 PM	Exports Library File	2 KB
MAP_x64.iobj	21-Mar-20 4:35 PM	IOBJ File	1,036 KB
📄 Registry.iobj	21-Mar-20 4:35 PM	IOBJ File	558 KB
MAP_x64.ipdb	21-Mar-20 4:35 PM	IPDB File	242 KB
📄 Registry.ipdb	21-Mar-20 4:35 PM	IPDB File	128 KB
III FASTIib_x64_Matlab.lib	21-Mar-20 4:47 PM	Object File Library	31,600 KB
IIII MAP_x64.lib	21-Mar-20 4:35 PM	Object File Library	12 KB
🏙 OpenFAST-Simulink_x64.lib	21-Mar-20 4:53 PM	Object File Library	4 KB
MAP_x64.pdb	21-Mar-20 4:35 PM	Program Debug D	4,076 KB
📳 Registry.pdb	21-Mar-20 4:35 PM	Program Debug D	4,668 KB

2) To create "FAST_SFunc.mexw64"

NOTE: OpenFAST should be compiled before this step using the procedure illustrated above.

Open the matlab file "E:\OpenFAST\openfast-2.2.0 \glue-codes\simulink\src\create_FAST_SFunc.m"

Make sure the variables "libDir" and "includeDir" are set correct. The "libDir" is the path where "FASTlib_x64_Matlab.lib" and "MAP_x64.lib" are present.

libDir = 'E:\OpenFAST\openfast-2.2.0\build\bin';

includeDir = 'E:\OpenFAST\openfast-2.2.0\modules\openfast-library\src';

Now run the "creat_FAST_SFunc.m". Upon successful run "FAST_SFunc.mexw64" is created in the location "libDir" as shown below.

📧 Registry.exe	21-Mar-20 3:56 PM	Application	243 KB
MAP_x64.dll	21-Mar-20 3:56 PM	Application extension	377 KB
OpenFAST-Simulink_x64.dll	21-Mar-20 3:50 PM	Application extension	51,488 KB
ශ් ^g MAP_x64.exp	21-Mar-20 3:56 PM	Exports Library File	7 KB
聲 OpenFAST-Simulink_x64.exp	21-Mar-20 3:50 PM	Exports Library File	2 KB
MAP_x64.iobj	21-Mar-20 3:56 PM	IOBJ File	1,036 KB
Registry.iobj	21-Mar-20 3:56 PM	IOBJ File	558 KB
MAP_x64.ipdb	21-Mar-20 3:56 PM	IPDB File	242 KB
Registry.ipdb	21-Mar-20 3:56 PM	IPDB File	128 KB
✓ FAST_SFunc.mexw64	21-Mar-20 4:12 PM	MEXW64 File	172 KB
FASTIib_x64_Matlab.lib	21-Mar-20 4:09 PM	Object File Library	31,600 KB
MAP_x64.lib	21-Mar-20 3:56 PM	Object File Library	12 KB
III OpenFAST-Simulink_x64.lib	21-Mar-20 3:50 PM	Object File Library	4 KB
MAP_x64.pdb	21-Mar-20 3:56 PM	Program Debug Database	4,076 KB
Registry.pdb	21-Mar-20 3:56 PM	Program Debug Database	4,668 KB

3) To run OpenFAST through Simulink

The procedure is same as FASTV8 except, copy the files "FAST_SFunc.mexw64", "MAP_x64.dll" and "OpenFAST-Simulink_x64.dll" to the folder where .fst file is present.