



VR-Engage 2.0.1 Release Notes

This release note contains the following release-specific information for VR-Engage 2.0.1.

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Systems Supported and System Requirements

For the most up-to-date information about systems supported, see the Product Versions page on the MAK web site at: <https://www.mak.com/support/product-versions>. For hardware requirements, see <https://www.mak.com/support/hardware-recommendations>.

VR-Engage 2.0.1 is available for the platforms listed in Table 1.

Table 1. Platforms supported

Operating System	Compiler
Windows 10	Microsoft Visual C++ 15.0 (64-bit)



The MAK data package contains data that the VR-Engage application requires. See "The makData Package and Product Compatibility" on page 5.

3D Video Cards Supported

VR-Engage 2.0.1 supports NVIDIA graphics cards that support OpenGL 4.5 or above. While we support NVIDIA Quadro cards, we strongly recommend GeForce cards. If you use a Kepler Series Quadro card, read the instructions in "Using Kepler Series Quadro Cards" on the facing page. VR-Engage does not support AMD (formerly ATI) graphics hardware.



VR-Engage strives to provide the best 3D scene quality possible and cutting edge visualization effects. To provide this functionality, VR-Engage takes advantage of OpenGL features that may not be supported on older video cards. When this is the case, you can disable these features, allowing VR-Engage to run in 3D modes.

OpenGL 4.5 is the minimum requirement for rendering a 3D scene in VR-Engage. For the best visual quality and highest performance, you should use the most recent NVIDIA GeForce card. The minimum recommended card is the 9xx series.

Some laptops have an NVIDIA graphics card and an Intel graphics card. You must configure your computer to use the NVIDIA card. To do so:

1. Open the NVIDIA Control Panel (in the System Tray).
2. Select Manage 3D Settings.
3. Select Global Settings.
4. Select Preferred Graphics Processor.
5. Select High-performance NVIDIA Processor.



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



If you use an external monitor with your laptop and your laptop is not using the NVIDIA graphics card when running VR-Engage, try setting the main display to be the laptop's built-in monitor instead of an external monitor.

Using Kepler Series Quadro Cards

There is a known issue with the Quadro drivers on Kepler series Quadro cards. NVIDIA says it's related to the fact that the default profile optimizes for a fixed eyepoint (for applications like CAD). To run on these cards, you must change the global profile for the driver, as follows:

1. Open the NVIDIA Control Panel.
2. Select the Manage 3D Settings page.
3. Select the Global Settings tab.
4. In the list of driver profiles, select Workstation App - Dynamic Streaming.

We are working with NVIDIA to have their drivers recognize our applications and apply this profile automatically. In the meantime, for Kepler series Quadro you must make this change manually.

Disk Space Requirements

A full installation of VR-Engage requires approximately 5.5 GB of disk space, and an additional 49 GB for the complete MAK data package. If you also install VR-Forces, that requires at least 4 GB of disk space for VR-Forces and the VR-Engage add-ons. (If you install VR-Forces with the toolkit and the API documentation, that takes approximately 5.2 GB.)

Licensing

The VR-Engage application requires a VR-Engage run-time license in order to run. Internally, VR-Engage relies on VR-Vantage capabilities for its 3D visualization, VR-Forces capabilities for its ownship simulation, VR-Link for its networking, and so on, but these capabilities are built into VR-Engage and do not require separate run-time licenses of these MAK products.

MAK License Management

VR-Engage 2.0.1 uses FLEXlm 11.17.1. You must install the license management software to run VR-Engage. If you are upgrading from a version of VR-Engage that used an older version of FLEXlm, you must upgrade your license management files. You do not need a new license. Licenses are forward compatible.

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

- Windows: [Windows License Manager Installer \(64-bit\)](#)
- Linux (VR-Forces only): [Linux License Manager Installer \(64-bit\)](#)

A license manager FAQ is available at <https://www.mak.com/support/license-support>.

VR-Forces Licensing Issues

With only a VR-Engage license, you can run VR-Engage, choose a terrain database to simulate on, create and place an entity, and control that entity. VR-Engage can only simulate and control a single entity at a time. When you "Change Role" and create a different entity to simulate, the entity you were previously simulating will be deleted and replaced by the new one.

If you are running a copy of VR-Forces on your network (which requires a separate VR-Forces license), then VR-Engage can interact with VR-Forces in a variety of ways:

- VR-Engage allows you to join a VR-Forces session and take manual control of one of the entities in the VR-Forces scenario. If you are controlling a VR-Forces entity, and then "Change Role" and ask to control a different entity, the original entity will still exist, as it is owned by VR-Forces.
- VR-Engage can initiate and receive changes to the terrain, for example, opening doors or destroying buildings. (VR-Forces acts as the dynamic terrain server).
- VR-Engage can reflect changes to time-of-day and weather that are published by VR-Forces.
- VR-Engage allows you to assign certain tasks to entities that are simulated by VR-Forces (for example, tell a subordinate to follow you, or move to a location you designate).

To simplify the startup workflow for certain use cases, VR-Engage gives you the ability to launch a VR-Forces back-end directly from the VR-Engage user interface, and to instruct VR-Forces to load and host a scenario of your choosing. This allows you to avoid separately launching VR-Forces from the start menu or command line, and automatically ensures that VR-Forces uses the same interoperability parameters as VR-Engage. A VR-Forces back-end license is always required to run VR-Forces, whether you launch it from the VR-Engage user interface, or launch it separately from the Start Menu or command line. If you do not have a VR-Forces back-end license available, VR-Engage does not allow you to launch VR-Forces and host a VR-Forces scenario.



When VR-Engage launches, it looks for a running VR-Forces and if it finds one, it connects to it. If it does not find one, it offers you the option to host and load a VR-Forces scenario, or start an Unhosted session. If you host a VR-Forces scenario, you will consume a VR-Forces license, which will prevent you from starting VR-Forces independently if you only have one license. If you start an Unhosted session, you can start or join a session only as an individual player; you cannot load and run a scenario.

Third-Party Libraries Supported

VR-Engage 2.0.1 uses the indicated versions of the following libraries:

- VR-Link 5.8
- Qt 5.15.2 (VC 15 and Red Hat 8)

- OpenSceneGraph 3.6.4
- Boost 1.63.0
- FreeGlut 2.4.0 (Windows), 2.6.0 (Linux)
- GL-Studio 7.0 (VC 15)
- DI-Guy 13.6 (development version)
- Triton 4.43
- Silverlining 6.20
- SpeedTree 6.3.2
- Oculus Rift Development Kit 1.26
- CDB API 2.2 (Windows), 2.1 (Linux)
- osgEarth 3.2
- CUDA 11.7

The makData Package and Product Compatibility

VR-Engage 2.0.1 is built against VR-Forces 5.0.1, VR-Vantage 3.0.1, and VR-Link 5.8. They both use the shared makData 16 package.

As of this release, the data installation is separate from the product installation. MAK applications can share the same data package, so you no longer need to install it separately for each product. For instructions on installing the data, see "[Installing the makData Package](#)" in the *VR-Engage Users Guide*.

Network Compatibility

VR-Engage 2.0.1 is compliant with RPR FOM 1.0 and RPR FOM 2.0 and includes FOM mappers for many draft versions of the RPR FOM. It is compliant with RTIs that support the HLA 1.3 specification, the SISO DLC HLA API 1516 version of the IEEE 1516 specification (SISO-STD-004.1-2004), or HLA Evolved. MAK recommends HLA Evolved.

To use an RTI with VR-Engage, it must use the same operating system and be built with the same compiler.

VR-Engage 2.0.1 supports DIS 4, 5, 6, and 7, and can therefore interoperate with DIS applications of any of these versions. MAK recommends DIS 7.

Backward Compatibility

Support for MAK Data Logger Recordings

While VR-Engage 2.0.1 works with all recent versions of the MAK Data Logger, please know:

- Versions of the MAK Data older than 5.5.1 (released in May 2018) have known problems with the encoding of DIS 7 Attributes, which can cause crashes in MAK products.

New Features and Updates

VR-Engage 2.0.1 has the following updates and new features:

- Built against VR-Forces 5.0.1, VR-Vantage 3.0.1, and VR-Link 5.8.
- VR-Engage has performance and stability improvements. See the Fixed Bugs table, below.
- You can now use the **Ctrl** key when selecting a saved observer view to have a smooth, animated transition to that view.
- You can add a new parameter in the *./data/simulationModelSets/VR-Engage/roles/devices/radio.[role].lua* files, `defaultRadio`. You can enter the name of a configured radio, such as Radio 1, to automatically enable the radio for entities who engage in that role.

The information goes inside the `components` block, for example:

```
components={
  ["radioLogic"] = {
    componentType = "DtRadioLogic";
    ...
  };

  defaultRadio="Radio 1";

  radios={
    ...
  }
}
```

- Players can now toggle the HUD for human characters by pressing **/** on the keyboard. This allows them to remove that obstruction from their view.

For the features included in the 2.0 release, see the [VR-Engage 2.0 Release Notes](#) (*./doc/VR-Engage2.0ReleaseNotes.pdf*).

Table 2. Fixed Bugs

Key	Summary	Release Notes	Fix Version/s
VRE-712	Restore translation capability	The vre_untranslated.ts file, found in ./translations, allows you to translate VR-Engage screens that are not shared by the VR-Vantage UI (which are the menus and screens available in Admin mode).	VRE-IPB16, VRE-2.0.1
VRE-2067	Key Mapping Editor does not work with new keyboard mapping system	The key and mouse mappings in Application Settings no longer apply to VR-Engage. The Key Mapping Editor and Mouse Settings pages of that dialog box have been removed from the VR-Engage GUI.	VRE-IPB16, VRE-2.0.1
VRE-2274	Night hides gear indicator for Driver role	The fuel gauge is now a full circle instead of a semicircle, and the gear displays at the bottom of the circle. This makes the selected gear visible, regardless of the view. Previously, it could be hard to read against a dark background such as nighttime.	VRE-IPB16, VRE-2.0.1
VRE-2387	Back button does not work while paused in the role state	When the scenario is hosted by another application, such as VR-Forces or another instance of VR-Engage, the Back button previously did nothing. While paused, players can now click the Back button. It has the same behavior as pressing Esc, in that it takes the player to the Application Menu or back to the role.	VRE-IPB16, VRE-2.0.1
VRE-2413	Focus View in VR/MR culls terrain	Fixed the calculation of the extremities for both eyes when calculating the culling angles for the camera. This resolves the problem of inappropriately culling the terrain.	VRE-IPB16, VRE-2.0.1
VRE-2417	Push-To-Talk needs to be remapped for pilots	To ensure that pilots can use the keyboard to talk on the MAK Radio, the button for cycling aircraft weapons forward has changed to H. (It was previously T.)	VRE-IPB16, VRE-2.0.1
VRE-2418	Update Radio app Batch files	VR-Engage includes batch files for launching the MAK Radio application in HLA1516e or DIS. The startMakRadioAppHLA1516e.bat file was updated to configure it with the same HLA modules used by VR-Engage and VR-Forces by default. The startMakRadioAppDIS.bat file is a new script, which was added for convenience in launching MAK Radio in DIS.	VRE-IPB16, VRE-2.0.1
VRE-2448	Firewall popups end up behind VR-Engage first time you run	Made an improvement to ensure that any firewall popups now display in front of VR-Engage, allowing the user to easily grant access to the VR-Engage executables necessary to run the application.	VRE-IPB16, VRE-2.0.1
VRE-2455	Soldier help menu incorrect for keyboard and mouse	Corrected the help menu and other documentation for human controls.	VRE-IPB16, VRE-2.0.1

Table 2. Fixed Bugs (continued)

Key	Summary	Release Notes	Fix Version/s
VRE-2471	Compass problems in drone HUD overlay	The drone camera display was incorrectly showing pitch, compass, reticle, and platform information. This is fixed. The display now shows only the relevant information for the drone.	VRE-IPB16, VRE-2.0.1
VRE-2472	Drone controls reported on help screen are wrong	The labels for the drone controller have been corrected in the F1 help diagram.	VRE-IPB16, VRE-2.0.1
VRE-2485	Can't lase from some FW/RW entities	Enabled the laser designator for VR-Engage-controllable fixed- and rotary-wing entities that did not have it before.	VRE-IPB16, VRE-2.0.1
VRE-2487	Sensor Operator can select weapons it can't fire	The Action menu for sensor operators no longer cycles through weapons. Sensor operators now access a submenu that selects a weapon, filtered on a list of valid targeting methods.	VRE-IPB16, VRE-2.0.1
VRE-2488	Sensor operator: laser missile fires with other weapon system selected	Added a check to ensure that the controller's weapon system is selected.	VRE-IPB16, VRE-2.0.1
VRE-2489	Unable to fire laser missiles from sensor operator role	Updated VR-Engage's implementations of fireMunition and chooseTarget to allow sensor operators to fire laser missiles.	VRE-IPB16, VRE-2.0.1
VRE-2510	Video stream: autostart doesn't work on channels created after startup	Fixed the timing for autostarting a video stream channel.	VRE-2.0.1
VRE-2511	Current munition name in gunner HUD is not always in sync with back-end	VR-Engage now ensures that any components that update the PSR value for current-munition-name will update the extended data to reflect the value in the PSR by the end of the frame.	VRE-2.0.1
VRE-2516	Culling issues when Zoomed in VR	Corrected the zoom values to prevent culling problems.	VRE-2.0.1, VRE-2.0.2
VRE-2530	Binocular reticle labeling is incorrect	The numbers are now correct. The lower numbers are 10, 20, and 30.	VRE-2.0.1
VRE-2539	LLDR does not display target data unless mouse is moved	The target data now accurately displays without requiring mouse movement.	VRE-IPB16, VRE-2.0.1, VRE-2.0.2
VRE-2541	VR-Engage hangs when path to data has spaces	VR-Engage can now account for spaces in the file path to shared data.	VRE-2.0.1

Table 2. Fixed Bugs (continued)

Key	Summary	Release Notes	Fix Version/s
VRE-2550	Human radio is off by default	You can add a new parameter in the radio.[role].lua files, defaultRadio. You can enter the name of a configured radio, such as Radio 1, to automatically enable the radio for players who engage in that role. See the New Features for more information.	VRE-2.0.1
VRV-1181	Two Video Streams Cause Stuttering	Playing two video streams simultaneously caused stuttering, though a single stream played smoothly. This has been fixed.	VRV-3.1, VRV-IPB16, VRV-3.0a, VRV-3.0.1
VRV-4168	Starting and stopping a video stream can cause a crash	Fixed a bug in which starting and stopping a video stream could cause a crash.	VRV-3.1, VRV-3.0a, VRV-3.0.1
VRV-4194	Video stream metadata (local) is not correct	Corrected a problem with missing fields and values in local video stream metadata.	VRV-3.1, VRV-IPB16, VRV-3.0a, VRV-3.0.1
VRV-4198	Video stream metadata for long frame is not published at the right time	Corrected an error in the timing of the publication of video stream metadata for long frames.	VRV-3.1, VRV-3.0a, VRV-3.0.1
VRV-4200	CIGI view rolls uncontrollably with exact 90 degree pitch	Fixed an issue that caused CIGI observer view attachments to roll uncontrollably after slewing the camera.	VRV-3.1, VRV-IPB16, VRV-3.0.1, VRV-2.8g
VRV-4205	Don't draw grid lines when there is no terrain loaded	Grid lines no longer display when the observer mode is set to Plan View and there is no terrain loaded.	VRV-3.1, VRV-3.0.1
VRV-4226	Double Click and <> attachment uses the attachment mode of the last saved view, when it should just use Follow.	Fixed a problem that caused some entities in scenarios loaded from MAK Logger recordings to use the tether attach mode instead of follow, the default. It also caused orientation problems and incorrect position caching.	VRV-3.1, VRV-IPB16, VRV-3.0a, VRV-3.0.1
VRV-4229	Some 3D models are not drawn when entities are created under heavy load	Occasionally, when many entities were created, some entities were not visible. Once an entity was invisible, there was no way to make the entity display without restarting VR-Vantage.	VRV-3.1, VRV-IPB16, VRV-3.0.1

Table 2. Fixed Bugs (continued)

Key	Summary	Release Notes	Fix Version/s
VRV-4234	Moving the mouse on the screen causes significant frame rendering slowdown	When the user moves the mouse over the screen, VR-Vantage tries to identify any entities to select. This process was incorrectly using Pixel Buffer Objects and consuming as much as 5ms of time. This bug did not affect scenes where a mouse is not in motion.	VRV-3.1, VRV-3.0.1
VRV-4237	Channel addition, initialization takes a long time because of the clouds	Corrected an issue with cloud visualization that slowed down creation of new channels.	VRV-3.0.1
VRV-4238	Some attribute group widgets do not support altitude-based scaling or an LOD out altitude	Previously, the attribute groups did not scale when increasing the observer's distance from the simulation object with those attribute groups. This has been fixed by adding the ability for DtValueBarAttribute, DtImageAttribute, DtQuadAttribute, and DtOutlineAttribute to LOD-out based on altitude. Also, made a change to DtFlatPrimitiveStyle and DtStippledPrimitiveStyle handling of sorted data to pick up needed data changes (and performance).	VRV-3.0.1
VRV-4239	Visualizers, when created, do not add the VisualizerShowHideContext::ElementHidden context	Sometimes an entity that was set to be invisible when embarking was not being set to be visible on disembark. Now we make sure that all relevant visibility flags are set correctly when an entity is first discovered.	VRV-3.0.1
VRV-4240	HBAO is not supported in MR/VR and therefore should automatically be turned off.	HBAO is disabled when using virtual or mixed reality devices.	VRV-3.1, VRV-IPB16, VRV-3.0.1
VRV-4242	VR-Vantage can crash when a second window, such as a sensor gimble view is open.	Addressed several issues with memory management associated with multiple windows being open.	VRV-3.0.1
VRV-4257	Aggregate "Collapse" operation does not work when used on subordinates.	Applied a fix to ensure that, when users select a subordinate entity in a unit and then choose Objects > Unit > Collapse, the unit including that entity displays as a single icon. See "Expanding and Collapsing Units" in the users guide for details on this function.	VRV-3.1, VRV-3.0.1
VRV-4271	Crash can occur when closing sensor gimbal window	Closing a gimbaled sensor window with a text overlay was causing VR-Vantage to crash. That problem has been corrected.	VRV-3.0.1
VRV-4273	Sometimes a terrain will stop paging in after closing a new Stealth window such as a sensor channel	Fixed a bug in which terrain never finishes loading if you close an observer window.	VRV-3.1, VRV-IPB16, VRV-3.0.1

Table 2. Fixed Bugs (continued)

Key	Summary	Release Notes	Fix Version/s
VRV-4283	Crash when opening then closing a new plan view window	Corrected an issue with textures. They are made non-resident for a window context when it is being closed but shared texture handles are not deleted.	VRV-3.0.1
VRV-4285	VR-Vantage sometimes crashes when you open a new PVD window.	Fixed an issue that prevented resources from being properly released.	VRV-3.1, VRV-IPB16, VRV-3.0.1
VRV-4289	Heightmap is computed in PVD when it's not necessary causing performance problems.	The heightmap, which is used for ocean masking, and several weather effects, is now avoided when in PVD mode (2D).	VRV-3.1, VRV-IPB16, VRV-3.0.1, VRV-2.8i
VRV-4290	We do not need CUDA Toolkit installed to use Virtual Reality	Previously, Varjo users needed the CUDA 9.2 SDK with patch 1 from August 16, 2018, to support mixed reality. This is no longer required.	VRV-3.1, VRV-3.0.1

Known Problems

VR-Engage has the following known problems:

- If you use the settings covered in "[Installing the makData Package](#)" in the *VR-Engage Users Guide* for the shared data, SensorFX works correctly. If you launch VR-Engage with SensorFX and see an error about data, however, you can resolve it by setting the JRM_DATA_DIR environment variable to indicate the location where you installed the data. Enter the path to the SensorFX directory in the format *mydatalocation/ModelData/sensorFX* where *mydatalocation* is the full path to the *./SharedData/16/latest* directory. An example of the full entry is: *E:/SharedData/16/latest/ModelData/sensorFX*.
- While engaged in a pilot role, releasing a bomb on another entity's laser designator requires that you first match your laser code to that of the other entity. VRE-2405
- Mixed reality does not work with the Vive Pro. Virtual reality works correctly. VRE-1790
- If a human character is executing a plan and a player engages and then disengages, the character does not resume its plan. VRE-1777
- The Plug-ins Loaded page of the VR-Forces Plug-ins dialog box has been suppressed. Look at the *./bin64/vrfSim.log* file for a list of the loaded plug-ins. VRE-1481
- You cannot take control of a VR-Engage-controllable human entity that is currently performing a DI-Guy animation task indefinitely. VRE-261

For information on other issues that you might encounter while using VR-Engage, see the [Troubleshooting](#) appendix in the *VR-Engage Users Guide*.