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STEEL BEASTS
Professional

PE 4.009 Release Notes

SB Pro PE 4.009 (Full Release) Version History and Release Notes

This is a *new version* of SB Pro PE (neither patch nor upgrade) – so don't install it over an existing version. This Steel Beasts version is intended to be installed separately. We strongly suggest **uninstalling previous versions of Steel Beasts Pro PE before installing it!**

To make sure that there are no leftovers from even older installations, we recommend using the Windows System Settings' "Add/Remove Programs" utility.

Note: This version will not run without an existing license for Steel Beasts Pro PE 4.0!

Steel Beasts Pro PE 4.0 is 64 bit only!

Licenses may be purchased from the eSim Games web store (for details, see below): <http://www.eSimGames.com/purchase.htm>

The **Edge browser** has been reported to **fail** with license activations; we recommend using a different browser when visiting the WebDepot to claim your license ticket.

This is a preliminary document to complement the version 3.0 User's Manual until a version 4.0 User's Manual will go into print – probably in January 2017.

This document focuses on changes since version 4.000. **Changes made between 4.000 and 4.006 are denoted in blue color.** You may want to study the release notes for version 4.000 if you aren't familiar with version 4.0 already; these can also be found on the eSim Games Downloads page:

www.eSimGames.com/Downloads.htm



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Hardware recommendations

SB Pro PE 4.0 requires a 64 bit Windows version, starting with Windows 7 or higher.

Downloading, unpacking the self-extracting archive and immediate installation requires up to approximately 12.5GByte harddisk space temporarily. Of these, *Steel Beasts* will claim about six GByte free harddisk space permanently; the rest may be freed up through deletion and/or burning the installation files to DVD.

We recommend a 2.5GHz multi-core CPU (faster is better), 8GByte RAM (16...32 recommended for high resolution map conversions), 1GByte video RAM, and generally a DirectX 9.0c graphics card supporting Shader Model 3.0. Mouse, keyboard, and monitor are mandatory. A sound card and internet connection are strongly recommended. Joysticks and selected control handle replicas are supported.

DirectX 9.0c is included; it is however possible to download a separate installer:

http://www.microsoft.com/en-us/download/dlx/default.aspx?id=34429&ei=0Hs3UtGDKcXkswbW5IHIAw&usq=AFQjCNGKhzc4TZBLmW2nMmdu_EbBHePwKA&bvm=bv.52164340.d.Yms

Anti-Virus software has in the past been a source of trouble for some. If an installation fails on the first try, the next step should be to disable the AV program during the installation. Note that some AV programs only pretend to shut down, but a service (or the executable itself) remains listed as active in the task or in the services list.



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Installation

1. Download **all** parts of the self-extracting archive installer into a common directory, e.g. C:\Temp or a “Steel Beasts” folder on your desktop
2. When done, run the ...part1.exe program to start the installation (this assumes that you uninstalled the previous version of SB Pro PE per recommendations on page 1 of this document)
3. If you know to have already installed CodeMeter runtime version 6.30d (or later), feel free to press “cancel” when the CodeMeter part of the installation pops up; that will save you a few seconds
4. If you haven’t purchased your license for SB PE 4.0 already, now would be the time to visit the eSim Games web shop, www.eSimGames.com/purchase.htm

You have different options there,

- a. time-limited licenses if you do not want to use a CodeMeter USB stick; these will expire after a while, depending on which option you purchase. The time counts from the moment of first use, not from the date of purchase, or the date of license activation (see next page for more details)
- b. a “classic” license if you never owned a Steel Beasts software license with a CodeMeter stick before
- c. upgrade licenses for CodeMeter stick owners, for one of two cases,
 - i. you own a Steel Beasts Pro PE license version 2.5, 2.6, or 3.0 already
 - ii. you own an SB Pro PE license version 2.4, or without a version number in it

To find out which license you have, start the CodeMeter “WebAdmin” which will open a web browser window, listing all the installed licenses on your CodeMeter USB stick

5. Once that your purchase has been made, the eSim Games web shop will send you two emails – the order confirmation, and a second one with the license ticket (a complicated URL leading to the WebDepot). Visit the link, and activate the ticket there to generate the license. We recommend **not to use** the “Edge” browser at this point. Future versions may support one of the required web technologies for license activations.
6. Play



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Steel Beasts uses an installer which can change the Windows Group Policies (access privileges) of the folder containing all the map data of SB Pro. If you do not want other users on your computer to use the Map Editor you may want to restrict access to the following folder again:

C:\ProgramData\Sim Games\Steel Beasts\maps

A popular suggestion in internet forums – one, which **eSim Games does not recommend** – is to right-click the SBProPEcm.exe in the ..\Release folder of the Steel Beasts installation, open the Properties dialog box, and in the “Compatibility” tab to select the option to “Run the program as Administrator” – or to run the setup program in the security context of an administrator account. We went at lengths to make sure that this breach of IT security is not necessary.

This installer includes the CodeMeter runtime version 6.30d.

Time-limited licenses

Since version 3.0 eSim Games offers a software rental option. This option is primarily aimed at users who do not already own a CodeMeter USB stick. Time-limited licenses are issued for one, four, and twelve months respectively:

- Licenses are bound to the computer on which they are installed.
- Only one license can be installed per computer. Activating multiple licenses on the same computer will only extend the duration of the single license, not add multiple licenses to the same computer. For example, if you buy a four-month and a one-month license, activating both will result in one license valid for five months.
- There is **no automatic renewal of licenses**; it is not a subscription fee that requires termination. Instead a warning will appear on program start if the license is about to expire (or if it already has expired).
- Licenses that have been purchased need not necessarily be activated immediately. You may buy five licenses but activate only one at a time if you wish. You just need to save the email with the ticket URL for future reference.



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Online Support & Documentation

Experienced users of Steel Beasts Pro PE may already visit the official fan page www.SteelBeasts.com with regularity. If you are reading this, and haven't been there yet, we strongly recommend that you do so. Whether you like discussion boards or not, its integrated search function may yield valuable information.

An important part of the site, though less immediately visible, is the collective effort to maintain an online documentation, **the Steel Beasts Wiki**:
http://www.steelbeasts.com/sbwiki/index.php/Main_Page

Even without access to the internet there is a **serious amount of documentation included with *Steel Beasts* itself** (although a current version of the User's Manual can only be supplied with the next update, currently scheduled for January 2017 (*as of this writing — Nov. 13, 2016*)).

This additional information can be found in a subdirectory of the Steel Beasts program group of the Windows Start Menu, incidentally named "Documents"; apparently it's still one of the best kept open secrets since about August 2000. It contains a PDF of the User's Manual and other ancillary information, e.g. the US Field Manual 101-5-1 about tactical signs and military map symbology as used in *Steel Beasts*.

News about *Steel Beasts* will usually be published first in the forum of the fan site, and also on eSim Games' homepage www.eSimGames.com which you may want to check out occasionally.

User Interface Changes

Generally, a lot of changes have been made since version 3.0 to give the user a **wider span of control** over dismounted infantry. The eye view now lists all elements of a mechanized platoon – both vehicles and organic infantry, down to infantry teams. This allows to direct squads in very much the same way as individual vehicles in a platoon, including commands to apply suppressive area fire, to target (moving) units, and more. To open the command menu simply left-click the sub-unit's tactical icon in the lower right hand corner.



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General Changes

We improved the collision handling of rapid fire weapons against massed infantry.

You may hold the Shift key in the main menu when clicking the Map Editor or the Mission Editor to be immediately prompted for the file to open and edit. This can save time otherwise wasted to load a blank file; Alt+click (on the Mission Editor menu item) opens an existing scenario file in test mode.

The AAR now records the state of the vehicle crew, ie whether they're inside the vehicle, peeking out of the hatch or all the way out of the hatch.

The crew hatch positions are assumed to be coupled to the crew state (which might not 100% conform to what happened in the scenario but was judged to be 'close enough'); if a crewmember is all the way in the hatch it will be shown as closed. For the CDR, the 'open protected' position will be shown if he was just peeking out of the hatch and the 'all the way open' position if he is completely out of the hatch.

Also recorded are the position of the troop hatches and troop doors; as currently in the execution phase, an open troop hatch implies infantry looking out of that hatch.

Old AARs will of course still work; for them all crews should be in the BUT-TONED position, all crew hatches hence be closed and troop doors and hatches likewise closed.

Any changes to connected input devices (like joysticks) will no longer be automatically picked up but require the user to enter the 'Controls' dialog and to press the 'Refresh Joysticks' button. Doing it this way will hopefully reduce the occurrence of application crashes in the (Windows) joystick device handling code whenever such changes occur.

Also increased the size of the 'Press a hotkey' notification message and made that message actually configurable.

Every (military) vehicle may now tow any other (military) vehicle – except helicopters. They must however move closer to the target vehicle (no winch,



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just fixed length cables), it takes longer to hitch (and disconnect) a target, and the towing vehicle must be of the same or higher weight class. At the moment there are also unresolved issues connecting a target vehicle to the front of the towing tank – it works ... but it doesn't look pretty.

A few more status messages have been created to complement the various progress bars, giving you (hopefully) a better idea about what is going on.

The user can now paste text into 'editbox' controls by right-clicking the mouse while the input focus is set to this control (note that the 'Ctrl-V' hot-keys remain functional of course).

Text list widgets, such as those in the File selection windows, will scroll the contents of the list when rolling the mouse wheel, instead of selecting the previous or next item in the list.

Error messages describing the case of missing heightmap or terrainmap files are now more verbose, with direct recommendations how to deal with the situation.

The default eye view position on vehicles is no longer “unbuttoned”, but the lowest position (which offers the best protection).

For ultra-wide screen setups with triple monitors, we fixed a scaling issue with tactical map displays in 3D vehicle interiors.

All 'advance to', 'retreat to', 'hitch to', 'shoot at' and similar commands will now center the cursor in the SB Pro window. This eliminates inadvertent scrolling and might also be more comfortable since there's likely less mouse travel required.

Also the right mouse button will now cancel any of these 'special' modes ... rather than having to press (any) keyboard button, or to click into the status bar (which often enough slewed the view). Finally, when in the overhead view, rotating the view (using Shift+right mouse button drag) does not cancel whatever command mode is currently selected.

Overhead View

An option was added to in the Mission Editor enabling a bird's eye view of the battlefield for the user at regular runtime (previously possible only for Instructor Host mode, or while testing a scenario). To access the view (if



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available), press F8 while already being in the external observer's position. Holding the right mouse button allows adjusting the camera angle, the mouse wheel or the regular "up" and "down" hotkeys will set the camera elevation.

Note that the "fog of war" is maintained in this view; enemy units that have not been spotted by computer-controlled units will remain invisible to the player even if his elevated camera position has line of sight.

Infantry

Dismounting mech platoons will now form a platoon command section of four, including the platoon commander, the platoon sergeant, and a medic. This medic can be sent to squad locations where casualties occurred, with a substantial chance to restore the casualty back into fighting condition.

Infantry squads will now generally apply first aid with a chance to revive casualties; depending on the troops' assigned quality level (see Mission Editor) the chance ranges from "minimal" to "not so great, but noticeable". The platoon medic always has a much better chance.

The 'Shoot at unit' command has now a hotkey, which by default is 'T'.

Formations, Movement, and Pathfinding

'Column' and 'Line' formation hotkeys now also work for infantry units. There is now also an (by default unmapped) 'Dual Column' hotkey. Both Line and Dual Column formations will be staggered for a more realistic dispersion of troops.

All 'weapon teams' may now use all movement modes (crawl-ing/sprinting/etc); however their movement speeds and stamina will be restricted.

On pressing 'W' to command a weapon teams with already disassembled weapons to start moving the soldiers will use a walking rather than a crawl-ing posture.

Infantry will now dismount vehicles running. Dismounts should get up less often now, making the whack-a-mole game a bit harder.



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The assembly/disassembly order has been improved in some cases (AT-3, AT-4, BILL, Milan, TOW, mortar) to reduce the number of floating components.

Civilians

Civilians created without a weapon start in 'standing' posture

- Fixed a bug preventing the "Suppress At..." command to work for armed civilians
- Fixed bugs making civilians refuse to crawl on the ground if manually commanded to do so (but would rather stand up)

Engineers

Added the "Engineer team" infantry type. They are equipped for breaching a range of obstacles; they can sweep lanes for mines, and will automatically defuse IEDs while doing so. 'Engineer' infantry squads may be split into teams.

Engineer infantry will now mark defused IEDs and Claymores.

Gun Artwork

Added the following assault rifles and MGs for dismounted squads, or updated their models:

- | | | |
|----------|---------|-----------|
| • AK-5C | • L85A3 | • M240 |
| • C7A2 | • M4 | • MG3 |
| • C8DK | • M16A3 | • PKM |
| • FN-FAL | • M60E | • SCAR-17 |

Adjusted the RPG-7s so that they have a booster effect.

The MG3 guns for all combatants but the Centauro will now be using the 'ground' front and rear aim posts (the Centauro will keep using the 'Air' ones). Note however that the gunner's POV remains unchanged (aligned to the 'Air' sights so that actual aiming using the 'ground' sights will be more challenging.



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Fixed a bug where the equipment of 'weapon team' soldiers would only be displayed while they were moving, not while being stationary.

Heavy Machine Gun Teams

Added MG3-HMG (tripod, sights)

By using the 'toggle reticle' hotkey ('R' by default) the MG3-HMG gunner may toggle the reticle illumination.

Light Machine Gun Teams

LMG teams are defined as MG teams with a bipod supported weapon, not by ammunition caliber. Some teams (e.g. M60E) will carry 200 rds ready and 400 stored, while others (PKM) will carry 100rds ready, 500 stored, or even just 50 rounds ready (MG3).

Missile Teams

AT-3 Sagger, AT-4 Spigot, Milan: Changed gun data so that soldiers will now setup the weapon while laying down.

Corrected the ATGM assigned to the US1990 soldiers.

Added the Dragon ATGM as a new optional weapon type for the missile team.

RPG Teams

Corrected the default RPG assigned to the US1990,2000 and KR2000 soldiers.

Sniper Teams

With version 4.0 sniper teams are added to Steel Beasts Pro PE; you may occupy the observer's position and designate targets to the (computer-controlled) shooter. In addition, snipers will automatically engage (only) non-vehicle targets that have been designated as "High Value Targets" in the Mission Editor.

The sniper teams' Ammunition dialog implicitly sets the weapon equipment. Engagement ranges are listed for man-sized targets.



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- M2 Barrett (cal .50)
- TRG-42 (.338 Lapua Magnum)
- Dragunov (7.62mm x 54R)
- M24 (.300 Winchester) (*insufficient squinting may fool you into seeing a TRG-42*)
- G3 with scope (7.62mm x 51) (*too intensive staring may make it look like a Dragunov*)

Character Artwork

Vehicle crews will only use custom selections of appearance if they are configured to be 'general infantry'. Vehicle with 'specialist crews' require a separate, explicit override (use 'Set look for crews' option in the Mission Editor).

Generic crew textures for various different nationalities were added, including North Korean infantry, several Israeli nationality textures, and a 1970s US and 'Soviet Russian' soldier, as well as a non-camo face texture for the USSR soldier. The latter will be the new default for the 'red' side in SB Pro PE.

Use better looking stand and walk animations for the weapons teams

The various AFV crewman meshes (US/DE/RU style) can now be assigned to infantry and civilian characters. Note that one limitation is that they will only use the AK47 rifle.

Buildings

Updated all buildings' maximum occupancy parameter. Buildings will now be limited to capacities divisible by two (0, 2, 4, 6, 8, 12, 16...) increasing the chances that infantry will deem a nearby building suitable to take up positions there. Some buildings are still at a low capacity of just two or four soldiers. The very small ones may only be taken by small teams like snipers. Four-position huts are intended for team sized units to prevent unintentional overcrowding. This should help avoiding micromanagement and helps computer-controlled units to disperse better.

Note: Infantry units usually refuse to enter a building only because the capacity is too low, or because some positions have already been taken by some other unit (friend, or foe).



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When ordered to take position in a building, the SB Pro will now show how many firing positions in the target building are still vacant. Waypoints may now be placed directly **on** a building in the map view to let infantry take up positions inside. In the past the battleposition marker had to be outside of the building, which was counterintuitive.

In the Mission Editor and in the Planning Phase it is now possible to set user preferences for default behaviors – both for movement routes and for behavior in buildings depending on the chosen waypoint tactics.

Hotkeys

'Extended keys' (the INS, DEL, HOME, END, PAGE UP, PAGE DOWN, and arrow keys in the clusters to the left of the numeric keypad) will now be referenced correctly in the 'hotkey configuration' dialog – in previous Steel Beasts versions they were confusingly identified as Numpad keys. Also, we localized the names of the 'Shift', 'Ctrl' and 'Pause' keys.

Road Leveling

In SB Pro version 4.0 just-in-time, low-resolution 'road leveling' is applied automatically whenever the scenario is being loaded; it does however not change the source files. The process is fast and usually delivers reasonable results.

Depth of Focus (DOF) for Thermal Imagers

Revised focus handling for vehicle TIS. (excluding RWS). All thermal sights will now appear more blurry and require focal adjustment. To simplify things, in the Personal Edition there is but a single hotkey to adjust the focus named "Focus Imaging System" which defaults to (Num Del (Decimal)). In addition the image may be adjusted by holding ALT and scrolling the mouse wheel.

Press the hotkey once to adjust the image to the object in the center of the crosshairs.

Note that on some vehicles, e.g. the CV90/35, a permanent autofocus is active, obviating the need for manual adjustments.



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Map Screen

When selecting multiple map graphics, 'empty' text fields (showing up as gray rectangles) will no longer be drawn.

Formation Handling

It is now possible to assign multiple (up to 240) units to “preset groups” – e.g. a company team. It is then possible at runtime to enter a New group route that will automatically get copied over to all other members of that preset group; the first route leg is always on hold to allow individual route adjustments before then a “group proceed” command can be given.

Groups can be composed at runtime (both Planning and Execution Phase) while in the map screen, System menu, Edit preset groups. This will open a dialog box listing all units owned by the individual player which he can move into his groups. Every unit can be member of only one of the up to six preset groups.

Other

The battleposition icons now support text labels.

The map view may now show a relief map shading effect (if so enabled in the MISSION EDITOR). Irrespective of the per-scenario settings this option is always available in the MISSION EDITOR, and in the AAR mode.

The waypoint/battle position context menus have been unified (i.e. always showing "Formation" and "Spacing" menus now).

High-tension power lines are now shown on the map. They appear as solid lines featuring ticks at the position of power pylons (the ticks will disappear at low zoom levels).

Fuel supply vehicles will now also display a supply radius indication for each individual vehicle (in configurations supporting such a display).

Legacy SB1-style anti-tank ditch objects are no longer rendered in the map screen.



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Multiplayer

A "remote screenshot" functionality for session hosts was added: While in the map screen, the session host may now access a new top-level menu "screen capture". It lists all players in the current network session.

By selecting an entry a screenshot will be taken at the client (*Steel Beasts* window only, **not** the whole desktop) and sent to the host. Its file format is always JPG, irrespective of the normal screenshot settings, to preserve network bandwidth.

These screenshots will be saved on the host's usual screenshot directory, with an additional "Remote" subfolder. Screenshots will be named as usual, with the addition of the client name. Example: <screenshot folder>\mm-dd-yy\Remote\SS_<clientname>_HH_mm_ss.jpg

When hosting an online session, the 'remove' button will be hidden if the marked player is the host (which cannot be removed!).

In addition the list of combatants will be switched to read only if any player but the host is selected.

"Package loss" is an additional metric shown with the frame rate counter overlay.

FPS/memory info overlay enhancements: the overlay will now stay active even if the network is considered "overloaded". Additionally, on the host, the overlay will now show ping time and bandwidth in/out usage for the individual clients.

Fixed a problem allowing clients to still join a session even after the Host had already started the loading process ... or which could deny clients to join a session when the 'join mission in progress' wizard was in use.

Nav Meshes

Version 3.0 nav meshes are invalid and will be ignored. We recommend opening old scenarios in the Mission Editor, to add a new nav mesh, and then to save the file. Nav mesh generation is now much faster than in previous versions, and should generally yield a better quality too. The SB Navmesh Builder is at the moment without function (...but will come back with the high-res terrain engine, ca. Q1/2017).



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Note that “a nav mesh” now actually comprises of several nav meshes – one for infantry and one (or more) for vehicles. Infantry nav meshes will ignore certain types of obstacles such as hedges, fences, and smaller walls because they can be climbed; infantry will “diffuse through” these obstacles for lack of detailed climb/crawl/jump/equipment handling animations.

Vehicles will attempt to honor light obstacles but may still crush them if driven manually (or by accident) if the vehicle is massive, and the obstacle is not.

All road types have now “travel costs” applied to them, favoring (somewhat) longer routes on multi-lane roads over narrow roads and forest service trails. If you want to force the use of secondary roads while entering a new route, click more often to set manual waypoints.

File Formats, File locations

As a reminder, the scheduled transition towards high resolution terrain (Q1/2017) is bound to put an end established practices of embedding map data directly in scenario files.

For the initial version 4.0 release the handling of map files and scenario files remains unchanged (aside from the discontinuation of version 3.0 nav meshes). However, the scheduled transition towards high resolution terrain is bound to put an end to these practices. The ability to embed heightmaps in scenario files is **scheduled for removal** in Q1/2017; the sheer mass of terrain data no longer makes embedding a viable option. Also the compression functionality for heightmaps in the Map Editor has already been removed (which seems to have been available only for the long discontinued '.raw' heightmap file format anyway).

AAR files may now exceed 2GByte in size. The new size limit is of rather theoretical nature, somewhere in the Exabyte range.

Unit and Callsign Templates have been moved into their own dedicated folders, 'My Unit Templates' and 'My Callsign Templates' respectively. The 'common' version of these folders (located in the %PROGRAMDATA% hierarchy) is called simply 'Unit Templates' and 'Callsign Templates'.



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These newly created folders will only hold templates created by the user; the ones shipped with SB Pro will from now on only be located in the %PRO-GRAMDATA% hierarchy (see above).

Note that the user's Windows access privileges to the 'common' folders determine whether Steel Beasts offers that functionality. For 'unit templates' this may be a bit obscure as the user interface hides most of these details (when loading Steel Beasts the content of 'common' and 'personal' folders are merged).

Note that with this update the installer program now creates the default Unit Template folder; this folder missing would cause the whole feature to be unavailable in the Mission Editor.

- Entirely new templates are always saved in 'My Unit Templates\Default'
- When changing or renaming an existing unit template, its location depends on the user's access privileges and the original file location.
 - If the original file was located in the 'My Unit Templates' hierarchy, it will always remain in that hierarchy.
 - If it was located in the 'Unit Templates' (=shared) hierarchy, it will be copied into the 'My Unit Templates' hierarchy if the user does not possess sufficient rights to change/rename the original file.

Note that for 'callsign templates', if the user elects to replace the existing files in the 'Unit Callsigns' hierarchy, **there is no guarantee that the installer will not overwrite them** whenever an update is being performed!

Also note that, if the user creates a new scenario, the program will initialize the parties' callsign templates from the 'My Callsign Templates' folder with priority, and fall back to the (shared) 'Callsign Templates' if the first doesn't contain the necessary files.

Changes to the Steel Beasts installer:

- SB Pro will now create 'minidump' data
- The Windows Start Menu has been rearranged:
 - all but the 'ordinary' Steel Beasts shortcuts have been moved into a 'Troubleshooting' subfolder of the Steel Beasts menu entry (which will open in Windows Explorer so people have an easier time choosing entries)

- a shortcut to the folder containing the minidumps (which might differ depending on Windows version and –settings) has been added to the 'Troubleshooting' folder
- renamed the web link shortcuts
- renamed the 'Other Documents' shortcut to 'Documentation'

Graphics, Audio Settings

The 'Volumetric Clouds' graphics option now defaults to **off**.

A graphics option was added to enable 'high detail/3d tank tracks' which will show an effect on some vehicles – like the M60A3 or the facelifted T-55.

The black bar at the bottom of the screen will now also be removed when the HUD is disabled (Alt+H) while in the 3D view (hover camera).

Version 4.0 introduces a new hotkey (Alt+S) bringing up the 'sound configuration' dialog. There is also a (rudimentary) 'audio' dialog in the 3D view's 'File' menu allowing the user to set the master volume; two commands to increase and reduce the volume are enabled, but by default no hotkey is set for them.

Updated all vehicles so that their engine and movement sounds now fade away at a more realistic distance. Their distance now depends on their classification and weight.

Localization

Renamed the various language directories so that they do not contain non-ASCII characters anymore.

Updated Austrian & German strings. Updated various English strings. Updated Danish, Finnish, and French strings. Added Greek strings. Updated Russian, Spanish, and Swedish strings. Updated the Dutch translation.

Russian and Greek localized text should now be displayed correctly.



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Simulation Rules

When reloading a (ranking) soldier's ammo while inside an IFV, SB Pro also restocks his ready ammo – now including AGL and mortar rounds.

Infantry will use their 'ordinary' binoculars (so no gun sight optics) while riding in vehicles.

Rain has an effect on the terrain's dustiness, traction, and drag now (read more on the mobility effects in the MAP EDITOR section below).

Mines that were cleared by engineer troops are now exposed on the map screen as well as in addition to the red ground markings.

The sink-in effect has been reduced for wheeled vehicles.

NVG will now double the detection range of AI rather than set a fixed range of 175m.

When confronted with multiple targets, members of a formation will attempt to choose different targets rather than concentrate on one.

Also, a few minor issues on various ARM files were corrected.

Behavior of Computer Controlled Crews

When commanded to scan a direction, the gunner will always sound an alert when finding a target.

Ballistics

The (Steel Beasts-internal) Fire Direction Center will now check an artillery unit's minimum engagement range when deciding which battery should service a fire mission. This should solve the issue where rocket artillery units were assigned to fire missions outside their range envelope. If no other arty units are available, these missions will remain 'Waiting for approval'.

Change to the HE missile simulation – hits to the ground will now actually take the missile's minimum range into account, and will only create an HE explosion if that distance was reached/exceeded.



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New Munitions

Added ammunition for the T-90

- 125mm 3BM59 APFSDS
- 125mm 3BM60 APFSDS

Added ATGMs

- AT-10b (Stabber/Arkan+)
- AT-10c (Stabber/ Arkan+)
- AT-11b (Svir-M)
- Milan ATGM
- Milan 3 ATGM

Added ammunition for the BMP-1, T-55, BMP-3:

- 73mm PG-15 HEAT
- 73mm PG-15VNT HEAT
- 73mm OG-15 HE
- 100mm 3UOF-17 HE-F
- 100mm 3UOF-19 HE-F
- 100mm 3UOF-32 HE-F

Added surface-to-air missiles:

- RBS-70 Mk.0
- RBS-70 Mk.1
- RBS-70 Mk.2 BOLIDE
- FIM-92B Stinger

Munitions adjustments

- Changed the names and introduction dates of various 14.5mm ammunition types
- Minor tweak to 20mm DM81 HEI-T round (Marder)
- Adjusted terminal ballistic performance of Milan 2 and Milan 2T ATGMs
- All munitions with a tandem warhead received a caret character in the name: ^
- Claymore mines will now also damage trucks (but not armored fighting vehicles)
- Changed the 105mm M735 APFSDS-T to tungsten rod rather than dU
- Configured the .30-06 LMG round to use a 3D tracer.
- M240: changed the ROF to be more realistic.
- Updated the properties of some RPG rounds; old scenarios featuring the "RPG-7L" round are automatically changed to use the "PG-7" now (which has identical properties of the old ammunition type).
- Reduced the HE power of the 20mm DM81 HEI-T and 23mm OZT HEI-T
- Updated Dragon ATGMs



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- "M47 Dragon" HE value
- "M47 Dragon II" HE value
- changed designation to "M47 Dragon III/Superdragon"
- changed its HE value and its warhead type to 'tandem'
- Internal changes to the 120mm "DM11 HE-T"
- Corrected origin of the "M392 APDS-T" round from UK to US
- Renamed the Hydra 70
- Adjusted crosswind drag for L31A7 HESH-T
- Adjust burn time for:
 - AT-2c
 - AT-3d
 - AT-4a
 - AT-4b
 - AT-4c
 - AT-5a
 - AT-5b
 - AT-6
 - AT-7
 - AT-13
 - HOT 2
 - lePzF
 - Milan 2
 - Milan 2T
 - PzF-3
 - PzF-3T
 - S-8D
 - S-8KOM
 - S-8BM



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- Adjusted speed/range/burndtime values for FIM-92B and SA-9B.

3D Projectiles

- Added the AT-2 Swatter ATGM and 275 HE FFAR ordnance actors.
- Added new animations to ATGMs AT-3 Sagger, AT-4 Fagot, BILL, Javelin, and Spike.
- Added the Hellfire, Milan, BILL and RBS70 3D missiles.
- Added the AT-3 Sagger 3D missile.
- Added the Javelin and Spike-LR 3D missiles.
- Added 3D ATGMs for TOW-1, ITOW, TOW-2, TOW-2B and improved the existing TOW-2A. Also removed some obsolete textures relating to the original TOW-2A.
- Added Dragon ATGM artwork
- Added a 3d missile for the 40mm grenade.
- Added a 3D missile for the 20mm DM63 APDS round.
- Added a missing TIS texture for the AT-4 Spigot missile.
- Increased the size of the MG tracers.
- Changed the TIS tracer image to be brighter.
- Updated some 3D missiles to use a new tracer mesh, and added a few more.
- Adjusted many ATGM and RPG 3D projectiles' tracer and/or booster
- Linked the RU 14.5mm ammo to a 3D tracer.

Vehicle Suspension

In preparation of high resolution terrain, added code to simulate the behavior of vehicle suspension

For motorbikes the effect of the centrifugal force is the opposite of nonmotorcycle vehicles (to simulate the drivers leaning into the turn)

Mission Editor

When selecting multiple map graphics, 'empty' text fields (showing up as gray rectangles) will no longer be drawn.

Unit Templates

Further changes regarding the reorganization of the unit templates: The code will now also look for 'legacy' templates in the folder that was used prior to the reorganization (ie 'My Documents\Sim Games\Steel Beasts\export ..\Templates'), so that they can still be used without the user having to move files manually.

Note however that renaming or resaving such a template will create it in one of the 'non-legacy' folders (see the comment for the original change that explains the folder selection algorithm):

- Steel Beasts will select the just created template if the user creates a new template via the map screen
- SB will not automatically change its position back to the center of the screen if it was already open when a new template was created
- SB will warn the user if there are unsaved changes in either the template's filename, title or description

Code was added to check against version mismatches with template files. Where incompatible files are detected, SB Pro no longer attempts to load them. A warning message will be added to the log file.

Split and Merge

One major new feature in version 4.0 is the option for splitting scenario files (and merging them back together). It is now possible to split an existing "seed" scenario into multiple files. These files can be edited independently, and later merged back into the final result. This can be a time-saver for the development of large scenarios, as well as an option for multi-player events to hand out a split scenario to each party's commander to develop his battle plan without being able to check out what the other commanders are doing. Before the start of the actual exercise the individual



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parts would then be merged back into one common scenario that is then distributed to all clients.

The scenario must be defined first by setting up the parties, and placing units to each party. After saving, split the file into one “*.mastersce” and a number of “*.splitsce” files. Hand them out, have them edited, then put them back into one common folder. Load the *.mastersce, then select “merge” to pull all *.splitsce files in. Save it as a new scenario file.

Notice that the original mission designer may impose limits as to what the individual parties’ commanders may change. Certain things must remain the same (like time, map, or weather conditions), others may not be desirable to be changed (like the force composition and artillery support).

Ctrl+mouse click will immediately open the Mission Editor’s dialog to merge scenarios.

Weather and Mobility

Weather settings will now influence the terrain mobility properties by interpolating between the extreme conditions set in the terrain theme (see Map Editor). The initial precipitation will prime the water saturation of the ground, where

- “no precipitation” means “dry ground”,
- “extreme” precipitation at mission start sets the ground to fully “wet”, and
- Intermediate precipitation levels set the starting conditions of the ground to 10%, 50%, and 75% water saturation respectively.
- Technically, a fully saturated ground will dry up within four days. For all practical considerations in a Steel Beasts scenario, once that the ground is wet it won’t dry up in a noticeable manner.
- “Light” type precipitation will require 150 minutes to change the ground from “dry” to 10% water saturation. “Extreme” downpour will wet the ground to 100% water saturation within 100 minutes. The other settings will be somewhere in between. “In between” means that the parameters for ground hardness, traction, resistance, and dustiness will make a transition from the values specified in the terrain theme. Up until now the “wet conditions” never actually had an effect, so it may be that lega-



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cy scenarios contain values that make little sense but which went unnoticed up to now.

Mission designers are advised to check their old creations and adjust accordingly.

Sounds

Scenario Events may now play sound files when the condition is true. Currently only WAV files are supported. The sounds will be embedded in the scenario file. The 'event' logic window allows playing back a test sound sample for the Mission Designer to compare their custom sound sample's volume; the volume may require to be adjusted by an external program.

Obstacles, Engineers

Engineer squad units may now clear minefields on foot by using induction coil sweepers. Dashed blue lines will appear on the ground denoting lanes that have been swept; red marks will appear where mines have been found. (As a simplification, these mines are actually removed right away rather than requiring a dedicated attempt at blowing them up with small demolition charges.) Put the engineers on a "breach" route and they will sweep the ground.

A new obstacle type has been added – concertina wire. They can be created in the Mission Editor, or at runtime by (dismounted) infantry, if vehicles are nearby carrying concertina rolls from which to construct the obstacle. No construction animations will be shown, the obstacle will automagically appear in phases, as long as there's sufficient supply of concertina rolls; infantry will start with their own vehicle but will also plunder units in the vicinity that have more.

When placing concertina type obstacles (one, two, or three rolls strong) in the Mission Editor, note that you can right-click an object to copy and to paste it. Also, mobile bridges, minefields, abatis, iso containers and bunkers may now be duplicated by right-click based copy and paste.

We rearranged the context menus for obstacles and fortifications to be more consistent.

It is now possible to place (invisible) command-detonated Claymore fragmentation mines. Note the map screen's display of a rear danger zone, and



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the trigger cable length of only 25m (=command radius). Own infantry must be within that radius ... but not too close either! It's probably best to place them behind some cover when claymores are being detonated. Claymore explosions require explicit conditions like IEDs **and** a trigger man within (uncomfortably close) range.

Minor Changes, Bugfixes

An Option was added to let the mission designer disable the automagical tank clock in the player's 3D view HUD that lets him estimate the direction into which he's looking. Instead the user would be forced at runtime to stop for a moment and press a hotkey for determine the azimuth manually (defaults to 'K'). After a few seconds the current direction in mil is shown at the top of the screen which will fade out if the view is panned too much, or if the player starts moving again.

(Only) Non-vehicle type units may be marked as a 'High Value Target' (via right-click). Only HVTs will get engaged by (hostile) sniper teams under computer control.

The 'Operation spawn zone' region's text label is now read-only.

When creating or saving an operation, Steel Beasts will now automatically create the operation's 'save' folder (which also holds the operation's scenarios); you are no longer required to do that manually.

There was a bug in the 'text options' menu that would allow to set the text rotation if the text was unscaled and disallow if it was not – which is now inverted, as it should.

Reduced the default visible range (for newly created scenarios) from 6000m to 3000m

The 'set look of crew' dialog now allows applying this setting to all formations comprised of the vehicles of the same type as is currently edited. Note that this functionality is not available for infantry formations since these should be changed via the 'character mesh pool' feature instead!

Improved the 'Camouflage' dialog in the Mission Editor:



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- it will **no longer** allow the user to close the dialog or switch parties if he configured a party to use custom characters ... but failed to actually specify any characters
- it will now warn user trying to switch to a different party without first applying any changes he did
 - renamed the 'OK' button to 'Close'
 - the list of characters is now alphabetically sorted

The 'Set mission date and time' dialog, if displayed in the Mission Editor's 3D preview ('Alt-S' hotkey) will now indicate whether the light level at the configured start time will overload night vision goggles; this dialog is not available while in the map view.

- Fixed bug related to using or creating scenarios using non-georeferenced maps (coordinates displayed were inconsistent between the 'pick map' mode, and those possibly referred to in the scenario briefing)
- The Mission Editor's 'extract map' functionality should now extract maps ... again
- There is now a zoom function when selecting the mapped area for a scenario



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Map Editor

Added 'style' options to all (scaled) texts displayed on the map screen. The user can now specify that the text is displayed either in 'normal', 'bold' (the previously single available option), 'italic' or 'bold & italic' styles.

The resolution of these texts also has been noticeably increased.

Added three European style chapels/small churches to the object library.

Map Annotations

It is now possible to add text elements to a terrain map. These text elements will appear in the Mission Editor for all parties as regular text objects (so they can still be edited). In addition there is a dialog allowing you to set the default size, color and rotation of 'map annotations'. These values are used both when creating new annotations manually, and when importing them via Shape import.

Note that currently, Windows-1252 encodings are assumed (with the exception of the 'Russian' locale).

Allow to select multiple 'map annotations' when using the Map Editor.

Hit the 'Escape' key when editing a map's annotations or mapgraphics text to cancel the editing mode.

A small change was made to the 'text rotation' menus in the Map Editor – if a text is set to 'rotate with the graphic' its rotation offset will be reset to 0°.

Powerlines

A single power pylon may now connect to multiple wires. This is done by placing multiple (well, up to two at the moment!) pylons at identical map coordinates; upon generating the map, Steel Beasts will take note of this and connect all wires (up to four – two 'in', two 'out') to a single pylon. Note that simply having two powerlines cross is not enough – two powerline vertices (ie the ones that explicitly place a pylon!) have to be used.

Note that all wires need to be of the same type (no mixing of a high-tension and a low-tension line on the same pylon) and that the pylon's orientation is not adjusted to account for the additional wires that connect to it.



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Area Covers

There is now an option to cover larger areas with Asphalt, Concrete, or Gravel textures; in addition, an area may be created without texture, to show up in the map screen (e.g. to denote the boundaries of built-up terrain. These areas may be created manually, or imported from Shape files.

'Area cover' objects can be configured in their color in the map display. Four sliders are available to control the red/green/blue color components, plus transparency. The chosen color may be applied to either the currently selected polygon, or all polygons of the currently selected type (ie gravel, concrete, asphalt or 'area').

Terrain Themes

With version 4.0 the “wet” ground conditions option is now enabled. While it’s raining, dry ground will make the transition from “dry” mobility parameters to “wet” conditions. Ground will absorb water quickly, but dry up very slowly. In other words, the mission designer can set weather conditions to make the transition from dry to wet within minutes, but not from (fully) wet to dry in an equally short duration.

High Resolution Heightmaps

For the initial release of version 4.0 no high resolution maps are available. An update is scheduled for Q1/2017 to add this functionality. Some changes made in preparation of this update already have an effect however:

- At the borders of mapped area, the terrain is now mirrored, eliminating the need for the (sometimes quite noticeable) elevation transition zones

Minor Changes, Bugfixes

- The Map Editor should now 'save to BMP' ... again
- Fixed a bug in the Map Editor where the 'selected road' would not be drawn if the user entered the 3D preview (F1)
- It is now possible to split roads. Mark a road, then hold Alt and click a point to cut the road in half. On a selected road, Shift+click creates addi-



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tional vertices, Ctrl+Click removes a node. Shift+Ctrl+click lets you select multiple roads.

Known Issues

Connecting an X-Box controller under Windows 10 may result in a loss of the mouse control in Steel Beasts.

The LEOPARD 1A5-GE (cast turret) has the 3D interior of the LEOPARD 1A5-DK (welded turret). The LEOPARD 2A6-GE has the 3D interior of the LEOPARD 2A5-DK.

The BMP-2's missile sight cannot be damaged.

The DRAGON missile gunner shows minor clipping with the missile launcher.

The Marder's shot counter only displays a static number.

For the ERCWS-M some simplifications with respect to focus handling are in place, based on the assumption that 'autofocus on/off' is a global, shared setting between CDR/GNR panels and day/TI view channels, and that while the autofocus is active, all manual focus change is disabled.

The Javelin's arming distance is 125m, even if set to direct attack mode.



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Gloating about Achievements that You May Not Notice

The Hannover–Weserbergland and Paderborn maps have been updated by our friend **Michael “Manteuffel” Sielemann**. Unfortunately he did not live to see the results of his effort in the new terrain engine, but died in early 2016. We will remember him.

Performance improvements could be achieved for "very high number of map objects" type scenarios. Still, more work is necessary in this field to handle the ever–growing complexity of our terrain databases.

The recording of AAR 'snapshots' (while the simulation is running) was improved substantially. Also, AARs now record (tactically relevant) particle locations and vehicle crew positions.

Artwork/Render Engine

Increased the distance at which 3d volumetric clouds are rendered.

Day, and Night

Terrain will now be lit between prior to sunrise (and after sunset). This effect includes changes in the sun's color and ambient color of the scene to loosely replicate the 'golden' and 'blue' hours.

Moon lighting has been added to night scenery, factoring in the moon's phase to determine brightness. The Milky Way was added to the night sky, as well as a catalog of bright stars (down to 11 mag). For the eye view only the about 1,000 brightest stars and planets will be well visible (or less, depending on visibility settings), binoculars will reveal objects down to 6 or 7mag, and image intensifiers will fill the sky with bright dots, making navigation by stars next to impossible. We recommend a setting with low angular sizes (e.g. 0.2mil; stars are, for all practical matters, POINT light sources), a reasonably large pixel diameter (e.g. 4...5), and then an adjustment of the gamma value until things look about right. Results will vary from one monitor and graphics driver settings to another, so you'll have to find your personal optimum.

Note that the sunrise/sunset times do NOT take into account daylight saving time shifts. Also, if a map is not properly georeferenced things may be



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equally off. Otherwise the astronomy rendering should be reasonably accurate for practical purposes within a combat simulation.

Particle System

Version 4.0 comes with an actual, shader based PS.

- The muzzle blast will now kick up dust proportional to the ground's current dustiness value (which may change while it's raining...)
- Accommodation type containers no longer emit flames and smoke to keep the framerate up

Sounds

Changed the "master volume" sliders in order to reflect human "perceived volume" correctly, e.g. a setting of 50% will now be perceived as "half as loud" as a 100% setting.

Vehicle-specific coaxial gun sounds, and vehicle-specific manual turret traverse/elevation sounds have been added. Also, some attenuation is now applied to the various 'gunfan' sound samples if the currently occupied crew position is unbuttoned.



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Bug fixes without database entry

- If the application window is narrower than its height, scene rendering will now still appear normal
- When commanded to scan a certain direction, the gunner would not recognize targets unless they were very close to the center of the direction ordered to scan
- For heavy weapons teams, when firing the weapon from an elevated floor inside of a building the weapon will now appear firing from that level, rather than ground floor
- Text fields shown on the map screen will no longer occasionally display the 'editing cursor' even if the field isn't actually enabled for editing
- Fixed a potential bug in the Leopard2A4 network code.
- Fixed an issue with cloud noise and distrails
- In the **Mission Editor** you are no longer prompted to enter a scenario to select other parties after clicking "cancel" in the password prompt before
- In **Network Sessions**, fixed a case of red briefing/summary texts appearing in the scenario selection menu screens. In addition new strings were added to denote the preferred summary/briefing (if Red, rather than Blue)
- Strength based **scoring** will be calculated correctly again when loading scenarios created prior to version 3.2
- The **AAR** will no longer show "ghost dust trails"
- Fixed a bug that prevented the use of custom maps (e.g. generated by TerraTools) in network sessions
- Fixed a bug that prevented the proper application of textures to custom objects outside of the Map Editor
- Updated the installer script to check for required Windows Update **KB2999226**
- Added a new text document listing the required runtimes (Visual Studio C runtimes, DirectX) along with their download URLs
- Fixed a bug resulting in the error message "**A D3D object has a non-zero reference count**" when changing between fullscreen and window mode
- TrackIR:
 - New head tracking mode 'TrackIR (alt)': Here the CDR's unbuttoned view direction will be relative to the turret, not relative to the hull
 - Fixed problem with using TrackIR as CDR of the LMV, HMMWV and others; the view azimuth would automatically move along the turret's yaw
- Corrected a filename issue that was preventing the KP infantry from loading their correct file (they appeared as the default USSR infantry).



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- Recreated the default options file (used if no previous options file exists, i.e. after a 'fresh' installation, or if the user starts SB in 'safe mode')
- Updated several African buildings to allow easier access for infantry. Note that some buildings intentionally do not allow entry (because they have no tactical relevance).
- Added an option for **soft shadows**. With soft shadows off, framerates can be substantially higher, especially if fps are already on the high end of the spectrum, or there are many shadow actors in view.
- Increased **shadow levels** to 10, allowing the shadow radius to be effectively doubled at level 10 vs the old level 5. Also, shadow level 1 (no terrain shadows) is now fixed to hard shadows. Finally, adjusted the shadow depth depending on the ground
- Fixed some thermal sight rendering anomalies
- Fixed a anomalies where random triangle clusters would appear above certain objects at medium and long viewing range
- Vehicle gunners may no longer use binoculars *and* NVGs simultaneously
- Reduced the HE dust-shockwave effect for smaller HE rounds in dusty conditions
- Adjusted thermal glass textures on buildings
- **Overhead View:**
 - Raised the OV's minimum view angle to -19.5°
 - Mouse control of heading/elevation is now independent of screen resolution
- **AAR:**
 - Fixed a bug that got the AAR playback get stuck on Weather events
- **Mission Editor:**
 - Added option to set the initial ground saturation in the **Weather** dialog. This means that the initial precipitation level no longer controls how wet the ground is, but this slider. Remember: For all practical matters ground can only get wetter. Drying up takes a MUCH longer time.
 - Fixed a crash bug that occurred when deleting a unit from a scenario that was previously saved as an "in-progress mission"
- **Ballistics:**
 - No more tracers for tube artillery and mortar rounds
 - 'OFUM PH 105' is now of WP type
 - Adjusted the minimum range of the "M381 HE" and "M386 HE-frag" rounds
 - Some adjustments to Stinger and Strela missiles
 - Increased Javelin's arming distance to 125m
 - Applied the minimum (arming) distance to HE rounds also in cases where they hit the ground rather than an object



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- **2S6 Tunguska:** Added data to have the SAMs launch at their correct location rather than at ground level
- **ASCOD Ulan:**
 - Added hotkeys
 - “Toggle GAS reticule” (R) will also cycle through all available reticule types in the thermal imager (white/black/off)
 - “Toggle TIS on/off” (Num+) now cycles through various thermal camera modes
 - “Fire control: Stab bereit” (L) will toggle the turret/gun servo motors
- **BMP-2:**
 - Troops mounting the vehicle will not open their troop hatches (since that would lead to the turret's speed being greatly reduced)
 - Adjusted vulnerability model allowing damaging the illuminated reticle in the primary sight
 - Inverted the position of the 'NB-BS' switch (controlling the ATGM subsystem's power supply)
 - Commander now must button up to
 - override the GNR
 - toggle ATGM power
 - open/close the ballistic sight doors of his daysight
 - change main gun ROF
 - toggle the turret speed
- **BMP-3:** Improved the default ammo loadout quantities to be more realistic.
- **Sho't Kal**
 - Increased the maingun ammo count to 72 rounds.
 - Allowed M456A1 ammo to be assigned to the vehicle
- **CV9035-DK, NL:**
 - Corrected an issue that caused one of the soldiers in the rear compartment to have his head sticking through the roof (the soldier nearest to the turret).
 - **Air targeting mode**
 - Fixed the laser pulse mode
 - Fixed the lead prediction
 - The reticule will no longer fall behind the (air) target on re-lasing
- **HMMWV Avenger:** Corrected placement of missile backblast
- **Infantry:**
 - Slightly adjusted the markings generated by **engineer teams**
- Properly animated the **Jaguar 1A3** commander's hatch
- **Leclerc:**
 - Corrected the default ammo loadout
 - Corrected a vulnerability error in the hull front area

- Corrected the smoke and HE grenade counts. Note that the HE grenades currently fire over the front and not the rear, though, and only one at a time.
- **Leopard 1A5**
 - Properly animated the commander's hatch
 - Corrected the missing texture issue on the Mine Roller and **Leopard 1A5-DK** roof (no longer appearing white).
- Added the DM11 HE round to various **Leopard 2s** that were missing it.
- Properly animated the **Leopard 2A4** commander's hatch
- **Leopard 2A5**
 - Properly animated the commander's hatch
 - Updated the **Leopard 2A5 DK** and **DK-A1** models to include the C8-DK rifle behind the CDR.
- **M2A2 ODS Bradley**: In the 3D interior, fixed an animation error with the handle for the thermal sight's ballistic shield doors
- **M60A3**:
 - The loader will no longer put the stabilization system in standby while moving at *slow* speed (<20kph)
 - Inverted the DRV's steering handle bar movement
 - Inverted the CDR's control handle stick movement
 - Added a new US M60A3 unit template for "early 1980s" to represent the period specific 5 tanks per platoon organization of the period
 - Renamed and replaced the old "1980s" M60A3 unit template (with 4 tanks per platoon) to "late 1980s"
 - Adjusted default ammo type and quantities to be more doctrinally correct based on the period
- Corrected the name of the **M113G3DK** to be consistent with the G4DK.
- Adjusted the gunner eye view on the **M113/Eng** to help address an issue where the gunner's eye view was partially obstructed while using the RWS panel.
- **M113DK**: Adjusted soldier positions to prevent obstruction to the RWS panel when viewed from the gunner's position (the obstruction to the view was part of a soldier's helmet).
- **MAN 10t**: Corrected MG3 ammo loadout, and allowed RWS to have smoke grenades.
- **MAN SX45**: Corrected an old model issue related issue that caused the wheels on the right side of the vehicle to be backwards (outer sides were facing towards the inside of the truck's body).
- **MRH-90**: Moved troop exit location to the rear ramp



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- **RG-31:** Removed an obsolete texture; updated two other textures
- **RWS Lemur:**
 - **2013 variant:** Removed depth of focus effect from 50x sniper scope view
 - **Numpad (decimal)** should now work reliably as the autofocus hotkey
- **SpPz Luchs A2:** Updated the Luchs interior model
- **T-62:** Fixed a wobble on the left side's first and last roadwheel
- **T-72s:**
 - Added a number of sound cues to the interiors.
 - Corrected the lever used to toggle the TKN-3 IR functionality (on top of the ocular)
- **T-72B, BV, B1, B1V:**
 - Corrected the maximum ballistic range
 - Corrected maximum LRF range
- Added a missing KP nationality texture for the **T-72M4**
- **UGV:** Corrected suspension parameters
- **Ural 4320:** Corrected the weight and power-to-weight ratio data for the "supply" and "fueler" variant.
- **VEC:** Added two OPFOR textures.
- **Sinai Operation**
 - Updated two scenarios to include the Sho't Kal and other, more appropriate vehicle types.
 - Updated seven scenarios, re-balancing changes caused by the Sho't Kal introduction

Resolved Bugzilla entries

- Fixed bug #1620; The commanders' sights will now visibly move to the viewing direction if the commander is buttoned up for the following vehicles: Centauro, Challenger 2, Fennek, Leclerc, Leopard 1s, Leopard 2s, M1A2, Merkava, and TAM VC
- Fixed bug #2212; we added sounds to deal with the "silent skidding" problem in version 4.006. Now we removed those sounds while the vehicles are swimming
- Fixed bug #3869, again
- Fixed bug #3917;
- Fixed bug 4033: A number of issues were corrected with the Sho't Kal's implementation of the commander's position
- Fixed bug #4213; heavy weapons teams may now properly set up their weapons, if suitable to be fired from there; if not, the weapon will not get assembled but the team will take position nevertheless
- Fixed bug #4718; engineer infantry controlled by clients will now properly clear minefields
- Fixed bug #4729; swapped hotkeys for entering the day and night TC MG views on the M60A3
- Fixed bug #4270; Manual Azimuth bar (top of screen) is now reliably visible
- Fixed bug #4660; For non-explosive obstacle types like steel beams red markings will no longer be created
- Fixed bug #4676; the BMP-2's IR sight will now lose its reticle when the ballistic computer is damaged
- Fixed bug #4738; adjusted the image quality of the IR sights of T-72B, BV, B1, B1V
Added the 'interlace' effect back in to both the T-72B and BMP-2
- Fixed bug #4740; no more floating fire after the collapse of some of the building models
- Fixed bug #4747; helicopters no longer sink through the ground in Network Sessions
- Fixed bug #4749; computer-controlled GNRs are now less fixated on infantry even after losing LOS
- Fixed bug #4751; assigned "click" sounds to some hotkeys in the BMP-2
- Fixed bug #4754; the BMP-2: CDR's sight (F2) now has an illuminated reticle (R)
- Fixed bug #4759; when HESCO guard towers collapse their crew no longer remain alive, floating in the air
- Fixed bug #4766; in the BMP-2 DRV position, left clicking a vision block no longer created the blitted driver view
- Fixed bug #4769; shooting HE on the ground between the tracks no longer kills vehicles (still creates other damage)
- Fixed bug #4770; human gunner may now change focus in thermal sight
The CDR will only override the thermal focus when overriding the GNR
- Fixed bug #4772; exhaust particles will no longer change to weird colors during dusk/dawn times
- Fixed bug #4773; legacy scenario files' conditions will now get converted correctly to the current format
- Fixed bug #4776; the "00 Leo 2A5 intro" tutorial briefing will now show the chosen language (if a translation exists) rather than Swedish text. Börk! Börk!
- Fixed bug #4777; scenario file password protection can no longer be easily bypassed
- Fixed bug #4782; in the BMP-2 the user can no longer turn off ATGM power while missile is in flight, and then guide it with power traverse of turret. Instead, the missile will simply abort in case of ATGM power loss (directly or indirectly)
- Fixed bug #4784; the M60A3 CDR may now reload the HMG without the need to unbutton – as long as the player remains in the 'eye' view.
- Fixed bug #4789; helicopters have their Klingon cloaking devices disabled in Mission Editor's 3D preview
- Fixed bug #4792; infantry will no longer walk on the bottom of lakes, but rather with their heads out of the water
- Fixed bug #4795; amphibious vehicles like to go swimming again
- Fixed bug #4796; the BMP-2 CDR's sight(1P3-3) magnification selection lever position is no longer misplaced
- Fixed bug #4797; something was wrong with the BMP-2 control handles STAND BY switch settings
- Fixed bug #4800; boresighted the M60A3's auxiliary sight
- Fixed bug #4802; infantry with protection vests are now actually better protected
- Fixed bug #4807; some 3D characters could appear unnaturally stretched
- Fixed bug #4811;
- Fixed bug #4814; on the CV90/35 the computer-controlled gunner will now rotate the turret to reloading position while the user remains in the commander position (unless the commander overrides, of course).
The 'traverse left' and 'traverse right' sound samples will be played in case a human is supposed to move the turret
- Fixed bug #4818; RBS70 missile variants will maintain the Air Defense map icon



- Fixed bug #4819; changing the troop type or appearance no longer resets the troop quality
- Fixed bug #4822; in the Overhead View while having selected a bridge layers issuing a 'fire' command (Space) will no longer cause it to start the bridge deployment/retrieval process (for that the vehicle owner must be in the vehicle or its external observer position)
- Fixed bug #4824; ATGM teams will now detect and engage targets using thermal and night vision sights
- Fixed bug #4825; in network sessions fire missions may now be cancelled by clients of parties other than the host's
- Fixed bug #4826; MICLICs will be more explode-y for clients in a network session
- Fixed bug #4827; the Wisent AEV's full-width mineplow will now also deploy for non-owner clients in network sessions
- Fixed bug #4831; during the Planning Phase all vehicle crew will now remain buttoned up
- Fixed bug #4835; map graphics will now retain their „flipped“ status when copied to other parties
- Fixed bug #4839; fixed the TNK-3 in the T-72s and the T-62. Corrected the status bar notification strings on these tanks as well as the BTR-70/80 and BRDM-2, so to no longer refer to a 'thermal sight'
- Fixed bug #4841; when Show Unit Icon | Actual position or Vehicle Icons are selected, they will now be shown again unless the scenario is being tested from the Mission Editor and the correct passwords for other parties have not been entered.
This also applies to the 'lines of fire' setting. Note that this will not affect the AAR Phase.
- Fixed bug #4842; eliminated a discrepancy with CDR view indicator on the tank clock when in manual azimuth mode
The CDR's view direction marker will simply show the view direction relative to the hull (with the option disabled it will show the absolute view direction)
- Fixed bug #4843; MICLICs launch animations will now be played on all connected machines in a network session
- Fixed bug #4845; in the T-72 (all models) the LRF On/Off toggle switch works now as intended
- Fixed bug #4846; 2S6 Tunguska will launch its missiles from the correct position now, making engagements of targets close to the horizon less futile
- Fixed bug #4859; HE rifle grenades now really conform to the minimum (arming) distance
- Fixed bug #4860; in the Mission Editor, New Unit... Civilian... "Casual 3" now comes right after "Casual 2"
- Fixed bug #4861; „Necromancer“ medics no longer practice their unholy rituals on enemy soldiers
- Fixed bug #4862; infantry type vehicle crews will now use the intended texture sets
- Fixed bug #4864; the BMP-1 has been reminded to cast its shadow onto the ground, hog day or not
- Fixed bug #4871; the Leo 2A5 and 2A6 commanders' vision blocks are no longer at identical heights but conform to the shifts, depending on the presence of roof add-on armor
- Fixed bug #4873; a map graphics mismatch of assault bridge and concertina wire obstacle
- Fixed bug #4875; Map Editor: Artwork errors with objects 61, 62, 63
- Fixed bug #4877; after catastrophic explosions detached turrets will no longer show optional stowage items
- Fixed bug #4878; water shows up black in thermal views again
- Fixed bug #4879; enabled 120mm DM11 HE round fuze settings for selected Leopard 2 tanks
- Fixed bug #4882; the M60A3 loader will now disable stabilization while reloading the coax. If the gunner enables stabilization while reloading, the reload will stop
- Fixed bug #4883; TOW TIS sight range brackets are now visible in narrow field of view
- Fixed bug #4885; sorted out the depth sorting with trees and bushes in RWS daysight views
- Fixed bug #4886; clicking Cancel in the Mission Editor when prompted for a password no longer renders Steel Beasts unresponsive
- Fixed bug #4888; corrected some render errors with Soft Shadows enabled
- Fixed bug #4890; for debugLog.txt files new entries will now be visible immediately
- Fixed bug #4891; "Save in Progress" missions will now load without crashing Steel Beasts
- Fixed bug #4892; the attempt to Test a scenario without crewable Blue units from the Mission Editor will now produce an error message rather than rendering the entire application unresponsive
- Fixed bug #4894; the Dachs AEV with auger drill will no longer show the excavator
- Fixed bug #4897; eliminated an error that would render some fences and powerline pylon invisible on shadow level 5+
- Fixed bug #4898; non-spawned actors will no longer kick up dust particles
- Fixed bug #4900; enabled depth of focus for the M966's thermal imager
- Fixed bug #4905; ERCWS screens and panels will no longer visibly float in the 3D preview during the Planning Phase



- Fixed bug #4911; heavy weapons teams will no longer behave like migrating birds (at times they wandered off to the east with no apparent reason)
- Fixed bug #4912; on the M60A3 the GAS view no longer twists with vertical gun movement
- Fixed bug #4913; certain, specific missions no longer crash SB Pro
- Fixed bug #4914; TIS damage set to M60A3 units will now actually damage the thermal imagers; also removed "FLIR FAIL" from thermal image.
- Fixed bug #4916; attaching plows no longer makes tanks lose weight, allowing them to be pushed around.
- Fixed bug #4918; infantry remains fixed to the ground in network sessions on client machines
- Fixed bug #4923; after renaming the language folders to rid them of non-ASCII characters SB Pro will now start under Windows 10 (Simplified Chinese, and, presumably, other Asian language versions)
- Fixed bug #4928; Parties using USSR camo will now show Russian style binocular views
- Fixed bug #4935; disabled muzzle reference sensor updates for the Personal Edition
- Fixed bug #4938; when RBS70 teams get destroyed the lead soldier will no longer float in the air
- Fixed bug #4954; weapons other than the coax on the Marder IFV will no longer inherit its rate of fire
- Fixed critical bug #4970 where computer-controlled gunners remained passive if new targets appeared in their sights, rather than warning the (human) commander and asking for permission to fire (like they used to, prior to version 4.006); back to normalcy
- Fixed bug #4971; for night missions the time clock will now properly roll over at midnight; this bug goes back to SB1 days...
- Fixed bug #4976; minefields will no longer spare CLIENT vehicles from damages
- Fixed bug #4981; mine breach graphics will no longer be automatically transmitted to all parties in a scenario, but only the breaching party.
The same applies to deployed mobile bridges
- Fixed bug #4982; toned down the extreme glare effect of RWS panels inside of vehicles
- Fixed bug #4988; in the Leo 2A5/A6 the TIM will no longer remain in ZÜ after a human player (re-)enters the position, but will be auto-set to independent movement
- Fixed bug #4998; eliminated discrepancies in behavior related to ATGM teams taking up positions inside of buildings
- Fixed bug #5001; re-enabled joystick support in terrain preview
- Fixed bug #5003
- Fixed bug #5009; for yet-to-be-spawned units the Lemur RWS panels will no longer float in the air
- Fixed bug #5027; claymore mines will now direct their blast into the intended direction
- Fixed bug #5032; after catastrophic explosions, detached turrets of the Sho't Kal are no longer invisible

4.000 (official release)