



DI-Guy 13.0 Release Notes

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Systems Supported

Table 1 lists the platforms currently supported by MÄK DI-Guy 13.0. Application code must be built with the indicated compilers in order to link to DI-Guy libraries.

Table 1: Platforms supported

Platform	Compiler
Red Hat Enterprise Linux Workstation 6.0	Default compiler (64-bit)
PC with Windows XP/Vista/Windows 7	Microsoft Visual C + + 9.0 (32-bit and 64 bit) Microsoft Visual C + + 10.0 (32-bit and 64 bit)



You must be an administrator to install MÄK products on Windows Vista.

Renderer Support

DI-Guy 13.0 supports the following renderers:

- Windows 32 bit: OpenGL, OpenGL Graphics API, DirectX 9 Graphics API, OSG Graphics API, Unity, VegaPrime.
- Windows 64 bit: OpenGL, OpenGL Graphics API, OSG Graphics API
- Linux: OpenGL, OpenGL Graphics API, OSG.

License Manager

To run DI-Guy 13.0, you must install MÄK license management software. DI-Guy 13.0 uses FLEXlm 11.11. You must obtain a new license file from MÄK. If you are running a previous version of DI-Guy, your old license will continue to be valid for that version.

The License Manager files are not part of the DI-Guy installer. You can download them at:

- Windows:
<ftp://ftp.mak.com/out/MAKLicenseManager-win-setup.exe> (for 32-bit systems)
<ftp://ftp.mak.com/out/MAKLicenseManager-win64-setup.exe>
- Linux:
<ftp://ftp.mak.com/out/MAKLicenseManager-linux-setup.tar.gz> (for 32-bit systems)
<ftp://ftp.mak.com/out/MAKLicenseManager-linux64-setup.tar.gz>

A license manager FAQ is available at:

<http://www.mak.com/license-support.html>

Network Compatibility

HLA only

DI-Guy 13.0 was built against VR-Link 5.0.1 and is compliant with:

- ♦ RPR-FOM 1.0 and a subset of 2.0 (draft 6, 14, and 17).
- ♦ MÄK RTI 4.1 or later .

DIS only

DI-Guy 13.0 supports DIS 4, 5, 6, and 7.

RTI Support

We recommend using the latest version of the MÄK RTI. However, DI-Guy should work with other RTIs that conform to the HLA 1.3 specification, the IEEE 1516 SISO DLC API or HLA Evolved and are built with the same compiler as DI-Guy.

When using the MÄK RTI, remember to make sure that DI-Guy can find your FED file, and optional *rid.mtl*, file by either putting them in the directory from which you are running, or by setting the environment variable to the directory that contains them.

FOM Support

DI-Guy 13.0 has built-in support for versions 0.5, 0.7, 0.8, 1.0, and 2.0, drafts 6, 14, and 17, of the RPR FOM. It also supports VR-Link's ability to support alternative FOMs through the FOM Mapper. By default, DI-Guy 13.0 uses RPR FOM 1.0. It is recommended that you use the DI-Guy FOM Extensions. DI-Guy includes two custom FOMs, one for HLA 1.3 and HLA 1516, and one for HLA Evolved.

New Features and Updates

DI-Guy 13.0 is has the following updated features:

- ♦ Many new and improved character models. For illustrations, please see [“Updated Characters and Other Content,”](#) on page 9.
- ♦ New animation blend tree system, enables new multi-direction locomotion animations, aiming while running, using one action to map to multiple animations. For example, one character type can now have a stand_ready action that maps to a number of different animations based on what is in their hand. Available animation nodes include 1D blender, 2D blender, 2 Animation priority weight masker, motion selector.
- ♦ New Instancing system providing 2.5x speed up for huge crowds at low LODs.
- ♦ A new hand item appearance system reduces the need for hundreds of appearances. Character types now specify information about what hand items are appropriate and configuration information applies that to existing appearances.
- ♦ Motion engine is no longer reset when changing heads or hands.
- ♦ Added demonstration tools for locomotion, aiming and tool use to DI-Guy Character Viewer. For details, please see Section 5.2.1, [“Demonstrating a Character’s Aim and Locomotion Capability,”](#) in *DI-Guy Content Reference Manual*.
- ♦ New animation blend tree node editor in DI-Guy Motion Editor. For details, please see Section 7.4.2, [“The Animation Node Editor,”](#) in *DI-Guy Motion Editor Users Guide*.
- ♦ Added new DI-Guy extras window in DI-Guy Motion Editor. It includes tools for evaluating different DI-Guy appearances (hand/head) with motions, turning on/off IK and visualizing. For details, please see Section 3.6, [“Changing Appearances,”](#) in *DI-Guy Motion Editor Users Guide*.
- ♦ New system for triggering events from within animations, scripts, and decisions are available.
- ♦ Real-time IK system. A new system for leg and hand/gun real-time adjustments. Feet stick to terrain and stairs better. Hands can adapt to different weapons without creating new animations.
- ♦ DI-Guy 13.0 uses the MÄK License Manager. For details, please see [“License Manager,”](#) on page 2.

Networking Changes

- ♦ Upgraded to VR-Link 5.0.1.
- ♦ HLA configuration files are now in *./config/diguy/networking*. You may need to update your RTI_CONFIG environment variable.
- ♦ Added support for HLA Evolved.
- ♦ Added new DIGuy HLA Evolved module.
- ♦ New HLA FOM for 13 and 1516, which adds support for head and hand appearances. Older FOMs will default to sending 12.5 compatible appearances.
- ♦ DIS custom PDU DIGUY_CUSTOM_PDU_ID_SET_CHAR_APPEARANCE now contains 3rd string for hand appearance.
- ♦ Characters now publish angular velocity every frame.
- ♦ Most of the math in the drift guide has been rewritten:
 - Now integrates the desired position forward based on desired velocity.
 - Uses desired angular velocity to modify the orientation over time.
 - Uses desired angular velocity to modify desired velocity.
 - Faster non asymptotic drifting to desired location/orientation.
 - Removed course error concept from guide
- ♦ Updated sample code demonstrating processing DIGUY_CUSTOM_PDU_ID_SET_SHAPE_VARIATION packet.
- ♦ Use transition time and velocity ramping to better slow down decelerating characters who are transitioning to stationary motions.
- ♦ We now only sync speed for characters that do not have custom PDUs being sent. We rely on the initial speed from the action PDU. Fixes issues with crawling, and transition speed.
- ♦ Change publishing code to send the desired action instead of the current action. Lets transitions go out over the network at the start of transition instead of after it's completed.
- ♦ Published velocity is now the average velocity for characters performing most simple actions, this avoids slow or fast packets and yields better dead reckoning results. Characters transitioning or colliding with objects should send raw velocity.
- ♦ Guide example has been heavily rewritten.
- ♦ Tweaked network guide defaults a bit
- ♦ *network.cfg* now saves to disk when going on line not off-line.
- ♦ Added adaptive guide value to network.cfg
- ♦ Added code to better handle characters playing locomotion animations over the network.

Animation API Changes

- ♦ Quaternion pipeline is now on by default. This can yield a 10-15% update speed up. If this causes any issues it can be turned off by calling `diguyApp::set_precompute_quaternions_enabled(0)`. All character animation configuration files have been upgraded to support quaternion pipeline.
- ♦ Rewrote portions of spline interpolation code to give consistent velocity results regardless of number of segments used. Most notable on vehicles with long paths that could exhibit sawtooth velocities in the past.
- ♦ Modified action lookup to return closer speed based action if alternative variant is specified.
- ♦ Waypoint segment changes should now affect visuals.
- ♦ Large internal rewrites of systems to support blend tree system. Animations play back in normalized time. Position accumulation works off of Δt instead of absolute animation time.

Motion Editor

- ♦ Added Collada Dae animation file import to Motion Editor.
- ♦ Added new `bdm` to Collada converter to allow animations to be edited in 3ds Max or Maya.
- ♦ Added new editor for adding script/decision events to animations (experimental).

Aiming

- ♦ Slowed down aim tracking when a character is on top of the target. Aiming could oscillate badly before.
- ♦ Cleaned up aim converge code, only takes one argument on/off now.
- ♦ `diguyCharacter::force_action()` will no longer reset aimer.

DI-Guy AI

- ♦ Removed `DIGUY_DYNAMIC_AVOIDANCE_METHOD_SIMPLE`. It was not being used.
- ♦ Added `diguyDynamicAvoidanceMethod` `DIGUY_DYNAMIC_AVOIDANCE_METHOD_REPULSION_ZONES_AND_PROJECTED_FORCES`, a new algorithm that incorporates facing direction and character velocity into influence calculations. Crowds with `repulsion_zone` set in `dss` get automatically upgraded to the new force model.
- ♦ Influence forces are now visualized by increasing red amount in influence disk to represent strength of force on character.
- ♦ Desired force heading line is now green-to-red to better differentiate from repulsion force.

- ♦ The velocity of the current action no longer affects the strength of the force contribution. This makes running characters less likely to plow through crowds.
- ♦ Added smoothing to accumulated crowd forces. Lowers the amount of jittering from the new force model.

DI-Guy API

- ♦ Improvements to changing character types while on a path.
- ♦ Fixed collada files to use short indices for index buffer, resulting in a 10% memory/disk improvement.
- ♦ Improved index buffer ordering to better make use of vertex cache; provides frame rate speedup.

Improved Content

- ♦ Removed most unneeded appearances that have been replaced by the hand item system.
- ♦ Upgraded Male and Female Bikers, Cameraman, Wheelchairs, and Flight deck crew to be skinned character compatible.
- ♦ Configuration setup for characters with secondary items (hoses, bikes, wheelchairs) has been simplified to not require additional actors.
- ♦ New car appearances authored via modern pipeline, skinned objects needing only 2 draw calls with bump/spec/AO/variation.
- ♦ New Female casual appearances.
- ♦ New Male casual appearances.
- ♦ New military characters.
- ♦ New Construction Worker character type.
- ♦ Animation blend tree functionality is now used in soldier_07 and mideast_soldier_07 character types. This adds support for:
 - Multi-directional movement via new actions upright_movement, crouched_movement and prone_movement.
 - All moving aim animations now support aiming different directions by combining original motion with stand_aim data.
- ♦ Added movement locomotion action to all vehicle character types, as well as bikers and wheelchairs. They can use diguyCharacter::set_animation_local_velocity() to go at any speed, not just quantized values as in the past.

Deprecated Functions

The following functions have been deprecated:

- diguyGraphicsShape offset API
- diguyGraphicsShape::get_has_offset_translation()
- diguyGraphicsShape::get_offset_translation()
- diguyGraphicsShape::get_has_offset_rotation()
- diguyGraphicsShape::get_offset_rotation()
- diguyGraphicsShape::get_has_offset_scale()
- diguyGraphicsShape::get_offset_scale()

The following deprecated functions have been removed. (Please see *diguyCharacter.h* for recommended replacements.:

- diguyCharacter::get_base_link()
- diguyCharacter::set_apply_actor_scale_to_action_bead_xy_travel()
- diguyCharacter::get_apply_actor_scale_to_action_bead_xy_travel()
- diguyCharacter::set_default_weapon_sound()
- diguyCharacter::get_default_weapon_sound()
- diguyCharacter::set_default_weapon_sound_gain()
- diguyCharacter::get_default_weapon_sound_gain()
- diguyCharacter::set_weapon_munition_type()
- diguyCharacter::get_weapon_munition_type()
- diguyCharacter::set_weapon_horizontal_error()
- diguyCharacter::get_weapon_horizontal_error()
- diguyCharacter::set_weapon_vertical_error()
- diguyCharacter::get_weapon_vertical_error()
- diguyCharacter::set_shader_program()
- diguyCharacter::get_recommended_appearance_shader_program_name()
- diguyCharacter::merge_asset()
- diguyCharacter::set_DIS_smoke_trail_state()
- diguyCharacter::get_DIS_smoke_trail_state()

Updated Characters and Other Content

The following pages illustrate some of the new and updated content in DI-Guy 13.0.









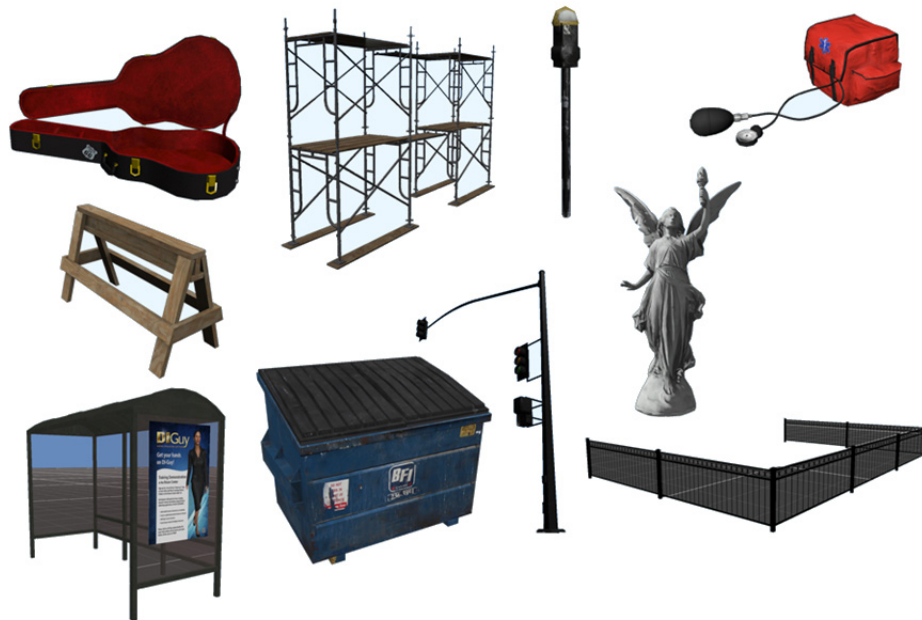






Figure 1-1. Female casual characters

Documentation Updates

The DI-Guy documentation set has been completely revised and updated. *DI-Guy Getting Started Guide* is a new introductory manual. The Character Viewer is now documented (as part of *DI-Guy Motion Editor Users Guide*). All manuals now have an index. The *DI-Guy Master Index* is a combined index of all of the manuals that are delivered in PDF format. Entries have live links to the target pages.

Bug Fixes

This release fixes the following problems:

- ♦ diguyCharacter::CALLBACK_ID_CURRENT_ACTION_CHANGED would not go off for characters on paths.
- ♦ Repulsion zone on/off did not work.
- ♦ Teleport at end of path travel option did not work correctly.
- ♦ Female casuals skin tones were not sent over the network Properly.
- ♦ Fixed logic bug with DIGUY_CUSTOM_PDU_ID_SET_SHAPE_VARIATION handling and multiple variation textures.
- ♦ No head appearances were being shown after revamping the head appearance system.
- ♦ Current body/head/hands appearances were not restored to defaults on reset.
- ♦ Fixed hard crash in Motion Editor when reversing short motions.
- ♦ Fixed Motion Editor mirroring functionally.
- ♦ Fixed many motion export issues.
- ♦ Set orientation could allow > 2 PI orientations.
- ♦ Characters could sometimes ignore extreme aim at azimuths.

Known Problems

DI-Guy 13.0 has the following known problems:

- ♦ The first time you load the IGuy_Interaction scenario, the terrain may disappear at certain camera angles. If you reload the scenario, the problem is no longer present.
- ♦ Instancing does not support advanced lighting and texture swaps.