

MoXie  File Conversion
version 1.1

manual

Lia Out, Data Processing and IT Department
VU University Medical Center, Amsterdam, The Netherlands
Herwin Horemans, Department of Rehabilitation
Erasmus MC, Rotterdam, The Netherlands

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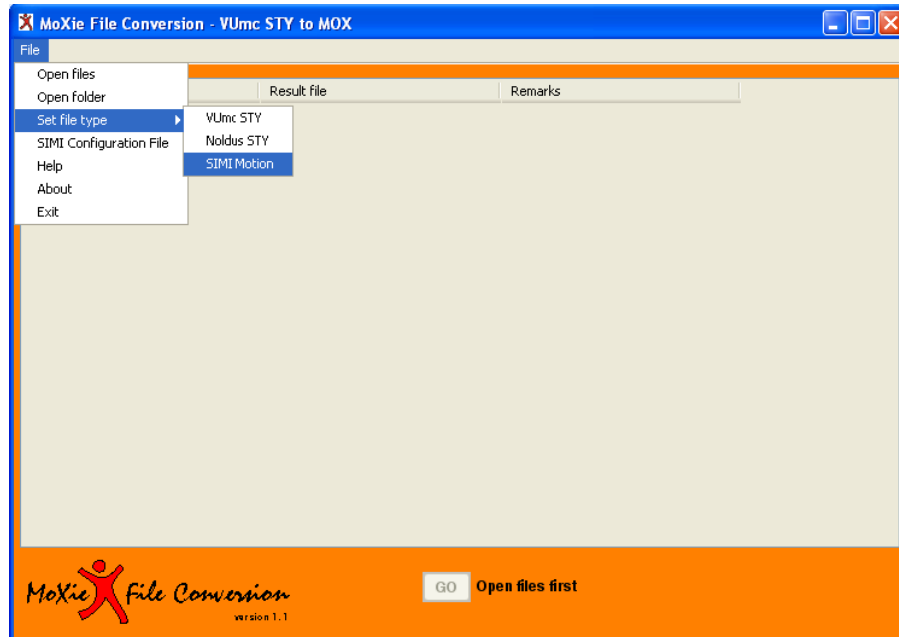
User guide

MoXie File Conversion is a tool for converting datafiles from different systems to MOX files that can be used in the MoXie Viewer.

Using MoXie File Conversion is very easy. Three steps must be made:

Setting the datafile type

In the title bar the current file type to be converted is shown. If necessary, change it through the *File* menu as shown.



Selecting files to be converted

Files to be converted can be selected separately (*File* → *Open files*) or the complete contents of a folder can be selected (*File* → *Open folder*). The result is shown here.



Convert files

By pressing the *GO* button all listed files will be converted. The resulting MOX files have the same name as the source files but a different extension (MOX), and are saved in the same folder.

Datafile types

In version 1.1 of MoXie File Conversion three file types can be converted. With the installation of MoXie File Conversion a shortcut has been placed on the desktop. This shortcut refers to *ommoxer_vumc.bat*. This batch file contains one line:
`java -Xmx512m -jar moxiefileconversion.jar "c:\mydatadirectory" 0`
The 0 at the end makes the tool open with VUmc STY file type. If desired, the shortcut on the desktop can be made to point to *ommoxer_noldus.bat* or *ommoxer_simi.bat*, which can be found in the directory where MoXie File Conversion was installed.

"c:\mydatadirectory" is the directory that is opened first, provided that it exists. Of course it can be edited to make it point to a desired folder.

VUmc STY

STY files as defined by the Department of Rehabilitation of the VUmc. It is necessary that the MDF files referred to in the STY files are present in the same folder. If DAR files exist with the same name as these MDF files, they should be present too, because in that case the information in the DAR file will be used.

Noldus STY

STY files as defined by Noldus Information Technology. It is necessary that the MDF files referred to in the STY files are present in the same folder.

SIMI Motion

XMP files as exported by the SIMI Motion system. The exact characteristics of these files are described below in *Preparation of SIMI Motion data*.

Filtering of EMG data

EMG data in data files with unprocessed EMG data (DAR and XMP files) is processed by applying the following subsequent steps:

1. the mean of the signal is subtracted from the signal
2. artefacts are removed by using a high pass 3th order Butterworth filter with a cutoff frequency of 20 Hz
3. the signal is rectified
4. the signal is smoothed with a low pass 2nd order Butterworth filter with a cutoff frequency of 2 Hz

The result of step 2 is 'EMG raw', the result of step 4 is 'EMG envelope'.

Validation

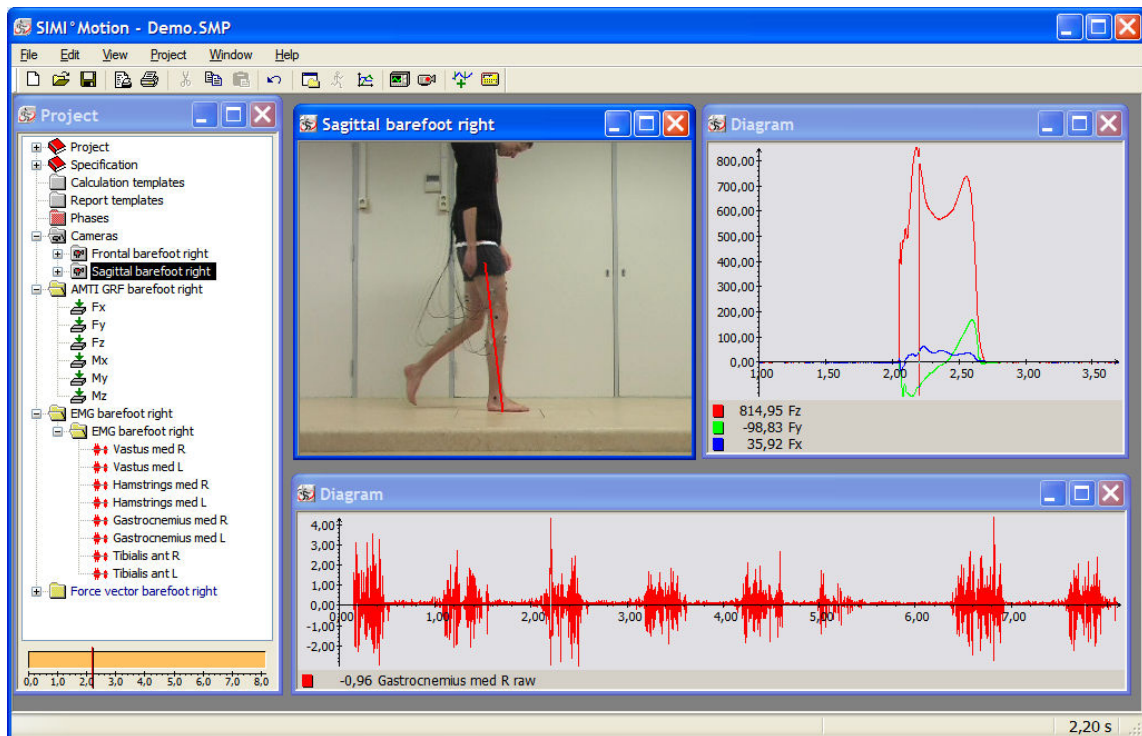
After the MOX files are created, an attempt is made to validate them against their XML schema. This schema, *moxie_viewer.xsd*, is located on <http://www.smalll.nl/vumc/rev/moxie>. If MoXie File Conversion is used without an internet connection, a schema file packaged with the program is used.

Preparation of SIMI Motion data

SIMI Motion data have to be configured in a special way in order to be usable by MoXie File Conversion. The steps to be taken are described below.

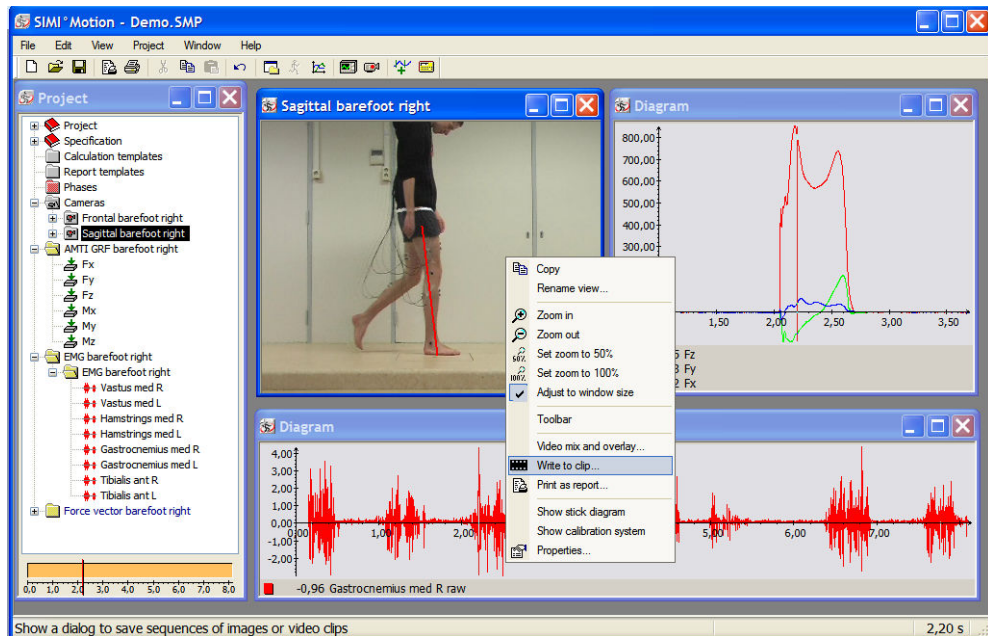
Simi Motion Project

Before converting Simi Motion Projects (SMP-files) to MOX-files that can be read by the MoXie Viewer, make sure that there is only one trial or condition per project. This trial may contain video, forceplate and EMG data. In the following example the condition is walking barefoot. Forceplate and EMG data must be raw and the channels should be named. If present, an overlay of the force vector can be displayed on the video.

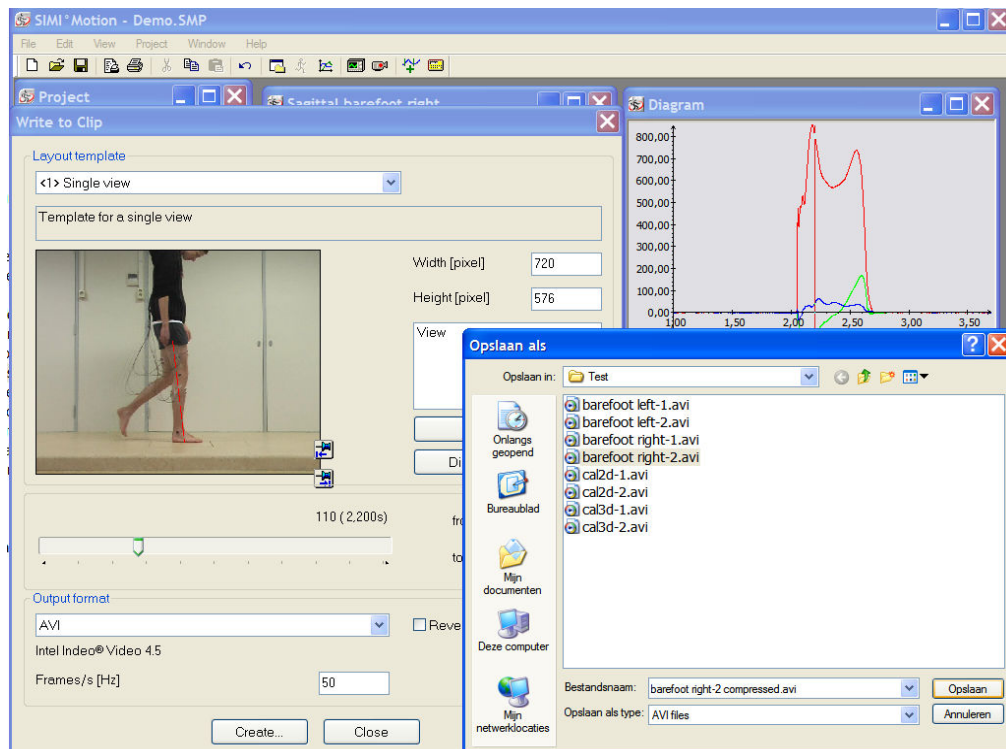


Video codec

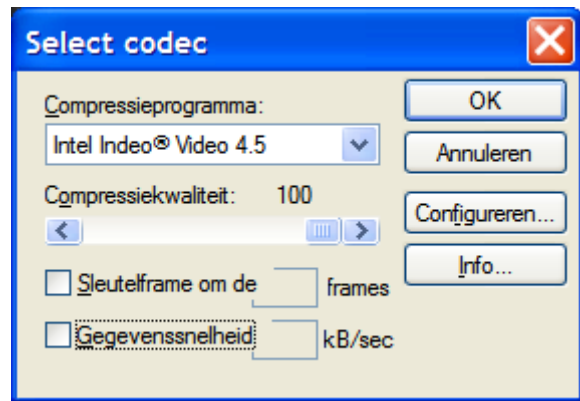
For the MoXie Viewer to be able to read the video files they have to be compressed with the Intel Indeo Video codec. Right – click on the video and choose *Write to clip...*



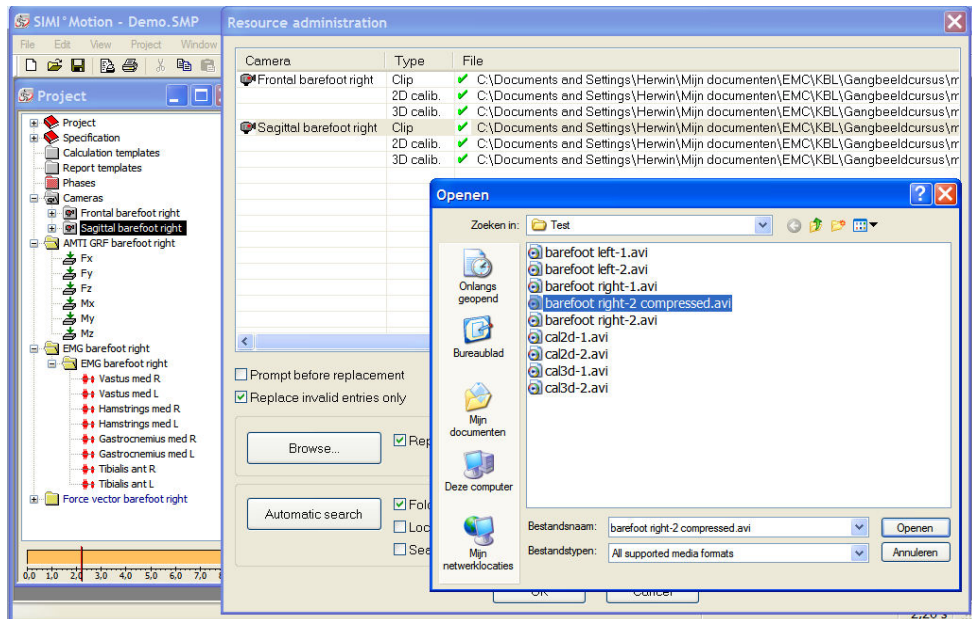
Select a *Single view* layout, *AVI* as output format and click *Create*. Choose a name for the video that will be compressed and click *Save*.



A *Select codec* window will appear. Select the *Intel Indeo Video* codec and configure the settings concerning to compression quality and desired file size. Close the *Write to clip* window after compression of the video. Do the same for the second video.



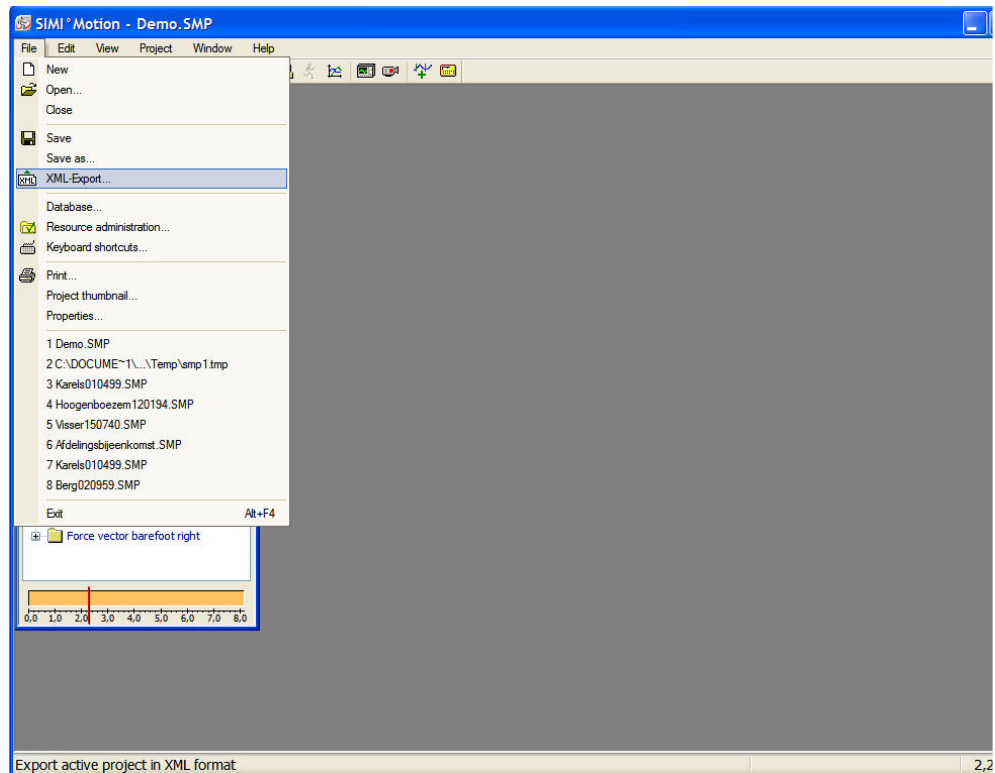
In the Simi Motion Project the video data should now be linked to the compressed videos. In the *File* menu click on *Resource administration...* Click on the line with the video clip whose link has to be changed and click *Browse*. Select the compressed video, and click *Open*. Repeat this for the second video and click *OK*.



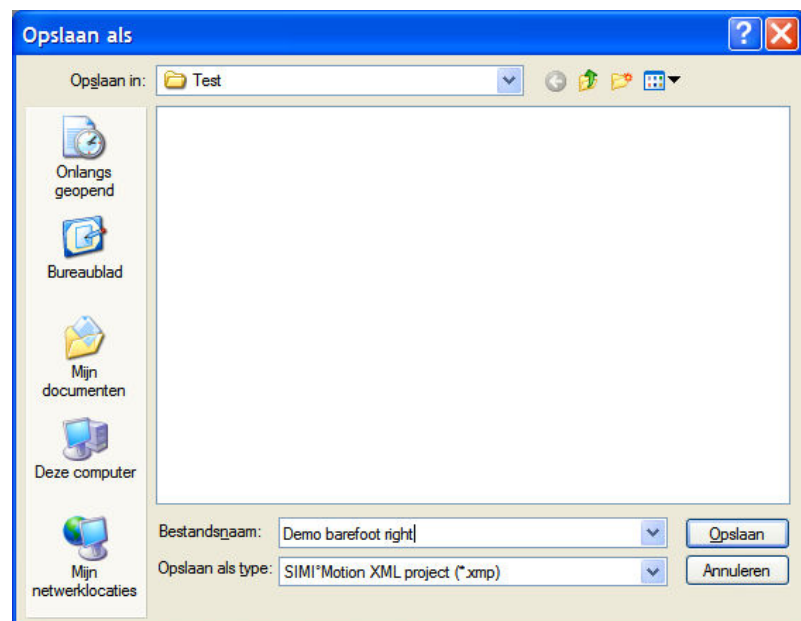
XML-export

Now the video data in the project are linked to the compressed videos and the project can be exported.

Choose *XML-Export...* in the *File* menu and give a name to the file (the file will get the XMP extension).



It is advised to use the same name as you used for the SIMI Motion Project.



Data scaling

SIMI Motion data are default saved as Volts in the range of the data acquisition device. Scaling can be done in two places, you should make a choice and not use them both.

1. Edit *SmlmpDT.ini*, ini-file of the SIMI Motion system.

In *SmlmpDT.ini*, the term factor (shown bold) can be introduced in the Devices section as shown below:

```
; //////////////////////////////////////
; // Devices
[DEV_EMG_STANDARD]
Name=emg_standandaard
Text=Biotel199, 8 Kanaals
Magic=0x2D474D45
NumberOfChannels=8
DefaultFrequency=1000
Channel1=Rectus femoris rechts
Channel2=Semitendinosus rechts
Channel3=Tibialis Anterior rechts
Channel4=Gastrocnemius med rechts
Channel5=Rectus femoris links
Channel6=Semitendinosus links
Channel7=Tibialis anterior links
Channel8=Gastrocnemius med links

Factor=1000,1000,1000,1000,1000,1000,1000,1000
```

We thank Annieck Ricken and Emiel Sneekes from Revalidatiecentrum Amsterdam for finding this out.

2. In this version of MOXie File Conversion we added a configuration file, *configsimi.xml*, in which scaling parameters can be set. The data are then stored in the MOX-file in scaled units, preferably engineering units (e.g. uV for EMG, N for force, Nm for torque). Scaling is applied before filtering of the EMG data.

The structure of the file is as follows:

```
<config_simi>
<datas>
  <magic>AMTI</magic>
  <data_name>Fx</data_name>
  <sensitivity>1.00</sensitivity>
  <baseline>0.00</baseline>
</datas>
<datas>
  <magic>AMTI</magic>
  <data_name>Fy</data_name>
  <sensitivity>1.00</sensitivity>
  <baseline>0.00</baseline>
</datas>
...
<datas>
  <magic>EMG-</magic>
  <data_name>*</data_name>
  <sensitivity>1.00</sensitivity>
  <baseline>0.00</baseline>
</datas>
</config_simi>
```

Note that all EMG channels have the same scaling parameters.

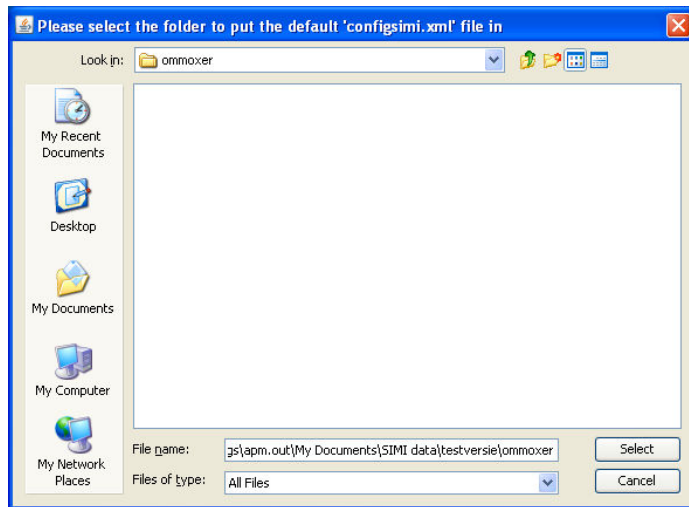
The following algorithm is used to convert data:

$$\text{result} = \text{Volts AD device} * \text{sensitivity} - \text{baseline}$$

The first time SIMI data are converted the user is asked for a location to store *configsimi.xml*.

Browse to the folder of your choice and press *Select*.

The *sensitivities* and *baselines* in the file should be edited by the system administrator according to the settings in your lab.



The location of the configuration file can always be found through the menu.

