



VR-Forces 4.0.4 Release Notes

This release note contains the following release-specific information for VR-Forces Release 4.0.4:

Systems Supported	2
Using Libraries and Binaries Built with Visual Studio 2005 and Later	2
3D Video Boards Supported	3
Disk Space Requirements	3
Compiler Compatibility on Windows	3
MÄK Product Compatibility	3
Qt Release Compatibility	4
FLEXlm Support	4
Third Party Library Support	4
Network Compatibility	4
Backwards Compatibility	5
RPR FOM Versions Supported	5
New Features and Updates	6
Changes to the GUI API	9
Documentation Updates	10
Fire at Target Task	10
Bug Fixes	11
Known Problems	13

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Document ID: VRF-4.0.4-3-120716

Systems Supported

VR-Forces 4.0.4 is available for the platforms listed in [Table 1](#). For toolkit users, application code must be built with the indicated compilers in order to link to VR-Forces libraries.

Table 1: Platforms supported

Operating System	Compiler
Windows XP (32 bit only) Windows Vista Windows 7	Microsoft Visual C++ 8.0, 9.0 (32 and 64 bit), 10.0 (64 bit)
Red Hat Enterprise Linux 5 (32 bit libraries)	default compiler

Future Platform Support Plans

This section provides advance notice of planned changes to platform/compiler support. VR-Forces 4.1, planned for Q4 2012, will support the following platforms:

- ♦ Windows 7 MSVC++ 8 32 bit.
- ♦ Windows 7 MSVC++ 10 64 bit.
- ♦ Red Hat Enterprise Linux 5, 32 bit.

Support for VC++ 9 will be dropped.

VR-Forces will drop support for VC++ 8 in late 2013. Based on availability and customer demand, we may start support of Red Hat Enterprise 6 and MSVC++11 in 2013.

Using Libraries and Binaries Built with Visual Studio 2005 and Later

All MÄK products built with Microsoft Visual Studio require the C Runtime Library to function. The C runtime libraries have always been available from Microsoft for download, they are also installed on a user's machine when a Microsoft compiler is installed. The C runtime libraries are not part of the normal Windows installation.

Unfortunately, the C Runtime Libraries required by Microsoft Visual Studio 2005 (MSVC++8.0) and later cannot just be copied into the *bin* directory of an application. The libraries need to be installed correctly into Windows system folders. (The process is actually a little more complicated, a manifest file needs to be created to tell Windows where to find the libraries.)

To accommodate this change, MÄK distributes the Windows installer for the C runtime libraries with all MÄK products released for MSVC++8.0 and later. The 32-bit installer is named *vcredist_x86.exe*; the 64-bit installer (if supported) is named *vcredist_x64.exe*. They are in the base directory of any installed MÄK product that requires them.

For more information see this Microsoft URL:

<http://msdn2.microsoft.com/en-us/library/ms235299.aspx>



You must ensure that the preprocessor defines `_SECURE_SCL=0`, and `_HAS_ITERATOR_DEBUGGING=0` are set for MSVC++8.0 and MSVC++9.0 builds. If these are not set, random crashes and assertions may be encountered during runtime. The MSVC++ 10.0 version uses the default values for these flags.

3D Video Boards Supported

In general, VR-Forces 4.0.4 should support any board that claims to support OpenGL 2.0. VR-Forces has been tested with current versions of NVidia graphics cards. There are known problems with ATI graphics cards (in particular, the ATI Radeon X1950 Pro).



You should always try to use the latest drivers available for your video board.

Disk Space Requirements

A full installation of VR-Forces requires approximately eight GB of disk space.

Compiler Compatibility on Windows

MÄK provides versions of product releases that have been compiled with different versions of Microsoft Visual C++ (for example, 9.0 and 10.0). When you run MÄK products together on the same computer, for example, VR-Forces and VR-Vantage Stealth, we strongly recommend that you run versions compiled with the same compiler. Mixing products compiled with different versions of the compiler can result in program instability.

MÄK Product Compatibility

To build VR-Forces applications, you must link with VR-Link 4.0.5. If you are building for HLA and want to link with the MÄK RTI, use MÄK RTI 3.x or later, although we recommend use of the latest release. If you are building for HLA Evolved, you must use MÄK RTI 4.0.4 or later.

Qt Release Compatibility

If you want to do development using the VR-Forces GUI API, you need to use Qt, a cross-platform GUI toolkit from Digia. The VR-Forces GUI was built with Qt release 4.7.4. Qt is available as a free download under the LGPL version 2.1 license at qt.digia.com. This version should be satisfactory for most VR-Forces customers. If you need a Qt commercial license, you must purchase the license from Digia.

FLEXlm Support

VR-Forces 4.0.4 uses FLEXlm 11.8. If you have a previous version of FLEXlm installed, you can install the MÄK License Manager and run FLEXlm from that directory, or you can copy the files installed by MÄK License Manager to your previous FLEXlm directory on your license server. You do not need to change license files (unless your maintenance agreement has expired.)

Third Party Library Support

VR-Forces 4.0.4 uses the indicated versions of the following libraries:

- ♦ VR-Link 4.0.5
- ♦ OpenSceneGraph 3.0.1
- ♦ Boost 1.45
- ♦ FreeGlut 2.4.0
- ♦ GL-Studio 4.2.3.

MÄK will provide modified source code for OSG and osgEarth upon request, as per the OSGPL license. Please contact support@mak.com for download links.

Network Compatibility

HLA only

VR-Forces 4.0.4 was built against VR-Link 4.0.5 and is compliant with:

- ♦ RPR-FOM 1.0 and a subset of 2.0 (draft 6 and 17)
- ♦ MÄK RTI 3.x, 4.x, and other RTIs that meet the HLA 1.3, IEEE 1516 SISO DLC API, or HLA Evolved specifications and are built with the same compilers as VR-Forces.

VR-Forces 4.0.4 is compatible with applications that use earlier versions of VR-Link if they support versions of the RPR FOM listed.

The VR-Forces 4.0.4 front-end is not compatible with RTI-NG Pro because it uses a non-standard version of *xerces_c_2_7.dll*.

DIS only

VR-Forces 4.0.4 supports DIS 4, 5, and 6, and can therefore interoperate with DIS applications of any of these versions.

Backwards Compatibility

The VR-Forces 4.0.4 APIs are not compatible with VR-Forces 3.x or earlier. It is largely compatible with the 4.x API. Small changes may be necessary to migrate from 4.0.3.

Scenarios created with VR-Forces 3.12 and 4.x are forward compatible.

RPR FOM Versions Supported

VR-Forces 4.0.4 has built-in support for versions 1.0 and 2.0 (draft 6 and 17) of the RPR FOM and RPR FOM 2.0, draft 17 with DI-Guy extensions. It also supports VR-Link's ability to support alternative FOMs through the FOM Mapper. By default, VR-Forces 4.0.4 uses RPR FOM 1.0.

If you are building an application with the VR-Forces toolkit and you want to specify a version of the RPR FOM through code, pass the version number (for example, 2.0006) to the *DtRprFomMapper* constructor and pass the resulting object to the *DtExerciseConn* constructor. Also, make sure you are using a federation execution name that corresponds to the right FED file. For example:

```
DtExerciseConn conn("VR-Link20006", "MyApp", new DtRprFomMapper(2.0006));
```

In order to support RPR FOM 1.0, we have added the following extensions (which are supported in later versions of the RPR FOM):

- ♦ EnvironmentProcess
- ♦ GriddedData
- ♦ EmbeddedSystem.IFF
- ♦ EmbeddedSystem.IFF.NatoIFF
- ♦ EmbeddedSystem.IFF.NatoIFF.NatoIFFTransponder
- ♦ EmbeddedSystem.IFF.NatoIFF.NatoIFFInterrogator
- ♦ EmbeddedSystem.IFF.SovietIFF
- ♦ EmbeddedSystem.IFF.SovietIFF.SovietIFFTransponder
- ♦ EmbeddedSystem.IFF.SovietIFF.SovietIFFInterrogator
- ♦ EmbeddedSystem.IFF.RRB
- ♦ BaseEntity.AggregateEntity
- ♦ ObjectRoot.BaseEntity.PhysicalEntity.Lifeform.

For both RPR FOM 1.0 and 2.0 VR-Forces 4.0.4 relies on the LgrControl and View-Control custom MÄK extensions.

New Features and Updates

VR-Forces 4.0.4 has the following new features and updates.

- ♦ Support for chain guns on attack helicopters.
- ♦ The ability to issue a complete plan from a global plan or entity plan. For details, please see [Section 8.6.5, "Issuing a Plan"](#), in *VR-Forces Scenario Management Guide*.
- ♦ Display of range rings. For details, please see [Section 7.7, "Displaying Entity Range \(Threat\) Rings"](#), in *VR-Forces Users Guide*.
- ♦ New flight control tasks for fixed-wing and rotary-wing entities. For details, please see [Section 6.4.2, "Fly Task Behavior is Different from Move Task Behavior"](#) and its related tasks, in *VR-Forces Scenario Management Guide*.
- ♦ Support for terrain profiles. For details, please see [Section 14.8, "Terrain Profiles"](#), in *VR-Forces Users Guide*.
- ♦ Ability to display streaming features using *VR-TheWorld Online - MAK Earth.mtf*. You can view geotypical structures and trees on actual building footprints and locations in Honolulu, Hawaii and Boston, Massachusetts. These features are represented only in the front-end. The back-end does not know about them and simulated entities are not aware of them.
- ♦ Support for indirect fire. This feature was called Indirect Artillery in VR-Forces 3.12. For details, please see Chapter 10, [Managing Indirect Fire](#), in *VR-Forces Scenario Management Guide*.
- ♦ Display of radio communications lines. For details, please see [Section 8.8, "Displaying Radio Communications Lines"](#), in *VR-Forces Users Guide*.
- ♦ Improved support for IFF. The Set IFF dialog box now displays the current settings for the selected entity and the Entity Information dialog box now displays IFF data for entities that are transmitting it.
- ♦ Ability to edit 2D icons and 3D models for an entity in the Entity Editor. For details, please see [Section 4.5, "Editing an Entity's Visual Model"](#), in *VR-Forces Configuration Guide*.

i

When you edit an entity's icon or model in the Entity Editor, the change does not apply just to the SMS that you are editing. It changes the default model mappings in the front-end and will affect all scenarios and all SMSs. Also:

- ♦ If you transfer an SMS to another system, the model mappings (and the models themselves) will not transfer with it.
 - ♦ Mapping changes are additive. Changes and additions update the mapping files, but if you delete entities from the SMS their mappings are not deleted.
 - ♦ Mappings made in one version of VR-Forces will not be automatically merged into installs of newer versions. Just like with the SMS, you have to manually merge them.
-

- ♦ Support for setting the radar mode for emitters. This affects the type of beam used. For details, please see [Section 7.28, "Set Radar Mode"](#), in *VR-Forces Scenario Management Guide*.
- ♦ Display of 2D bounding boxes. For details, please see [Section 7.9, "Displaying Bounding Volumes"](#), in *VR-Forces Users Guide*.
- ♦ Ability to place entities on overlays. For details, please see [Section 2.1.2, "Placing Objects"](#), in *VR-Forces Scenario Management Guide*.
- ♦ New global command - Delete Self, lets an entity delete itself in its plan without specifying its name. This is useful for reusable - non-entity-specific plans, such as when creating plans for multiple entities or custom plans for B-HAVE spawn patterns. For details, please see [Deleting One's Self from the Scenario](#), in *VR-Forces Scenario Management Guide*.
- ♦ Ability to display an icon when an entity receives an object console message. For details, please see [Section 7.10, "Configuring Entity Console Messages"](#), in *VR-Forces Users Guide*.
- ♦ The Simulation Time and Exercise Start Day/Time scenario parameters have been deprecated. They have been replaced with the Starting Time of Day parameter. As time advances, the Time of Day toolbar will change coloration. In 3D, the sky coloration also changes as time advances. The deprecated parameters will still be supported in legacy scenarios.
- ♦ Ability to include a scenario description in the scenario file. The description can be edited while the scenario is loaded. For details, please see [Section 1.1, "Creating a Scenario"](#) and [Section 1.2.4, "Displaying Scenario Information"](#), in *VR-Forces Scenario Management Guide*.
- ♦ The Create menu has been reorganized:
 - The Lifeform category on the Create menu has been changed to Human.
 - A category for animals has been added.
 - Control objects are now in pull-right menu instead of at the end of the menu. (Waypoint, routes, and areas are still available at the top level.)
 - A category for tactical graphics has been added. Currently it supports circles and ellipses.
- ♦ The hostility relationships file (*.hst*) has been deprecated and replaced with the scenario extras file (*.xtr*). The scenario extras file records the same hostility information as the hostility relationships file. It also stores spawn pattern templates for the B-HAVE Module, if it is installed. This file may also be used for scenario parameters that get added in future releases. If you load an existing scenario that has an *.hst* file, the information is loaded from the file. If you change the file and save the changes, they get written to an *.xtr* file and thereafter, the *.hst* file is ignored.
- ♦ Improvements to the front-end API.

- The back-end now reads *surfchar.map* when it loads a non-GDB terrain, such as OpenFlight or MEDE. It will try to match imagery to surface types, as it does in the TDB Tool. You can create a surface characteristics map for a specific database if you name it *<mtfFileName>.surfChar.map*. For example for the *myTerrain.mtf* database, you would name the file *myTerrain.surfChar.map*. This change only affects the back-end. It does not affect the TDB Tool. The *surfChar.map* files is discussed in [Section 2.5.2, "Converting OpenFlight File Texture Data to GDB"](#), in *MAK Terrain Database Tool Users Guide*.
- Ability to specify the plug-ins you want to load in the Simulation Connections Configuration dialog box. For details, please see [Section 5.9.1, "Loading Plug-ins"](#), in *VR-Forces Users Guide*.
- The Entity Has Target condition no longer returns True of the entity that has identified a target has rules of engagement that prevent it from firing.
- The Set Fire Now set data request has been removed. It has been replaced with the improved functionality of the Fire at Target task.

If you run a scenario created with a previous version of VR-Forces that has a Set Fire Now set data request, it will be processed as if it were a Fire at Target task. However, if a scenario was saved while an entity was actively carrying out a Set Fire Now, the task will not be completed.

For details about Fire at Target, please see [Fire at Target Task](#), on page 10.

- To support the Fire at Target task, changes were made to the weapon interface, the target selection controller, and lasing components. For details, please see the Migration Guide section of the API documentation or the Migration Support page at www.mak.com.
- Aggregate marking text can now be up to 31 characters in HLA. Formerly the limit was 10 characters.
- A variety of changes have been made to the default simulation model set. For details, please see Chapter 4, [Simulation Model Set Changes in VR-Forces 4.0.4](#), in *VR-Forces Migration Guide*.
- You can now configure the organization of the Create menu in an XML file. The file *initialCreateMenuConfiguration.xml* is associated with a simulation model set (for example, *./data/simulationModelSets/default/gui/initialCreateMenuConfiguration.xml*). Objects are organized under the menu options defined in this file according to their category. If you assign objects to a category that is not in *initialCreateMenuConfiguration.xml*, a menu option for the category is automatically added to the end of the Create menu and the list of categories on the Entity Palette.

Changes to the GUI API

There have been a number of enhancements and changes to the VR-Forces GUI API. The following are the main changes:

- ♦ *DtGuiThreadVrfRemoteController*. This new class has replaced the *DtVrfSimMessenger*, and now provides a complete interface to the VR-Forces Remote Controller API over the threading boundary, from within the GUI thread.
- ♦ *DtNetworkMessageCallbackManager*. This class has replaced *DtVrfSimMessageHandler* and has been expanded to provide callbacks on many additional message types that arrive from the simulation engine to the GUI. The callback structure of this class has also changes from static callbacks to boost signals.
- ♦ Menu Configuration. The API for adding and removing items from the VR-Forces menus has been improved with a new abstraction layer to make the process more straightforward. Each of the major menu areas has a new menu class with methods for adding and removing items. These classes are:
 - *DtVrfMainMenu*
 - *DtTaskMenu*
 - *DtSetMenu*
 - *DtCreateMenu*
 - *DtVrfRightClickMenu*
 - *DtVrfTaskSetMenuItem*.

The menuManipulation example shows how to use these classes to alter the menus of the application.

- ♦ Accessing information about simulation objects. A new abstraction around the data of simulated objects has been added to the *DtVrfStateViewCollectionManager* class, which now returns instances of *DtObjectDataInterface*. An instance of this class wraps up all data that the GUI has received about a particular simulated object, and gives a simplified interface to accessing it for use in dialog boxes and other GUI elements. This class also has methods for requesting additional data from the simulation engine, such as resource stores, that are not normally published by the back-end, but are accessible through the network interface to the simulation engine. The *GuiObjectDataInterface* example shows how to use this new interface.
- ♦ Local Object Management. A new API has been put in place to allow for creation of objects to visualize within the GUI application, that are not arriving over the network from the simulation engine. The top level class for this API is the *DtLocalObjectManager*, and the *guiLocalCreateObjectMenu* example shows how to use this new API.

Documentation Updates

Documentation has been updated for this release. A migration guide that summarizes changes to the GUI API between VR-Forces 3.12 and VR-Forces 4.0 through 4.0.3 and a summary of changes to the GUI API between VR-Forces 3.12 and VR-Forces 4.0.4 has been added to the documentation set. The contents of *VR-Forces Developers Guide* and *VR-Forces Front-End Developers Guide* is now part of the HTML API documentation. These manuals will be removed in the next release of VR-Forces.

The discussion of the 30 mm Cannon System on pages 5-12 and 5-13 in *VR-Forces Developers Guide*, is no longer correct due to changes to the target selection controller. For details about these changes, please see the Migration Guide section of the API documentation or the Migration Support page at www.mak.com.

VR-Forces Scenario Management Guide documents the Set Fire Now set data request. This set data request has been removed from VR-Forces and that section is no longer valid. The new Fire at Target task is not documented in *VR-Forces Scenario Management Guide*. The documentation is as follows:

Fire at Target Task

The Fire at Target task lets you command an entity to fire at a specific target and allows you to specify which weapon system to use and how many rounds to fire.

To order an entity to fire at a target:

1. Select the entity you want to fire.
2. Choose **Task** → **Fire at Target**. The Fire at Target dialog box opens.
3. Select the target entity.
4. In the Weapon Selection group box, select an option as follows:
 - To let VR-Forces choose the weapon, select Automatic.
 - To choose the weapon yourself, select Manual and select a weapon from the drop-down list.
5. In the Maximum Rounds to Fire box, enter the number of rounds you want the entity to fire. (The entity will stop firing when the target is destroyed or when the maximum number of rounds has been fired, whichever comes first.)

Bug Fixes

This release fixes the following problems that were present in prior releases (with bug-tracking numbers):

- ♦ The aggregate marking text is no longer limited to 10 characters but now limited to 32 characters as specified in the RPR FOM. 48404
- ♦ The **at-time** and **near-time** parameters of the default-circle controller are now documented. 48299
- ♦ Improved documentation for subtasks. 48295
- ♦ When placing animals in a scenario, the placement model is the appropriate animal. 48196
- ♦ The stopToShoot example has become outdated and was removed. 48168
- ♦ The menu manipulation example did not work for all menus. It has been updated. 48162
- ♦ Improved documentation for Environmental PDUs in Developers Guide. 48159
- ♦ True Aggregates now show up in the Echelon list. 48113
- ♦ The front-end crashed if you put protocol specific options after the `-- vrfLauncher` command line option. 48077
- ♦ Deleting an empty overlay layer could cause the front-end to crash. 47953
- ♦ The front-end was not aware of all back-end settings changes. 47919
- ♦ The Set Embark command did not respect slot requests. 47885
- ♦ The entity icons in the Echelon View did not always match the icons on the map. 47833
- ♦ The back-end now intercepts the close widget and knows the front-end is shutting down. 47793
- ♦ Time of Day now advances when you start playing a scenario. 47789
- ♦ Aggregates did not keep their plan when transitioning between aggregate states. 47782
- ♦ Scenario merge did not correctly merge waypoints and related plan tasks. 47780
- ♦ The remoteControl example did not always start scenarios correctly. 47768
- ♦ Moving an object sometimes reset its heading. 47751
- ♦ Scenario merge did not preserve the state of fixed-wing entities that were flying. 47750
- ♦ Many road following problems were fixed or improved. 47738
- ♦ Some of the front-end command line arguments were inconsistent with VR-Link command line arguments for the same functions. 47726
- ♦ The front-end crashed if you tried to restore factory settings. 47704
- ♦ The Hide Empty Overlays check box did not work. 47680
- ♦ It was not possible to change a prop's altitude. 47676

- The **allow-passing** parameter in the rail-movement-system in *ground-road-following.sysdef* did not work. 47674
- Cars sometimes drove on the wrong side of the road. 47662
- Creating a route in VC 10 in debug mode caused a crash. 47629
- Improved documentation for the addTask example to include coverage of the SMS required SMS changes. 47529
- Improved the Raven's takeoff and land task behavior. 47485
- Improved documentation for *DtTacticalSmokeActuator*. 47396
- When using icon images, the creation icon attached to the mouse used the destroyed icon. 47375
- Dragging an entity out of an aggregate in the Echelon View did not work. 47368
- XR Model for the RQ-11 Raven was incorrect. 47323
- Fixed problems with UAVs patrolling routes. 47301
- Fixed articulation calculation errors for M1A2 Gun turrets. 47277
- Fixed angle calculation to resolve gun aiming error. 47276
- The list of menu names in *VR-Forces Front-End Developers Guide* was incomplete. The appendix has been removed. This information is now accessible from the header files. 47097
- Vehicles driving on roads sometimes only worked in one direction. 46793
- It was not possible to add a DI-Guy animation to a plan. 46757
- Altitudes are now correct when using a geocentric terrain with display units set to database coordinates. 46705
- The loading scenario prompt did not always close automatically. 46665
- The Simulation Time toolbar no longer jitters as time changes in Linux. 46589
- Major improvement to route editing quality for all display unit configurations. 46253
- In certain circumstances, Adjust All Points broke the route being edited. 46250
- The Save Terrain As dialog box no longer requires user to add extension. 46007
- Changing the vertex altitude while creating a route no longer makes the route line go off screen in 3D. 45876
- Process State Repository documentation significantly updated. 44141
- The in-frustum geometry evaluator that can be used in the sensor geometry and the target selection geometry now works correctly when the az-min/az-max angles are specified outside the range of +/- PI/2. 11557

Known Problems

VR-Forces Release 4.0.4 has the following known problems (with bug-tracking numbers):

- The first time you load a terrain (including the terrains supplied with VR-Forces), VR-Forces caches textures in its fast load format. This is a slow process. However thereafter, the terrain will load quickly. If you want to avoid runtime caching, you can preprocess the terrain with the medfTool before you load it. If you want to disable runtime caching, you can do so as described in [Section 10.10, "Configuring File Caching in VR-Vantage"](#), in *VR-Forces Configuration Guide*.
- Use of radio communications lines can affect performance. The front-end and back-end can become unsynchronized due to a slowdown in the networking thread.
- Ground vehicles and lifeforms will not avoid feature obstructions on geocentric terrains. 43868
- Some metaflight terrains, such as HarrisAfghanVillageFlatEarthMetaflight and HarrisAfghanVillageGeocentricMetaFlight will not display in the 2D view when first loaded. To see the terrain, change to a 3D view mode, and press the spacebar (center view on terrain) to move the eyepoint to the terrain location. After this, the terrain can be viewed in the 2D view. 43797
- The imagery for the makland terrain database is much larger than the actual terrain data, which is confined to the square inset in the middle of the image. This means that if you try to simulated entities on the outer areas of the image, simulation will fail because there is no terrain data there. 43867
- Fixed-wing entities crash when tasked to move into formation. 10255
- The Getting Started scenario does not work as expected if B-HAVE is installed. This is due to problems with the PathData for VR-Village. To improve behavior, open `./vrforces4.0.4/appData/settings/B-HAVE/bhaveOptions.mtl` in a text editor and change the value for `unify-movement-tasks` to False.
- Geometry files referenced by a MetaFlight file must be in OpenFlight format, and not in Vega Prime's binary format (`.vsb`). MÄK's terrain libraries do not support `.vsb` files. 11772
- Rotary-wing entities are not able to reach moving waypoints or land on moving ships. A rotary-wing entity will approach a given waypoint or landing point, but will never completely reach the goal. 12801
- Dead lifeform entities may unexpectedly block line of sight. Their bounding volumes are always upright, regardless of whether or not they are dead. 36648
- Embarked entities controlled by joystick cannot disembark. For example, if you use a joystick to control a fixed-wing taking off from a carrier, the aircraft will take off, but it will remain in an embarked state. 37175
- Lifeform entities cannot be configured with multiple weapon systems. 40408
- Not all languages can be used to name entity types in the entity editor. 42241

- Although the indirect fire controller will wait until the target location is paged in before executing a fire for effect task, it does not take into account the dispersion radius. This means that depending on the size of the page and the radius, some detonations might happen underground. 42682
- When `DtBallisticGun::createDetonationInteraction` has its "assureMiss" parameter set to true, it may not have terrain paged in for the area in which it needs to create the detonation (on the ground nearby). 42730
- Sometimes when you try to create a Friendly entity from the Create menu, the list of entities is not displayed. Selecting the Opposing or Neutral option and then going back to the Friendly option causes the list to be displayed. 42930
- In some cases, VR-Forces will fail to load a scenario if the main window of the GUI application does not have focus. 43547
- The road driving feature in VR-Forces requires that the road vectors making the network be connected at their edges. Some data does not have accurate positions for road ends, which will cause them to be disconnected, and the road driving unable to plan a path along those roads. 42895
- If you have a large size obstacle, it is possible that entities might get confused and travel through it. If this happens to you, it is recommended that you make smaller obstacles. 45549
- Entity intervisibility fans do not draw correctly on geocentric terrains. 44190
- When creating some lifeform entities, the 3D model attached to the mouse pointer when placing is inconsistent with the entity type that is being created. The entity that is created, however, is the correct type and does show the correct 3D model after it is created. 43728

The following known problems apply to the front-end:

- VR-Forces may crash on exit on Linux if your Linux installation is not at the latest version of *libselinux* (as of the date of this release).
- Some strings in the graphical user interface are not included in the translation files. Some strings, such as those on the Create menu, are in configuration files, such as *entity.mst*. Others are in settings files. You can translate these strings by identifying the appropriate configuration file and translating the strings. 47806
- The `TerraSimSampleUrbanMetaFlight` terrain is not initially visible when loaded in PVD. To see the terrain, press **e** to zoom in. This problem potentially exists for all paged terrains whose page-in distance is less than the default observer distance in PVD mode.
- Changing the hierarchy of raster map layers may cause a crash. 44498
- If a graphics card does not support shaders, you may receive the following error message when you load a terrain that uses them:

`Shader [Branches] validation failed`

To work around this problem, set the SpeedTree Performance Profile to Disabled, as follows:

- a. Choose **Settings** → **Display**. The Display Settings dialog box opens.

- b. Select the SpeedTree Settings page.
- c. In the Performance Profile drop-down list, select Disabled.

