



Question:

How to integrate ASCET 7 FMUs in COSYM HiL (RTPC target)?

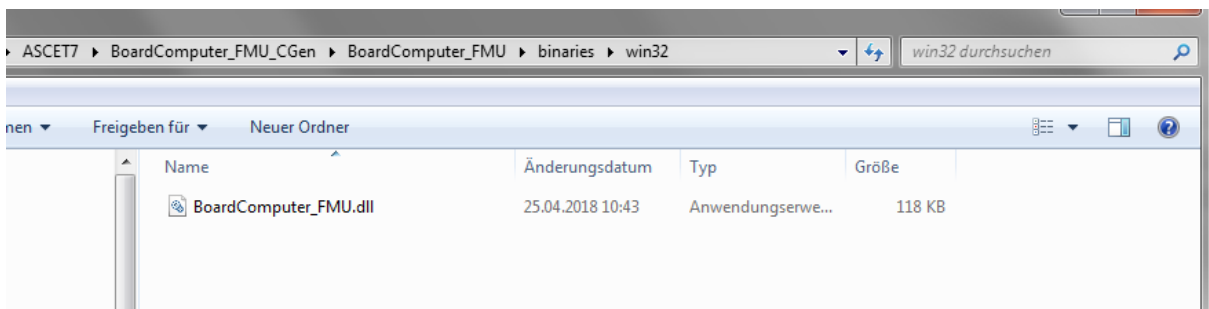


Answer:

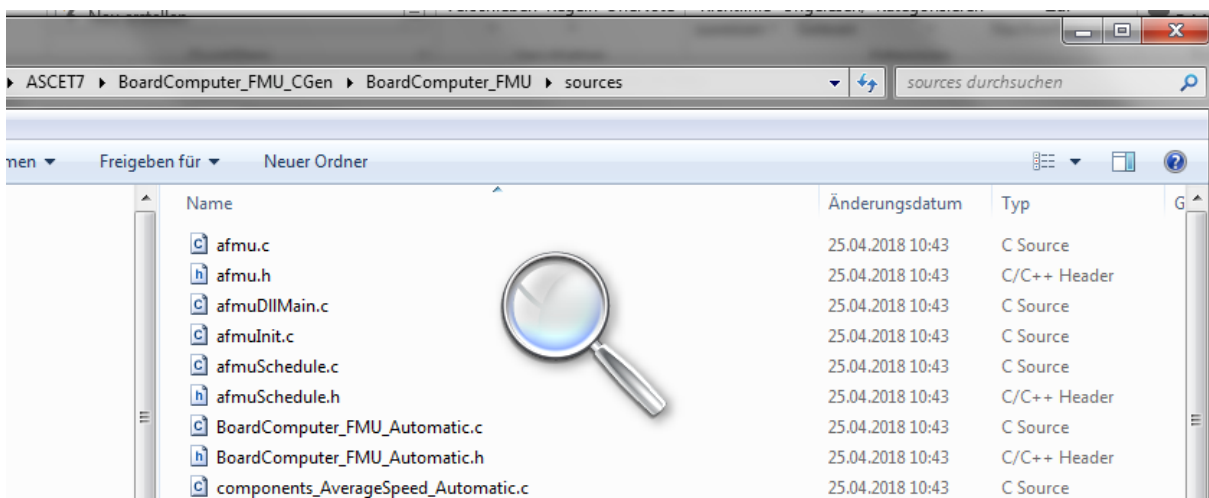
ASCET 7 generates FMI 2.0 FMUs for Windows. Those could be imported in COSYM libraries and integrated and deployed directly in COSYM-SiL target.

Some modifications are necessary in order to build those FMUs in a COSYM system with RTPC target (COSYM HiL use case):

1. Export in ASCET 7.X the FMU and select "with source code".
 - This step currently generates one FMI 2.0 FMU for windows. With the source code we will be able to build the FMU for RTPC-linux (our current target for COSYM).



2. Build the binary for RTPC-linux
 - Check source directory of the generated ASCET – FMU:



- The file afmuDllMain.c is valid only for windows; rename it to afmuDllMain.c.win for excluding it.

- Add a makefile containing the compiler flags and settings:

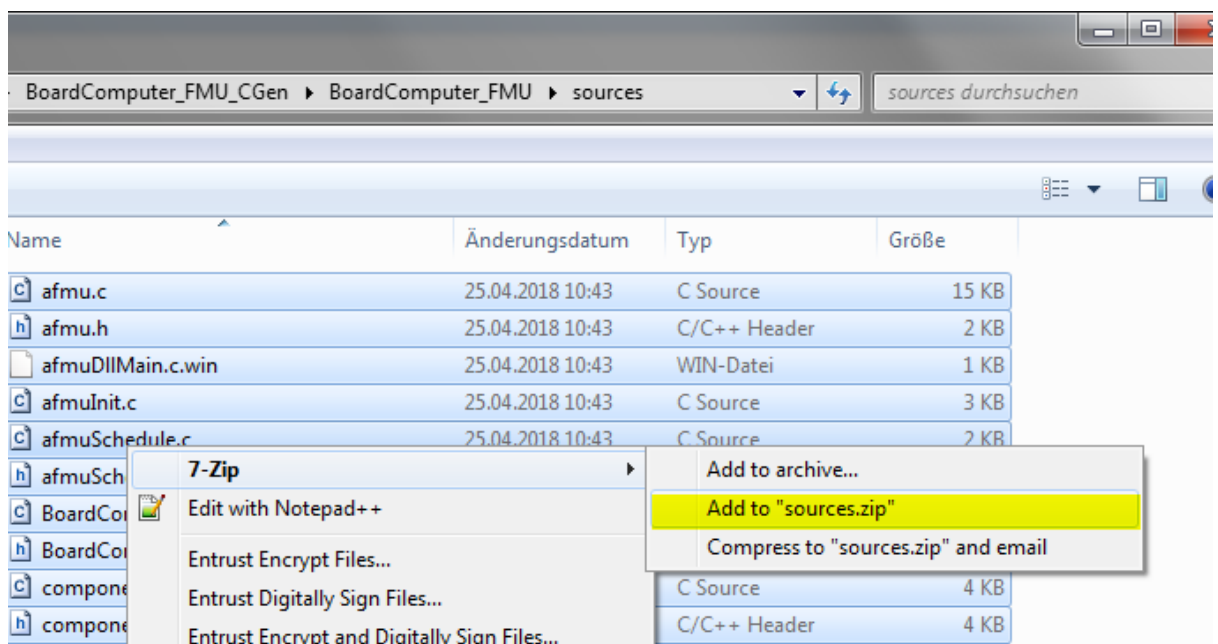
```

SHELL = /bin/sh
CC = gcc
CFLAGS = -fPIC -D_POSIX_SOURCE -DASCET_PLATFORM_BUILD -DCOMPILER_UNUSED_CODE
-Dreal32=float -Dreal64=double -I/opt/etas/include

TARGET = BoardComputer_FMU.so
SOURCES = $(shell echo *.c)
HEADERS = $(shell echo *.h)
OBJECTS= $(SOURCES:.c=.o)
$(TARGET): $(OBJECTS)
    $(CC) -shared -o $(TARGET) $(OBJECTS)

clean:
    rm *.o *.so
    
```

- Zip the contents of the source directory together with the new created file makefile



- Create the library for RTPC using "build User Library" in RTPC <http://192.168.40.14/cgi-bin/userlib> using the created source.zip file in "Upload Archive File".

Build User Library

User Library Files

```
total 1388
-rwxr-xr-x 1 user 66032 May 17 14:17 BoardComputer_FMU.so
-rw-r--r-- 1 user 1908 Apr 25 10:43 BoardComputer_FMU_Automatic.c
-rw-r--r-- 1 user 1786 Apr 25 10:43 BoardComputer_FMU_Automatic.h
-rw-r--r-- 1 user 992 May 17 14:17 BoardComputer_FMU_Automatic.o
-rw-r--r-- 1 user 3979 Apr 25 10:43 ESDL_CharTable1_r32r32.c
-rw-r--r-- 1 user 1848 May 17 14:17 ESDL_CharTable1_r32r32.o
-rw-r--r-- 1 user 3979 Apr 25 10:43 ESDL_CharTable1_r32r64.c
-rw-r--r-- 1 user 1856 May 17 14:17 ESDL_CharTable1_r32r64.o
-rw-r--r-- 1 user 3979 Apr 25 10:43 ESDL_CharTable1_r64r32.c
-rw-r--r-- 1 user 1856 May 17 14:17 ESDL_CharTable1_r64r32.o
-rw-r--r-- 1 user 3979 Apr 25 10:43 ESDL_CharTable1_r64r64.c
-rw-r--r-- 1 user 1864 May 17 14:17 ESDL_CharTable1_r64r64.o
-rw-r--r-- 1 user 2688 Apr 25 10:43 ESDL_CharTable2_r32r32r32.c
-rw-r--r-- 1 user 1760 May 17 14:17 ESDL_CharTable2_r32r32r32.o
-rw-r--r-- 1 user 2688 Apr 25 10:43 ESDL_CharTable2_r32r32r64.c
-rw-r--r-- 1 user 1776 May 17 14:17 ESDL_CharTable2_r32r32r64.o
-rw-r--r-- 1 user 2688 Apr 25 10:43 ESDL_CharTable2_r32r64r32.c
-rw-r--r-- 1 user 1824 May 17 14:17 ESDL_CharTable2_r32r64r32.o
-rw-r--r-- 1 user 2688 Apr 25 10:43 ESDL_CharTable2_r32r64r64.c
-rw-r--r-- 1 user 1832 May 17 14:17 ESDL_CharTable2_r32r64r64.o
-rw-r--r-- 1 user 2688 Apr 25 10:43 ESDL_CharTable2_r64r32r32.c
-rw-r--r-- 1 user 1824 May 17 14:17 ESDL_CharTable2_r64r32r32.o
-rw-r--r-- 1 user 2688 Apr 25 10:43 ESDL_CharTable2_r64r32r64.c
-rw-r--r-- 1 user 1832 May 17 14:17 ESDL_CharTable2_r64r32r64.o
-rw-r--r-- 1 user 2688 Apr 25 10:43 ESDL_CharTable2_r64r64r32.c
-rw-r--r-- 1 user 1768 May 17 14:17 ESDL_CharTable2_r64r64r32.o
-rw-r--r-- 1 user 2688 Apr 25 10:43 ESDL_CharTable2_r64r64r64.c
-rw-r--r-- 1 user 1784 May 17 14:17 ESDL_CharTable2_r64r64r64.o
-rw-r--r-- 1 user 3306 Apr 25 10:43 ESDL_CharTableFixed1_r32r32.c
-rw-r--r-- 1 user 1736 May 17 14:17 ESDL_CharTableFixed1_r32r32.o
```

Upload Archive File: 1 Keine Datei ausgewählt. 2

Supported are zip, tar.gz and tgz files.

Delete:

Download Library Files:

BoardComputer_FMU.so ✓

Convert Files:

Converting .c Files into Linux Format

Converting .h Files into Linux Format

Renaming .h Files into lower Case Names

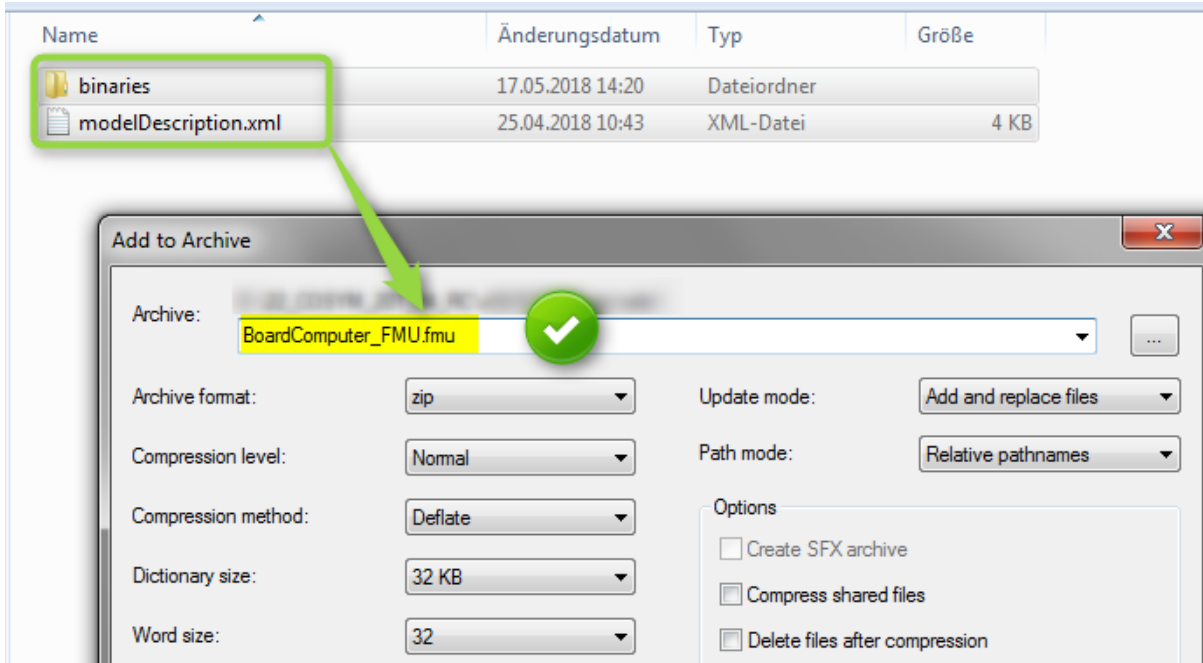
Build User Library:

The Makefile 'makefile' will be used to build the library.

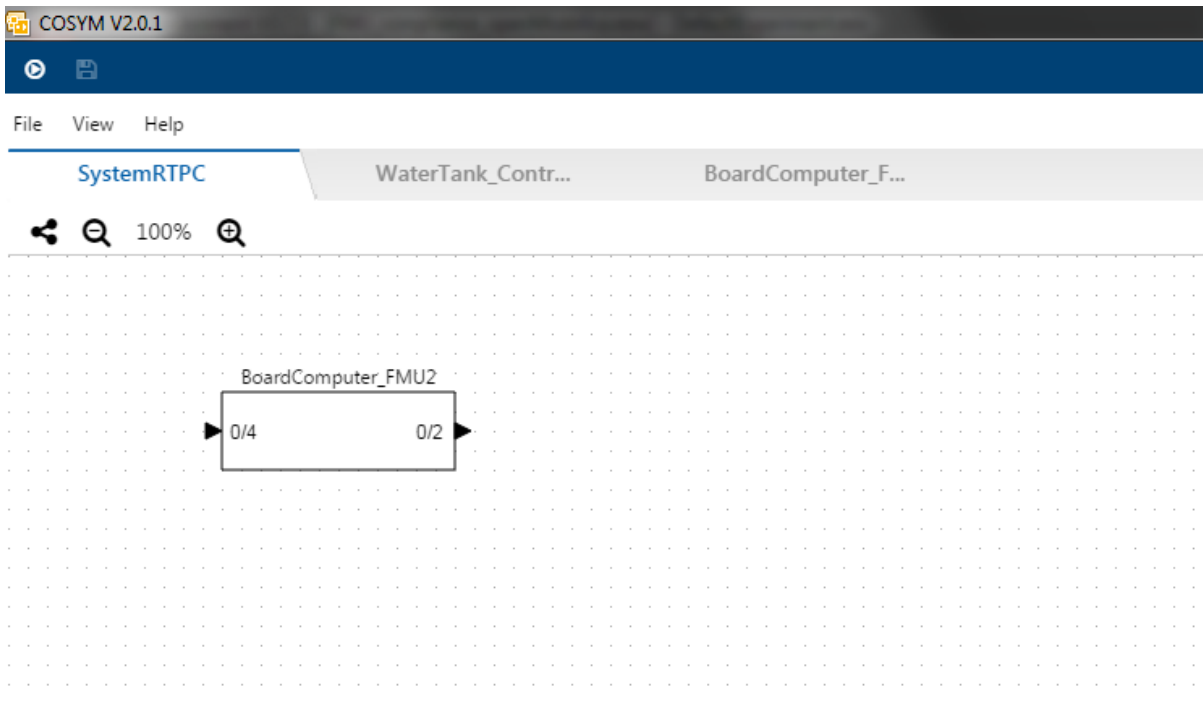
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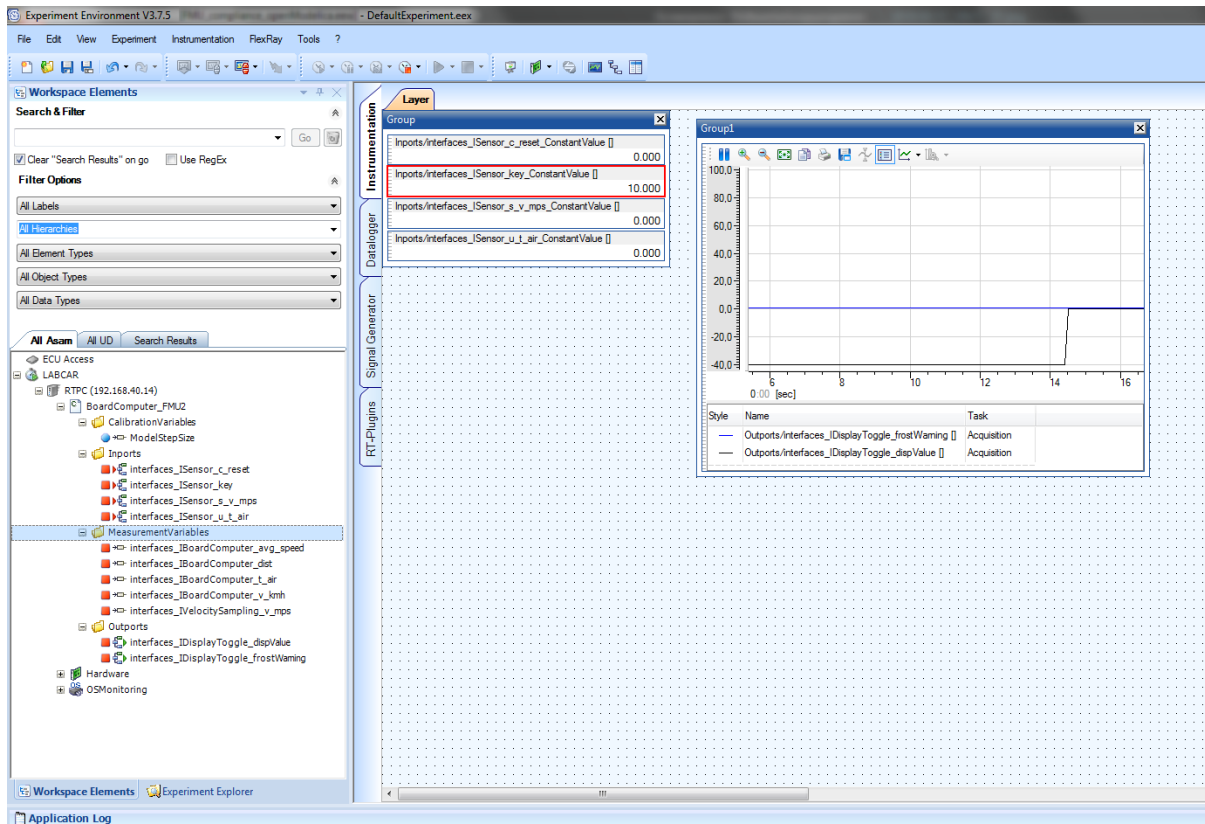
- Copy the created user library BoardComputer_FMU.so in a folder: \binaries\linux64\

3. Create the new BoardComputer_FMU.fmu: by adding modelDescription.xml and \binaries\linux64\BoardComputer_FMU.so files



4. This FMU can be imported and built in a COSYM system, and simulated in RTPC:





Additional information:

Related FAQs:

<https://www.etas.com/download-center-files/products ASCET Software Products/faq 625236173 en ascet how to export an ascet model to fm u.pdf>

<https://www.etas.com/download-center-files/products RTA Software Products/faq 972567708 en rtpc build user library.pdf>



In case of further questions:

Please feel free to contact our Support Center, if you have further questions.

Here you can find all information: <http://www.etas.com/en/hotlines.php?langS=true&>

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