

# DSH<sup>plus</sup> – MotionSolve – Interface

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COMPETENCE IN FLUID POWER SYSTEMS SIMULATION  
KOMPETENZ IN DER SIMULATION FLUIDTECHNISCHER SYSTEME

**FLUIDON**  
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# Content

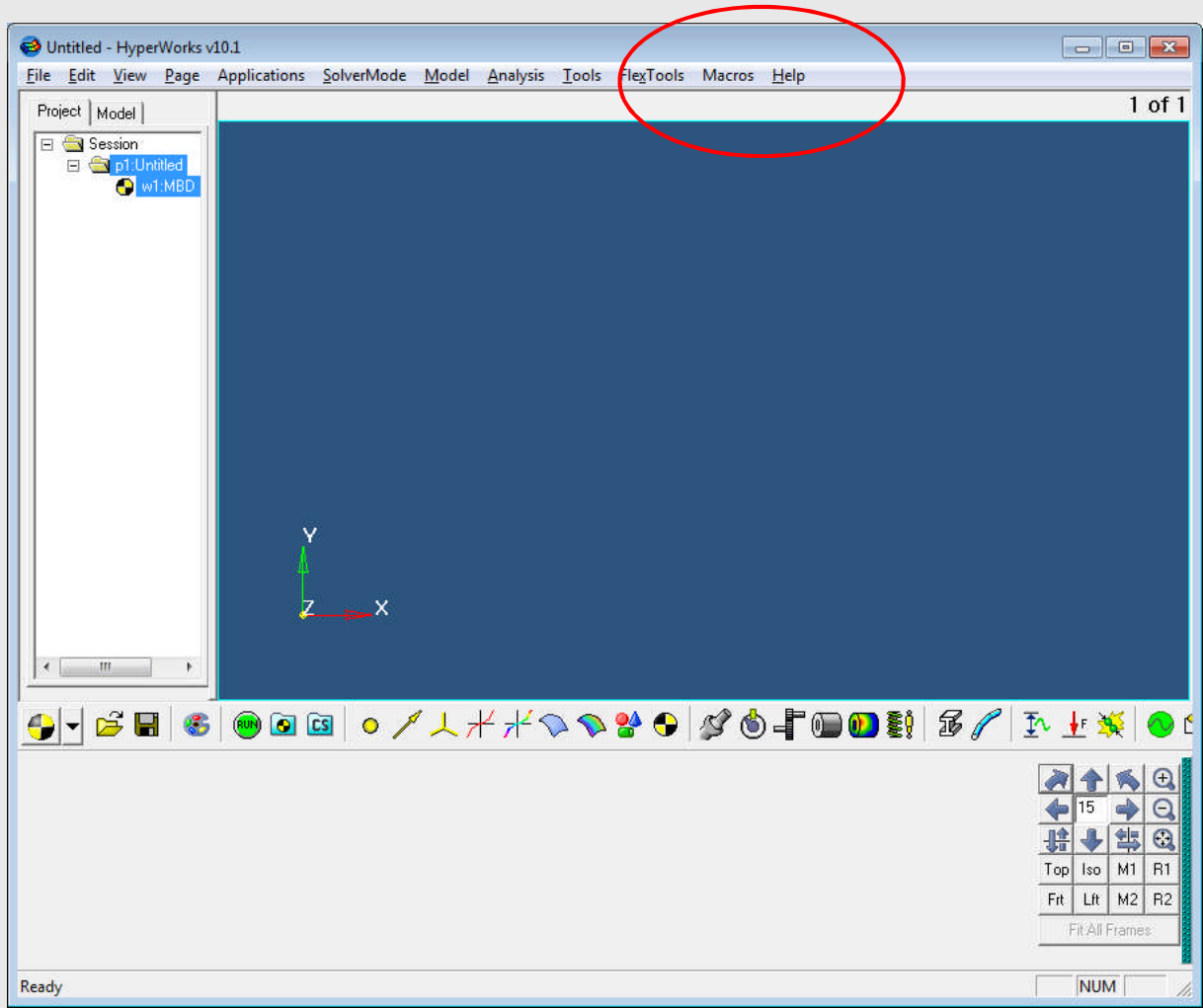
1

General Preparation of MotionView 10.1

2

**DSH<sup>plus</sup>** – MotionSolve Co-Simulation Application Example

# Preparation of MotionView 10.1



Initial MotionView window without DSHplus menu entry

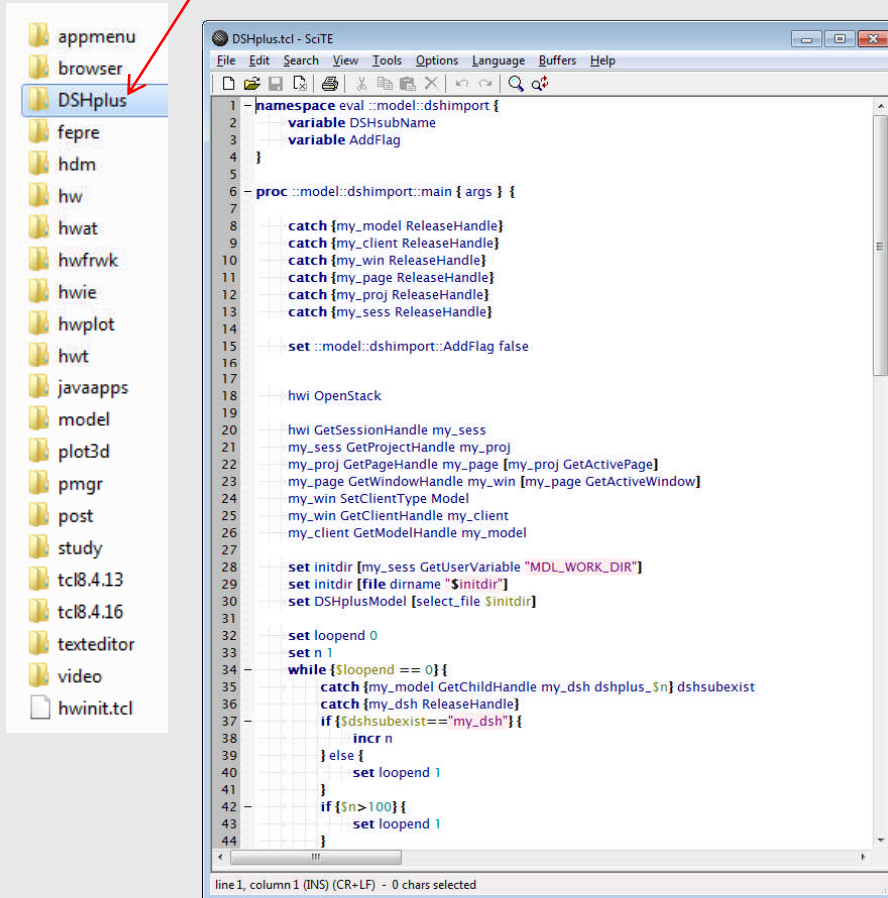
Changes have to be made in the following two folders

- hw10.1
  - avitoools
  - demos
  - help
  - hm
  - hst\_dss
  - hw
    - bin
    - etc
    - include
    - jre
    - lib
    - mdl
    - prefinc
    - tcl
  - hwsolvers
  - hwx
  - hx
  - hypercrash
  - icons
  - io
  - javaapps
  - security
  - templates
  - tutorials
  - utility

# Preparation of MotionView 10.1

In the folder „tcl“ a subfolder „DSHplus“ is needed.

The subfolder contains the macro file „DSHplus.tcl“



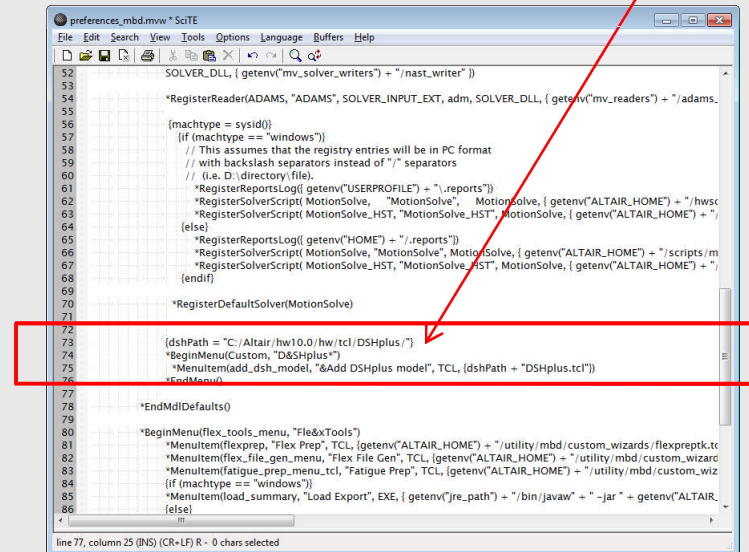
In the folder „prefinc“ the file „preferences\_mbd.mvw“ needs to be changed.

Please make sure to have a backup copy of the original file!

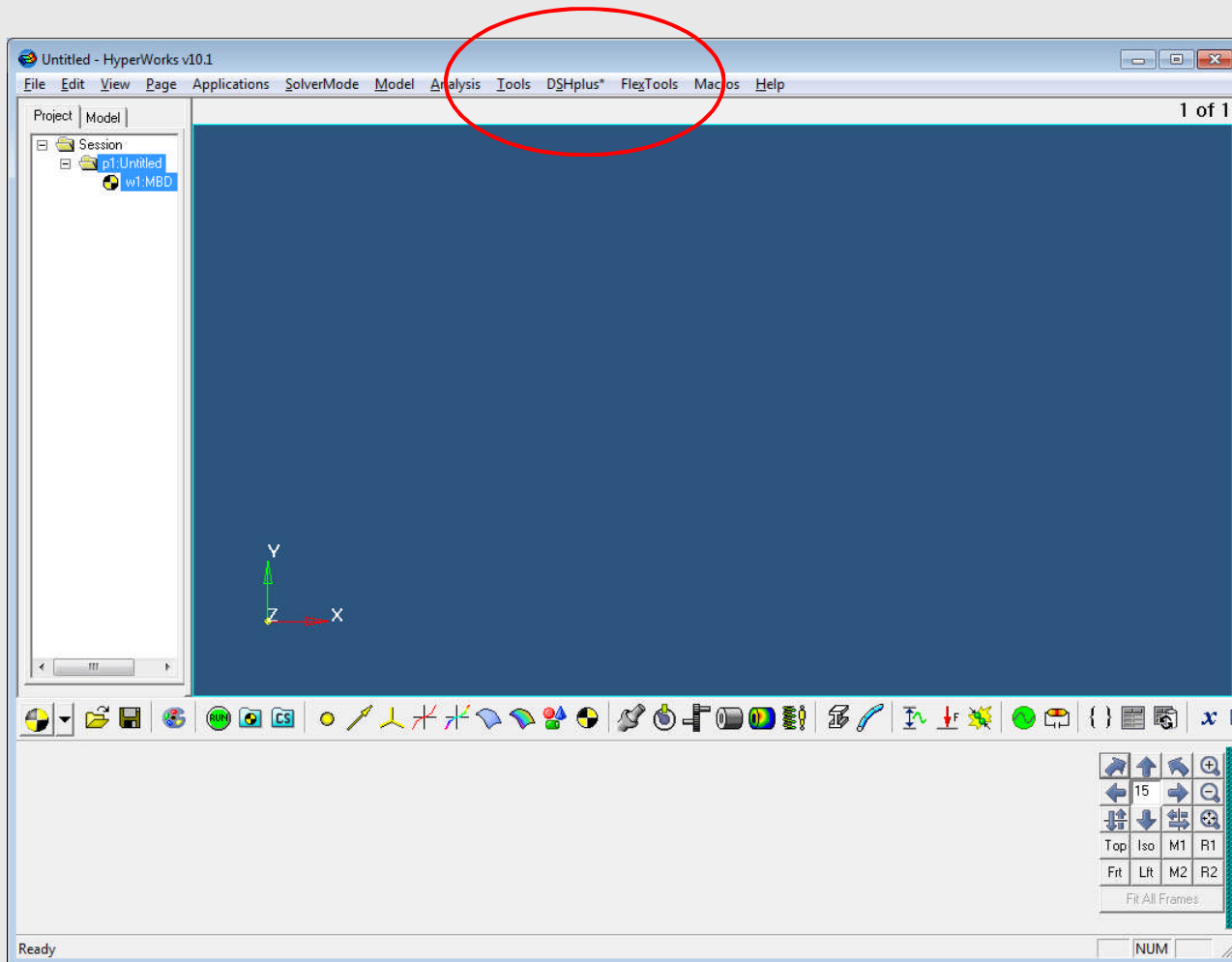
A DSHplus menu entry will added to the MotionView menu.

Note: Perhaps the file path to the TCL scripted need to be updated!

Save the file and restart MotionView



# Preparation of MotionView 10.1



The MotionView window should now look like this.

New MotionView is able to import DSHplus-STC modules

For additional information have a look to the video

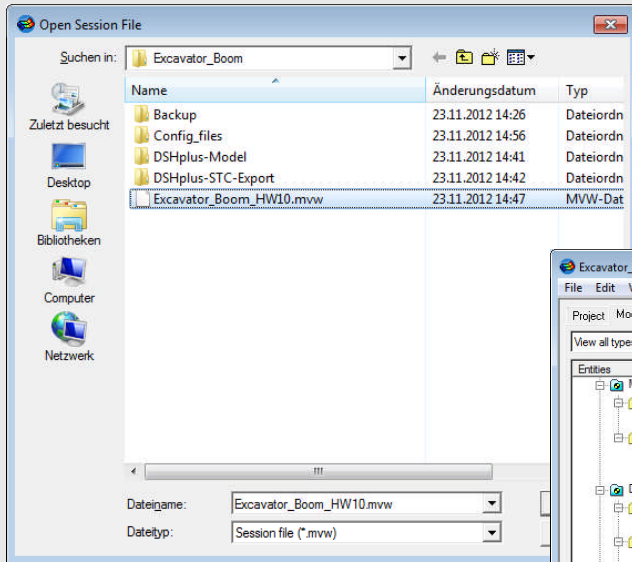
“DSHplus\_Altair\_new\_Interface.mp4”

# Content

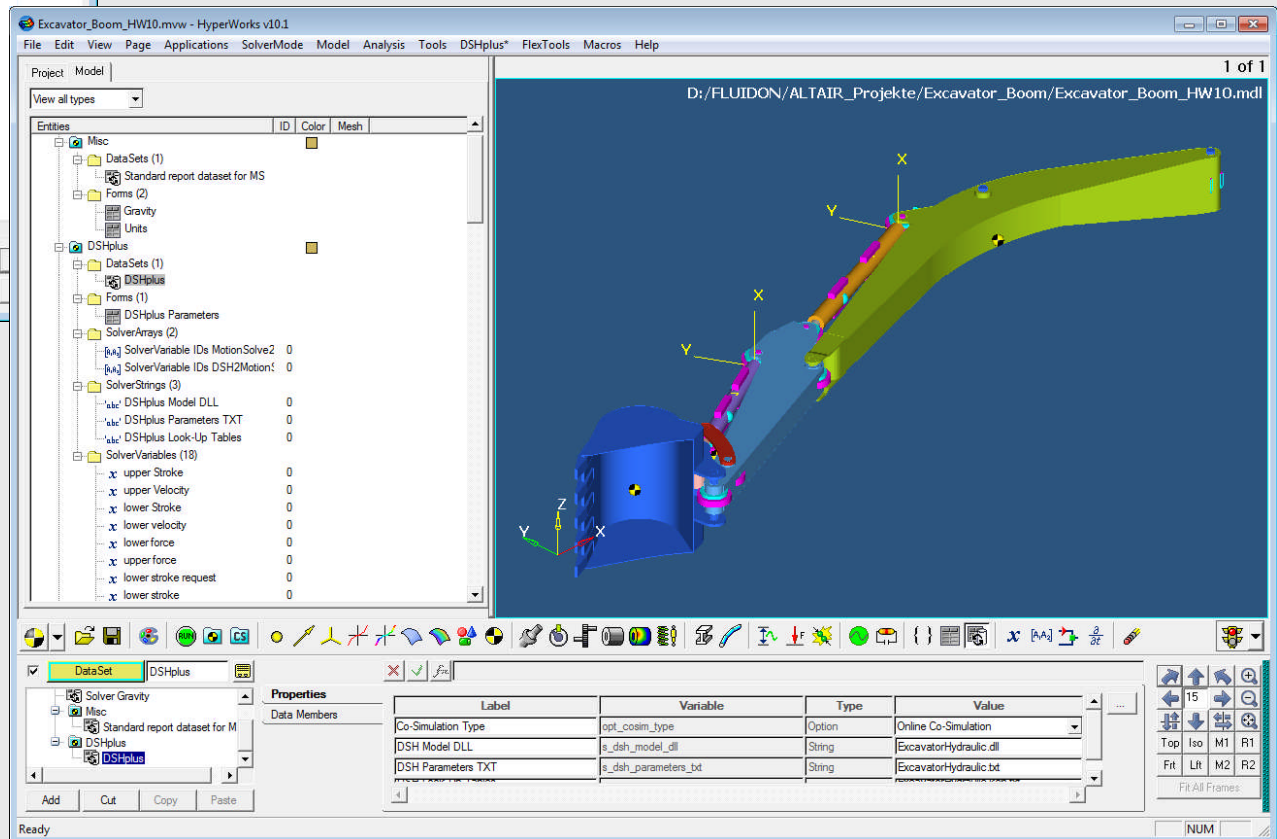
1 General Preparation of MotionView 10.1

2 **DSH<sup>plus</sup>** – MotionSolve Co-Simulation Application Example

# Preparation of the Co-Simulation Example



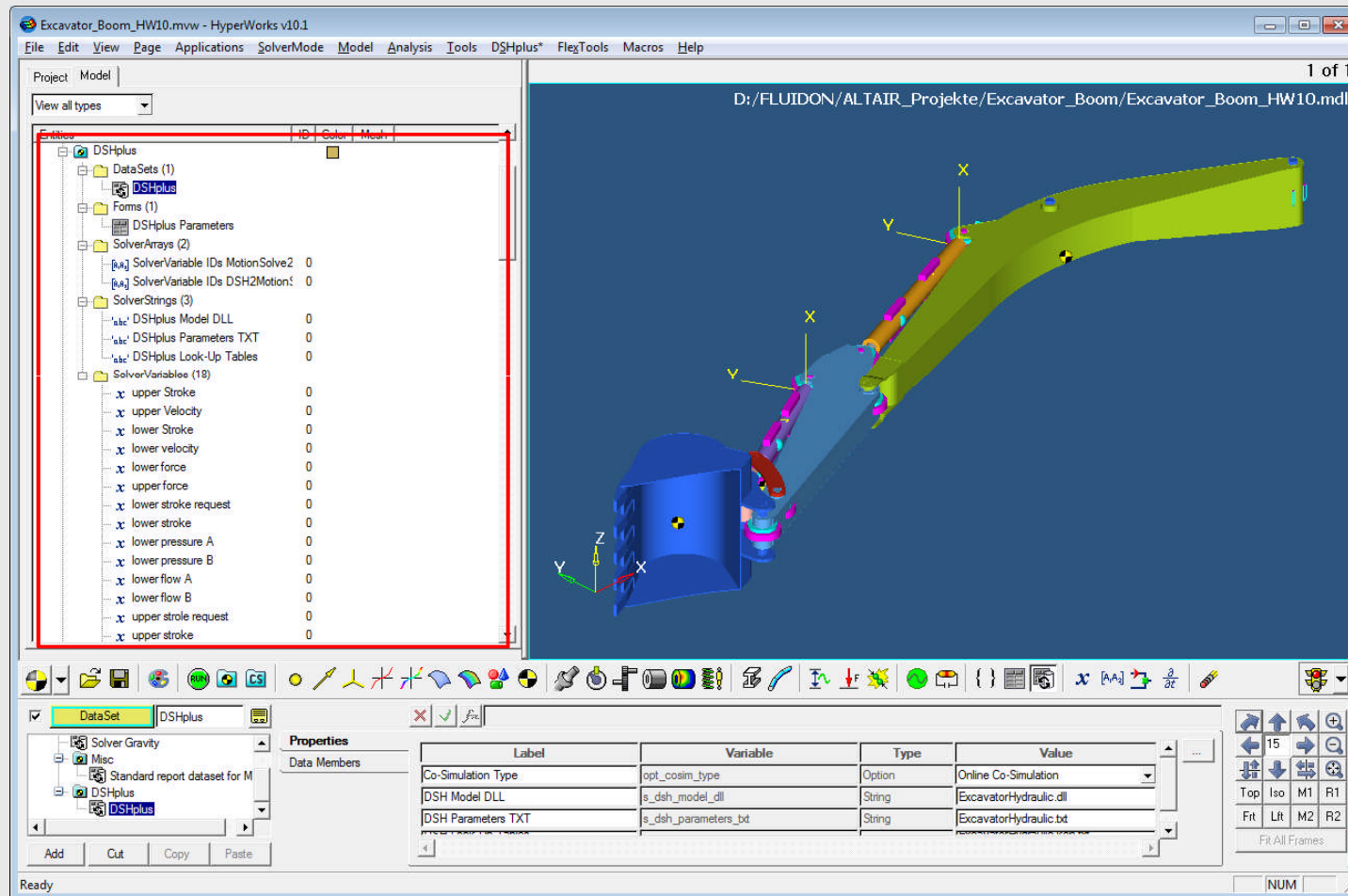
Open "Excavator\_Boom\_HW10.mvw"



The result should be like this

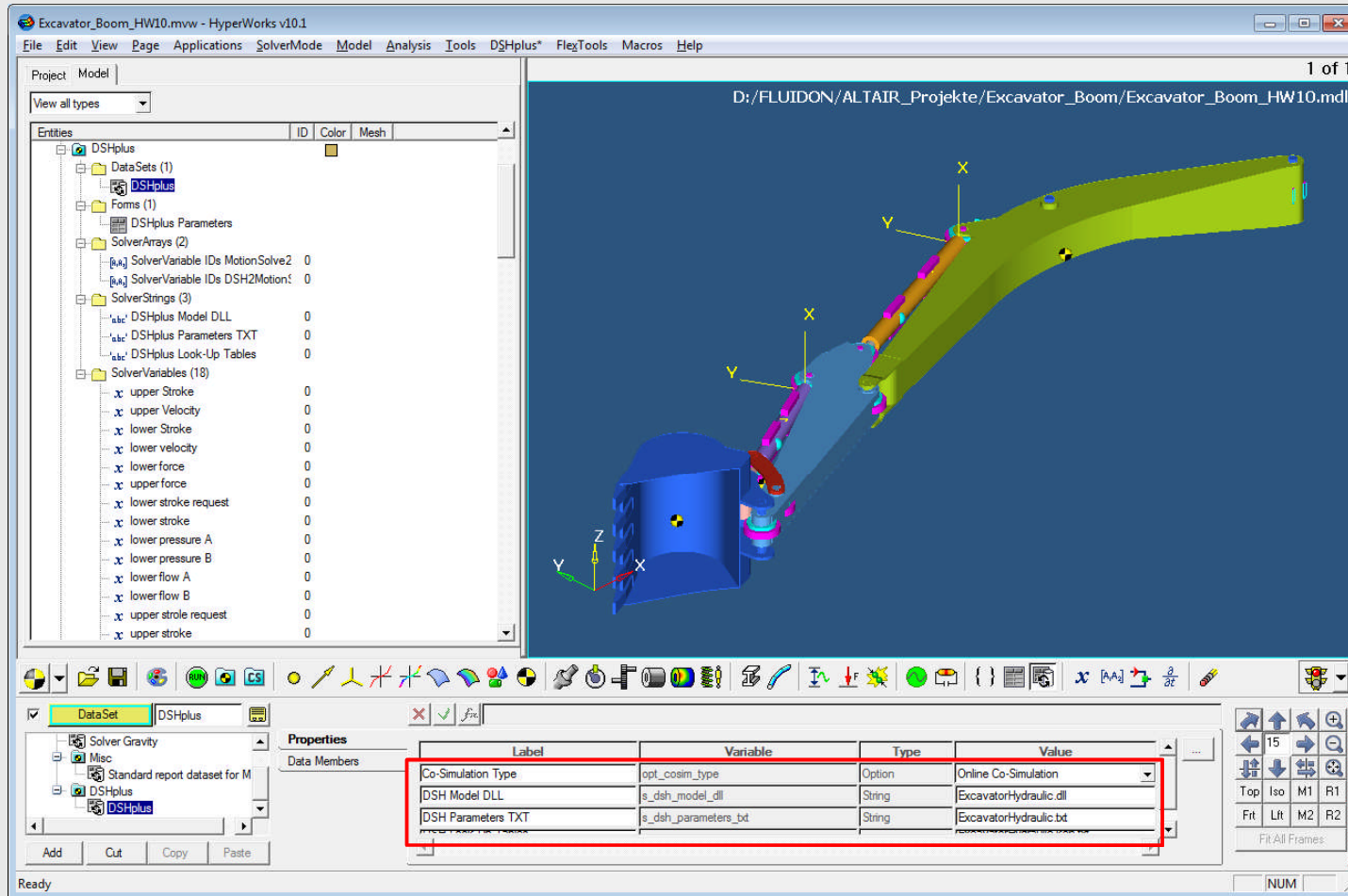
# Preparation of the Co-Simulation Example

A DSHplus-STC module is already included to the Excavator Boom model.





# Preparation of the Co-Simulation Example



The name of the required DSHplus-STC module DLL can be taken from the DSHplus Model DLL text string.

If a new DSHplus-STC Module is imported by the TCL macro, the model DLL name is automatically taken from the DSHplus export.

Because in the demo application the DSHplus-STC Module is already included, the DSHplus-STC export should have the name "ExcavaterHydraulic".

# Preparation of the Co-Simulation Example

Öffnen Projekt

Suchen in:

- Daten (D:)
- FLUIDON
- ALTAIR\_Projekte
- Excavator\_Boom
- DSHplus-Model**

Projekte:

Titel	Datum
DSHplus_MOTION_Excavator_371....	27.04.2012 17:20:...

Projektinfo

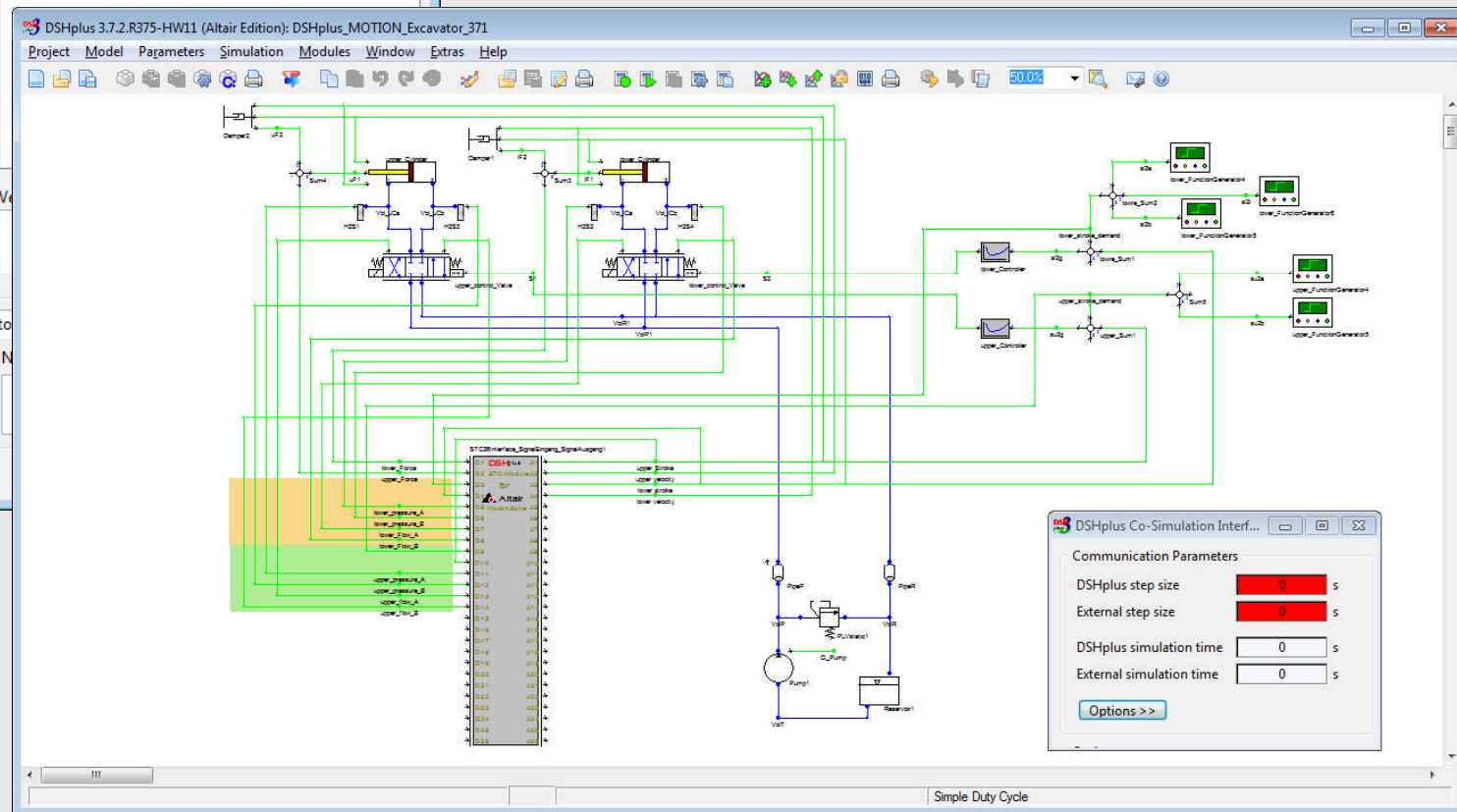
Titel: DSHplus\_MOTION\_Excavato

Autor: bm

Erzeugt: 09.12.2005 9:02

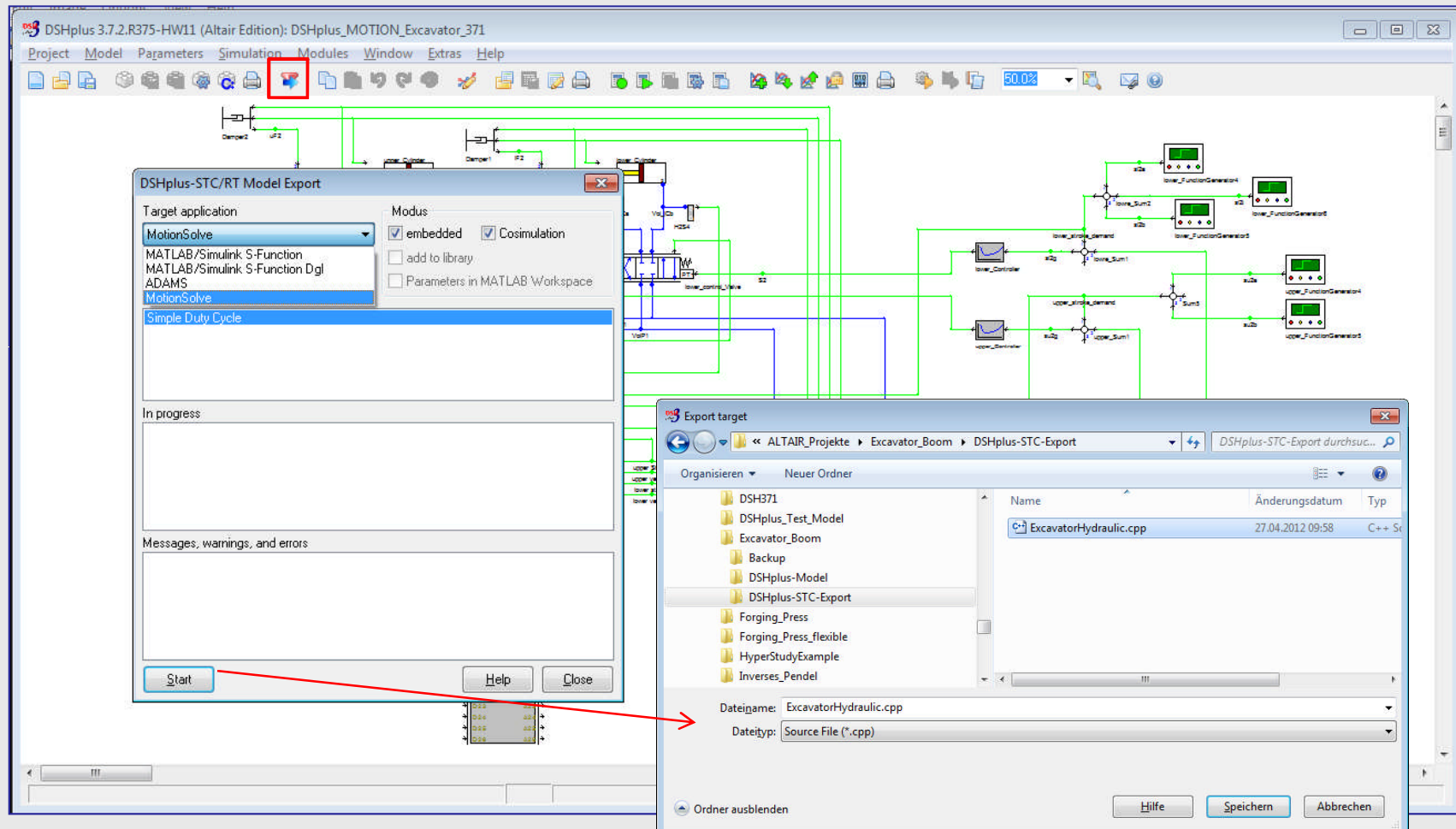
Geändert: 27.04.2012 18:20

It is an old model that does not have animation of the components!



# Preparation of the Co-Simulation Example

Select "DSHplus-STC Model Export" and export the model into a separate folder



# Preparation of the Co-Simulation Example

The high-lighted files are required for the DSHplus-STC Modul

CosimulationDSHplus.log	22.11.2012 22:04	Textdokument	1 KB
ExcavatorHydraulic.cpp	23.11.2012 13:21	C++ Source	153 KB
ExcavatorHydraulic.def	23.11.2012 13:21	Export Definition F...	1 KB
ExcavatorHydraulic.dll	23.11.2012 13:21	DLL-Datei	137 KB
ExcavatorHydraulic.h	23.11.2012 13:21	C/C++ Header	1 KB
ExcavatorHydraulic.ilc	23.11.2012 13:21	ILC-Datei	512 KB
ExcavatorHydraulic.ild	23.11.2012 13:21	ILD-Datei	128 KB
ExcavatorHydraulic.ilf	23.11.2012 13:21	ILF-Datei	1.344 KB
ExcavatorHydraulic.ils	23.11.2012 13:21	ILS-Datei	1.984 KB
ExcavatorHydraulic.ken	12.12.2005 22:52	KEN-Datei	1 KB
ExcavatorHydraulic.ken.txt	23.11.2012 13:21	TXT-Datei	1 KB
ExcavatorHydraulic.mdl	23.11.2012 13:21	Simulink model file	8 KB
ExcavatorHydraulic.tds	23.11.2012 13:21	TDS-Datei	640 KB
ExcavatorHydraulic.txt	23.11.2012 13:21	TXT-Datei	29 KB
ExcavatorHydraulicInterface.dll	31.07.2012 14:42	DLL-Datei	479 KB
ExcavatorHydraulicModell.dll	23.11.2012 13:21	DLL-Datei	155 KB
ExcavatorHydraulicModell.ilc	23.11.2012 13:21	ILC-Datei	512 KB
ExcavatorHydraulicModell.ild	23.11.2012 13:21	ILD-Datei	192 KB
ExcavatorHydraulicModell.ilf	23.11.2012 13:21	ILF-Datei	1.344 KB
ExcavatorHydraulicModell.ils	23.11.2012 13:21	ILS-Datei	1.984 KB
ExcavatorHydraulicModell.tds	23.11.2012 13:21	TDS-Datei	768 KB

**Please not:**

Due to a software bug the file extensions of one ASCII-Text files are wrong after the export!

For your own DSHplus Module exports you need to change the extension ".txt.ken.txt" into ".ken.txt!"

Copy the files into the folder of your MotionSolve model

Backup	22.11.2012 21:13	Dateiordner	
DSHplus-Model	23.11.2012 12:38	Dateiordner	
DSHplus-STC-Export	23.11.2012 13:24	Dateiordner	
Support_GB.h3d	11.11.2008 11:16	Altair HyperView ...	552 KB
Upperarm.h3d	11.11.2008 11:16	Altair HyperView ...	1.410 KB
Uppercontrol1.h3d	11.11.2008 11:16	Altair HyperView ...	662 KB
Uppercontrol2.h3d	11.11.2008 11:16	Altair HyperView ...	587 KB
lowercontrol1.h3d	11.11.2008 11:17	Altair HyperView ...	606 KB
lowercontrol2.h3d	11.11.2008 11:17	Altair HyperView ...	569 KB
arm_control_coupler.h3d	11.11.2008 11:17	Altair HyperView ...	569 KB
control_bucket_coupler.h3d	11.11.2008 11:17	Altair HyperView ...	591 KB
bucket.h3d	11.11.2008 11:17	Altair HyperView ...	911 KB
lowerarm.h3d	11.11.2008 11:17	Altair HyperView ...	941 KB
Excavator_Boom.mdl	27.04.2012 18:21	Simulink model file	24 KB
ExcavatorHydraulic.dll	23.11.2012 13:21	DLL-Datei	137 KB
ExcavatorHydraulic.ken.txt	23.11.2012 13:21	TXT-Datei	1 KB
ExcavatorHydraulic.txt	23.11.2012 13:21	TXT-Datei	29 KB
ExcavatorHydraulicInterface.dll	31.07.2012 14:42	DLL-Datei	479 KB
ExcavatorHydraulicModell.dll	23.11.2012 13:21	DLL-Datei	155 KB

# Sample Co-Simulation

The screenshot displays the HyperWorks v10.1 software interface for a co-simulation project. The main window shows a hydraulic circuit diagram with various components like valves and cylinders. Several windows are open, providing detailed information about the simulation setup and results.

**Command Prompt (C:\Windows\system32\cmd.exe):**

```

Initializing model...
User Subroutine DLL (D:\FLUIDON\ALTAIR_Projekte\Excavator_Boom\ExcavatorHydraulicInterfa
< USER MESSAGE FROM USRSUB [30300500] >
INFO: -----
      DSHplus - MotionSolve - Interface
      (c) FLUIDON GmbH - 2011
      -----
< USER MESSAGE FROM USRSUB [30300500] >
INFO: IFLAG state: 1 >> Before DSHplus-STC interface mapping
< USER MESSAGE FROM USRSUB [30300500] >
INFO: IFLAG state: 1 >> After DSHplus-STC interface mapping
Analysis model processed
Partitioning generalized coordinates...
Total Number of Independent Coordinates = 2
The following were initially chosen as independent coordinates:
  
```

**Upper\_Boom\_Control Plot:**

Time / s vs. upper\_stroke\_demand.Value, upper Stroke.Value, S1.Value

**Lower\_Boom\_Control Plot:**

Time / s vs. lower\_stroke\_demand.Value, lower stroke.Value, S2.Value

**Forces Plot:**

Time / s vs. lower\_Force.Value, upper\_Force.Value

**DSHplus Co-Simulation Interf... Parameters:**

- Communication Parameters
- DSHplus step size: 0.0004444 s
- External step size: 0.001 s
- DSHplus simulation time: 20 s
- External simulation time: 20 s

**Properties Table:**

Label	Variable	Type	Value
Co-Simulation Type	opt_cosim_type	Option	Online Co-Simulation
DSH Model DLL	s_dsh_model_dll	String	ExcavatorHydraulic.dll
DSH Parameters TXT	s_dsh_parameters_txt	String	ExcavatorHydraulic.txt