Fully Customizable Characters

*Solutions mentioned here should apply only to run-time customizable characters, if a character does not need any run-time changes it must be single skin, it is most optimal way in terms of performance.

**To use example character please put "Merc_scout_skins" directory into your "\mastercd\objects\characters\mercenaries\" directory because it refers to some existing files

All possible custom things for characters go into 1 of these 4 following categories:

1. Texture/shader change

please **create/use material library/material** in the SandBox© material editor. *Refer to documentation and training materials for help*.

2. Static attachments

- rigid armor parts, weapons, shields, gloves (no fingers bones), boots (no toes bones), helmets - basically anything which does not need skinning/deformation/animation/attached to last bone in hierarchy , export them from 3dsmax as *explained in documentation*, attach/view in the engine
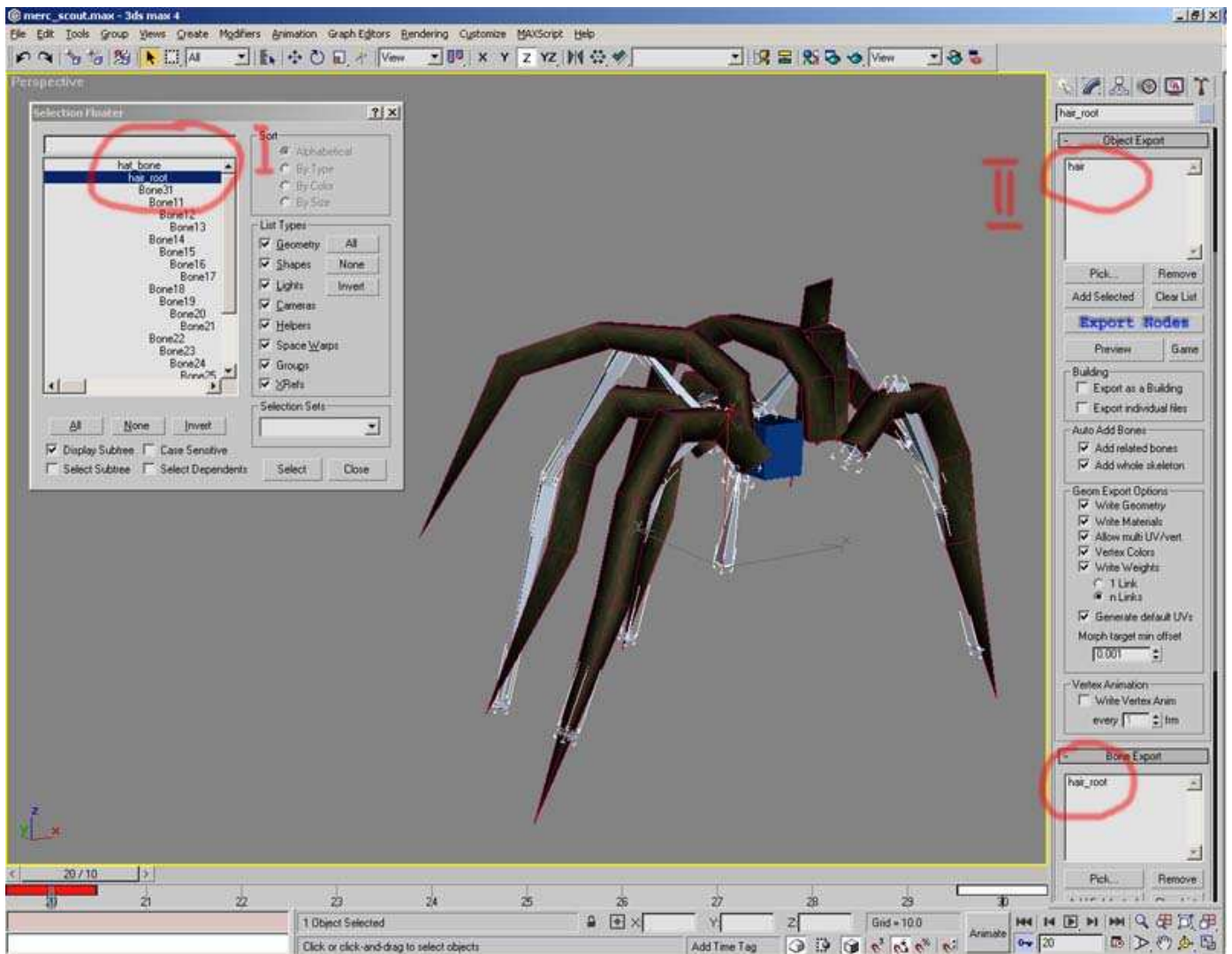
3. Animated attachments

– blowing hairs, garments and different animated decorative character elements. Create them as usual separate **characters**, as many bones as you need, materials, animations, morph targets. Preview in the engine separately. Attach in the engine to a bone of another character.

a) *Exporting animated attachments*

I. In 3dsmax link root bone (i.e. "hair_root") of your animated attachments to bone of main character you want the attachments to be linked to in the game (i.e."hat_bone")

II. Select animated attachment mesh/add to CryExport, make sure that in "Bone Export" rollout root bone of the attachment is listed, not root bone of your main character, remove main char root bone/add attachment root bone in the list if needed. In our case it should be "hair_root" in "Bone Export" list.

III. Export mesh, animations as usual.

IV. Unlink attachment's root before saving max-file/exporting main character if needed.

Look below for the illustration

b) *Attachment's animations might use same names as main character animations.*

In this case engine will automatically start animation of character and animation of attachment(s)

For example   **(merc_scout.cal, hair.cal) Please look inside CAL file there you will see same animation naming**

"swalkfwd" for "merc_scout" character – walk cycle

"swalkfwd" for animated attachment "hair" – animation of hair blowing in the air <u>while walking</u>

"_surprise01" for "merc_scout" character – alerted look around

"_surprise01" for "hair" character – alerted hair look ☺

If you attach "hair" character to "hat_bone" bone of "merc_scout" character and make him play "swalkfwd" animation – "hair" attachment will also play "swalkfwd" animation and you will get your character running with his hair blowing in the air. Accordingly the same works for "_surprise01" animation.

In this case we suggest making length of attachment's animation same length of corresponding parent character animation unless animation synchronization might be difficult

Same applies for skirts, ponytails etc.

c) Internally in the engine animated attachment is the same character as any other except it attached to a bone of other character. It is possible to *call from code any available animation at any moment* for it, same way you do this for any character.

## 4. Skinned attachments (replacable/swapable skin parts)

This type of attachments uses same skeleton as parent character (skin0) does, therefore it must be exported with exactly same settings: same skeleton, same root bone name and same number of bones.

a) All parts like these are possible to keep in one 3dsmax scene in order to use exactly the same skeleton and "export individual files option"(batch export) in the CryExport.
Object names might be same as file names (including path). To export just select all/add/export individual files. It is the same way you export GLM sets.

For example character skins structure inside 3dsmax-file might be like this:

"merc_scout"   - base model, one single skin includes everything
"merc_scout_nohands"   – model w/o hands, needs only hands attached
"merc_scout_noarms"   - model w/o hands and arms, needs both hands and arms
…
"merc_scout_empty"   - empty model(just skeleton), needs attachments for everything
……………………..
"merc_scout_hands"
…   - All different hands models
"merc_scout_hands12"
……………………..
"merc_scout_arms"
…   - All different arms models
"merc_scout_arms35"
……………………..
"merc_scout_body"
…   - All different body models
"merc_scout_body56"
……………………..
…and so on…

Look below for the illustration
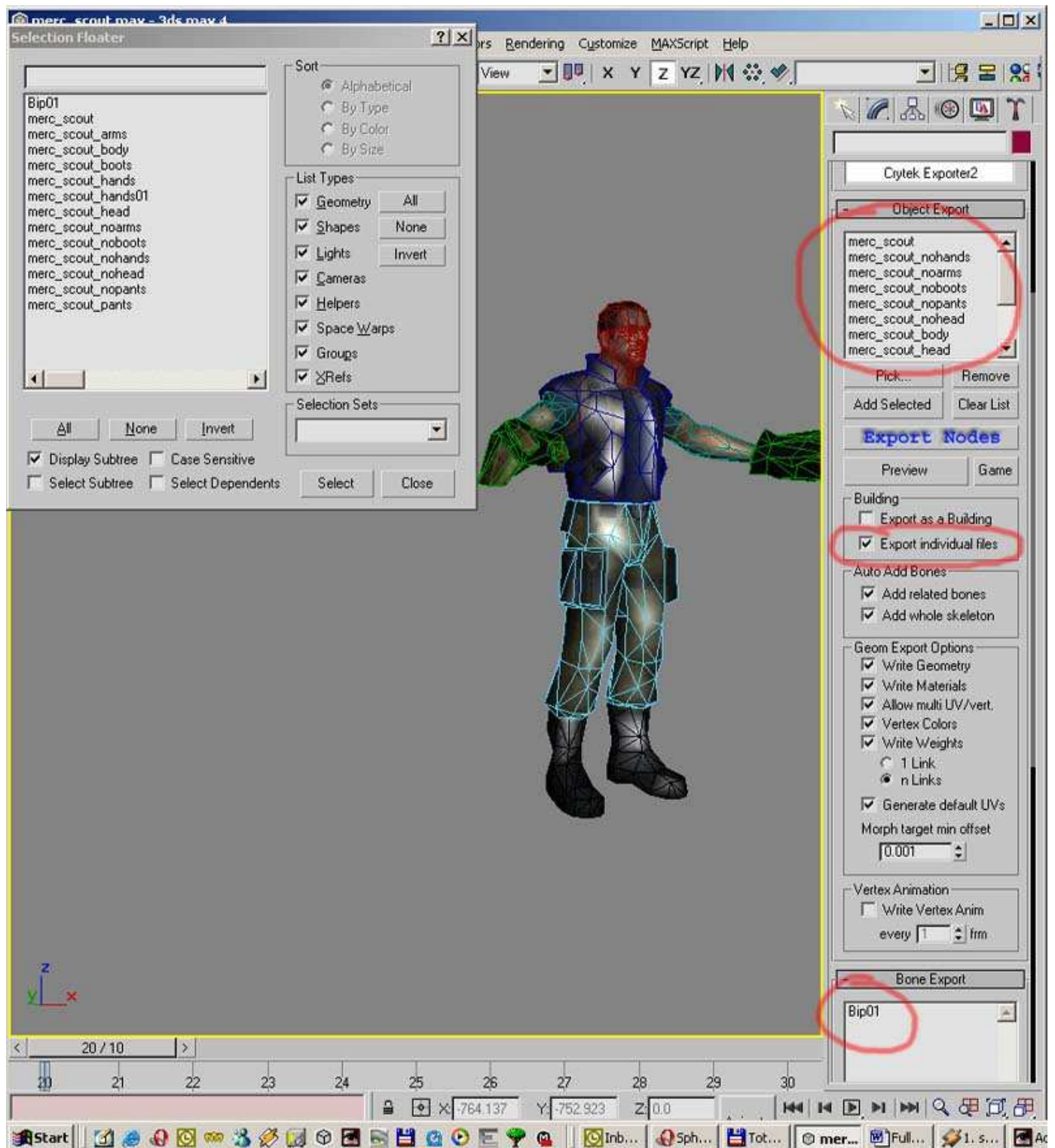
"Export individual files" – batch export of skinned attachments

b) **CL file** – character list file, simple text. You can load this file for a character in the engine/preview instead of loading multiple skinned attachments manually

Example:
merc_scout.cl
merc_scout_nohands.cgf
merc_scout_hands.cgf
merc_scout_hands01.cgf
merc_scout_noarms.cgf
merc_scout_arms.cgf
merc_scout_nohead.cgf
merc_scout_head.cgf
merc_scout_noboots.cgf
merc_scout_boots.cgf
merc_scout_nopants.cgf
merc_scout_pants.cgf
merc_scout_body.cgf
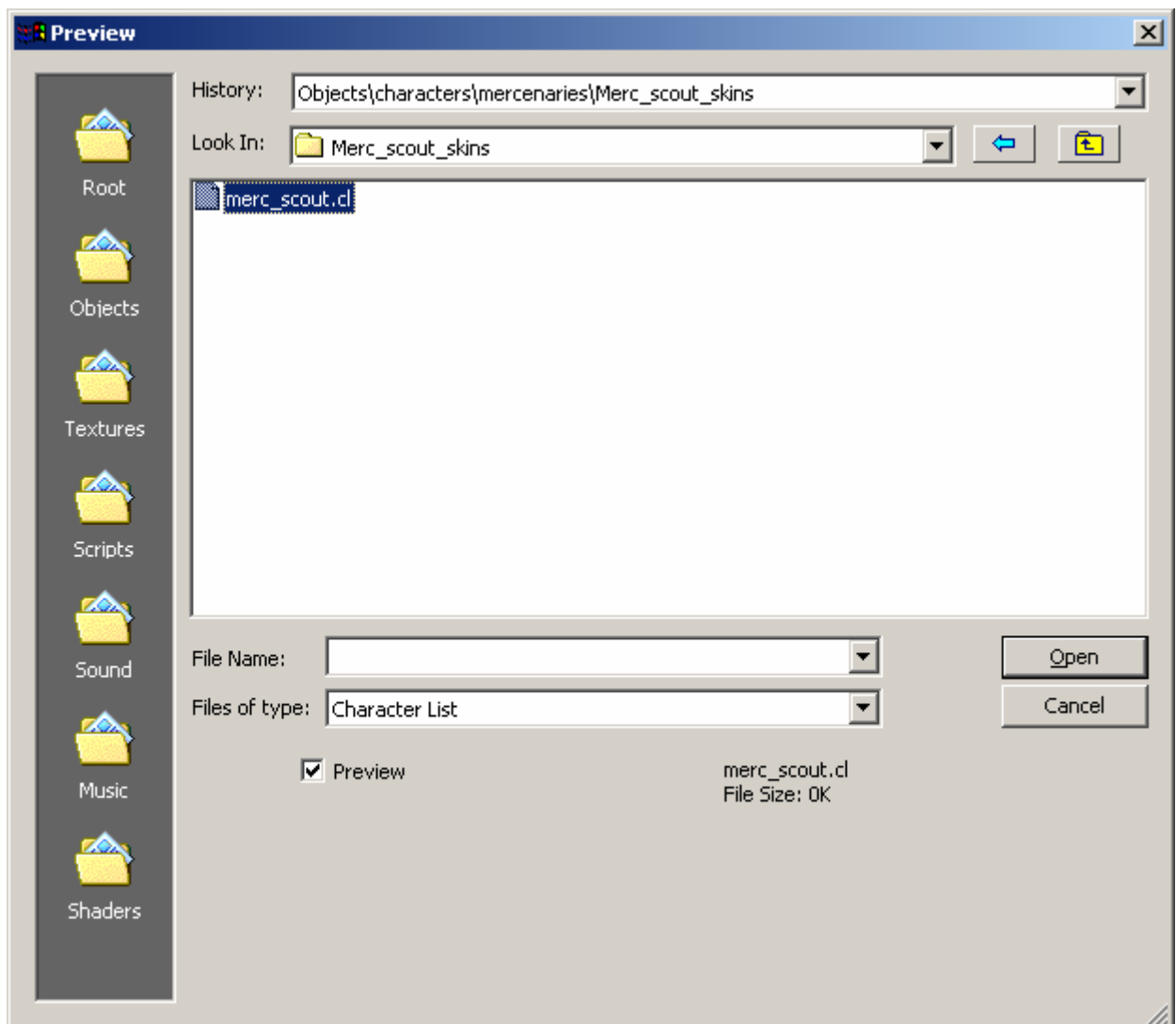
Possible problems:
   a) *If you get this message, it means that skinned attachment you are trying to load for the character does not have same skeleton structure. Re-export with exactly same skeleton/root bone.*

b) Stencil shadows does not work correctly on an attachment – check open edges in its model, every attachment has to have NO open edges in order for stencil shadows to work correctly

All types of attachments listed above work together. It means a character can have skinned attachments (new arms model etc), animated attachments (a skirt, hair etc), and static attachments (a sword, a shield, a helmet etc) at the same time
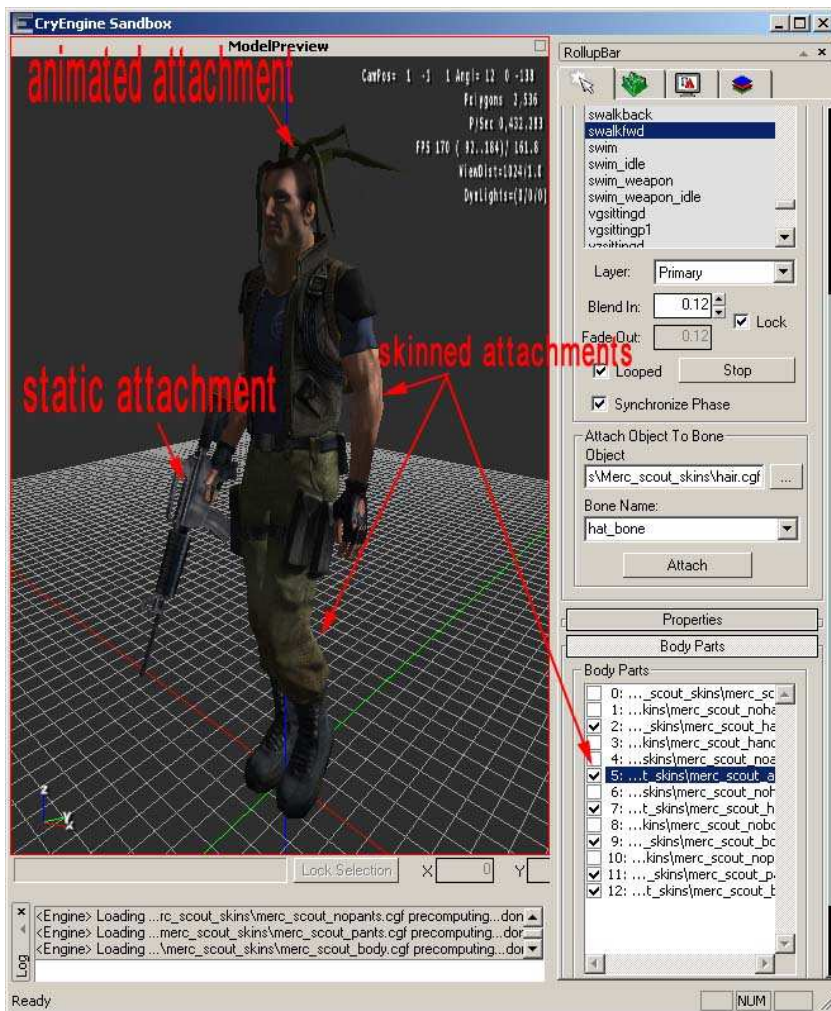
Document: **Maksym Aristov.** Code: **Sergiy Midgalsky**   **©Crytek GmbH, 2003**