

## 3.24.1.0 (2024-10-11)

### CORE 12.1.0

#### Features

- Added 'in use' flag to anchor and sensor configurations, leaving users the option of only using a subset of their configured device pool.
- System reports now include logs from all services running on the system.

### ZACTRACK-CLIENT 12.1.0

#### Features

- Added support for Leica disto devices x3, x4 and x6.
- DEVICE SETTINGS DIALOG: Added 'in use' flag to anchor and sensor configurations, leaving users the option of only using a subset of their configured device pool.
- DISTO RELOCATE DIALOG: Users now have the option to choose the points used for relocation manually.
- DISTO STATUS DIALOG has been redesigned and streamlined in order to work with Bluetooth and Wifi devices.

#### Changes

- DISTO DIALOGS: Users no longer have to press a button ('Disto ...') to turn on the laser. Instead, the laser is turned on automatically when the dialog is opened or a measurement is finished.
- SYSTEM REPORT DIALOG: Individual log options have been merged to single 'Logs' option, which now automatically includes all log types.

#### Fixes

- DISTO VALIDATE DIALOG: Fixed validation not working correctly.

## 3.24.0.0 (2024-09-12)

### CORE 12.0.0

#### Features

- Added MVR-XCHANGE feature, allowing users to join MVR-xchange groups in the light network and discover other stations as well as all committed MVR files.
- Added UPDATE RATE MODE feature, allowing users to lower update rates for specific actors in order to increase the number of simultaneous actors (SMART, MINI).
- Added TRACKER PRIORITY feature, allowing users to assign each tracker a priority in order to control their order of precedence when going online (SMART).
- Now automatically generating system report on application crash.
- Users are now able to change the transmission power offset via the system settings (SMART, MINI).

#### Changes

- The server UUID is now persisted across application restarts.
- Fixture refinement now works more reliably when selecting a UWB device as a lux sensor.
- Now showing minimum update rate instead of average update rate in analyzer view.
- Improved internal show validation logic in order to avoid corrupt show database states.

#### Fixes

- Fixed an exception that occurred when receiving ArtPollReply packets.
- Fixed clients not receiving the correct position from merged actors after one of the trackers goes offline.
- Fixed exceptions not being logged correctly in several threads.
- Fixed metadata not being included correctly in system reports.

### REPORT-GENERATOR 1.0.0

#### General

- First version of the report generator service, responsible for creating pdf reports from recorded data collections (.zlog files).

## RTLS 2.6.0

### Features

- Possibility to lower the update rates of individual trackers by ranging only every second, third or fourth range cycle.
- Possibility to assign each tracker a priority in order to control their order of precedence when going online.

### Changes

- Improved logging.
- Improved range filtering and tracking position calculation to correctly handle lower update rates.
- Reduced the timeout for freeing an occupied TWR slot from 15 seconds to 5 seconds.

### Fixes

- Fixed a bug in the retrieval of the last range message during the position solver task.
- Fixed exceptions not being logged correctly in several threads.
- Fixed potential issue when transmitting TWR slot parameters to anchors.

## RTLS-MINI 1.5.0

### Features

- Possibility to lower the update rates of individual trackers by ranging only every second, third or fourth range cycle.

### Changes

- Improved range filtering and tracking position calculation to correctly handle lower update rates.
- The maximum possible refresh rate has been increased from 20Hz to 40Hz.
- The number of trackers currently set to active no longer affects the tracking update rate.

### Fixes

- Fixed exceptions not being logged correctly in several threads.

## WEB-CLIENT 2.0.0

### Features

- Completely changed the look and feel of the landing page, which now includes a properly laid out page for tablet application downloads.

## WEB-MONITOR-BACKEND 2.2.0

### Features

- Added support for report generator and data collection.
- Added support for retrieving detailed information about a single anchor.

## WEB-MONITOR-FRONTEND 2.2.0

### Features

- LIVE: Added indication for current UPDATE RATE MODE to actors in the sidebar (MINI, SMART).
- LIVE: Users are now able to see more detailed information about an anchor by clicking on the corresponding information button in the sidebar.
- Added DATA COLLECTION feature, allowing users to collect live tracking data of a running system for further analysis (MINI, SMART).
  - Go to DIAGNOSTICS -> DATA COLLECTION in order to start a recording or download a previous one.
  - Users are advised to add as much detail as possible by providing each tracker's placement as well as additional notes.
- Added REPORTS feature, allowing users to generate pdf reports from existing data collection files (MINI, SMART).
  - Go to DIAGNOSTICS -> REPORTS in order to generate a report by either selecting an existing log file on the server or uploading it from the local file system.
  - Select RANGE REPORT for a very quick overview of all recorded ranges. POSITION REPORT contains more detailed information, but takes significantly longer to generate.
  - Reports are currently limited to a maximum of 5 tracking devices.
  - Note that depending on the type of report selected, it can take up to several minutes to generate a report. During this time, the overall system performance is likely to be significantly affected. So please do not trigger this process at a time when accurate and responsive tracking is critical!

## Changes

- Added centralized loading system in order improve performance and reliability.
- Added several performance improvements by reducing the number of renders necessary whenever live data changes.
- Improved layout and readability of notifications.
- Redesigned several icons to improve contrast and readability.
- Reduced total number and size of vector graphics in order to improve performance.

## Fixes

- LIVE: Fixed anchor state icon not updating correctly in some cases.
- LIVE/VISUALIZER: Fixed icon flickering when moving the camera while using the browser dev tools.
- LIVE/VISUALIZER: Fixed several camera movement issues due to focus changes.
- Fixed anchor and tracker monitoring info not updating correctly in some cases.

## ZACTRACK-CLIENT 12.0.0

### Features

- Added MVR-XCHANGE feature and dialog
  - Open the MVR-XCHANGE DIALOG in order to join or leave a group.
  - Once you have joined a group, you will be able to see all other stations in the group as well as the MVR files they committed.
  - Long press on a station or file and select INFO in order to see more information about the corresponding entity.
  - Select an MVR file and click IMPORT to retrieve the specified file. The application will automatically open the SHOW IMPORT WIZARD.
- Added MVR IMPORT, allowing users to import content of MVR files by using the new SHOW IMPORT WIZARD.
- Enhanced SHOW IMPORT WIZARD, giving users more options when importing from ZTS, CSV or MVR files.
  - Added option to import the entire show file or just specific elements.
  - Added option to either create a new show or merge the selected elements into the current show.
  - Added option to merge or replace existing elements when importing from a CSV or MVR file.
  - Added enhanced show validation in order to increase resilience against erroneous system states.
- Added UPDATE RATE MODE feature, allowing users to lower update rates for specific actors in order to increase the number of simultaneous actors (SMART, MINI).
  - Go to SHOW EDITOR -> ACTOR -> TRACKING SETTINGS to specify the maximum number of simultaneous HIGH and LOW update rate devices.
  - Open the ACTOR DETAIL DIALOG to choose an update rate mode for the corresponding actor.
  - Icons in SHOW EDITOR and LIVE VIEW allow you to see an actor's current update rate mode at a glance.
- Added TRACKER PRIORITY feature, allowing users to assign each tracker a priority in order to control their order of precedence when going online (SMART).
  - Set tracker priority in the TRACKER DETAIL DIALOG (default is 100).
- Now automatically generating system report on application crash.
- Users are now able to change the transmission power offset in the SYSTEM SETTINGS DIALOG (SMART, MINI).

### Changes

- ANCHOR DETAIL DIALOG: The next unused anchor id is now selected for new anchors that are not in the device settings.
- SYSTEM SETTINGS DIALOG: Origin calibration tracking device is now called puck instead of tracker ( MINI).
- Improved internal show validation logic in order to avoid corrupt show database states.

### Fixes

- FIXTURE ALIGNMENT DIALOG: The 'Recalculate' task is no longer incorrectly enabled when only three alignment points are available.
- FIXTURE ALIGNMENT DIALOG: UI elements are now updated correctly after finishing a 'Refine' task.
- FIXTURE ALIGNMENT DIALOG: UI elements are now updated correctly after finishing a 'Recalculate' task.
- FIXTURE TYPE IMPORT DIALOG: Fixed potential application crash when trying to import a GDTF file on Android versions lower than 8.
- SYSTEM CALIBRATION WIZARD: Anchors are now correctly added to the show with their preferred ID.
- TERRAIN WIZARD: Fixed potential application crash when using an Android version lower than 8.

### 3.23.2.0 (2024-07-12)

#### CORE 11.2.0

##### Features

- Added support for zactrack PRO pucks.

##### Changes

- Now showing current and maximum number of assigned fixtures in analyzer view on systems with a restricted number of assigned fixtures.

##### Fixes

- Fixed application erroneously trying to sync tracking device registry even if tracking server is currently disabled, leading to log files being flooded with related messages (PRO).
- Fixed some uncaught critical exceptions not being logged correctly (PRO).

#### ZACTRACK-CLIENT 11.2.0

##### Changes

- SHOW EDITOR/FIXTURE TYPES: Improved import of GDTF files.
  - Only the first channel function is parsed and used if a GDTF attribute belongs to a DMX channel and this channel has more than one channel function.
  - The 'DMXFrom' field of a channel in the GDTF file now determines the start of the DMX range of this channel.
- Updated fixture library.

### 3.23.1.2 (2024-04-09)

#### CORE 11.1.2

##### Fixes

- Fixed calibration pucks not automatically being included in managed devices (PRO).

#### ZACTRACK-CLIENT 11.1.1

##### Changes

- FIXTURE TYPE LIBRARY/OSC: Added XYZ and MUTE preset for CODA Audio Space Hub.

##### Fixes

- LIVE VIEW: Fixed label being hard to read when using font colors that are similar to the background color.

### 3.23.1.1 (2024-03-19)

#### CORE 11.1.1

##### Fixes

- Fixed rare stability issues when using 2d tracking mode (PRO).

### 3.23.1.0 (2024-03-15)

#### CORE 11.1.0

##### Changes

- Now providing individual tracker positions and position monitoring information to client applications.
- Now using decimals for OSC ranges instead of whole numbers.

##### Fixes

- Fixed potential application crash due to race condition when receiving position data.
- Fixed some valid custom network ips not being possible due to wrong subnet overlap calculation.

## RTLS 2.5.0

### Changes

- Position Solver: Calculate additional position monitoring information.

## RTLS-MINI 1.4.0

### Changes

- Position Solver: Calculate additional position monitoring information.

## WEB-MONITOR-BACKEND 2.1.0

### Features

- Added support for new trace modes.

## WEB-MONITOR-FRONTEND 2.1.0

### Features

- LIVE/VISUALIZER: Added an option to show the position of the trackers.
- LIVE/VISUALIZER: Added options to display information about the quality of the position and the anchors that are being used with the traces of the actors/trackers.

### Fixes

- Fixed a problem where the server state icons were not properly aligned.
- Fixed actor color in visualizer not matching actor color in sidebar.
- Fixed anchors are rendered even though they are not part of the show.
- Fixed background image being incompletely displayed.
- Fixed the anchor icons not updating their positions after updating the show.
- Fixed transparency of actor color in visualizer being incorrect.

## ZACTRACK-CLIENT 11.1.0

### Features

- Added over 300 new fixture types to fixture library.
- Added several new options to LIVE VIEW SETTINGS:
  - Added advanced TRACE MODES for diagnostic purposes:
    - \* ANCHORS USED: Actor traces are colored based on the current percentage of anchors used for position calculation.
    - \* RANGE-POSITION DIFFERENCE: Actor traces are colored based on the variance between the available anchor ranges and the calculated tracker position.
  - Added option to only show traces for a specific actor.
  - Added option to clear all current traces.
  - Added option to show individual tracker positions for merged actors.
- DEVICE SETTINGS DIALOG is now available for all system types, allowing users to specify preferred anchor ids for non-PRO systems as well.
- FIXTURE TYPE LIBRARY/OSC:
  - Added preset for Flux.
- OSC FIXTURE DIALOG: Users are now able to use decimals when selecting mode 'Range (float)'.
- SHOW IMPORT/EXPORT: Added advanced support for show import/export from/to CSV files.
  - When importing, users can decide whether or not to create a new show or merge the imported file into the current show.
  - Note that only actor and fixture patchings as well as some additional attributes are supported at the moment. Click on the '?' in the SHOW IMPORT DIALOG or simply export a test show to a CSV file in order to learn more about the used CSV file format.

### Changes

- Made usage of 'trackers' vs 'pucks' more consistent across several dialogs.
- CALIBRATION WIZARD: Removed calibration error from final results page.
- CREATE SYSTEM REPORT: The dialog now stays open and shows the current download progress when downloading a finished system report.

- DEVICE SETTINGS DIALOG: Focus now automatically changes back to EUI text field when adding a configuration without closing the dialog.
- DEVICE SETTINGS DIALOG: Now automatically suggesting next anchor id when adding a configuration without closing the dialog.

#### Fixes

- Fixed a number of typos in existing fixture library.
- CALIBRATION WIZARD: The origin puck is now correctly colored in white instead of black (MINI).
- EDIT UNIVERSE DIALOG: Now correctly showing a number keyboard when changing the priority.

### 3.23.0.7 (2023-12-15)

#### WEB-MONITOR-FRONTEND 2.0.5

##### Fixes

- Fixed visualizer not working correctly when client device is not connected to the internet.

#### ZACTRACK-CLIENT 11.0.5

##### Fixes

- AUTOFUNCTIONS WIZARD: Fixed autofunction values for iris/zoom/focus incorrectly being set to zero.
- MULTIPLE FIXTURES DIALOG: Fixed application crashing when opening dialog if the current show contains no fixture type.

### 3.23.0.6 (2023-12-04)

#### CORE 11.0.6

##### Fixes

- Fixed some config lines being removed automatically due to being erroneously moved to network properties.

#### ZACTRACK-CLIENT 11.0.4

##### Fixes

- CREATE MULTIPLE FIXTURES DIALOG: Fixed not being able to enable control input for OSC fixtures.
- FIXTURE DETAIL DIALOG: Fixed not being able to enable control input for OSC fixtures.

### 3.23.0.5 (2023-12-01)

#### CORE 11.0.5

##### Fixes

- Fixed show control sometimes not working correctly if control input source is set to OSC.
- Improved error handling when attempting to retrieve network interfaces.

#### WEB-MONITOR-FRONTEND 2.0.4

##### Fixes

- Fixed calibration points not being rendered, and log message being displayed at the wrong time.
- Fixed the dialog that informs you that you are connected to the backup server not being displayed immediately.
- LIVE: Fixed a problem where elements were missing from the sidebar.

#### ZACTRACK-CLIENT 11.0.3

##### Fixes

- CREATE MULTIPLE FIXTURES DIALOG: Fixed control input checkbox state not being updated correctly when selecting special fixture types.
- FIXTURE DETAIL DIALOG: Fixed control input checkbox state not being updated correctly when selecting special fixture types.
- LIVE VIEW: Fixed users sometimes not being able to use terrain selection dialog if show control source is set to OSC.

### 3.23.0.4 (2023-11-17)

#### CORE 11.0.4

##### Fixes

- Fixed integer values not being parsed correctly when receiving OSC CONTROL input.

#### RTLS-MINI 1.3.1

##### Changes

- Improved logging.

#### WEB-MONITOR-FRONTEND 2.0.3

##### Changes

- LIVE: Reduced application margin on larger screens.

##### Fixes

- LIVE: Fixed long actor names not being aligned correctly.

#### ZACTRACK-CLIENT 11.0.2

##### Fixes

- ACTOR LIVE DIALOG: Fixed active mode sometimes not being displayed correctly when using OSC CONTROL.

### 3.23.0.3 (2023-11-10)

#### CORE 11.0.3

##### Fixes

- Fixed large number of log messages when log level is set to TRACE.
- Fixed performance issues when clients are requesting sensor and actor link data on some newer systems (PRO).

#### WEB-MONITOR-FRONTEND 2.0.2

##### Changes

- Provided a more accurate error message in case the show file could not be parsed.

##### Fixes

- DIAGNOSTICS/LINK: Fixed an issue where the default tracker role was incorrect in some cases.
- LIVE: Fixed incorrect scrolling behavior in Live View.

#### ZACTRACK-CLIENT 11.0.1

##### Fixes

- CREATE MULTIPLE FIXTURES DIALOG: Fixed control universe start channels being shifted incorrectly.

### 3.23.0.2 (2023-11-06)

#### CORE 11.0.2

##### Fixes

- Fixed rare exception when receiving error messages from the tracking server (PRO).

#### WEB-MONITOR-BACKEND 2.0.1

##### Fixes

- Removed unnecessary and misleading log message.

## WEB-MONITOR-FRONTEND 2.0.1

### Fixes

- Fixed infinite loading screen due to misinterpretation of data.

## 3.23.0.1 (2023-11-03)

### CORE 11.0.1

#### Changes

- Smartbeam values received via OSC CONTROL that are outside the allowed range are now clamped. Smartbeam can now be disabled by sending the value '0'.

#### Fixes

- Fixed some older systems no longer receiving live tracking system information (PRO).
- Fixed users being unable to change wifi settings (MINI).

## 3.23.0.0 (2023-10-25)

### CORE 11.0.0

#### Features

- Added OSC CONTROL feature, which allows users to control live settings of actors, fixtures, terrains and scenes via predefined Open Sound Control (OSC) strings.
  - Users must enable OSC control input explicitly for each entity in order to control the corresponding live settings.
  - By default, the server listens for OSC input on port 8000. This can be changed via the config line 'network.osc.listen.port'.
- Added TERRAIN feature, which allows users to dynamically control the height (z-axis) of actor positions depending on their current xy-position.
  - Each terrain consists of several terrain shapes, which are abstract representations of a specific part of the physical stage.
  - Actor positions are mapped to the height of the shape they are in.
  - Only actors with a 2D position will be mapped to the terrain.
  - Multiple terrains can be added to a show, and the currently active terrain can be selected via the client or console, similarly to scenes.
  - **NOTE:** Grid points are now deprecated since they are completely replaced by terrains. Existing grid points will be converted automatically.
- Added new show control mode (previously called scene control):
  - BASIC: Used for compatibility reasons (existing shows) and contains one channel:
    - \* SCENE SELECT (1)
  - STANDARD: Default mode for new shows and contains ten channels:
    - \* SCENE SELECT (1)
    - \* TERRAIN SELECT (2)
    - \* Reserved for future use (3-10)
- Users can now change the network interface used for PosiStageNet (PSN) by using the config line 'network.psn.interface'.

#### Changes

- Actor positions transmitted to clients now include position adjustments such as height and terrain offsets.
- Automatic system calibration is now enabled by default (PRO).
- Grid distortion filter:
  - Improved the performance.
  - This filter is now used as the core logic of the new terrain feature.
  - Added option for a linear transition if the input position lies outside of the defined grid area. This option is called "Soft Edge" in the context of the terrain feature.
- Improved automatic tracker state changes during certain procedures such as fixture alignment, anchor calibration, auto functions wizard and terrain wizard (MINI).

**Fixes**

- Fixed main custom network ips of additional non-default interfaces being overridden by connected DHCP servers.

**RTLS 2.4.0****Changes**

- Updated code architecture in order to increase performance and maintainability.

**RTLS-MINI 1.3.0****Changes**

- Updated code architecture in order to increase performance and maintainability.

**WEB-MONITOR-BACKEND 2.0.0****Features**

- Improved retrieval of anchor link data and anchor tracking information.

**WEB-MONITOR-FRONTEND 2.0.0****Features**

- Navigation has been reworked for an enhanced user experience on desktop and mobile devices.
- LIVE: Added information about the current control input source to actors and fixtures in the sidebar.
- LIVE/VISUALIZER: Actor traces are now based on elapsed time. On mobile devices, the maximum trace history is limited to 5 minutes.
- LIVE/VISUALIZER: Added legend for easier readability.
- LIVE/VISUALIZER: Added option to show actor position labels, which can be enabled in the visualizer settings.
- LIVE/VISUALIZER: Increased minimum and maximum zoom levels.
- LIVE/VISUALIZER SETTINGS: Added option to show/hide background image.
- LIVE/VISUALIZER SETTINGS: Added option to show/hide legend.
- LIVE/VISUALIZER SETTINGS: Added option to show/hide scale bar.

**Changes**

- Added background color when hovering over clickable icons and items.
- Clicking on the logo in the upper left corner will now open the LIVE page.
- Items and text can no longer be selected with the mouse to avoid irritating visual artifacts.
- Removed blocking behavior of the application's loading screen.
- Updated theme for better usability and improved several dialogs and elements throughout the application to match the new theme.
- Vastly improved overall performance, especially for very big shows with a lot of actors and anchors.
- DIAGNOSTICS/LINK: Adjusted layout to be more consistent with the rest of the application.
- DIAGNOSTICS/LINK: Anchor and tracker link can no longer be viewed as cards, only as a matrix.
- DIAGNOSTICS/ANALYZER: Adjusted layout to be more consistent with the rest of the application.
- DIAGNOSTICS/ANALYZER: Tracking category is now split into subcategories.
- LIVE: Extended the clickable area used for showing/hiding the sidebar.
- LIVE: Item collapsed states are now persisted when opening and closing the sidebar. They are not persisted on page reload.
- LIVE: Removed redundant dmx id from actors in the sidebar.
- LIVE: The tracker list dialog is now accessible via the small i-icon next to the tracker count.
- LIVE/VISUALIZER: Added arrows to axes in order to indicate their direction.
- LIVE/VISUALIZER: Improved background image and background image rotation dialogs and made behavior more consistent with other dialogs.
- LIVE/VISUALIZER: Increased thickness and length of X and Y axes to enhance visibility.
- LIVE/VISUALIZER: Interaction icons above the renderer are now dynamically placed either in the top bar or in the visualizer settings dialog depending on the current window size.
- LIVE/VISUALIZER: Moved the scene rotation buttons from the visualizer settings dialog to the top bar above the renderer.
- LIVE/VISUALIZER: Optimized layout and placement of scale bar.
- LIVE/VISUALIZER: Picture position mode is no longer persisted across page refreshes.

- LIVE/VISUALIZER: Removed axis labels. LIVE/VISUALIZER: The scene grid now always has a minimum size of 60x60m, regardless of the current zoom level.
- LIVE/VISUALIZER: The visualizer now always rotates around the center of the scene.
- LIVE/VISUALIZER SETTINGS: Added confirmation dialogs before deleting traces, resetting visualizer settings to defaults, and deleting the background image.
- LIVE/VISUALIZER SETTINGS: Restructured dialog and improved overall layout.

### Fixes

- DIAGNOSTICS/ANALYZER: Fixed erroneous time and timestamp.
- DIAGNOSTICS/TRACKER LINK: Fixed link information for pucks sometimes not being displayed correctly.
- LIVE: Fixed inconsistent battery display for actors.
- LIVE/VISUALIZER: Fixed objects sometimes being rendered twice after reloading.

## ZACTRACK-CLIENT 11.0.0

### Features

- Added OSC CONTROL feature, which allows users to control live settings of actors, fixtures, terrains and scenes via predefined Open Sound Control (OSC) strings.
  - Added option to select Open Sound Control (OSC) as control input source in EDIT ACTOR DIALOG, EDIT FIXTURE DIALOG, EDIT SHOW DIALOG and MULTIPLE FIXTURE DIALOG.
- Added TERRAIN feature, which allows users to dynamically control the height (z-axis) of actor positions depending on their current xy-position.
  - Added SHOW EDITOR/TERRAINS, used to show and edit a show's current terrains.
  - Added TERRAIN WIZARD: This wizard automates the process of creating simple terrain shapes. It can be used to use existing pucks or trackers to define the boundary of an elevated stage area and to customize its height.
  - Added terrain visualization in LIVE VIEW.
- EDIT SHOW DIALOG: Added option to define the show control mode (BASIC or DEFAULT) when DMX control input is enabled.
- LIVE VIEW: It is now possible to show or hide the background of labels and the current position of actors. These settings can be accessed from the new LIVE VIEW SETTINGS DIALOG.

### Changes

- Adjusted control input selection across dialogs to increase clarity.
- AUTOFUNCTIONS WIZARD: Moved the actor override to the second wizard step.
- AUTOFUNCTIONS WIZARD: Now only showing actors and trackers that are currently online.
- AUTOFUNCTIONS WIZARD: The second step of the wizard activates all trackers (trackers present in the current show and calibration trackers). The last step of the wizard activates only the trackers selected in the previous steps of the wizard (MINI).
- FIXTURE (TYPE) ANGLE MEASUREMENT WIZARD/CENTERING: Added checkboxes to lock either pan or tilt movements.
- LIVE VIEW: Actor positions (including traces and labels) are now always displayed in front of other elements, so that actor positions are never covered.
- LIVE VIEW: Added visual feedback when an element (calibration point, autofunction point, anchor, or terrain shape point) is selected for editing.
- LIVE VIEW: Adjusted the element size in 3D view to match 2D view size.
- LIVE VIEW: Improved initial load time.
- LIVE VIEW: Maintain current zoom factor when switching between 2D and 3D view.
- LIVE VIEW: Moved Live View control settings to a new dialog called LIVE VIEW SETTINGS. The dialog can be accessed with the new gear wheel icon button.
- LIVE VIEW: Now showing control input source in title of entity live dialogs if available.
- SHOW EDITOR/ACTORS: The color of the actor will now be displayed as a colored circle in front of the actor's name.
- SHOW EDITOR/ACTORS: The default color of the actor is now selected depending on whether the actor's tracker is used as a calibration tracker (PRO, SMART).
- SHOW EDITOR/FIXTURE TYPES: Z-axis prediction and smoothing presets are now always visible, regardless of the selected tracking mode or system type. This makes it possible to control the responsiveness and smoothness of elevation changes caused by the new terrain feature (MINI).

### Fixes

- ACTOR GROUP LIVE DIALOG: Fixed application sometimes crashing when closing dialog right after opening it.

- ACTOR LIVE DIALOG: Fixed application sometimes crashing when closing dialog right after opening it.
- LIVE VIEW: Fixed camera translation not working correctly in 3D mode (translation is accessible through three-finger gestures).
- LIVE VIEW: Fixed minor memory leak.
- SHOW EDITOR/UNIVERSES: An IN universe can no longer be deleted if it is used as show control input.

### **3.22.3.3 (2023-10-16)**

#### **ZACTRACK-CLIENT 10.3.2**

##### **Fixes**

- Fixed potential application crash when importing large autofunction files.
- Fixed scenes sometimes not being imported correctly when importing an autofunction file.

### **3.22.3.2 (2023-10-13)**

#### **CORE 10.2.2**

##### **Changes**

- Trackers now require one less anchor for tracking when in mode 'Force 2D' (PRO).

### **3.22.3.1 (2023-10-05)**

#### **CORE 10.2.1**

##### **Changes**

- Additional ip configurations can no longer be set via system config, but are instead set via network settings. Deprecated config lines are converted automatically.
- Users can now set additional ips for the ZACNET network interface.

##### **Fixes**

- Fixed erroneous backup server network configuration when adding multiple ip configurations.
- Fixed potential application crash when assigning fixtures without a dimmer channel (including OSC and PSN fixtures) to an actor with mode 'Dimmer off'.

#### **DISPLAY-CONTROLLER 1.4.1**

##### **Fixes**

- Fixed default interfaces not being shown if custom additional ips are set.
- Fixed ip addresses not being right-aligned correctly.
- Fixed long version labels occluding other important display elements.

#### **ZACTRACK-CLIENT 10.3.1**

##### **Changes**

- NETWORK SETTINGS DIALOG: Added options to set ips for all existing network interfaces.

##### **Fixes**

- SYSTEM SETTINGS DIALOG: Fixed fixture setting visibility not being preserved after closing the dialog.

### **3.22.3.0 (2023-09-21)**

#### **CORE 10.2.0**

##### **Features**

- It is now possible to define pan/tilt angles per fixture. This overrides the pan/tilt angle definitions of the associated fixture type.

- Users can now add multiple ip configurations to a single network interface via the system config. This is possible for any interface except the ZACNET interface. Configurations must be specified in CIDR format (e.g. '192.168.2.1/24').
  - Additional ips for the LIGHT interface can be added with 'network.light.additional\_ip=;<....>'.
    - Additional ips for other interfaces can be added with 'network..ip=;<....>' (PRO).
    - Note that some configurations are not allowed due to overlap with reserved subnets.

## Changes

- Anchor calibration:
  - Ranges between calibration pucks/trackers are no longer used for the calibration by default, as such ranges are often affected by reflections (SMART, MINI).
  - The quality of the UWB link (connection) between the master anchor and other anchors is calculated during the mesh ranging process (MINI).
- Fixture Alignment now saves the pan/tilt angles used to align fixtures along with the alignment error and timestamp for later review.
- Removed subnet '172.24.0.0/13' from the list of reserved subnets (PRO, MINI, MAESTRO).

## Fixes

- Repositioning anchors (calibrating anchors using anchors that already have positions):
  - Calibration is no longer aborted if an anchor not selected for repositioning has insufficient ranges.
  - Corrected calculation of the calibration error.
- Fixed application crash when defining a truss with an incorrect coordinate system definition. In case of an error, the truss is loaded with the default coordinate system (coordinate system of the stage).

## RTLS 2.3.2

### Changes

- Updated several dependencies to the latest version.

## RTLS-MINI 1.2.2

### Fixes

- Fixed a minor concurrency issue resulting in a potential exception.

## ZACTRACK-CLIENT 10.3.0

### Features

- FIXTURE DETAIL DIALOG:
  - It is now possible to manually set the pan/tilt angles of a fixture. This overrides the pan/tilt angle definitions of the associated fixture type.
  - It is now possible to measure the pan/tilt angles of a fixture using the Angle Measurement Wizard.
- FIXTURE (TYPE) ANGLE MEASUREMENT WIZARD:
  - Improved automation of the process by automatically flipping pan and tilt to the next position required for the measurement.
  - Significantly improved the quality of the pan measurement by using a different measurement approach. This new approach is only enabled when measuring pan, not when measuring pan and tilt at the same time.
- SYSTEM CALIBRATION WIZARD/RANGING: Now showing potential link (UWB connection) problems between the master anchor and other anchors (MINI).
- SYSTEM CALIBRATION WIZARD/TRACKERS: Added the option to use or reject ranges between calibration pucks/trackers. Rejecting such ranges can improve calibration results by avoiding potential reflections (SMART, MINI).

### Changes

- ADVANCED SETTINGS/NETWORK SETTINGS: Removed subnet '172.24.0.0/13' from the list of reserved subnets (PRO, MINI, MAESTRO).
- FIXTURE LIBRARY DIALOG: PSN fixture types now use the same prediction and smoothing presets as OSC/MSD fixture types.
- FIXTURE MOVEMENT DIALOG/ALIGNMENT/FIXTURE CENTER DIALOG (i.e. context menu option 'Refine'): Added notification when saving refined pan/tilt values.
- SHOW EDITOR/FIXTURES: The Alignment Result dialog now displays the pan/tilt angles used for the last alignment.
- SHOW EDITOR/TRUSSES: Improved validation of the coordinate system definition.

## Fixes

- SYSTEM CALIBRATION WIZARD:
  - Fixed minor layout and naming issues in the validation result table.
  - Reposition Anchors: Limited the selection of anchors so that there are at least four anchors left that have a valid position.
- TRACKING SYSTEM DIALOG: Fixed minor layout and naming issues in the anchor and sensor link tables.

## 3.22.2.0 (2023-08-29)

### ZACTRACK-CLIENT 10.2.0

#### Features

- SYSTEM CALIBRATION WIZARD/VALIDATE ANCHORS (new): It is now possible to validate existing anchor positions by comparing them to measured ranges. The validation result shows the differences between the measured ranges and the distance between the anchor positions in the form of a color-coded table. This process can help to identify anchor placement problems such as unintentional repositioning or swapping of anchors, as well as ranging issues such as reflections or weak signals.

#### Changes

- ANCHOR DETAIL DIALOG: Anchor status information (including anchor link) is now only displayed for anchors that are connected.
- TRACKING SYSTEM DIALOG: Visual improvements to the anchor and sensor link tables.

## 3.22.1.0 (2023-07-28)

### CORE 10.1.0

#### Features

- Added DEVICE SETTINGS, replacing the deprecated ANCHOR MAP feature.
  - Device settings contain various settings for specific anchors and sensors, including a preferred anchor id.
  - On PRO systems with new generation (SN5) of Kinexon software, these settings are used to determine which anchors and sensors are in use.
  - Deprecated anchor maps are converted automatically.
- Added more fine-grained options to factory reset, allowing users to decide which parts of the system they want to reset.
- OSC Fixture Type: Added support for the OSC mode 'Absolute Centimeters (int)'.

#### Changes

- Backup servers now only work with systems of the same type.
- No longer supporting deprecated local Kinexon tracking systems (PRO).
- Now including system type in discovery package.

#### Fixes

- Fixed a problem where tracker positions would initially be incorrectly set to (0,0,0).
- Fixed application crash when manually setting the main server ip via config.
- Fixed continuous log output on non-unix backup systems when enabling remote maintenance.
- Fixed potential application crash when control channels are out of bounds.

### ZACTRACK-CLIENT 10.1.0

#### Features

- Added ADVANCED SETTINGS/DEVICE SETTINGS, replacing the deprecated ANCHOR MAP feature (PRO).
  - Device settings contain various settings for specific anchors and sensors, including a preferred anchor id.
  - On PRO systems with new generation (SN5) of Kinexon software, these settings are used to determine which anchors and sensors are in use.
  - Deprecated anchor maps are converted automatically.

- **ADVANCED SETTINGS/FACTORY RESET:** Added more fine-grained options, allowing users to decide which parts of the system they want to reset.
- **FIXTURE TYPE LIBRARY/OSC:**
  - Added presets for Adamson FletcherMachine: XYZ Output, XY Output.
  - Added presets for ADM (Audio Definition Model): XYZ Output, XY Output.
  - Added presets for grandMA3: Cue Trigger, Fader Control.
- **OSC FIXTURE DIALOG:** Added support for the OSC mode 'Absolute Centimeters (int)'.
- **SERVER DISCOVERY DIALOG:** Now showing system type for compatible servers.

### Changes

- Changed default zactrack server ip to '172.20.13.1'.

### Fixes

- Fixed some instances of inconsistent wording throughout the application.
- **EDIT POINT DIALOG:** Point references in OSC and MSC fixture types are now updated correctly when the point name is changed.
- **EXPORT FIXTURE TYPES DIALOG:** Removed unsupported file type "Zactrack Fixture Type".
- **FIXTURE ALIGNMENT DIALOG:**
  - Fixed an issue where the drop-down list view of available point sources (calibration points and trackers) would constantly jump to the top, interfering with the user's scroll position.
  - Fixed problems when switching between fixtures. Alignment points and their pan/tilt values are now loaded and saved correctly.
- **FIXTURE ALIGNMENT WIZARD:** Fixed potential application crash when minimizing the application with the dialog open.
- **FIXTURE LIBRARY DIALOG/MY LIBRARY:** Fixed an issue where imported fixture types would not be immediately visible.
- **OSC/MSC FIXTURE DIALOG:** Fixed a problem that could cause the wrong calibration point to be displayed in the coordinate system definition.
- **SHOW EDITOR/POINTS:** It is no longer possible to delete a point that is still in use by MSC fixture types.
- **SYSTEM CALIBRATION WIZARD/RANGING:** Fixed a problem where the anchor selection was ignored (MINI).
- **SYSTEM CALIBRATION WIZARD/TRACKERS:** It is no longer possible to select trackers with an invalid firmware version (SMART).
- **TRACKING SYSTEM DIALOG:** Fixed a layout issue where certain display aspect ratios would crop a button.

## 3.22.0.0 (2023-06-02)

### CORE 10.0.0

#### Features

- Added support for new generation (SN5) of Kinexon tracking software and hardware (PRO).

#### Changes

- Optimized Kinexon controller logic in order to increase stability and enhance performance (PRO).

### ZACTRACK-CLIENT 10.0.0

#### Features

- Added support for new generation (SN5) of Kinexon tracking software and hardware (PRO).

#### Changes

- The application now shows/hides certain controls based on the connected server's capabilities.

## 3.21.4.2 (2023-06-02)

### CORE 9.3.2

#### Fixes

- Fixed special fixture types from very old show files not being converted correctly.
- Fixed very old show files not being converted to new format correctly due to delayed anchor map initialization.

## ZACTRACK-CLIENT 9.3.2

### Fixes

- Fixed erroneous validation errors due to special fixture types from very old show files not being converted correctly.

## 3.21.4.1 (2023-05-31)

### CORE 9.3.1

#### Changes

- Clients are now notified if the Wi-Fi access point uses the default passphrase.

## ZACTRACK-CLIENT 9.3.1

### Changes

- Added warning to inform user if the Wi-Fi access point uses the default passphrase.

## 3.21.4.0 (2023-05-26)

### CORE 9.3.0

#### Features

- Now allowing custom/light ips in 172.0.0.0/8 subnet that are not overlapping with reserved subnets 172.24.0.0/13, 172.20.0.0/16, 172.20.0.0/14 or subnets used by docker services. Note: IP ranges 172.16.0.0/16, 172.17.0.0/16 and 172.18.0.0/16 are only supported by servers with a system maintenance package version of at least 5.3.0.

#### Fixes

- Fixed battery percentages not always being calculated correctly on new systems (PRO).

## WEB-CLIENT 1.3.1

### Fixes

- Fixed logo not being displayed correctly on smaller screens.

## ZACTRACK-CLIENT 9.3.0

### Features

- NETWORK SETTINGS DIALOG: Now allowing custom/light ips in 172.0.0.0/8 subnet that are not overlapping with reserved subnets 172.24.0.0/13, 172.20.0.0/16, 172.20.0.0/14 or subnets used by docker services. Note: IP ranges 172.16.0.0/16, 172.17.0.0/16 and 172.18.0.0/16 are only supported by servers with a system maintenance package version of at least 5.3.0.

### Changes

- SHOW EDITOR/FIXTURE TYPES: Improved parsing of fixture type attributes when importing from GDTF file.

### Fixes

- FIXTURE DETAIL DIALOG: Fixed users being able to set invalid start control channel values, leading to application errors.
- LIVE VIEW: Fixed anchor icons being tinted red despite no issues being detected (PRO, SMART).
- SHOW EDITOR: Fixed possible application crash when changing certain show parameters.

## 3.21.3.0 (2023-03-14)

### CORE 9.2.0

#### Features

- Added option to delete single show history entry.
- Added option to generate a system report for support agents.
- Added option to set ip addresses for additional network interfaces via config file (PRO).

## Changes

- Database file is now compacted correctly after removing entries or after an application restart.
- Now ignoring custom ip/netmask configurations overlapping with 172.0.0.0/8, 10.10.0.0/16 and 10.11.0.0/16 subnets.

## RTLS 2.3.1

### Changes

- Main changes related to firmware:
  - Increased the brightness of the LED.

### Fixes

- Fixed minor issue when discovering MINI trackers/pucks.

## RTLS-MINI 1.2.1

### Changes

- Main changes related to firmware:
  - Changed LED color from white to yellow during start-up to distinguish MINI trackers/pucks from SMART trackers/pucks.
  - Increased the brightness of the LED.
  - Increased the duration of the discovery period from 60 seconds to 3 minutes.

## WEB-MONITOR-BACKEND 1.4.0

### Features

- Added anchor link and sensor link pages.

## WEB-MONITOR-FRONTEND 1.4.0

### Features

- Added anchor and sensor link pages.

### Changes

- Improved performance in loading page by reducing the number of re-renders necessary.
- Minor UI changes for improved support of smaller screen sizes.

### Fixes

- Fixed a navigation bug on MAESTRO systems.
- Fixed renderer not always being displayed correctly when opening the application on mobile devices and landscape mode.
- Fixed several security vulnerabilities.

## ZACTRACK-CLIENT 9.2.0

### Features

- ADVANCED SETTINGS/SYSTEM REPORT (new): Users can now generate a system report for support agents for a specified time frame.
- SHOW EDITOR/ANCHORS: Added 'Highlight' option to anchor context menu (accessible via long press), which lets the LED of the selected anchor blink rapidly for 5 seconds.
- SHOW HISTORY DIALOG: Added option to delete single history entry via context menu.
- TRACKING SYSTEM DIALOG: It is now possible to discover and update trackers and pucks from other zactrack products (SMART, MINI).

## 3.21.2.0 (2023-01-24)

### CORE 9.1.0

#### Fixes

- OSC/MSC Fixture: Frame rate limitation is now handled for each single OSC/MSC fixture instance instead of handling the limitation on socket level (i.e. limiting the output for each defined IP:PORT pair).

## RTLS-MINI 1.2.0

### Fixes

- Main fixes related to firmware:
  - Fixed a rare problem where the UWB receiver could not receive any UWB messages anymore.
  - Fixed issues when receiving unwanted UWB messages during an ongoing TWR (two way ranging) process.

## ZACTRACK-CLIENT 9.1.0

### Changes

- SHOW EDITOR/ANCHORS: Now allowing to add anchors without specifying the anchor's EUI value. This can be useful for preparing anchors without yet knowing their EUI values.

### Fixes

- SHOW EDITOR/ACTORS: Fixed potential application crash when adding a tracker to an actor while working offline.

## 3.21.1.0 (2022-12-21)

### CORE 9.0.3

#### Fixes

- PSN input: Fixed PSN receiver crash when decoding PSN packets that contain more data than specified by the current protocol specification.
- PSN input: Fixed PSN receiver crash when decoding PSN packets that do not contain every specified data field.
- PSN input: Unhandled errors are now logged.

## DMX-CONTROLLER 1.1.0

### Fixes

- Fixed a bug that prevents sending valid dmx data if a certain condition is not satisfied during initialization of the dmx controller.

## RTLS-MINI 1.1.0

### Features

- Improved accuracy of anchor and sensor link calculations.
- Improved battery life of active trackers (at least 4 hours).
- Now supporting up to 15 active trackers and up to 60 inactive trackers. The tracking frequency will dynamically change depending on the amount of active trackers.
- Now supporting zactrack UWB pucks.

### Changes

- Anchor alignment: Calculations for evaluating the link quality between the master anchor and other anchors are now based on the quantity of received messages instead of the quality of the measured range. This increases the possibility of correctly aligning anchors in situations where the quality of the range measured between anchors is insufficient.
- Decreased timeout parameters used for TWR (two way ranging). This slightly increases the tracking speed in case any active device (anchor or tracker) is offline or not reachable for any reason.
- Number of devices for concurrent initialization is now limited to 20 for better stability regarding tracker's low power listening.

## ZACTRACK-CLIENT 9.0.3

### Changes

- FIXTURE MOVEMENT DIALOG/ALIGNMENT: The list of available trackers is now continuously updated.

### Fixes

- FIXTURE MOVEMENT DIALOG/ALIGNMENT: Fixed a possible application crash.

## 3.21.0.2 (2022-11-16)

### CORE 9.0.2

#### Fixes

- Fixed “factory reset” functionality, which deletes entire show history (shows.db) and system settings (system.properties).

### ZACTRACK-CLIENT 9.0.2

#### Fixes

- NETWORK SETTINGS DIALOG: Validation of Wi-Fi settings is now done only on MINI systems.

## 3.21.0.1 (2022-11-14)

### CORE 9.0.1

#### Changes

- Fixture Refinement: Improved polling of lux values from UWB Pucks (MINI).

### MANUAL 1.3.1

#### Changes

- Converted almost all of the images to .webp format to save storage space.
- Updated manual to newest version, including pages for MINI system.

### RTLS-MINI 1.0.2

#### Changes

- Export light sensor values via API.

#### Fixes

- Fixed issue leading to problem during firmware update process.

### ZACTRACK-CLIENT 9.0.1

#### Features

- Added support for zactrack UWB Puck (MINI).

#### Changes

- Improved data integrity in the case of network errors (for instance poor Wi-Fi reception).
- ACTOR DETAIL DIALOG: Value for merge distance is now in millimeter units instead of centimeter units.
- SHOW UPLOAD: Improved user feedback for issues during show upload.

#### Fixes

- Fixed minor layout issues when showing tracker and anchor lists.
- Fixed sorting logic of anchor lists (first: assigned anchors, second: unassigned (sorted by EUI)).
- Fixed sorting logic of tracker lists (first: assigned to actors, second: calibration pucks/trackers, third: unassigned (sorted by EUI)).
- ACTOR DETAIL DIALOG: Merge distance value is now parsed and converted correctly.
- FIXTURE TYPE ANGLE MEASUREMENT WIZARD: Fixed a possible application crash when closing the wizard dialog.
- SHOW EDITOR/ACTORS: Fixed color of unassigned actors not being updated in some edge cases (MINI).
- SHOW EDITOR/FIXTURE TYPES: Fixed issue when importing GDTF (General Device Type Format) files directly from the default zactrack fixture types folder.

## 3.21.0.0 (2022-11-02)

### General

- This is the first release for zactrack MINI systems.

## CORE 9.0.0

### Features

- Added full support for the zactrack MINI tracking system including WiFi configuration, direct DMX output and optimized system calibration.

### Changes

- Changed license restrictions for fixtures.

## DMX-CONTROLLER 1.0.0

### General

- First release of DMX-CONTROLLER service.

## MANUAL 1.3.0

### Changes

- Updated manual to newest version.

## RTLS-MINI 1.0.1

### General

- First release of RTLS-MINI service, a wireless real time tracking system based on UWB.

## WEB-CLIENT 1.3.0

### Changes

- Logo is now chosen dynamically based on system type.

## WEB-MONITOR-BACKEND 1.3.0

### Changes

- Made service compatible with MINI system type.

## WEB-MONITOR-FRONTEND 1.3.0

### Features

- Main logo (top left corner) is now dynamically updated depending on the current system type (PRO, SMART, MINI).

### Fixes

- Empty batteries of trackers are now displayed correctly.

## ZACTRACK-CLIENT 9.0.0

### Features

- Added DISCOVERY buttons to several tracker- and anchor-related dialogs. These allow you to manually discover new devices in order to add them to the system (MINI).
- Main logo (top left corner) is now dynamically updated depending on the current system type (PRO, SMART, MINI).
- Users can now set the current DMX OUT universe in one of the following ways (MINI):
  - Select the universe in the dropdown menu in SHOW DIALOG.
  - Long-tap on a universe in SHOW EDITOR -> UNIVERSES and choose 'Set as DMX OUT'.
  - Check the corresponding checkbox in the UNIVERSE DETAIL DIALOG.
- LIVE VIEW: Now showing battery icon for anchors (MINI).
- NETWORK SETTINGS DIALOG: Added WiFi configuration (MINI).
- SYSTEM CALIBRATION WIZARD/ANCHORS:
  - Added button 'Highlight', which lets the LED of the selected anchor blink rapidly for 5 seconds.
  - Now showing warning if an anchor has an invalid firmware version.
- SYSTEM SETTINGS/CALIBRATION: Added button to clear inserted EUI numbers.
- TRACKING SYSTEM DIALOG/ANCHORS: Added ability to update anchor firmware.
- TRACKING SYSTEM DIALOG/TRACKERS: Now showing battery level (as a percentage of fully charged).

## Changes

- Updated fixture library:
  - Fixed incorrect zoom for Prolights Astra Wash7Pix
- FIXTURE ALIGNMENT WIZARD/PREPARE: State of calibration trackers/pucks is now updated and validated continuously if simple mode is selected.
- SYSTEM CALIBRATION WIZARD: Updated workflow for MINI systems (MINI).

## Fixes

- LIVE VIEW: Fixed an issue with special characters in rendered text labels.
- SYSTEM CALIBRATION WIZARD/CALIBRATION: Improved error messages.

## 3.20.0.2 (2022-10-25)

### ZACTRACK-CLIENT 8.0.2

#### Changes

- SYSTEM SETTINGS/CALIBRATION: Selection dialog is now reflecting ongoing changes.

#### Fixes

- LIVE VIEW/FIXTURE LIVE SETTINGS: Fixed a bug where the fixture offset is reset to zero.

## 3.20.0.1 (2022-10-14)

### CORE 8.0.1

#### Fixes

- Included fixes from version 7.5.5.

### WEB-MONITOR-BACKEND 1.2.1

#### Fixes

- Included fixes from version 1.1.1.

### WEB-MONITOR-FRONTEND 1.2.1

#### Fixes

- Included fixes from version 1.1.1.

### ZACTRACK-CLIENT 8.0.1

#### Changes

- Updated fixture library.

#### Fixes

- FIXTURE ALIGNMENT WIZARD/CENTERING: Default values for pan and tilt are now correctly retrieved when selecting multiple fixtures for alignment.
- FIXTURE ALIGNMENT WIZARD/REFINE: Improved naming of selected alignment points.
- SHOW EDITOR/ACTORS: Fixed sorting of new trackers that are not part of the show yet.
- SHOW EDITOR/ANCHORS: Fixed sorting of new anchors that are not part of the show yet.
- SHOW EDITOR/UNIVERSES: Priority for sAcn is now set correctly when creating multiple OUT universes.

## 3.20.0.0 (2022-08-18)

### CORE 8.0.0

#### Features

- Actor merges have been reworked.

- Merges are no longer created by adding actors to another actor's merge list. Instead, users can now add multiple trackers to a single actor.
- If an actor contains more than one tracker, the positions are automatically merged using the already established merge logic.
- **NOTE:** Existing shows with actor merges are converted automatically. This means that actors that are in another actor's merge list will be removed automatically and their tracker added to the previous merge master.
- Anchor-Link and Tracker-Link is now available for SMART tracking systems.
- Tracking and prediction logic has been re-implemented in order to allow for more generic filters and easier testability. This should also reduce the possibility of lags and freezes during high workload.

### Changes

- Deactivated some unused statistics in order to boost performance.
- Changed how the system internally identifies SMART devices (anchors, pucks, trackers).

### Fixes

- Fixed bug leading to incorrect tracker tracking time calculation.
- Fixed rare bug leading to out of memory exception when trying to create autofunction zones with invalid puck/tracker positions.

## RTLS 2.3.0

### Features

- API: Now transmitting anchor link data for trackers and anchors if requested.

### Changes

- API: Now sending additional monitoring data for anchor link with master anchor.

## WEB-MONITOR-FRONTEND 1.2.0

### Features

- For each actor, a tracker list with detailed information about each tracker can now be accessed via button click.
- For each actor, the number of online trackers (i.e. trackers that provide a valid position) is now displayed in the sidebar.

### Changes

- UI changes to support the reworked actor merge.

### Fixes

- Analyzer View: PSN positions, recorded positions and Kinexon positions are now displayed correctly.
- Server Connection Dialog: A server with more than two IPs is now displayed correctly.

## WEB-MONITOR-BACKEND 1.2.0

### Changes

- Data structures used for the reworked actor merges are now supported.

## ZACTRACK-CLIENT 8.0.0

### Features

- Actor merges have been reworked completely.
  - Merges are no longer created by adding actors to another actor's merge list. Instead, users can now add multiple trackers to a single actor in the ACTOR DETAIL DIALOG.
  - If an actor contains more than one tracker, the positions are automatically merged using the already established merge logic.
  - **NOTE:** Existing shows with actor merges are converted automatically. This means that actors that are in another actor's merge list will be removed automatically and their tracker added to the previous merge master.
- ACTOR DETAIL DIALOG: Users can now select available trackers by clicking 'Select Tracker' and (optionally) assign a name to trackers. The tracker name will be shown in addition to the EUI number throughout the application (for instance in tracker selection views or analyzer view).

- **ACTOR LIVE VIEW:** Click on the info button (top right corner) to show information about all the trackers added to an actor (Tracker Details Dialog).
- **ANCHOR SELECTION DIALOG (new):** Works similar to tracker selection, but for anchors.
- **LIVE VIEW/ACTOR LIST:** Quick access to the new “Tracker Details Dialog” is possible via long press on actor elements.
- **SHOW EDITOR/ACTORS:** Trackers assigned to actors are now listed in an expandable sub-list.
- **SYSTEM SETTINGS/CLIENT SETTINGS:** Added field “Allow Unassigned Tracker Selection” for showing/hiding tracking devices (trackers, pucks) that are online, but not assigned to any actors or not configured as calibration device.
- **TRACKER SELECTION DIALOG:** Added various filter options and improved layout.
- **TRACKING SYSTEM DIALOG:** Anchor-Link and Tracker-Link is now available for SMART tracking systems.

### Changes

- **ACTOR DETAIL DIALOG:** Improved layout.
- Changed sorting logic of tracker lists (first: assigned to actors, second: calibration pucks, third: unassigned).
- Improved wording.
- **LIVE VIEW/ACTOR LIST:** Automatically adjust the font size for long actor names.
- **LIVE VIEW/ACTOR LIST:** It is now possible for inactive actors to distinguish between ‘tracker is inactive and offline’ and ‘tracker is inactive and online’. Inactive trackers, which are online, will display their current battery state (SMART).
- **LIVE VIEW/FIXTURE LIST:** Automatically adjust the font size for long fixture names.
- **NOTE:** A tracker may be added to one actor exactly. It is no longer possible, that the same tracker is part of multiple actors.
- **NOTE:** Due to changes how the system identifies SMART devices (anchors, pucks, trackers), it is advised to add SMART devices automatically or via the dedicated selection dialogs. Adding SMART devices by entering an EUI number manually should only be used in exceptional cases.

### Fixes

- **FIXTURE ALIGNMENT WIZARD/MANUAL CENTERING:** Fixed a bug where the loading screen would be displayed indefinitely if a CP (calibration point) with an UWB puck as light sensor source was selected.
- **SHOW EDITOR/ACTORS:** Increased column width for the Control Universe.

## 3.19.3.1 (2022-10-14)

### CORE 7.5.5

#### Fixes

- Fixed crossfade affecting other channels than PAN and TILT if AUTO6M is active.

### WEB-MONITOR-BACKEND 1.1.1

#### Fixes

- Fixed log files getting unexpectedly large in some edge cases.

### WEB-MONITOR-FRONTEND 1.1.1

#### Fixes

- Fixed missing grid at large stages.

### ZACTRACK-CLIENT 7.6.1

#### Fixes

- **FIXTURE GROUP LIVE DIALOG:** Fixed rounding error leading to crossfade value sometimes not being displayed correctly.

## 3.19.3.0 (2022-08-08)

### WEB-MONITOR-FRONTEND 1.1.0

#### Features

- Added a new clickable icon in the top right corner to visualize the current state of the main and backup server. The current license tier is shown as well.
  - Clicking on the icon opens a dialog with more detailed information.

**Fixes**

- UI is now instantly updated when Show file has changed.

**WEB-MONITOR-BACKEND 1.1.0****Changes**

- Supports backup state info.

**ZACTRACK-CLIENT 7.6.0****Features**

- LIVE VIEW: It is now possible to filter displayed actor positions by selecting a specific actor group.
- SHOW EDITOR/FIXTURE TYPES: Fixture types represented by the General Device Type Format (GDTF) can now be imported via the import dialog.

**Changes**

- LIVE VIEW: Increased zoom range for covering larger areas.

**Fixes**

- FIXTURE LIVE: Fixed problem where traces selection was not cached correctly.
- FIXTURE LIVE VIEW: Fixed a problem where the fixture offset values and the console checkbox state are erroneously altered.

**3.19.2.4 (2022-07-19)****CORE 7.5.4****Fixes**

- Fixed actor appearing as offline if only z axis is non-zero.
- Fixed psn input position 0,0,0 leading to offline actor states.

**3.19.2.3 (2022-07-15)****CORE 7.5.3****Features**

- Introduced config parameters 'network.psn.send.axis\_mapping' and 'network.psn.listen.axis\_mapping' to change and/or invert the axes of PSN input/output positions and orientations (e.g. 'x;z;-y' swaps y and z axis and inverts the new z axis).

**3.19.2.2 (2022-07-06)****CORE 7.5.2****Features**

- Introduced config parameter 'network.psn.listen.ip' to change ip address for receiving PSN traffic.

**Fixes**

- Fixed issue where config parameter 'network.psn.send.ip' changes ip address for receiving PSN traffic.
- Fixed system critical exception when receiving ACN synchronization packets.

**WEB-MONITOR-FRONTEND 1.0.5****Changes**

- Added fixture assignment information for DMX values 254 and 255.

**Fixes**

- Fixed remove-fixture-assignment bug.

### 3.19.2.1 (2022-06-14)

#### CORE 7.5.1

##### Fixes

- PSN output: Do not add an empty tracker-list sub chunk to PSN data and PSN info packets if no PSN trackers are currently online or active.

#### WEB-MONITOR-BACKEND 1.0.4

##### Fixes

- Fixed disconnection from zactrack server bug.

#### WEB-MONITOR-FRONTEND 1.0.4

##### Fixes

- Fixed bug where anchors and fixtures vanish from sidebar if it is closed and re-opened.

### 3.19.2.0 (2022-06-09)

#### CORE 7.5.0

##### Features

- Per fixture freeze control: The current actor position (if available) is freed indefinitely as soon as the assignment control channel has been set to '254'.
- PSN output: The transmission rate for PSN\_DATA packets is now configurable (default is 60Hz, minimum is 1Hz and maximum is 90Hz).

##### Changes

- Decreased the highest possible actor DMX id from '254' to '249'. 254 is now used for the per fixture freeze control feature and 250-253 is reserved for future development.
- Enhanced logic for keeping track of main and backup server states.
- PSN output: The PSN name matches now the corresponding actor name.

##### Fixes

- Fixed potential exception when accessing universe objects during show change.
- Fixed potential exception when pan/tilt attributes are not set for fixture types.
- Fixed potential exception when receiving DMX input data during show change.
- Improved performance when loading large shows containing many universes, fixtures and actors.

#### WEB-MONITOR-BACKEND 1.0.3

##### Fixes

- Fixed reconnection to zactrack server bug.

#### WEB-MONITOR-FRONTEND 1.0.3

##### Fixes

- Fixed bug where actors are not displayed when the sidebar is collapsed at loading time.

#### ZACTRACK-CLIENT 7.5.0

##### Features

- Added a new clickable icon in the top right corner to visualize the current state of the main and backup server. The current license tier is shown as well.
  - Clicking on the icon opens a dialog with more detailed information.
  - Hiding the icon in case no backup server is present is possible via System Settings -> Client Settings.
- FIXTURE LIVE DIALOG: The assignment list contains now a static entry 'Freeze Position' (DMX value 254) to freeze the current actor position (if present) indefinitely for the selected fixture(s).
- SHOW UPLOAD: Now showing a warning if connected with a backup server.
- SYSTEM SETTINGS/GENERAL SETTINGS: Added field to configure the transmission rate for PSN\_DATA packets (default is 60Hz, minimum is 1Hz and maximum is 90Hz).

## Changes

- ACTOR DETAIL DIALOG: Decreased the highest possible actor DMX id from '254' to '249'.
- Actor validation includes now a check for valid actor DMX ids.
- Increased the server connection timeout from 1000ms to 2000ms.
- Updated fixture library.
- The server connection icon in the top right corner shows now the server role of the connected server. 'M' stands for Main, 'B' for Backup.

## Fixes

- SHOW EDITOR/ACTORS: Actor names are now correctly highlighted (red text color) if any validation error occurred.

## 3.19.1.0 (2022-05-10)

### CORE 7.4.0

#### Features

- Autofunction dimmer zones can now be created by using tracking positions of Pucks and/or Trackers.
- OSC Fixture: It is now possible to define the argument of the OSC message as string. The argument string may also contain specific placeholders that will get replaced before sending out the OSC message.
- OSC/MSX Fixture: It is now possible to limit the amount of packets sent per second.
- Pan/Tilt Fixture: It is now possible to turn the dimmer off for a specific time period (controlled by the fixture type) as soon as a pan or tilt flip is detected.

#### Changes

- OSC Fixture: Changed placeholder 'FIXTURE\_NAME' to 'FIXTURE\_ID'.

#### Fixes

- sACN IN universe: Only the stream with the highest sACN priority will be processed and used in case of receiving multiple sACN input streams for a specific universe.

### RTLS 2.2.2

#### Fixes

- Main fixes related to firmware:
  - Improved initialization of UWB radio chip. This solves the occasional issue of puck devices being stuck in the setup process.

### WEB-MONITOR-BACKEND 1.0.2

#### Fixes

- Fixed bug during show-file loading.

### WEB-MONITOR-FRONTEND 1.0.2

#### Changes

- Improved performance of zactrack web monitor service.
- The grid is now only displayed up to a length of 200m.

### ZACTRACK-CLIENT 7.4.0

#### Features

- FIXTURE TYPE DIALOG: It is now possible to specify a timeout for turning the dimmer temporarily off during a pan or tilt flip.
- NEW AUTOFUNCTIONS WIZARD (SMART, PRO):
  - This wizard guides the user through a setup process for creating new autofunction dimmer zones.
  - Autofunction zones are created by incorporating tracking positions of Pucks and/or Trackers.
  - Instant live preview and live settings for the autofunction zone to be created.
  - Works for multiple fixtures.

- OSC FIXTURE DIALOG: It is now possible to define the argument of the OSC message as string. The argument string may also contain specific placeholders that will get replaced before sending out the OSC message.
- OSC/MSC FIXTURE DIALOG: It is now possible to limit the amount of packets sent per second.
- SYSTEM CALIBRATION WIZARD: Now showing an image slideshow for better understanding of the Puck placements and the coordinate system definition (SMART).

### Changes

- FIXTURE ALIGNMENT WIZARD/PREPARE: Allow a selection of up to 8 points for the refinement process (PRO).
- Manual pan/tilt movement is now possible at three different speed levels: coarse, fine and ultra-fine.
- OSC Fixture:
  - Added default preset 'No Preset'.
  - Changed placeholder 'FIXTURE\_NAME' to 'FIXTURE\_ID'.
- OSC/MSC FIXTURE: Changed default values for prediction and smoothing.
- SYSTEM CALIBRATION WIZARD/RANGING: Improved labeling of mesh ranging error messages (SMART).
- Updated fixture library.

### Fixes

- Fixture library:
  - Fixed colliding channels for fixture type 'Ayrtron Mistral (Extended)'.
  - Corrected physical tilt range for fixture type 'Clay Paky Sharp Wash 330'.
- FIXTURE MOVEMENT DIALOG/ALIGNMENT and FIXTURE ALIGNMENT WIZARD:
  - Fixed problem when reloading pan/tilt values of an already selected point.
  - Fixed problem when switching between selecting all fixtures from the current fixture group and selecting a specific fixture from the current fixture group.
  - Fixed some concurrency issues.
- Improved wording.
- SYSTEM CALIBRATION WIZARD: Fixed width of the dialog (was too tight for some Android devices).

## 3.19.0.3 (2022-04-21)

### WEB-MONITOR-BACKEND 1.0.1

#### Fixes

- Fixed reconnecting issue at startup.

### WEB-MONITOR-FRONTEND 1.0.1

#### Changes

- RJ Maestro systems are now supported by the zactrack web monitor service.

## 3.19.0.2 (2022-03-04)

### CORE 7.3.2

#### General

- Added tracking system hotfix from release 7.2.2.

## 3.19.0.1 (2022-03-01)

### GENERAL

- Fixed 'Web Monitor' services not being installed for PRO and MAESTRO systems.

## 3.19.0.0 (2022-02-15)

### GENERAL

- First release containing the web based monitoring tool 'Web Monitor' for zactrack systems.

## CORE 7.3.1

### General

- Upgraded API to reflect support for node.js.

## WEB-CLIENT 1.2.1

### Changes

- Added 'Web Monitor' link on landing page.

## WEB-MONITOR-BACKEND 1.0.0

### General

- First release of the zactrack web monitor service. Backend for the web based monitoring tool for zactrack systems.

## WEB-MONITOR-FRONTEND 1.0.0

### General

- First release of the zactrack web monitor service. Web based monitoring tool for the zactrack systems.

## ZACTRACK-CLIENT 7.3.1

### General

- Upgraded API to reflect support for node.js.

## 3.18.3.0 (2022-02-11)

### CORE 7.3.0

#### Features

- Fixture Alignment: Avoid fast and sudden pan/tilt movements during crucial alignment operations. When enabled by the client, a smooth pan/tilt transition is applied instead and increases alignment precision by reducing potential wobbling for fixtures mounted on non-rigid trusses.

#### Fixes

- OSC Fixture Type: Fixed bug when initializing OSC mode 'Range (float)'.
- OSC Fixture Type: Fixed minor validation check.
- Tracking Manager: Fixed potential concurrency exception.

## ZACTRACK-CLIENT 7.3.0

#### Features

- ANALYZER: Data rows can now be filtered by groups (All, Misc, Network, System, or Tracking).
- FIXTURE ALIGNMENT WIZARD/MANUAL CENTERING: Added checkboxes to lock either pan or tilt movements.
- FIXTURE ALIGNMENT WIZARD/REFINE: In case of errors during the refinement process: It is now possible to continue with the alignment for all error-free fixtures (i.e. fixtures with a successful refinement).
- FIXTURE LIBRARY DIALOG:
  - Added new tab "My Library": Lists all fixture types that were exported to the local device storage.
  - Tab "Lighting Fixtures": A fixture type can now be selected as preset for a custom fixture type via long press. A long press is the action of holding one's finger on the screen for a few seconds.
  - Tab "Other Protocols": Added the option to create an OSC fixture based on a vendor preset. A vendor preset contains vendor specific data like the used network port or the OSC address and parameter configuration.
- LIVE VIEW:
  - Enable the selection of elements (CP, AutPos, Anchors) via long press on/near the rendered element. A dialog will open to view/edit the selected element.
  - If "Auto Pos" (Autofunction Points) checkbox is enabled: A long press somewhere inside the stage coordinate system opens a dialog to create a new Autofunction point at the location of the long press.
- SYSTEM SETTINGS/FIXTURES: Enable "P/T Alignment Transition" to avoid fast and sudden pan/tilt movements during crucial fixture alignment operations. A smooth pan/tilt transition is applied instead and will increase alignment precision by reducing potential wobbling for fixtures mounted on non-rigid trusses. The duration of the transition can (optionally) be adjusted.

## Changes

- ANALYZER: Improved overall performance.
- CREATE UNIVERSE DIALOG:
  - It is now possible to add more than one single unicast address right away.
  - Now showing a more detailed warning message in case of validation errors.
- EDIT FIXTURE TYPE DIALOG/EDIT CHANNELS:
  - Channels (coarse/fine values) may now overlap during editing. Final validation is done before closing the fixture type dialog.
  - It is now possible to edit each and every channel.
- File Export/Import (Show-File, Autofunction-File or Fixture-Type-File):
  - Export: Warn user before overwriting any existing files.
  - Import: A previously exported file can now be deleted via long press.
- FIXTURE MOVEMENT DIALOG/ALIGNMENT: Added a checkbox to force the tracker height to zero (if a tracker was selected as position source).
- LIVE VIEW:
  - Actor and fixture live settings: Reduced unnecessary network traffic.
  - New actor icon (simple circle).
  - New anchor icon.
  - The color of an anchor icon will change from green to red as soon as a connection problem with the anchor is detected.
- OSC FIXTURE DIALOG: Warn if no (valid) destination IP was added.

## Fixes

- CLIENT APPLICATION UPDATE DIALOG: Improved wording.
- CREATE UNIVERSE DIALOG:
  - Fixed validation when 'unicast address' is selected.
  - Now showing an additional field to set the priority value for sACN OUT universes.
  - The default value for the sACN OUT priority is now correctly set to 100 (was 0 before).
- EDIT FIXTURE TYPE DIALOG:
  - EDIT CHANNELS DIALOG: Improved performance when loading and displaying channel data.
  - EDIT CHANNELS DIALOG: "Set highlight from console": Fixed channel '1' not being updated with current console value.
  - Fixed different minor bugs.
- EDIT UNIVERSE DIALOG:
  - Fixed validation when the universe number of sACN universes is greater than 255.
  - Fixed validation when adding a unicast address.
  - Fixed wording in title of confirmation dialog when removing a target address.
  - Improved the input validation of the priority value for sACN OUT universes.
- FIXTURE ALIGNMENT WIZARD: Fixed a possible application crash as well as different minor bugs.
- FIXTURE MOVEMENT DIALOG/AUTOFUNCTIONS:
  - Buttons for selecting the previous/next scene are now working as expected.
  - Exclude special fixtures (for instance OSC fixtures) when selecting all fixtures of a specific fixture group.
- Overall application stability: Fixed multiple bugs where the application would crash when the connection to the server is (temporarily) lost.
- SYSTEM SETTINGS: Do not allow saving changes in case of connection problems.
- UNIVERSE MONITOR DIALOG: Correctly display the point in time of the last received universe data.

## 3.18.2.2 (2022-03-03)

### CORE 7.2.2

#### Fixes

- Fixed tracking system not working correctly on PRO systems due to an invalid service state check.

### 3.18.2.1 (2021-12-15)

#### CORE 7.2.1

##### Changes

- Dynamic fixture position feature is now enabled by default.
- PSN tracking input is now enabled by default.

##### Fixes

- Fixed exception when PSN IP address is not a multicast IP address.
- Improved calculation of average packet amount per second for sACN and ArtNet (IN and OUT universes).
- Improved sACN protocol implementation:
  - Fixed bug where the default priority was 0 instead of 100.
  - Fixed bug where “Universe Discovery Packets” would be sent too often.
  - Fixed bug where “Universe Discovery Packets” would not contain the correct list of actively transmitted universes.

#### RTLS 2.2.1

##### Features

- Main features related to firmware:
  - Trackers will switch to deep sleep mode if in discovery mode. This greatly increases battery run time for trackers that have no connection to any anchors.

#### ZACTRACK-CLIENT 7.2.1

##### Features

- MSC FIXTURE DIALOG: Open a dialog to alter target IP and port by clicking on a destination address.
- OSC FIXTURE DIALOG: Open a dialog to alter target IP and port by clicking on a destination address.

##### Changes

- Increased length of allowed anchor eui numbers to 6 digits.
- MSC FIXTURE DIALOG: Validation errors are now shown in a dialog.
- OSC FIXTURE DIALOG: Validation errors are now shown in a dialog.

##### Fixes

- Improved wording.
- SYSTEM SETTINGS/CALIBRATION: Added validation to check if selected eui numbers are distinct (SMART).
- UNIVERSE DETAIL DIALOG: Corrected wording when adding an IP address for an Art-Net output universe.

### 3.18.2.0 (2021-10-22)

#### CORE 7.2.0

##### Features

- Added number of “MIDI Show Control” (MSC) packets sent per second for each destination to analyzer.
- Added number of “Open Sound Control” (OSC) packets sent per second for each destination to analyzer.
- OSC Fixture Type: Introduced placeholders for adding the current position of the assigned actor to the OSC address string.

##### Changes

- Improved the process for sending OSC and MSC data packets.

##### Fixes

- Fixed possible exception during fixture alignment.
- OSC/MSC Fixture: Fixed performance issue when a defined destination IP is not reachable.

## RTLS 2.2.0

### Features

- Inactive trackers are now assigned to a specific synchronization slot to minimize collisions with other UWB messages. The rate at which an inactive tracker sends discovery (i.e. blink) messages depends on the total amount of (active and inactive) trackers in the system (default is one discovery message every 4.0 seconds).

### Changes

- Improved calculation of drift statistics (used for evaluating the clock synchronization).
- Improved calculation of range statistics (used for evaluating the range exchange between anchors and trackers/pucks).
- Improved ranging between pucks during anchor alignment by selecting anchor with best RSSI value.
- Improved communication between anchors and tracking server.
- Main changes related to firmware:
  - Calculate additional debug and monitoring data for anchor synchronization.
  - Changed the rate at which active trackers send discovery (i.e. blink) messages from 0.5 seconds to 1.0 seconds.
  - Improved communication with battery gauge chip.
  - Improved configuration of the UWB radio chip.
  - Improved mechanism for sending non ranging related messages from anchors to trackers.
  - Improved the serial communication protocol (data transfer from server to anchors).
  - Prioritize serial communication over UWB communication in certain situations for faster communication between anchors and tracking server.
  - The LED light of trackers and pucks blinks green after sending a discovery message. If any anchor replies, the LED light blinks a second time (yellow if an anchor sends synchronization information, white if an anchor sends an acknowledgement message).

### Fixes

- Main fixes related to firmware:
  - Fixed a bug in double receive buffer mode.
  - Fixed a bug when sending multiple UWB messages without enabling the receiver in between.
  - Fixed a memory overflow when activating LED highlight.
  - Fixed a memory overflow when assigning trackers/pucks to a ranging slot.
  - Improved anchor synchronization.

## ZACTRACK-CLIENT 7.2.0

### Features

- FIXTURE ALIGNMENT WIZARD: Possibility to filter list of fixtures by calibration points.
- LIVE VIEW:
  - Dynamic grid resolution based on the current zoom factor (5 meter, 1 meter and 10 centimeter grid cells).
  - Now showing a caption for the current grid resolution.
  - Visualization for 'Special Fixtures' (OSC and MSC). The visualization can be enabled inside the fixture's 'Live Settings Dialog' and will provide visual feedback for the defined coordinate system and transformation.
- OSC FIXTURE DIALOG:
  - Added OSC arguments preview.
  - Introduced placeholders for adding the current position of the assigned actor to the OSC address string (see '?' button for details).

### Changes

- FIXTURE ALIGNMENT WIZARD: Number of selected fixtures is now limited to 60 instead of 20 (PRO).
- OSC/MSC FIXTURE DIALOG: Improved layout.

### Fixes

- FIXTURE MOVEMENT DIALOG/ALIGNMENT/FIXTURE CENTER DIALOG (i.e. context menu option 'Refine'): The fixture will now keep the current pan/tilt position (instead of moving back to default/home position) as well as the "Highlight Base Channel" values, if enabled.
- LIVE VIEW: Hide actor's position as soon as the actor went offline.
- OSC FIXTURE DIALOG:
  - Corrected the OSC address preview if mode 'Grid 2D' is selected.
  - Corrected the OSC address preview if the address contains multiple space characters.
- TRACKING SYSTEM DIALOG: Fixed application crash when the connection to the server is lost.

### **3.18.1.3 (2021-08-30)**

#### **ZACTRACK-CLIENT 7.1.3**

##### **Features**

- SYSTEM SETTINGS/GENERAL SETTINGS: Users can now change the default IP for the zactrack Wifi Puck (PRO).

### **3.18.1.2 (2021-08-04)**

#### **CORE 7.1.2**

##### **Fixes**

- Transmission of SpotMe (OUT) universe data is now done in real time instead of only once per second (MAESTRO).

#### **ZACTRACK-CLIENT 7.1.2**

##### **Changes**

- AREA INITIALIZATION WIZARD: Improved layout (MAESTRO).
- AREA INITIALIZATION WIZARD: Position and distance inputs are now in meter units instead of millimeter units (MAESTRO).

### **3.18.1.1 (2021-07-29)**

#### **CORE 7.1.1**

##### **Fixes**

- Fixed erroneous merge of IN universe and SpotMe OUT universe (MAESTRO).

#### **ZACTRACK-CLIENT 7.1.1**

##### **Changes**

- Improved wording (MAESTRO).

### **3.18.1.0 (2021-07-26)**

#### **CORE 7.1.0**

##### **Features**

- Added number of PosiStageNet (PSN) packets sent/received per second to analyzer.

##### **Changes**

- Forward amount of zones from console input to SpotMe devices (MAESTRO).
- Improved the real time calculation of dynamic fixture positions. Calculated alignment positions of fixtures with an assigned PSN ID are adjusted based on the incoming PSN position data.
- Now transmitting additional license information to connected clients.
- PSN tracking has been refactored to be more consistent with other tracking protocols.
- SpotMe height offset input covers two instead of one DMX channel (MAESTRO).

##### **Fixes**

- Fixed bug when writing DMX channel data in output universe (MAESTRO).
- Fixed possible exception when converting PSN packets to position data packets.

## ZACTRACK-CLIENT 7.1.0

### Features

- The client will now display a warning when the current show contains more actors than the system license allows for.
- The client will now display a warning when the current show contains more fixtures than the system license allows for.
- LIVE VIEW: Added option to show a background image of the stage. Users can select an image of the stage via 'System Settings' -> 'Client Settings' from the local file system. Supported file formats: 'jpg' and 'png'. Note that this is saved in the client application itself and is not part of the show.
- SHOW EDITOR/FIXTURE TYPES: Import and export functionality for one or multiple fixture types using the .zftf file format (zactrack proprietary file format).
- SHOW EDITOR/FIXTURES: Improved the user interface and error handling for setting up dynamic fixture positions.

### Changes

- Improved look and feel of the user interface (MAESTRO).
- Improved wording (MAESTRO).
- SpotMe height offset input covers two instead of one DMX channel (MAESTRO).

### Fixes

- Consistent color in logo icons.
- Fixed minor connection issue with the server API.
- ACTOR LIVE DIALOGS: Fixed rare application crash.
- ACTOR DETAIL DIALOG: Fixed possible application crash when parsing user input data (MAESTRO).
- FIXTURE ALIGNMENT WIZARD/REFINE: Fixed possible application crash when closing the wizard.
- FIXTURE ALIGNMENT WIZARD/REFINE: Fixed broken layout if more than five fixtures were selected.

## 3.18.0.3 (2021-06-01)

### CORE 7.0.1

#### Changes

- Adjusted a default config parameter value for the freeze filter to improve steadiness for high freeze values.

### RTLS 2.1.2

#### Changes

- Increased maximal allowed range from 40 meters to 45 meters.
- Position Solver: Updated certain default config parameter values for improved robustness against wrong range measurements.

#### Fixes

- Fixed rare problem during tracker firmware update.

## 3.18.0.2 (2021-05-28)

### ZACTRACK-CLIENT 7.0.2

#### Fixes

- SYSTEM CALIBRATION WIZARD/PREPARE: Removed placeholder image.

## 3.18.0.1 (2021-05-21)

### ZACTRACK-CLIENT 7.0.1

#### Fixes

- NETWORK SETTINGS DIALOG: Fixed some valid ip configurations not being possible due to erroneous validation check.

## 3.18.0.0 (2021-05-19)

### GENERAL

- First release compatible with PRO and MAESTRO systems.
- This release requires an installed 'system-maintenance' package version of 4.0.0 or above. Make sure to update the specified package before trying to install this one.

### CODEMETER 1.2.0

#### Fixes

- Fixed codemeter service sometimes not being restarted correctly.
- Fixed dongles not being recognized on systems with AMD64 architecture.
- Fixed dongle replugs sometimes not being recognized correctly.

### CORE 7.0.0

#### Features

- Added MAESTRO system type and functionality for calibrating and controlling SpotMe devices.
- Added PRO system type and made relevant logic compatible with package-based system.
- Added support for new PRO tracking systems API.

#### Changes

- Adjusted default battery mapping (PRO).
- Live tracker/anchor feedback is now enabled by default (PRO).
- The application now periodically creates an additional backup of live show state. If the main state file is corrupt or missing after hard-resetting the system, the state is restored from the backup file.
- The system will now generate default metadata for trackers without metadata as long as they have a recently updated position (e.g. virtual trackers from simulator).

#### Fixes

- Fixed fixture refinement never changing state if started with fixtures that are not in the server's show file.
- Fixed missing support for 3-byte runtime variables.
- Fixed possible exception due to log messages.
- Fixed potential crash due to concurrency issues when adding/removing listeners for tracking positions.
- Fixed potential exception while polling battery states (PRO).

### DISPLAY-CONTROLLER 1.4.0

#### Features

- Added support for 'MAESTRO' system type, which changes logo to MAESTRO logo and adjust interfaces accordingly.

#### Changes

- Optimized and improved displayed images.

### ZACTRACK-CLIENT 7.0.0

#### Features

- Added client version for MAESTRO systems.
- ACTOR DETAIL DIALOG: Users can now select eui numbers from currently available trackers by clicking 'Select Tracker'
- ADVANCED SETTINGS/ANCHOR MAP (new): Can be used to set default anchor mappings, which will then be automatically applied when creating anchors (i.e. anchor ids/euis are automatically set according to specified map). Can only be used on PRO systems.
- FIXTURE ALIGNMENT WIZARD:
  - Added support for zactrack Wifi Puck (PRO)
  - Simple mode on MAESTRO systems now uses four calibration area points in combination with the tablet sensor
- FIXTURE CENTER DIALOG (new): Can be used to refine light beam centering of a fixture for a specific point using a light puck or the tablet sensor.
- FIXTURE MOVEMENT DIALOG/ALIGNMENT: Added context menu option 'Refine' for alignment points, opening the FIXTURE CENTER DIALOG.

- **FIXTURE MOVEMENT DIALOG/AUTOFUNCTIONS:** Added 'From Tracker' button, allowing users to create autofunction points from tracker positions
- **FIXTURE TYPE ANGLE MEASUREMENT WIZARD (new):** Can be used to measure the true pan/tilt spread of fixture types with inaccurate manufacturer specifications. This requires an actual fixture of the particular type that is placed on the floor in an upright position. Access the wizard in the **FIXTURE TYPE DETAIL DIALOG** of the specific fixture type.
- **NETWORK SETTINGS DIALOG:** Subnet for **LIGHT** interface is no longer limited to class A, B or C.
- **SYSTEM CALIBRATION WIZARD:**
  - Added calibration workflow for **MAESTRO** systems (**AREA INITIALIZATION**). The area can be initialized either by using the distance measurement device or by entering the relevant positions and distances manually.
  - New option 'Reinitialize System (Measure)', which allows users to reinitialize the coordinate system using a distance measurement device (**PRO, SMART**).

### Changes

- Dialogs throughout the application can no longer be opened more than once at the same time (e.g. by accidentally double-clicking on a list item).
- The application now shows/hides several features depending on the system type of the connected zactrack server.
- **FIXTURE ALIGNMENT WIZARD/PREPARE:** When adding new nodes in advanced mode, the default selection is now the first unused node in the list (instead of always the first one).
- **FIXTURE ALIGNMENT WIZARD/REFINE:** Refinement must now be started manually for each point if a tablet sensor is used.
- **FIXTURE ALIGNMENT WIZARD:** No longer able to open fixture alignment wizard without an active server connection
- **NETWORK CONFIG DIALOG:** No longer allowing ip configuration in 10.10.0.0/16 subnet due to compatibility issues with tracking server (**PRO**).
- **TRACKING SYSTEM DIALOG:** 'Web Interface' button now opens url <http://serverip:15555> on **PRO** systems.

### Fixes

- **CHANGELOG DIALOG:** Fixed formatting errors leading to version headers not being display correctly.

## 3.17.2.1 (2021-05-11)

### CORE 6.2.1

#### Features

- Added current server date and time to analyzer.
- Added highest tracker update rate to analyzer (in addition to average update rate).

#### Changes

- Changed freeze filter tracking behavior: If the freeze filter is at 100% and the tracker goes offline, the current tracker position is kept as long as the freeze filter remains at 100%.
- Offline and unstable trackers no longer influence the average update rate shown in analyzer view.

#### Fixes

- Fixed potential exception when retrieving tracking system information.

### RTLS 2.1.1

#### Changes

- **Position Solver:** New config parameter to output position only if quality is high enough (default: >50%).
- **Position Solver:** New config parameters for improved selection of input ranges (no difference to previous version with default parameter values).
- **Position Solver:** New config parameters for optional z-axis boundary check before outputting position (no difference to previous version with default parameter values).
- **Position Solver:** New config parameters for defining the min amount of ranges needed (no difference to previous version with default parameter values).

#### Fixes

- Fixed rare exception when switching between main and backup system.

## ZACTRACK-CLIENT 6.2.1

### Changes

- Removed gray color from list of possible actor colors due to difficult visual differentiation from gray background.

## 3.17.2.0 (2021-03-05)

### CORE 6.2.0

#### Fixes

- Fixed PosiStageNet (PSN) fixtures blocking channels for universe merges leading to certain channels being erroneously set to 0.

### RTLS 2.1.0

#### Features

- Stable version of anchor time synchronization, a.k.a. anchor link (enabled by default, may be disabled with 'dev.anchor\_link\_enabled=false').
- Increased max supported anchors from 8 to 11. Default configuration allows to connect 11 anchors, may be changed with 'dev.twr.seats=11'.
- Increased max supported trackers from 10 to 30. Default configuration allows to connect 10 trackers, may be changed with 'dev.twr.slots=10'.
- Preferred master anchor: it is possible to define a specific anchor priority list via the config file with 'dev.preferred\_master\_anchors'. The system then deterministically selects of all connected anchors the anchor with the highest priority as master anchor.
- First beta version of using ranges from multiple trackers to output a tracking position based on some or all (depending on the used strategy) of these range values. Key idea is that using multiple trackers for calculating one single position minimizes noise and non line of sight problems such as reflections or weak signal strength.
- Main features related to firmware:
  - Faster tracking (i.e. faster TDMA (Time-division multiple access) scheme) by enabling double buffering for receiving UWB messages as well as some TDMA parameter optimization.

#### Changes

- Refactored and improved the management/controlling of connected anchors (includes setting the anchor slot number, anchor master flag and tracker slot definition as well as switching between the different operation modes (default mode, listening mode and ranging mode)).
- Refactored usage and definition of ranging related parameters (i.e. parameters that define the TDMA structure). These parameters may also be defined explicitly via the config file and may be updated via the thrift API.
- Refactored and improved how the current range stream states (stable, unstable or offline) are calculated. In addition, a precise receive percentage of received range values is available for monitoring.
- General refactoring of some classes and packages as well as removing unused or deprecated code.
- Send 'ping' message to anchors once per second instead of two times per second. Reason: less frequent disruption of receiving UWB messages due to UART I/O.
- Main changes related to firmware:
  - Current firmware version: bootloader = 8.0, application = 14.0.
  - Removed last occurrence of dynamic memory allocation.
  - WDT (watch dog timer) is now configured to run also if CPU is in sleep or halt mode.

#### Fixes

- Fixed a small bug in range filtering: median range value was calculated wrong in some special cases.
- Fixed a bug during tracker firmware update: a lock was not unlocked in every situation and the anchor mode was not updated in every situation.
- Fixed a bug in reading the latest log file via thrift API.
- Fixed a bug in initializing the logger framework where some log messages would only be logged to console and not to external files.
- Main fixes related to firmware:
  - Fixed a bug in calculating the clock drift of trackers.
  - Fixed a bug in initializing communication with the battery fuel gauge chip.

- Improved communication with the Decawave chip.
- Tracker slot management implemented more sophisticated (i.e. minimize tracking interruption time).
- Improved stability of UWB DFU (device firmware update) process in case of receiving undesired UWB messages.
- Improved implementation of anchor time synchronization, a.k.a. anchor link.

## ZACTRACK-CLIENT 6.2.0

### Changes

- SERVER DISCOVERY DIALOG: Improved server discovery in network environments with unusual configurations.

### Fixes

- CREATE FIXTURES DIALOG: Fixed wrong creation preview for 'PosiStageNet' fixtures.
- FIXTURE CALCULATION DIALOG: Fixed users not being able to exit dialog if fixture hasn't been uploaded to server.
- SHOW EDITOR/FIXTURES: Fixed wrong data display for 'PosiStageNet' fixtures.

## 3.17.1.1 (2020-10-31)

### RTLS (2.0.2)

#### Fixes

- Fixed issues during application deployment.

## 3.17.1.0 (2020-10-30)

### CORE (6.1.0)

#### Features

- Added support for osc mode 'Range (float)'
- Added support for osc address string with placeholders
- Added config option 'osc.analyzer'. When set to true, the analyzer will show the output osc address strings for each actor/fixture combination.

#### Changes

- Lux timeout for light beam centering with pucks can now be set in core.properties (fixture.alignment.uwb\_lux\_timeout)
- Now fetching current master anchor configuration from tracking server.

#### Fixes

- Fixed possible crash during log message filtering.
- Fixed potential exception when trackers come offline/online.

## WEB-CLIENT (1.2.0)

### Changes

- Added 'View Logs' link to footer
- Updated layout to dark theme

## ZACTRACK-CLIENT (6.1.0)

#### Features

- ACTOR LIVE VIEW: Now showing battery percentage in dialog title if available.
- CALIBRATION WIZARD/TAGS: Now showing number of available pucks if SIMPLE MODE is selected.
- FIXTURE LIBRARY DIALOG:
  - Redesigned dialog for improved usability
  - 'Special Fixtures' (e.g. MSC, OSC, PSN) can now be created by selecting them under 'Other Protocols'
- FIXTURE ALIGNMENT WIZARD
  - Added support for 'TABLET' light sensor
  - Added advanced option 'Force Tracker Heights To Zero', which sets the z component of all tracker positions to 0.
- LIVE VIEW: Added axis labels

- OSC FIXTURE DIALOG
  - Added support for osc mode 'Range (float)'
  - Added support for osc address string with placeholders (see '?' button for details)
  - Added address string preview
- SHOW UPLOAD: Improved user feedback for issues during show upload.
- SYSTEM SETTINGS/CALIBRATION: Users can now select calibration pucks from currently available trackers by clicking 'Select Tracker'
- TRACKING SYSTEM DIALOG: Now showing current master anchor.

### Changes

- Added warning icon to deletion messages and system calibration warnings
- CALIBRATION WIZARD: 'Simple Mode' is now always enabled by default
- CALIBRATION WIZARD: Now selecting colored calibration pucks by default if no other selection has been saved and the pucks are available
- CALIBRATION WIZARD: No longer showing calibration error at the end. Calibration quality is instead categorized as GOOD, OK or BAD. Click on the large checkmark to see details.
- CALIBRATION WIZARD/TAGS: Available tags are now continuously updated if SIMPLE MODE is selected.
- FIXTURE DETAIL DIALOG: No longer showing truss option if trusses are disabled in SYSTEM SETTINGS.
- POINT DIALOGS: Changed copy button layout from icon to label for enhanced clarity

### Fixes

- Fixed keyboard not closing after exiting various dialogs
- FIXTURE ALIGNMENT WIZARD/PREPARE: Fixed application crash when starting alignment in advanced mode for the first time without changing selection
- FIXTURE DETAIL DIALOG: Fixed bug where users could save fixtures with colliding in and out universe channels
- FIXTURE DETAIL DIALOG: Fixed erroneous patching collision check
- FIXTURE LIBRARY: Fixed invalid channel configuration in fixture 'Ayrton Bora (Extended)'
- FIXTURE LIBRARY DIALOG: Fixture types with invalid channel configurations can no longer be created.
- FIXTURE TYPE DIALOG: Fixed fixture type name not being saved correctly
- FX POINT DETAIL DIALOG: Fixed users not being able to change autofunction point positions
- LIVE VIEW: Fixed actor status sometimes not being updated correctly after downloading show from server.
- MSC FIXTURE DIALOG: Fixed broken layout of dropdown menus
- SHOW EDITOR/UNIVERSES: Users can no longer remove last remaining universe
- UNIVERSE DETAIL DIALOG: Universe type (IN/OUT) can no longer be changed after creation due to type changes frequently leading to various patching issues. If you want to change the universe type, simply delete the universe and create a new one.

## 3.17.0.2 (2020-04-21)

### ZACTRACK-CLIENT (6.0.1)

#### Fixes

- DISTO DIALOGS: Fixed incorrect transformation of received disto positions, leading to erroneous point positions
- UNIVERSE DETAIL DIALOG: Fixed target addresses not being loaded correctly for SACN universes.

## 3.17.0.1 (2020-03-17)

### RTL5 (2.0.1)

#### Fixes

- Fixed tracking system failing after changing slot configuration more than 99 times.

## 3.17.0.0 (2020-03-13)

### General

- Added service 'fan-controller', which smartly controls fan speed based on current workload. Only works on hardware shipped after 2020-03-01. Fans in earlier systems will continue to run at full speed.

## CODEMETER (1.1.1)

### Fixes

- Fixed service taking a long time to stop during a soft reboot.

## CORE (6.0.0)

### Features

- Added tag firmware update functionality.
- Added support for sACN protocol 'DRAFT'
- Added ability to set netmask of the LIGHT network interface.
- Added tracker LED highlight functionality

### Changes

- Improved logging performance
- Now correctly returning system info to clients for SMART tracking system.
- Optimized application memory usage
- Reduced traffic between client and server during busy live shows
- FIXTURE ALIGNMENT: If the centering procedure was started with multiple fixtures, fixtures now move to their next target pan/tilt (if available) while another fixture is still centering.
- FIXTURE ALIGNMENT: The dimmer channels of all involved fixtures that are not currently being moved are now automatically set to 0 during the centering procedure.

### Fixes

- Fixed LIGHT network interface not being detected correctly if ip does not start with '2' or '192'.
- Fixed potential concurrency exception when using more than one client simultaneously

## DISPLAY-CONTROLLER (1.3.0)

### Features

- Added loading display mode: Now showing static 'Starting...' screen after boot while applications are still loading.
- Added recovery mode: Display has red background and displays error message if zactrack services cannot be detected.

### Fixes

- Fixed connection check blocking application for several seconds due to timeout parameter not working as intended.

## FAN-CONTROLLER (1.0.0)

### General

First release of FAN-CONTROLLER container. Smartly controls fan speed based on measured temperature. Only works on supported hardware.

## MANUAL (1.2.0)

### Changes

- Reduced size of images used in manual to temporarily decrease image size

## RTLS (2.0.0)

### Features

- First stable version of firmware update over uwb transport for tags and pucks:
  - Update only bootloader, only application or both.
  - Firmware version check: check for every tag/puck that goes online if update is necessary based on version number (bootloader and application).
  - Possibility to force updates without firmware version check
- Important UWB-messages contain RSSI values.
- Led highlight for selected nodes for easier identification. during led highlight the led blink and color behaviour changes temporarily.

## Changes

- Config file is read only from now on.
- Anchor position solver: dynamic error threshold. threshold will increase by fixed step size after each duration for faster convergence.
- Restarting server will restart connected anchors as well.
- Changes related to firmware:
  - Firmware version is split into release number and build number. build number is set to zero for release versions and incremented by one for every commit to preserve unique version numbers.
  - Current firmware version: bootloader = 7.0, application = 13.0.
  - Main changes in bootloader: bug fix in reading version number, bootloader inactivity timeout reduced from 120 sec to 30 sec, enter bootloader with GPREGRET after softreset.
  - Main changes in application: force tx clock enabled, uart api bug fixes, clock drift bug fix, new LED blinking behaviour for tags and pucks, reduced amount of spi calls to dw chip, firmware update over uwb transport, led highlight functionality.

## Fixes

- Bug fixes in initialization and teardown of anchor connection if network cables (switch to server or switch to anchor) are unplugged or plugged.

## ZACTRACK-CLIENT (6.0.0)

### Features

- Added TRACKER FIRMWARE UPDATE functionality
  - The client will display a warning if patched trackers (or pucks) with an invalid (or out-of-date) firmware are detected. Users will then be guided to the update dialog.
  - Users can now update tracker firmware by selecting trackers in the TRACKING SERVER dialog and clicking 'Update Selected', which will update trackers via UWB.
- Added MIDI SHOW CONTROL (MSC) support
  - To create an MSC fixture type, press '+' in SHOW EDITOR/FIXTURE TYPES and then 'Create Special'.
  - Users can set and modify a variety of different msc-related options directly in the fixture type.
  - The dialog allows users to specify multiple target ips/ports, custom (relative) coordinate systems, axes ordering and formats.
  - Create a fixture and assign it to any tracked actor to enable msc output to the specified ip address(es).
- OSC FIXTURE TYPE DIALOG: Added the option to embed value into address string
- TRACKING SERVER DIALOG: Added tracker list, showing current tracker information similar to anchor list (toggle with tabs)
- TRACKING SERVER DIALOG: Added 'Highlight' option to tracker/anchor context menu, which lets the LED of the selected node blink rapidly for 5 seconds.
- NETWORK CONFIGURATION: Added ability to set netmask of the LIGHT network interface.

### Changes

- Now showing a warning message if client version is incompatible with server version (in addition to popup dialog)
- INFO DIALOG: CORE and INSTALLED CLIENT version information can now be extended/collapsed and is no longer visible by default.
- LIVE VIEW/ACTOR LIST: Adjusted battery icon thresholds.
- NETWORK CONFIGURATION: No longer allowing invalid LIGHT ip addresses
- SHOW EDITOR/ACTORS: Now showing state instead of online status. GREEN means online and ranging, ORANGE means online and in discovery, GRAY means offline.
- TRACKING SERVER DIALOG: Coordinator info and link buttons are now hidden for SMART systems
- TRACKING SERVER DIALOG: Now showing build number for tag and anchor firmware, in addition to major version numbers.

### Fixes

- Fixed issue where a puck would sometimes be falsely detected as a tag

### 3.16.1.0 (2020-02-12)

#### CODEMETER (1.1.0)

##### General

- Internal changes to deployment procedure

#### CORE (5.1.0)

##### Fixes

- Fixed software starting in debug mode by default

#### DISPLAY-CONTROLLER (1.1.0)

##### Changes

- Now showing connectivity icon next to system time if there is an active internet connection
- Now also showing ips from usb tethering
- IP sorting is now consistent across reboots

#### MANUAL (1.1.0)

##### General

- Internal changes to deployment procedure

#### RTLS (1.1.0)

##### Fixes

- Fixed software starting in debug mode by default

#### WEB-CLIENT (1.1.0)

##### General

- Internal changes to deployment procedure

#### WEB-CLIENT (1.1.0)

##### General

- Internal changes to deployment procedure

#### ZACTRACK-CLIENT (5.0.3)

##### Changes

- CALIBRATION WIZARD: Changed 'Calibration Error' to 'Calibration Result'

### 3.16.0.0 (2020-01-24)

#### General

- This is the first release of the main ZACTRACK SOFTWARE PACKAGE for zactrack SMART systems. Starting with this release, zactrack applications will be shipped in self-contained packages, which can be installed/updated by endusers through the zactrack system update page (<http://SERVERIP:8080> while connected to the zacnet network).
- This initial release package contains the following applications for zactrack SMART systems:
  - Service 'Codemeter' (Version 1.0.0): Used for validating and registering application licenses.
  - Service 'Core' (Version 5.0.0): Central zactrack server application, responsible for all network- and tracking-related tasks.
  - Service 'Display Controller' (Version 1.0.1): Used to display information on the integrated LED display.
  - Service 'Manual' (Version 1.0.0): Zactrack software manual, which is available on <http://SERVERIP:8081> while connected to the zacnet network.
  - Service 'Rtls' (Version 1.0.0): Zactrack real-time locating system server, responsible for coordinating uwb trackers and anchors and calculating positions based on ranging data.
  - Service 'Web Client' (Version 1.0.1): Exposes a landing page on <http://SERVERIP>, with links to apk files, documentation and update page.
  - APK 'Zactrack Client' (Version 5.0.2): Zactrack Client for Android tablets.
  - APK 'Autofunctions' (Version 5.0.0): Autofunctions application for Android tablets.