Adding New DI-Guy Characters to VR-Forces

VR-Forces supports DI-Guy characters and includes many lifeform characters. However, MÄK customers sometimes want to add their own DI-Guy characters. This document explains how to add newly created DI-Guy characters to VR-Forces.

The general process for adding a new character is as follows:

1. Create the new character using DI-Guy software and copy the required files to the VR-Forces data directory.

2. Add a model definition and element definition for the new character.

3. Add the new character to *character_digest.xml*. If the character has animations, add them to *character_animations_table.mtl*.

4. Create a new VR-Forces character in the Entity Editor.

1. Copy DI-Guy Files to the Data Directory

VR-Forces stores files for DI-Guy characters in *./data/Lifeforms/DIGuy* and its subdirectories. After you create a new character using DI-Guy software, you must copy the files for this character to these directories.

DI-Guy documentation recommends that all customer content be placed in *$(DIGUY)/custom*. To follow this convention, create a directory called *./data/Lifeforms/DIGuy/custom* and put your files in the appropriate subdirectories under it.

2. Add Model Definitions and Element Definitions

To visualize a DI-Guy character in VR-Forces, you must add a model definition and element definition for each character.

2.1. **Create a DI-Guy Model Definition**

To create a model definition for a DI-Guy:

1. Choose **Settings** → **Visual Model Editors**. The Visual Model Editors dialog box opens.

2. Select the Model Definition Editor page.

3. Click the Add button (✚) next to the Model Definitions label. The Add Model Definition dialog box opens.

4. Type a name for the new model definition. It must end with the letters DIG.

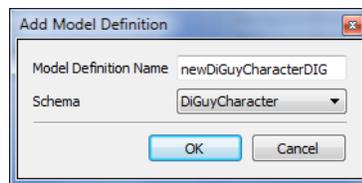5. In the Schema list, select DiGuyCharacter (Figure 1).

Figure 1. Add Model Definition dialog box

6. Click OK. The new model definition is added. It is highlighted in red because it is missing parameters (Figure 2).
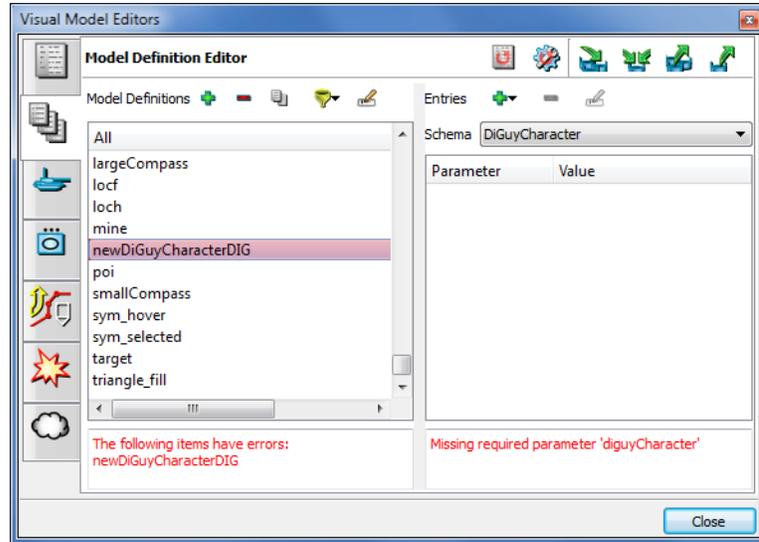

Figure 2. New model definition

7. Click the Add Parameter button (➕▾). A list of parameters is displayed (Figure 3).
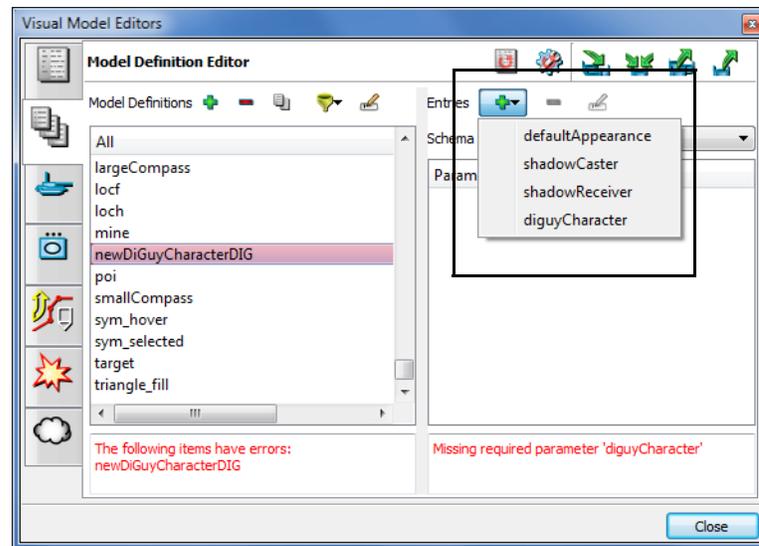

Figure 3. Add parameter list

8. Select defaultAppearance. It is added to the parameter list.

9. Click the value for the parameter. The field becomes editable.

10. Type the default appearance name for this character (Figure 4).

11. Add a diguyCharacter parameter.

12. Click the value for the parameter. The field becomes editable.

13. Type the character name for this character.

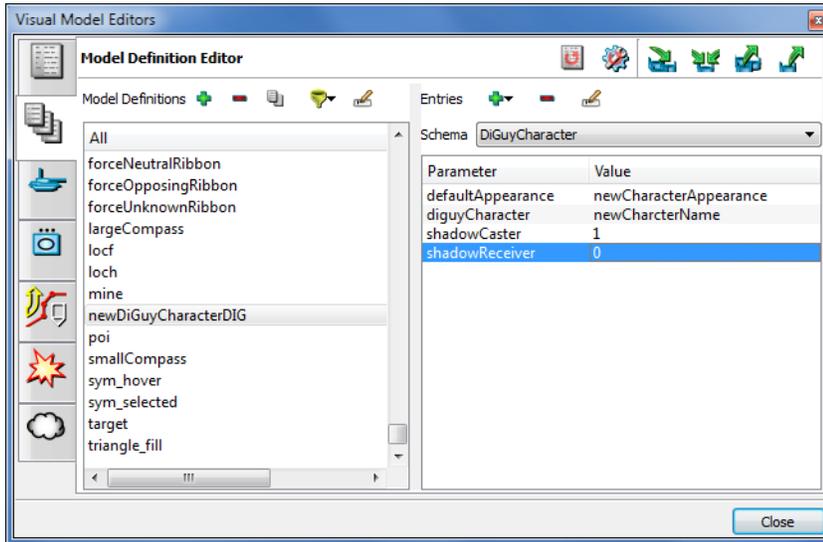14. Add the shadowCaster and shadowReceiver parameters (Figure 4).

Figure 4. DI-Guy character parameters

2.2. Add an Element Definition

To create an element definition:

1. Choose **Settings** → **Visual Model Editors**. The Visual Model Editors dialog box opens.

2. Select the Entity Definition Editor page.

3. Expand the element definition hierarchy to the Life Form level and select the type of life form you are adding (Figure 5).
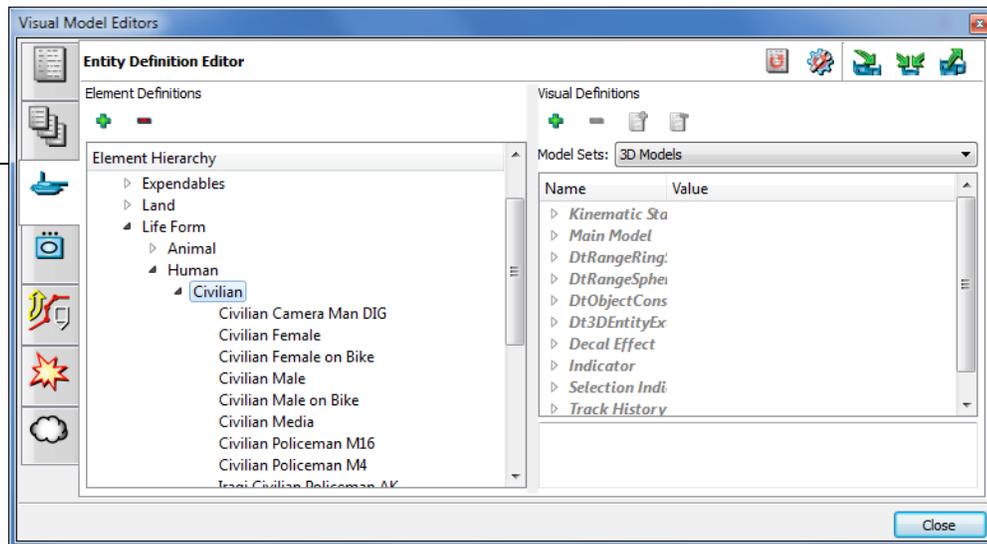

Figure 5. Entity Definition Editor page

4. Click the Add button (✚). The Create Element Definition dialog box opens.

5. Type a name for the element definition. (You cannot edit the name after you create it, so try to avoid typing errors.)

6. Click OK. The new element is added to the list (Figure 6).
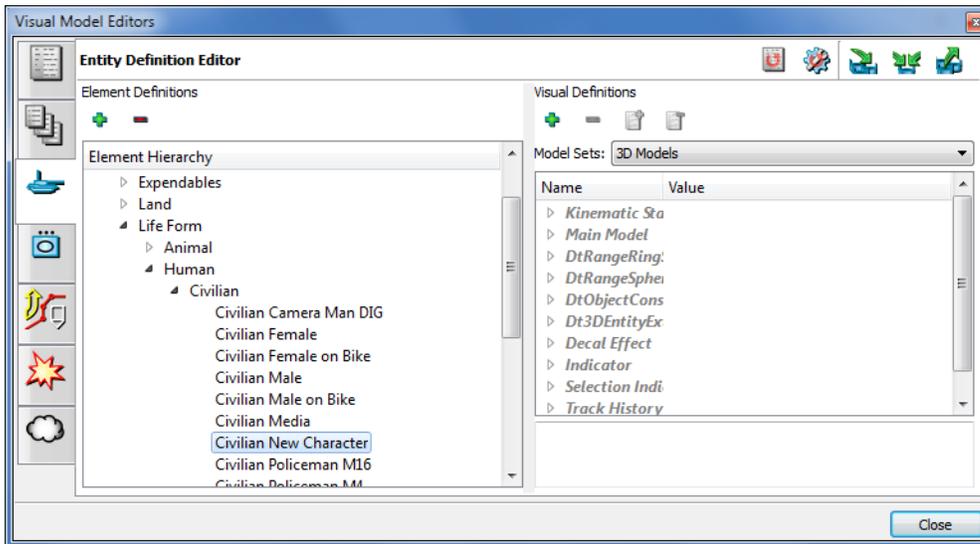

Figure 6. New entity definition added

7. In the Visual Definitions list, select Main Model (Figure 7).
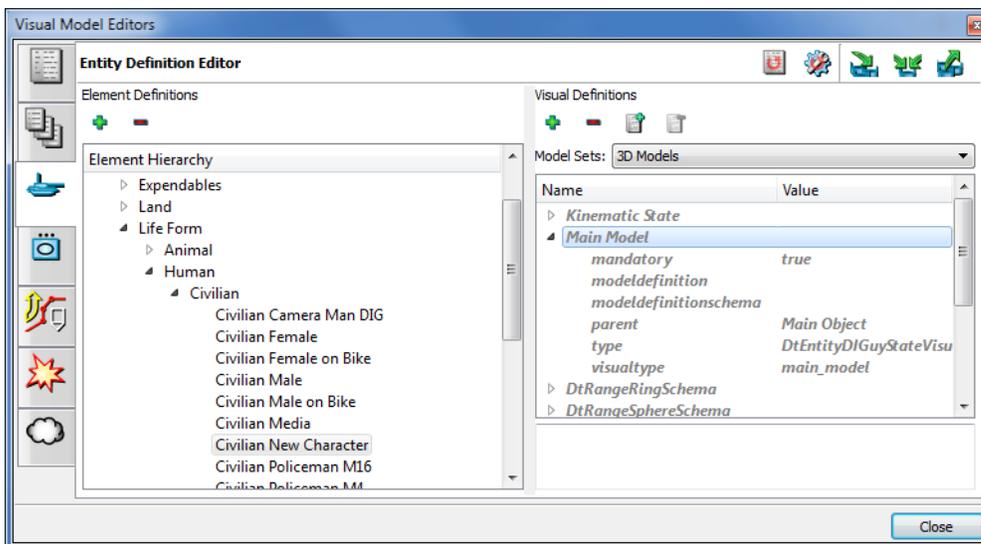

Figure 7. Main Model visual definition

8. Click the Value for the **modeldefinition** attribute. The Choose Model Definition dialog box opens.

9. Click the Add button (➕). A list is added to the window (Figure 8).
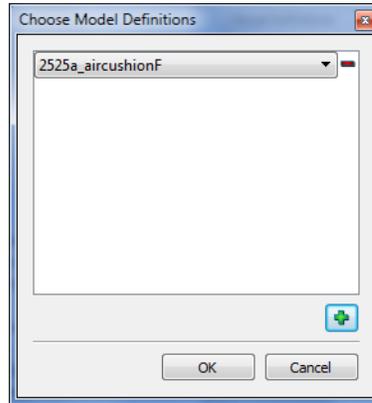
Figure 8. Choose Model Definition dialog box

10. Select the model definition that you created for this character (Figure 9).

Figure 9. New model definition selected

11. Click OK. The model definition is updated (Figure 10).

Figure 10. Completed entity definition

12. Select the value column for the **modeldefinitionschema** attribute. The Choose Supported Model definition Schema dialog box opens.

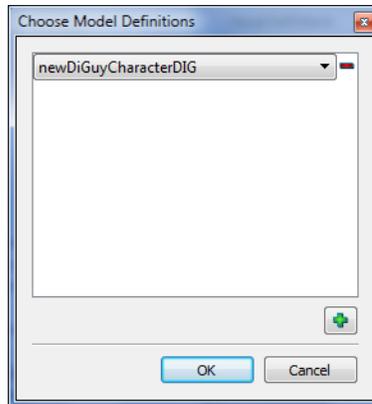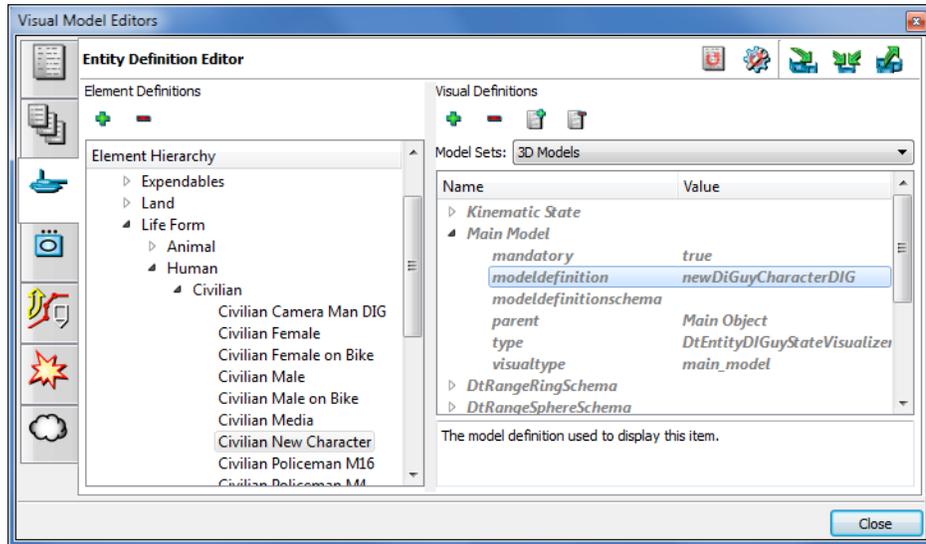13. Click the Add button (✚). A list is added to the window.

14. Select DiGuyCharacter.

15. Click OK.

16. Close the dialog box.

3. Updating the Character Digest and Animations Table Files

The DI-Guy characters, appearances, and animations available to lifeforms are controlled by two configuration files:

- ◆ *./appData/settings/vrfSim/character_digest.xml* contains information that VR-Forces needs to synchronize an entity's simulated location with the movements generated by DI-Guy animations.

- ◆ *./appData/settings/vrfSim/character_animations_table.mtl* lists the DI-Guy characters available for VR-Forces entities and the appearances available for each character. This information is used to populate lists in the Entity Editor. You can edit this file to add additional DI-Guy characters to those already configured for VR-Forces. The syntax of entries is described in the file.

!   Any characters you add to *character_animations_table.mtl* must be valid DI-Guy characters that are already in *character_digest.xml*. You cannot arbitrarily make up new types of characters.

3.1. Adding New Characters to the Character Digest

If you create a new character, you have two options for adding it to the character digest. You can use the DI-Guy SDK to generate a new version of *character_digest.xml,* or you can edit the file by hand. For details about using the SDK to update this file, please see *$(DIGUY)\programming_examples\DIGuyDigest* in your DI-Guy installation.

To add a new character manually:

1. Open *character_digest.xml* in a text editor.

2. Copy the entry for a character that is similar to your new character.

3. Change the attribute values to valid values for your new character.

4. Save the file.

3.2. Adding a New DI-Guy Animation

This section explains how to add a new DI-Guy animation to VR-Forces. It assumes that you have the DI-Guy software and have created the new animation.

> **i** The new animation must be made with the same version of DI-Guy supported by VR-Forces. Please see *VR-Forces Release Notes* for the currently supported version.

To add a new DI-Guy animation:

1. Create the new animation in DI-Guy. You will create an animation and add it to a character's action table. Make sure that the name of the animation file matches the name of the action you added to the action table. For example, if the name of the animation is layEgg, but you call the action lay_egg, it will not work.

> **i** There is a 1-1 relationship between characters and their action tables. You cannot use an animation based on a chicken character in a cow character's action table.

2. Add the new animation to the list of animations for this character in *./appData/settings/vrfSim/character_digest.xml*. For example, if the new animation is *char_chicken_action_table.cfg*, add an entry to the chicken character. The following example assumes a new animation called lay_egg. The chicken will sit, lay the egg, then stand up.

```
<character_type name="chicken">
  <appearances>
    <appearance name="chicken_1" />
    <appearance name="chicken_2" />
    <appearance name="chicken_3" />
  </appearances>
  <head_appearances>
    <head_appearance name="default" />
  </head_appearances>
  <actions>
    <action name="lay_egg" > <---Needs to match name in action table and
                                 motion file
      <duration>1.500000</duration>
      <speed>0.000000</speed>
      <posture>upright</posture>
      <direction>none</direction>
      <variant>normal</variant>
    </action>
    <action name="stand" >
      <duration>0.500000</duration>
      <speed>0.000000</speed>
      <posture>upright</posture>
      <direction>none</direction>
      <variant>normal</variant>
```

```
        </action>
...
```

3. Add the new animation to *./appData/settings/vrfSim/character_animations_table.mtl*. This table determines whether an animation can be assigned to an entity using the DI-Guy Animation task (`is-taskable-animation   True`) or whether it is used based on the entity's behavior. For example, if an entity is moving faster than a certain speed, it is given a running animation. An entry for our lay egg example would look like the following:

```
(chicken
  (display-name "Chicken")
  (animations
    (animation
      (animation-name "lay_egg")
      (name-to-be-displayed "Lay an egg")
      (is-taskable-animation  True)
      (animation-variant "normal")
    )
    (animation
      (animation-name "feeding")
      (name-to-be-displayed "Feed")
      (is-taskable-animation  True)
      (animation-variant "normal")
    )
...
```

4. Add a New Entity in the VR-Forces Entity Editor

Add a new entity in the Entity Editor, as described in *VR-Forces Configuration Guide*. Give the new entity the same name as the element definition you created in the Visual Model Editor dialog box. This will ensure that the entity enumeration is mapped to the correct element definition.

When you specify the 3D model, the list of character names is drawn from the **display-name** attribute in the entries in *./appData/settings/vrfSim/character_animations_table.mtl*. The list of appearances is drawn from a character's entry in *./appData/settings/vrfSim/character_digest.xml*. Therefore, these files must have been updated before you can specify the 3D model in the Entity Editor.