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SB Pro PE 4.162 (Update)
Version History and Release Notes

This is a full installer for SB Pro PE which requires the uninstallation of prior versions.

Changes to prior version 4.161 will be highlighted like in this example.

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 for easier navigation.

Note: **This *Steel Beasts* version will not run without an existing license for *SB Pro PE 4.1!***

This software is 64 bit only.

Licenses may be purchased from the eSim Games web store (for details, see below): https://www.esimgames.com/?page_id=1530

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

This is a preliminary document to complement the version 4.1 User's Manual.

This document summarizes all changes since version 4.023 (December 2017), 4.156/4.157/4.159/4.160, and changes since version 4.161 (September 2019).

Previous Release Notes can be found on the eSim Games Downloads page: www.eSimGames.com/Downloads.htm

Hardware recommendations

…are largely unchanged from version 4.0

SB Pro PE 4.1 requires a 64 bit Windows version, starting with Windows 7 or higher.

Downloading, unpacking the self-extracting archive and immediate installation requires up to approximately **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 However, in order to edit maps, **100 GByte free disk space** will be required **per unpublished map** for the uncompressed map data, which will be largely freed up on publishing.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. 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

Preliminary remarks. Sorry, they are necessary. With version 4.1 a number of things are different from all previous versions of Steel Beasts Pro, and the most relevant difference for the installation is that there are now multiple installers. While they can be operated in any sequence we still recommend applying the **Map Package Installer first.** Or, at least put some thought into the location of the map packages, which make up the bulk of the installation. You may freely determine the disk drive and installation folder for the map packages. This is particularly relevant for computers with a small SSD as the C: drive, and bigger conventional disk drives. The *Steel Beasts Pro PE* installer will recognize your prior choice for the map package folder's location.

If you're installing from the 32 GByte red "eSim" USB stick, most references to download instructions can be safely skipped except for patches/updates to SB Pro PE itself, and the Steel Beasts Map Tools.

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 Tools**, and the **SB Pro PE 4.162 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 the Maps Installer!**
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 directory; the full installation may take **up to 14 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_1 ...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 **know** to have already installed CodeMeter runtime version **6.90a** (or later), feel free to press "cancel" when the CodeMeter part of the installation pops up; that will save you a few seconds
5. If you haven't purchased your **license for SB PE 4.1** already (if you did, skip forward to point 7), now would be the time to visit the eSim Games web shop, https://www.esimgames.com/?page_id=1530

   You have different options there,

   a. **time-limited licenses** if you do not want to use a CodeMeter USB stick; these will expire after a while, depending on which option you purchase. The time counts from the moment of first use, not from the date of purchase, or the date of license activation (see next page for more details)

   b. a **"classic" license** if you never owned a *Steel Beasts* software license with a CodeMeter stick before

   c. **upgrade licenses** for CodeMeter stick owners, for one of three cases,

      i. you own a *Steel Beasts* Pro PE license version 4.0 already

      ii. you own a *Steel Beasts* Pro PE license version 2.6, or 3.0

      iii. you own an SB Pro PE license version 2.5 and older, or without a version number in it

      To find out which license you have, start the CodeMeter "WebAdmin" which will open a web browser tab, listing all the installed licenses on your CodeMeter USB stick
6. 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. **Do not to use the "Edge" browser.**
7. Play
8. Optionally (but recommended), install the *Steel Beasts Map Tools*
9. Even more optionally, download and install the *Steel Beasts Legacy Maps*
10. 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 6.90a**.

Time-limited licenses

Since 2013 eSim Games offers a software rental option. This option is primarily aimed at users who do not already own a CodeMeter USB stick. Time-limited licenses are issued for one, four, and twelve months respectively:

- Licenses are bound to the computer on which they are installed.
- 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 just need to save the email with the ticket URL for future reference.

Online Support & Documentation

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

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

Even without access to the internet there is a **serious amount of documentation included with *Steel Beasts* itself**. 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 printed version of the User's Manual (reflecting changes up to June 2019) is available from the eSim Games web shop (*as of this writing — Dec. 20, 2019*), 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.

CodeMeter

- Updated the **CodeMeter** runtime software to version 6.90a
- **SHADOWPC**: As this application creates a **virtual machine**, the CodeMeter runtime blocks access to time-based licenses. Permanent licenses on CodeMeter stick are not affected by this. *Thanks, Jeff.*

Operations

- Updated all 10 **1973 Sinai Operation** scenarios

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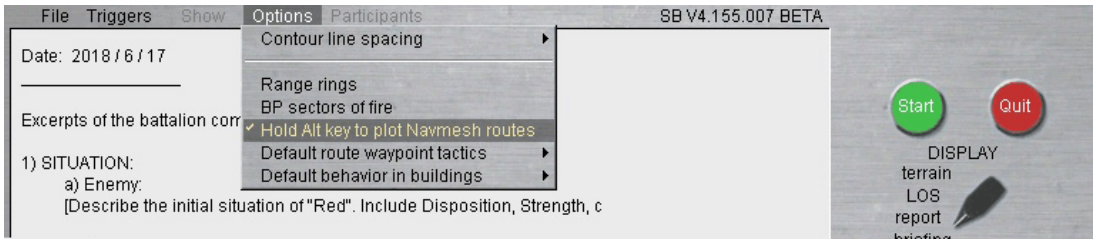
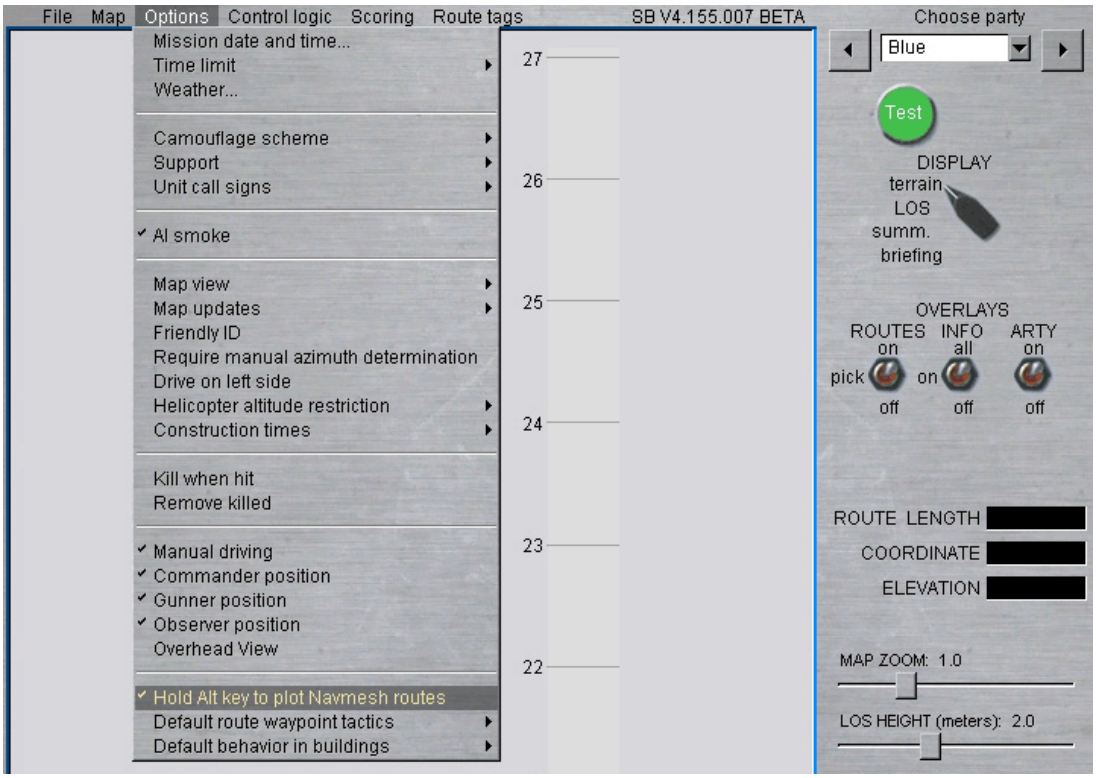
User Interface Changes

Pathfinding for vehicles and infantry should exhibit noticeable improvement in a number of situations (still being far from perfect). Especially, the performance of navmesh generation was improved by **several orders of magnitude (!)**, and likewise the use of the navmesh works so much better now that **we strongly recommend enabling their use by default.** For that you need to change your preferences only once, in two different places – the **Planning Phase**, and the **Mission Editor**:



The default selection is still to enable navmesh usage when plotting routes only if the **Alt** key is held down. This was largely a reaction to lag in the user interface that would appear with the nav meshes found in version 3.0, so many beta testers didn't like it. But the situation has changed now, justifying a reconsideration of your preferences.



For all but the highest realism level, when in the map view, clicking a unit under your control will reveal the location of all vehicles via some connector lines (which will blink red, if the vehicle is stuck).

We introduced a "nudge" function to improve the positioning of heavy infantry weapons. While you're in the team leader's position (**F7**) you may use hotkeys to move the weapon a little bit (arrow keys). For it to work, the gun must be located outside of a building, already be unpacked, and you must be stationary. How much and how quickly you can nudge a weapon depends on the weapon itself for relatively obvious reasons. Note that all "nudge" commands are oriented with the gun's base (e.g. tripod) and not necessarily with the gun's current orientation.

In some dialogs, **Tab** and **Shift+Tab** will now cycle through widget elements.

The **F2** hotkey will now **always center the map** on the "**tadpole**" marker of the last viewed 3D location, be it in the Mission Editor, the AAR, or the Planning Phase.

Some dialogs will now have an option to **delete files**. These will be moved to the **Windows Recycle Bin** (so they aren't irrecoverably lost in the case of an error).

Updated most **tutorial files** for their time of day settings. All maps must be **georeferenced** now (they cannot be converted to the new map package format without being assigned a world coordinate). As a consequence, the **time zone settings** of some **legacy scenarios** may be up to twelve hours off. If it's dark and it shouldn't be, this is the first thing to adjust in the Mission Editor!

When controlling an IFV's troop leader position, the unit icon is now shown as active in the map view to ease finding your own position.

Most importantly, removed a stray pixel under the medic map symbol.

On startup, all joystick axis configurations will now be validated more reliably.

Map Packages

Probably the biggest UI change, or at least the one with the most far-ranging implications or deviations from established procedures. Some background information is due:

> The new feature of supporting ultra-high resolution map data requires a new approach to map data handling. Up to this point *Steel Beasts* used a 12.5m width terrain mesh; this has been increased by a factor of 512 (0.78125m mesh width); factor 2048 actually with respect to the rendering.
>
> Naturally, this inflates the size of map data for the same area. This in turn makes it absolutely impractical to maintain the established practice to embed

map data in a scenario. And that means that when joining a network session, the map data for the current scenario must be distributed by different means.

And if the map data are not contained in the scenario file anymore, it must be guaranteed that every client in the network session is operating from the same terrain data set – we can no longer rely on file names as the only means to "identify" a map. So we have now introduced a unique identification number, the "**map UID**".

At the same time mission designers like to tweak maps specifically for the requirements of as few as but a single scenario. But you don't want to duplicate potentially huge maps, even in the age of cable internet and terabyte disk drives. So we're now storing such minor modifications as a '**Delta map**' which basically just contains the changes made in reference to a '**Base map**' that was created first.

Coming back to the previous paragraph's need for synchronous map data: **Maps need to be finalized for public distribution.** They may no longer be edited after that point. This prevents different versions of the same map files floating around and causing all kinds of trouble in network sessions. Therefore, a map can no longer be edited after it has been **published**, and network sessions will only accept scenario files linked to published map packages. (But you may create a new delta map based on the map for which you need to create 'one more change'.)

And just so you don't lose overview about what file belongs where, *Steel Beasts* now stores everything in a parent folder with subdirectories, and we call that parent folder and everything in it a '**map package**'. So, all that you need to worry about, in principle, is handling that folder rather than HGT and TER files in the past. The good news is, you may also store map-specific custom textures in a map package, e.g. that friendly local Dictator's face from billboards reading "All Hail President ~~Muntu~~ Kitenge".

Even better, for the moment eSim Games provides a map server from which *Steel Beasts* will attempt to automatically download the necessary map data if they can't be found on the local computer by querying their **map UID**. In a future version of *Steel Beasts* it will be made possible to set up your own map server and to operate it parallel to other map servers.

Now, what does all that mean in practice?

For scenario files officially installed with *Steel Beasts* you shouldn't notice anything. They should simply work as we made attempts to convert all legacy maps needed

to open these scenarios. *Steel Beasts* opens a legacy scenario, reads the map data file names from it, and compares it to map packages that are locally installed. Map packages store this information if they are based on converted legacy maps. As soon as the map has been identified, the corresponding new map data will be loaded, and the scenario simply works without changes.

If the map cannot be found, *Steel Beasts* will attempt to locate it on the map server, and if found there, proceed to download and extract it automatically into the appropriate folders on your local harddisk. At that point it is ready to proceed opening the file, and you can run the scenario as before. In this case the error messages and **debugLog** files will provide all the necessary information about the file names in question.

If the map can also not be found on the map server you may need to convert the necessary maps yourself. Alternatively, and possibly a very pragmatic workaround, when you try to open the scenario in the **Mission Editor** the warning message has a button to **Replace the Map**. This only makes sense if you know which map was originally used in the scenario, and that a similar map has already been converted. But where this is the case you can proceed very quickly. You still may want to save the scenario under a different name, just in case that test runs reveal problems from the map replacement that were not immediately obvious, and then take the more thorough path:

You can then open the Map Editor and start the map conversion wizard (**File… Convert from TER** or **Convert from HGT** respectively) to work with the identified original map (per **debugLog** file as described above). In the worst possible case it may be necessary to extract the map data from the scenario itself as a preparatory step. This should be the method of last resort.

Further details can be found in the **User's Manual** — unsurprisingly, in the **Map Editor** chapter.

The Steel Beasts Map Package Download Tools

These are an optional (but highly recommended) set of tools to be installed along with Steel Beasts, albeit in (yet another) separate installer, **MapDownloadSetup.exe V16.0** at the time of this writing.

Run the installer. Afterwards, start the Download Manager. Click the (?) icon to open the help file/documentation of the tool. Most of the time you won't need it as the download functions are embedded in Steel Beasts. But if you want to play a legacy scenario in a network session and if you don't have the converted map installed, Steel Beasts cannot identify that map and therefore not download it. But if the session host tells you the map UID, you can use it to "query the package" and

then download it. Afterwards, click the refresh button before trying again to join the network session.

A Reminder about Terrain Themes

This isn't so much a change in user interface, but **a reflection of observations** that we made when reviewing old THM files.

A few somewhat off-the-cuff remarks from a recent forum thread:

- **Avoid "0" and "1.0" settings.** These are extreme values and as such should only be used in rare cases after careful consideration.
- **Bumpiness** "0" is the Utah Salt Flats, which you find in exactly one place, Utah. And there, only on the salt flats. Bumpiness "1.0" means the coarsest terrain you can think of. Like the boulder fields on the flanks of alpine mountains. Where mountain goats are having trouble. *Wheeled **off-road*** vehicles should handle *up to* 40% bumpiness. Anything above that value would be considered "extremely difficult" with "mobility risk" (even if such a setting by itself will not incur that risk in *Steel Beasts*). ***Tracked*** vehicles may be able to handle *up to* 80% bumpiness, but that should normally be considered the end of the rope, really. Like, crawling speed at full throttle, or something.

  Then again, "natural terrain" (untouched by agricultural use) would rarely have a bumpiness less than 20%.
- **Traction** "1.0" is the equivalent of hot rubber on hot asphalt. That's a rare condition in nature. Even more rare is zero friction. The most slippery condition in real life is cold drizzle freezing on the ground and it usually exists only for a few hours, and is particularly problematic only on flat, hard surfaces (like roads). So, for *terrain*, it practically doesn't exist.
- **Dustiness** "1.0" is "Afghanistan", "Gobi", or "Atacama" desert. The kind where you open sealed plastic containers and you still find dust inside. "0" is a wet swamp. Any other place on earth is somewhere between these two extremes. Dry grassland might be around 40%. And of course, if you have "0" and "1.0" dustiness right next to each other it makes for very awkward dust development when you drive around. A transition from 20% to 40% on the other hand is a natural and quite benign effect.
- **Hardness** should rarely exceed 0.95. Hardness "1.0" is when you don't dig emplacements and foxholes — you *dynamite* them, and you might need several attempts. Seriously, if it's 95...100% hardness we're talking about different forms of rock. Maybe limestone is just 95% compared to granite at 100%, but

it's rock nevertheless. So the terrain texture should also reflect that, if you want to be consistent. So 94% hardness is the kind of concrete-like substance into which fine mud might dry. Realistically, "hard" ground would be closer to 80...90% hardness. And a freshly tilled field would probably be like 40% hardness. A shifting sand dune might be 10%.

- **Think of combinations.** If it's rock, and really hard, and super bumpy, can it still have a high traction value? Can watery swamp offer 100% traction? Of course not. Nor could that sand dune of 10% hardness and 90% dustiness. And in all these cases the **ground resistance** must go up as well. Conversely, if it's supposed to offer high traction, low drag, what type of terrain can it actually be? If super flat and super hard, we're back at the Utah Salt Flats. Yes, they exist in nature, but they are a rare occurrence. "World famous" rare, actually.
- **Approach it functionally.** If you know that 30% of your map are going to be terrain X and you *want* it to be traversable by off-road wheeled vehicles it shouldn't have more than 40% bumpiness, it still must offer decent traction (maybe in the 75...85% range).

  Next, the bumpier the terrain the higher its drag, so if you settle for a 30% bumpiness value that means it's already pretty difficult, and the drag might be in the 25% range, possibly even higher. Oh yeah, that'll slow everybody down. People will hate that.

  But it'd be realistic for your average "scrub" terrain, or particularly knobby grassland.

  On the other hand, if its farm land, the bumpiness tends to go down, and you don't set up a farm on rocks. So it's got to be relatively soft and low bumpiness terrain.

Not every "possible" combination actually makes sense.

Just because it can be done doesn't mean it should. Ideally you'd have unity of mobility factors and visual representation, in which case you should pick a fitting texture, and give the terrain type a descriptive name.

Sound

Adjusted the volume level of various switch sounds.

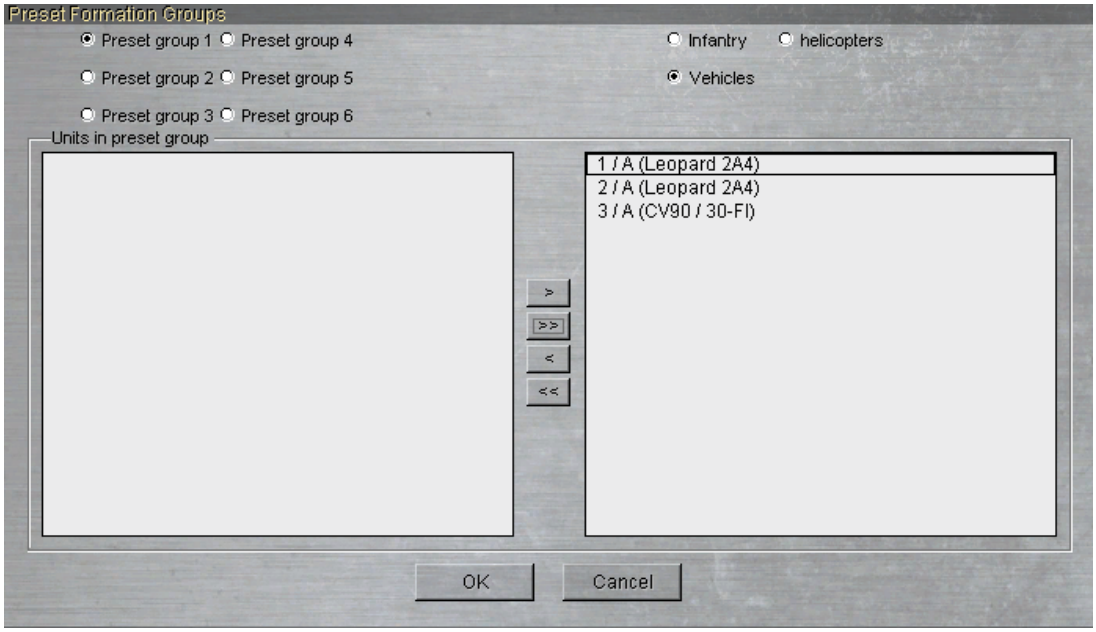
Added new **DShK** firing sounds.

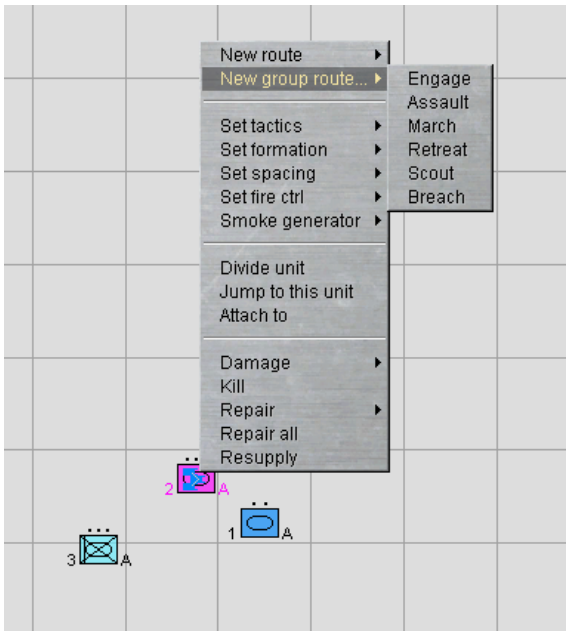
Added a Dragon ATGM booster sound.

Formation Routes

While the concept isn't entirely new it's also not very well known and can be a substantial timesaver especially if you have to manage a larger formation in a scenario, so it's worth mentioning here in an otherwise unusual level of detail:

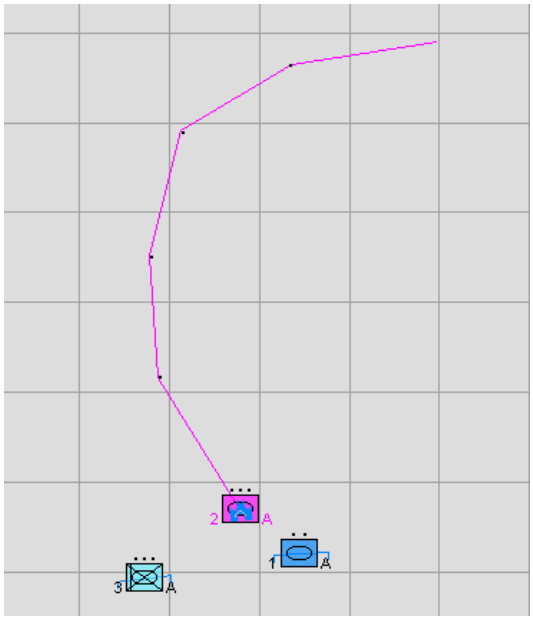
"Group route" generation is possible in the Planning and the Execution Phase, and depends on a set of units having previously defined as a **Preset Group**, using the dialog **'File|Configure preset unit groups'**:

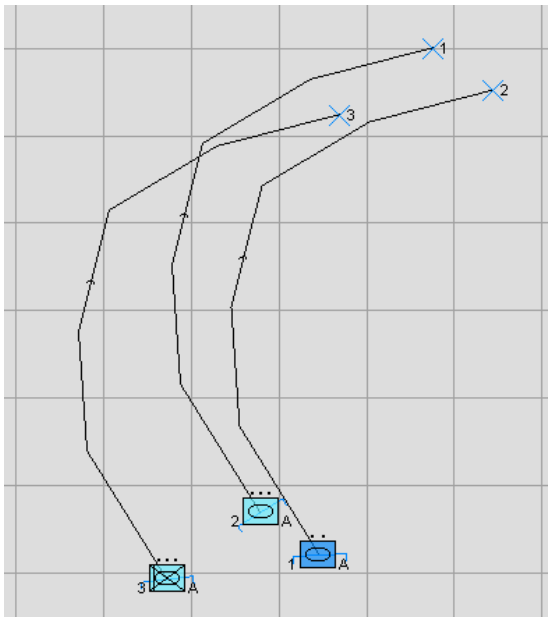




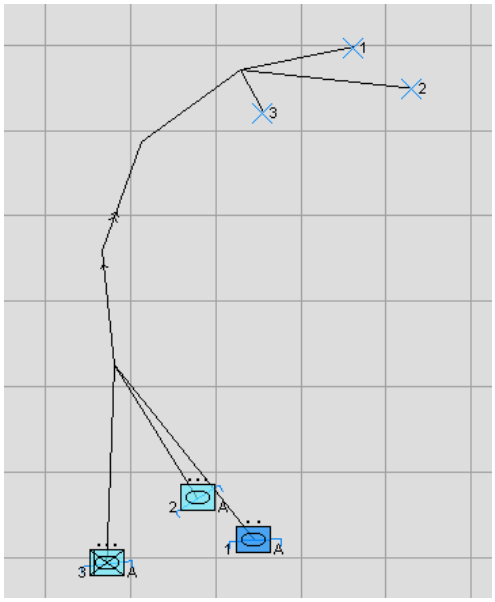
When you right click on a unit in a Preset Group (map screen) it opens **'New group route'** as a submenu. Proceed normally as with other new routes for single units.

That way you will create a **base route** for the Preset Group; the difference being that routes for other units in the group will be automatically copied (see next page):





The base route is assigned to the unit you right-clicked, routes are generated for the other units from that base route. The default mode for Preset Group route generation is a simple copy mode (above).



If you hold the **Ctrl** key down when right clicking to finalize the creation of a Preset Group Route, however, an alternative '**converge and diverge**' Group Route mode will be used (left).

This can be used to connect, typically, to an already defined road march route unconnected to any other unit. The Preset Group Routes will then converge on the first waypoint, share the common route, and fan out from there to restore the old formation.

Log files

If a map package could not be found (when attempting to load a scenario file), the **map's UID** will be written into the debugLog.txt file so it can be retrieved more easily.

Graphics settings, Performance

Generally, the framerate could be improved over version 4.0.

Removed the non-functional, performance-killing slider for **volumetric clouds**.

The old advice to create forests of a single tree type, and without interruptions for optimal performance, is no longer valid. New optimization strategies did away with the tree clusters (which looked less convincing on hill slopes anyway).

Alt+D (Terrain Details)

The **Ground Detail** slider now controls the LOD balance. At 50 (default) the LOD distribution is balanced between quality/performance. At 0, performance is highest but distant terrain is rendered in lower detail, and bumps tend to "swim" when moving at high speeds over very bumpy terrain. At 100, distant terrain is rendered in very high detail, but performance can take a significant hit, especially in maps based on high-resolution datasets.

Controls

Added the option to reassign and invert the driver's joystick input axes by the 'configure axis' button in the **Controls** dialog. Likewise, separate axes are now supported for devices with brake and gas pedal.

When typing a filter/search phrase, the list of commands will immediately update now.

You may now navigate widgets with **Tab** (and **Shift+Tab**) hotkeys.

'Checkbox' type widget can now be toggled using the **Space** bar.

'Radio button' widgets will use the **up/down** (for rows of buttons) or **left/right arrow** keys (for columns).

In some trucks, the vehicle commander may now designate targets to the vehicle gunner from his 3D view position.

Added a new joystick-related string for a combined brake/acceleration axis.

Infantry MG Teams

When controlling an MG team, '**F7**' lets you take the commander/gunner's position (it's a bit of a hybrid in that you can control the weapon directly as the commander). Most **machine guns** and the automatic grenade launcher have now their weapon sights modeled in 3D, with adjustable range settings (**mousewheel**, **Shift+mousewheel**). Note that the **Mk.19 AGL's** iron sight is off, with a high degree of fidelity (see section "New/Updated Munitions", pg. 21). Note also that for the **MG3**, as the range setting is not directly visible on the 3D model from the player's point of view, it's displayed as HUD text at the top of the screen.

As with other heavy weapons, you may '**nudge**' your MG's position using new hotkeys (**arrow up/down/left/right**) in order to better position them around obstacles if you find the current location unsuitable.

The gun sight view (**F2**) offers now two modes, the "aim mode" (looking through the sight) and the "peek mode" (looking over the weapon). Toggle these two modes with the hotkey '**O**'. In addition, '**R**' can toggle between different sight modes (if any), such as the MG3's anti-air aim. Finally, '**N**' toggles the field of view, leaning the perspective closer or farther away from the gun sight.

AAR

The AAR map view's '**Options**' menu now contains the entry "**Show 3D view unit callsigns**". This allows to toggle the tactical icons showing each combatant's callsign. This can also be toggled with the "**Toggle HUD Overlay**" hotkey (**Alt-H**).

The AAR now provides a checkbox to ignore all events that happened outside of the mapped area.

HE explosion (sub) **events** are sorted by type – vehicles first, then personnel, then damages to other things.

Added a new event type: '**SBIED/VBIED exploded**'. This one will be logged whenever a combatant's '**Explode, if...**' condition becomes true. IEDs may form craters; these will be played back in the AAR, but discarded when **saving in-progress**.

AARs will track the **progress of emplacement construction** during the execution phase in 25% increments which is totally unfair for those 99% projects — but 99% complete is 100% incomplete; deal with it.

Steel Beam obstacle states (if partially or completely breached) will now also be shown.

The AAR optionally visualizes the "**effector cones**" of the **Afganit active protection system**. If a launcher has exhausted its supply of intercept grenades, the cone will no longer be

rendered. In the case of **intercept events**, the active cone will be rendered less transparent than the others.

The Event Description text may now be copied to the Windows clipboard (**Ctrl+C**).

Removed the building smoke to cut down on AAR file size.

Network Sessions

You may now sort the Assembly Hall's participants list - by join order (default setting/previous behavior); the local player will always be the first one listed. Other sort toggle options are alphabetically (ascending and descending), and by party (blue/red/../unassigned). (Use the Sort button, in case you were wondering.)

Command line options

Added new command line parameters to convert legacy maps in the non-interactive mode (e.g. as a part of a batch conversion)

- **--convertterrainmap** converts the specified (legacy) terrain map to either an (unpublished) delta map package for an existing base map, or as a new pair of a (published) base and an (unpublished) delta map
- **--convertheightmap** converts the specified (legacy) heightmap to an (unpublished) base map
  Note that:
  - the application will close itself after the operation was concluded
  - both operations will abort if a map package based on the given maps already exist
  - the map metadata information (including the geolocation information, if the source maps are lacking it) will contain default values that the user can change using the **'Map Information'** dialog in the **Mission Editor**
- **--disablemapdownload** disables the in-application map package downloading and browsing support (not recommended)

Localization

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.

- Updated **Danish** strings
- Updated **English (AU)** and **(UK)** strings
- Updated **Finnish** strings
- Updated **French** strings
- Updated **German** strings
- Updated **Polish** strings (seems to require **Windows-1250** code set)
- Added **Portuguese** menu strings
- Updated **Russian** strings
- Updated **Spanish** strings

Simulation Rules

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.**

Armored units will stay closer to artillery barrages, and move out faster when the fire missions end.

Computer-controlled units may now find passages through **rock cluster mazes**, if such paths exist, provided that the rock clusters were spray-painted on the terrain rather than being ground clutter objects of the terrain theme.

Computer-controlled units on routes with **column formation** will now **stop moving** forward if the player in the lead vehicle reverses or turns around. Rather, they will let him pass before resuming their trailing behavior, reducing the chances for embarrassing logjams.

When giving a platoon move order in the **overhead view** the routes are now offset to maintain the initial relative position between individual squads (rather than having them converge on the designated location).

Vehicles with **earthmoving** capacity (at this point, all AEVs with dozer blade) will sense **emplacement** sites cleared for construction within **200m** around their location and, assigned tactics permitting, will autonomously attempt to perform the construction. (The new terrain engine has the capability for terrain deformation at runtime.)

In network sessions, only the **owner** of an AEV vehicle may start planning a new earthworks project (right-clicking on someone else's AEV will simply not show the **'Plan Earthworks'** context menu item).

Civilian vehicles, even if member of a hostile party, will be **exempt** from computer-controlled units **firing** at them if they are not equipped with a mounted weapon (**Technicals**), or if the passengers are clearly visible (motorcycle). This allows for **infiltration** tactics with irregular units disguising as noncombatants, especially **VBIEDs**.

Ballistics

Direct fire HE rounds will no longer kill tanks so often (as in 4.156 … 4.159) through the overpressure mechanism. **It is still possible for overpressure to kill a**

tank, but this is by design, in the domain of 155mm HE, FAEs, large IEDs, and aircraft bombs. Also, note that tanks, PCs, trucks, mine protected vehicles, and (2 different classes of) MRAPs all have different levels of vulnerability modeled, so generally – PCs are more vulnerable than tanks, trucks are least resistant, and MRAPs are the most resistant to kill via overpressure

Sabot petals and the associated **cannon danger zones** are now simulated. Computer-controlled units will fire sabot rounds purely as a visual effect. Player-owned vehicles however with a human player in a turret crew position (GNR, CDR) will generate sabot petals with potentially deadly effect – for MBTs typically in a 9° arc, out to 550 meters forward of the muzzle. Medium caliber petals are primarily dangerous in the immediate vicinity of the muzzle.

In addition, human-operated gun fire has now also **overpressure zones** forward and around the gun muzzle which may be lethal to nearby units.

Made Tracers Look Great Again. Maybe not the most catch campaign slogan ever, but it's true. Where data were to be found, they conform to delayed initiation time, burnout range, tracer color, and general visual appearance.

Made Impact Flashes Bright Again. They should now usually be perceptible during your gun sight obscurance period, even in high dust conditions with no wind.

Reworked every single HE, HEAT, and HESH round to generate an additional fragmentation effect. The fragmentation effects usually conform to standard models of explosive engineering as far as the distributions of fragment mass, spatial density, and fragment velocity are concerned. At this point only the strongest fragments are considered for their terminal effects against vehicles; all fragments are considered against exposed personnel. They may pass through (multiple) walls if given enough energy, and be dangerous out to more than 100 meters (if of sufficient size). As such they are a hazard on impacts on AFVs to nearby dismounted infantry (and innocent bystanders) as well as commanders foolish/brave enough to stick their heads out of the hatch.

In addition, all HE rounds have an overpressure effect which also now conforms to models widely accepted in explosives engineering. Overpressure strength varies with the exposure of personnel to the aspect of the pressure wave, lateral pressure waves being substantially more harmful than those passing over from head-on.

Where HE rounds had documented self-destruct ranges/times, these were added too.

Updated the crosswind-sensitivity of a number of especially smaller caliber munitions that had a decimal error (!).

MRAP type vehicles are generally more resilient against overpressure damages with the new HE model.

DPICM bomblets: New behavior

In previous releases DPICM fire missions were a highly confined matter of surgical precision. The reality however is that the cluster munitions are being released up to 400m above the target area and rely on spin and velocity of the cargo missile to be distributed more or less evenly across the terrain below. With version 4.1 cluster munitions have the following spread pattern, with the long axis in the direction of the gun line (and the short axis perpendicular to it), meaning that these are – without ammunition dispersion – the minimal dimensions for an ICM strike (and that only if the long axis of the target area coincides with the gun line). Otherwise it gets messy; avoid calling "danger close":

- **O-23 DPICM** (152mm Howitzer): 145 x 90m² — requires nine rounds to the same location to achieve standard effect
- **M483A1 DPICM** (155mm Howitzer): 75 x 40m²
- **M-42 ICM** (122mm Howitzer): 30 x 20m²
- **M-42D ICM** (122mm Howitzer): 30 x 16m²
- **M335 DPICM** (122mm Howitzer): 45 x 20m²
- **Type83 DPICM** (122mm Howitzer): 45 x 25m²
- **Rocket ICM M26, M26A1** (MLRS): 200x100m²
- **Rocket M30 GMLRS-ICM** (MLRS): 160x80m²

As a consequence, to avoid oversaturation of the target area, the call for fire must take into account the cluster munition spread pattern, and call for just as many tubes as required fulfilling the fire mission.

A particular case is the MLRS rocket (M26, M26A1). Because we're dinosaurs and haven't gotten around reflecting contemporary artillery procedures our rocket artillery at this point fires the entire missile pod per fire mission, and there's nothing that you can do about it. So an MLRS launcher group (two vehicles) fires 2 x 12 rockets; each rocket covers 200 x 100m²; consequently a single group's fire mission **must** cover 500x600m² target area with nearly 100% overlap, or 1000x600m²/1200x500m² without overlap per fire mission. This might explain why in the 1980s MLRS fire *missions* (!) were, typically, a brigade level asset (so **you** would never get to call them).

For the moment, if you must incorporate the MLRS in your missions (yes, we know you feel the itch…) our professional recommendation is to create preconfigured fire missions to be released by trigger or by event, rather than giving the player free reign. You may want to create 24 box-shaped 200x100m² map graphics in the

Mission Editor to reference the spread area, and then arrange them in a way best suited for the fire mission (since you also know the gun line).

By the way, keep in mind the time of flight at max range; M26: 84 seconds.

Since the "**Embark, if... unit (this) is low on ready ammo**" conditions works properly now, this is an excellent trigger for rocket artillery units to vacate their firing position immediately after the fire mission, to drive to a rearmament point, and then ("**Embark, if... unit (this) is not low on ready ammo**") to drive to the next firing location.

New/Updated Munitions

- Adjusted (increased) the crosswind drag for a number of HE rounds, mostly
- Adjusted the explosive mass of the **9M114/AT-6** ATGM
- Adjusted the effect of **M42 DPICM bomblets** (227mm rocket **M26/M26A1**)
- Adjusted the **roll rates** (and direction) of a number of **ATGMs: AT-2, AT-3, AT-4, AT-10, AT-11, AT-14**
- Added various DPICM bomblets for various rounds. Most will perform nearly identical to previous *Steel Beasts* versions. **152mm O-23** stands out (reflecting a different artillery doctrine).
  For the most part we adjusted the spread patterns to deliver a similar effect on target; where new data comes to light however, we reserve the right to adjust the parameters (with resulting changes to the effect on target).
- Added some **7.62mm AP** rounds available for tank coax fire. This is not standard practice and was done primarily to aid one very specific training case without breaking everything else; they were kept in SB Pro PE for compatibility reasons.
- Added/Updated all **40mm Low Velocity** (rifle) and **High Velocity** (AGL) grenades; drove everybody mad with the triple verification of their ballistic properties and the related discrepancy in the **Mk19** iron sight which was discovered in 2003, but not fixed before May 2018; the iron sights of the **Mk19 AGL** in this software version still have the old (faulty) sights, but they are faulty with a high degree of accuracy.
- Updated range for 76mm BK-354M (**PT-76**), tracerized it
- Added/Updated 84mm **RPG M136 AT-4 HEDP, M136 AT-4 CS**
- Added 90mm **RPG** "**C90-CR (M3)**" variants
- Added 90mm rounds for Cockerill **Energa Mk8** tank gun
- Added/updated **OF-412**for **100mm Tank Gun**
- Added/Updated 105mm **RPG-27 Tavolga RMG** and **RShG-1 Tavolga FAE**
- Added/updated **M344, M344A1, M346** for **106mm Recoilless Rifle**
- Added/updated **BK-4 HEAT** for **115mm Tank Gun**
- Added/updated **OF-843B** for **120mm Mortar**
- Added/updated **DM11 HE-frag, DM12 PELE** for **120mm Tank Gun**

- Calculated 12mm rocket artillery ballistic parameters. Found a missing 2.
- Added/updated **BM-59 Svinets-1**, **BM60**, **Vacuum-1** and **Vacuum-2 APFSDS** for **125mm D81 Tank Gun**
- Added/updated various 150mm **HOT-2**, **-2**, **-3 ATGMs**
- 152mm Howitzer
  - Added/updated OF-61, OF-64 for **2S3** howitzer
  - Added/updated OF-83 BBHE, OF-83 BTHE, OF-540 SMK, OF-540 MS SMK for **2S35 Koalitsiya** howitzer
- 155mm Howitzer
  - Added/updated M107C1, M110C1, M1711A1, M1711A1 PGK, M1712A1, M1712A1 PGK for howitzer **PzH 2000**
- Tentatively reduced max range for 178mm **Hellfire** missiles to 6km (LOBL), and increased the minimum engagement range to a still slightly optimistic 500m
- 220mm Rocket
  - Added/updated 9M27F, TBSM, TBS for **TOS-1A**
- 227mm Rocket
  - Added/updated M26, M26A1 for **M270 MLRS**
- Surface-to-Air Missiles
  - Added/updated 70mm FIM-92B **Stinger**
  - Added/updated 72mm **SA-7** Grail/**Strela-2**
  - Added/updated 120mm **SA-9B** Gaskin, SA-9B-Mod0
- Mk80 aircraft bomb series
  - **Mk81** 250lb bomb
  - **Mk82** 500lb bomb
  - **Mk83** 1000lb bomb
  - **Mk84** 2000lb bomb

3D Munitions

- Added the **AT-10** missile
- Added RPG projectiles **AT-4**, **RPG-27**
- Updated the generic anti-tank blast mine artwork
- Updated the **AT-2** scatter mine artwork

MBT main gun reload times

- Researched and reevaluated all tank maingun reload times based on various sources, including TRADOC TRISA WEG.
  Based on average rate of fire, the reload rates have been changed to more plausible values, rather than being based on optimistic extremes. This resulted in the following changes:
  - **AMX-13** +1 sec
  - **Challenger 2** +0.667 sec

- **Leopard 1** (all) +1.5 sec
- **M1A0** +1 sec
- **M1(IP)** +1 sec
- **M60A3** +3 sec
- **Merkava 2** (all) +1.667 sec
- **Sho't Kal** +3 sec
- **Centurion** Mk5 +3 sec
- **T-72** (all) -1.0001 sec
- **T-90S** -3.5 sec
- **TAM VC** +1.5 sec
- **Centauro** +1.5 sec

Other adjustments

- IFV CV90/35
  - changed the round standard deviation for a number of 35mm rounds that are used in the CV90/35, to better model the difference between open/closed bolt firing modes

Mission Editor

General

Most armored vehicles can be equipped with the **AVePS active protection system** (APS) which intercepts at about 50m range. Exceptions are typically those that have an alternate APS (such as **Afganit** of the **Armata/Kurganets** platforms) built in, or which have insufficient passive armor protection or no roof to carry the 200kg heavy launcher. Currently the AVePS presence is visualized only on the **GTK Boxer**, **Centauro**, **DF30**, **DF90**, **TPz Fuchs 1A7**, **Leopardo 2E**, **RG-31 Nyala**, and **T72B1 w/ ERA**. AVePS has an automatic convoy protection mode so that not every vehicle needs to carry a launcher; neighboring units may still intercept incoming projectiles. One AVePS launcher carries four intercept grenades.

It is now possible to set an **absolute travel speed for routes**, in 10km/h increments up to 50km/h. Such routes receive an additional square tag in blue color with white text.

IEDs are now **configurable**. When assigning the '**Explode, if...**' option to a combatant a new dialog will open to define the size of the explosive device, as multiples of existing munitions. Depending on the combatant, different weight restrictions will apply. The dialog will close after munitions and their quantities have been selected, and the condition for the explosion has been set.

Depending on the size of the explosion, a crater will be formed in the terrain and the combatant may disappear.

You may now build chains of routes with **Jump to end, if...** conditions. This might allow for more elaborate unit positioning randomization. There must still be an unbroken chain of jump routes going all the way back to a unit, however. Also, end points of any Jump route will now be treated as computer-owned, so that they can't be changed during the Planning or Execution Phase.

When selecting a **single vehicle** unit, the status bar will display the current as well as the **maximum number of troops** that it can carry.

When setting a certain **posture** to an individual character it will maintain that posture for as long as it remains in **Stay** tactics.

The default camouflage scheme for the **Red** party is now **OpFor**. Legacy scenarios remain unaffected.

Navmesh Data

The generation time for navmeshes could be dramatically reduced, while their quality was made substantially better, thanks to integrating **PathEngine**. Therefore it's no longer optional to have them or not. Rather, it's now optional to save out the

Navmesh data in a scenario file. While embedded navmesh data can inflate the scenario file size substantially (depending on the map), scenario loading times will go down. Conversely, if a scenario needs to be distributed over low bandwidth internet connections it may be overall faster to cut the scenario file size to a minimum, and let each client restore the Navmesh locally.

To support this, the **Mission Editor's** menu **Map... Navmesh...** offers two entries, to **Regenerate**, and to **Save with scenario**. By default navmeshes are no longer saved, but it may actually be a good idea to activate that option at least for your single player scenarios.

Emplacements and Obstacles

In the editor you may now specify the **completion percentage** of a concertina obstacle (or an emplacement) using a newly introduced property menu (**right-click** to open). Obstacles stored in legacy scenarios files will all be treated as to be fully constructed. Missions **saved in-progress** will however retain the actual completion percentage.

Vehicle emplacements will generally work much better due to a new dynamic generation procedure. For this a **referencing tool** has been introduced with which to designate the lowest point that can still be targeted from the emplacement with a vehicle for which it was made (similar to the LOS bubble for regular battle positions); in previous versions this was always "800m to the front" which, on sloped terrain, could result in less-than-adequate depths.

While **Testing** a scenario you may create instant-ready emplacements.

The **construction time** for vehicle emplacements is governed by the (dry) **Hardness** of its underlying terrain as well as the emplacement options (camouflage and two tier). The baseline creation time is two minutes (on perfectly soft ground) to 4 minutes (on perfectly hard ground). Adding camouflage will double the creation time, as will adding the 'two-tier' option. You may also select a general **Option** in the Mission Editor to have **Realistic**, **Moderate**, or **Rapid** earthworks construction times, the latter two cutting times to ¼ or 1/10th, but never less than thirty seconds. Setting these options are independent from the completion state of a construction site.
The status bar will indicate the remaining creation time for the selected emplacement - in the Mission Editor for incomplete emplacements, and while the mission is in progress for constructions planned or in progress.
Note that in the Mission Editor an emplacement's construction time is computed whenever the emplacement is moved. Replacing the map or terrain theme will **not** trigger a recomputation of these times!

Note also that you cannot create emplacements in bodies of water (including embankment zones) during the Execution phase, simply because the engineer vehicles will

avoid driving into the water. It is however possible to create partially flooded emplacements – but again, computer-controlled units will not be able to use them.

Camera Animation Editor

Adjusting camera positions now also work while the mission is paused, probably a critical improvement. Added an option to the camera animation editor to keep the tether combatant's pitch and roll from moving the camera.

Mission Debugger

As a new tab, "**IDs**" has been added. This can help you to analyze legacy scenarios where, under certain circumstances, some units could have duplicate unit IDs with the resulting negative consequences especially for control logic and scoring. This is actually **a rather serious issue** that deserves every mission designer's attention!

Formation (and callsign) Templates

Added/Updated templates

- US Mech Inf Bn APC
- USSR 1974 BMP-1 Motor Rifle COY
- USSR 1978 BMP-1 Motor Rifle COY
- Updated "two other" USSR templates
- Updated "nine USSR templates", and added three more
- Improved two USSR Motorized Rifle Regiment templates (and callsigns)
- Added two new USSR Tank Regiment unit (and callsign) templates
- Updated "four USSR callsign templates"

New Texture Sets

Added/Updated the following nationalities:

- BR
- CD
- CN (1970)
- CZ
- DE (1980)
- EE
- EG
- ER
- ET
- FR
- FR (2000)
- GR
- IR
- KP
- NG
- PL (2000)
- RU (2020)
- SY
- TR
- UA
- US (2010)
- USSR
- ZA

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Map Editor

The following sections do not cover everything new about the Map Editor. The **User's Manual** does, especially when it comes to features like flattening the terrain under buildings, leveling roads, raising roads, building ramps, etc.

User Interface

In version 4.1 **THM files** may be edited only from a limited palette of already existing THM files (because, reasons).

As a new modifier similar to the known "**is wadi**" or "**is water**" there's now also an "**is dirt**" checkbox. This texture will be used for emplacements that are being dug at runtime. Don't assign this flag to multiple textures.

Per bug #7152 trees, bushes, rocks and other land objects are now swept further from the sides of (paved) roads.

The (new) **Map Information** dialog lets you look up all scenarios referencing the currently loaded map to identify dependencies. The list can be filtered to show 'common' and/or 'personal' scenario files, or to only show legacy scenarios (created in previous versions of *Steel Beasts*).
Note that this is a 'best effort' evaluation which cannot find all scenarios located on the local hard drive (for example scenarios created and stored by other users on the same PC cannot be found).

Right-clicking the **'Extra Information'** frame in the **'Map Package Browse'** dialog will copy the package's **UID** to the Windows clipboard.

The editor now has a popup widget listing the last editing steps, allowing to bulk-**undo** (and **redo**) actions up to the selected entry.

The various latitude/longitude input dialogs now allow entering fractions in the 'arcsecond' field (an aspect of bug #7909). Likewise, the various output methods will also display fractionary arcsecond values.

When selecting a **bridge** object, the Editor will now show the location of the bridge's pillars and hint the length of the individual bridge segments.

By default, the '**Map Package Browse**' dialog will have the "Search by Name" field enabled, and you can immediately type away (since it also has focus).

In the **Map Editor** and **Theme Editor**, land objects will now show the global object number.

Renamed the Arid (Africa-dry) map theme to just Arid, as it is really a generic Arid theme that includes both the Australian and African trees (it can be used for either environment).

New Objects

Added a 'single military accommodation container' object

- **Concertina wire** obstacles are now available as **line objects**
- Stone tower buildings will no longer catch on fire
- New environmental regulations force smoke stack owners to filter soot particles; women and minorities hardest hit.
- Updated hundreds of tile textures to line up more seamlessly

Known Issues

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

- **ATGM Teams:** Erratic behavior when viewed by owning client in network session
- **Local time zone** settings may be off for legacy scenarios
- Placing long range artillery units **outside of map boundaries by more than 4km** settings may result in ballistic anomalies including rounds never reaching their targets
- ~~Computer-controlled drivers overshoot sharp road turns/intersections~~
- ~~The **Map View** may get damaged by HE effects~~

Artwork/Render Engine

Vehicle shadows are now cast on grass, bushes, rocks, and similar land objects.

Generally reduced video memory consumption (by 500…1,500 Mbyte, depending on Road Rendering Detail settings), which may also reduce system memory consumption with some systems; system RAM usage could be reduced by another 900 MByte. By that, many cases of video memory swapping to system RAM (and from there to disk in the worst case) can be avoided, hopefully yielding significant frame rate gains. This is probably especially useful for customers with 1…2 GByte VRAM graphics cards and 8 GByte system RAM. Please check your Graphics and Detail settings (**Alt+G**, **Alt+D**), especially the Dynamic Cache Size (which should be reduced to minimum for machines with RAM shortage).

Re-enabled shadow rendering in Map Editor, Mission Editor, and Planning Phase 3D preview

Terrain bumps are gradually smoothened away as snow depth increases, to a max depth of 50cm. At 50cm and greater snow depth, the bumps are gone. (This is in line with the programmer's personal experience as a mountain-dwelling hermit.) Note that the heights are simply modulated (whatever that means). While not being ideal in the programmer's eyes it's still considered *good enough*, not the least for

reasons of economy of effort (which, at least in this case, is not a euphemism for being lazy, I have been assured).

Made smoke more efficient (to hit the frame rate less).
Added more smoke to take advantage of the performance gains.
Became apparently a bit too giddy, had to dial it back some.

In the **Terrain Detail** dialog, a **Forest Distance** slider was added allowing you to control how far out forests will be rendered. Can help with framerates.

Improved several rock and bush textures (thermal and desert).

Weapon-system specific changes

For about 90 vehicle models with torsion bar suspension the movement of roadwheels was updated.

Re-categorized a number of "protected mobility vehicles" from "APC" to "truck" (even if "armored truck").

Created generic profiles for **MRAPs**' "Protection Level-1" and "-2"

Armored Personnel Carriers

GTK Boxer

- Made the wheels even wheelier, or more normal — or both. Multiple entries in the changelog, they might all be about the same thing.
- Can now be equipped with RWS **M151 Protector**
- Applied **MRAP Protection Level-2**
- Added an Australian camouflage texture

BTR

- May now reload 14.5mm HMG while driving
- Updated some model files

BTR-50:

- Instructed soldier #15 that the party does not approve clipping one's limbs through the hull
- Soldiers #19 and #20 were elected to participate in a new Siberian student exchange program

BTR-60:

- Ordered the CDRs to pull in their feet, and to stop hoarding more than one set of tools per vehicle
- Ordered the troops to stop goofing around and sit down properly

- Updated internal 14.5mm HMG firing sound
- Minor update to model files
- Updated troop capacity to allow for dismounted mech PLT command team
- Troops dismount more orderly now
- Made the wheels even wheelier
- Fixed a bug with the Commander's position and the zoom function

BTR-70:

- Ordered the CDR to pull in his feet
- Updated internal 14.5mm HMG firing sound
- Minor update to model files
- Updated troop capacity to allow for dismounted mech PLT command team
- Troops dismount more orderly now
- Tired the tires some more

BTR-80:

- Received a facelift
- Updated internal 14.5mm HMG firing sound
- Troops dismount more orderly now
- Updated troop capacity to allow for dismounted mech PLT command team

BTR-82a:

- **New System**
- Removed the LRF, TIS, ballistic computer, dynamic lead, and stabilization (it had these components by mistake)

BTR B-10 Kurganets-25:

- **New System**

Fennek MRAT

- **New System**
- Transports missile teams, preferably of the **Spike** type

Fennek SWP

- **New System**
- Similar to HMMWV Avenger, it dispenses **Stinger** missiles

TPz Fuchs

- Burns better now
- Fixed bug 2619; see section "Resolved Bugzilla entries"

LMV

- Updated vulnerability model

M113

- Dialed up the aggression level against fence posts. They had it coming.
- Updated some model files for **M113A1**,**A2**,**A3**,**A2G**,**G3**,**G4**,**Med**,**Repair**,**FO**,**Eng**,**OPMV**
- Updated eye view of CDR to be outside of an attached HMG
- Removed stealth cover from headlight lens
- Made sure to always have side skirts present on **M113A3**, **G3**, **GO**, **Eng**, **OPMV**, **Repair**, **TOW**

M113/FO:

- Corrected the rotation limit on the commander's opened hatch.

M113G3:

- No longer amphibious (user-submitted report by: **DK-DDAM**)
- CDR's hatch won't clip no more

M113G4, FO, OPMV:

- Ordered the driver to pull in his leg

M577

- **New System**
- Unfun-ctional Command Post vehicle; mobile or "deployed"
  Note that if "deployed", the vehicle cannot be moved during the execution phase. Ever.

M901

- Added some missing textures in the interior

Pandur

- Corrected the gunner unbuttoned max pose so that his back does not clip through the open hatch (user-submitted report by: **Assassin7**)

Piranha III-C

- New formula! Now spiked with free-range concertina wire
- Other units' AI gunners are less reluctant to engage it now, at times
- Updated some model files
- Can now be equipped with **M151 Protector RWS**

XA-360

- GNR may now operate the RWS (if any) from the 'eye view'

Armored Reconnaissance Vehicles

ASLAV-25

- Set gun EL and AZ speeds and accelerations to more realistic values
- Updated the **Instant Action** scenario

BRDM-2

- Tired the tires some more
- Minor update of the model files
- Updated internal 14.5mm HMG firing sound
- Reduced power-to-weight ratio
- Vehicle family is now less impossible to kill with **AP/APFSDS** rounds
- After paternity test established that wheel was not child of hull, it was given into custody where it tragically committed suicide by null pointer
- May now reload 14.5mm HMG while driving

BRDM-2/AT:

- Minor update of the model files

Centauro

- Added two desert camouflage texture variants
- Added an OpFor texture
- Fixed bug 2015; see section "Resolved Bugzilla entries"

Eagle IV

- If equipped with **Lemur RWS**, the CDR's screen will have a backlit button in the top right corner to toggle between RWS sight replication and map screen

Fennek Recce

- Two variants now, with **cal .50 M2HB**, or **40mm Mk 19 AGL**
- Is no longer an "arty spotter" (since there's now an FO variant)

LAV-25

- Set gun EL and AZ speeds and accelerations to more realistic values

SpPz Luchs A2

- Has now the correct designation
- Added 20mm DM63 APFSDS-T as selectable ammunition, *Iä, Iä!*
- Adjusted the GNR's eye view position
- Set gun EL and AZ speeds and accelerations to more realistic values
- Impertinent GNR longer changes TIS FOV while you override
- Fixed bugs 4125, 5257; see section "Resolved Bugzilla entries"

NZLAV

- Set gun EL and AZ speeds and accelerations to more realistic values

Piranha DF 30

- New System
- Corrected the default ATGM count of the **Spike ATGM team**

Piranha DF 90

- New System
- Removed the strange tire tread mark from the side of the PSS on the woodland, winter, desert and UN textures

FV107 Scimitar

- Ordered computer crews to stop trolling human commanders by clipping their heads through the roof, even if it tingles nicely

TAM VC, VCTP

- Set gun EL and AZ speeds and accelerations to more realistic values

VEC

- Adjusted the GNR's eye view position

Armored Recovery Vehicles

- Fixed bug 5483; their maximum recovery distance is now 60m (cable winch length)

BREM T-16 Armata

- New System
- KE impacts are now more likely to knock off or destroy reactive armor components; they may *appear* more vulnerable than on some T-72 variants since there the bricks can be removed only in clusters rather than in individual tiles

M88

- Updated M2HB model to new standard with adjustable iron sights

Wisent ARV

- If equipped with **Lemur RWS**, the CDR's screen will have a backlit button in the top right corner to toggle between RWS sight replication and map screen

Artillery Systems

2S35 Koalitsiya-SV SPAH

- New System

BM-21

- Added more explodey fun stuff

Fennek FO

- New System

Fennek TACP

- New System
- Technically it's a "new system" but for all practical purposes it's identical with the FO. But who knows, mighty oaks from small acorns grow. Or they get fed to free-range sows.

Fennek Mortar

- New System
- Transports **mortar** teams of the **81mm** type; okay, you got me: Calling this an "artillery system" is preposterous

M270 MLRS

- New System, for all practical purposes:
  - Enabled munitions M26 DPICM, M26A1 DPICM
  - Enabled reloading animation sequence

M981 FIST-V

- Computer-controlled CDRs are scanning for targets again
- Adjusted the center of gravity

M1064

- Burns better now

MT-LBu ACRV (1974) FO

- New System
- Decolorized thermal texture

Panzerhaubitze 2000 SPAH

- New System

TOS-1A MLRS/Direct Fire Hybrid

- New System

Engineers

- AEVs with mineplows can**not** create vehicle emplacements
- Fixed bugs 5996, 6113, 6114, 6119; see section "Resolved Bugzilla entries"
- Updated the '**Bridgelayer and Mineplows**' tutorial

GTK Boxer Eng

- Applied **MRAP Protection Level-2**

Dachs AEV

- Can create emplacements now (with dozer shield)

Kodiak AEV

- **New System**
- Added crew positions: CDR, DRV, GNR
- Can dig emplacements (with dozer shield)
- Can be equipped with **M151 Protector RWS**, full-width mineplow

MICLIC:

- Fixed bugs 4980, 4984, 5881; see section "Resolved Bugzilla entries"

Wisent AEV

- Can create emplacements now (with dozer shield)
- If equipped with **Lemur RWS**, the CDR's screen will have a backlit button in the top right corner to toggle between RWS sight replication and map screen

Fun Trucks and Contraptions

- Generally enabled checking the azimuth manually for military trucks (didn't work for some)
- Added mounted missile launchers for a white variety of trucks, including
  - **BILL-1**
  - **MILAN**
  - **SPIKE** (looks like **BILL** because it uses **BILL** artwork)

Bushmaster

- Applied **MRAP Protection Level-1**
- Added a dismounted command element
- Added option to add UAV/UGV (to be controlled by dismounted PLT command team)

Civilian Vehicles

- May now all be configured to carry an IED
- Shooting that IED location incurs the chance of a premature detonation

Cougar MRAP

- Lowered its center of gravity slightly
- Applied **MRAP Protection Level-2**

Dingo A2

- Applied **MRAP Protection Level-1**

Fennek AD

- **New System**
- Carries no troops
- Its main feature is to be decorative, but it may be equipped with a light machine gun – *rrrawwwr!*

HMMWV

- Fixed bug 5708; see section "Resolved Bugzilla entries"

M966:

- GNR buttoning up is no longer immune from enemy fire

M1025:

- Fixed bug 5118; see section "Resolved Bugzilla entries"
- GNR buttoning up is no longer immune from enemy fire

MB GD240

- Received a facelift
- Added crew positions: DRV, CDR

MB 300G CDi-NL

- **New System**
- Added crew positions: DRV, CDR, GNR
- Fixed crew positions. Multiple times. The bastards.
- Multiple equipment options

Pinzgauer 710M

- Added crew position: GNR
  You may now mount an infantry-owned **MG3** on the (un-tarped) vehicle's roll bar. If the gun is mounted, and at least one single soldier is being transported, a GNR crew position (**F6**) is temporarily available. It is then possible to toggle the mounting position between the front and the rear roll bar with the '**0**' hotkey. By default this operation takes 15 seconds; 45 if on the move. Without a human GNR, the relocation order can be given by the vehicle CDR.

  Limitations:
  - To shoot the gun you must be in the GNR position. If in a network session the owner doesn't allow other players in, the gun cannot be used!

- On squad dismount, a human GNR will be kicked out into the external observer's position as they will take the gun with them.
- With GNR crew damage the MG3 is inoperable (even in case a full squad of infantry sits in the back of the vehicle)
- If multiple 'MG' teams are loaded, be sure to remember which team's MG is mounted if you want to dismount "the other one", etc.
- there is as of this point no animation visualizing the GNR

- Will die now if CDR and DRV are incapacitated, GNR presence or not

RG-31 Nyala MRAP

- Lowered its center of gravity slightly
- Minor update of the model files
- Applied **MRAP Protection Level-2**

Technical trucks

- Removed certain excessive ammo cook-off effects, and dialed down the likelihood for spectacular explosions in general. Can still happen, but not all the time
- Driver's door hinge no longer opens 180°
- Corrected the reload speed of the Technical Mortar truck. It still has (intentionally) slightly longer reload time than dismounted mortars, but it's much faster than it was before
- Limited amount of HMG ammo that the **Technical-T 1.2t** can carry

Typhoon-K 6x6 MRAP

- **New System**
- May be equipped with remote weapon station
  It's still not playable, though

Vector ATTV

- **New System**
- Added crew positions: DRV, CDR, GNR
- Multiple equipment options
- GNR buttoning up is no longer immune from enemy fire

VW Amarok

- **New 3.3t Technical/Police 4x4-V**
  - This vehicle will appear equipped with a snorkel if the 'UN' camouflage option is selected
  - It will be equipped with police lights in the 'CIV' camouflage option
  - Added crew position: DRV

- If equipped with an optional weapon, the CDR position is available.

- **New 3.3t Truck 4x4 V-NL**
  - It may be olive drab, and off-road, but… well, it transports a soldier. *Cute.*
  - Added crew positions: DRV, CDR
  - The 'military' version of this vehicle was changed so that it will appear without tarp in the 'CIV' camouflage variants
  - Corrected an error on the rear window which caused police emblems to appear on the back glass
  - Ordered the rotation axis on right side wheels to stop being contrarian

Helicopters

- Added a thermal exhaust effect to many helicopter models
- Updated all helicopter model's vulnerability definitions to conform to a common standard
- Updated all helicopter model's reverse speeds to conform to a common standard. No warning beepers, though.
- All attack helicopters may now fire their ATGMs on the move

AH-1 Cobra

- Changed treatment of gun armament
- Adjusted default ammo count
- Hardened the LRF against burnout

AH-64 Apache

- Minor update of the model files

CH-146 Griffon

- Minor update of the model files

Mi-8

- Fixed bug 4045; see section "Resolved Bugzilla entries"

Mi-17

- Fixed bug 4045; see section "Resolved Bugzilla entries"

Mi-24 HIND

- Changed treatment of gun armament
- Adjusted default ammo count
- Hardened the LRF against burnout

- Added more variants of the **AT-6 ATGM**
- Added **AT-9 ATGMs** approximate the **Mi-24VM**

UH-60 Blackhawk

- Minor update of the model files

Infantry

- The UGV wheels will finally spin
- For the **Mk.19** AGL, adjusted the rate of fire
- Set a more realistic pack and upack time for the **Mk.19** AGL
- Adjusted reload quantities for rifle quads
- Spanish soldier do not have black feet. We apologize for spreading false impressions. To make good for it, we issued free interceptor vests, CR90 RPGs, and AP rifle ammo
- Added a missing texture to the infantry bunkers which, despite being generally terrible, are surprisingly hard to purge from the code base
- Improved the mounted and dismounted **DShK** AA sight
- Fixed bug 4521 by adding the ability to **'nudge' infantry heavy weapons** using new hotkeys in order to better position them around obstacles.
  Note that the gun has to be unpacked, outside of buildings, that the user has to be stationary and in the 'eye' view.
  Note also that gun's movement frequency and movement distance is specific to each gun. The movement direction is always relative to the gun's base heading (which for turreted guns is different from the barrel's/launcher's heading)!
- Made grenade launcher on **AKM** (a.k.a. "**AK-47**") visible

Missile teams:

- Added the **AT-14 Kornet** launcher and missile, **New System**
- Added the **BILL-1**, **MILAN**, **SPIKE** missile launchers
- Computer-controlled **SPIKE** teams will use the 'high' attack profile for targets at ranges over 2,000m
- **Javelin** launchers may now tilt +/-45°; most useful in hilly terrain
- Fixed bug 3406; see section "Resolved Bugzilla entries"

Sniper teams:

- Sent them on some R&R, to develop a bit of a sun tan
- If a unit is marked as an **HVT**, all its members will now be targeted by sniper teams, not just the leader
- Fixed bugs 4867, 5690; see section "Resolved Bugzilla entries"

Infantry Fighting Vehicles

BMD-2

- Added **3UBR8 APDS-T** and **AT-4C** as ammunition options

BMP-1

- Updated some model files
- Updated troop capacity to allow for dismounted mech PLT command team

BMP-2

- Added an **Instant Action** scenario
- Updated some model files
- Updated troop capacity to allow for dismounted mech PLT command team

BMP B-11 Kurganets-25

- **New System**

BMP K-17 Bumerang

- **New System**

BMP T-15 Armata

- **New System**
- KE impacts are now more likely to knock off or destroy reactive armor components; they may *appear* more vulnerable than on some T-72 variants since there the bricks can be removed only in clusters rather than in individual tiles

ASCOD Pizarro

- Updated a few tutorials
- Gave the whole vehicle a critical review; artwork remains unchanged
- The CDR's daysight is no longer permanently disabled
- Simulated and animated the CDR's unity sight mirror. From now on, the TC can either look through the unity sight view, or through his ocular - they can no longer be active at the same time.
  The mirror can be moved by clicking the little lever to its left from the CDR's position. By default (and by the computer-controlled CDR) the mirror will be set in such a way that the ocular is usable.
- Animated the azimuth and elevation locks
- Animated the ballistic shield door handles. Note that currently it is not possible to open/close these shields individually
- Rear hatch soldier will cover the rear now, when unhatched
- Updated some mobility-related data

- Ordered crews to respect the height limit of partially opened hatches
- Reduced the track/sprocket ratio mismatch, to be off by one only
- Enabled 'high detail tracks'
- Added UN, OpFor textures
- Fixed some decal issues on the rear troop door
- Fixed bugs 5976, 5978; see section "Resolved Bugzilla entries"

ASCOD Ulan

- Fixed a wrong label on the ballistic computer's control panel

CV90/30

- Updated a few tutorials
- Fixed bug 2381; see section "Resolved Bugzilla entries"

CV90/35

- Improved reload times for HE and smoke grenades; it's now 240 seconds for all, not just one of them
- Improved modelling accuracy of open/closed bolt firing modes
- Added a number of HE-I rounds which aren't actually fielded but were developed for the Gepard AA vehicle between the 1960s and the 1980s and which are compatible with the Bushmaster Mk.III chain gun. Have fun.

CV90/35-DK:

- Updated a few tutorials
- Updated Gunner's hatch opening angle
- Reinterpreted coincidence window data to allow for acceptable accuracy of KETF fire in Wide Burst mode which was totally borked up to this point

CV90/40:

- Updated a few tutorials

M2/M3A2 Bradley

- Updated a few tutorials
- Troops dismount prettier now
- Set gun EL and AZ speeds and accelerations to more realistic values

Marder 1A3

- Set gun EL and AZ speeds and accelerations to more realistic values
- Covered up holes in side skirts
- Track width and sprockets now slightly less misaligned
- Adjusted CDR's hatch max rotation angle

- Fixed bug 5242; see section "Resolved Bugzilla entries"

FV510 Warrior:

- Updated right side roadwheels that had been fitted for, but not with hubs

Logistics

- All ambulances are now accessible from the F8 views, despite the exploit concerns. You may want to keep an eye on such cheaters in network sessions. eSim Games officially supports corporal disciplinary action, so that the irresponsible few don't ruin the game for everybody — again
- **All ambulances can now dismount a medic team**

Boxer Ambulance

- Minor update of the model files
- Applied **MRAP Protection Level-2**

HEMMT, HEMMT Cargo

- Added variant option with extra armor plates
- Gave 'em a serious facelift in general
- Winch hook is much hookier now
- Taught the old dog a new trick, to explode when ammo boxes are hit
- Can now be equipped with **M151 Protector RWS**

MAN KAT-1 4x4

- **New System**
- Transports troops, ammo; command/radio variant

MT-LBu Ambulance

- **New System**

Wissellaadsysteem WLS/WLS-P

- **New System**
- Eye candy, for now

Unimog Troops

- Troops dismount faster now

Ural-4320

- Gave 'em new wheels
- Gave 'em 3D crews
- Added engine exhaust
- Troops (if any) dismount faster now
- Updated some model files

YAD-4442

- **New System**
- Transports troops, ammo

Main Battle Tanks

Centurion Mk5/1

- Other units' AI gunners are less reluctant to engage it now, at times
- Updated some model files
- Fixed bug 5949; see section "Resolved Bugzilla entries"

Challenger 2

- Emptied the fuel drums on the rear, which increases overall vulnerability against attacks from the rear; but it reduces the vulnerability for "fuel leak" damage at the same time, which was way more disruptive in test games, with the new HE model in place
- Updated the **Instant Action** scenario

Chieftain

- Turret-mounted smoke dischargers discharge their smoke now in the direction of the turret orientation
- Prettied it up
- Replaced the mine roller that it probably never had with a plow (user-submitted report by: **Hedgehog**)

Leclerc

- Swapped the SLSGR-95 ammo for DM11

Leopard 1

- Other units' AI gunners are less reluctant to engage it now, at times
- Set gun EL and AZ speeds and accelerations to more realistic values

Leopard 2

- Set gun EL and AZ speeds and accelerations to more realistic values
- Updated a number of tutorials
- In Danish Leopards, the GAS reticule will now shine in a yellowish/gold color as long as the turret is not in the 'TURM AUS' state - in that case we Paint it Black
- Fixed bug 7750 even more to allow the use of joysticks for both the turret operation and view panning

Leopard 2A5:

- Increased resolution for some internal textures so that text labels can be read more clearly
- Found the missing **DM11 HE-frag** round
- Joystick may be used again to move the turret in manual ("Not Aus") mode
- Substantially increased combat mass, and power-to-weight ratio for the **Leopard 2A5-DK1** and **-DK2** from more accurate numbers. Also added increased mine/IED protection properties.

Leopard 2A6:

- Found the missing **DM11 HE-frag** round
- Joystick may be used again to move the turret in manual ("Not Aus") mode

Leopardo 2E:

- Fixed bugs 4074, 5858; see section "Resolved Bugzilla entries"
- Joystick may be used again to move the turret in manual ("Not Aus") mode

M1 Abrams

- US style smoke launchers (incl. Bradley) may now fire 50mm multispectral smoke grenades
- Improved UI for the commander's weapon station. It's now possible to fire the weapon without having to click the view for mouse control; so it can now be entirely operated with arrow keys and space bar
- Revised the **'Master Blaster'** code so that a click on the 3D interior's firing handle will **always** fire the main gun. Using the 'masterblaster' hotkey (**Shift+Space** by default) however will either fire the main gun or the coax, depending on the 'weapon select' toggle. This isn't quite how it works in real life but we have only so many hotkeys, and you don't have simulator mockup environment where actions can be directly tied to specific electric signals, so let's call it *a useful approximation*.
  Firing the weapons this way is now independent of fire control and override state as well.
- Shuffled various munitions to the appropriate ammo slots
- Fixed bugs 705, 4865, 5745, 5802, 6384; see section "Resolved Bugzilla entries"
- Set gun EL and AZ speeds and accelerations to more realistic values

M1A2 SEP:

- Added **M908-OR**
- Updated the CDR's **cal .50** weapon

- Shuffled ammo slots for some munitions to match index hotkeys
- Fixed bugs 3611, 7310; see section "Resolved Bugzilla entries"

M60A3

- Added an **Instant Action** scenario
- Shuffled various munitions to the appropriate ammo slots
- Set gun EL and AZ speeds and accelerations to more realistic values
- Corrected various hatches
- Update on some of the model files, and some of the artwork
- Fixed bugs 4372, 4588, 4594, 4853, 5742; see section "Resolved Bugzilla entries"

Merkava 2

- Un-uglied the bags in the turret bustle rack

Sho't Kal:

- Added smoke generator capability
- Added an **Instant Action** scenario
- Other units' AI gunners are less reluctant to engage it now, at times
- Fixed bug 5125; see section "Resolved Bugzilla entries"

T-14 Armata

- **New System**
- KE impacts are now more likely to knock off or destroy reactive armor components; note that unlike some T-72 variants the bricks will be removed individually due to the way they are mounted
- Improved the armor model by making more accurately sized breach and autoloader, to more realistically limit the possibility of a round passing through the turret interior without hitting anything important; still possible, though
- Instructed AI gunners to aim slightly better for more vulnerable locations
- Corrected an error that prevented the 3rd slot of maingun ammo to have rounds assigned to or removed from it

T-55

- Other units' AI gunners are less reluctant to engage it now, at times
- Added OF412 HE/frag round
- Removed OF32 HE/frag round along with the errors in it

T-55A (m.1974):

- **New System**

T-62

- Other units' AI gunners are less reluctant to engage it now, at times
- Added a new BK-4 HEAT round

T-72 MBTs

T-72B:

- Made the **T-72BV** and **T-72B1V's** ERA explodey again
- KE impacts are now more likely to knock off or destroy reactive armor components for the **T-72BV** and **T-72BV1**; ; note that unlike some Armata variants the 1st generation ERA bricks will be removed in clusters after a hit
- Added a 3-tone pattern RU texture for **T-72B**,**BV**,**B1**,**B1V**
- Corrected the missing **T-72B1** commander's hatch on the OPFOR and RU and RU2020 textures

T-72M, M1:

- Added the missing commander's hatch on the winter textures

TAM VC:

- Set gun EL speed and acceleration to more realistic values

TTB:

- Announces its vulnerable parts better to computer-controlled gunners now

Remote Weapon Stations

ERCWS-M

- Fixed a problem where clicks on the panel would register twice
- Computer-controlled GNRs will now enable the thermal camera after a system reboot (if a human player was mischievous enough to power it down)
- The 'Auto Focus' toggle was moved from the 'Camera Settings' submenu to the 'Battle' screen (note that the action of manually changing focus will disable the 'auto focus' setting)
- In daysight it is no longer possible to quickly cycle through several zoom levels; you must wait until the next FOV has been reached before commanding further change
- Changing the camera's field of view will now disable auto target tracking (ATT)
- in case of a failed lase (due to any reason) the system will no longer enter battle sight range
- The (narrow-FOV) brackets around the reticule will now blink as long as the 'auto target tracking' button is pressed. In case ATT could be successfully enabled (and while it stays enabled) these brackets will be shown (but not blink)

- Some make-up was applied to the 'Auto Focus' battle screen menu item
- Smoke grenades may no longer be fired while being out in the hatch using the gun manually
- The 'autotrack' mode can now be disabled by pressing the 'autotrack' hotkey once more
- Corrected fire-limitation areas for LMV and Pandur I (RWS)

Lemur RWS

- Updated a few tutorials
- Corrected the 50x magnification of the sniper scope option to be actually 50x

M151 Protector/CROWS-II

- **New System**
- A Wiki page is in preparation at SteelBeasts.com

M153 Nordic Protector

- **New System**
- A Wiki page is in preparation at SteelBeasts.com

MiniSamson:

- Fixed bug 5269; see section “Resolved Bugzilla entries”

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Bugfixes without Bugzilla entry

- Version 4.162 changes at the end of this section
- Changed year in version strings and resources to 2017
- Changed year in version strings and resources to 2018. Turned 50. Partied. Can still remember it.

  I'm growing old.
- Changed year in version strings and resources to 2019
- Fog bands in the skye, fading
  Ever more pleasantly
  By the grace of Florida Man, the legend
- Beta testers reported massive walls that would appear in the terrain for no apparent reason
- A programmer announced his intent to fix a bug about massive walls that would appear in the terrain, or else volunteer to join the Night Watch
- Deviant calendar nerds may no longer troll *Steel Beasts* by picking February 29th as a start day in non-leap years.
- Automatically generated powerline pylons will no longer be generated on top of roads
- First attempts of the programmer to fix The Wall Bug were repulsed by local defense contraptions. Rumors of White Walkers begin to circulate.
- Properly re-deadened not-quite-so dead combatants, and displayed them as a warning to others on the Map Screen when loading an in-progress saved scenario
- Added a dedicated APS explision sound effect. It's very explisiony. We have the best explisions.
- Reminded elite snipers that they can shoot targets only when picking the right ammunition
- Spoiler alert: The Night King programmer reports having breached the Wall
- The Mission Editor preview will now correctly render whether a soldier is carrying RPGs and rifles with underslung grenade launchers
- Fixed a problem in the Pandur 1 (RWS) where the CDR's 'eye' view would be incorrectly rendered if the ERCWS-M was set to display its TI channel
- Spoiler alert: The Night King programmer was impaled by terrain spikes for a short period after assaulting the Wall
- Removed the African Rebel General from the African Civilians custom camo group.
- Moved some Afghan men from the Taliban camp to the Afghan Civilians custom camo group.
- T-72M, M1, B, B1, BV, B1V: 3D tracks now slightly less misaligned with their sprocket wheels.
- Renovated Apartment 19
- Widened door frame of Middle-Eastern House No. 12
- Thinned walls of Middle-Eastern House No. 13, installed dead-soldier retainment system NTY-CLP 3000. Raised the rent to cover the investment. Evicted tenants after protests; democracy could be restored. Move along. There's nothing to be seen here.
- Spoiler alert: The Night King programmer is quite optimistic to breach the Wall soon – again.
- Fixed that "long-standing issue where the AAR 'hit ray' for ground impact events would not be properly shown". You've all been waiting for this fix *for ages*
- Fixed bug in the Centauro where the CDR's GPSE display was not correctly scaled in the interior's 'eye' view.
- Updated all Instant Action scenarios, removed a few to streamline the list
- No more reports have been received from the Wall for quite a while now
- Dead Tree
  More massive than ever
  Looming taller
  Its bark barking barkier, bark bark
- NVG mounts will now appear better on soldiers' helmets
- When using the 'Move Up' and 'Move Down' hotkeys (defaults: Q/Z) while inside a vehicle's squad troop position, ensure that the 'eye' view mode is being selected. Also, when switching views while in the vehicle's squad position, ensure that the troop hatches are opened/closed according to the view's requirements, so that the view position is correctly positioned inside or outside the troop hatch.
- The AMV XA-360 gunner's eye view did not cause the RWS to update its display. This sentence no sense.
- Spoiler alert: The Night King finally made good on his promise. The Wall is utterly razed now
- Fixed hard to repeat crash bug when making road path routes
- Fixed even harder to repeat crash bug when making road path routes
- Realized it was hard to repeat, that crash bug, when making road path routes
- Fixed crash bug when making road path routes – even though fixing it made it even harder to repeat

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PE 4.162 Release Notes

- Added platoon command group support for various NATO vehicles.
- Fixed problem in M60A3 where internal sounds would continue playing if the user jumped to a different unit.
- The BMP-2 ATGM missile guidance no longer uses imprecise yaw and pitch values which makes ATGMs guidance even more unrealistically precise and stable at long ranges.
- Fixed problem where commands like 'advance to', 'shoot at' etc issues from the first-person perspective might not work as intended since the line-of-sight might have been blocked by the own vehicle/gun/building
- If a combatant with an IED explodes under a bride, the explision now also happens under a bridge. Do not follow this man's invitations to wedding parties.
- IED explisions will no longer show up as "airstrikes" in the AAR.
- All trees, dead or alive
  Balanced masses, standardized now
  Helping collapse realistically
  From dynamite's breath and chariot's push
  Inconsistent guesswork no more
  Their border sink heights adjusted
- Fixed crater creation in wadis.
- Fixed a bug in the Lemur where in online sessions the action of resetting the (user-configurable) gun limits would not be communicated from the GNR's PC to anyone else in the session, leaving the gun on all other clients restricted to the gun's initial limits.
- Corrected some issues when rendering land sharks - they should be less noticeable now
- Fixed problem where tanks featuring a LRF in an independent sight were not actually using this LRF's position when doing LOS tests, but the primary sight's location
- The M60A3 will now emit its smoke at center rear (as it has two exhaust ports)
- Fixed a bug where loading an invalid 'plan' file would make the application reload the whole scenario (especially a problem for online hosts!) and (inexplicably) bring up the 'Save AAR' question dialog..
- Soldiers (including snipers) will now factor in crosswind and ammo drift when firing rifles
- De-bugged the 'Mission Debug Window' where the party names in a dropdown box would be truncated
- Fixed a typo in the 'Package Download' dialogue, leading to the 'STRINGX_MAPDOWNLOAD_DEJAVU_2' string to be used twice

- Fixed a typo in the 'Package Download' dialogue, leading to the 'STRINGX_MAPDOWNLOAD_DEJAVU_2' string to be used twice

- If in the Mission Editor multiple reference points are selected, and if at least one is a 'standard' (always deployable, by anyone (see bug #2453) point, then the 'make deployable' and 'set owner' property menu entries are hidden (as this would just be confusing)
- Added missing 'Low Fuel' caption in the 'damage if' condition dialog
- Fixed a number of errors with the menu listing all the possible vehicle position types (see bug #6310)
- Fixed a problem with real-time earthworks not earth-working correctly.
- Fixed issues in the AI aiming algorithm (for TC HMG and soldier MG/rifles)
- Fixed a bug in the Challenger 2 where the TC was still able to control his panoramic sight while actually looking around in the 3D interior..
- Fixed incorrect scaling of the Leopard 2A5 (and 'better') peri reticule at log magnifications - this is basically the same as bug #7303 (for the 2A4) (user-submitted report by: Lumituisku)
- Fixed bug #7422 some more where medics could never repair units that started the scenario as 'destroyed'. This also applied to instructor actions!
- Fixed a bug with very old scenarios where vehicles could unexpectedly end up with a mineplow
- Imp roved an issue that caused tanks to be killed by 125mm HE rounds. Which probably means that tanks are harder to kill by 125mm HE rounds now. But maybe their killability (that's officially a word now) was imp roved.
- A programmer felt the "Need to explicitly apply centroid shift to global uv in dx9 as the water (especially noticeable in bumpy HR maps) and tilemap were offset by 0.39m)"
  You have been warned.
- Significantly adjusted the 125cc motorcycle suspension, power to weight, mass, and steering values to be more realistic. The old motorcycle values were based on the cycles curb weight without passenger, and so was allowed to achieve extremely unrealistic performance.
- Leaves of grass and others
  Cluttering the ground
  Will fade with distance
  But faster now
  Preserving framerate

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- When loading a 'plan' file in an online session, changes to 'concertina wire' obstacles were not communicated to the other participants
- The 'last lased coord' marker in the map screen (visible at lower realism levels) is no longer set whenever the user picks a screen coordinate (which happens surprisingly often)
- Units equipped with a Protector RWS may be given the command to suppress with it
- Artillery units now compensate for crosswind
- In the AAR the location of units will not mysteriously change if the replay rolls over the end of the mission
- Learned about programmer euphemisms for crash bugs,
  - an issue
  - an exception
  - a possible access violation
  - a possible null pointer exception
  - an out-of-bounds read
  - an integer-division-by-zero
  - an unchecked pointer access
  - an access violation
  - an array overflow
  - an unhandled exception
- For the RWSs MiniSamson and ERCWS-M the GNR's emergency firing view mode (Alt+F1) now plays external gun sounds
- In network sessions, DF30 GNRs may now control the vehicle CDR's sight's field of view and thermal polarity
- When multiple routes are selected, it's now possible the bring up the properties context menu
- Adjusted no-traverse zones and some nonsensical elevation restrictions for the RWS Protector
- Applied a number of "other changes" to the RWS Protector (Sector auto scan, scan speed)
- No longer showing "certain laser effects" in the AAR when they weren't supposed to be seen (I didn't even know we had "laser effects"…)
- Improved the sink depth of the "dtree1" palm tree
- Corrected some artifacts on the snow specular textures. Also adjusted the sand normal texture, and greatly improved the sand specular textures so that they appear less like plastic, and more gritty
- Improved the asphalt, concrete, dirt, dry lake, gravel and sand specular textures, and added a new mud normal and specular texture (for beaches)
- Corrected the alignment of the dry lake normal textures
- Fixed a bug where pressing the **Map Package Download Manager's 'Continue'** button would in fact not continue the scenario loading process
- Spotting rounds will now create a proper hit effect
- Adjusted the **Arid dry Theme** file; forest tiles may no longer use the dead tree model. Also, a few more tree types were added
- When Raising Selected Road(s) in the Map Editor, splined curves will be properly considered
- VBIEDs on a bridge will no longer explode under the bridge
- Steel Beasts promised to crash less often on updates of vehicles equipped with an active protection system
- In the Create New Map Package dialog the UTM zone will no longer spill over
- The SB Pro Map Package Download Manager will no longer crash when reading empty tags in XML config files, or stop responding when reading certain map package metadata
- Connecting to the Steel Beasts Map Package Download Manager service will render other applications unresponsive less often
- When using the Undo/Redo function in the Map Editor, hedges and other objects may now be properly selected
- Map Packages queries will report timeouts more reliably now

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Resolved Bugzilla entries

Credit where it's due: I tried to mention **contributions from the *Steel Beasts* community** as far as bug reporting is concerned. You will notice them by their red color. However, it is very likely that I missed some contributions, and I'm very sorry for that, but I'll have to leave the research of bug histories to future digital application historians. I will try to keep better track of this in the future.

- Fixed bug #224; units stuck in places will now indicate their predicament in the **Map Screen** by a blinking red line connected to the formation icon
- Fixed bug #705; **M1** tanks may finally reload the last six rounds from the hull storage
- Fixed bug #778; panning the view is now disabled when jumping from one crew station to another. In other words, from now on it shall be known that view panning only works when moving from sight view to sight view while staying in the same crew station.
- Fixed bug #1108; Theme files may now be edited from within the **Mission Editor**, too
- Fixed bug #1120; the "**Embark, if…** Unit (this) is **low on Ready Ammo**" now emphasizes the ammunition caliber when calculating the condition; while being analytically incalculable for the user it gives superior intuitive results
- Fixed bugs #1188/#5774; **vehicle emplacements** are now generated in a way to guarantee good protective properties irrespective of the underlying terrain's height map, with a **referencing tool** designating the lowest point that can still be targeted from the emplacement with a vehicle for which it was dug (similar to the LOS bubble for regular battle positions)
- Fixed bug #1277; the maximum number of players in the "**Give to**" menu has been lifted from 32 to 127 session participants
- Fixed bug #1366; dead helicopters now switch off their engines
- Fixed bug #1472; in the **Mission Editor**, hidden waypoints from computer-controlled routes will now remain hidden when pasting another route to them
- Fixed bug #1822; 3D infantry need will now provide a subtle red puff when hit
- Fixed bug #2015; the **Centauro** CDR will no longer yell *"Caliber 50"* when firing his 7.62mm MG
- Improved on bug #2098 without entirely solving it; for some weapon/sight combinations (especially noticeable with 40mm AGL types) computer-controlled gunners would scan along the gun's line of fire, which for larger distances would - due to the weapon's ballistics - result in them looking up in the sky, and not at the ground/horizon
- Fixed bug #2381, so that the **CV90/30-FI** TIS no longer shows "9995" if there's no return for the laser rangefinder
- Fixed bug #2492; **mortar** artillery fire **sounds** will now be chosen based on the caliber of the firing gun (and impacting round)
- Fixed bug #2605; 'Advanced gunnery' subscores will now be ignored if loaded in a 'Pro PE' configuration.

  Note that if a scenario containing such scores are loaded and saved again using the PE **Mission Editor**, they will be lost!
- Fixed bug #2619; for the Fuchs APC, ballistic shields are now being controlled by the CDR
- Fixed bug #2667; on multi-lane bridges, computer-controlled units will now bypass disabled vehicles
- Fixed bug #2800; if an autonomous actor is unable to reach its drain location, it will return to the actor pool
- Fixed bug #2972; the map shall no longer get corrupted when jumping to view the 3D world in different places
- Fixed bug #3134; adjusting artillery fire no longer causes the strike number field to shift to the true impact location.

  On 'high' realism level, unless testing a scenario, the fire mission-related on-map text will be removed
- Fixed bug #3233; you may no longer damage tracks on wheeled vehicles in the 'damage' menus
- Fixed bug #3279; in the AAR, Alt+H will now toggle the display of tactical unit labels in the 3D scene.
- Fixed bug #3406; for the Milan ATGM, with unlimited ammo the sight will now drop (as it's supposed to) as soon as a missile is in the air, and will remain such as long as the missile's flying and the minimal firing period (set to 6 seconds) has not elapsed.
- Fixed bugs #3611/#7310; the M1A2's fire control system will now apply lead to slow moving targets more reliably. The interval in which the control handles are considered to be 'in neutral' has been further restricted.
- Fixed bug #3663; for all but instructors, the 'Set Unit Spacing' and 'Set Unit Formation' entries in the Planning Phase are now disabled. Instructors may also change a unit's heading

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- Fixed bug #3667; when clients join a network session and do not pick a specific vehicle, they will no longer start as observers on the Blue party, but rather the party that they selected in the Assembly Hall.
  Note that this involves a slight change in behavior, in that a (non-instructor) player who has not selected any combatant will now always be assigned to the party he has currently selected in the assembly hall (i.e. if he has e.g. the 'Red' party selected he will start out as an observer in the highest-ranking 'Red' vehicle; if he has the 'Blue' party selected he will be put into 'Blue'.
  Such a client will **not be assigned ownership** of any units under these circumstances, however (not even if he is the only human player in his party) - see bug #4459
- O R'ly! fixed bug #3739/5779; in the Mission Editor vehicle emplacements now have an additional property, 'Visible while planning' (if they are not 'visible' then all parties but the owning one will not see them while still in the Planning Phase). ImportAAIGrid() now runs asynchronously, and while we're at it, CNTHeightMap::Save() now runs asynchronously too with a marvelous infinity bar, uh, infinite progress bar
- Fixed bug #3768; ordered the observer of sniper teams to have his rifle appear on his back at less strange times
- Fixed bug #3932; giving the unload command while manually driving a troop-carrying vehicle is no longer possible
- Fixed bug #4045; Mi-24 HIND and Mi-8 HIP may now fire their ATGMs on the move
- Fixed bug #4070; external observer positions are now enabled for ambulance vehicles
- Fixed bug #4074 by closing a gap under the Leopardo 2E's periscope
- Fixed bug #4125 by adding the HE 400m mark to the SpPz Luchs' range dial
- Fixed bug #4372 by smoothing the transition from the M60A3 CDR's 12X daysight LRF view to the cupola level view
- Fixed bug #4482; digitally ironed gravel, concrete, and asphalt areas
- Fixed bug #4521 by adding the ability to 'nudge' infantry heavy weapons using new hotkeys in order to better position them around obstacles.

  Note that the gun has to be unpacked, outside of buildings, that the user has to be stationary and in the 'eye' view. Note also that gun's movement frequency and movement distance is specific to each gun. The movement direction is always relative to the gun's base heading (which for turreted guns is different from the barrel's/launcher's heading)!

  Command a movement (using the new hotkeys). After some (weapon-specific) time period has passed, the weapon shifts to its new position. During this process a status message will be displayed
- Fixed bug #4594; in the M60A3 it is now possible to directly use the LRF even if BTL RANGE was previously selected
- Fixed bug #4615; Vehicles equipped with **NVGs** may now **drive faster at night**, unless dense fog is added to the darkness
- "Potentially fixed" bug #4648 by occasionally not letting computer-controlled gunners put the gun over the rear deck
- Fixed bug #4831; all vehicle crew now default to buttoned state
- Fixed bugs #4853/#4588; in the M60A3, both the GNR and CDR will now apply lead when firing
- Fixed bug #4865; for the M1, IPM1, M1A1 and M1A1(HA): The max. lase range is now limited to 7990 meters
- Fixed bug #4867, and enabled a 50x spotting scope view for sniper teams.
  The 'sniper observer' may now toggle between the 'ordinary' binoculars and a '50x sniper scope'. This is done by using the 'Toggle GAS reticle' (default 'R') hotkey while not using binoculars.
  In addition, a small info overlay was added that shows some information about the sniper soldier's state (whether he is allowed to fire, whether he can see the target, whether it's in range..)
- Fixed bug #4980; instructors (and, in Test mode, mission designers) resupplying units equipped with MICLIC trailers will also refill the trailer now
- Fixed bug #4984; deployed MICLIC line charges can no longer be command detonated from just any distance. The vehicle that deployed the line charge must remain within 100m of the starting point of the deployed charge in order to detonate it.
- Fixed bug #5010 by re-redefining what "All" means (everybody, apparently); priority artillery reference points with an ownership setting of "All" can again be moved by everyone in that party in the Planning Phase. While this has now been rectified, legacy scenarios remain börked until saved in the new format.
- Fixed bug #5072/#6313; an error causing duplicate unit names was corrected, which in turn caused all kinds of nasty effects such as icon mismatches in the eye view's command HUD, or the inability of revived infantry to reform/join back into formations moving on routes
- Fixed bug #5118; for the M1025, the variable GNR "aim" pose now works as intended

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- Fixed bug #5125; the Sho't kal's loss of stabilization no longer prevents the gun from firing. The GNR may now switch to emergency mode, re-enabling the firing circuit
- Fixed bug #5134; bumpy terrain will exhibit fewer surface cracks than before
- Fixed bug #5158; vehicles no longer driving down the center of some two-lane bridges, causing collisions
- Fixed bug #5181; when clicking on a platoon icon, on all but the highest realism level, the unit's vehicle locations will be shown in map view with connector lines leading back to the platoon icon, as long as the unit is under the user's control, or the user is an instructor, or a mission designer testing a scenario
- Fixed bug #5212; the mini map's selection frame's orientation is no longer 90° off
- Fixed bug #5242; with the IFV Marder 1A3, manual elevation control is now possible after pressing the 'Manual FCS' hotkey ('.') would not allow for manual elevation control
- Fixed bug #5257; made the SpPz Luchs A2's 20mm ballistics and range scales less inconsistent
- Fixed bug #5269 by making some of the MiniSamson's MFD texts and messages less unreadable
- Fixed bug #5292; when on a route in column formation and the player in the lead vehicle starts to manually drive in the opposite direction, following vehicles will now stop driving until the leader has passed their position
- Fixed bug #5337; thermal sights should now have less trouble focusing through partially transparent grass/ground clutter
- Fixed bug #5414 by removing a feature that you never saw. Smile and wave, boys, smile and wave.
- Fixed bug #5471; in the Mission Editor it is now possible to concatenate routes with Jump to end, if... conditions
- Fixed bug #5483 by reducing ARVs maximum recovery distance to 60m
- Fixed bug #5527; sent the new terrain engine to a speech therapist, curing that stutter
- Fixed bug #5536; made infantry poses in the AAR less inconsistent with their state at the event if they died during the mission
- Fixed bug #5584; made computer-controlled armored units exploit the end of artillery barrages faster.
- Fixed bug #5599; made sure that squad leaders will enter buildings along with their men
- Fixed bug #5620; improved the handling of rock clusters (stones) in pathfinding, as long as the framerate is 10 fps or better
- Fixed bug #5655; improved loading and unloading sequence of soldiers (though it wasn't quite so straightforward as it seemed)
- Fixed bug #5658; PCs will now open their ramps/doors only immediately before the arrival of troops
- Fixed bug #5664; embiggened muzzle blasts in dusty terrain, and emplacements (...yes, it's a perfectly cromulent word)
- Fixed bug #5669; in the Mission Editor, assigning Stay tactics will no longer reset an existing 'Set Posture' setting
- Fixed bug #5689; in the Planning Phase, ammunition data (part of the S2 advisory) at the end of long briefing texts will no longer get cut off
- Fixed bug #5690; sniper accuracy now scales with training level. 'Elite' level practically never misses after the first shot even in extreme crosswind conditions, with progressively worse aiming (primarily in the pitch axis) depending on training level
- Fixed bug #5702; fuel settings between 0...8% now work as intended
- Fixed bug #5705; in hilly terrain, computer-controlled gunners no longer scan the skies
- Fixed bug #5708; manual azimuth determination now also works on HMMWVs (M1025 and M966)
- Improved the problem of bug #5709. Apparently we now have fewer, but better disparities between host and clients with missile equipped units.
- Fixed bug #5719; Missile teams no longer ignore gun 'pack time' if given the 3D UI's 'move to' command
- Fixed bug #5720; computer-controlled calls for artillery fire will now use the 'number of tubes per off-map section' (set in the Mission Editor)
- Fixed bug #5723; very light vehicles (such as motorcycle and civilian car/truck) can now suffer engine damage when running over 3D characters
- Fixed bug #5730; when located in a building, an FO sight's LRF is no longer giving your own coordinate
- Fixed bug #5732; in network sessions, vehicle emplacements and bunkers can now be rotated even if the handler extends beyond the deployment zone
- Changed bug #5733 by making Custom Region and Obstacle Zone graphics boundaries resizing differently wrong than before
- Fixed bug #5735 by enabling camera movement for the Camera Animation Editor while paused

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- Fixed bug #5737; apparently some infantry units (from templates) were not being rendered in the Mission Editor on creation
- Fixed bug #5742; enabled Shift+Space to fire the main gun in the M60A3, just as clicking the red T handle in the 3D interior
- Fixed bug #5745; all M1 series tanks now require to switch to Emergency fire control mode for the CDR to control the turret
- Fixed bug #5746; the AAR browse menu will now indicate whether the AAR was recorded by the host, along with the number of participants
- Fixed bug #5749; with this change, the Mission Editor's 'Repair if' menu no longer features the 'Low Fuel' damage ("fixing" this "damage" will require a nearby fuel vehicle). Mission designers testing a scenario can still use the 'Resupply' option
- Fixed bug #5751; took away the FO team leader's antigravity device
- Fixed bug #5752; rain no longer causes strange effects in thermal while using the DOF focus with quality setting is at 1
- Fixed bug #5763; with LMG teams in buildings, the MG gunner's view is now at kneeling height
- Fixed bug #5802 where in the M1 series tanks: the hydraulic gauge in gunner's position dropped to 0 psi on the wrong damage (stabilization), will now drop to zero with turret drive damage
- Fixed bugs #5819, 5821; gave extracurricular lessons for land objects profiles; later they passed their LOS tests. Also told them that they can't have some horizontal line above them at certain ranges. This was soo 2017, it's just no longer fashionable
- Fixed bug #5827; let it be known that henceforth equipping an optronics device will unequip binoculars
- Fixed bug #5834; the AAR now provides a filter option to ignore all events that took place outside of the visible map area
- Fixed bug #5856; all lists in context menus are now sorted using the 'natural sorting order' as implemented by the Alphanum algorithm
- Partially fixed bug #5858; in the Leopardo 2E (CDR station) clicking the "2x/8x" button will now longer have any effect on the zoom of the TC's monitor display. Likewise, switching the peri zoom (using the hotkey) while looking through the peri will no longer influence the TIM. However, the TIM zoom button has yet to influence the displayed EMES view
- Fixed bug #5881; As a CDR of a MICLIC-equipped vehicle, after the line charge was successfully deployed the 'fire' sound sample will no longer be played
- Fixed bug #5909; politely asked to troops to die in buildings with more style, and not stick their limbs through walls
- Fixed bug #5949 by improving the computer-controlled CDR's aim with the TCMG on the Centurion 5/2
- Fixed bug #5960; asphalt, gravel, and concrete areas will now override the terrain tiles' hardness with 1.00
- Fixed bug #5976; in the IFV Pizarro, changed the CDR day, TI narrow & wide reticules
- Fixed bug #5978 (a text label in the Pizarro interior)
- Fixed bug #5983; unbushed the firing range
- Fixed bug #5987; large infantry squads will now enter Buildings That Are Too Small without acting in a Brain-Dead Fashion
- Fixed bug #5996; engineer vehicles will be equipped with concertina rolls by default when placed in the Mission Editor
- Fixed bug #6008; It is now safe again to edit (already named) triggers
- Fixed bug #6021; when a reference point is created, you may now directly type into the selected text field
- Fixed bug #6033;with this change, 'Main Gun', 'Ammo Storage', 'Turret' and 'Driver' damage will also cause a vehicle to be considered 'non operational'
- Fixed bug #6045; vehicles will now find paths around clusters of rock clusters … without blowing Navmesh sizes to hundreds of megabytes (…per scenario…)
- Fixed bug #6050; Apparently We Have A Beta Tester Who Likes To Capitalize Every Word That He Writes In Bug Reports No Matter How Much Of A Pain It Is To Fix That Afterwards In The Release Notes
- Fixed Bugs Bunny; glued him to the floor
- Fixed bug #6056; added missing rates of fire options in the RWS M153 Protector
- Fixed bug #6099; waypoints on 'Hold' or 'Defend' orders which are missing an unconditioned follow-on route (thus blocking its implicit embark conditions) will now be displayed in black color. In addition, a warning will be displayed in the status bar.
- Fixed bug #6101; party 10,11,12 might now have a text string associated, for consistency
- Fixed bug #6113/#6114; with armored engineering vehicles (AEVs) performing earthworks, manual driving commands will lead for the operation to be sus-

pended (the plow will raise) until it is resumed ('C'), or player jumps to another vehicle

- Fixed bug #6116; for AEVs a 200m radius to sense planned earthworks is now rendered on the map screen in the Mission Editor, the Planning Phase, and while testing a scenario
- Fixed bug #6117; when constructing emplacements, there is now a "focus point" marker (similar to the LOS bubble) connected to the emplacement by a dashed line. Use this marker to define the lowest point in the terrain that the unit for which the emplacement is made should still be able to shoot. The focus point needs not be located to the front, although that usually offers the best protective value.

  During the execution phase you may abort an **active earthworks construction** process by simply giving the vehicle doing the work a route. This vehicle will then be unavailable for any subsequent construction until it has reached the end of this route. Note that the emplacement remains in its current state, and any other nearby AEV will automatically drive up to it and continue its construction process

  While an AEV is assigned to construct a given emplacement, a blinking black line will be drawn from the AEV to the earthworks.
- Fixed bug #6188; when not testing a scenario, 'pool' units do neither render unit icons nor route lines while in the 3d view's overhead view mode.
- Fixed bug #6191: Allow users to configure a scenario's default callsign template(s)
  With this change, the default callsign templates (used in newly created scenarios) are no longer hardcoded. Instead, the installer will place a 'default.xml' configuration file into the 'common' callsign template folder, specifying, for each party, the callsign template(s) to be used (the templates specified in that file correspond to the formerly hardcoded templates); see pages 24 f. in the User's Manual about the file locations.
  In addition to that, you are free to override these defaults by supplying your own 'defaults.xml' file in your 'personal' callsign template folder. If such a file exists, the 'common' configuration file will be ignored altogether!

  Note that the latter file will simply look up callsign template files by name; in case a given file does not exist in the 'personal' callsign template folder the application will also search the 'common' template folder (so there is no need to copy 'common' callsign template files into the 'personal' folder - unless you want to change them!) In case that - for whatever reason - both the 'personal' and the 'common' configuration files cannot be read the application will fall back to the generic 'US' template file located in the program installation location.
- Fixed bug #6278; the '--fullscreenwindow' command line option will now stretch the window across the whole virtual desktop, not just the primary display
- Fixed bug #6290; mounted infantry will be subjected to penalty zones only if their carrying vehicle is not exempt from said zones.
- Fixed bug #6294; Jump to end if conditions will now be copied with the Copy route chain function
- Fixed bug #6320; for spin induced drift, left was right and right was left, right? So that was righted, clockwise. (user-submitted report by: Hedgehog)
- Fixed bug #6342; medics will indicate their activity (if any) with flashing green text "Treating wounded" in the status bar
- Fixed bug #6344; added a squad sized {Maneuver-defensive -> Battle position} map graphic
- Fixed bug #6345; {Maneuver-defensive -> Battle position} map graphic now defaults to platoon size
- Fixed bug #6358: Default hotkey file behavior
  Upon pressing the '**Defaults**' button in the 'controls' dialog, SB Pro will now try to load the '**std.hkf**' file located in the '**misc**' subfolder of the *Steel Beasts* root installation folder. Only if this file cannot be found or otherwise fail to open, *Steel Beasts* will use a 'hardcoded' hotkey configuration.
  Note however that, unlike earlier behavior, not merely the hotkey mapping but also some other input-related aspects like the preference to use joysticks or 'control handles', or to disable joysticks entirely etc. will also be applied.
- Fixed bug #6384; the M1's Unity Sight will now move in vertical axis with the primary sight (user-submitted report by: Assassin 7)
- Fixed bug #6420; manure silos will now properly collide, with rotary air impellers or otherwise
- Fixed bug #6434; when taking a screenshot while the message "Saved Image" was shown, that text overlay is now being suppressed from the screenshot file; IOW, you can no longer make screenshots of the "Saved Image" message.
- Fixed bug #6449
  A unit with a 'spawn if' condition and a 'Jump to end, if…' route with battleposition tactics (like 'guard', 'hold', 'defend', 'stay', 'suppress'..) set at the end will get the tactics reset to 'none' upon being transported to its final position (typically a checkpoint at the end of a route). It will now assume this route's position (if any) or continue a route leading from the checkpoint (if any, and depending on this route's embark conditions)

- Fixed bug #6455; in the Mission Editor and Map Screen, the current selected unit's status text is from now on drawn in white rather than red text.
- Fixed bug #6461; the JIM-LR 'Enter Range' hotkey now defaults to Shift+Enter
- Fixed bugs #6465, 6470
- Fixed bug #6477 by adding a few missing line breaks to the HTML Report files
- Fixed bug #6493; tank gun rounds that were swapped out (by double tapping another ammo type in the CDR position) are no longer counted as being "used" in HTML Report files
- Fixed bug #6503. Strength based baseline scoring was broken, points were awarded despite the defined baseline % of enemy forces not being destroyed
  With this change, the 'Gunnery' user-score and 'Strength' based mission-score are now being calculated slightly differently:
  - if such a score does NOT feature a 'penalty' (a 'Kills' penalty for the 'Gunnery' score variant), then whatever is applied as the 'baseline' score gets applied immediately, regardless whether the baseline strength-percentage (or kill-#) was reached
  - on the other hand, if such a score DOES feature a 'penalty' then whatever is defined as the baseline gets only applied after the baseline strength-percentage (or kill-#, for the 'Gunnery' score variant) actually got reached.

  'Gunnery' score **Example:**

  Suppose there are four targets in the scenario, with a baseline of four kills set, corresponding to a score of 100
  - if no penalty is applied, the user will have a 0 score at mission start and will only get 100 points if he destroys all four targets
  - if a penalty is applied (say, 25 points per kill), then the user will ALSO start with a score of 0, but the score will increase with each kill (25 with the first, 50 with the second, 75 with three targets killed, 100 with all four killed)
- Fixed bug #6538; as a general change, if the CDR of a vehicle is disabled and the player assumes his position anyway, a (computer-controlled) 3D gunner character will no longer be rendered
- Fixed bug #6542; copied routes and route chains may now be pasted to multiple waypoints just like this was already possible with multiple units
- Fixed bug #6543; with this change, after a preset formation route has been issued only units which are not already in a battleposition will enter 'stay' mode and turn towards the first leg of their newly assigned route (until the command for the whole preset group to execute the move is given)
- Fixed bug #6547.
  Shift+Mousewheel will adjust iron sight range settings on weapons fast, Mousewheel alone will offer more precise changes.
  Note: With this change proper keyboard commands to adjust ranges with auxiliary sights were implemented as well; the "Increase GAS range" and "Decrease GAS range" keys will now work as well; however, since these are mapped to Shift-Up and Shift-Down however, the 'Shift' modifier will simply have no effect without remapping the hotkeys
- Fixed bug #6549; Scimitar GNRs not in the position to rotate the turret will now have to wait for a rise in their social standing
- Fixed bug #6553; for Shoot type commands, the mouse cursor will now change into a crosshair
- Fixed bug #6575; in the AAR, IED events will now draw three concentric circles to indicate the lethality of overpressure effects for pK100 (red), pk50 (orange), and pK0 (grey)
- Fixed bug #6613; Spoiler alert: The Wall wasn't entirely razed. The Night King had to rise again to complete his work
- Fixed bug #6638; re-animated a slide/ski element on the full width mineplow
- Fixed bug #6647; smoke grenades will now visibly disappear from the ERCWS-M (when popping smoke)
- Fixed bug #6664; the ERCWS-M is now stabilized even if palm switches are not pressed
- Fixed bug #6665; the ERCWS-M's auto-target-tracking mode now works even if palm switches are not pressed
- Fixed bug #6672; vehicles will now reliably avoid deep wadis with steep slopes
- Fixed bug #6673; after firing an ATGM from a Technical truck the computer-controlled driver will no longer seek a hull-down position while the missile is still in the air. In fact, players pressing the 'fire' command hotkey will no longer implicitly (and randomly, to boot) issue a battle position command. It now explicitly requires the 'Battle position / engage' command
- Fixed bug #6694 by adding proper reticule lines to the Sho't Kal CDR's periscope
- Fixed bug #6704; raised the CV90/30-FI troop leader's unbuttoned position
- Solved the mystery of bug #6718, the incredibly shrinking on/off button of the RG-31 Nyala CDR's repeater screen

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- Fixed bug #6721; on Breach routes, vehicles now boldly go into (and under) water and wadis
- Fixed bug #6729; UAVs are now exempt from the 'helicopter altitude restriction' setting
- Fixed bug #6730; halved the duplication of ammo in HTML Report files for scenarios where units were split during the mission
- Fixed bug #6741; switched off light for M113 interior roof during night missions
- Fixed bug #6744; made fire control commands (F, H)work again for weapon categories that can fire with open bolts
- Fixed bug #6751; reduced the UI's apparent confusion between "attach to.." and "Mount.." command
- Fixed bug #6757; trailing vehicles moving in column formation on road at night ordered to catch up with the leader
- Fixed bug #6810 by reversing the hands on the Leopard 1 interior's Azimuth Indicator (user-submitted report by: MAJ_Fubar)
- Fixed bug #6862; dusty terrain should no longer trigger annoying autofocus adjustments
- Fixed a very obscure Legacy Scenario (1.0) bug #6884 (user-submitted report by: RedWardancer, with generous support by Rotareng)
- Fixed bug #6890; T-72A/M1 smoke grenade salvos no longer alternate left/right; all three salvos will now fire straight ahead.
- Fixed bug #6917; consistent field of view for DF30 gunner's sight when toggling between thermal and day view
- Fixed bug #6919; consistent field of view for DF90 gunner's sight when toggling between thermal and day view
- Fixed bug #6924; entering an incorrect password in the Mission Editor will no longer close the dialog
- Fixed bug #6993; in-progress saved scenarios will maintain the infantry bunker destruction state
- Fixed bug #7014 by limiting the length of callsigns that may be entered without being truncated in network sessions
- Fixed bug #7018; when searching for network sessions, spaces in pasted IP addresses will get wasted
- Fixed bug #7040; computer-controlled medics doing the Herbert West on unsuspecting, mortally wounded soldiers may no longer mask their unholy pastime in the HTML Report file as "Repaired by instructor". So it will go unreported, in a flagrant attempt to evade attention by ignorant authorities and pitchfork wielding village hicks that stand in the way of mad science. Instructor actions to revive soldiers however, a noble deed that went unnoticed for too long, will now receive their due credit and gratitude from otherwise orphaned and widowed relatives of our valiant Pixeltruppen
- Fixed bug #7059; some HE events caused duplicate entries in the AAR caused duplicate entries in the AAR
- Fixed bug #7069; the 'Flat Map' Wizard has now a 'terrain roughness' slider, allowing to magically betray its own name
- Fixed bugs #7074/7085; the Set party camouflage options dialog in the Mission Editor has now received a Cancel button, and lists camouflage options by full country names rather than the ISO 3166-1 Alpha -2 two-letter codes
- Fixed bug #7087; removed the EverSlide™ Teflon coating from the MT-55 bridges
- Fixed bug #7119; the interval between rifle grenade shots depends on the unit's training level now, with the minimum time ('elite' training level) being 5 seconds, and the maximum time ('bumbling fools') being 30 sec
- Fixed bug #7127; sniper teams will no longer shoot for standing man height when their targets are actually lying prone, and compensate more or less accurately for crosswind
- Fixed bug #7136; 'Impotent' HE rounds will no longer cause damage.
  The AAR event replay changed as follows:
  - the title bar will indicate that the HE explision as a whole is impotent
  - units hit by impotent fragments or overpressure will show this using the 'affected by fragments' line
  - 'impotent' rounds should never cause red text to be displayed
- Fixed bug #7138; with this change, infantry company XO units can be equipped with either UGV or UAV. Infantry platoon XO (PLT SGT) units are still not allowed to utilize such equipment.
- Fixed bug #7142; moved the Sho't Kal's smoke generator's exhaust to engine area
- Fixed bug #7146; in the Mission Editor, the status bar will now indicate if an infantry unit is equipped with UAV or UGV
- Fixed bug #7152; improved sweeping rocks from roads. Very narrow trails may still be blocked by rocks; they are not intended to represent vehicle-worthy passages anyway
- Fixed bug #7169; in the Set Ammunition dialog muzzle velocities will now be shown for the highest charge; a fire mission may still be executed with a lower charge

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- Fixed bug #7173; the right ammo feed of all CV90/35s has the now correct propellant temperature set
- Fixed bug #7177; re-enabled access to the VIS display for the CV90/35s' troop leader position
- Fixed bug #7178; corrected the camera position for the CV90/35-NL troop leader's F4 view
- Fixed bug #7179 - "Troops with "CA" or "DK" camo enabled: muzzle flashes now coincide with muzzles
- Fixed bug #7198 where in the M2/M3A2 Bradley's thermal view the TOW reticule is no longer oversized
- Didn't really fix bug #7207, but tied the ground clutter with digital rope to reduce its popping and wriggling
- Fixed bug #7215; pressing the 'Ctrl+S' hotkey in the Map Editor while working on an unpublished map package will save it under its current name.
- Fixed bug #7217; with this change, the session host may blacklist specific clients from joining a session based on their IP address. This operation can be performed both in the Assembly Hall and through the 'Online Join Wizard' by clicking the corresponding button. Clicking the adjacent 'Manage Blacklist' button allows the host to review and edit the blacklist.
  If a client is blacklisted, it is forcibly removed from the session; subsequent connection attempts will simply not list the session it was excluded from. Blacklists are erased on restarting Steel Beasts.
- Fixed bug #7256 - "DF90: AI commander does not empty the coax MG casings"
  The DF90's CDR will now empty spent cartridges from the main gun if:
  - it's overflowing (5 rounds)
  - the gun has not been fired for 5 seconds, the vehicle is not under direct or indirect fire, and the basked is halfway full

  The DF90's TC will empty the coax if:
  - it's overflowing (200 rounds)
  - the coax has not been fired for 5 seconds, the vehicle is not under direct or indirect fire, and the shell bag is 3/4 full
- Fixed bug #7270; for M1 series tanks the commander's .50 cal will move with arrow keys, even if another user is in the gunner's position"(user-submitted report by: Lumituisku)
- Fixed bug #7290; in the Map Editor, pressing 'Ctrl-C' in the 'Map Package Browse' and 'Map Information' dialogs, as well as in the Mission Editor's 'Map Info' popup will now copy relevant information (such as the map UID) to the clipboard
- Fixed bug #7298; resized the Centauro GPS day view reticule (user-submitted report by: Lumituisku)
- Fixed bug #7302; Leopard 2A5 and newer: turning off TIM of the PERI improves quality of EMES video feed"(user-submitted report by: Lumituisku)
- Fixed bug #7303; resized the Leopard 2A4 PERI reticule (user-submitted report by: Lumituisku)
- Fixed bug #7304; resized the 50x scope (Lemur RWS and sniper team) reticule (user-submitted report by: Lumituisku)
- Fixed bug #7305; fixed an ages old, previously unregistered inverted logic with the Leopard 2A4's ballistic shield doors (user-submitted report by: Lumituisku)
- Fixed bug #7308; decoupled the BMP- 2's view of the top vision block from gun movement (user-submitted report by: Lumituisku)
- Fixed bug #7310 where the M1A2 SEP did not apply lead if the amount of input signal from joysticks/control handles was very small. As long as the vehicle FCS supplies lead correction values (which basically is whenever the vehicle is in motion) zeroing the control handles will no longer zero the lead calculation
- Fixed bug #7311; for M1 series tanks, when the player is in GNR position (F1) with the mouse controlling the view, the gun will no longer drop in elevation
- Fixed bug #7319; in the Mission Editor it is now possible to designate a region as a 'hovercam no-fly zone'
  If not testing a scenario, or if you're not an instructor, the hover cam view may not be moved into such a region during the Planning Phase. If the student right-clicks on the map and selects 'View' the option will be greyed out; while in the free-flight camera mode, it is not possible to enter the zone.

  Note that students may still move the camera up the "glass wall" and spy into the area with high zoom.
- Fixed bug #7320:
  After performing an **in-progress save**, 'pure' **map graphics** (ie these without any associated actors) created in the previous Planning and/or Execution Phases may be subsequently moved/modified again in the new Planning Phase. **Note** that this was already possible for units and deployable obstacles/fortifications.
- Fixed bug #7341; for the DF30 gunner's sight the color selection mode for the reticule is now available in the thermal sight as well (pending further revision from subject matter experts)
- Fixed bug #7347
  The joystick/mouse input sensitivity is now scaled with the currently active visual channel's FOV.
  Note that hand cranks are not subject to this scaling factor

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- Fixed bug #7428; the CV90/35-DK will now shoot with much higher accuracy in WIDE burst mode; certain coincidence window size data are now interpreted differently
- Fixed bug #7437; dismounting infantry has now been trained to prefer the rear of their own vehicle when crossing sides
- Fixed bug #7472; increased the number of damages that can be listed in the 3D view HUD
- Fixed bug #7479; there was an unintended field of view disparity with primary sights (between Leopardo 2E and Strv 122, and the remaining Leopard 2 fleet). (Bug detection inspired by: Lumituisku)
- Fixed bug #7498; when saving in progress, the resulting scenario file retains the distinction between component damages that can be repaired at runtime ("Damage, if…") and those which can't ("Damage…")
- Fixed bug #7506; the commands Shoot at unit and Shoot here will no longer be shown if the unit in question can't handle it
- Fixed bug #7538; computer-controlled gunners will no longer fire the RWS Protector in full zoom-out view
- Fixed bug #7551 even more; in some cases vehicle emplacements would appear level with the surrounding terrain (but vehicles would still dive into them)
- Fixed bug #7561; BTR-50 infantry no longer crossed in front of the vehicle when dismounting
- Fixed bug #7574; we were so nice to add a resupply function to off-map artillery (which, while testing a scenario, allows to reset the supply level)
- Fixed bug #7619; added dust effect behind multiple rocket launch systems other than BM-21
- Fixed bug #7637, 7666; Vehicles will now handle wadis better; avoid them in most cases, but drive into them where necessary
- Fixed bug #7653; infantry will no longer be stationary when they should be moving
- Fixed bug #7658; the RWS M153 Protector's designator laser beam is now visible in NVG sights
- Fixed bug #7660; partially fixed smoke related issues with the RWS M153 Protector's designator laser beam
- Fixed bug #7662; roads should no longer become transparent, at least at relevant observation ranges; this is a surprisingly finicky optimization process, better not touch it again
- Fixed bug #7664; for the RWS M153 Protector, ground clutter and terrain bumps will no longer mess up the designator laser beam
- Fixed bug #7666, see #7637
- Fixed bug #7668; closed spacing should work again with a variety of stationary tactics, specifically coil, column, herringbone
- Fixed bug #7669; no more pirouettes in the Panzer Ballet where close column formation had vehicles drive in circles when going to wider spacing
- Fixed bug #7672; in the AAR client machines will no longer get to see mounted infantry in wrong locations for events where their parent vehicle was hit by fire
- Fixed bug #7692; assigned the proper firing rate hotkey for the RWS Protector (PgDn)
- Fixed bug #7696; unassigned the spurious "Dynamic Lead" hotkey from the RWS Protector; instead, the panel's LEAD ANGLE button is to be used, or the hotkey Control: Lead for a connected game controller button
- Fixed bug #7701 by improving the rendering of roads at medium distances
- Fixed bug #7702; updated the Map Package Download Manager to v17, including additional server paths in the configuration
- Fixed bug #7714; selecting multiple routes and changing their properties no longer renders them invisible
- Fixed bug #7718; adjusted mortar smoke rounds to generate smoke on impact only
- Fixed bug #7719; when using the hotkey to button up, in some vehicles the CDR's view wasn't automatically moved inside
- Fixed bug #7725; wiped a strange black smudge from the panel right of the RWS Protector (would appear if the panel was turned on)
- Fixed bug #7738; reduced the amount of fragments generated to the rear of RPGs, rifle grenades, and other anti-tank weapons which were occasionally harmful to the firing unit at short engagement distances
- Fixed bug #7722; mortar smoke rounds no longer use 155mm howitzer munitions effects; off-map mortar smoke volleys will now use the effect for M929A1 WP or M929A1 multispectral smoke
- Fixed bug #7730 by reducing the blur that would occur in some scenes involving the rendering of roads
- Fixed bug #7739; found the track shadows that negligent computer crews lost somewhere during the beta test
- Fixed bug #7744; DF30: If CDR PSS (day mode/narrow FOV) is switched to TI, this no longer results in wide FOV (which wasn't supposed to be and which couldn't be changed)

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- Fixed bug #7745; in the DF30 DATA>BS menu, one "G TI" was renamed to "C TI"
- Fixed bug #7748; in the Main Menu ... Options ... File Paths all slashes have been backslashed
- Fixed bug #7749; when selecting Control Handles in the Controls Dialog this will now properly invert the treatment of palm switches
- Fixed bug #7750; in many Leopard 2 variants the unbuttoned commander may now control his view with the joystick again (without having to put the Peri into ZÜ mode)
- Fixed bug #7750 even more.
- Fixed bug #7751; the palm switch state will no longer be ignored in all Leopard 2s if Control Handles have not been selected as the input device in the Controls Dialog (this bug may go back to even version 1.0)
- Fixed bug #7752; invisible dust particles are now invisible to the laser range finder too
- Fixed bug #7754; it's now much harder to bypass the Afganit APS by aiming low with some ATGMs
- Fixed bug #7756; in the Controls Dialog, swapped "Fire HE grenade here" and "Fire smoke grenade here" (the hotkeys were set correctly, their description was flipped)
- Fixed bug #7758; for the Kodiak AEV the RWS is no longer rendered below the vehicle
- Fixed bug #7762; looking at skylined trees will no longer produce certain transparency-related render artifacts
- Fixed bug #7763; looking at trees beyond the map boundary at certain elevation angles will no longer make them disappear
- Fixed bug #7764; the palm switch state will no longer be ignored in all Leopard 1A5s if Control Handles have not been selected as the input device in the Controls Dialog
- Fixed bug #7769; used the stapler to close a few tears and splits in the terrain, with the skybox shining through
- Fixed bug #7773; **Shift+A** and **Shift +D** will turn vehicle by 1/16th full circle (=22.5°) again
- Fixed bug #7777; the Steel Beasts installer will no longer automatically create the %PROGRAMDATA\eSim Games\Steel Beasts\displayoptions folder on startup, as it may not own the required user account privileges (which could lead to an error condition).
- Fixed bug #7778; replaced the Dragon ATGM's NVG with a TIS
- Fixed bug #7781; allied parties will no longer adopt Blue's callsign template but bring their own
- Fixed bug #7787, in the **Map Editor** the 3D preview will work properly even if the user just added a new road object
- Fixed bug #7796; version 4.0 legacy scenarios featuring the Dragon ATGM's no longer damage the Missile Launcher by default; version 4.156/157 scenarios require manual repair of Dragon missile teams
- Fixed bug #7800; scout teams no longer fire RPG salvos and magically multiply their RPG ammo
- Fixed bug #7825; water is now properly rendered in the **Map Editor** again
- Fixed bug #7830; you may no longer occupy the Squad leader's position in personnel carriers that have no crew positions
- Fixed bug #7833; overpressure will kill tanks now only when it's supposed to
- Fixed bug #7837; in the **Mission Editor**, IEDs no longer duplicate as "1x Unknown"
- Fixed bug #7840 by adjusting certain WP smoke particle effects
- Fixed bug #7848; the **Afganit APS** behaves now more discriminatory when intercepting projectiles on a near-miss trajectory
- Fixed bug #7860; the **Ctrl+F** and similar leveling dialog boxes in the **Map Editor** will now be kept entirely within the visible screen area
- Fixed bug #7871; when editing roads in the **Map Editor**, the 3D preview will now show those changes more reliably
- Fixed bug #7872, where **Weather default values** were ignored in the **Mission Editor**, failing to adopt theme-specific settings (applies to new scenarios only without previously defined weather control points)
- Fixed bug #7874; when using routes with **Jump to end, if…** condition, units will adopt the orientation perpendicular to the route, as in previous major versions of SB Pro PE
- Fixed bug #7875; **Leopard 2** fire control systems will now compensate for **crosswind** in in the Personal Edition
- Fixed bug #7879; **Leopard 2A5** (and newer) may now control the turrets again with the joystick in manual (Turm Aus) mode (this was a regression error from too hasty attempts to fix bug 7750)
- Fixed bug #7889; eliminated a text overflow in the **Call for Fire** dialog if off-map artillery had "infinite" ammo

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PE 4.162 Release Notes

- Fixed bug #7893; **laser range finders** will return a steady signal even if an approaching target has a thick dust column trailing
- Fixed bug #7894; **helicopters** and UAVs will no longer continue to spin if the A/D movement hotkey is released
- Fixed bug #7898, which prevented the **replacement of maps with legacy scenarios**
- Fixed bug #7901; in the **Support** dialog of the **Mission Editor** finite off-map artillery ammunition is now listed in different lines to reduce text overflow
- Fixed bug #7904; computer-controlled gunners will no longer keep firing on targets that are completely behind cover (before, certain edge cases made that possible; there will still be even edgier cases where it might still happen, but they should be really rare now)
- Fixed bug #7905; **IFV Ulan** will no longer roll forward when ordered to reverse while in a position oriented downhill
- Fixed bug #7906; added an actual **repair time** to final drive (**sprocket wheel**) damages; requires an actual repair vehicle and, on the somewhat optimistic side, 30 minutes repair time per item
- Fixed bug #7909 some more; when saving an existing map package as a new one (be it Delta or Base Map), the new map will no longer have a 30m coordinate offset
- Fixed bug #7910; using the **Select Group Routes** command will no longer crash the application if no group route has been plotted yet
- Fixed bug #7922; destroyed vehicles may now be targeted by recovery vehicles (for towing...)
- Fixed bug #7929; powerlines will no longer appear like seams in the ground
- Fixed bug #8013; artillery fire mission labels will now be visible on the map depending on chosen realism level
- Fixed bug #8028; Steel Beasts 1.x legacy scenarios featuring the Jaguar 2 tank destroyer will now load properly again, converting them to Jaguar 1A3
- Fixed bug #8035; when changing the completion state of an obstacle, the scenario is now considered changed, too
- Fixed bug #8039; previous session hosts may now be deleted by selecting the entry in question (hit 'Del') – Network Sessions menu, IP Address list
- Fixed bug #8048; MTLBu ambulances are now, too, protected by the Geneva convention
- Fixed bug #8054; told Leclerc CDRs to button up more often
- Fixed bug #8071; in the Mission Editor's Support Options dialog it is now possible to clear a previous selection of Priority of Fire; likewise, every unit in every company may now be selected
- Fixed bug #8076; smoke grenade meshes are now removed individually on the M60A3
- Fixed bug #8077; for the Vector ATTV gunner the default position is now unbuttoned
- Fixed bug #8080; historical windmills no longer rotate with the wind (their sail cloths being removed), and have been moved to the Landmark category in the **Map Editor** rather than Industrial
- Fixed bug #8091; in the AAR, HEAT impact rays will now go all the way in like in days of yore, Lenore! Stop on the surface? Nevermore!
- Fixed bug #8102; when joining a mission in progress, the client will be prompted to download the scenario from the host only once
- Fixed bug #8106; made various air defense missiles less impotent
- Fixed bug #8118; T-72 carousel loop will stop playing if user hops to external observer's position (F8)
- Fixed bug #8121; improved logging in the area of loading mod files to at least provide a clue which sound file might make the hardware or driver crash Steel Beasts because it can't handle a 32bit IEEE floating point wave file
- Fixed bug #8129; Map Editor shows now pillars of selected bridges
- Fixed bug #8130; in the Map Editor, newly created bridges are no longer permitted to lay on the ground but rather to stand up properly
- A tribute to the beta testers, without whom we wouldn't have found the following 620 bugs. Bugs that you never got to see and wouldn't even know that we fixed them.

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

  Fixed bugs #5108, 5134, 5244, 5305, 5317, 5476, 5507, 5523, 5567, 5570, 5589, 5591, 5613, 5630, 5679, 5698, 5718, 5760, 5764, 5771, 5772, 5773, 5774, 5778, 5787, 5788, 5790, 5792, 5793, 5794, 5798, 5798, 5805, 5806, 5810, 5811, 5812, 5816, 5822, 5824, 5826, 5835, 5839, 5840, 5847, 5850, 5853, 5857, 5860, 5864, 5865, 5867, 5869, 5876, 5880, 5882, 5883, 5887, 5888, 5889, 5892, 5896, 5897, 5899, 5902, 5906, 5912, 5914, 5915, 5917, 5937, 5938, 5946, 5947, 5953, 5956, 5957, 5961, 5967, 5968, 5971, 5972, 5974, 5975, 5984, 5985,

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