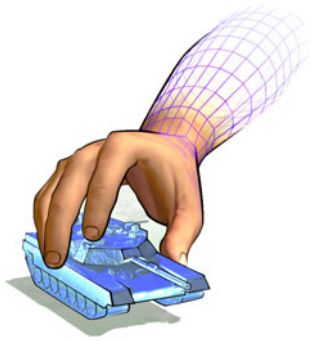

# B-HAVE Module for VR-Forces 1.1 Release Notes

This release note contains the following release-specific information for B-HAVE Module for VR-Forces Release 1.1 for VR-Forces 3.10.1:





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# Systems Supported

B-HAVE Module for VR-Forces 1.1 for VR-Forces 3.10.1 is available for Windows 2000 and XP, MSVC++ 7.1 and 8.0.

## Disk Space Requirements

A full installation of B-HAVE Module requires approximately 138 MB of disk space.

## MÄK Product Compatibility

The B-HAVE Module for VR-Forces is compatible only with the version of VR-Forces for which it was built. It has the same compatibility with simulation protocols and versions and third party libraries as the version of VR-Forces for which it was built.

## FLEXlm Support

The B-HAVE Module for VR-Forces uses FLEXlm 10.8. You must obtain and install a license file for the B-HAVE Module in addition to your VR-Forces license file.

# New Features and Updates

The B-HAVE Module for VR-Forces 1.1 has the following new features:

- Ability to create a group of entities in one simple operation
- Changes to movement mode configuration and assignment
- Ability to restrict the wander task to a specific area
- Lifeform entities can now move sideways
- A new Set View Target set data request
- Recognition of VR-Forces obstacles
- Ability to specify local zones for single-pass, multi-detail PathData generation
- Ability to display PathData around one entity
- Ability to move along a route from the end point to the start point
- Example scenarios
- Improvements to Lua scripting:
  - Change to drawing in the MÄK Stealth
  - Ability to send radio messages
  - New functions.

## Creating a Group of Entities

You can now create multiple entities and assign them a task or set data request.in one operation. Entities are created within a specified area and you can create the area as part of the create entity process. For complete details, please see "Creating Groups of Entities" in Chapter 4, *Using the B-HAVE Module in VR-Forces*, in *B-HAVE Module for VR-Forces User's Guide*.

## Changes to Movement Modes

Previous releases of the B-HAVE Module allowed you to specify a Restricted movement mode, which gave preference to movement along roads if the the PathData configuration included a road seed graph. In B-HAVE Module 1.1, movement modes have been renamed and enhanced and the configuration process has been simplified. You can now configure PathData generation to automatically create road data if the GDB includes road features. You can enable this data generation so that entities can prefer roads or avoid roads. It is no longer necessary to create and specify a road seed graph.

In VR-Forces, you can specify the movement modes Free, Prefer Roads, or Avoid Roads.

## Specifying Local Zones

You now have the option of specifying local zones when you create PathData configurations using the B-HAVE Module plug-in for the TDB Tool. Local zones allow you to specify areas of varying detail within a larger area for which you are creating PathData. Unlike use of seedgraphs, specification of local zones does not require the extra step of generating PathData for the area of concern. Also, unlike seed graphs, local zones always have the same density as the PathData for the larger area. For complete details, please see "Creating a PathData Configuration" in Chapter 3, *Generating PathData*, in *B-HAVE Module for VR-Forces User's Guide*.

## Sideways Movement

Entities can move sideways as part of dynamic avoidance. This is enabled by default.

## Set View Target Set Data Request

The Set View Target set data request specifies that an entity face another entity while it is carrying out its tasks.

## Avoidance of VR-Forces Obstacles

Entities now consider VR-Forces obstacles (control objects) when determining avoidance behaviors.

## Restricting Wandering

When you assign the Wander task to an entity, you can now restrict its movement to an area. The B-HAVE Wander dialog box has been redesigned to support this option.

## Displaying PathData Around an Entity

The B-HAVE Module lets you draw PathData in the MÄK Stealth. You can draw it for the entire scenario or for individual entities. Drawing PathData is controlled by functions in Lua scripts. For details, please see "Viewing B-HAVE Module Data in the MÄK Stealth" in Chapter 5, *Writing B-HAVE Module Scripts*, in *B-HAVE Module for VR-Forces User's Guide*.

As part of the implementation of this feature, the AIUtilDrawGraph() function is no longer supported. The functions AISetDrawEntityCentric() and AISetDrawPathData have been added.

## Improved Route Movement

The B-HAVE Move Along Route task has a new option that lets you specify that the entity move along the route starting at the end point.

## Example Scenarios

The B-HAVE Module now includes the following example scenarios:

- Crowd: 100 civilians wander randomly around the city in the SampleUrban terrain. They go in and out of buildings and to multiple floors of buildings.
- Interior Movement: Demonstrates the movement of lifeform entities within buildings. Some civilians wander randomly in and out of buildings, while some DI and other civilians follow pre-determined plans to reach points on different floors of some of the buildings in SampleUrban. DI 1 has no plan. You can task him to move to some of the created waypoints to demonstrate dynamic path planning.
- Scatter: A hostile DI follows a plan to move to a set of patrol points while twenty civilians use Lua scripts to keep hidden from the hostile entity. The civilians run behind buildings whenever they see the hostile entity.
- Makland B-HAVE: Mixed vehicle and life form activity on the Makland terrain. Some civilian traffic moves along the roads. Some DI walk in and out of the palace, changing guard duty, and some military vehicles leave the palace to drive along the roads to locations in the town.

## Improved Lua Scripting

The B-HAVE Module has the following new Lua functions:

- AIEntityGetOrderedSpeed()
- AIEntitySetRulesOfEngagement()
- AIEntityIsUnderFire()
- AIFleeSetDangerRadius()
- AIFleeGetDangerRadius()
- AIWanderSelectRandomDestination()
- AIUtilGetVRFExerciseTime()
- AIUtilGetVRFExerciseStartTime()
- AIWanderSetVRFArea().

Additional new functions are described in "Displaying PathData Around an Entity," on page 4 and the next section, "Sending Radio Messages".

### Sending Radio Messages

You can now use Lua to have entities send each other "radio messages", which are simply a text string.

To send a message, use AIVRFRadioSendTextMessage(string) or AIVRFRadioSend-TextMessage(string, entity name) functions anywhere in a script. Please see the example *example_RadioDispatcher.lua*, which has a list of messages to send at specific times in the simulation.

To receive a message, use the function AIVRFRadioMessageReceivedCallback(string). It is called asynchronously from the Think() function) when a message is received by the entity. Please see the example *example_RadioListener.lua*, which shows how to listen to a message, and optionally extract a waypoint name from the message to execute an order.

The following is a simple example. It enables sending and receiving messages on this entity :

```
-- this script is a simple Lua radio test.
-- Cvln 1 will send messages
-- everyone will print received messages
counter = 0
myName = AIEntityGetName()
function Think()
  if counter == 1000 and myName == "Cvln 1" then
    AIUtilWarn("sending messages...")
    AIVRFRadioSendTextMessage("hello world !") -- this message is
 broadcast to all entities
    -- this message is sent to Cvln 2
    AIVRFRadioSendTextMessage("hello to you, Cvln 2", "Cvln 2")
    counter = 0
  end
  counter = counter + 1
end
function AIVRFRadioMessageReceivedCallback(text)
  AIUtilWarn("received radio message:" .. text)
end
```

## Documentation Updates

The PDF version of *B-HAVE Module for VR-Forces User's Guide* has been updated to describe all new features.

By default, the maximum number of entities that B-HAVE Module can control at one time is 250. If you need the B-HAVE Module to control more than 250 entities, you can change the MaxEntity value in *./data/parameters/BHAVE/BHAVE_conf.xml*.

## Bug Fixes

The following problems have been fixed in this release:

- Entities can now flee from VR-Forces Waypoint objects.
- Embarked entities are now filtered from the Dynamic Avoidance system.
- Checkpointing support is improved for tasks and Lua scripts.

## Known Problems

B-HAVE Module Release 1.1 has the following known problems:

- PathData cannot be generated on geocentric or geodetic terrain databases, so most functions of the B-HAVE Module will not work on these databases.
- PathData cannot be generated on paged GDB terrains.
- Civilian lifeforms are not configured by default to spot other civilians, only armed entities. This is done for performance reasons, but can be changed in the OPE files. Edit the visual-sensor detection-types parameter to change what types of entities are spotted.
- The AIEntitySetSpeed Lua command and the VR-Forces Set Ordered Speed command set the same parameter of an entity, so Lua scripts that call AIEntitySetSpeed every tick will override any ordered speed set from the GUI or plan.
- Obstacles will sometimes be ignored if their perimeter is too big.
- In the TDB Tool, when you make changes to a database and then save it to a new terrain descriptor name, the next time you open the descriptor, you will have an empty resources file. This because the changes you made were saved under the original name prior to the Save As operation. To fix this problem, copy the resources files from the previous <terrain name>_PathData directory to the <new terrain name>_PathData directory. You may also want to copy any PathData you have generated before you saved to the new MTD and GDB file.