



P.O. Box 654 ◦ Aptos, CA 95001 ◦ USA
Fax: +1-(650)-257-4703

STEEL BEASTS
Professional

PE 4.377 Release Notes

SB Pro PE 4.377 (Web Installer) Version History and Release Notes

Changes in this document since version 4.363 are highlighted like this. It contains, however, all changes since version 4.268.

eSim Games offers a full installer for this version of SB Pro PE. We recommend uninstalling Steel Beasts Pro PE versions. Map Packages can remain untouched.

Installation instructions can be found from page 3 of this document.

We recommend reading this document with a dedicated PDF viewer capable of showing the embedded table of content.

Note: This *Steel Beasts* version requires an existing license for *SB Pro PE 4.3!*

Upgrade Licenses may be purchased from the eSim Games web store (for details, see below): https://www.esimgames.com/?page_id=3165

Customers with time-limited licenses may continue to use their existing licenses.

This is a preliminary document to complement the version 4.3 User's Manual.

This document summarizes changes since version 4.268 (December 2021); Previous Release Notes can be found on the eSim Games Downloads page: www.eSimGames.com/Downloads.htm



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Hardware recommendations

...are largely unchanged from versions 4.0, 4.1, 4.2:

SB Pro PE 4.3 requires a 64 bit Windows version, starting with Windows 10 or higher.

Downloading, unpacking the self-extracting archive and immediate installation requires up to approximately **38GByte harddisk space temporarily**. Of these, *Steel Beasts* will claim about **17 GByte free harddisk space permanently**; the rest may be freed up through deletion and/or copying the installation files to a USB stick. However, in order to edit maps, **100 GByte free disk space** will be required **per unpublished map** for the uncompressed map data, which will be largely freed up on publishing. Usually, it is therefore better to work on only one map at a time, and to prefer Delta maps over Base map packages as they usually consume less disk space.

We recommend a 3.0GHz multi-core CPU (faster is better, and the latest generations are considerably faster than old CPUs of nominally the same clock speed), **8GByte RAM** (16...64 recommended for high resolution map conversions), **2GByte video RAM** (more is better; much more is much better), and generally a **DirectX 9.0c** graphics card supporting **Shader Model 3.0** (which includes pretty much everything that is currently commercially available).

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: <https://www.microsoft.com/en-us/download/details.aspx?id=34429>

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, or to create an exemption for the Steel Beasts installer program. 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

For all customers with or without an already existing installation of SB Pro PE: If applicable, **uninstall** prior installations of SB Pro PE (keep the map packages). Then run the **Bundle Installer** 4.357 (SBProPEBundleInstaller_4357.exe).

For customers accustomed to Steel Beasts 4.0 (or older):

With version 4.2, eSim Games introduced a web installer that will download the necessary files as you install. There's also an option to keep downloaded installer files if you are on slow or metered connections. This web installer is generally easier, and you simply run the same installer in the future; it will then automatically check for the latest version.

(Only) for those who like to retain more control at the expense of convenience:

Since version 4.1 there are now **multiple installers**. We recommend applying the **Map Package Installer** first. The *Steel Beasts Pro PE* installer will recognize your prior choice for the map package folder's location. This is important insofar as the map packages consume more than 70% of the storage space that Steel Beasts needs, and will keep growing as you may download additional map packages in the future.

1. Download **all** parts of the self-extracting archive installers into a common directory, e.g. C:\Temp or a "*Steel Beasts*" folder on your desktop – the **Maps Installer**, the **SB Map Transfer Tools**, and the **SB Pro PE 4.357 full installer**. The **Legacy Maps Installer** is only required under very specific circumstances (please visit the user forum at SteelBeasts.com) and can be installed at any later point if necessary.
2. Uninstall previous versions of *Steel Beasts*. Note that you can keep previously installed Map packages!
3. When done, run the **SBMapPackageInstaller.exe** program **first** to transfer the map data to your harddisk (unless you kept it from an earlier version; in that case skip this step). You are free to pick the target



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directory; the full installation may take **up to 16 GByte of disk space**, and future in-game downloads may further increase that demand for storage space in that specific location.

The Map Package Installer will store its location in the Windows registry, so subsequent installations of *Steel Beasts* will know where to find the map data automatically.

After the first installer program is finished, it's time to install *Steel Beasts Pro PE* itself. Start `SBProPE4_357.part1.exe` for the installation (this assumes that you uninstalled the previous version of *SB Pro PE* per step 2 above). Installing *Steel Beasts* will consume about **six GByte harddisk space**.

4. If you haven't purchased your **license for SB PE 4.3** already, now would be the time to visit the eSim Games web shop:

https://www.esimgames.com/?page_id=3165

(if you did, skip forward to point 6)

You have different options there, as summarized in this YouTube video:

<https://www.youtube.com/watch?v=HPi-MA94yFO>

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.
6. Install the Map Transfer Tools (V55)
7. Play
8. Highly optionally (and typically unnecessary), download and install the *Steel Beasts Legacy Maps*
9. Play more

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 that folder again. Note that the map data are now being installed from a separate installer, and that they can be stored in pretty much any local folder that you like.

This installer includes the CodeMeter runtime version 7.60.



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3rd Party Libraries

The following software libraries are used with this Steel Beasts installation:

- adl 15.0
- apr 1.7.0
- apr-util 1.6.1
- **curl v7.85.0**
- Eigen 3.3.9
- expat 2.3.0
- GeographicLib 1.51
- gtest 1.10.0
- jpeg-turbo 2.1.0
- libjasper 2.0.32
- log4cxx 0.12.1
- lz4 1.9.3
- **OpenSSL v1.1.1.q**
- PolyPartition 2021.01
- RakNet 2021.05
- shapelib-1.5.0
- sqlite 3.35.5
- TinyXML2 8.0.0
- Uriparser 0.9.5
- xxHash 0.8.0
- zlib 1.2.12

Time-limited licenses

eSim Games offers a software rental option. This option is primarily aimed at users who do not already own a CodeMeter USB stick (or to residents of countries to where a CM stick cannot be shipped). Time-limited licenses are issued for one, four, and twelve months respectively:

- Licenses are bound to the computer on which they are installed.
- They do not work with virtual machines (!)
- 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 probably should 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

Don't like to read?

Less information, but still some, can be found in the tutorials on <https://www.YouTube.com/c/eSimGamesDtl>

Even without access to the internet there is a **serious amount of documentation included with *Steel Beasts* itself**. 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 NATO Stanag 2019 App. 6c about tactical signs and military map symbology as used in *Steel Beasts*.

A *User's Manual* may be available for a limited time in printed form from the eSim Games web shop, and is supplied as a PDF with the software installation.

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.

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- Updated the *User's Manual* (English, German)
- Added a prior version of these **Release Notes**
- Added AZERTY keyboard chart

CodeMeter

- Updated CodeMeter encryption so that virtual CM containers are less likely to lock themselves under Windows 11. Customers, to which this happened since last year, are kindly asked to contact eSim Games for reinstating their licenses
- Updated the CodeMeter runtime software to version 7.60 (which, like prior version 7.51, no longer supports WINDOWS 7)
- **SHADOWPC**: As this application creates a virtual machine, the CodeMeter runtime blocks access to time-based licenses. Permanent licenses on Code-Meter stick are not affected by this.
- **AVAST Anti-Virus** has repeatedly been reported to block CodeMeter runtime components. If you're using this product, please set the appropriate permission.

New Maps

- Copy the following map UIDs from this document into the SB Map Package Transfer Tool (**V55(!)**) to download the following new map packages. Note that these map packages have been optimized for a reduced loading speed, so
 - These are the same maps as before, but have of course new map IDs
 - You should definitely delete the old versions from your Map Packages directory first, just so there will be no misunderstanding when you try to load a scenario with the old, slow map. In this case, open such a scenario in the Mission Editor, and choose to replace the old map with the new ones
 - Mission Designers are urgently advised to update their scenarios and purge traces of old version where you can find them
 - Kiev East aab94a0c-2a87-45c7-a518-940a3e2c92b3
 - Kiev West bb104aa2-be76-4587-87ed-2c4cd3bca5a9
 - Kramatorsk 5045eb19-688a-4266-90e6-5ad4e58b3e76
 - Mykolaiev-Cherson ad7d4d96-016b-4bed-8a86-4d7def2500c4
 - "Oksbøl Training Area" 7e0e7e2e-27c9-4aad-9a85-8974d8496cd5
 - Severodonetsk 952710e5-3a55-4ae7-9fbc-634f2e841bd1

New Scenarios

- Added a number of Single Player scenarios
 - Added a number of T-72B3 tutorials
 - Operation Oryx
 - Added “a” new scenario (unfortunately, the internal documentation doesn’t list a title, but assures that the scenario designer credits were updated)
 - Added "Tank Commander – Revingehed" (placed in folder ...\\Single\\Version 4.3\\)

User Interface Changes

Steel Beasts is now better at remembering the last used location when saving, or importing files.

In the map screen, building objects are now rendered in dark gray color to help with map graphics remaining recognizable (e.g. TRPs).

- Adjusted party colors for Light Blue, Brown, Gold, Orange, Dark Blue, Dark Red and Gray to look better and have much more noticeable difference between player occupied and player owned units.
- In the **Open Scenario** dialog, you may now search for scenario names; using the **Esc** key while this dialog is open will no longer cause Steel Beasts to close
- Where applicable, the **Alt** and **Shift** hotkey modifiers may now be used simultaneously.
- **Alt+Shift+W** opens a dialog window to set the window size to one of a number of standard settings, including vertical Full HD.
- Added new categories to the **Controls** dialog, for **AAR** hotkeys, **Infantry**, **Missile control**, and **Remote Weapon Stations**, and improved the joystick wheel axis config

Execution Phase

With **low realism** settings chosen, there’s now an indicator showing how much more time a **hitch/unhitch** command will require to be carried out.

With **medium** or **low realism** settings chosen, there’s now an indicator showing how much more time the placement of a **panel** will require to be carried out.

In the map screen, depending on whether a selected group of units is an “implicit” **call sign-based group** or a **Task force**, you will now see menu entries such as **New group route / New task force route**, **Proceed (group) / Proceed (task force)**, **Select group routes / Select task force routes**, and **Select group / Select task force**. Functionally there is no difference between these pairings, they just

indicate that one is based on callsign selection while the other is a user-defined assembly of forces.

Network Sessions

Participants in network sessions are now able to reassign ownership of attached infantry units, regardless whether they are currently being carried or not, to other participants, via the new **Give dismounts to unit** property menu on the **Map Screen** (this feature is at this point not available via the 3D view's status bar icon).

This feature is available both in the **Planning** and the **Execution Phase**.

Even participants owning infantry riding in vehicles they do **not** own can order them to mount and dismount, both from the map screen (by right-clicking on the carrying unit/vehicle) and the 3D view screen (by right-clicking the corresponding unit/vehicle symbol in the status bar, or via hotkey). It is also possible for them to command the dismounts to open/close the troop hatches (via hotkey).

Localization

The **Language menu (Options)** will now display the available languages using two columns, if the list exceeds five entries.

Steel Beasts will, after a change of language, now reload the assigned hotkeys in the **Controls** dialog window accordingly. This will work reliably only if the change is done through the regular procedure in **Main Menu... Options... Language** and Steel Beasts has focus.

As a general reminder for all users with non-Latin alphabets: *Steel Beasts* uses **Windows-1252 character code sets**. This requires the enable option “**Language for Unicode-incompatible Programs**”; For this, open the **Windows Settings – Time and Region – Change Date/Number format**, then change to the “**Administration Tab**” and then click on the “**Change system locale**” (the second) button.

A number of previously hardcoded strings are now accessible for translation.

- Added new **English (US)** strings
- Updated the **English (US)** User's Manual
- Updated **Danish strings**
- Updated **Dutch** strings
- Updated **French** strings
- Updated the **Austrian German** localization
- Updated **German** strings
- Updated the **German** Benutzerhandbuch
- Updated **Greek** translation
- Updated **Polish** strings (still requires Windows-1250 code set, not -1252)
- Updated **Russian strings**
- Updated **Spanish** strings

The Map Package Transfer Manager

MapTransferMgr_V55_Setup.exe is part of the bundle installer, as a selectable option. Highly recommended, consumes very little disk space. Also, **essential** to get the new maps from Ukraine and Denmark (see previous section “Maps” above).

The visualization of the download progress in the **Package Download Wizard** window was improved.

- The 'Query Map Package UID' window will now ignore spaces in the entered UID string when determining the UIDs validity
- The Map Package Transfer Service is now able to continue its startup process in case its configured 'Map Package Directory' can not be looked up. It will hence respond to queries from Steel Beasts (or the Map Package Transfer Manager) but will be unable to download any map packages, but this should give the users a better clue what is going on (later changes might actually show a customized error message in the UI).
- Updated the URL to eSim Games' map package download server
- The Map Package Transfer Service will now check whether its configured Map Package Folder actually exists, and log out an error if that is not the case.

Simulation Rules

- Added trenches for infantry, in several stages of construction (=depth/protection), and two flavors (camouflaged, or not)
 - Trenches have a “max occupancy” rate with respect to the number of firing positions
 - There is some “overflow capacity” where excess soldiers will take cover at the bottom of the trench if all nearby firing positions are occupied; you may not, however, stack an infinite number of soldiers in such a short trench segment
 - Soldiers in a trench will recover from suppression faster
 - Losses in trench fighting positions will be refilled faster while there’s more soldiers “parked” in the “overflow” capacity of the trench
 - Note the remark in the “Known Issues” section. Yes, the soldiers float, it’s not as straightforward to fix as one might imagine.
- Added mortar pits, the equivalent of deepest trenches, for mortar teams
- Slightly lowered the traction of AT ditches

- Added cumulative recoil effects for burst-fire capable infantry weapons (HMG, LMG, AGL), be it mounted or dismounted;
short bursts: Accurate
long bursts: Not so much (now even less so; for MG 1st person sight, increased standard deviation of recoil forces (while maintaining median) to penalize long bursts more). Weapons tend to recoil with an upward momentum, and have their recoil reduced if mounted (or conversely, if you're accustomed to their mounted behavior, be prepared to fire much shorter bursts now).
- It takes longer now to breach double and triple strand wire obstacles
- This entry may not belong here, but I want to draw attention to an entry in the "Weapon-system specific changes" section for Leopard 2. Basically, the Leopard 2 as simulated in Steel Beasts underwent a critical review of its armor protection estimate, resulting in a significant reduction of the 2A4 variant's frontal protection. Later models (Leo 2A5+) received only minor modifications.

AI Behavior / Pathfinding

Generally, please note that there is a framerate dependency for all pathfinding. Pathfinding will eventually stop working if the framerate dips under 10 fps.

Set alternate timings for the duration of suppression effects, reaction times, and more for infantry situated in trenches.

In legacy scenarios the drive on left side setting was previously being saved in an embedded navmesh rather than with the scenario file itself. This is no longer the case. The 'drive on left side' setting is now stored in the scenario file, as you would expect. When loading old scenarios, the setting will now default to drive on right side. Aussies, Britons, and the Swedish time-travelers from before 1967 among our customers may need to update their scenarios.

Helicopters perform a "racetrack" pattern when encountering enemy on Engage routes now. They no longer drop in altitude when guiding missiles; they hit their targets when hovering over slopes. They aim better with unguided rockets. They perform small evasive maneuvers to throw off AAA bursts. They crashland more spectacular, but may also successfully perform autorotation, improving changes for troop survival.

Helicopters are much more accurate now, especially when engaging infantry, due to a range of corrective measures.

Six-vehicle platoons will no longer mess around if set to column formation, and then move out in column formation (see entry for bug 10803).

Ballistics

Updated the name, origin and introduction data of various ammunition types

New/Updated Munitions

- added for KPVT 14.5mm
 - MDZ HEI
 - MDZ-M HEI
- Added the missing 40mm M430A1 grenade round to the MK19 AGLs
- Added the 40mm M384 grenade round to the AH-1 Cobra
- Added 66mm RPG-18 (visualized by RPG-22 3D model)
- Added 75mm RPG HEF DZGI-40
- 76mm SA-19 (9M311) received a 3D missile avatar
- Added 85mm RPG HEF NR-4
- Added 100mm 3D3 WP SD for T-55A and -AM
- Minor updates for 110mm
 - PzF-3 DM12
 - PzF-3T* DM33
- Added 110mm PzF-3IT* DM72A1
- Added 120mm DM-73 APFSDS-T, with a 3D missile avatar
- Added 120mm mortar
 - RP Smoke 3D5
 - WP Smoke D-843A
- 125mm AT-8 received a 3D missile avatar
- Added 127mm ATGM GAM-100*
- Updates for various 152mm AT-14 Kornet missiles in an epic battle against misleading GRAU designations, duplicate entries, and experimental prototypes that were never actually produced outside of laboratories
- Updates for 155mm
 - HE-SF-EFP "BONUS"
 - HE-SF-EFP "SMArT"

Both munitions now scan for targets while descending after the ballistic flight phase (and separation). If detecting a valid target within a 15° cone in travel direction they fire, with the detonation elevation dependent on how close the target is to the center
- Increase range of 170mm Spike SR* to 2000m
- 220mm BM-27 rockets received a 3D missile avatar

Other adjustments

- Changed the date of introduction for a number of munitions
- Most surface-to-air missiles are now proximity fuzed



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Mission Editor

General

You may now display units of 'other' parties (i.e., parties other than the currently selected/edited). These units will be displayed using the (somewhat faint) 'AI' color scheme.

For any armed unit in a scenario, Mission Designers may now set both the initial loadout of ammunition (at mission start), and the default amounts to which it will be replenished by nearby ammo trucks.

Right-clicking a route now opens a context menu to split the route by waypoint insertion. Existing embark and/or retreat conditions will be retained for the first leg of the route (see bugs #7036, 11281).

Expanded the **Drone Properties** configuration dialog: Mission Designers may now set the resolution of mounted sensors, thereby proportionally determining the distance out to which a target may still be recognized/identified. Also, you may set the requirement for UAVs to maintain an uninterrupted line of sight to the controlling unit. Be aware that this can drastically reduce the distances over which these units can be successfully employed!

Typically, but not always, command signals would be relayed through elevated radio towers.

Parties may now change their affiliation to each other more than once. Be careful, conflicting conditions may apply at the same time so the results may appear unpredictable. Likewise rapid flip-flopping may occur which is entirely not what this feature was made for, so bad mission design can break a lot here.

With great powers comes great responsibility.

Reworked the order of the "New Unit..." context menu, grouped into sections Combat troops, Combat Support troops, "Other", Aircraft and Air defense, Civilian. Within these groups, the order is roughly "by importance"/"general combat value", and in the sub groups in alphabetical order.

Note that units can be listed in more than one category; e.g., the HIP/Mi-6 Supply is both "Helicopter", and "Logistics"; these categorizations are not mutually exclusive. In this document, where duplicate entries would occur, they are placed in the first category in which they appear.



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- From Template
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- Aircraft
- Air defense
- Drone
- Civilian

Some of these new categories already made it into the scenario control logic, others may follow. This allows you to separate infantry from their transport units on arrival at a waypoint without having to reference each team's individual callsign in embark conditions. The old method still works, of course, and at some point you will probably want the infantry to mount their vehicles again, but if the whole platoon is roughly in the same area as are their transports, that will happen without the need for micromanagement.

The **Earthworks** menu has been replaced by the **Fortification** menu, containing **anti-tank ditches, bunkers, emplacements, mortar pits, and trenches**

Trenches and **anti-tank ditches** may be **duplicated** to simplify mission design

While **Testing** a scenario,

- the overhead view (F8-F8) is always available, irrespective of the scenario's settings
- **artillery target areas** are drawn in the map view immediately, irrespective of **Realism** settings
- in the **Planning** or **Execution** phase, you can create fortifications and obstacles:
 - mobile bridges (they may not be deleted in the Execution phase!)
 - bunkers (these likewise may not be deleted while in the Execution phase)
 - set an object's planning-phase visibility while actually being in the Planning phase



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By right-clicking one (or multiple selected) **Mortar Pit** object(s), you may choose to duplicate it/them. You may also set their visibility during the Planning Phase of a mission.

Delta map packages may now be embedded in scenario files if under 100 MByte in size. In the **Map** menu, use the new **Embed map** option.

If a user merely selects a scenario file with an embedded map package (if it is missing from his installation), the package will be extracted and installed right away.

Notes:

- **in-progress** saved and **split** scenarios may not embed map packages
- To strip an embedded map from a scenario, simply open it in the Mission Editor, uncheck the **embed map** option, and save the file
- Where an embedded map package has the same name as an already existing package it will instead be installed into a folder with the **[embedded]** string appended. If that folder name *also* is already present, the package's GUID will be used. This is the same approach as taken by the **Map Package Transfer Tools** (there, a **[downloaded]** string will be appended)
- Where a scenario has an embedded map package but the user is not allowed to write to the configured 'map package' folder: A graceful exit with error message will happen

The **Mission Debugger** will indicate **duplicate IDs** in legacy scenarios by coloring the "IDs" button red color more reliably. It could be missed prior to this version if the duplicate IDs were in other parties than the currently selected one. Remember, kids, duplicate IDs are the Steel Beasts equivalent of identity theft.

They're a Bad Thing™. Be sure to check your old scenarios; save them as a new file and Steel Beasts will solve the problem for you. But you have to check them. Please excuse the inconvenience.

Artwork

- Added a USSR desert uniform
- Added a RU 2020 desert uniform

Formation (and callsign) Templates

Added/Updated templates

- Updated 5x USSR nationality templates (Mot Rifle Co, Bn, Rgt) with new AT-7 Saxhorn.



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- Updated 3x OPFOR nationality templates (Mech Inf Co, Bn, Bde) with new AT-11 Saxhorn 2.

Map Editor

Multiple instances of Steel Beasts may now edit multiple delta maps that are all based on the same base map package. Previously, that was not possible.

Steel Beasts will now ensure that there is sufficient free storage space before allowing to save a map package as a new base map package.

You may now rotate a multitude of previously selected objects (Marquee tool, or **Shift+Click**) by using the rotation handle of the last selected object while holding the **Alt** key.

Added a "Constant Incline" checkbox to the **Raise Roads** dialog, which builds straight ramps rather than preserving the undulations of the underlying terrain.

Raising roads now tests for intersections between selected road segments, to ensure that the intersection area is not raised again.

When selecting a new actor to place, you may now search for a given map actor either by its numerical ID or by its description. The dialog will display the description of the currently shown actor to help with identification/search.

Due to this, the maximum number of 'custom actor palettes' has been reduced from six to five!

Land Object Lines

...were somehow, somewhat optimized. Whatever that's supposed to mean. Seriously, I'm embarrassed.

Map Packages

If you are accustomed to SB Pro PE version 4.0 or older, please read the primer on Map Packages in the Version 4.167 Release Notes first.

Artwork/Render Engine

All guided missiles now have a more or less prominent wobble effect to their guidance, making it a bit harder to hit targets, especially the distant, moving ones.

Updated the 6m civilian ISO container and added 12m variants. Snakes are air freight again.

Improved the two light post models and textures.

Improved the concertina wire obstacles for some LOD transition.

Added more infantry poses; not all are integrated yet, however. “Standing, suppressed” is, for trenches.

When sun is low, terrain lights up.

Bits and pieces may now disappear/fall off on many (but not all) vehicles on destruction. If burning, they will build up a layer of black soot over time as another permanent visual indicator, since the fires (burning longer now) will eventually stop.

Improved visuals for laser-projected and illuminated reticules on all of the following vehicles, and added (multiple) glare filter options for most:

- | | |
|-----------------------------|-------------------------|
| • ASLAV-25 IFV | • Leopard 1A5 MBTs |
| • AT-4 ATGM sight | • Leopard 2 series MBTs |
| • BMP-2 IFV | • M1 Abrams series MBTs |
| • BTR-82 APC | • M2/M3 Bradley IFVs |
| • Centauro | • M60 series MBTs |
| • Challenger 2 MBT | • Pizarro series IFVs |
| • CV90 series IFVs | • T-55 MBT |
| • FGM148 Javelin ATGM sight | • T-62 MBT |
| • FV510 Warrior IFV | • T-72 series MBTs |
| • Leopard AS1 MBT | |

Added glare filter option for:

- AT-5 ATGM sight

Helicopters will now sink in water, extinguishing smoke or flames.

Sound

- Improved the error logging in the sound subsystem
- Added a new flyby sound to non-wire guided missiles and rockets. They go “woosh” now rather than “whirrrrr”
- The “Wheel Heavy Rumble” loops better now
- Blue and Red rifle sounds sound better now, also some of the MGs
- More variable explosion sound volume
- Updated and fine-tuned a number of sounds, attenuation distances (such as for propeller-driven UAVs)
- Added sounds for helicopter non-explodey crashes
- Improved 27 sounds, concentrating on mid-perspective artillery impacts, grenades, all explosions and various weapons. Also replaced the near perspective 25mm autocannon sound, and “3rd person” burst sounds (the 3 to 5 round bursts used when delaying sound over distance)

- Added new impact sounds to particle effects
- Improved the randomized small arms impact sounds for particle effects
- Improved and replaced all maingun mid-range sounds, and the catastrophic explosion sound so they do not sound out of place with all the other new mid-range sounds
- Increased volume of some "splash" sounds, from rounds impacting on targets

Known Issues

...here are the main issues that we know about, no need to report them again:

- Infantry in trenches currently float in the air; fixing this was considered dangerous to the release date, so it's postponed to a post-release patch
- Likewise, it totally sucks to take 1st person control of MG teams in trenches when trying to shoot in any direction other than straight forward. Shall be fixed ASAP, but the fix is somewhat risky to break other things, so it needs extensive testing
- Some crew-served weapons may currently not deploy in trenches; a future update shall add heavy weapon emplacements
- SB-600 (and other man-portable UAVs) has currently zero setup delay. That shall change with the first patch; the actual system seems to require a quite substantial 10-minute prep delay which has obvious tactical implications
- Changing the content of 12m obstacle containers (placed in the Mission Editor, then changed from air-filled to something else) may mutate them back into 6m variants
- Helicopters still miss when firing guns, if at high altitude, flying fast
- 40mm DM12 MZ/HEDP for Mk 19 AGL is currently underperforming against armored targets (Bug 8607)
- Local time zone settings may be off for legacy scenarios; mission designers will need to fix this where it's still an issue
- Legacy scenarios involving the generic cal .50 Remote Weapon Station will have it replaced by the M151 Protector on most vehicles. However, on all MAN KAT series trucks the GNR's position will no longer be available (Bug 8920). On the Pandur, it can be manually replaced by the Arrows RWS (new)

Weapon-system specific changes

Generally, light armor systems and aircraft are more vulnerable to nearby HE explosions. An unspecified number of unspecified vehicle types have received a Danish camouflage texture.

Main Battle Tanks

Challenger 2

- For cosmetic reasons, assigned default ready ammo to the two loader's MGs on the roof (they still don't work, and won't in SB Pro 4.x)
- Significant revision of frontal turret armor protection, reducing it to be more in line with contemporary Abrams and Leopard 2 protection levels
If your problem is that after this change you die a lot, it's probably because of staying exposed in fire positions for too long

Leopard 1

- Added a hotkey ('O') for the CDR to toggle the Pano's pitch from automatic to manual control

Leopard 1A5

- Fixed bug #11350 - added a sun filter option for the daysight

Leopard AS1

- Added CD, ER, ET, ZA nationality textures

Leopard 2

- Fixed bugs #11202, 11212; see section "Resolved Bugzilla entries"
- Adjusted metadata for AI decision-making
- Adjusted auxiliary sight FoV
- Fixed bug #11350 - added a sun filter option for the daysight

Leopard 2A4

- Adjustments to the vulnerability model
- For the driver's place, four additional gauges are now functional
- Significant revision of frontal armor protection, reflecting the first 2,050 ever made tanks rather than the final 75 of the 8th production lot, which received a new armor package (and even then, our previous estimate was overly optimistic).
Leopard 2A4 has now a protection level between M1 and M1A1. If your problem is that after this change you die a lot, it's probably because of staying exposed in fire positions for too long

- Mass and power-to-weight values adjusted reflecting majority of production lots (prior to 1987)

Leopard 2A5, 2A6 (all)

- Minor revision of frontal hull armor protection, reflecting that base Leo 2A4 armor was upgraded during the conversion process to final production lot levels; however, that was overly optimistic

Leopard 2A6M A2

- **New System**
- Yes, carries five 120mm cartridges fewer. Adds to the mine protection.
- Uses unchanged Leopard 2A6 interior
- Adjusted the default ammo types in type, and quantity

Leopardo 2E

- Adjustments to the vulnerability model
- Improvements to the driver's navigation system
- The thermal imager replacing the driver's image intensifier center vision block is set as a 'vehicle specific option'.
Note that Leopards in newly created scenarios will have this option enabled by default, while it will be disabled for older scenarios (this can easily be changed in the Mission Editor though)

M1 Abrams

- Adjusted metadata for AI decision-making
- Fixed bug #11350 - added a sun filter option for the daysight

M1(IP) Abrams

- Corrected an error that doubled the mantlet protection value

M1A1 Abrams

- Nicer Australian camouflage colors

M1A2 SEP Abrams

- Fixed bug #11173, see section "Resolved Bugzilla entries"
- Nicer Australian camouflage colors

M60A3

- **New System**
- Austrian variant of M60A3, just without the TTS
- Fixed bug #11350 - added a sun filter option for the daysight

M60A3 TTS

- Changed gunner's passive IR sight to fixed FOV of 8 degrees
- Corrected several small issues on the interior model

T-14 "Armata"

- Improved the behavior of the turret ring area, to make it less likely to absorb extreme angle impacts on its upper "lip"

T-55

- Adjusted the default KE ammo to be for the time period of that particular tank variant (rather than defaulting to the oldest round available)
- improved CDR's peri IR sight
- improved the GNR's IR sight quality

T-62

- Adjusted the default KE ammo to be for the time period of that particular tank variant (rather than defaulting to the oldest round available)
- Corrected the default HEAT round and the default HE round to be more correct for the time period
- improved CDR's peri IR sight
- Improved the GNR's IR sight quality
- The arm of the non-functional searchlight is now animated

T-64 MBTs

- Improved the behavior of the turret ring area, to make it less likely to absorb extreme angle impacts on its upper "lip". This change is about the limit of what can be realistically simulated without causing other problems

T-72 MBTs

- Corrected an issue that caused the ammo counter's needle to be nearly invisible (pale green instead of black like it was before)
- Improved the behavior of the turret ring area, to make it less likely to absorb extreme angle impacts on its upper "lip"
- improved CDR's peri IR sight
- Adjusted driver's position, preventing head clipping through the glacis (with the associated loss of protection)

Mounted 12.7mm NSVT HMG

- Enabled “peek” view for 12.7mm NSVT HMG
- Added adjustable iron sight for 12.7mm NSVT HMG
- Enabled AA reticule for 12.7mm NSVT HMG
- feed tray cover to be opened during reloading
- removed the static spent links

T-72A, M

- Corrected the default HEAT round to be more correct for the time period
- improved the IR sight quality

T-72B, M, M1

- This tank is a message of peace: Added UN texture
- Updated the AA MG tutorial scenario

T-72B, BV, B1, B1V

- improved the IR sight quality

T-72B3

- Set the interior dome light color to be similar to the T-72B1
- Fixed bugs #11178, 11197, 11202; see section “Resolved Bugzilla entries”
- **New System**
- Added Commander’s position
- Added Gunner’s position
- Added Driver’s position
- Added a number of tutorials

Note: The T-72B3 has a fire control system that is pretty evolved from the T-72M1’s with which most seasoned Steel Beasts users may be familiar. Due to the automatic target tracking and other features, there can be delays between pulling the trigger and the gun going boom, if the gun happens to be outside of its coincidence window. This may appear unfamiliar, but it’s not a bug.

T-80

- Improved the behavior of the turret ring area, to make it less likely to absorb extreme angle impacts on its upper “lip”

T-90

- Improved the behavior of the turret ring area, to make it less likely to absorb extreme angle impacts on its upper “lip”

Infantry Fighting Vehicles

ASCOD Pizarro F.1

- Is now an “IFV”
- Added an optional BMS screen for Commander’s position
- Enabled or adjusted Brightness and Contrast controls for Thermal Imager
- Set the troops’ default RPG to C90

ASCOD Pizarro F.2

- **New System**
- Added Commander’s position
- Added Gunner’s position
- Added Driver’s position
- Added Troop Leader’s position
- Enabled or adjusted Brightness and Contrast controls for Thermal Imager
- Set the troops’ default RPG to C90
- Adjusted the specular texture

ASCOD Ulan

- Reduced dust creation from muzzle blast
- Is now an “IFV”
- Enabled or adjusted Brightness and Contrast controls for Thermal Imager

BMP-1

- Is now an “IFV”
- Adjusted meta data, reducing reluctance of computer-controlled troops to engage them with HMGs

BMP-2

- Fixed bug #11195, see section “Resolved Bugzilla entries”
- Facelift to 3D model
- May be loaded with multispectral smoke grenades now
- Added various different nationality textures
- Added UN texture set
- Ordered soldier #7 to stop sticking his head through the hull roof
- Is now an “IFV”
- improved CDR’s peri IR sight, IR sight quality
- may pop its turret now
- Smokes more on full throttle (does not inhale, though)
- Adjusted meta data, reducing reluctance of computer-controlled troops to engage them with HMGs

- Added RU2020 texture set
- Added OPFOR texture set
- Adjusted vehicle mass, power-to-weight ratio
- Minor revision of armor protection

BMP-3

- Is now an "IFV"
- Adjusted meta data, reducing reluctance of computer-controlled troops to engage them with HMGs
- Increased likelihood of catastrophic ammunition cook-offs, based on recent demonstrations to the effect in Ukraine

CV90/30-FI

- Is now an "IFV"
- Found the missing AK47 rifle texture in the interior view

CV90/35

- Raised the CDR view point allowing to peek over the opened hatch rim

As for the rest...

- Is now an "IFV"
- Sensitivity adjustment for joystick response function in high magnification views
- lead should now be correctly applied in network sessions, so that the barrel cam video will on all PC show be correctly displaced when firing WIDE and DEEP volleys
- implemented the 'Aim Assist' for TC and GNR in all modes but 'stationary AP' and 'AIR ABM'. Whenever a valid range is entered this mode should be activated; letting go of the palm switches should disable it again, as would switching to 'stationary AP' or 'air' target mode. The turret's average turning rate over the last two seconds will be used; any inputs done by the GNR will be temporarily added to this 'base' speed (so that if he zeroes them the 'base' speed will again be used) while inputs done by the TC (via his thumb-stick) will be permanently added on top of the 'base' speed. Note that the TC's input sensitivity is drastically reduced; there is however no axis scaling performed (since the available manual documentation lacks any reference to this). Likewise, the 'Aim Assist' will be enabled even if the handles are zeroed as no documentation of any other behavior could be localized
- the displayed ranges as well as their labels should now be correct in the VIS 'Operational' screen



P.O. Box 654 ◦ Aptos, CA 95001 ◦ USA
Fax: +1-(650)-257-4703



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- the FCS should now retain (and return to) previous lase results if an 'invalid' lase (for example by lasing into the sky) was performed. The readout on the GNR's daysight (specifically the dots indicating the type of range displayed) should now also be correct under these circumstances
- in 'stationary AP' target modes no odometer information will be used to correct the range in the ballistic computer (as per manual)
- letting go of the palm switches will no longer force a switch to battlesight range; this now only happens if the palm switches are grabbed
- the ammunition readout in the GNR's day sight will now blink if a firing mode requiring a volley count higher than the available count was selected. Due to the absence of other information the blink frequency was set to 1Hz
- switching to PENE firing mode now forces battlesight range
- reworked the modelling of the crew's control handles in order to correct some inaccuracies... if PENE or 'AIR AMB' modes are now selected, you may no longer change the weapon type (i.e., main gun/coax or left/right) or target mode.

You are still free to select 'AIR ABM' if PENE is selected and vice versa however. Pressing the PENE button while in PENE mode will return the target mode to whatever setting the 'target type' toggle was set to (i.e., air/moving/point or deep/moving/wide, depending on feed selected). Pressing the 'Resume' button on the GNR's control handle will likewise cancel PENE or 'ABM AIR' modes.

Note that there is one exception here: as a 'convencience' (gameplay) function, for historical reasons, the 'Next rate of fire' hotkey (default: PgUp) allows the user to cycle between 'AIR ABM'/PENE' and the currently set target mode on the user's handle. This functionality was retained.

- selecting PENE or 'AIR ABM' modes now automatically selects the KETF feed
- Changed the visual representation of the remaining ammunition in the CV9035's left feed in its 'Weapons' VIS UI.
- changed the color of the maingun cycle indicator
- in the 'ABM LINE' target mode the FCS will lead as soon as a valid range was entered (not only once the fire button was pressed). Once the salvo has been fired the system will keep on applying lead (towards the last aimpoint!) until a new range entry has been done
- if the palm switches are initially pressed, the FCS will now enter battlesight range into the computer.

However, this is not a 'first class' range entry, as they system will not apply any ballistic corrections (lead, range correction based on vehicle and turret movement) until the crew has explicitly entered a range (by lasing or



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toggling the 'range entry' button, which will cycle through all available ranges (Laser1 /2, manual and battlesight).

Likewise, the 'aiming aid' will not work with that initial battlesight range. Moreover, if the crew changes the selected weapon or ammo type, the system will immediately apply this new range (which is not the case if the crew explicitly set a range; e.g., if they are using 'manual' range then switching weapon/ammo types will – selected target mode permitting – keep this 'manual' range entered in the FCS)

- the 'resume' button (on the gunner's handle) will now cancel 'PENE' and 'AIR ABM' modes
- in case the TC override, enters 'PENE' or 'AIR ABM' mode then returns control to the GNR, the FCS will remain in 'PENE' or 'AIR ABM' mode unless the GNR does not have his palm switches pressed
- pressing the 'select range' pushbutton while in any 3D prediction mode the FCS will now change to battlesight range (and stop aiming aid)
- If firing a volley in 'wide' mode, the gun will stay at the last position (i.e., 'rightmost') as long as the shooter keeps the trigger depressed. Once let go, the gun will return to its starting (i.e., 'leftmost') position, ready for another salvo
- Battlesight range is no longer forced when CDR overrides GNR – this is only done if the CDR's choice of ammo or target mode requires a valid (lase) range
- the turret will no longer move if no palm switches are being pressed
- some CV90/35 related network magic was made to somehow work better, and more robust too
- If the GNR's unity sight is opened about halfway, the day sight will be blacked out
- Increased the coincidence window when firing a KETF salvo

CV90/35-DK

- Is now an "IFV"
- LRF is now using 'last return' logic by default

CV90/35-NL

- Is now an "IFV"
- The barrel-cam reticule adjusts color based on image brightness
- LRF is now using 'first return' logic by default
- when grabbing the palm switches or when switching range type (e.g., from 'manual' to 'battlesight'), the GNR day sight will for one second show the currently used as well as the 'next' range

- the wind direction is now using the [1;12] interval
- While the CDR overrides, cant correction is disabled
- Improved mouse control in Aim Assist modes

CV90/40

- **Enabled Driver's 3D interior**
- Is now an "IFV"
- Received texture update (both CV90/40-B and -C)

M2/M3A2 Bradley

- Is now an "IFV"
- Replaced muzzle flash with autocannon muzzlebrake effect

Marder 1A3

- Is now an "IFV"
- Enabled Brightness and Contrast controls for Thermal Imager
- **Disabled "anti-alias" effect in thermal sight reticule**

FV510 Warrior

- Changed the name from "Warrior (ODS)" to "Warrior".
After a deep dive into the rabbit hole of the obscure subject of the addon passive applique armor, it seems that the addon armor was first used in ODS 1991 – yes – but was already available before and referred to as "the wartime kit" intended to be used by all units in active combat. So, it seems, anytime the Warrior would have gone into combat since the vehicle first entered service (~1987) then it would likely of also had the addon armor added, likely making it also correct for pre-ODS late Cold War scenarios in the late 1980s (and thus, not specific to ODS).
- Is now an "IFV"

Armored Personnel Carriers

BTR-50

- Corrected the default carried RPG and ATGM types to be more appropriate

BTR-60

- Raised the buttoned driver height to fix an issue that caused a small part of his foot to stick through the front hull
- Corrected the default carried RPG and ATGM types to be more appropriate
- Reduced the “perceived threat level” for this system with respect to AI decision making
- Revision of armor protection, increased survivability

BTR-70

- improved CDR’s peri IR sight
- Raised the buttoned driver height to fix an issue that caused a small part of his foot to stick through the front hull
- Reduced the “perceived threat level” for this system with respect to AI decision making
- Revision of armor protection, increased survivability

BTR-80

- Raised the buttoned driver height to fix an issue that caused a small part of his foot to stick through the front hull
- Improved the default RPG type and count
- Increased turret frontal arc armor protection
- Reduced the “perceived threat level” for this system with respect to AI decision making
- improved CDR’s peri IR sight
- improved GNR’s IR sight

BTR-80A

- **New System;** a BTR-80 with 30mm autocannon and night vision, but without powered turret traverse or stabilization
- Is a “Prototype” because it was never fielded in numbers

BTR-82A

- Corrected the rotation axis for EL on the gun (it was instead moving side to side when elevating, resulting in it being unable to engage anything)
- Removed the “turret grind” sound, to make it more like the BMP-2
- Improved the shell ejection particle effect on vehicle

- Raised the buttoned driver height to fix an issue that caused a small part of his foot to stick through the front hull
- Added UN texture set

BTR-82AT

- **New System;** a BTR-82A with thermal imager (not an anti-tank vehicle)
- No crew positions
- Optional add-on armor

Dingo 2A2

- Mounted troops no longer immune to incoming fire
- Troops will dismount on both sides now

Fennek AD

- Souped up destruction visuals

M113A2

- Set the troops' default RPG to 1980s LAW variant

M113A2G

- Added DE nationality textures

M113A3

- Improved the rear fuel tanks with respect to armor model

M113G4

- Facelift to 3D model
- Engine exhaust now visible
- Improved commander's pose when operating mounted LMGs

MT-LB

- Set the default carried RPG and LMG type to Soviet equipment

TPz Fuchs

- Enabled second axle for steering
- Improved the wheels
- Improved the wheel damages
- Updated the wheel texture
- added a few different nationality versions

Anti-tank Vehicles

- Removed the TOW-2A Aero and TOW-2A Aero RF from vehicles and launchers since this seems to only have existed with the TOW-2B variant

BRDM-2/AT

- **Added Commander's position**
 - Missile aim sight is View 2
 - Cupola vision blocks are Altview 4
 - To reload the missile rack, the launcher must be retracted, and the CDR be buttoned up
- **Added Gunner's position**
- **Added Driver's position**
- Azimuth limits on the turret/launcher are set to +/-110°
- Indicator light will identify loaded missile type (AT-4, or AT-5). Both lights will stay dark if vehicle is loaded with AT-3 missiles.
- **Revision of armor protection, increased survivability**
- **Made damages to CDR's sight more likely**

Fennek MRAT

- Is now an "Anti-tank" vehicle
- Corrected the default number of ATGMs for the dismounted ATGM team to be more realistic based on the team's 2-man size
- **Souped up destruction visuals**

Kornet-D1 (Tigr-M)

- **New System**
- Added Commander's position
- Added Gunner's position
- Added Driver's position
- **Adjusted front grill for RU 2020 camouflage**

M113G3-TOW

- Prettified TOW launcher 3D model

M901

- Facelift to 3D model
- Added the mounted M240 LMG to the gunner's cupola

M966 HMMWV

- Improved the location of the gunner's eye view when unbuttoned

Reconnaissance Vehicles

ASLAV-25

- Is now a “Recon” vehicle

BRDM-2

- improved CDR’s peri IR sight
- Is now a “Recon” vehicle
- Revision of armor protection, increased survivability

Centauro

- Added turret traverse and hydraulics sounds
- For cosmetic reasons, assigned default ready ammo to the two loader's MGs on the roof (they still don’t work, and won’t in SB Pro 4.x)
- Is now a “Recon” vehicle
- Added various different nationality textures

Eagle IV

- Facelift to 3D model
- Is now a “Recon” vehicle
- No more major ammo cook-offs
- Better dismounting experience

Fennek Recce

- Is now a “Recon” vehicle
- Added a new view mode ('Alt View 3'), allowing to view both the BAA and its control panel at the same time
- Souped up destruction visuals

FV107 Scimitar

- AI will now no longer call it a tank, for scenario control logic it now counts as a “PC”
- Is now a “Recon” vehicle

FV101 Scorpion

- Fixed bug #11207, see section “Resolved Bugzilla entries”
- Is now a “Recon” vehicle
- AI will now no longer call it a tank, for scenario control logic it now counts as a “PC”

LMV

- Is now a “Recon” vehicle



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SpPz Luchs A1 /A2

- Is now a “Recon” vehicle
- Received name update since differences between A1 and A2 are irrelevant in its representation in Steel Beasts

M113C&V

- **New System**; Dutch scout vehicle with 20mm overhead autocannon

M1025 HMMWV

- Is now a “Recon” vehicle

MB G300 CDI

- Both dismounts can now be seen in the back of the vehicle
- Changed the map symbol to recon
- Is now a “Recon” vehicle

Piranha DF 30

- Corrected several issues with misnamed normal and specular textures
- Is now a “Recon” vehicle

Piranha DF 90

- Is now a “Recon” vehicle

Tigr-M SpN

- **New System**
- Added Commander’s position
- Added Gunner’s position
- Added Driver’s position
- **Adjusted front grill for RU 2020 camouflage**

VAMTAC ST5

- Enabled all gunner aim poses and improved the LMG aim pose
- Is now a “Recon” vehicle
- Corrected some smoothing issues

VAMTAC Recce (VERT)

- Improved AI utilization of the sensor mast
- Updated vulnerability model; several components now in sensor mast
- Is now a “Recon” vehicle

VEC

- Is now a “Recon” vehicle

- Disabled "anti-alias" effect in thermal sight reticule

Vector ATTV

- Enabled all gunner aim poses and improved the LMG aim pose

Troop Transporters

Non-troop-transporting light trucks were moved into other categories, like Logistics, or Reconnaissance.

Bushmaster PMV

- Updated exterior model
- Added interior model
- Added texture sets

Fuchs 1A7

- Set the troops' RPG to period-adequate default

MB GD240

- Reduced the top speed since the actual vehicle's speed is governed
- Added VBIED capability

RG-31 Nyala MRAP

- Rear doors open faster

Unimog

- Corrected a smoothing issue on the LOD1

Ural 4320

- Set the default carried RPG and LMG type to Soviet equipment

YAD-4442

- Set the troops' RPG and LMG to period-adequate defaults
- Added VBIED capability

Remote Weapon Stations

- Adjusted RWS component damage probabilities

Arrows

- Corrected several issues with misnamed normal and specular textures
- Corrected several smoothing problems around the edge of the control panel

EOS 400S “Raven Mk.2”

- **New System**

ERCWS-M

- Decreased the vertical no-fire zone on the **Dingo 2** platform to make the gun more usable. The gun may now be fired in all directions with a negative elevation of up to 10 degrees. Note that this is a preliminary setting, pending the receipt of actual specifications

MiniSamson

- The controllers' buttons and switches may now be clicked in the 3D interior

Protector

- Corrected several issues with misnamed normal and specular textures

ROSS

- **New System**
- Quite similar to the Arrows, actually

Infantry

- Corrected a problem with US 1970 soldier's normal map texture
- UN infantry now have “UN” on their helmets

AGL teams

- Only dismounted 40mm Mk.19 AGLs will come with the 32-round belt now. Vehicle mounted weapons will default to ammo boxes of 48 grenade capacity

MG teams

- Corrected issues with misnamed normal and specular textures for PKT LMG

Missile teams

- Prettified TOW launcher 3D model
- For the FGM-148 Javelin, there's now a hotkey to select the flight profile
- Added a Chinese copy of the FGM-148 Javelin

Mortar teams

- 60mm, 81 mm, 81 mm Long infantry mortars: Adjusted the rate of fire to be more realistic. 60mm mortars, the smallest, are now the fastest firing

Reconnaissance teams

- Soldiers preparing/collecting a drone or loitering munition will carry their rifles on their backs now

Sniper teams

- Updated the sniper LOD1 in an attempt to cover up the errors on the base suit texture

Artillery Systems

2S9 Nona

- Added bang sound for when it goes bang

2S23 Nona SVK

- **New System**

ACRV/MT-LBu

- Added a RU 2020 nationality desert texture

BM-27 Uragan-M1

- **New System**

Grkpbv90 "Mjolnir"

- **New System;** Mortar carrier with dual barrel assisted loading, up to 16 rounds per minute
- Can fire "STRIX" terminally guided anti-tank rounds
- Fixed bug #10144

M109A3

- M109: Updated the texture to remove false shadows on the mantlet

M113/FO

- Improved commander's pose when operating mounted LMGs

M981 FIST-V

- Added the mounted M240 LMG to the gunner's cupola
- The CDR is now seated inside the troop compartment with access to the hammerhead periscope view; to access unbuttoned view, user GNR's position

M1064A3 Mortar Carrier

- Corrected the round count
- Facelift to 3D model
- Corrected the maximum range of movement of the TC's hatch

Piranha V AAMS

- May now fire "STRIX" terminally guided anti-tank rounds

Engineers

GTK Boxer/Eng-NL

- Added interior model
- **Added Commander's position (F7)**; note the CDR's basic thermal periscope sight (will rotate only horizontally)
- **Added Gunner's position (F6)**; if equipped with remote weapon station
- **Added Driver's position (F9)**
- **Added Squad leader's position (F11)**

M113A3 ENG

- **Set the troops' default RPG to 1980s LAW variant**

Logistics

ASLAV-CS

- Is now a Logistics vehicle

BREM-1

- **Thoroughly revised the vehicle components and protection level**
- **Improved the behavior of the return rollers**
- **Fixed a floating antenna**

Scania WLS-P

- Added a 'water' cargo item
- Added a 'fuel station' cargo item

Unimog

- Corrected a smoothing issue on the LOD1

YAD-4442

- Exhaust smokes nicer

Command

M109 CP

- **New System**

M113G3-DK/OPMV

- Is now a Command vehicle
- Improved commander's pose when operating mounted MGs

M113G4-DK/OPMV

- Facelift to 3D model
- Is now a Command vehicle
- Improved commander's pose when operating mounted LMGs

M577

- Is now a Command vehicle
- **Corrected an issue with the camo net color on the LOD2**

MAN KAT I 4x4/Command

- Is now a Command vehicle

Piranha V CP

- Added 2x dismounts to represent the commander and to allow access to the F11 view
- Is now a Command vehicle
- **Corrected an issue with the camo net color on the LOD2**

Vamtac CMD

- Is now a Command vehicle
- Is now a smoother Command vehicle
- **Corrected an issue with the camo net color on the LOD2**

Others

TOS-1A

- Still mean, but more useful now.
On arrival in a battle position with "suppress" tactics, it will fire **three** mis-siles and distribute them over the attention focus arc, at the range of the LOS bubble (rather than firing all rockets on a single point).

Prototypes

BREM T-16 Armata

- Small improvements to the armor model

BTR-82

- **New System;** stabilized 14.5mm HMG with HE ammunition

Typhoon-K 6x6 MRAP

- Added option for PILAR gun shot detector (when using Arrows RWS)
- May fire smoke grenades (when using Arrows RWS)

Aircraft

- Improved the survivability of rotor blades in general, for all helicopters and large UAVs
- HUD colors were changed to be Navy blue at day and Egg yellow at night for optimal contrast; night being defined as the sun being -3° or less below the horizon

Helicopters (all)

- Missile impacts will now trigger explosion and smoke effects
- Damaged or destroyed helicopters may dive, or perform an autorotation
- In a crash, troop survivability depends on impact velocity

Attack Helicopters (all)

- Added a nicer swoosh sound when launching rockets

AH-1Q Cobra

- Improved aim for its grenade launcher
- Adjusted ATGM loadout to better reflect Q variant capabilities
- Set default gun ammo capacity to max
- Adjusted the cadence of on-board cannon

AH-64 Apache

- Added the laser guided Hydra 70 APKWS rocket
- Set default gun ammo capacity to max
- Adjusted the cadence of on-board cannon

Mi-8T, TB

- Made adjustments to make it easier for the AI to utilize the ATGM

Mi-24 Gunship

- Added a more detailed rotor and stabilizer
- rotor and stabilizer actually spin now on the lowest LOD
- Added a more detailed S-8 rocket pod
- Added 'booster' frames for the ATGMs
- Added 3D crew
- Thanks to some super sophisticated AI upscaler the camo outlines and writing on the tail look better now, also the red star. Behold!
- Made adjustments to make it easier for the AI to utilize the ATGM
- Upscaled NG nationality texture
- Replaced gun sound, to match cadence

Tiger ARH

- Adjusted the cadence of on-board cannon

Air defense

2S6 Tunguska

- Improved SA-18 missile guidance

Fennek (Stinger)

- Souped up destruction visuals

SA-9

- Revision of armor protection, increased survivability

Vamtac ST3 Mistral

- Added a small deployment animation (still no gunner, though)
- Corrected some smoothing issues on the LOD1 model

Robotic Systems

- Created a new set of STANAG 2019 compliant tactical icons for reconnaissance drones, attack drones, and loitering munitions, together with a hopefully consistent naming convention
 - UAV(R) for reconnaissance
 - UAV(A) for attack
 - UAV(M) for (loitering) munition
- All use the new Unified UxV User Interface
- Key performance parameters can be adjusted in the Mission Editor for your experimentation needs

UAV(I)V Bullitt Anti-Drone Drone

- **New System**
- May be assigned to (any) infantry (A-team only)
- Whenever owning infantry assumes **Defend** or **Hold** battle position, Bullitt will be automatically deployed and activated
- Autonomous system that will attack **any** quadcopter or low-flying reconnaissance drone up to 400m altitude that it senses flying overhead, irrespective of party affiliation.

UAV(M) Libelle Anti-tank Standoff Munition

- **New System**
- May be assigned to Scout teams (only)
- Man-in-the-Loop control mode
- Designed for one-time use, but may return to base
- Image recognition support for operator, without Friend/Foe identification; will also mark other Libelle drones within the operator's field of view (because they can sense each other, somehow)
- Toggle through available targets with on-screen buttons, or hotkey **Shift+I**
- Initiate the attack on a chosen target with the on-screen button, or hotkey **Space**

UAV(M) Sprite Anti-tank Autonomous Munition

- **New System**
- Requires launch container (large, small), can be set up in **Mission Editor** only
- Comes as attack drone (Autonomous Munition), or as a geofenced automated reconnaissance and surveillance asset (Scout variant) with longer flight endurance.
- The Autonomous Munition will attack **any** military vehicle (or civilian vehicles resembling military units) in its designated engagement zone, irrespective of party affiliation. Might recognize ambulances and respect their status in daylight and fine weather, keeping fingers crossed.
- **The large containers may easily exceed the supply of available unit IDs for a given party. It is therefore strongly recommended** to use only small launch containers with Scout Sprites in a player-occupied party while using the large containers **in a separate party**. Since they will attack anything that remotely looks like a military vehicle in their engagement zone anyway, party affiliation is not very relevant, and you may still reference Blue or Red events and conditions to trigger a swarm launch.
- Designed for one-time use, but may return to base

UAV(M) Swingblade SB-600 Loitering Munition

- **New System**
 - S-600 renamed to SB600
 - SB600 renamed to Slingblade AT
 - Slingblade AT renamed to **Swingblade SB-600**
- May be assigned to Scout teams (only)
- Man-in-the-Loop control mode
- Not designed to return to base
- Image recognition support for operator, without Friend/Foe identification
- Toggle through available targets with on-screen buttons, or hotkey **Shift+I**
- As of the time of writing, use the on-screen **Deploy** button to set up the launcher tube, then press **Space** to launch the munition. Afterwards you may switch to the LM's camera view and steer it like other fixed-wing UAVs.
- Initiate the attack on a chosen target with the on-screen button, or hotkey **Space**

UAV(R) Munin

- **New System**
- May be assigned to Scout teams (only)
- Man-in-the-Loop control mode
- Designed to return to base
- **While being prepared for flight, it will be shown on the ground now**

UAV(R) S-100

- **New System**
- Operates independently (as vehicle), like Sperwer
- Man-in-the-Loop control mode
- Designed to return to base

Civilian

Technical trucks

- Prettified TOW launcher 3D model
- **Set its troops default RPG to be anti-personnel type (reflecting the doctrinal role in infantry fire support, as seen in recent COIN conflicts)**

Mounted 12.7mm NSVT HMG

- Enabled "peek" view for 12.7mm NSVT HMG
- Added adjustable iron sight for 12.7mm NSVT HMG
- Enabled AA reticule for 12.7mm NSVT HMG
- feed tray cover to be opened during reloading
- removed the static spent links



P.O. Box 654 ◦ Aptos, CA 95001 ◦ USA
Fax: +1-(650)-257-4703

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1.2t Technical-T

- Improved the default RPG type and count
- Assigned a DSHK HMG to the vehicle by default, not allowing an unarmed version (if you want an unarmed version then use the "1.2 Truck-T" version)

1.2t Technical-T, 81 mm Mortar

- **New System**
- **Increased recoil kick from mounted mortar fire**
- **Adjusted CDR pose when in various states**

1.2t Technical-T, MG/ATGM

- May now carry Mistral SAM launcher

1.2t Technical-T, 106mm M40 RCL

- Allowed the doors to be (rarely) randomly removed as part of the stowage.

2.7t Truck 4x4-F

- Improved the default RPG type and count

Bugfixes without Bugzilla entry

- Corrected the typo in the filename of the "Operation Oryx" third scenario
- A number of issues related to trench object modification in the Mission Editor were identified, and corrected
- Libelle, Sprite Attack/Scout, Quadcopter: Removed the artillery spotter ability because they are not intended to be artillery FOs
- Fixed a 'crash to desktop' when using a **2016 Enterprise Edition of Windows 10** with the system locale set to Russian language; generally, however, do not expect eSim Games to fix issues of such exotic configurations. There are too many "Windows 10" versions out there that we could possibly catch every single combination. The basic assumption in all our development is that you have a near-up to date Windows 10 installation. **That you still receive security updates is an insufficient indication of the validity of your operating system environment when installing Steel Beasts (or other recent games, one might add).**
- Similarly, non-ASCII characters in file paths (or more specifically, Formation Template file names) are still not supported in Steel Beasts (and won't, until version 5) due to the fucked up way of codepage handling in Windows (and other operating systems); there is no such thing as "plain text"...
Aaanyway, Steel Beasts will at least no longer shut down when confronted with such an issue. The debugLog.txt file will show an entry **"No mapping for the Unicode character exists in the target multi-byte code page."**
Loading template files with non-ASCII characters will show artifacts from Windows codepage transformation; saving such a file would create other funny characters (IOW, "result in a misnamed file")
- **ISO containers** will now randomize their colors even if placed below 0 altitude or off map to the south or west
- The **UAV(I)V Bullitt** will no longer be deployed if the spawn point is inside a building, or the controlling soldier is in a building
- Fixed a rendering issue when 'picking' an area (to be used in a scenario) from a large map
- Fixed a problem with testing a scenario without any artillery assets - you could create a new 'off-map' artillery fire mission – but of course, no actual artillery strike would materialize
- Fixed an issue with the Package Transfer Manager and Package Transfer Service possibly crashing on shutdown
- Fixed error in the Map Package Transfer Tools - the number of uploaded packages was transmitted incorrectly
- Fixed an error in the Map Package Transfer tool when transferring data using ftp/http(s) protocols
- The Steel Beasts installer will no longer incorrectly name the (optionally created) 'Quick Launch' icon
- If you started reading this in the hope of a hidden lottery game, keep going.
- Fixed a bug where in some cases some map annotations could not be selected (and altered) by the mission designer
- In multiplayer session, the soldier's posture (standing, kneeling, crawling etc.) will now be transmitted more quickly, resulting in less perceived lag. Prior to this, soldiers could take several seconds before adopting the new pose
- Fixed seven obscure things that I can't make sense of in the internal comments, and since this is a mind-numbingly boring (but necessary) job to write these release notes I'm not going to bother trying to decode them, sorry
- **CV90/35**
 - changed a spelling error in the GNR's day sight
 - **The Azimuth Laying Limit and Front laying limit** may be (de)activated by either CDR or GNR
 - Fixed a problem where letting go of the palm switches would make the gun jump
 - Fixed a multiplayer issue with lead calculations
 - Disabled text readouts in the TI views that would normally not be shown
 - Fixed a networking bug related to the right feed's ammo count (if changed by the crew via MFP)
 - The 'azimuth laying limits' can now only be changed in half-hour increments
 - Removed a bogus change-of-ammo-feed pause
 - **The IR Gunner and IR Commander MFP** pages now correctly show all TI magnification factors; in addition, in the -NL variant, the commander TI's magnification can now actually be cycled using the MFP
 - **The AIR ABM and PENE** modes can no longer be cancelled by simply activating these functions again
 - A small change to the logic of the **ARMED LEDs** on the **MFP**
 - Fixed a few incorrect strings in **MFP** and **VIS**
 - When activating assisted aim, all joystick input will be ignored for one second after aiming assist was activated.
 - Fixed a possible issue in network sessions with crew toggling the other crewmember's TI power
 - Fixed a small visual problem when drawing the 'laying limits' arc in the **VIS**
 - The MFP will now correctly show the currently active ABM target mode
 - The CDR releasing control will no longer conflict with the GNR's selected weapon, target mode, or burst settings

- After successfully firing an **ABM wide** volley, the gun will stay in its position (offset to far right) unless a new range is entered
- Switching weapon or ammo type while battlesight range is selected will now update the range in the ballistic computer
- Fixed a bug that would cause the GNR's handle selection to over-override the CDR
- Fixed a problem with KETF salvo accountancy
- The turret's laying limits can no longer be bypassed by letting go of palm switches
- The camera zoomed on VIS or MFP remains on target now, despite moving turret
- With the CDR taking control of the turret, the fire control system now properly selects battle range, correct weapon, ammo and target type
- Entering the KETF 'deep' target mode enters battlesight range only if no valid range was entered previously
- Manual range updates now take immediate effect
- The FCS now reverts to battlesight on override
- In network sessions the FCS mode is now properly reset if GNR simply lets go of palm switches
- Removed the 'SINGLE/BURST' readout in the TI UI in case the COAX is selected
- fixed flickering of 'salvo count' readout when switching firing modes in online sessions
- The TI UI will now display an 'ERROR' string in its lower area if the turret's or hull's emergency switch is active.
- manual ranges down to 50m may now be entered into the ballistic computer
- No more gun sight jumps if releasing GNR palm switches after a previous turret emergency shutdown
- Improved the readability of the VCS menus
- In the VCS menus no yellow line will be drawn alongside its leftmost edge
- Fixed problems in the **CV9035's Aim Assist** implementation
 - the gun's up/down speed would not always be properly integrated
 - now persistent if override status changes
 - fixed more problems in **Air** target modes
 - Switching to **Moving point** (KETF) target mode will now cancel it
 - Fixed five more problems
 - no longer enabled if control handles centered
- **CV90/35-NL**
 - GNR may control his TI while being overridden by CDR
 - In the **Config** MFP menu language may now be switched simply by pressing the **ENTER** button
 - lasing is no longer inhibited if CDR's 1:1 outlook sight door is open. Note that this is still the case if the GNR's unity sight is open
 - removed an unrealistic sound if the CDR changed the FOV of his thermal imager
 - The **Resume** function will now properly cancel **PENE** or **AIR ABM** modes
 - The CDR's handle's target mode now correctly transmitted in network sessions
 - Removed a non-existing **Cycle Mode** from the **CALC** MFP menu
 - Fixed a bug where the Squad's VIS would not be rendered correctly
 - when letting go and pressing the palm switches, the gun no longer jump slightly to the right
 - when steering the gun using the mouse, and lasing, the cursor would be recentered, leading to an immediate gun steering action
 - The CDR's VIS renders/updates correctly when zoomed in to the VIS panel
- Terrain engine only renders initialized terrain now
- Fixed a bug in the speed control of the **Protector** and **FN Arrow** guns when doing automated movements
- Fixed an issue in the **Kodiak AEV**, if equipped with the **Protector RWS**, where the GNR, when clicking on the RWS control panel, would not be moved into the gun's sight view
- Did some general fixes to the camera placement in 'fixed' views (ie ones where no user camera movement is possible) to work better if the vehicle is violently moving (in rough terrain)
- Fixed bugs with large area pathfinding world changes
- There's still some free mousepads in eSim inventory
- Fixed a bug where some tanks could not lase if ballistic shield doors were closed, even if they had laser holes
- In the **Strv-122** the Peri's 'touchline' functionality can now be disabled
- Fixed bug with the **MiniSamson** control panel replica resulting in uncommanded movement
- Toned down the emissive properties of some of the lights in the **Leopard 2A5DK-A2** interior (gunner's control panel and loader's control panel).
- Fixed an unhandled exception (aka 'crash to desktop') when selecting a really old scenario file to host in a network session
- Fixed various bugs in the **Ulan**
 - Fixed bug in the network code
 - Fixed an issue where the CDR could not change the gun's salvo length, even when overriding.
 - Fixed an issue where the gunner could not fire the gun with the RSA (turret drive) being inactive.
 - Fixed an issue where the main gun breech would slam forward if the COAX ran out of ammunition
 - the STAB system may now be enabled without power traverse (RSA)
 - CDR and GNR no longer have to lase once (each) before a remote lase entry would be accepted
 - Changed the weapon control panel so that the 'Åœb' selection is used (and has to be pressed) if

- the '2' ammunition entry is selected. The previous usage of the 'MZ' button was invalid
- Fixed an issue in the Ulan where the TC's cross-wind setting would not be properly entered in the fire control computer
- the CDR's thermal imager now properly applies automatic brightness and contrast controls
- Fixed another issue with the automatic contrast/brightness controls
- if the vehicle starts combat ready and the user starts as the driver, he may now flip the 'engine contacts' and 'main battery' switch
- the sight will no longer incorrectly 'jump' if a new range was entered into the fire control computer after the RSA was disabled and subsequently (along with the stabilization system) reenabled
- the gunner's optical sight's symbol brightness are no longer very dim upon scenario start
- in case the FCS was damaged or turned off but a LRF range existed, this range readout would be replaced by a '....' if the crew changed weapon feeds
- The (recently introduced) 'Hide Directories' checkbox in the 'file picker' widget and the search text edit widget will only be shown if the widget is NOT in the 'pick folder' mode. Likewise, the 'open folder' dialogue will no longer show the 'sort' button (none of these operations are functional when picking folders)
- Fixed a possible issue in the terrain code that could lead to corrupted height values being saved
- Fixed an unhandled exception (aka 'crash') when browsing for AAR files and encountering one created by a newer version of Steel Beasts
- Improved the rendering of the map display in the M577 and Piranha V/Cmd
- Fixed bug rendering all in-game displays in the Piranha V (other than the 'command' variant) black
- Fixed a wrong standing RPG firing animation for infantry equipped with the PzF3
- Removed excessive CPU usage noticed in main menu, but also occurred during all aspects of execution
- Fixed issue where an operation's title images would not be rendered in the UI
- An (attached) gun's adjustable sight will now be initialized to a value other than 0
- Fixed an issue where objects might disappear with extreme camera roll angle
- About those mousepads, if you want one you'll need to send an email. More on that later.
- Fixed an animation issue where fired smoke grenades were still being rendered on the **M151 RWS**
- Fixed a small issue in the **FN Arrows RWS** where the user pressing the 'pop smoke' hotkey would hear the SGL launch sound even if no rounds were expended.
- Fixed an issue where a (human) gunner, occupying a position located within a vehicle's hull (not its turret) may still be limited in his amount of allowed left/right view yaw movement by the turret's orientation
- Moved the mission editor's display of the scenario file name (shown at the bottom) up a little bit so that it's not clipped by the window border
- Improved the depth of several vehicle emplacements
- No more 'roger' sounds playing in the Planning Phase
- Fix issue where actors did not fade out to transparent at distance
- Fixed animation issue on the MAN KAT1 4x4/Command truck.
- Fixed an issue in online sessions where mobile bridges would not consistently remove berms of anti-tank ditches
- Fixed an offset in the dozer blade track
- Fixed an issue where LOS tests might incorrectly report a hit (or in any case cause additional computation) when the tested actor should actually be exempted from the test
- Fixed an issue in the T72 code where, if the crew overrode the settings of the ballistic computer and reverted this, an invalid value might have been entered.
- Fixed an issue in the **Mission Editor**, where, if a formation was selected and the **Set unit type** menu was brought up, the formation's current (single) type was not checkmarked
- Fixed bugs in the **Leopardo 2E**
 - the laser could still be fired with the day channel (left) ballistic shield door closed
 - The fuel gauge in the driver position will now read zero if its engine is turned off (or damaged).
 - engine can no longer be turned on (using the hotkey) if the battery select switch was not set to the 'March' position
 - driver's nav display, if the BMS was active but no route was entered, the system would display the current GPS coordinates rather than empty 'bearing to waypoint' and 'distance' indicators. Also added an indication (a yellow triangle at the top) in case an active route exists
- Fixed bugs in the **Leopard 2A5/2A5+**
 - Reversed the direction in which the user cycles through the modes of the thermal imager (it was ON-STBY-OFF-ON now it is ON-OFF-STBY-ON)
 - Fixed an animation issue where the switches for the ballistic shield doors were reversed (i.e., showing 'closed' when the shields were in fact open)
 - Fixed a bug in the **Leopard 2A5-DK A1/A2** variants where Rücksteuerung would not be applied at ranges beyond 4000m (even though its ballistic computer can handle ranges up to 5000m). Admittedly, this is only a theoretical concern
 - in BEOB and TURM AUS modes, the stabilization system is less often left in an inconsistent state



P.O. Box 654 ◦ Aptos, CA 95001 ◦ USA
Fax: +1-(650)-257-4703

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- Fixed a network/animation issue where the gunner's fire control knob might not always represent the actual state of the fire control system.
- In network sessions, the CDR's manual range (used in 'KH' mode) will now be properly applied. The range display on the ballistic computer will now also be updated with this range.
- If the CDR's peri was in ZÜ mode, when switching to KH-HZF the gun/turret may now be controlled.
- In network sessions the (human) CDR, controlling the turret in KH-HZF mode, may no longer change certain system states if a human GNR is present (FEX, the 'main gun/coax' switch). Note that if the gunner is AI (and alive), the CDR can actually issue the command and the AI gunner will execute it, but you need to talk to your human gunner.
- the CDR's 'FIRE' light in the Peri and TIM now represents the arming state of the gun rather than its coincidence with the active sight. In effect, this behaves now identical to the Leopard 2A4.
- The magnification of the CDR's thermal imager maintains synchronization with the Peri's settings (if the CDR's TI is in 'medium' or 'digital mag' modes, the Peri will be in 'high' magnification).
- Fixed an issue where the 'follow route' icon could not be clickable while it was in its blinking state.
- Fixed a bug in the **Pizarro F.1** vehicle where the AI driver did not set the battery master switch to ON if the vehicle started non-combat-ready, leaving it unpowered and unusable.
- The email needs to have the (exact) subject line I need a new mousepad, eSim!
- Tweaked the view limits of the VAMTAC ST5 VERT driver position so that all controls are easily visible.
- The **Leopardo 2E** and the **Strv-122** tanks will no longer allow the crew to use the laser rangefinder if the gunner's day sight is in 'low' magnification mode. Under these circumstances, the 'battlesight' range (1500m) will be entered into the ballistic computer.
- Fixed incorrect computation of an embedded map's final destination folder.
- Fixed an issue with raising/lowering roads in maps with many roads/objects that would cause the algorithm to take inordinate amounts of time to complete.
- Fixed issue in various **Leopard 2A5** tanks with panel indicators being much too bright.
- Fix'd color in greyscale displays, sometimes.
- Fixed a bug in the **DF90** where the control panel would indicate a 'battlesight' range when the range actually originated from the laser range finder.
- Fixed a bug in the **Leopardo 2E** where the TI contrast/brightness settings of TC and GNR would not be properly communicated to other machines in online sessions.
- If the **M60A3 TTS** laser range finder had more than 3 returns, random letters were printed on the chat line.
- Fixed an issue in the **Pizarro** and **Leopardo 2E** BMS displays where the map drawn would not reflect the one seen in the user's 'map view'.
- Fixed a bug in the **Piranha IIIC DF90** where the TC's display unit would not return to showing the correct (original) view mode if it temporarily switched over to showing the gunner's sight view during the loading process.
- Fixed issue on the **BRDM-2 AT** with the turret not being properly slaved to the cupola (on AI only vehicles).
- Fixed rendering issue on the **BRDM-2 AT** where spent missiles would not be properly rendered while the launcher was erected.
- Fixed an issue in the **Leopard 2A4** where the 'FEUER' lamp on the gunner's weapons control panel would only be lit if the gun was actually in coincidence when it actually only reflects the 'FEUER' state of the gun as set by the loader. Note that the 'F' indication inside the HZF (GPS) (as well as the actual shot authorization code) retains the additional coincidence gating.
- Fixed a possible unhandled exception when composing paths to files to which the user has no access.
- The AI TC in the **VEC** will now always enable power to the smoke grenade launcher so that grenades can be fired in case the vehicle gets immobilized etc..
- Fixed issue in the **Pizarro** and **Leopardo 2E** vehicles, where, with the 'touchscreen' feature enabled, a click on the BMS would bring up the map screen, thereby closing the touchscreen window. The fix is to imply NOT enter the map view if the user clicks onto the BMS (instead this has to be done via hotkey).
- A user in 'scenario testing' mode may now teleport units on the map (ie actually use the 'move unit' functionality shown in the unit's property menu).
- Fixed an issue with network message addressing, causing the message to be delivered to the wrong combatant (always combatants on the 'blue' side when the sender might be in a non-blue party), possibly creating all manner of hard to reproduce network bugs.
- Removed the option to selectively disable AI crew positions for combatant types (and configurations) where this option can never apply.
- The list showing the available vehicle-specific hotkey filters, as well as the list of available camouflage patterns in the mission editor will now be more reasonably sized and display a scroll bar if the number of selectable items exceeds the visible area.
- The list of filters for hotkeys is now (again) alphabetically sorted.
- The slider widget will now draw its 'handle' even if the control is set to be read-only.



P.O. Box 654 ◦ Aptos, CA 95001 ◦ USA
Fax: +1-(650)-257-4703

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- Fixed an issue in the code for missiles using predictive LOS guidance - the code checking for LOS at the impact point did not work correctly
- More reliable in-flight synchronization of missiles in network sessions
- Have your name and address in the email body. Mousepads limited while supplies last.
- Added smoke trail to **Hydra-70**
- Adjusted ER nationality infantry to have M16 rifle and TOW missile, based of additional research to have a more unique mix of equipment.
- Fixed overflowing text in the **Controls** dialog
- Fixed control issues with **T-72B3** GPS sights, making input consistent between view modes and input method
- Fixed a problem where the **UAV(I)V Bullitt** could not be deployed because it assumed there was an actor (the drone itself) at its deploy position
- **Warrior** night vision sights no longer show daysight reticle
- Fixed an issue in network sessions, where sometimes the movement of a map graphic would not be properly synchronized
- Fixed a bug in the **Pizarro F.2** TIS UI where the text in the status bar (top) would sometimes bleed into the TI sight picture
- Removed incorrect illumination effect from range on **CV9040 & ASLAV** thermal GPS.
- Fixed a bug in the **Centauro B1/Troops** where in network sessions the automatic TIS contrast/brightness feature may not always have worked correctly
- Fixed a bug in network sessions where in the **Leopard 2A5(+)** vehicles the CDR's 'override' state would not be properly communicated to all session participants
- Fixed an issue in the **Centauro** vehicle where the AI CDR would unbutton through his closed hatch
- **In Progress** saved mission that then get saved again in the **Mission Editor** will now keep the damage states of buildings and bridges
- Vehicles on a mobile bridge crossing an AT ditch or crater no longer experience the slippage of the terrain under the bridge
- Fixed a glitch in the particle trail IR intensity, which became blacker as it faded
- Fixed rendering issues with the **M113/FO** and **FIST-V** NVG views
- Fixed a bug in the networking code with vehicles transporting a large (>30) number of dismounts. Due to this change this version is network-incompatible with earlier versions!
- Adjusted the interior lighting properties of all **CV90s** so that the interior light is less likely to activate when the hatches are open in the day time
- **Leopardo 2E**: Minor adjustments on the armor model
- Kinetic impacts on the ground now show hot in thermal views
- Adjusted the firing positions for soldiers in the small barn so that their heads no longer clip through the roof
- Adjusted the IED payload capacity of the **motorbike**
- **DF30 & DF90**: Added laser warning sensors that may be damaged
- In map views, removed the plow/roller from enemy icons. Human players are expected to determine, and to report to others, the significance of such equipment
- **M1 Abrams** (all): The ammo cook flame will no longer occur in inappropriate situations
- Further improved the "halo" particle effect, both daylight and thermals

Resolved Bugzilla entries

- Fixed bug #247; AI vehicles will no longer insist following the player into a dead end all the way if the player starts driving back in his own tracks
- Fixed bug #346; you may set conditions to turn engines off on waypoints.
Note that this condition is ignored if the checkpoint has an unconditioned route (or a conditioned route, with the condition being satisfied) leading from it. Unit will adopt this condition upon arriving and discard (ie disregard) it once they embark on a new route (or if they successfully turned off their engines). Units will automatically turn their engines back on if the waypoint they are occupying has a conditioned route leaving from it whose condition gets satisfied, if the user assigns them a manually plotted route, or if they are under direct or indirect fire.
Note that this new property menu entry is only available in the **Mission Editor**, not in the Planning or Execution Phases!
- Fixed bug #674; attack helicopters will use other means to engage hostile helicopters, if possible, than (just) with their ATGMs
- Fixed bug #1620; the **Leopard 2A5(+)** series CDR's peri will now always be put into 'ZÜ' mode if the AI CDR unbuttons
- Fixed bug #2052; the **Wisent ARV** has green wheels in deserts no more
- Fixed bug #2179; units not starting battle ready will have their engines turned off at mission start.
Note that this only applies to newly created scenarios.
- Fixed bug #2228; dead infantry in buildings no longer block a firing position, nor count towards max occupancy
- Fixed bug #2279; **BRDM-2 AT** is now crewable
- Fixed bug #2903; vehicles on resupply stop scanning their turrets
- Fixed bug #3077; **Scimitar, Scorpion, 1.2t Technical** with recoilless rifle no longer traverse the turret on the move
- Fixed bug #3204; **Mission Designers** may now set both the initial loadout of ammunition, and the default amounts to which they would be replenished when parking next to an ammo truck
- Fixed bug #3229; **Wait Times** damage was moved into a unit-specific, or a scenario-wide **Option** instead. This will now also affect drone/loitering munitions setup times (and therefore should be used with measure, as it has the potential to shift balance); see also bugs #11285, 11313
- Fixed bug #3354; smoke stacks may finally be assigned variable heights
- Fixed bug #3357; there's now a "Hotkey finder" in the **Controls** dialog. Type a key or a key combination, and it will reveal all the functions currently tied to it - possibly reduced by an active filter
- Fixed bug #3371; CO and XO units are functionally considered as FO units now
- Fixed bug #3528; in the **Truck 4x4-F** the driver may now check the rear
- Fixed bugs #3659, 3660, 5139, 7466 by restructuring the **New Unit** menu, and adding new categories
 - Logistics
 - Recon
 - Split "PC" category into APC and IFV
 - Allow a single vehicle to be listed in multiple categories
- Fixed bug #3680; non-tank units bereft of any 'other' main ammunition, will



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- now stop and reload ATGMs while on Engage routes
- Fixed bug #3692; for T-90 the ready and stored ammo count now matches the correct figures
- Fixed bug #3863; have a 'weapon deployment' progress bar for infantry
- Fixed bug #3916; UGVs/UAVs may now be configured to be required to maintain line of sight to the controlling unit
- Fixed bug #4138; Helicopter crashes now potentially more spectacular
- Fixed bug #4459; players joining a session-in-progress as the sole player of a certain party will now inherit ownership of all units, rather than being owned by the Host in previous versions, who, being in a different party, couldn't do anything about it
- Fixed bug #4743; Helicopters will now fire unguided rockets and gun at an area if they are given a **Suppress here** command (not to be confused with a **Suppress** battle position tactic)
- Fixed bug #4755; as a desired "nice inconvenience" the BMP-2 commander's TKN-3 peri will now automatically spin to the rear when the player uses the (F2) commander's sight
- Fixed bug #4763; AI tank gunners will now ignore helicopters unless the helicopters are engaging them (and the tank crews spot the threat)
- Fixed bug #4775; AI tank gunners no longer wait for enemy to be come within coax MG range (~1200m) before engaging enemy infantry with main gun HE. With this change, there is no maximum range out to which 'weapon team' (ie non-'ordinary') troops will be engaged (this used to be 1500m for troops which didn't recently fire ATGMs)
- Fixed bug #5468; in emergency mode, in the IFV Marder, the arrow keys now work
- Fixed bug #5555; Mission designers may now (optionally!) embed a 'delta' type map package into a scenario file. The maximum file size of the package must not exceed 100MB. The embedded map package will be silently installed in the user's map package folder.
- Fixed bug #5559; the CV90/35's Thermal auto focus is now toggled off and on through the vehicle system menu (and be off by default)
- Fixed bug #5621; infantry no longer fire at other infantry inside closed armored vehicles, ignoring the wall of armor in between
- (partially) fixed bug #5670; in network session, GNR's stabilized sight jumps if CDR ceases override using his own stabilized sight
Fix implemented for the CV90/35
- Fixed bug #5701 by changing the guidance model of **Spike-SR** and **RB57 Storm (NLAW)** from unguided rocket, to guided, fire and forget RPG
- Fixed bug #5718; reduced the movement speed penalty of deep snow for dismounted infantry by half
- Fixed bug #5795; CV90/35 Gunner's VIS screen will now turn with the turret
- Fixed bug #5934; **Leopardo 2E (SP)**: battlesight button in vehicle interior now behaves properly
- Fixed bug #6300; infantry on **March** tactics will no longer crawl just because some enemy was spotted somewhere
- Fixed bug #6419; Rocket artillery vehicles will no longer fire their entire missile loadout; instead, the call for fire's 'rounds per tube' setting is used. The

widget has been updated to allow selection of up to 40 rounds per tube (to account for the BM-21's maximum loadout).

In addition, on arrival at a battle position with **Suppress** tactics, MRLS will fire only three missiles at random spots within the observation focus arc, at the range of the LOS bubble.

- Fixed bug #6579; the BTR-80 Gunner's primary sight now uses the BMP-2 commander's sight
- Fixed bug #6695; infantry mortar teams will now fire all available tubes as requested per Call for Fire dialog, rather than just one
- Fixed bug #6761; Helicopter pilots received extra training to avoid collisions with hedgerows, power pylons, bridges, land object lines and more
- Fixed bug #6766/#9820

With this change, multiple 'ISO Container' type obstacles, as well as vehicle emplacements and bunkers may be rotated. It is also possible to set the 'focus' point for multiple vehicle emplacements simultaneously; note that in this case all emplacements will have the same focal point (while object rotation results in all objects to have the same orientation value).

There also has been a behavioral change with the 'focus' position – it will no longer rotate alongside its emplacement but stay fixed.

- Fixed bug #6954; told the hit rays in the AAR to quit smoking those strange shaders that made them appear metallic, and, at times, difficult to properly recognize them
- Fixed bug #7017; Motorbike suspension is now less of an issue

- Fixed bug #7036; right-clicking a route now opens a dialog to split the route and to insert a new waypoint. Existing conditions will be retained for the first leg of the route
- Fixed bug #7359; the Spike's "Missile lock" no longer persists the engagement
- Fixed bug #7495; out-of-order sorted platoons will now restore their column formation better more often
- Fixed bug #7543; plugged a hole under the CV90/30-FI's gun that could be seen when zoomed-in on to TA4-6 control panels. Phew!
- Fixed bug #7553; T-15 received a dedicated emplacement; the corresponding menu listing all available vehicle emplacement types has now been split into two as well
- Fixed bug #7701; when viewed in narrow field of view, roads may now be rendered out to farther distances
- Fixed bug #7708; In-Game Map Downloader: added a 'Refresh' button to the map package download wizard. In addition, see bug #9638
- Fixed bug #7765; the **Mission Debugger** will now properly change the "IDs" button to red color if a legacy scenario has **duplicate IDs** in other parties
- Fixed bug #7867; **battle positions** no longer insist on **Normal spacing**; they will now adopt the arriving unit's settings. Routes and checkpoints now default to "No change" spacing setting
- Fixed bug #7923; the **M60A3** turret will no longer rotate continuously if **Suppress orders** are given
- Fixed bug #8040; as a keen user's eye spotted, the eye view and other unstabilized sights were shaken differently at the same speed, depending on the **direction of travel**; no longer.



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- Fixed bug #8113; Trucks and **Technicals** with **missile** armament will no longer adjust their position despite being on 'Stay' tactics.
- Fixed bug #8128; when creating a **route** from an **infantry** unit directly to a **building**, the lazy bastards will no longer pretend being already there as a lame excuse not to move at all
- Fixed bug #8189; eliminated an artefact that created the impression of a 4th **low tension power line** at the base, running under ground
- Fixed bug #8224; vehicles will now **re-load ammunition** to their default capacities, rather than just to their (potentially very low) level at the start of a scenario
- Fixed bug #8367; **Piranha V** interior no longer creates massive FPS loss
- Fixed bug #8439; Map editor: powerline cables are not rendered in 3D if user re-loads the map"
- Fixed bug #8522; Some petty tyrant in Redmond decided that for the Windows 10 start menu, developers could no longer create their subdirectories for each different application.
All SB installations will now be put into one (shared) **eSim Games - Steel Beasts Pro** folder
- Fixed bug #8709; AI bridgelayers were reminded that in order to replace a span of a damaged bridge it's insufficient to dump their own bridge just somewhere in the vicinity of the gap and call it a day
- Fixed bug #8778, again
- Fixed bug #8779; **Minisamson RWS** stopped flooding the network
- Fixed bug #8811; in network sessions, units with radios disabled or damaged could receive some map updates; no longer under the same rare circumstances
- Fixed bug #9085; **Leopardo 2E** is now contrasting better
- Fixed bug #9098; when joining a network session in progress, clients no longer only receive the map graphics for the Blue side (so if they were on Red, no graphics for them)
Note: This change has the side-effect that the host player will see ALL map graphics on his side (even ones there were sent (as an example) to 'my vehicle only' by someone else in a different unit.
- Fixed bug #9218; Map package names may now contain any character except for the (Windows-reserved) characters such as: <>/\||":?*|
In addition, dear script kiddies, skip your funny map names like "CON", "PRN", "AUX", "NUL", "COM1", "COM2", "COM3", ..., "COM9", "LPT1", "LPT2", "LPT3", ..., "LPT9", and "*map name*";
DROP TABLE MapPackages;--
They are likewise reserved by Windows, or just plain naughty
- Fixed bug #9230, for more detailed, more soul-crushing changelog notes
- Fixed bug #9244; decided, reluctantly, that for the LMV equipped with ERCWS, when you went to gunner's RWS panel (F6-F2), twice as many vehicle interior models being rendered was not twice as good
- Fixed bug #9251; as the squad leader, clicking the Leonardo panel in the Piranha V PC and Eng variant no longer produces an "odd view"
- Fixed bug #9313; improved the contrast for UAV HUD elements
- Fixed bug #9394; patched a hole in the T55 driver's compartment with canvas



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- Fixed bug #9395; with the help of better accounting, we moved **Leopard 2** family periscopes out of the red.
Updated the **Leopard 2A5 DK, DK-A1 and DK-A2** interiors
- Fixed bug #9396; adjusted lighting for M1 family ammo box that had interior combat light applied, on the outside
- Fixed bug #9434 by making deployed bridge position more consistent between network session players
- Fixed bug #9436; for all the **Leopards** *except* the **AS1**, the conflation of TIS standby and view channel selector prism toggle has been removed, to no practical effect for users of the Personal Edition.
Just so you know.
- Fixed bug #9437; terminated a UTM grid zone conversion error for 3.x to 4.2+ scenarios
- Fixed bug #9441; Map annotation colors may now be any color again, and not just “any color as long as it’s black”
- Fixed bug #9444; infantry will be able to utilize breach lanes created by engineer infantry, as long as at least three dismounted engineers work side by side when creating the breach. Our dismounts seem to have really fat bellies, and short arms
- Fixed bug #9450; infantry will now handle overlapping minefields better, getting stuck less often
- Fixed bug #9480; the T-16 Armata refuses to be misgendered as an AEV now
Maybe it’s just a phase.
- Fixed bug #9494; Particle effects now seem to 'blink' less with certain vehicles
- Fixed bug #9495; in network sessions, the main gun on client-owned vehicles, occupied by a human user, will no longer fail to load
- Fixed bug #9499; navmesh supported routes now ignore water and wadi terrain while plotting a breach route
- Fixed bug #9500;
The Steel Beasts installer will now write the version number of the (most recently!) installed version into the Windows registry, a REG_SZ value with the name 'Version' into the key `HKLM\Software\Sim Games \{SB_Version_Number}`, e.g. `HKEY_LOCAL_MACHINE\SOFTWARE\Sim Games\Steel Beasts Pro PE`
- Fixed bug #9504; **DF90**: On the move GNR's control panel rotates w/ vehicle roll angle, and the camera now, too
- Fixed bug #9508; **Piranha V/Engineer** and **AEVs** are now able to mark lanes on breach route
- Fixed bug #9510; for the Gold party (and a few others), color's currently occupied vehicle/unit color has been adjusted not to be too similar to the owned unit color
- Fixed bug #9514; **Piranha V**: When equipped with RWS, switching RWS to thermal mode (while in gunner's position) no longer renders vehicle interior in black and white
- Fixed bug #9521; **Piranha V** NVGs work as intended now
- Fixed bug #9526; **Protector**: if user has F1 view 'activated' and switches to F2 view, RWS no longer moves uncontrolled
- Fixed bug #9527; **Piranha V**: When in commander F1 view, left clicking on the BMS screen will now take you to F5 view
- Fixed bug #9529; **Arrows**: if user has F1 view 'activated' and switches to F2 view, RWS no longer moves uncontrolled
- Fixed bug #9531; **MT-55** assault bridge: AI drivers are now able to use it to cross water obstacles



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- Fixed bug #9534; **M1 series** tanks: commander is now able to override with P key while in Emergency Mode
- Fixed bug #9535; **Arrows M2S**: AI gunner is now able to engage enemy targets
- Fixed bug #9538/#9539; **CV90/35**: enabling and disabling E-stop no longer changes rear deck clearance limits/with gun over rear deck prevents depression of the main gun
- Fixed bug #9540; units can now use **underpasses**
- Fixed bug #9545; **Revive if...** condition will no longer work with turretless wrecks
- Fixed bug #9553; **T-72** main gun will no longer become non-functional in network sessions, with gun seemingly stuck in loading position
- Fixed bug #9555; **Fennek**: Lost frame rates when BAA was deployed and Day or Thermal Camera enabled have been recovered for CDR and GNR position
- Fixed bug #9556; **JIM-LR** may no longer be used on the move
- Fixed bug #9559; **Spike ATGMs** will now reliably have their guidance cable cut when reloading launcher in a vehicle
- Fixed bug #9564; **Arrows RWS**: AI GNR hit enemy targets more reliably now
- Fixed bug #9567; for mounted troops, **JIM-LR** may now be used in unbuttoned squad leader's view (F11)
This change also enables use while in buildings
- Fixed bug #9572; **DF90**: In Network Session, thermal imager no longer remains stuck in cooldown mode
- Fixed bug #9590; **Protector** display is now displayed on **Leonardo** WPN page
- Fixed bug #9596; passing under bridges forces less of a slow down now, struck a deal with the Troll union
- Fixed bug #9616; **Follow Leader** works as intended now
- Fixed bug #9622; **Helicopters** may now hit their targets with rockets, despite time acceleration being off
- Fixed bug #9625; **Snap to road** route plotting broken works better now around **bridges**
- Fixed bug #9628; **Piranha FUS**: Added **Fire!** and **Fire and adjust!** commands for human CDR, as well as joystick support for override
- Fixed bug #9634; **Infantry Taskforce** routes will no longer occasionally switch to **Computer Ownership** (thus denying you the option to edit them)
- Fixed bug #9638; clients will now refresh the list of locally stored map packages whenever a new session is connected (or if the host changes the used scenario)
- Fixed bug #9643; fixed a weird warp of the **Leopard 2A4** hull texture
- Fixed bug #9653; helicopters no longer miss targets engaged with SACLOS ATMGs while flying over slopes
- Fixed bugs #9656/#8665; **Mission Editor**, **Test Mode** by adding an alternate test function that closer resembles actual player limitations.
The **Experimental** mode giving the Mission Designer more options is enabled by default (if the scenario is being launched from the **Mission Editor**, or directly from the **Main Menu** (while holding down the **Alt** key)).
The "Normal test mode mode" may however be toggled in the **File** menu (or **System** menu, while in 3D view).
- Fixed bugs #9657; even dead infantry no longer reload their ammo
- Fixed bug #9659; session **Host** players may now assign **Client** players to units

- Fixed bug #9672; when assigning players by **Host** (bug 9659), the vehicle will now always be 'public' (ie free for other players to join) now.
A client occupying a vehicle's CDR position may however still prevent other players from entering his vehicle
- Fixed bug #9681; in winter themes, (some) leafless distant trees will no longer appear with foliage in thermals
- Fixed bug #9683; mounted troops that died no longer force the vehicle into a limbo state where it can never complete the **dismount procedure**
- Fixed bug #9684; vehicles will now halt ongoing **mount/dismount** procedures when receiving manual driving commands (ASDW)
- Fixed bug #9686; in the **Mission Editor's Support** dialog, Off-map support now lists "Rounds per tube" settings
- Fixed bug #9716; **Leopard 2A5-DK** and **2A5A1-DK** received textured for their stored rifle, and the coax MG
- Fixed bug #9731; list of scenarios is now reset if the **Search** function was used
- Fixed bug #9738; starting with version 4.300, the **versioning scheme of the binaries** changes so that both the FILEVERSION and the PRODUCTVERSION fields contain the complete version information, 'major'. 'minor'. 0. 'hotfix', eg '4.301.0.0' (for no-hotfix releases) and '4.301.0.15' (as an example for a hotfix).
Note that the representation in the user interface will remain unchanged.
- Fixed bug #9785; in the **Windows Start Menu - Steel Beasts** the outdated "Maps" shortcut has been replaced by a new **Themes Folder**, allowing direct access to the last items residing in the 'old' map location. The **Maps Folder** entry has now been changed to point to the map package storage location *at the time the installer was executed*. This might get out-of-date if you change it later!
- Fixed bug #9798; the **DF90** AI CDR will no longer order a human gunner to fire sabot, and force its use when encountering infantry
Note that the CDR may still load an **undesired** ammo type if the chosen type simply cannot be loaded due to ready rack design
- Fixed bug #9802; made sure that in all cases units on march routes would reach their waypoint, even if that happened to lie in the divider section of highway No. 5
- Fixed bug #9812; made icky warehouse #231 less sticky
- Fixed bug #9823; adjusted the color of containers in the map view
- Fixed bug #9828; adjusted the max altitude for **Quadcopter** UAVs
- Fixed bug #9831; resolved a number of AI issues for troop transport vehicles in case that **mounted troops** became **incapacitated**
- Fixed bug #9891; moved all the 'C2' type vehicles into the newly created **Command** category.
- Fixed bug #9900; reduced the frame rate loss experienced by clients in a network session if someone plowed a lane through a minefield
- Fixed bug #9920; non-tank vehicles are now able to drive around **steel beams** obstacles
- Fixed bug #9968; printing to **Microsoft PDF** no longer locks Steel Beasts up
- Fixed bug #9971; the mouse vector origin was moved to any sight's cross-hair center, finally
- Fixed bug #9977; improved obstacle avoidance for vehicles following roads



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- Fixed bug #10008; while dismounting, infantry will now run to their positions rather than crawl
- Fixed bug #10028; **SMARt** and **BONUS** rounds now reach their targets reliably
- Fixed bug #10048; **aggregated** icons may no longer be selected when invisible
- Fixed bug #10050; adjusted adjustment increments when adjusting artillery fire — because, mortars
- Fixed bug #10067; infantry with targets outside their weapon range more patient now
- Fixed bug #10076; fixed a **Group by callsign** issue in cases where the number of units exceeded battalion strength
- Fixed bug #10079; added the following hotkeys for **AAR Playback** control
 - **Alt+Space**: start/stop
 - **Alt+Arrow left/right**: rewind/FFD
 - **Alt+Arrow up/down**: skip to end/start
 - **Alt+S**: skip to next event
 - **Alt+H**: remove the control box, icons
- Fixed bug #10083; helicopters now stay above treetop level when hovering and aiming at targets, if near trees
- Fixed bug #10117; deployable earthworks, even if not deployed, will no longer leave terrain deformations in mission area
- Fixed bug #10123; in the **Eagle IV**, while on the move the RWS panel in F2 view no longer appears shaking excessively
- Fixed bug #10130; the **UGV** hull roll angle now conforms to the underlying slope, irrespective of orientation
- Fixed bug #10132; Steel Beasts will no longer crash after changing a unit's name in the **Mission Editor**
- Fixed bug #10140; in network sessions, client-owned infantry will now conform to the player's **behavior-in-buildings** settings even if he isn't watching
- Fixed bug #10144; **Grkpbv90** has better artwork on the inside now
- Fixed bug #10146; **revived** infantry will now walk as ordered
- Fixed bug #10147; large maps no longer fail to decompress with **Map Package Transfer Manager**
- Fixed bug #10148; roadside objects no longer scare passing vehicles
- Fixed bug #10155; trivial or not applicable damages to units will no longer be reported in **hit by penalty** events in AAR and HTML report
- Fixed bug #10158; it's now possible to duplicate **AT ditch** and **infantry trenches** in the **Mission Editor**
- Fixed bug #10165; improved the AI drivers' ability to bypass standing vehicles without collision
- Fixed bug #10176; improved the eye view's **Vehicle** menu entries to reduce confusion
- Fixed bug #10187; improved the camera noise effect for all UxVs
- Fixed bug #10189; it's now possible to change the **language settings** at runtime. This does **not** change voices, will **not** be saved out in the user's **Options** file
- Fixed bug #10211; tanks with plows no longer use **March** tactics on breach routes if following a MICLIC
- Fixed bug #10214; **Load Overlay** works more reliably with emplacements
- Fixed bug #10217; Steel Beasts will now ask for confirmation on file deletion in certain dialogs (previously this was only asked when using the **Del** hotkey)
- Fixed bug #10219; breaching units now behave correctly if confronted with multiple minefields in successive order
- Fixed bug #10220; **helicopters** and **drones** avoid **powerline pylons** better now



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- Fixed bug #10232; loading a **saved plan** now positions dismounted infantry in the **Planning Phase**
- Fixed bug #10248; took the smoke generator from **M113 G4** which it wasn't supposed to have in the first place. Nice try, though.
- Fixed bug #10255; **Vector ATTV, Mercedes G300 CDi**: Changed their default platoon size from 1 to 4
- Fixed bug #10270; latecomers no longer ram other units, if routes converge on a common waypoint
- Fixed bug #10276; condition parameters are now properly copied with routes
- Fixed bug #10277; the dialog to configure IEDs no longer orphans conditions
- Fixed the rather bad bug #10282 about **Random Variables** and their representation in the **Mission Debugger**
- Fixed bug #10286; **AVePS** launchers will no longer float in the air after a **T-72** (and maybe others) lost its turret after death
- Fixed bug #10292; the **VEC-M1** crew can now switch to coax or main gun HE ammo if engaging troops
- Fixed bug #10308; **Navmesh** routes will now take in to account mobile bridges
- Fixed bug #10309; **Navmesh** pathfinding for vehicles on **Breach** routes now ignores **AT ditches**
- Fixed bug #10312; AI on non-navmesh routes no longer refuse to use deployed **mobile bridges** leading across **AT ditches**
- Fixed bug #10317; RPG gunners will lie down again if their target moves out of range
- Fixed bug #10324; in the **CV90/40** with **KulsGr 90/PFHE** ammo selected, the invalid **time fuze** mode will no longer be shown as the round has only **impact / proximity** fuze modes
- Fixed bug #10330; improved the IR sight quality for a number of Soviet era combat vehicles
- Fixed bug #10333; **Arrows** and other RWSs can now be controlled with joystick despite active mouse control
- Fixed bug #10343; In-progress saved scenarios with mission time limit will no longer end immediately
- Fixed bug #10356; **Leopard 2A4** gunners now apply lead in BEOB mode
- Fixed bug #10364; **Leopard 2A4** loader now secures gun while replacing an already loaded cartridge
- Fixed bug #10367; Offline Sessions will no longer load an empty scenario if the map package happens to be missing.
- Fixed bug #10395; in the **Planning Phase** the displacement of approximate enemy locations is now properly randomized
- Fixed bugs #10401, 10402; ambulance vehicles no longer load combat troops and replenish their ammo
- Fixed bug #10409; **Leopard 2**: in KH HZF (KW) mode the CDR TC may order the GNR to switch to day optics, again
- Fixed bug #10413; adjusted the **Leopardo 2E** unbuttoned DRV pan limits
- Fixed bug #10428, a missing texture for the **DF90** coax on CDR's side
- Fixed bug #10420; In offline mode Steel Beasts will no longer pause while minimized from fullscreen mode, and continue playing sounds.
- Fixed bug #10421, an issue with the CDR's hatch of the **Leopardo 2E, Strv-122**
- Fixed bug #10464; vehicles equipped with **Arrows RWS** will now finish reloading smoke grenades
- Fixed bug #10468; crews of vehicles equipped with an ATGM (not mounted in a powered turret) and travelling faster

- than 10km/h now stow the launcher in its forward position
- Fixed bug #10469; **Parties** may switch **attitude** more than once per scenario now. This “bug fix” has a lot of abuse potential, so be careful.
 - Fixed bug #10473; you may left-click a selected unit’s route anywhere, again
 - Fixed bug #10474; **HEMMT Fueler** and **Supply** will stop scanning their HMGs when the CDRs button up
 - Fixed bug #10479; some vehicles with **missile launchers** will stop on **Engage** routes to reload missiles rather than running into the next enemy empty
 - Fixed bug #10481; changed the sequence in which Steel Beasts finds **desert, winter, autumn textures** to apply if a nation-specific texture doesn’t exist
 - Fixed bug #10483; infantry mortar teams keep fighting now if their leader becomes a casualty
 - Fixed bug #10485; on *some* vehicles a carried ATGM tube is no longer visible after the missile team is mounted
 - Fixed bug #10495; after a helicopter was shot down, surviving troops will now take a while to exit the wreckage
 - Fixed bug #10502; Some tanks do not allow manual traverse wheels to operate the turret even though key tapping does"
 - Fixed bug #10509; NLAWS will hit their targets now
 - Fixed bug #10515; follow-up vehicles will now bypass their leaders if these were immobilized by **Driver damage**
 - Fixed bug #10522; extended the gun recoil travel for **M60A3**
 - Fixed bug #10525; halved the distance to pull vehicles to a road to 17.5m in the cases where the unit driven manually but still in road tracking mode
 - Fixed bug #10533; for all **M60A3**, the commander's HMG's elevation may now only be controlled by arrow keys
 - Fixed bug #10548; in the **Call-for-fire** dialog you may now type-in the number of rounds per tube
 - Fixed bug #10555; educated **engineer infantry** that One Does Not Simply Walk Into Mordor Minefields
 - Fixed bug #10556; when on **Suppress** tactics, **helicopters** will now shoot the designated area, ignore enemies
 - Fixed bug #10558; **AH-1 Cobra** prefers ATGMs over unguided rockets now
 - Fixed bug #10567; DLLs installed by Steel Beasts largely come with digital signatures now
 - Fixed bug #10568; the "third person" rocket artillery sound #567 will now be heard over much longer distances
 - Fixed bug #10573; in the **Mission Editor** you may now reorder callsign templates of other than just the current party, e.g. **Options -> Unit call signs -> Red -> Reorder**
 - Fixed bug #10575; in the **Mission Editor**, if manual azimuth determination was set for the scenario, the tank clock or compass are shown again in **Test mode**
 - Fixed bug #10607; TIS/Day fusion camera has been improved by color enhancement of hot spots
 - Fixed bug #10613; while still focusing forward, infantry squads maintain 360° surveillance now
 - Fixed bug #10625; in the **Weather Control** dialog, after editing a just added WC point, the button now says **Update**
 - Fixed bug #10658; Vehicles sometimes want to be in the same place as a dead vehicle, especially one that formerly belonged in the same platoon"
 - Fixed bug #10663; further delay AI reactions to incoming artillery fire
-

- Fixed bug #10669; for session hosts, the list of available map packages will now be automatically refreshed on pressing **Go**, or **Change scenario**
- Fixed bug #10677; crews of BTRs equipped with night optics will now use them in low light conditions
- Fixed bug #10698; **helicopters** engaging with ATGMs no longer drop altitude, rather try maintaining LOS to target
- Fixed bug #10699; improved the sound of helicopters firing unguided rockets
- Fixed bug #10700; troops in helicopters are now ignored until dismounting
- Fixed bug #10702; **Shift+Alt+W** now lets you set specific window sizes
- Fixed bug #10704; tank platoons may no longer form a double column
- Fixed bug #10705; reenabled mortar smoke burst effect
- Fixed bug #10726; Holding down the **Shift** key while clicking the main menu's **Map Editor** button will now filter the list of map packages with only **unpublished** maps (that can be edited)
- Fixed bug #10727; **SMArt 155** and **BONUS** will now detonate when hitting the ground
- Fixed bug #10728; improved behavior if troops dismounting near obstacles
- Fixed bug #10738; AI units will now try to escape scripted ICM artillery barrages
- Fixed bug #10745; gunners of recoilless rifles no longer wear their coat of invisibility when spotting enemy
- Fixed bug #10756 where some missile-equipped anti-tank vehicles would ignore targets on non-flat maps
- Fixed bug #10794; wheeled vehicles suffering tire damage will now emit an audible tire puncture sound
- Fixed bug #10781; When a vehicle is on top of a trench's occupied fighting position, the soldier will now go into the kneeling-suppressed pose at the bottom of the trench rather than abscond
- Fixed bug #10792; if an LMG infantry unit is in a building, and that unit loses its MG somehow, visiting the MG's sight no longer lets your view ascend into the infinite sky
- Fixed bug #10801; infantry dismounting from a vehicle parked next to a building will no longer stand around, but rather form a pile of lying bodies
- Fixed bug #10802; battle positions (other than **Hold**, **Stay**) set to be **invisible** will now alternate between yellow and their base color if they miss an unconditioned escape route
- Fixed bug #10803; Six-vehicle platoons in column formation are no longer sorted out of order; on moving out, they will no longer try to swap positions (which tended to ruin a lot of things in narrow urban settings)
- Fixed bug #10828; the **Mission Editor's autosave** function now works even if the scenario has not been saved yet
- Fixed bug #10836; for the **MK.19 AGL** and other "new guns", first use of the mouse wheel to adjust range no longer sets the range to 1000m
- Fixed bug #10850; in the **Call-for-fire** dialog the number of available mortar tubes is no longer multiplied by the strength of their crews
- Fixed bug #10851; squads may now store more than 0 **rifle grenades**
- Fixed bug #10852; improved foreground raindrops in the external observer's view
- Fixed bug #10864 about some obscure IPS thing that can apparently be reloaded, and caused trouble with UAVs in flight. Internet, rejoice!



P.O. Box 654 ◦ Aptos, CA 95001 ◦ USA
Fax: +1-(650)-257-4703



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- Fixed bug #10866; the **M113G4-DK** CDR is now using the proper MG pose
- Fixed bug #10873; air defense missiles now home for the helicopter body
- Fixed bug #10898; when troops are mounting into PC, there is now a way to stop one of the teams from carrying out the process
- Fixed bug #10951 by increasing the LOD transition distance for vehicle emplacements
- Fixed bug #10956; fixed a network issue with the **BMP-2** ATGM launcher elevation
- Fixed bug #10912; un-reversed the driver's door for **Technical RCL**
- Fixed bug #10943; **optical MG sights** are now calibrated to same default range; other details cleaned up too, particularly with **Elcan 97 Spectre**, and **ACOG**
- Fixed bug #10961; user-occupied infantry positions (such as a weapon team's sight) are now exempt from suppression reactions that were previously preventing you from firing the weapon
- Fixed bug #10984; the **M901** GNR no longer unbuttons, then faces the wrong direction
- Fixed bug #10989; Russian 120mm mortars quit quitting smoking now
- Fixed bug #10990; enabled the BRDM-2 CDR's TKN periscope IR/NVG mode
- Fixed bug #10999; **SA-9** missiles no longer detonate prematurely
- Fixed bug #11000; reduced proximity fuze range for several air defense missiles to improve lethality
- Fixed bug #11002; helicopters are much better at hitting targets with unguided rockets; fixed this then some more
- Fixed bug #11003; improved the ability of infantry in trenches to shoot sideways as it used to right up to the release version, that broke it for some obscure reason
- Fixed bug #11015; the shape of those (invisible) collision boxes for large boulders are now following their shape more closely. That being said, collisions will remain more art than exact science since collisions between boulders and vehicles are determined by their bounding boxes, and not the exact geometry; this has advantages elsewhere, that's why we're doing this
- Fixed bug #11053; added oomph to the **FIM-92B Stinger's** warhead
- Fixed bug #11078; Helicopters crashing into ground/water now "splash"
- Fixed bug #11071; entrenched infantry now gets suppressed on an individual level, rather than the whole collective. The range for hit notifications is while occupying an infantry trench
- Fixed bug #11078; helicopters crashing into ground/water will now create a 'splash' particle effect." They no longer need to reach the lake bottom to trigger water splash. (Also, the water now extinguishes fire and smoke)
- Fixed bug #11083; in the Austrian German **Call for Fire** dialog, **Width** and **Depth** are no longer swapped
- Fixed bug #11086; for new scenarios, the default visibility is now 4000m
- Fixed bug #11087; in the Mission Editor, when picking the map area there is now an additional crosshair to indicate the map center
- Fixed bug #11088; **Munin** drones will now properly crash to the ground (when killed)

- Fixed bug #11097; in the Support dialog, minor adjustments were made to clarify issues that seem to have confused some in previous versions
- Fixed bug #11090; vehicles will now cause proper collisions with light poles and some buildings, rather than ghosting through
- Fixed bug #11102; **T-72B3, BMP-2**: If the owning player moves the **TKN-3** out of the way to use the CDR's sight, the AI will no longer move the cupola back, unless the player teleports away. The AI CDR may rotate the cupola
 - if no human ever occupied the TC position
 - if the owning player is **not** in the observer's position
 - if the owner **is** in the observer's position, but hasn't been in the CDR's spot for 60 seconds or longer
- Fixed bug #11168; with plows engaged, when given manual turn orders mineplow vehicles will now lift the plow. You'll have to maneuver in a more organized fashion
- Fixed bug #11173; **M1A2 SEP**: LED lights are no longer missing from ICDU, so you identify your FCS mode
- Fixed bug #11175; Earthworks: your attempt to create linear trenches or ditches by setting just a single node (duh) will no longer crash Steel Beasts (double d'oh!)
- Fixed bug #11178; **T-72B3**: Some erratic behavior with the target tracker that appeared only in some situations was fixed, somehow
- Fixed bug #11179; the **Ammunition Dialog's** lower pane scroll bar now scrolls all the way down in all known cases
- Fixed bug #11180; you may now delete **Record** entries from within the **Main Menu**
- Fixed bug #11182; somehow, a déjà-vu of bug 11175 (see above), now fixed
- Fixed bug #11185; **T-72B3**: the target-tracking frame will now disappear with de-spawned units (on the tank range)
- Fixed bug #11196; **BMP-2**: NVG option for driver
- Fixed bug #11197; **T-72B3**: with target lock enabled, panning turret off the target does not cause lock termination
- Fixed bug #11202; **T-72B3**: with mouse used as an input device, inputs are added up to ATTS commands, resulting in overcorrection
- Fixed bug #11203; **PSG** and **PL** teams will now reliably dismount in the planning phase
- Fixed bug #11205; **Leopard 2** family: if changing FCS mode with hotkeys, rotary switch now follows
- Fixed bug #11206; the mysterious case of wandering left-aligned text labels in a locked Mission Editor room was solved
- Fixed bug #11207; **Scorpion**: main gun sound FX is missing during gameplay"
- Fixed bug #11212; **Leopard 2** family: Thermal imagers no longer out of focus
- Fixed bug #11216; destroyed organic UAVs will no longer have their icon revealed on the map
- Fixed bug #11217; in the **Mission Editor**, you may copy map graphics to other sides, again
- Fixed bug #11218; you may **Refresh Map Annotations** again in the **Mission Editor**
- Fixed bug #11219; you may create **Text objects** again on the map
- Fixed bug #11220; **Camera Animation Editor** – the **Frame forward** button goes backwards, no more
- Fixed bug #11221; no more excessive smoke particle effects from KE impacts



P.O. Box 654 ◦ Aptos, CA 95001 ◦ USA
Fax: +1-(650)-257-4703



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- Fixed bug #11225; duplicating ISO containers now duplicates their properties properly, period
- Fixed bug #11226; sending map graphics with text labels/text overlays to other participants no longer results in alignment shift
- Fixed bug #11227; fixed an AI problem resulting in occasionally chaotic behavior (gearboxes, sign errors, going backwards when trying to drive forward)
- Fixed bug #11231; Smart artillery munitions missing target will detonate on ground; now with smart munition explosion effect
- Fixed bug #11237; when sending **Multi-phase Attack** and **Dir. of attack**, main map graphics to other parties, the optional elements are now copied over
- Fixed bug #11244; see bug #3204
- Fixed bug #11253; infantry in trenches will now get suppressed by incoming indirect fire, including airburst
- Fixed bug #11256; quadcopter drones set to **LOS needed** which then actually lose LOS, may no longer be flown manually with ASDWX keys until LOS is regained
- Fixed bug #11261; after testing a scenario, and confirming to save the AAR, it **will** now be saved without you having to exit to the **Main Menu**
- Fixed bug #11265; accessing the **Drone information** dialog during the **Planning Phase** no longer triggers the **Save plan** dialog at start of **Execution Phase**
- Fixed bug #11266; the **Load AAR** menu no longer shows erroneous scenario start and end times
- Fixed bug #11267; **Munin UAV** in **Network Session**, and in **orbit mode**, no longer lose camera lock when owning client jumps away from unit and returns
- Fixed bug #11269; in the **Planning and Execution Phase** you may no longer toggle the **Start deployed** checkbox in the **Drone Information** dialog
- Fixed bug #11270; now denying battery depletion during drone deployments
- Fixed bug #11271; for **Robotic systems**, the GUI buttons now remain functional when regaining control after LOS loss
- Fixed bug #11273; in the **Mission Editor**, applying the **Burned** slider to destroyed units no longer crashes Steel Beasts
- Fixed bug #11277; further improved user control over **T-72B3** gunsight
- Fixed bug #11280; the **M1064A3** will no longer miss its HMG when loading a legacy scenario
- Fixed bug #11284; **Robotic Systems** will now adopt **Shortened wait times** applied to parent unit; this also applies to attached guns. When set, the time to pack up is reduced to zero
- Fixed bug #11286; GUI buttons for **Robotic Systems** control screens remain clickable after UxV exceeds control range limit
- Fixed bug #11289; for the **UAV(R) Munin** no more excessive events **Unit destroyed on collision** are generated. They made AAR files unusable and unstable
- Fixed bug #11292; in the **Leopard 2A5+**, the **TIM power** switch is now properly initialized in its ON position
- Fixed bug #11294; for all **DF30** crew, the **Num+** hotkey now toggles NVGs while the player is unbuttoned, rather than the thermal sight inside the turret
- Fixed bug #11295; human **M60A3** CDRs operating the **Range Feed** button no longer cancel the lead for AI GNRs. These will now skip lasing if the target range and yaw rate don't change much

- Fixed bug #11299; **M150** and **M113G3-DK TOW** gunners may now engage even if the player occupies the CDR position
- Fixed bug #11304; clients not owning **Mjolner** mortar vehicles may now see them firing
- Fixed bug #11305; improved the path navigation for helicopters
- Fixed bug #11308; calling precision artillery while in **Test Mode** now yields the proper effect
- Fixed bug #11314; for **Leopard 2A5+**, the close/open GPS shield door hotkey (**Shift+B**) works again
- Fixed bug #11318; on the **M60A3**, the CDR's LRF sight may now be toggled between 6x and 12x
- Fixed bug #11322; reduced the chance that a change in **Terrain Theme** results in invisible land object lines
- Fixed bug #11324; on the **T-72B3** you may change the gun elevation by joystick again (the Y-axis input was being discarded), even if X-axis is centered
- Fixed bug #11325; the **Centauro B1** CDR's night sight resolution is now adequately limited
- Fixed bug #11328; In the **Map Editor**, **Height Tools > Restore** now work after the map was saved
- Fixed bug #11334; in the **Map Editor**, shifted the **Line Object's** selection click location to the center
- Fixed bug #11335; **UAV(M) Sprite** will now engage targets again
- Fixed bug #11336; all line objects (including old **Hedge** objects, **except bridges**) may now be multi-selected with the marquee tool to be moved, or deleted
- Fixed bug #11337; in network sessions, all clients will see human-fired ATGM launch signatures synchronized now
- Fixed bug #11345; **UAV(M) Sprite** will no longer self-destruct immediately after launch from container
- Fixed bug #11346; on the **Technical-T Mortar** truck, gunner/commander will no longer go AWOL *for reasons*
- Fixed bug #11348; the MG3 iron sight is now set to a default of 500m for most cases
- Fixed bug #11350; M1 series tanks and Leopard 1A5, 1A5-DK, and Leopard 2 series: a shaded filter toggle for day sight should be added, similar to M60A3
- Fixed bug #11354; Clicking **Exit Map** has a reduced chance of crashing Steel Beasts later
- Fixed bug #11356; with human CDR overriding **BMP-2 GNR**, the IR spotlight now properly elevates with the gun
- Fixed bug #11372; **M2/M3A2 Bradley**: Changing reticule by hotkey **R** now delivers a change in reticule, rather than just the sound for it
- Fixed bug #11390; in thermal views water surfaces may now reflect the surrounding landscape and sky
- Fixed bug #11400; **Vehicle emplacements** will now adjust their depth after LOS bubble adjustment (before, it required an actual move action). **Vehicle emplacements** will now also be updated while in the **Planning Phase**
- Fixed bug #11401; on the **BMP-2**, **BTR-70**, and **BTR-8x** the gun elevation is now properly synchronized over the network, so all clients receive the same impression of gun fire accuracy
- Fixed bug #11416; with a damaged missile launcher, AI vehicle crews will no longer attempt to reload it
- Fixed bug #11427; Building objects are now given a dark gray color on the map,

so black reference points may still be recognized when placed on buildings

- Fixed bug #11437; added back the reticule markings for **120mm HE-T** on the **Strv122** gunner's auxiliary sight
- Fixed bug #11439; on the **UAV(M) Sprite** container you may no longer edit the **Stop launch if condition during Execution Phase**
- Fixed bug #11440; Steel Beasts will now successfully download a missing base map, if a delta map is already present
- Fixed bug #11441; Steel Beasts will no longer crash full screen mode is enabled
- Fixed bug #11458; helicopters will now climb earlier when approaching hills, reducing the chances of crashing
- Fixed bug #11472; to avoid confusion on a **Join in Progress**, clients will now see the party name appear to the right of their name once they select a unit; clients will not be able to change their status to **ready** until they select a unit
- Fixed bug #11476; in network sessions, the **UAV(R) Munin** (and possibly others) will now launch more reliably after setting it up, no longer dropping to the ground immediately
- Fixed bug #11492; adjusted air defense missile proximity ranges to increase reliability
- Fixed bug #11493; **UAV(R) Munin** will now maintain flight height settings while owner teleports elsewhere



P.O. Box 654 ◦ Aptos, CA 95001 ◦ USA
 Fax: +1-(650)-257-4703



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Steel Beasts beta testers found the following 528 bugs that you'll never have to experience.

Guys, we owe you more than we will ever know. Thank you all for your silent service.

- Fixed bugs #4053, 4590, 8959, 8963, 8974, 9025, 9120, 9154, 9157, 9175, 9309, 9310, 9311, 9312, 9314, 9316, 9317, 9318, 9320, 9321, 9322, 9323, 9324, 9325, 9326, 9327, 9328, 9329, 9330, 9331, 9332, 9337, 9371, 9372, 9374, 9375, 9377, 9378, 9379, 9410, 9411, 9412, 9413, 9445, 9467, 9481, 9548, 9560, 9563, 9576, 9661, 9665, 9739, 9746, 9756, 9760, 9778, 9788, 9836, 9837, 9847, 9849, 9850, 9852, 9853, 9857, 9854, 9858, 9859, 9860, 9863, 9866, 9871, 9872, 9873, 9874, 9883, 9884, 9886, 9887, 9888, 9889, 9890, 9896, 9897, 9901, 9902, 9903, 9904, 9905, 9906, 9907, 9908, 9910, 9913, 9914, 9919, 9921, 9922, 9923, 9926, 9927, 9929, 9933, 9934, 9937, 9938, 9941, 9945, 9950, 9956, 9957, 9966, 9967, 9975, 9982, 9984, 9985, 9992, 9993, 9996, 9997, 9999, 10003, 10005, 10021, 10022, 10038, 10056, 10058, 10088, 10091, 10095, 10097, 10099, 10100, 10118, 10124, 10128, 10138, 10141, 10142, 10144, 10156, 10157, 10159, 10160, 10169, 10171, 10173, 10174, 10175, 10177, 10178, 10180, 10181, 10186, 10195, 10197, 10203, 10205, 10207, 10216, 10228, 10231, 10236, 10238, 10250, 10254, 10256, 10257, 10271, 10273, 10274, 10278, 10287, 10289, 10296, 10300, 10304, 10306, 10313, 10320, 10322, 10327, 10328, 10335, 10337, 10342, 10344, 10345, 10351, 10357, 10358, 10362, 10370, 10371, 10374, 10376, 10380, 10383, 10391, 10392, 10394, 10397, 10400, 10404, 10405, 10408, 10410, 10412, 10414, 10416, 10417, 10423, 10424, 10426, 10439, 10440, 10441, 10462, 10499, 10430, 10431, 10433, 10436, 10438, 10442, 10444, 10446, 10447, 10448, 10450, 10452, 10455, 10475, 10478, 10482, 10484, 10493, 10496, 10498, 10499, 10500, 10510, 10519, 10521, 10523, 10526, 10529, 10531, 10537, 10538, 10540, 10542, 10546, 10549, 10550, 10552,

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4.363 (official release – September, 2022)

4.268 (official release – December, 2021)