# 3do2Scm

# A workflow to import Total Annihilation models to Supreme Commander

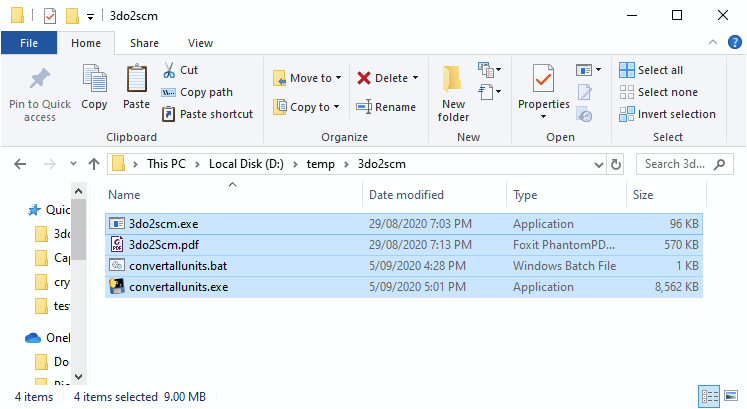
There are a couple of [blender plugins](https://github.com/Oygron/SupCom_Import_Export_Blender) that allow import/export of SupCom SCM files. But the workflow to get your old Total Annihilation 3do files into blender with textures and correctly oriented bones/armatures etc in the first place is ... well I couldn't find an easy path.

So I rolled up my sleeves and pumped out this tool to convert from 3do directly to scm. It makes heavy use of some fine code for reading Total Annihilation data structures by Michael Heasell from [here](https://github.com/MHeasell/rwe) as well as the [blender plugins](https://github.com/Oygron/SupCom_Import_Export_Blender) themselves by Dan, Brent, GeomanNL, Darius, Oygron, so big shout outs to then all is due.

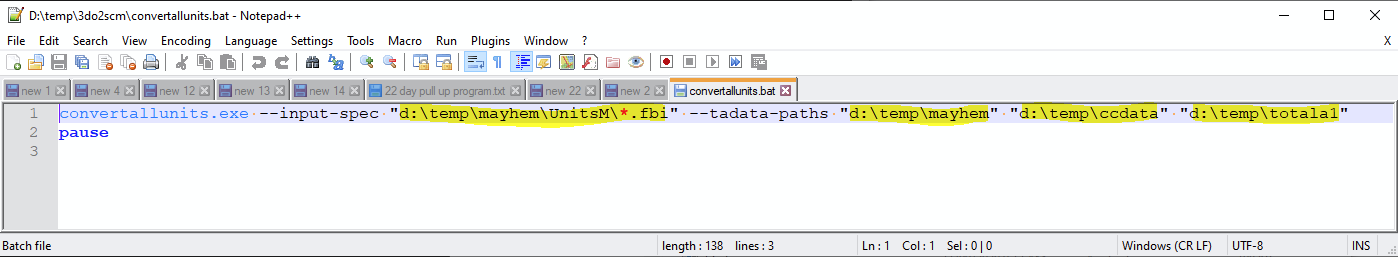
And since the 3do/SCM is only half the story, we include a tool to assist in converting TA animation scripts from their native BOS/COB format into SupCom’s SCA format. We’ll cover that in the instructions too.

## Model Conversion (3do to SCM)

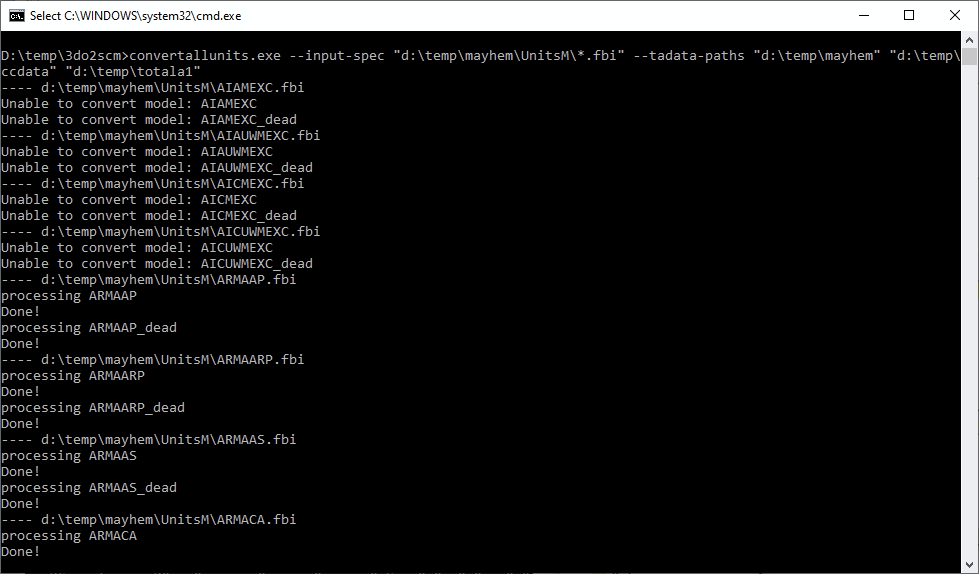
Use [HPIView](http://units.tauniverse.com/tutorials/tadesign/tadesign/ta-files.htm) to extract Total Annihilation data somewhere. In the following I’ve extracted mine to d:\temp\total1 and d:\temp\ccdata\. We’re going to be using the “units” and “objects3d” subdirectories directories.

Extract contents of release to someplace. I’ll use d:\temp\3do2scm:  


Edit the file “convertallunits.bat” and change the paths to match where you extracted everything

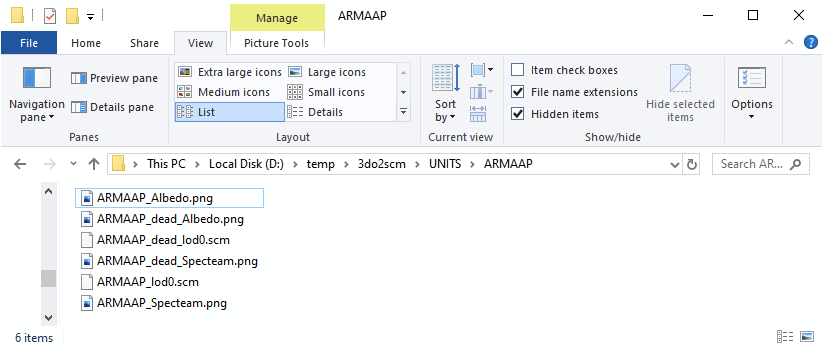


Double click on “convertallunits.bat” and observe the output. It should take a few minutes.

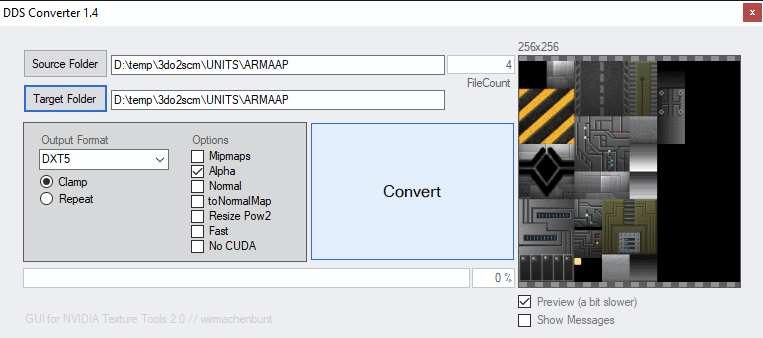


”Unable to convert model” generally means that a unit .fbi exists, but no .3do model.

If all goes well you’ll now have a new directory called “UNITS” in your d:\temp\3do2scm directory:



The .scm files contain the 3d model. And the .png files contain the texture images. Now we need to convert the texture images to DDS format so SupCom engine can load them. I’ve done mine manually using [DDS Converter](https://vvvv.org/contribution/dds-converter). Just point it at the UNITS\ARMAAP directory and click “Convert”.



You now have:

* <unitname>\_lod0.scm
* <unitname>\_Albedo.dds
* <unitname>\_SpecTeam.dds
* <unitname>\_dead\_lod0.scm
* <unitname>\_dead\_Albedo.dds

This should be the minimum required to create the 3d model side of the unit in the SupCom engine.

The remaining files to actually create the unit are:

* <unitname>\_dead\_prop.bp
* <unitname>\_heap\_prop.bp
* <unitname>\_unit.bp
* <unitname>\_script.lua

Which this tool unfortunately can’t help you with, but they’re text format and there are plenty of examples to look to for reference.

Any questions / feedback, leave me a message on the [FAF forums](https://forum.faforever.com/topic/128/convert-total-annihilation-3do-to-supcom-scm).

Good luck!

# Animation Conversion (BOS/COB to SCA)

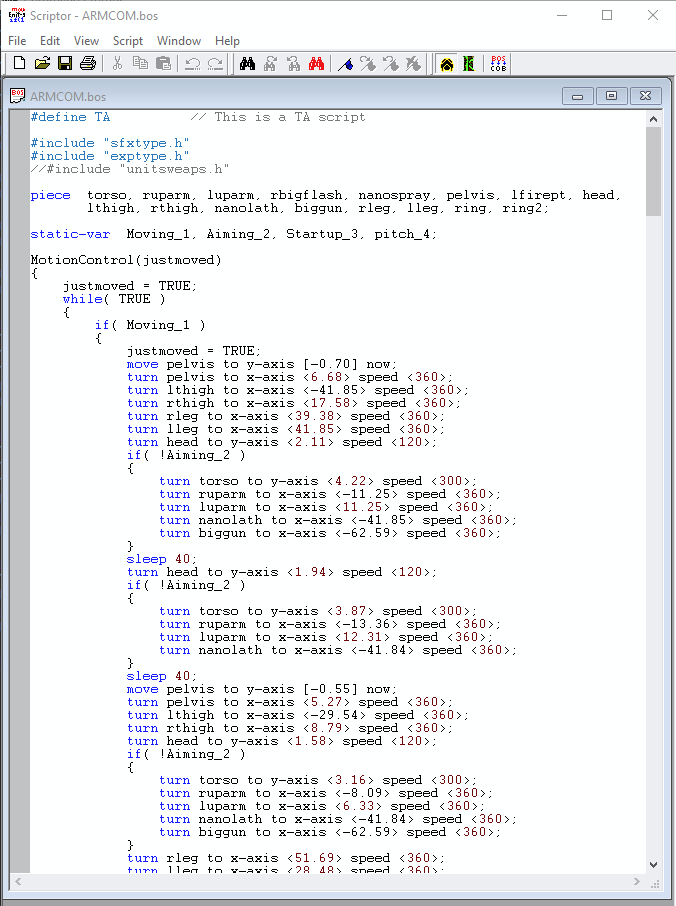
TA animation scripts (BOS files) are compiled (to COB files) and run in a virtual machine with loops and condition statements and local variables and generally allow for the animation to be tightly integrated into the TA simulation, whereas SupCom SCA animation files are pre-compiled sequences of movements without any decision points in them. Instead the SCA animations are triggered from a LUA script, which would do all the integration with the simulation environment.

Therefore a seamless conversion of TA’s BOS/COB files to SupCom LUA/SCA may be extremely complex (or a fun challenge?). But in the interests of pragmatism we’ve instead opted for operator assist rather than full automation.

The approach here is going to be to copy/paste snippets of BOS code for compilation into SCA files. It’s up to the user to find the snippets of interest and to activate the SCA animations from LUA code. We’re going to call the snippets of BOS code nBOS for “not-BOS” since the language is going to be greatly simplified and a few special keywords added.

Lets walk through the process of obtaining a snippet of BOS code for making the Arm Commander walk, and compiling it into an SCA file.

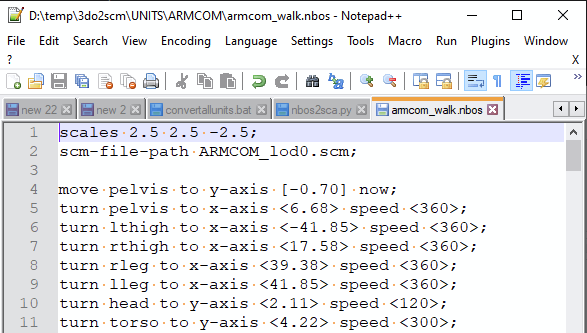
First, grab a copy of [Scriptor](http://switeck.tauniverse.com/). Run it and open a .BOS file or a .COB file from your TA data directory. I’m going to load ARMCOM.bos from the Total Mayhem mod.



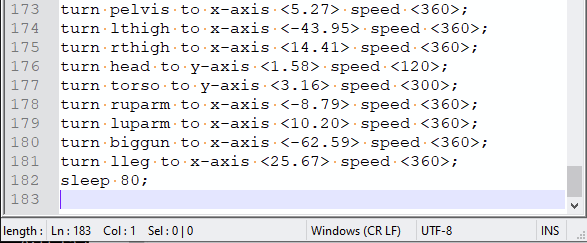
Look for the MotionControl() function. It contains a whole cadenza of “move” and “turn” and “sleep” statements enclosed in while loops and if statements. Let’s copy/paste all the move/turn/sleep statements from the blocks where the ARMCOM is just “moving” but not “aiming” (ie !aiming. “!” means “not”). Save them in a new file using your favourite text editor (eg notepad++) and call it “armcom\_walk.nbos”.

Add a special “scales” statement to the top to indicate the TA-to-SupCom x,y,z scale factors to use. Use 2.5,2.5,-2.5 to match the output of 3do2scm. Or use 1,1,1 if you’ve written a script from scratch using SupCom coordinates.

Add a special “scm-file-path” statement to the top to indicate the .scm file in which to find the bone structure and initial poses. By default nbos2sca will look in the same directory as the .nbos script for the named .scm file, but you can specify a full path to the .scm file if required. (you can also override the .scm file from the command line).

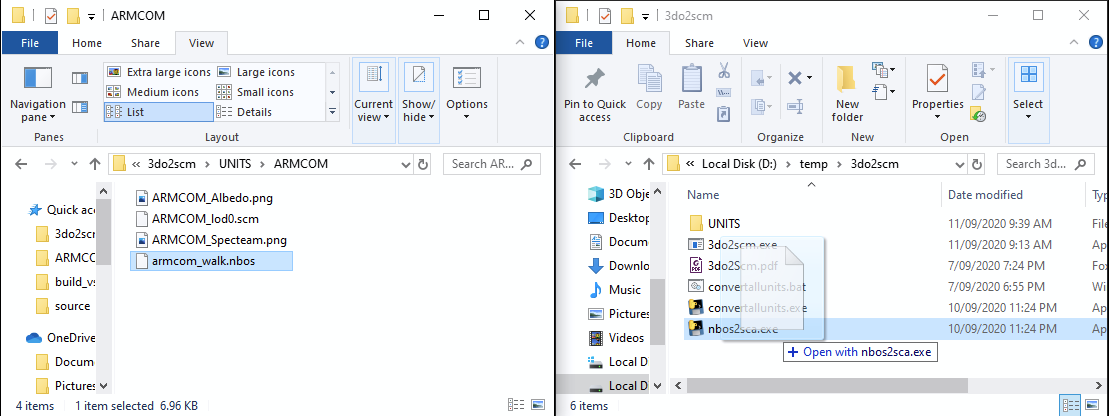


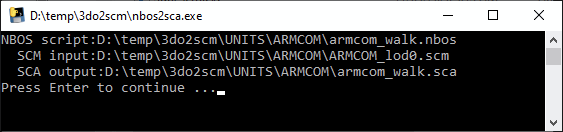
…



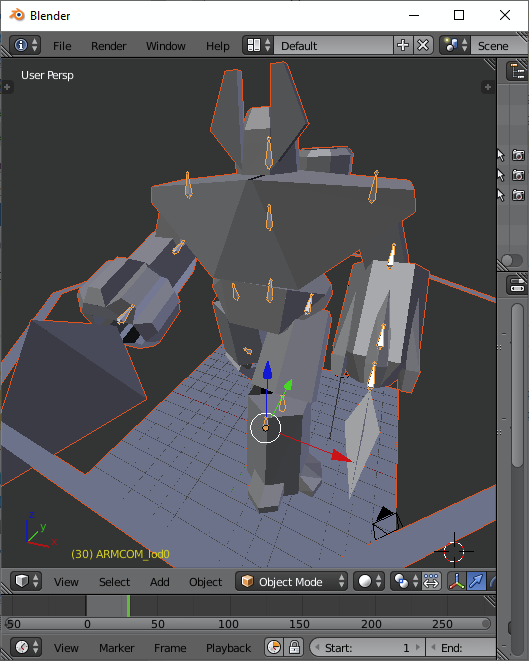
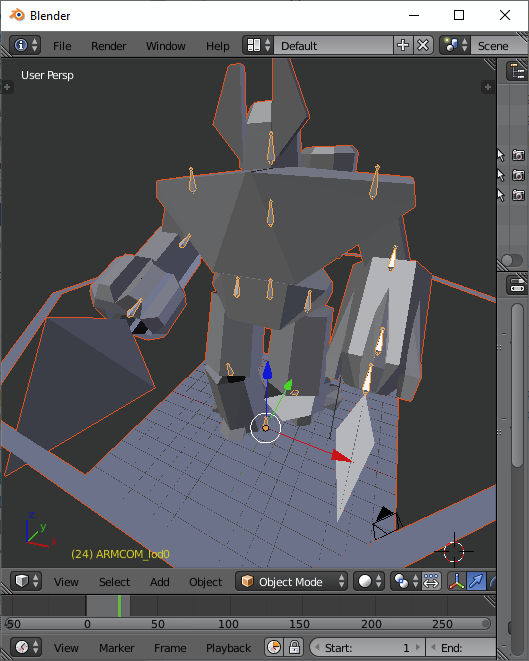
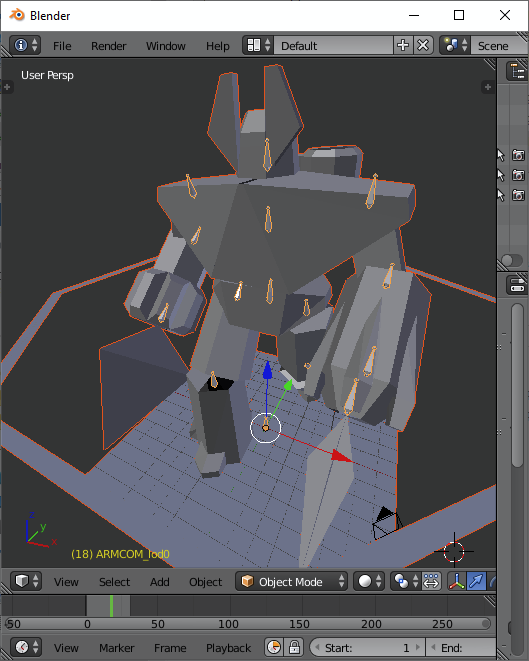
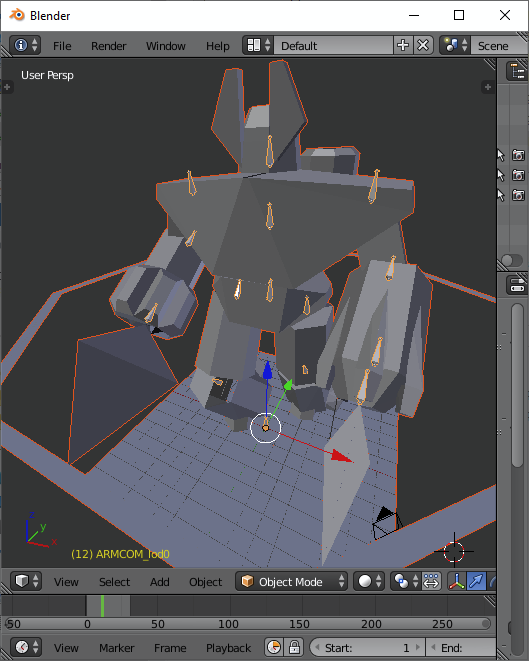
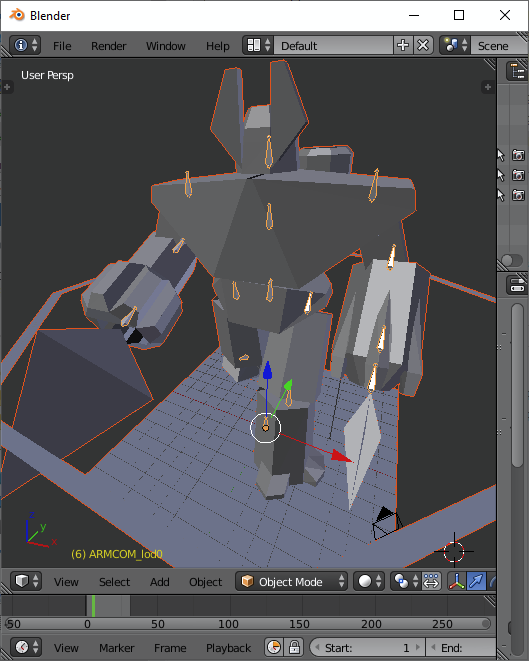
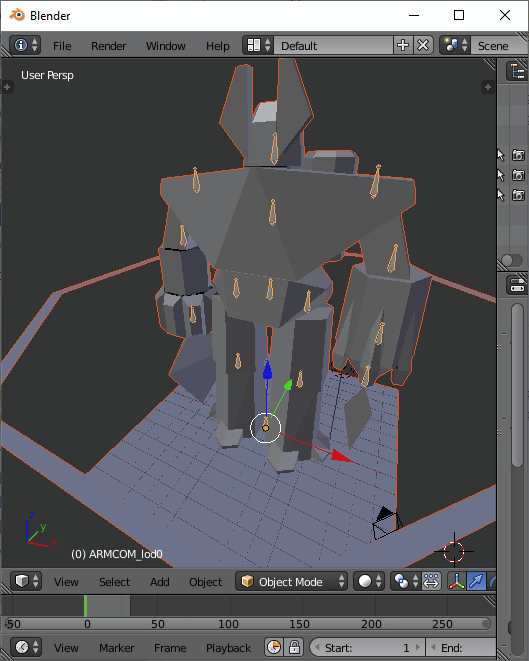
Note that the original BOS file has a list of “pieces”. Our nbos2sca converter tracks the poses of all bones in the model regardless of whether they’re mentioned in the script. As an animator newbie, I’m unclear as to whether or not this is useful / required. Please [let me know](https://forum.faforever.com/topic/128/convert-total-annihilation-3do-to-supcom-scm) if the tool needs a feature to restrict the animation data to only a subset of listed bones.

To run the nbos compiler, just drag/drop one (or a whole bunch of) .nbos files onto the nbos2sc.exe executable in windows file explorer. (or open command prompt and execute nbos2sca.exe --help to override some default options).





You should now have a shiny new SCA file: “armcom\_walk.sca”. Let’s check it out in [Blender](https://www.blender.org/). Use the [Blender plugins](https://github.com/Exotic-Retard/SupCom_Import_Export_Blender) to load the .SCM model and then again to load the .SCA animation.



That’s it. I hope you’re able to make some gains from this tool.