Manual of the SensFloor® Care Ward Terminal

Software Versions:

Station: 3.2.0

Activity: 2.2.0

Live: 3.3.0

Manager:1.1.0

Manual Ward Terminal			FUTURE SHAPE
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Content

1   Introduction

This manual addresses caregivers in hospitals, nursing homes and senior centers who need to surveillance several rooms or apartments by means of a ward terminal either from a central station (ward) or by means of a mobile device.

The purpose of the ward terminal is to aggregate information from so-called SE10 room terminals installed in patients' rooms that are equipped with the floor sensor system SensFloor®. The sensor system measures footsteps of people by means of an electronic underlay invisibly installed under the floor covering. By means of the SensFloor it is possible to capture movements of the residents in their rooms and to record, display and analyze these movements by means of the central ward terminal.

In most application cases, a touch screen monitor is directly attached to the ward terminal that displays the status of the rooms, shows events and alarms and offers interactive functions to the care personnel (see Fig. 1). As the ward terminal is essentially a web server, it is also possible to connect to it through a wired or wireless network and display the graphical user interface (GUI) by means of a web browser on a mobile or stationary client device such as a tablet or a PC.

This document describes the functions of the ward terminal as they are accessible after the SensFloor® underlay, the SE10 room terminal and the ward terminal have been installed. The installation of the underlay, the electrical installation of the room- and ward-terminals and the basic configuration of the room-terminal can only be done by trained personnel who must refer to the manuals "E_SensFloor_Installation_Manual" and "E_Manual_SE10_Room_Terminal". Technicians who want to connect the SensFlor Care system to other devices, such as an indoor call system, for instance, can refer to the maual "E_SensFloor Care API".

For the general operation of the SensFloor® System consult the manual "E_Manual_SensFloor_System".

Note that at some places in this manual and in the graphical user interface it describes, numbers appear in hexadecimal notation (hex) that uses the symbols A to F for the decimal numbers 10 to 15.

Expressions that appear in the GUI are printed in ***bold face*** in this manual so that they can be found more easily. In addition, there is a glossary at the end of this manual.

The manual is organized in different sections that follow the logics of the interactive tap-zones, buttons, and checkboxes. The entire ward terminal can be operated by touch- or click gestures. The connection of a USB keyboard is supported but not necessary. However, for some users the connection of a USB mouse may be advantageous.

By default, a detailed training is provided by the manufacturer's experts after installation of the SensFloor® care system. Further training material is available from the website www.future-shape.com or by email from the support team at support@future-shape.com. However, another effective way to get accustomed to the various features and functions of the system is to use a room with SensFloor® as test site before the residents move in. For this room, sensor data should be collected by moving in the room and by intentionally activating the alarms pre-configured by the installation team (see Fig. 4). By observing the live movements in the room on the ward terminal, the effects of the various settings can be tested. The recorded data can be used to understand the principle of the history-, replay- and report functions of the ward terminal.

At the end of this manual there is a collection of full-page images that serve as a short-manual or for quick reference.

Please do also pay attention to the frequently asked questions and the sections about safety and certifications at the end of this manual.

Most users can skip the next section "Physical Setup of the Ward Terminal" as this setup is usually handled by the installers of the SensFloor® Care system. However, in situations when connections accidently have been cut or the terminal must be moved to another place, the users can refer to this section for the reinstallation.

2 What is new?

If you have an earlier version of this document, you might be interested in what has changed in the software and consequently in the description within this manual. The important changes seen from an end-user´s perspective, are shown in red.

Changes in Station 3.2.0

- Number of external sensors increased to three
- Added user-feedback when updating a room's alarm
- Added user feedback when leaving the alarms page with changes made but not sent to the room(s)
- Alarm icons on the alarms page are now clickable
- Added support for 12h AM/PM time display
- Added option to hide the number of static/moving objects
- Added ability to hide the options-menu, the rooms state sub-menu and the alarms config button
- Added a way to apply the hidden/shown menu options and time format to localhost only
- Added support for different backend-frontend time zones
- Added direct link to playback an alarm event to the past alarms list

Changes in Live 3.3.0:

- Number of external sensors increased to three
- Active alarms are shown on the frontend
- Added support for different backend-frontend time zones

Changes in Activity 2.1.0:

- Number of external sensors increased to three
- Added support for different backend-frontend time zones
- Added support for routes and query parameters

Changes in Manager 1.1.0:

- Added support for the pushover app
- Added support for the systems app

3   Physical setup of the Ward Terminal

The ward terminal is an embedded computer based on the well-known Raspberry Pi® platform, which is equipped with a real-time clock (RTC) and a specific Future-Shape software on a memory card in Micro-SD format. One label on the box contains the serial number (QR code), the others carry information about how to connect to the device and its services.

The operation of the ward terminal requires a working LAN network at the installation site. The router within this network assigns IP addresses to the connected devices. To acquire the information from the rooms equipped with SensFloor, the ward terminal must be connected to the same LAN that the SE10 room terminals are connected to. The physical connection is done by means of a LAN cable plugged into the ward terminal's RJ45 socket (see image below). If the network's parameters are configured accordingly by the network's administrator, the ward terminal obtains its individual IP address we call WTIP from now on. The network's administrator can find out which WTIP was assigned to the ward terminal by the router.

After powering up the ward terminal by means of its AC/DC adapter (see image below), the device searches for all room terminals in the same sub-network and connects to them to obtain sensor and event data of the rooms. The ward terminal's web server provides several views on these data as web applications accessible by means of an ordinary web browser run on any client PC/tablet/mobile phone within the local network. To see the apps, the browser must be directed to the WTIP complemented by the port number written on the ward terminal's label. If WTIP is 192.168.5.5, for instance, entering http://192.168.5.5:10000 in the client's web browser displays the default room overview of the ward that is called "Station App".

The default view is also displayed on a touch monitor attached to the ward terminal's HDMI connector. To interact with the GUI by means of touch gestures, a USB connection between the ward terminal and the monitor is necessary (see Fig. 1).
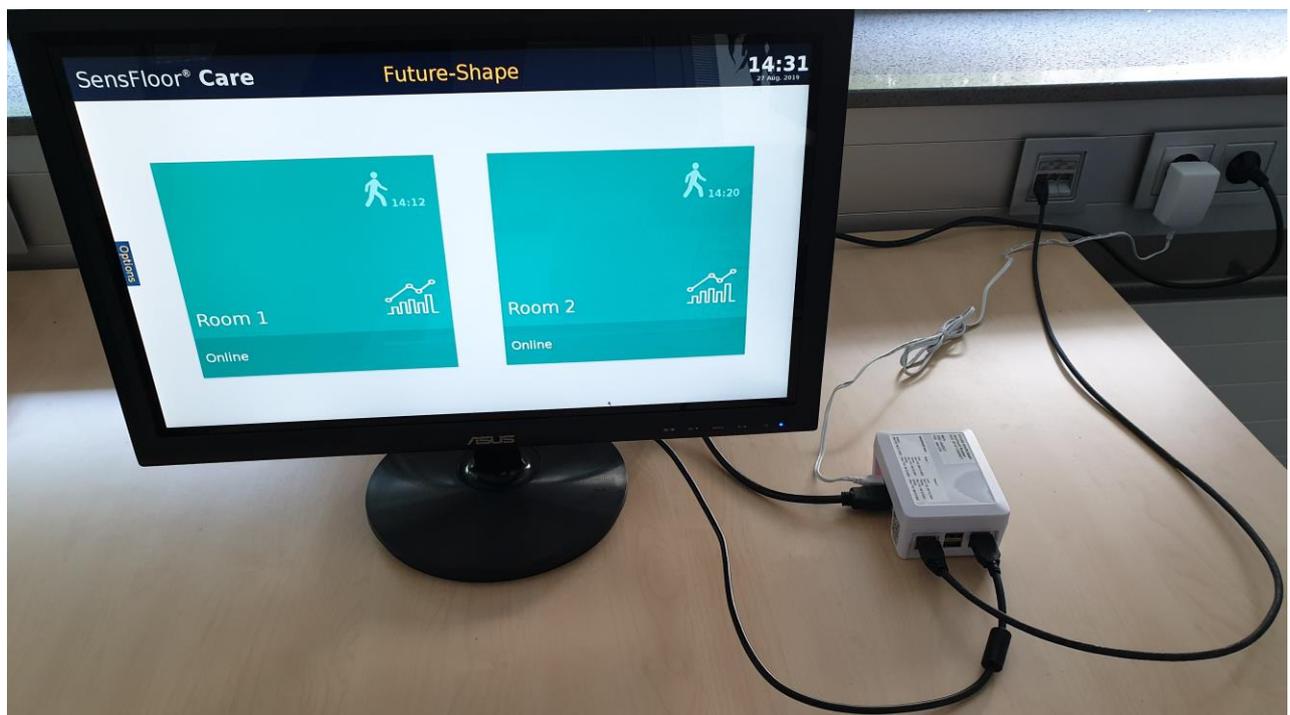

Fig. 1: Ward terminal (white box) connected through HDMI and USB to a touch monitor and to the network via LAN cable.

All cables should be in place when the ward terminal is powered up. The boot up process takes about two minutes after which the room overview described in the next section, is shown on the screen.

4   The Room Overview

The main view of the ward terminal is an overview over the status of all the rooms of the ward that are equipped with SensFloor.

Fig. 2 shows an example with six rooms.

Each room is represented by a square-shaped tile with five zones: four icons at the corners of the upper area and one multifunctional bar at the bottom.

The icon on the upper right corner provides information about when the last activity was encountered in the room. The other icons are interactive tap zones (see below).
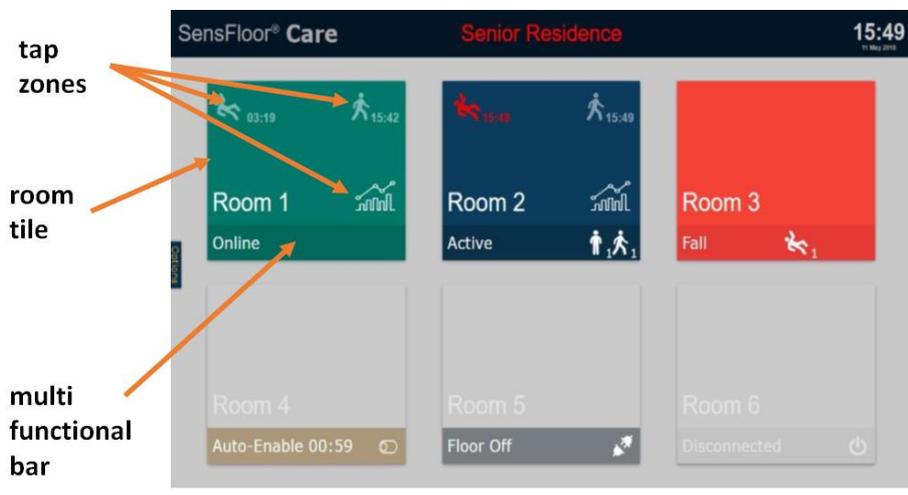

Fig.2: Example of an overview with six rooms.

4.1   Colors of the Rooms' Tiles

The upper part of the tiles appears in four different colors each of which indicates a specific status of the associated room:

Green: The SensFloor system is working but no activity is detected, i.e., no foot touches the floor. This either means that the room is empty, or the person is in bed. The time of the latest activity is indicated in the upper right corner (see Fig. 2, room 1) and the task bar displays *Online*.

Blue: There is activity in the room. In this case, icons in the lower right corner of the tile indicate the number of standing or walking people (see Fig. 2, room 2) and the task bar shows *Active*.

Red: The tile becomes red when the SensFloor has detected a person lying on the floor e.g., after a fall. This situation is also indicated by a corresponding icon and the word *Fall* in the task bar (see Fig. 2, room 3). As soon as the fall situation is over (e.g., the person got up from the floor), the tile becomes blue or green again. In that case, the recent fall situation is indicated by a red fall-icon and a time stamp in the "recent alarms"-section in the upper left corner of the tile (Fig.2, room 2).

Grey: This color indicates that the SensFloor function for the corresponding room is switched off. This situation can have one of the following reasons, which is also indicated in the task bar:

- *Auto-Enable*: The SensFloor has been switched off (e.g., for cleaning) by tapping on the task bar. In the default configuration, the SensFloor will automatically switch on after a configurable time (see Fig. 2, room 4). The remaining time until automatic activation is indicated in the task bar. The floor can be switched on manually at any time by tapping on the task bar again.
- *Floor Off*: The SensFloor is not powered anymore (see Fig. 2, room 5). This can happen if the power supply of the floor has been switched off manually by means of a key switch or a switch in the electrical installation box of the corresponding room. The floor will return to normal function automatically as soon as the power supply is switched on again. In any other case, there is a problem with the power supply and support must be contacted.
- *Disconnected*: The ward terminal has lost contact to the corresponding room. Usually, this indicates a problem of the IT-network. The local IT-Administrator should be contacted for support.

In any of these cases it should be noted that the SensFloor system of the corresponding room is temporarily not functional such that alarms cannot be transmitted to the ward terminal! However, all events that deactivated the SensFloor are logged together with a time stamp in the corresponding room terminal's log file. Therefore, any irregular situation can be investigated afterwards.

There are some more colors the tiles can adopt for a short time, when certain events have been defined as alarms. The tile becomes yellow, for instance, when the person leaves the room. Since leaving the room is not a continuous process, the yellow coloring of the tile is visible only for a few seconds. The room leaving event is still visible afterwards via the alarm indicator in the upper left corner of the room tile (see below). The meaning of the colors will be explained together with the alarm configuration in one of the next sections.

4.2   Interactive Tap Zones

There are four areas within the tile of the room that can be tapped to invoke other functions:

 Tapping on a room's name leads to a *live view* of the current activity in the room. This function is described in the section ***Live View***.

 Tapping on the statistics symbol leads to the *History View*, in which alarms, events and activity in the room can be analyzed with respect to a longer period in the past. This function is described in detail in the section ***History View***.

 In the upper left corner, recent alarms are displayed in a scrollable list. Which alarms are indicated, depends on the actual configuration: by default, these are fall alarms but the user can define others as well. Details are described in the section "Alarm Configuration". When tapping on the symbol, the most recent alarm is acknowledged by moving it down the list and turning its color from red to grey (see Fig. 2, room 1). This way, a care person can indicate to the colleagues that the current alarm is already under investigation. Of course, an alarm should only be acknowledged, if appropriate measures are taken to deal with the situation that caused the alarm. **In reverse this means, whenever there is a red alarm icon on any room's tile, this alarm is not yet handled such that immediate inspection of that room is mandatory!** 24 hours after an alarm, it is automatically removed from the list. **Tapping on a recent (grey) alarm, shows a playback of the event in the activity app (section 6).** This function is very useful to investigate an event in detail that led to an alarm.

 The task bar shows the current activation status of the floor, the status of the people in the room and an icon for the current event (see previous section). As described earlier, tapping on the task bar will switch off the SensFloor function for this room and the ***Auto-Enable*** counter will appear (see Fig. 2, room 4).

 When the floor reactivates (either automatically after the ***Auto-Enable*** timer has run out or manually by tapping on the task bar), the floor will perform a short recalibration cycle during which the task bar becomes blue. This recalibration function is also useful after new furniture or carpets are installed in the room. Recalibration will filter out the permanent sensor activity eventually caused by these new static objects. Please refer to the manual "E_Manual_SensFloor_System" to learn more about when a recalibration is required.

 When the floor is switched off permanently by means of the switches in the ***Options Menu*** (see next section), the task bar becomes red to inform the user that currently the system is not functional, and no new alarms can be displayed on the ward terminal.

4.3 The Options Menu in the Room Overview

Tapping on the *Options*-Tab at the left edge of the screen slides in a configuration menu. In the upper part, the SensFloor system of individual rooms can be switched off permanently. In that case, there is no *Auto-Enable* function, and the task bar of the room becomes red (see previous section). This function should only be used when the SensFloor system is not required for this room.

In the panel *Alarm Sounds*, tones for individual alarms can be switched on or off.

Fig. 3: The options menu.

If a touch monitor is used for the ward terminal, the sound is played over the HDMI connection if the monitor provides this feature.

In the lower left corner of the *Options* menu, the desired alarm events can be configured. For every room, those alarms are available that have been configured in the corresponding room terminal. Please refer to the manual "E_Manual_SE10_Room_Terminal" for learning how to define the available alarms in a room. Note, that alarms that have not been defined in the room terminal do not appear in the list of selectable alarms in the ward terminal's *Alarm Configuration*!

A room can be selected by tapping on its name. All available alarms for this room are shown as icons in the tab. In the right half of the screen, any of the alarms can be selected from the drop-down list or by clicking on the corresponding alarm icon in the rooms list. The icon of this alarm is then highlighted in the color that is assigned to the alarm. A selected alarm can be configured as follows: the alarm can be generally disabled, which will leave its icon in the room tab greyed out. Another possibility is to define an active period by choosing a time interval (see Fig. 4).
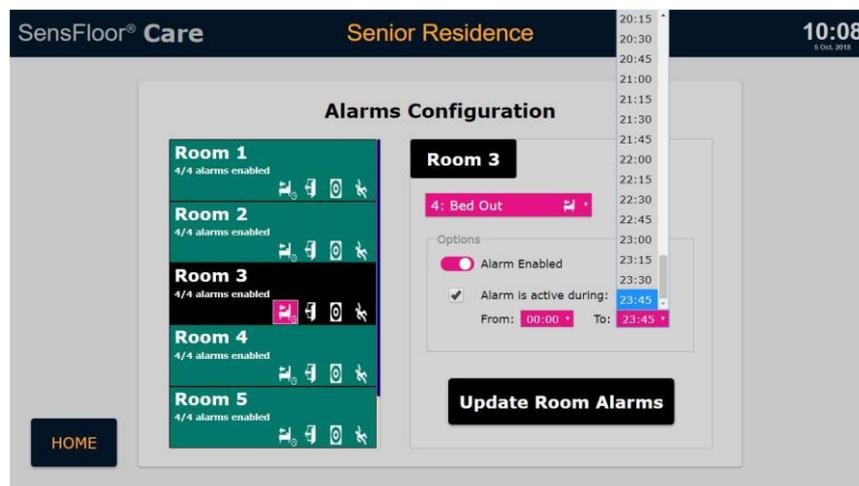
Fig. 4: Alarm configuration. Here, room 3 is selected for configuration and an active period is selected.

This can be used, for instance, to produce a "leaving room alarm" only during the night The question which event to configure as alarm depends on the condition of the person living in the room: to assist a frail person to visit the toilet at night, configuring a *Bed Out*-event as alarm during the night is helpful, for instance. If a person is suffering from dementia, making the *Room Out*-event an alarm can minimize the danger of unnoticed disappearance.

When all alarms are properly configured, *Update Room Alarms* must be tapped to save the changes. Tapping *Home* returns to the room overview.

Under *Language* in the Options menu, the language of the whole GUI can be changed. When changing the language to English, the AM/PM time display format is automatically activated. The format can be changed manually in the Layout panel (see section 4.5).

4.4   Types of Events

Whereas events like a fall are usually not specific to special areas in the room, some alarms depend on the position of furniture, like the bed, or on the location of the doors. Therefore, the available alarms must be defined in the room terminal of every individual room as is described in the corresponding manual. During this configuration, which can be done by trained personnel only, some parameters can be selected such as the *Region* in which the event shall be detected or the *Relay Outputs* of the room terminal that should be triggered. However, some alarms have individual parameters that depend on their special nature. The following table describes all possible alarms, the individual parameters, and some application cases:

Event/Icon	Description	Parameter	Application Example
Presence	Person/object activates floor sensors in a region for a given duration	***Duration***	Calling assistance at night, switching on orientation lights
Movement	Person walks in a region with a velocity higher than a given value	***Velocity***	Detecting insomnia or hyperactivity
Count	More than a given number of people are in a region	***Number***	Detecting when a patient confounds his/her room
Fall	Person or water pool of liquid on the floor	**-**	Fall detection
Toilet	Person stays in the bathroom for a given duration	***Duration***	Detecting accidents in the bathtub, switching on orientation lights
Toilet In	Person walks into the bathroom	Bathroom equipped ***with SensFloor***?	Calling assistance at night
Toilet Out	Person leaves bathroom	Bathroom equipped ***with SensFloor***?	Verifying that person goes to bed again
Toilet Timer	Person stays in the bathroom for a given duration (no SensFloor in bathroom)	***Duration***	Detecting accidents/immobility in bathroom
Bed In	Person goes to bed	**-**	Ensuring that person gets enough sleep
Bed Out	Person leaves bed	**-**	Frequently leaving the bed at night indicates health problems
Bed Timer	Person has not left the bed for a certain duration	***Duration***	Detecting immobility or strokes in bed
Room In	Person enters the room	Corridor equipped ***with SensFloor***?	Detecting whether person has come back from an excursion
Room Out	Person leaves the room	Corridor equipped ***with SensFloor***?	Detecting run away patients
Ext. Sensor	External sensor is activated	**Number** (1…3), contact **closed/opened**?	Integrating a movement sensor/burglar alarm or an acknowledgement button/RFID reader

Fig. 5: All events that can be configured in the room terminal.

For some of the alarms during configuration, the information must be given whether an area is equipped with SensFloor or not. Based on this information, the system selects an appropriate algorithm to detect whether an event is fulfilled or not. If the bathroom is equipped with SensFloor, the system can simply use the sensors in the bathroom to detect the presence of a person. If the bathroom is not equipped with SensFloor, the direction of walk in the entrance area to the bathroom is evaluated.

When deciding which events should become alarms or should be used to switch other devices, some considerations are required to achieve the desired result as we show with the following two examples:

Which event to use for controlling an orientation light at night?

The light should be switched on by the room terminal's relay as soon as the person puts the feet on the floor. In this case, the ***Bed Out*** event will not work in time, as this event is only fulfilled, when the person has left the zone in front of the bed completely. In addition, the light should also be switched on, when the person enters the room at night or comes back from the bathroom. The ***Movement*** event will also not work as the person might stand still for some time during which the light should remain on. The event to choose is ***Presence***.

*Is it possible to know that a room is empty after a **Room Out** event?*

Although this logic might work in many cases, there are always exceptional situations that break the sequence: if a person is brought to bed by a nurse, for instance, the **Room Out** event will be triggered by the leaving nurse while the person rests in the room sleeping. Even a **Presence** event will not provide the desired information in that case.

More cases can be found in the FAQ section at the end of this manual.

4.5   Configuring the Layout of the Rooms Overview

In the Room Overview described in this section, the default layout with default room names Room 1, Room 2, ... was used. However, it is possible to give more meaningful names to the rooms, to adapt the geometric layout of the tiles and some more parameters. To this end, the address WTIP:10000/layout can be used:

Fig. 6: Changing the layout of the room overview

Under **Layout Options** the name (Title) of the SensFloor Care installation can be changed. **Rows**, **Hor**.- and **Vert. Space** configure the geometric layout of the tiles in the GUI. This function can be used to adapt the view so that it fits best on a monitor, for instance.

Under **Display Options**, there is the possibility to hide the **Options** menu in order to prevent unauthorized persons to apply undesired changes to the system. It is also possible just to hide the alarm configuration menu or the **System On/Off** menu (Fig. 3) in the options menu.

By ticking **Apply to Localhost Only**, the configuration under **Display Options** affects just the touchscreen connected through HDMI whereas devices connecting through the network show the default options.

The option **Show Activity Amount** displays or hides the number of moving or standing objects on the rooms' tiles of the home screen. This option was added specifically for show cases in which many people are present in a room. In those cases, the count may show wrong numbers as objects may stand very close to each other.

Under *Rooms List* an individual name can be given to each room. Hostname and IP address are usually set automatically during the setup of the SensFloor Care system. However, in case of problems with the local network configuration, the network's administrator can set the hostname and IP address of the room terminals manually. When knowing these parameters, even a new rom can be added to the layout manually by tapping on *Add Room*. By using the red ⊟ symbol, it is also possible to remove a room from the layout.

The changes are registered by tapping *Save Layout* which is accompanied by a security query.

5 The Live View

5.1 Inspecting a Room in Real Time

Tapping on a room's name in the overview leads to a real time visualization of the current activity in that room. Depending on the degree of customization that was applied during the configuration of the room terminals, either the schematic layout of the SensFloor is displayed or a complete ground plan with walls, doors and furniture like in Fig. 7.

If people are present in the room, the current position, velocity, and recent pathway of every person is displayed as filled circle moving across the SensFloor area.
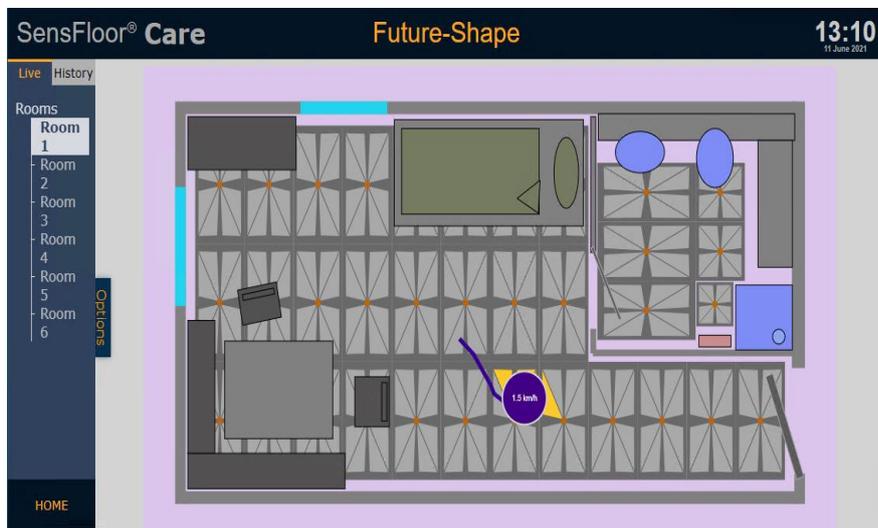
Fig. 7: Live View of a room.

This way, after an alarm, a quick inspection of the situation in the room is possible. When a fall occurs, the position of the person on the floor and the size of the activated sensor pattern is indicated (see Fig. 8).

By means of the shortcuts in the left part of the display, the user can quickly change between the rooms, go to the *History View* of the current room (see next section) and return to the room overview.
When tapping on the *Options* tab, a panel with many parameters of the live view appears.
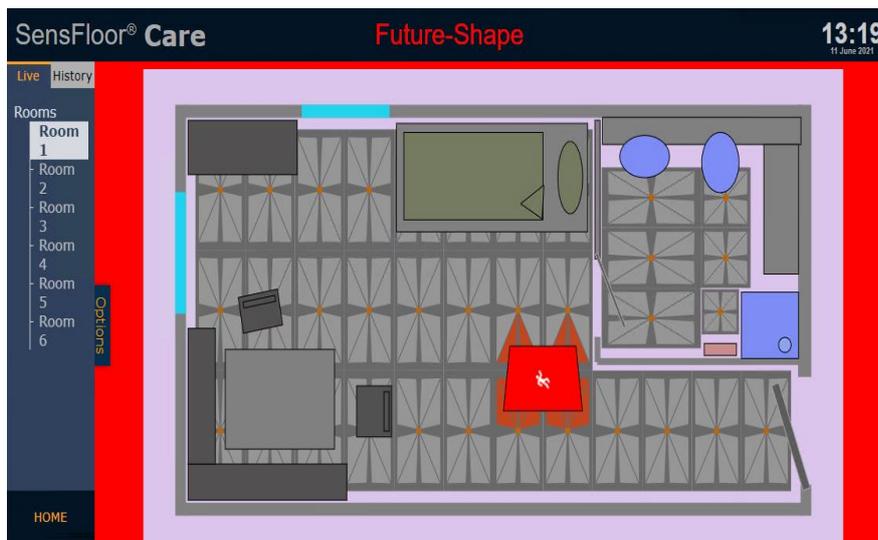
Fig 8: Indication of a fall alarm.

5.2 Options Menu in Live View
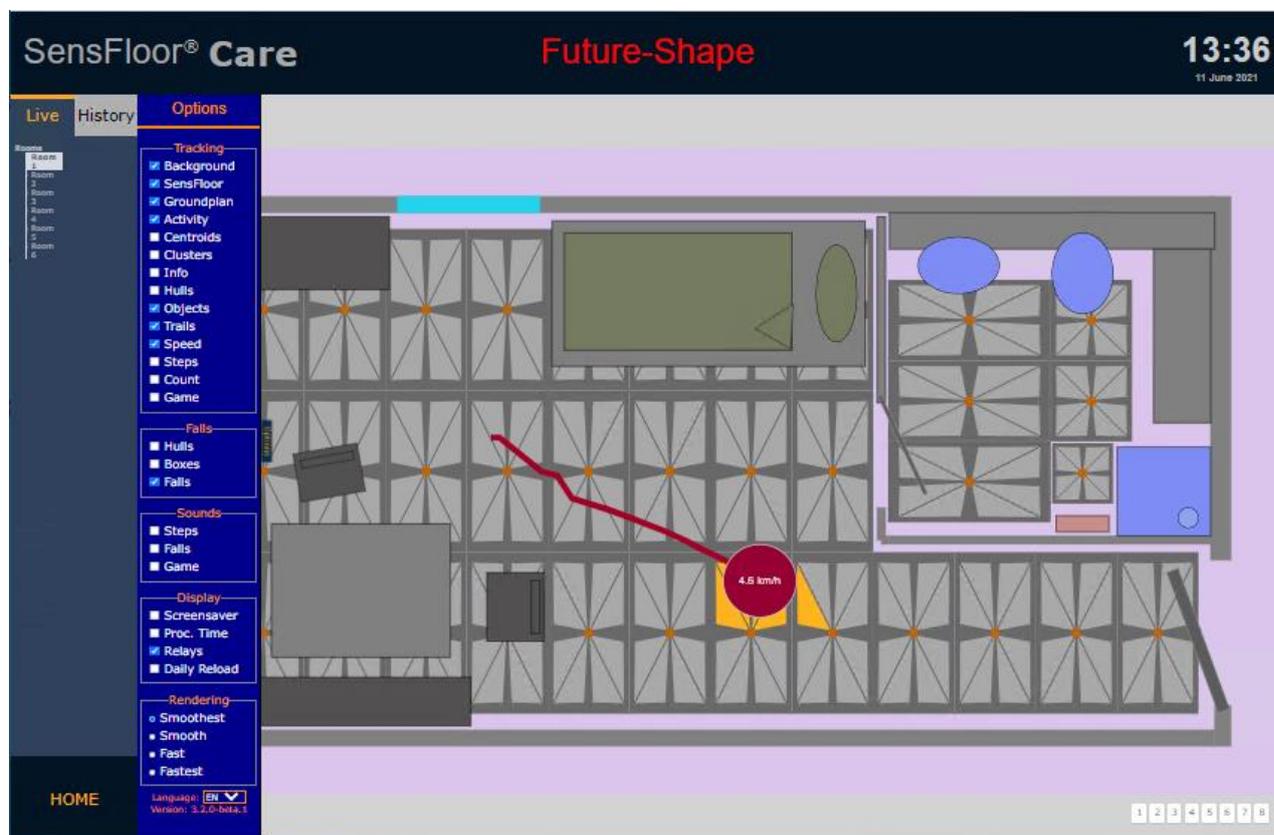
Fig. 9: Options tab in the Live View.

The options under *Tracking* control the appearance of the visualization and the elements that are shown. The easiest way to understand their influence is to activate or deactivate an option and to observe how the rendering changes. In particular the options *Sensfloor* (show/hide the layout of the sensors), *Speed* (display speed of objects or show individual objects in different colors) and *Steps* (indicate each footstep) are interesting.

The options *Count* and *Game* are not useful for individual rooms but for corridors or public spaces that are equipped with SensFloor.

When the option *Count* is active, an experimental interface appears that can be used to count transitions of people between four areas (A-D). The position and size of the areas are pre-defined and cannot be edited by the user for now (see Fig.10).

Under *Tracking: Count*, the number of people that have already crossed the areas is shown for specific selections of regions (e.g., 2 from entrance A to any exit B, C or D) and as a matrix for all possible combinations. The count can be reset automatically after one day or one week and a list of all transition events can be exported as ASCII file with time stamps to the client device by clicking the diskette icon.
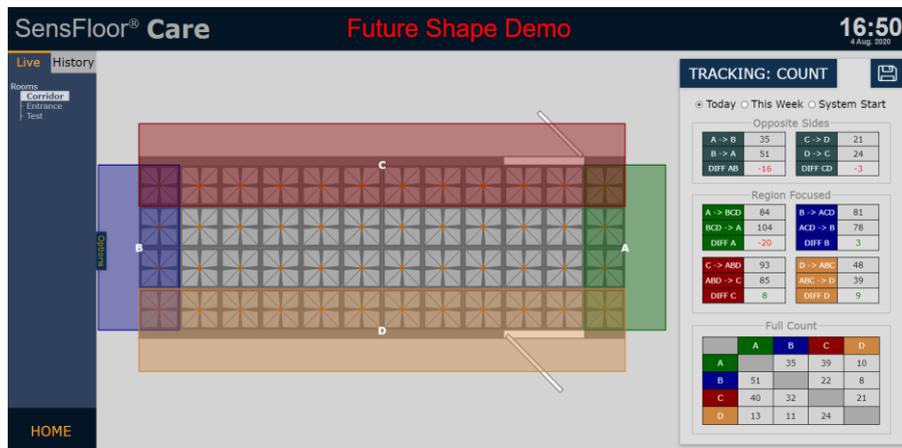
Fig. 10: Experimental interface for counting.

When the option *Game* is activated, the SensFloor area transforms into a playground. The users must try to walk to specific locations indicated on the screen as fast as possible. In particular in nursing homes a publicly accessible area can be used to mobilize elderly people and train their physical and mental capabilities this way.

The game begins on the empty area by showing a green circle as a starting point (see Fig. 11).

Once this location is visited, a new location is marked by a red dot. The task is to visit this new location as fast as possible (see Fig. 12). Therefore, the walking speed of the player is measured and displayed in the upper right corner. In total, a sequence of five locations must be visited until the game is over.
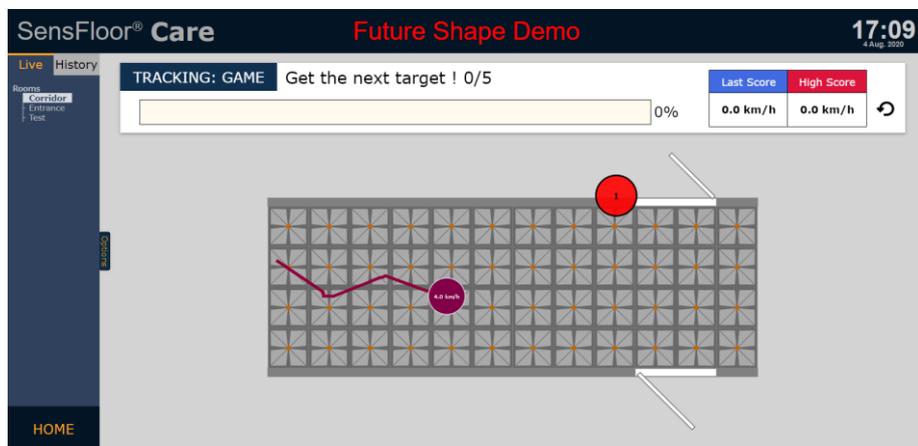
The total speed for the entire pathway is indicated as individual score of the player. A new game is started once the area is empty again so that the next player can start the game.

The current high score, which is indicated in the right upper corner, can be reset at any time by tapping on the reset-icon ↻ to the right.

Fig. 11: Start screen of the simple chasing game for public areas.

Fig. 12: Game in progress.

In the options tab, there are some special parameters in the category *Fall* that configure how fall events are displayed. When the option *Fall* is not ticked, these events are not visualized in the *Live View*. However, they are still logged and shown on the room overview of the ward terminal.

In the category *Sound* tones for footsteps, falls and the chasing game can be activated. By default, sounds are transmitted over HDMI to the monitor connected to the terminal. The sound output and volume setting of the monitor must be configured appropriately to hear the tones.

The options in the category *Display* control the display settings of the GUI: When *Screensaver* is ticked, a predefined slideshow is played during standby. The option *Proc. Time* displays the speed of the rendering engine. This can be used for debugging purposes. The option *Relays* displays the status of the room terminal's relay contacts (see Fig. 9, right lower corner). This option is useful when these relays have been configured to transmit alarms to an indoor call system. Relays that are highlighted indicate that the corresponding contact is active. The option *Daily Reload* refreshes the GUI at midnight in case the rendering engine (web browser) hangs.

In the category *Rendering* one of four different rendering frequencies can be selected. With the selection *Smoothest*, movements are most even but a lot of processing power is required. If performance problems occur (delays, hang-ups etc.), the selections *Fast* or *Fastest* might help.

There is also a *Language* selection menu.

6 The History View

In contrast to the **Live View**, the **History View** allows for an analysis of the activity in a room over a longer period in the past. This way, changes in the health status of persons can be discovered and tracked. It is also possible to obtain statistical information about the frequency of events and alarms. Detailed information about which movements directly preceded a fall, for instance, can be gained by using the *replay* function.

The **History View** can be accessed either through the statistics symbol 📊 on a room's tile in the room overview or from the Live View by tapping the **History** tab. In some of the following pictures, we show only that part of the display, that contains the history-specific functions. The **History View** is generated by the **Activity App**.

6.1 The Overview Function

The Activity App analyses SensFloor data in time periods within a date range. A period consists of a configurable time window between one minute and twenty-four hours.

For instance, if you wish to look at data for the ten first days of January 2021, you can choose the date range as 01.01.2021 – 10.01.2021, and the time window as 00:00 – 23:59. However, if you only want to look at mornings during those days (i.e., to generate morning reports), you can select the time window to be only 07:00-12:00. Furthermore, if you want to look at nights, the time window can be chosen as 22:00-06:00.

Note that in this last case, the (night) period includes two different days.
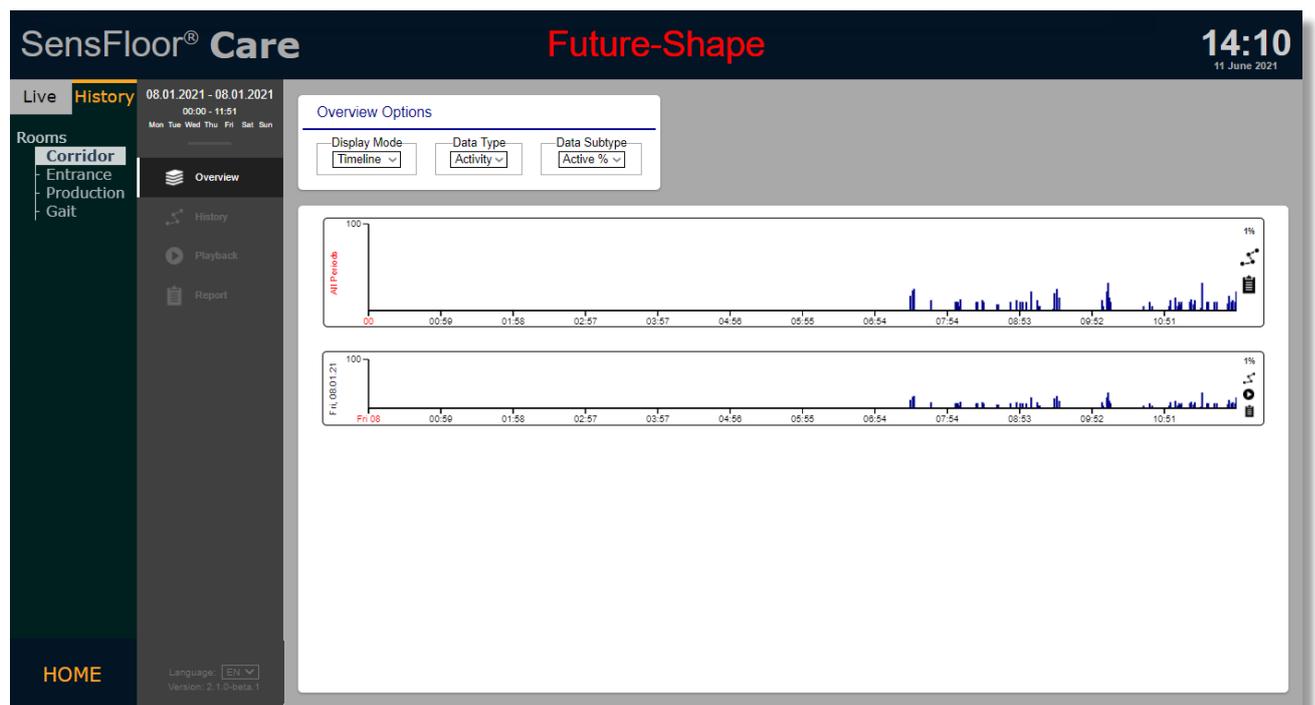
Fig. 13: Overview displaying the activity in a room during a selected period.

Time periods within the date range can be further filtered by selecting which weekdays to include (e.g., to exclude weekends from the analyses). The default view is an *Overview* over the activity in the corresponding room. The activity is displayed as bar graph over a *period* the details of which are displayed in the upper left part of the history window. By default, the period is the current day from midnight up to the current moment. In Fig. 13 the period starts at midnight January 8th and ends at 11:51am on the same day.

By clicking on the period selection area, a *Calendar View* appears which allows for the selection of the desired periods. By clicking on the start and end time, hours and minutes of a time window can be selected from a drop-down list (Fig. 14 right upper panel).

By clicking on the date range, a window comes up which allows for the selection of a start and end of a set of days for which the previously selected time window shall be analyzed (Fig. 14 left lower panel). By means of the shortcuts to the left, a predefined set of days can be selected quickly, e.g., the last month.

If the analysis is to be limited to specific weekdays within the selected date range, weekdays can be selected (black) or removed (grey) by clicking on them in the *Week Days* panel (Fig. 14 lower right).

After the desired time window and date range is selected, the data must be extracted from the log files stored on the corresponding room terminal. This can be achieved in two ways: by clicking on *Get Activity Data*, only information about events and alarms is extracted whereas clicking on *Get Location Data* also captures the position of the objects (i.e., the persons) on the floor. The first, quicker method is sufficient to obtain statistics about falls or other events, while the second, slower method can be used to track the movement of people, e.g., shortly before a fall occurred. If location data has been extracted, the color of the timeline data changes from black to blue.
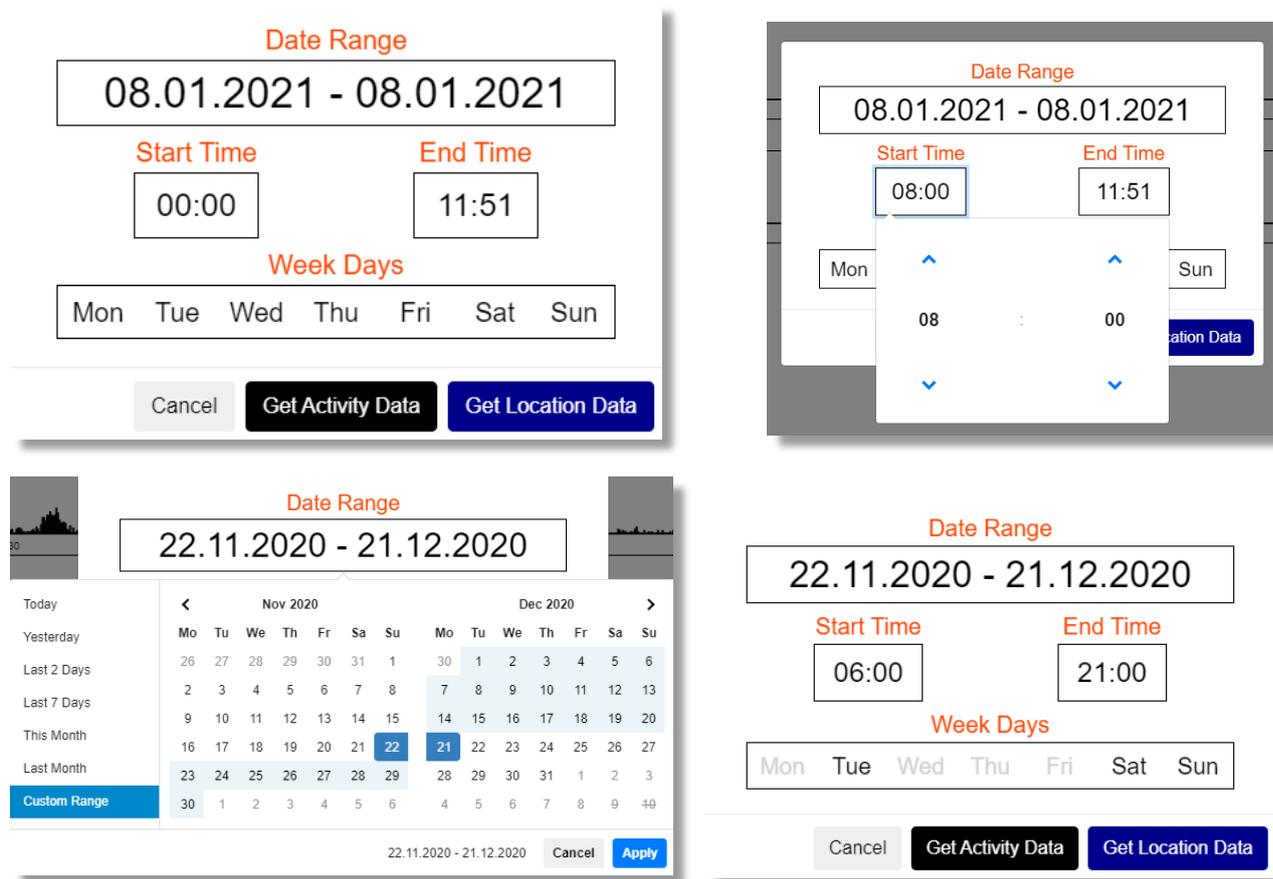
Fig. 14: Selection of a time window and a set of days for which location- or activity data of a specific room shall be analyzed. In this example data in the time window between 06:00 and 21:00 of all Tuesdays, Saturdays and Sundays between November 22 and December 21, 2020 have been selected.
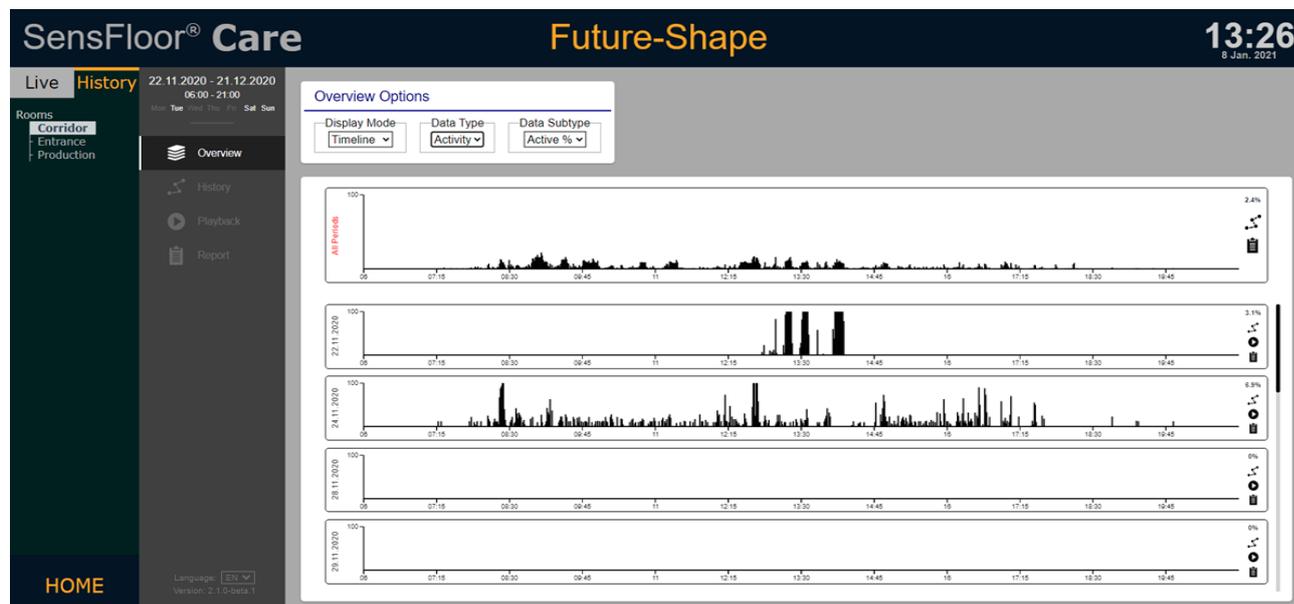
Fig. 15: Scrollable list of bar graphs for the selected time window and set of periods.

As can be seen in the example of Fig. 15, by default the activity within the chosen time window is displayed as bar graphs in a scrollable list for every period of the selected set of periods. In addition, the activity accumulated over all the periods is displayed in the first bar graph on top of the list (***All Periods***).

By means of this visualization, the variation of activity from day to day can be analyzed. In the example of Fig. 15, for instance, the graphs are empty before 7am and after 6:30pm because the data stem from a SensFloor area in a public space which is rarely occupied at those times. By means of the graph of accumulated activity, variations within the time window averaged over many periods reveal routines such as getting out of bed or breakfast time.

The horizontal width of each bar corresponds to an interval of 1 minute, which is, therefore, the temporal resolution of the time series. By default, the height of each bar in the periods shows, which fraction of that minute activity was registered by SensFloor. When, for instance, from the 60 seconds only for 30 seconds there was activity on the floor, the corresponding bar would go halfway up to 50% activity. In the accumulated plot, the percentage is divided by the number of periods such that the bar can only reach 100% when every period there was permanent activity in that very minute.

The average activity is displayed as percentage in the right upper corner of each period's graph. The other clickable symbols in the right edge of the plot are shortcuts to the ***History-***, ***Replay-*** and ***Report-***Functions that will be explained in the next sections. In any case, the data of the corresponding period (or from the accumulated ***All-Periods*** plot) is pre-selected for the analysis within those functions.

By default, the bar graphs show the activity on the SensFloor over time as relative number (***Active%***). For rooms equipped with SensFloor this information already provides a rough estimate about the resident's general health status as a low activity level during the night and a normal level during the day indicates a relaxing sleep and a good physical status.

In addition to the relative activity, other indicators can be selected in the *Overview Options* (see Fig.16). When changing the *Data Subtype* into *Objects,* the graphs show the number of objects that were present on the SensFloor over time. Usually, this corresponds to the number of persons, however, also moving metallic objects or other objects which change the capacitance are counted here.
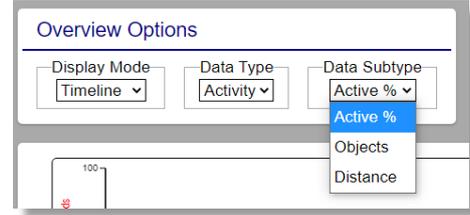

Fig. 16: Default Overview Options.

The subtype *Distance* shows the distance in meters that were covered by the objects while being on the SensFloor.

This information is interesting when analyzing the movement behavior of residents, for instance.

For an individual analysis, the comparison of the figures over a longer period is more meaningful. To facilitate this, the *Display Mode* can be changed from *Timeline* (i.e., the bar graphs) to a calendar view (see Fig. 17). Here, the values for activity, distance, objects etc. averaged over the selected time window are indicated for each day of the chosen set of days. Days with zero values are indicated as empty white squares to highlight this fact. By means of this plot, changes in certain indicators can be spotted easily.

The example in Fig. 17 shows, for instance, that on Nov. 24 and Dec. 1 the covered distances in the SensFloor area were much larger than on the other days.
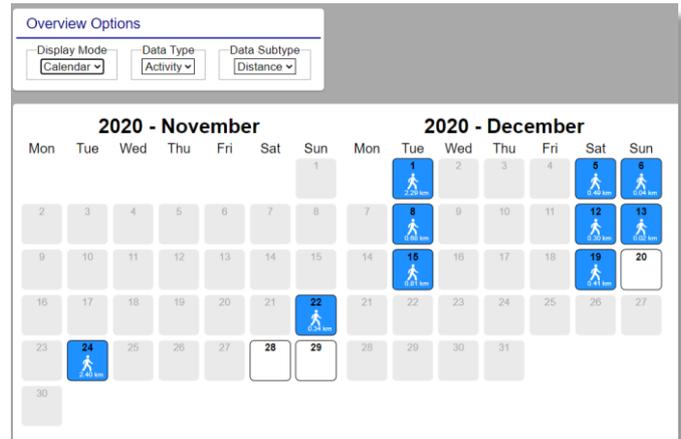
Fig. 17: Calendar view. Days not belonging to the set are greyed out.
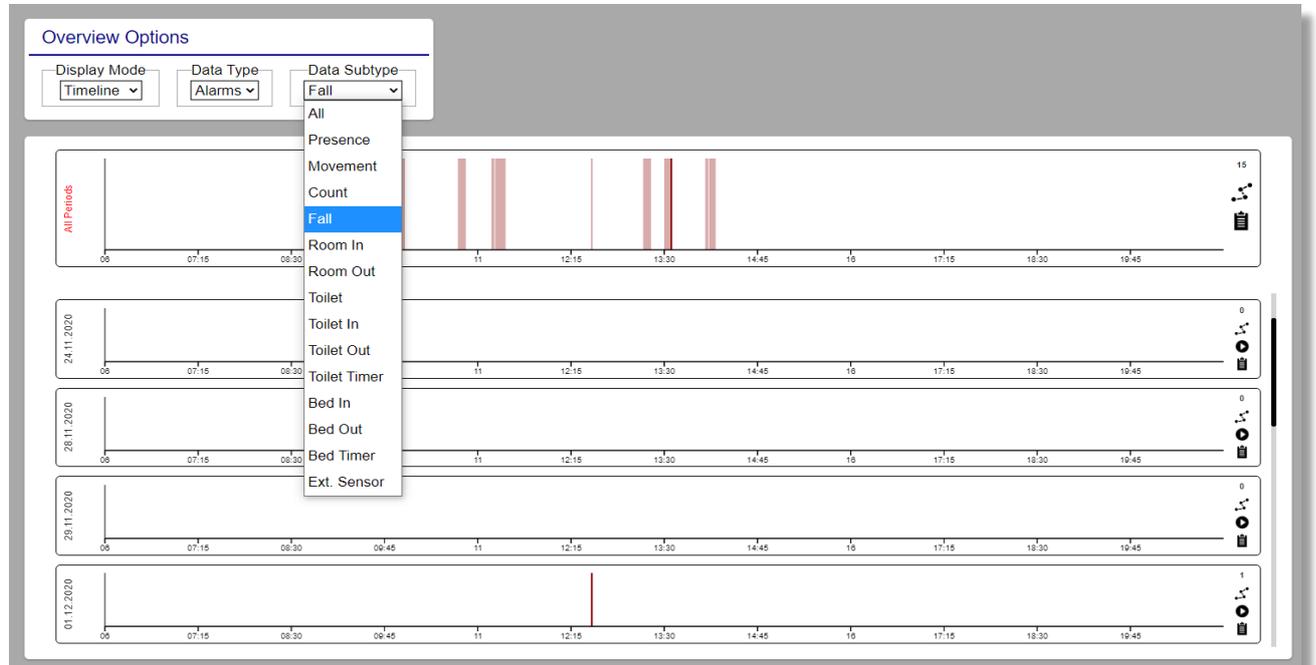
Fig. 18: Timelines of alarms.

The *Data Type* can be changed from *Activity* to *Alarms*. In this case, any type of alarm (or all alarms at once) can be selected as subtype. Depending on the configured alarms (see the list in Fig. 5 and Fig. 18) this allows

for a detailed analysis of the events in a specific room. In the example of Fig. 18 the first timeline shows that on the selected days over all 15 falls have happened between 8:30 and 14:45. The timeline of Dec. 1 indicates one fall at 12:20.

The *Calendar View* reveals that there were falls on five days of the selected 13 days with a peak of 6 falls on Nov. 22.

By selecting meaningful events and comparing the development of the occurrence of these events over a long time, changes of the health status of individuals can be tracked even more precisely than with the activity graphs alone.

By analyzing the number of *Bed Out* events at night, for instance, diseases that prevent a person from a relaxing sleep can be revealed.

This data representation can also facilitate the documentation process together with the *Report* function (see below).
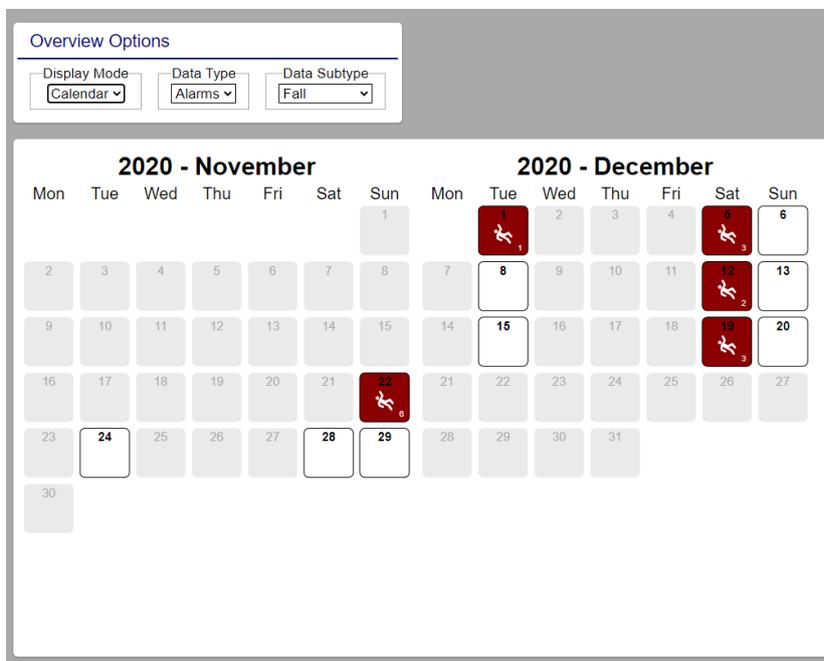
Fig. 19: Calendar view of fall alarms.

6.2 The History Function

Whereas the overview function described before is used to obtain statistics about activity and events over a set of periods, the history function allows for a more detailed analysis of single periods or even single events. When clicking the history icon at the right edge of the timeline of Dec. 1 in the overview (Fig. 18), for instance, the data of this day is displayed in the history view (Fig. 20).

Fig. 20: History view of one period.

The timeline with the activity data is shown at the bottom. Its black color indicates that only event data has been extracted so far. Consequently, the fall that occurred on this day around 12:20, is indicated as red dot in the timeline and as fall-icon in the ground plan of the room. If any other alarms/events had occurred in this period, they would also be displayed in the ground plan using the icons introduced earlier in Fig. 5.

Under *Period Options* in the upper right corner, it is possible to change the period of interest to another one from the set. If it has not already been done in the overview, the location data for this period can be extracted by clicking on *Get Location Data*. The color of the timeline data will turn to blue and as long as the option *Trajectories* under *Display Options* is active, the pathways of all objects/persons during the period are drawn in the ground plan (see Fig.21). By means of activating or de-activating other display options, further information can be displayed or removed.
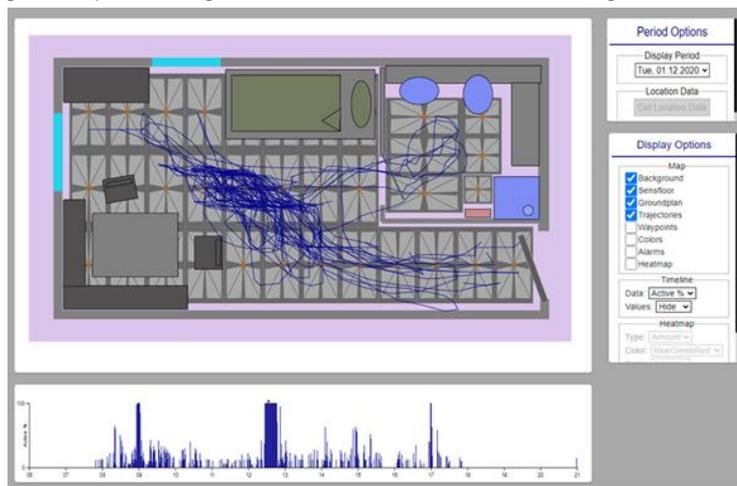
Fig 21: Pathways (trajectories) are shown in the ground plan.

By activating the *Colors* option, for instance, the trajectories of different persons are plotted in different colors so that they can be distinguished. The indication of the location of the alarms and events by means of their icon in the ground plan can be switched on and off using the *Alarms* option. The option *Waypoints* displays triangles where an object has left the area and circles where an object has entered.

The bunch of trajectories gives an impression about the preferred *pathways* that people use in the SensFloor area. To investigate preferred *locations*, the **Heatmap** feature can be activated in the display options (see Fig. 22). Depending on the **Type** selection, either the accumulated **Amount** of activity or the **Time** of presence at a location is displayed as a color-coded map of *linear* or *logarithmic* scaling.
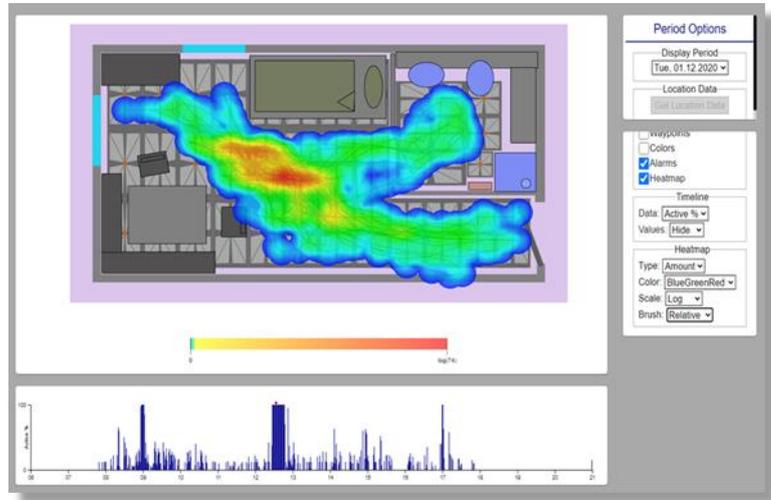
Fig 22: Heatmap: color-coded image of preferred locations.

To analyze events more closely, it is necessary to zoom into the time window around the event. This can be accomplished by dragging a rectangle around the time of the event in the timeline either using a mouse or by means of a dragging gesture on the touch screen and then pressing the *magnifying glass* icon on the top right of the timeline (see Fig. 23).
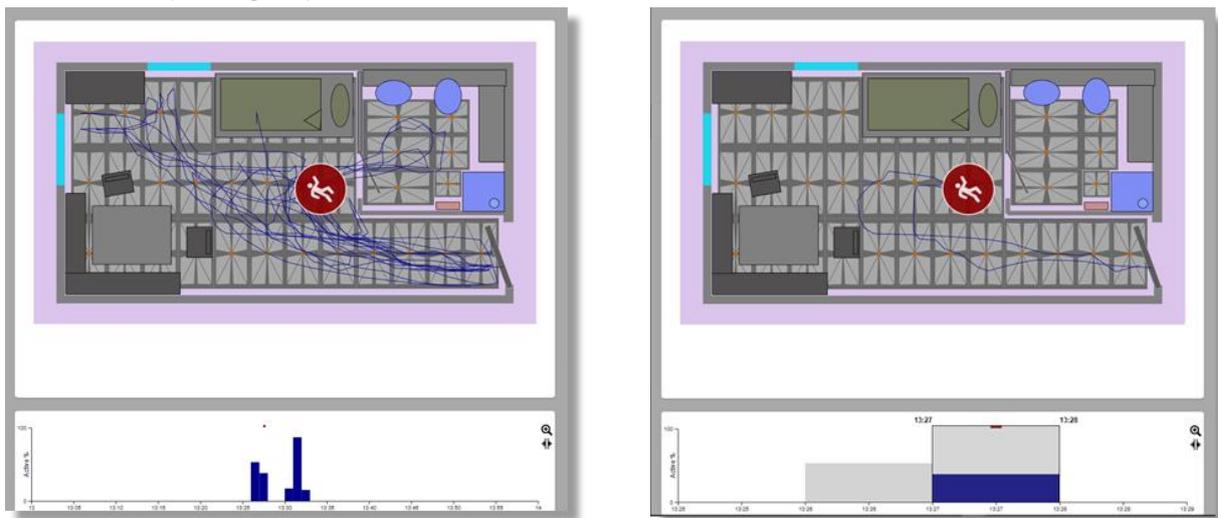
Fig. 23: Zooming into the time window around a fall event.

This procedure can be repeated until the minimum time-bin of one minute fills the complete timeline. As only those trajectories are plotted in the ground plan that fall into the highlighted time-bin, the pathway that led to the fall can be investigated in detail. By clicking on the *limits*-icon under the magnifying glass icon, it is possible to return to the timeline of the full period at any time.

It is important to note that not only the trajectories but all display options, such as *Waypoints* and *Heatmap*, refer to the current selection in the timeline. This way, those representations can be analyzed around interesting alarms/events as well.

By default, the heatmap is normalized over the whole timeline (*Brush*-option *Relative*). To normalize the color scaling to the selected time window only, the brush option *Absolute* can be chosen (see Fig. 24).
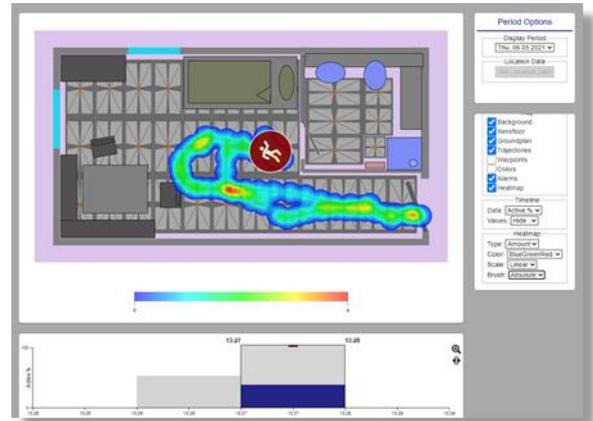
Fig. 24: Heatmap limited to the time window around the fall.

6.3 The Playback Function

To investigate the dynamic aspects of certain alarms and events, the situation can be replayed by means of the playback function. The function can be either accessed from the history panel or directly by tapping on one of the past (greyed) alarms on a room's tile from the room overview. In the latter case the playback directly starts from a few seconds before the corresponding alarm event. This is very useful to investigate in detail an event that led to an alarm.
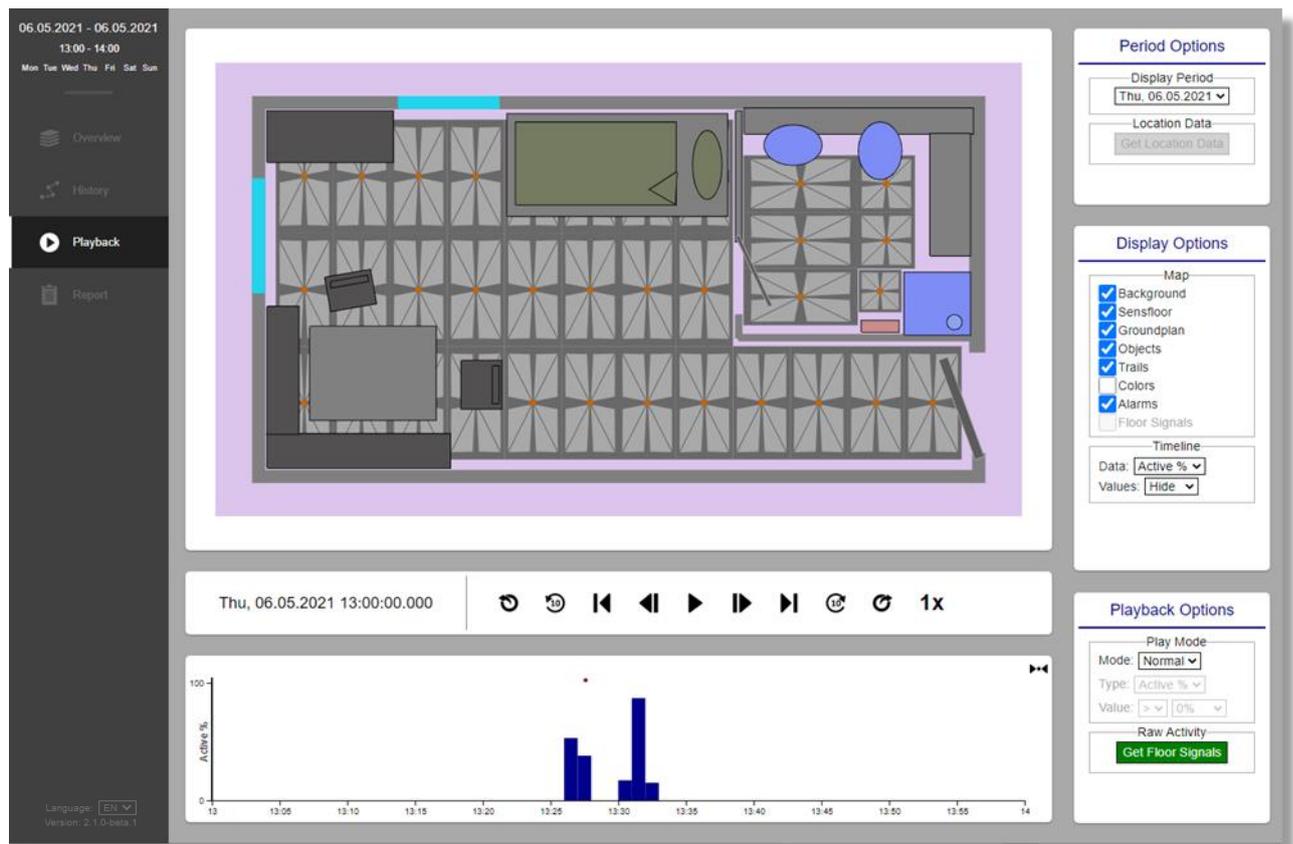
Fig. 25: Default GUI of the playback function.

The playback GUI is shown in Fig. 25. Below the ground plan a panel with videorecorder-like controls is shown. Whereas the *Period Options* are the same as in the *History* Function, the *Display Options* have slightly changed, and a new *Playback Options* Panel appears.

When the playback button ▶ is pressed, the timestamp left of the controls starts to run in red color and a red time cursor moves across the timeline (see Fig. 26).

Any activity that is reached by the cursor is displayed in the ground plan as if it was live. *Objects* (persons) are represented by blue dots and their recent paths are shown as blue *Trails* in the ground plan. Both visualizations can be switched off in the *Display Options*.

By activating the *Colors* option, every object and its trail is shaded in a different color, so that they can be distinguished.
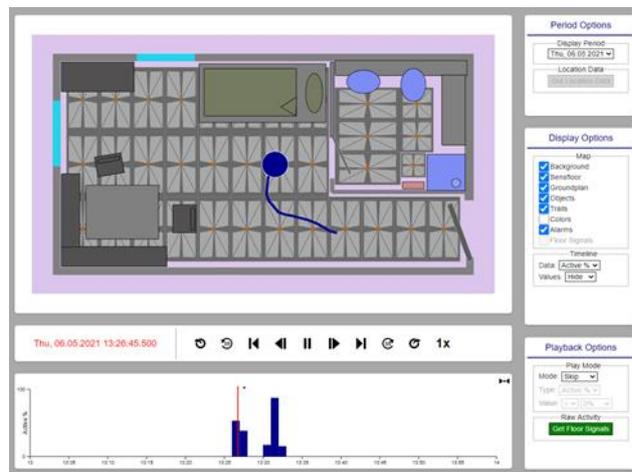
Fig. 26: Playback is running.

It is even possible to show the raw sensor signals after downloading them from the log file by pressing *Get Floor Signals* on the lower right of the screen. Depending on the width of the selected time window, the amount of data can be large, so the extraction process takes a while. After it is finished, the color of the data in the timeline changes to green to indicate that raw sensor data is available. Due to the large data set the zooming options are not available as the processing would be too slow. This state is indicated by a red lock symbol in the timeline. The zoom lock can be released at any time by clicking on the lock symbol which will discard the raw sensor data from analysis.
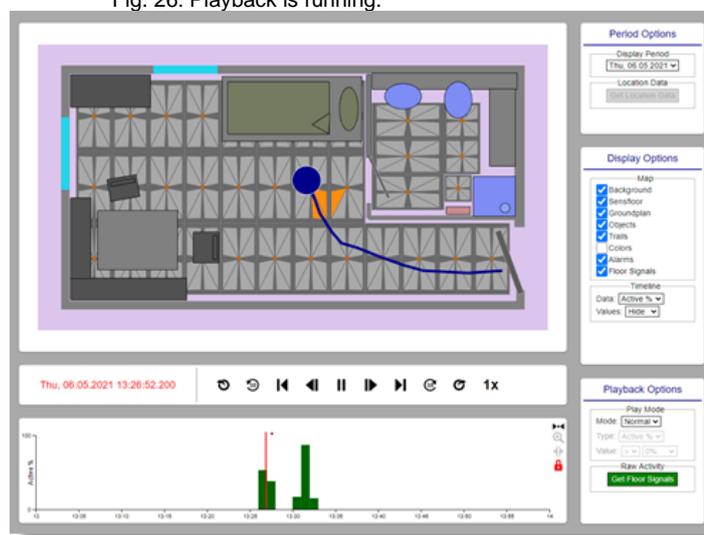
Fig. 27: Using the *Floor Signals* option.

When the *Signal* option is activated and the raw sensor data is available, the sensor fields (grey triangles) obtain a shade of orange depending on the activity induced by people walking across the floor. This way it is also possible to identify sensor activity induced by other objects or liquids on the floor.

In large time windows, it may be hard to find the events of interest quickly. Therefore, there is a set of further playback controls:

▶ ❙❙	Play and pause
◀❙ ❙▶	Jump back and forth 0.1s. This is best used in pause mode to analyze in fine steps
❙◀ ▶❙	Jump to the start/end of the selected time window
⑩ ⑩	Jump back and forth 10 seconds
↺ ↻	Jump to the previous/next appearance of a new object/person. This function is very handy to jump over periods which contain no activity
0.1x , **1x** , **20x**	Change playback speed to slow motion, real time, or time lapse

Fig. 28: Playback controls

Another possibility to find interesting periods is to use the **Seek Mode** available by clicking on the symbol ▶◀ in the upper right corner of the timeline panel. When seek mode is enabled, this symbol becomes red and the time cursor changes into a dotted line. In this situation, no zoom windows can be dragged but instead the time cursor can be grabbed and moved manually across the timeline. As the corresponding events are displayed synchronously in the ground plan, this allows for a very fast search for interesting events. If the right position is found, the mode can be changed back to normal by clicking on the symbol again.

Another useful way to scan a wide time window quickly is to change the **Play Mode** from **Normal** to **Skip** in the **Playback Options**. When using **Play** in this mode, periods without any activity will be skipped automatically. The **Playback Options** do also allow for a filtering of the timeline by using the **Play Mode Filter**. In this mode it is possible to filter the data in the timeline for periods with a given **Value** of maximum or minimum relative **Activity** or **Objects**. One application of this function is, for instance, to look for periods in which a second person (e.g., a nurse) was present in a room together with a patient (see Fig. 29).

The data can also be filtered for specific **Alarms** by setting the options **Type** and **On** accordingly.
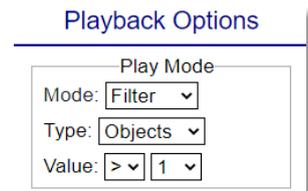
Fig 29: Playback options to filter for periods with 2 or more persons present..

6.4 The Report Function
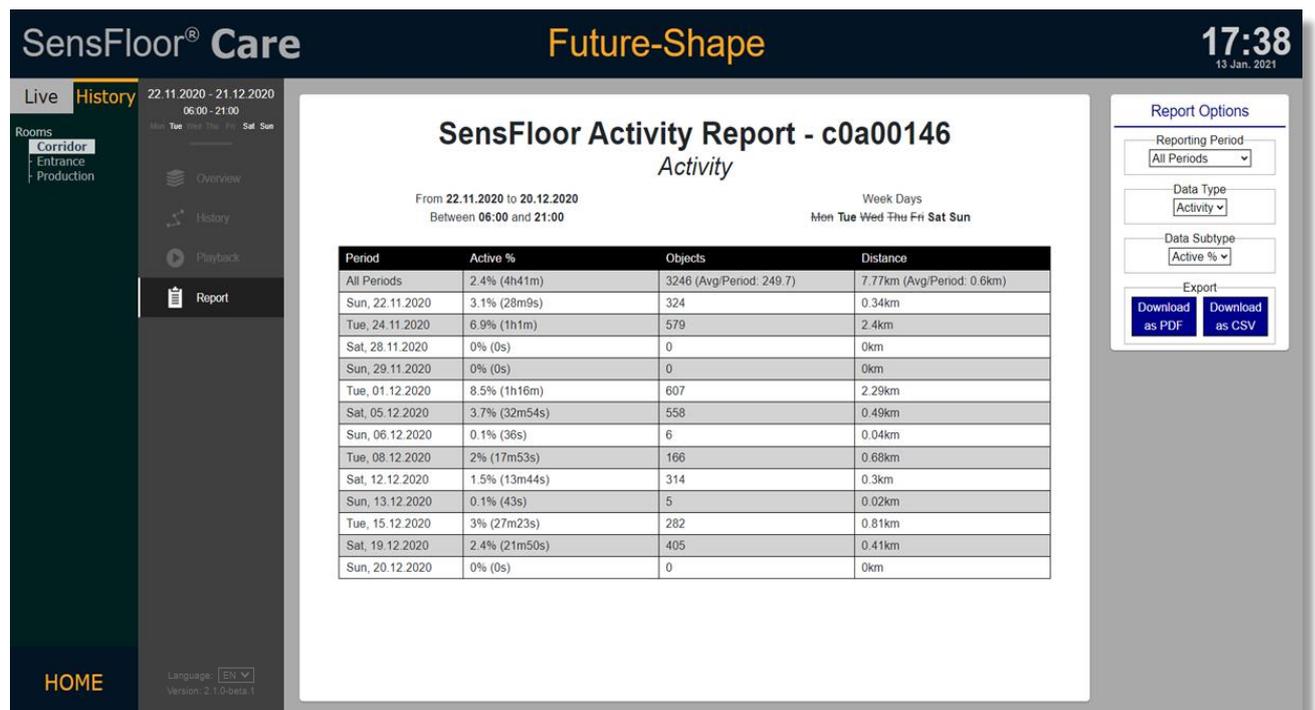
Fig. 30: Report of the selected period and set of days.

The report function offers a spreadsheet-like representation of the activity, alarms, and events of the corresponding room's SensFloor installation over the selected period within the chosen set of days (see Fig. 29). By default, all days of the set are listed but by means of selecting a **Reporting Period** in the **Report Options** it is possible to show just a single day. When the default **Activity** is set as **Data Type**, the table shows the relative activity in % and the total active time in the first column. The second column shows the number of objects (persons) per day and the third column displays the overall distance walked by all persons.

When changing the data type to **Alarms**, the list shows all types of alarms and the time when and the location where they occurred (see Fig. 31).

This list can be filtered for specific alarms by changing the **Data Subtype** accordingly. Consequently, when no alarm of the selected type has ever happened, the list remains empty.

The coordinates of the alarm locations are given relative to the coordinate origin of the corresponding room's SensFloor installation, that was selected in the configuration GUI of the room terminal at installation time.
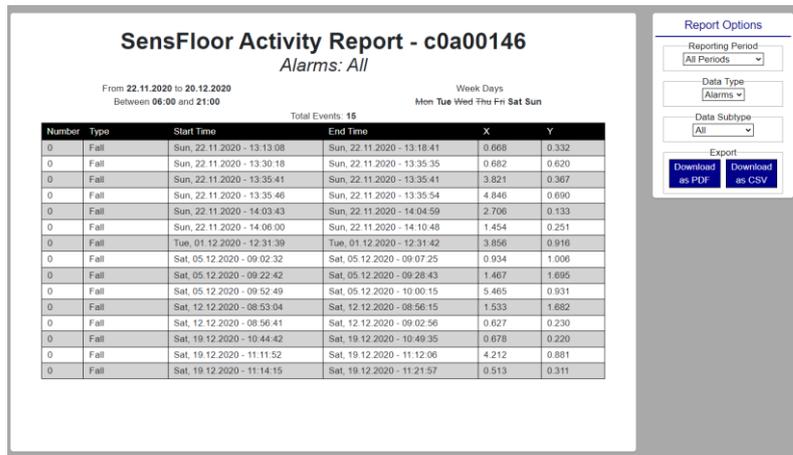
Fig. 31: Report of alarms.

When clicking on **Download as PDF**, the currently visible spreadsheet is converted into a pdf and downloaded to the ward terminal or the client device that is used to display the ward terminal's GUI.

When clicking on **Download as CSV**, the currently displayed table is converted to a simple ASCII-text file with columns separated by commas (see Fig. 32) and downloaded to the ward terminal or the client. Files of this type can be read in by a text editor but also by common spreadsheet applications like Excel, for instance such that analyses can be easily exported.

This exporting function can be used to simplify the documentation process in the care facility as all relevant data is collected and presented in a compatible format automatically.
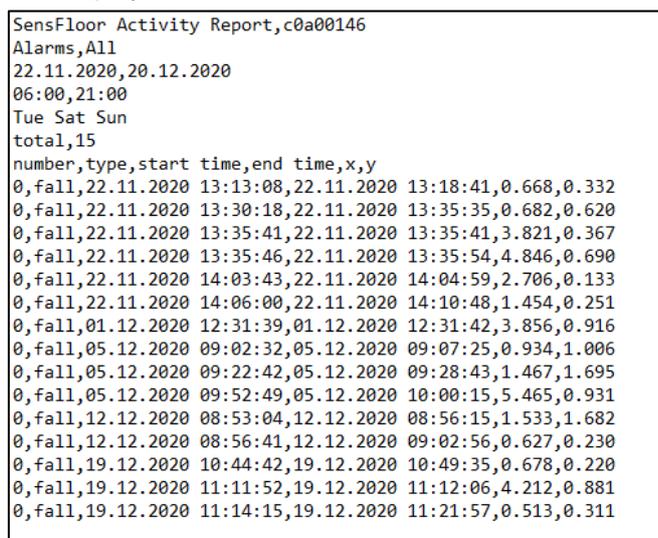
Fig. 32: CSV-formatted text file.

7 The Manager App: Updating and licensing apps

7.1 Online updates

All apps described in this manual are continuously improved by the developers. From time-to-time new versions with bugfixes or new features are released by the manufacturer. To see the current version numbers and to check whether a new update is available, the *Manager* app can be accessed through port 15000 of the device. Fig. 33 shows the interface. All currently installed apps are listed with their *Version* number and their *Expiration Date*. Usually, the customer has obtained an unlimited license to use the set of apps that was delivered together with the hardware. However, in special cases, such as feature tests, the usage time may be limited. In this case the app will stop working when the *Expiration Date* is reached.
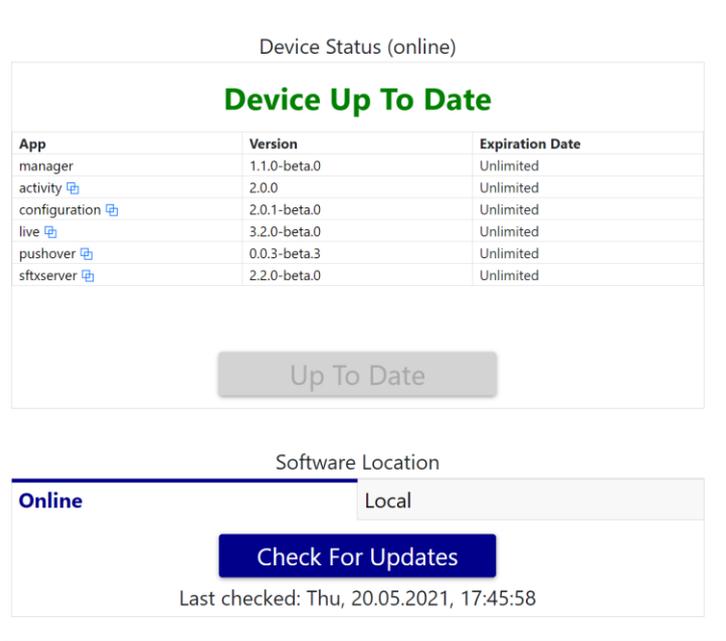
Fig. 33: The Manager app shows the current versions of the installed apps

If the user has forgotten, which names are associated with which visualization, it is possible to jump right to the corresponding GUI by tapping the ⊡ symbol right of an app's name. By clicking on *Check For Updates*, the application searches for a new license file on the cloud server. This license file contains information about which versions of the apps are licensed for which device. The license file can be edited by the manufacturer only. If there exists a new license file, the *Manager* app downloads, decrypts, and parses the file. If it finds new licensed versions of one or more apps, it offers to download these apps from the cloud server and installs and starts them automatically when tapping *Update Now* (see Fig. 34). In the list of apps, the old and new version is indicated.
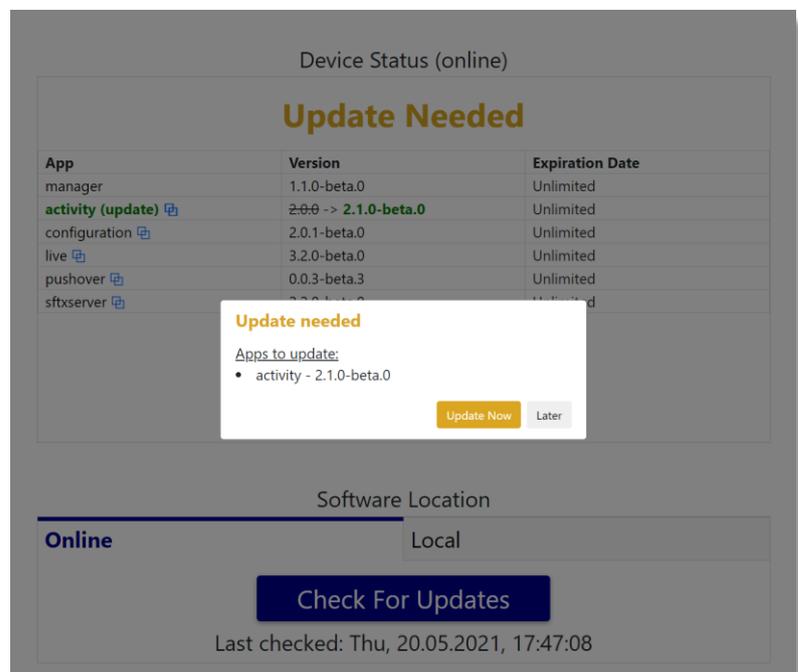
Fig 34: One app is available in a new version.

7.2 Updates by the manufacturer/distributor

This form of update requires that the corresponding device has free access to the internet to check the cloud server for updates. If the client network allows for secure access to the devices from external networks (e.g., through VPN or a tunnel), this update can also be done remotely either by the distributor or, exceptionally, by the manufacturer through its IoT maintenance access tunnel.

7.3 Automatic updates

If the device is qualified for automatic updates by a corresponding flag in the license file, the whole process runs automatically if the device remains connected to the internet and has access to the cloud server.

⚠️ **It is important to note, however, that during the update process the device is not functional in the SensFloor Care system. Another important issue to consider is the necessity to observe and test whether an update works properly in a specific customer installation (see section *After Updating*). This testing period is also required when apps have updated automatically.**

7.4 Offline on-site updates

To update devices which have no internet connection, another update method is available. The manufacturer can generate a software bundle containing an encrypted updated license file and the corresponding compiled versions of all licensed SensFloor Care apps. This bundle is transferred to the customer/distributor by e-mail or a cloud service (Dropbox, OneDrive etc.). The customer's/distributor's service personnel can connect to the device through LAN/WiFi and use the device's *Manager* app to upload and install the software on-site. In the app, *Local* must be selected as *Software Location*.

Fig. 35 shows the process step by step. After clicking *Upload Software*, a zip-file with the bundled software can be uploaded from the client to the device. If the contained license file contains licenses for newer versions than the ones already installed, the *Manager* app offers to install these versions from the bundle. The process finishes by automatically restarting the new apps.
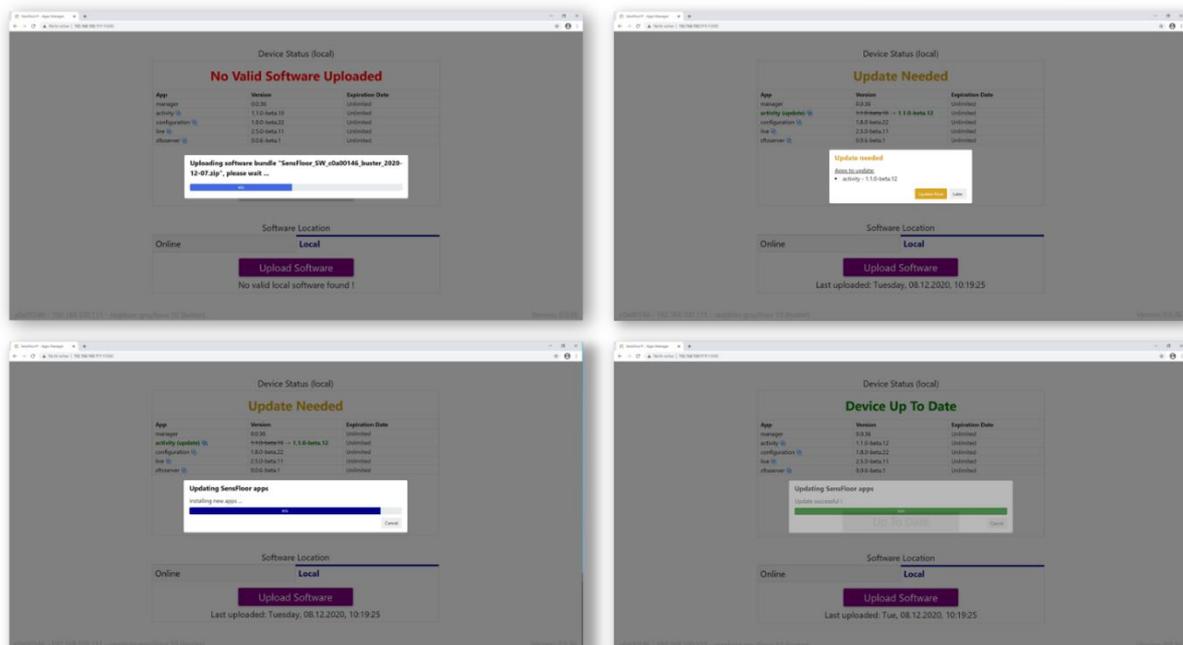

Fig. 35: Process for locally updating from a software bundle (zip-file).

If at any point in the offline or online update process an error occurs, e.g., the upload of the bundle or the download of the new versions from the cloud server fails, the manager invokes its roll-back function and restores the previous versions of the apps. In that case, the update process can be repeated afterwards.

7.5   After updating

Most updates come with new features and functions. The manufacturer will provide training material and manuals so that the customers can profit from these new properties.

All apps which are not marked as beta versions have been tested by the manufacturer. However, there is always a possibility for undesired behavior in individual SensFloor installations. Therefore, it is mandatory to observe and test an updated installation for a certain time after the installation. Customers should collect information about problems or malfunctions and transmit that information to the manufacturer. An existing valid software maintenance contract covers rectifying bugs and malfunctions of the apps. Please note that it is possible that new app versions are not compatible with previous configurations such as alarms or layouts. In those cases, it is required to repeat the configuration as described in the corresponding sections of this manual.

In general, feedback from the customers and end users is a valuable source of information to improve the apps and to add new features in the future.

8 Additional Information

8.1 Disclaimers and Warnings

Disclaimers

1. The SensFloor Care system is an assistance system that does not replace any human surveillance and care.
2. The end user must be aware, that there exist situations in which (1) the SensFloor Care system cannot detect a fall and (2) in which a fall alarm is given even though no fall has occurred.
3. The SensFloor system provides not a signal denoting any medical emergency, and the distributor or supplier is not required to contact or dispatch any medical emergency or assistance.
4. The SensFloor system must be installed by a certified expert in the room that is intended to be monitored.
5. The SensFloor system is for indoor use only.
6. The SensFloor underlay may not be installed in the shower.
7. To forward alarms to the emergency contact, the ward terminal must be permanently observed and/or the SensFloor Care system must be paired to an existing indoor call system and/or to the SensFloor Life push message service.
8. The size of a room which can be supported by one SensFloor transceiver SE10 is limited by the wireless transmission range of approx. 20 meters (free field).
9. The SensFloor underlay may not function properly if it is (1) installed beneath not certified flooring or (2) with not certified adhesives on top of the SensFloor underlay, (3) cleaned with liquids that leave a conductive layer on top of the flooring, (4) during wet cleaning as long as the floor is not dry again, (5) in environments with high air moisture, or (6) when detecting falls of people wearing thick clothing.
10. Presence of pets or additional people in the room during a fall might cancel/prevent the fall detection.
11. An accumulation of people in the room, pets, water puddles, electrical cables/devices, wet or conductive materials on the floor can trigger false fall alarms or activity notifications.
12. The SensFloor System detects falls on areas only, where the SensFloor underlay is installed.
13. When testing the system, it is recommended to repeat the test in different locations around the room to make sure the system covers all accessible areas of the room.
14. A fall test should be repeated once a month to make sure the system is still functioning correctly.

Warnings

1. The device will not function during a power outage.
2. The device will not transmit an alert to an emergency contact if the LAN/WLAN is not working or the indoor call system is down or defective.
3. Installation and use instructions must be followed precisely, or the system will not work.

8.2 Safety Information

Never open or disassemble any of the devices belonging to the SensFloor® Care system! Do not open any distribution boxes or electrical cable installations! Do not drill any screws into the floor that is equipped with the SensFloor system! Do not open the floor covering! If moisture has entered the floor construction, switch off the power supply immediately!

Investigate any alarm messages immediately! Do not acknowledge any alarm message without checking the cause! A seemingly false fall alarm may be due to moisture on the floor which must be removed to reduce the risk of falling. After switching off the system (e.g., for cleaning) ensure its reactivation!

8.3   Troubleshooting and Frequently Asked Questions

Observation	Cause	Measure
Live view or timeline show activity for periods when the room was empty.	Sensors measure spurious changes in capacity.	Check location in the room for objects/cables/dirt/moisture on the floor. Remove cables and metallic objects. Clean floor with pure water and wait until it has dried out. Recalibrate the floor by means of the taskbar.
When cleaning the floor, false fall alarms occur.	Floor sensors are activated by moisture.	During cleaning, switch off the room's SensFloor® by means of the taskbar. Wait until floor is dry and switch on again.
Fall alarms occur when multiple people are in the room.	The fall detection algorithm evaluates the size of the active area.	Call service who can reduce the sensitivity of the floor sensors.
Pets in the room activate the sensors or cause false alarms.	System cannot distinguish between animals and humans.	Deactivate the SensFloor® at times when pets are in the room.
Events do not lead to the desired alarms.	Wrong alarm configuration.	Check whether the desired alarms have been configured for that room and the active time is set correctly (see Fig. 4). Call service to change the base configuration of that room.
Alarms are shown but there is no alarm sound.	Alarm sound is switched off in the alarms' configuration (see Fig. 3). The monitor's or client's sound is switched off.	Activate the sound by means of the options panel in the room overview. Check the sound configuration of the monitor or client.
Alarms show in the ward terminal but not in a connected indoor call system	There is a problem in the connection to the indoor call system	Call service of the manufacturer of the indoor call system.
Single sensor fields show permanent activity.	Sensor fields may be broken.	Call service to switch off those fields. The overall function is not impaired.
The ward terminal's GUI works not as intended (does not react, shows service windows, or is distorted)	The Raspberry Pi that the ward terminal software runs on has a software- or hardware problem.	Restart the ward terminal by disconnecting the power supply for some seconds. Call service if the problem persists.
The monitor of the ward terminal shows no image.	The power supply to monitor or ward terminal is interrupted. The monitor is switched off. The HDMI-cable is broken or not connected.	Ensure that the physical setup is correct (see Fig. 1).
The tiles of one or more rooms show the message "Floor off" on the ward terminal.	The SE10 receiver in the room does not receive any radio messages from the SensFloor® underlay.	Switch on the SensFloor® by means of the key switch in the room or the switch in the room's electrical installation box. Call service if the problem persists.
The tiles of one or more rooms are missing or show the message "Disconnected" on the ward terminal.	The network connection between the room and the ward terminal does not work.	Ensure that the network cables of the SE10s and the ward terminal are connected. Ask your local network administrator for help.

In live view, large areas of the floor are permanently active although the floor is dry.	Moisture may have entered the floor construction.	Switch off the power supply to the SensFloor® in the room to avoid a short circuit and call service.

8.4 Service Address

For questions or requests, please contact our distributor who has installed your SensFloor® Care system. Depending on your service and maintenance contract, you may also contact the manufacturer's support:

Future-Shape GmbH, Altlaufstrasse 34, 85635 Hoehenkirchen-Siegertsbrunn, Germany

Tel.: +49 8102 89638 , E-mail: support@future-shape.com, Web: http://www.future-shape.com/

8.5 Cleaning, Recycling and Certification Information

The hardware of the SensFloor Care system consists of various components. Cleaning, recycling, and conformity information of each component can be found in the corresponding manuals and datasheets that have been delivered together with the system at hand over of your SensFloor® Care installation. In addition, the datasheets of those components that are manufactured by Future-Shape GmbH can be requested by using the service address. The declaration of conformity of the system components that are manufactured by Future-Shape can be found at the end of this manual.

8.6 Warranty

The conditions for warranty are listed in the General Terms and Conditions of the manufacturer.

8.7 References

The following documents are to be considered as part of the manual and can be obtained from the manufacturer by making use of the service address.

E_SensFloor_Installation_Manual   E_Manual_SE10_Room_Terminal

E_Manual_SensFloor_System

Manual Ward Terminal	**FUTURE·SHAPE**

Date of Issue	Dokument ID	Version	
15.12.2021	**E_Manual_Ward_Terminal**	**04**	

9   Abbreviations and Glossary

9.1   Abbreviations

GUI = graphical user interface   LAN = local area network   USB = universal serial bus

FAQ = frequently asked questions   PC = personal computer   RTC = real time clock

IP = Internet protocol   WTIP = ward terminal IP address   SE10 = room terminal

9.2   Glossary

Words in **bold face** refer to Text in the graphical user interfaces.

10 Conformity

Declaration of Conformity

As part of our due diligence, we pay attention to the certification of manufacturers of components and semi-finished products in our supply chain. This applies to ingredients and their origin from countries of origin not classified as critical (EU)2017/821.

Future-Shape GmbH, Altlaufstr. 10, 85635 Höhenkirchen - Siegertsbrunn, Germany declares with the CЄ mark, that the SensFloor® system meets the basic requirements and guidelines of the European regulations in combination with CЄ-certified and top-flooring approved by Future-Shape.

Underlying EU regulations and standards

REACh (EU) 1907/2006; Registration, Evaluation, Authorisation and Restriction of Chemicals
RoHS 2011/65/EU; restriction of the use of certain hazardous substances in electrical and electronic equipment
DIN EN IEC 63000;VDE 0042-12: Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances
RED 2014/53/EU; provision of radio equipment / EMC 2014/30/EU; Electromagnetic compatibility
DIN EN 60601-1:2013-12;VDE 0750-1:2013-12: Medical electrical equipment - Part 1: General requirements for basic safety and essential performance; EN 62479:2011-09;VDE 0848-479:2011-09: Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields; DIN EN 300220-1, V3.1.1: Short Range Devices (SRD) operating in the frequency range 25 MHz to 1000 MHz - Part 1: Technical characteristics and methods of measurement; DIN EN 300220-2, V3.1.1Short Range Devices (SRD) operating in the frequency range 25 MHz to 1 000 MHz - Part 2: Harmonized standard for access to radio spectrum for nonspecific radio equipment
CE-Conformity on the basis of hEN 14041: Resilient, textile, laminate, and modular multilayer floor coverings - Essential characteristics; EN 13501-1 Fire classification of construction products and building elements ; ISO/TR 11925-1: Reaction to fire tests - Ignitability of building products subjected to direct impingement of flame ; EN 12667:2001-05: Thermal performance of building materials and products - Determination of thermal resistance; DIN EN ISO 24343-1:2012-04: Resilient and laminate floor coverings - Determination of indentation and residual indentation; DIN EN 1991: Eurocode 1: Actions on structures; EN 16516:2020-10 Construction products: Assessment of release of dangerous substances - Determination of emissions into indoor air.

11   Short Manual

The following pages contain slides that serve as quick reference for the functions of the ward terminal. This short manual is also available as separate document from Future-Shape.

Ward Terminal Quick Start – Room Overview Options

SensFloor® by FUTURE SHAPE

- By tapping on the „Options" label in the room overview, a configuration panel can be shown or hidden.

- Here, the SensFloor System of any room can be swiched off. Unlike when tapping a room's taskbar, no auto enable function will switch on the system automatically. Therefore, the user is responsible for re-activating the system!

- Individual sounds for some alarms can be switched on separately. A monitor with loudspeaker is required for this to work. This function does not replace a dedicated nurse call system!

- By tapping on „Alarms Configuration", the alarms of individual rooms can be switched on or off, and time windows can be defined for each (e.g. "Bed Out" alarm during the night only).

Ward Terminal Quick Start – Alarm Configuratuion
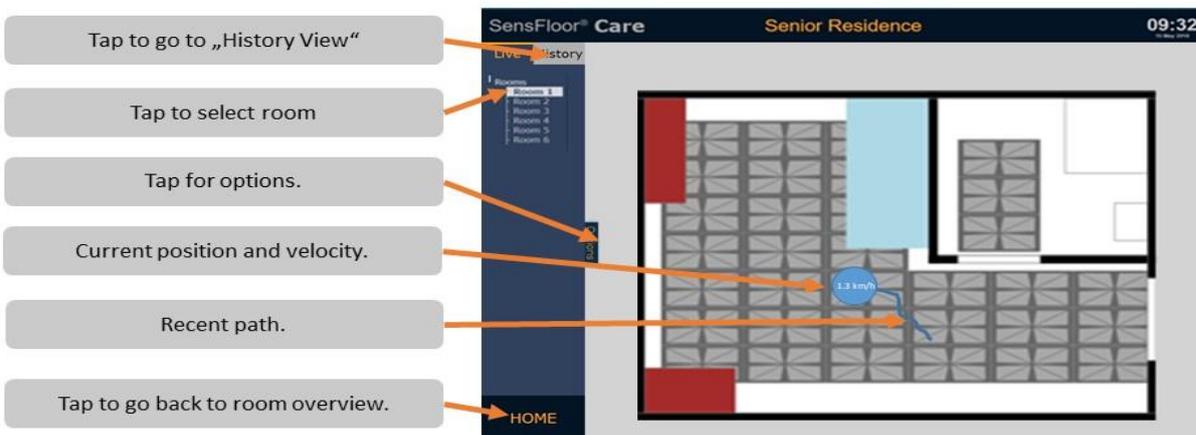
SensFloor® by FUTURE SHAPE

- Users can enable or disable one or more of the preconfigured alarms for each room separately. If many rooms exist, the room list can be scrolled.

- Each alarm can be limited to a selectable period of time (e.g. at night).

- In the list of rooms, icons indicate the alarms' status for each room (white=enabled, grey=disabled, clock symbol=time window defined).

- Changes of the configuration for each room must be registered by tapping „Update Room Alarms" before selecting the next room.

Ward Terminal Quick Start – Live View

SensFloor® by FUTURE SHAPE

Tap to go to „History View"

Tap to select room

Tap for options.

Current position and velocity.

Recent path.
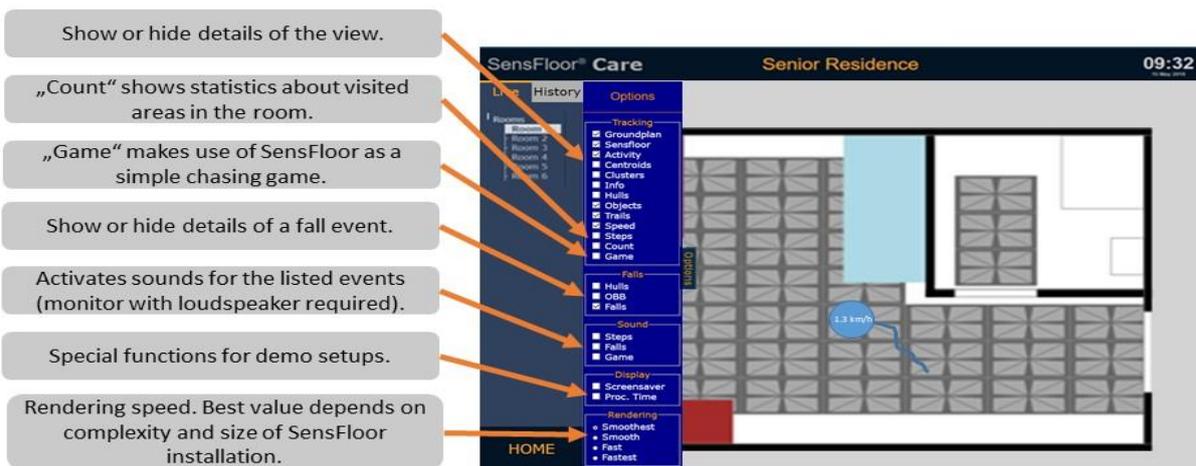
Tap to go back to room overview.

- When tapping on the room name in the room overview, a live view of the room is shown.
- People in the room are shown as moving circles together with their current velocity and recent path.
- Falls are indicated by means of a red background and an indication of the location of the fall.
- Either by tapping on the „History" tab, or from the room overview by tapping the 📈 symbol, the „History View" can be accessed.

Ward Terminal Quick Start – Live View Options

SensFloor® by FUTURE SHAPE

Show or hide details of the view.

„Count" shows statistics about visited areas in the room.

„Game" makes use of SensFloor as a simple chasing game.

Show or hide details of a fall event.

Activates sounds for the listed events (monitor with loudspeaker required).

Special functions for demo setups.

Rendering speed. Best value depends on complexity and size of SensFloor installation.

- By tapping the "Options" label, in the live view, a configuration ribbon can be shown or hidden. **These options are for experienced users only and do not have to be changed in the default care application!**
- Aspects of the live view can be changed by ticking the corresponding options.
- For demo puposes, some special views can be activated ("Counting", "Game", "Screensaver").
- The user can control if and how falls are displayed in the live view (independent of the room overview).

Ward Terminal Quick Start – History – Overview

SensFloor® by FUTURESHAPE

Days and period to analyse (current day and time is default).

Tap to select either timeline or calendar mode

Activity: select % of active time or number of people Alarms: display all alarms or select type.

Tap to go to „Live View".

Tap to select room.

Tap for overview (default), analysis (History), playback or reporting of activity in the room.

Accumulated data of all periods.

Data for every single period (default is current day only).

Tap to go back to room overview.

Average % of activity or sum of people/alarms (depends on data type and subtype selected in „Overview Options").

Shortcuts to History, Playback and Report for this period.

- When selecting "History" from room overview or live view, data for the current day is downloaded from the room and displayed as % of active time in the room.
- Change days and time domain (period) to analyse (see next page).
- Data is shown for each day and accumulated over full period (same time domain).
- Select type and corresponding subtype of data.

E_Ward_Terminal_QuickStart_v03 © Future-Shape GmbH, 01.2021

Ward Terminal Quick Start – History – Select Period

SensFloor® by FUTURESHAPE

Tap to select periods and set of days to analyse.

Tap to include or exclude week days from the selected set of days.

Tap „Date Range" to display calendar. Tap first and last day to analyse. Tap „Apply".

Date Range
24.01.2021 - 24.01.2021

Tap on these shortcuts to quickly select a set of days.

Tap to choose start and end time of day from scroll arrows or by clicking on the numbers. The selected period is the same for all selected days of the calendar.
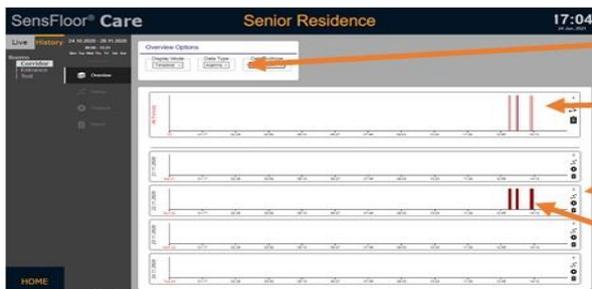
Tap to download only event data (e.g., alarms).

Tap to download location data for the period from the room to the ward terminal. Download time depends on length of period.

E_Ward_Terminal_QuickStart_v03 © Future-Shape GmbH, 01.2021

Ward Terminal Quick Start – History – Multiple Days

SensFloor® by FUTURE·SHAPE

Data type „Alarms" and subtype „Fall are selected.

This panel shows all alarms of this type in all periods for the whole set of days.

These panels shows all alarms of this type for single days (scrollable).

Each alarm is indicated by a vertical line at the corresponding point in time. If data subtype „All" is selected the alarms are indicated in grey color otherwise they show the color of the alarm.
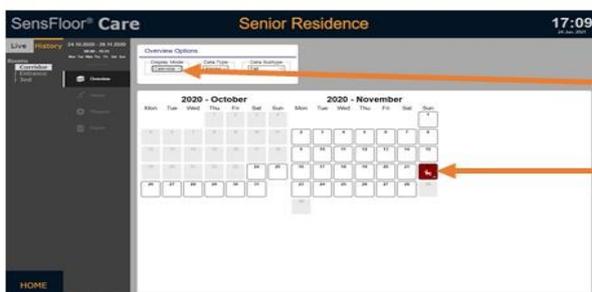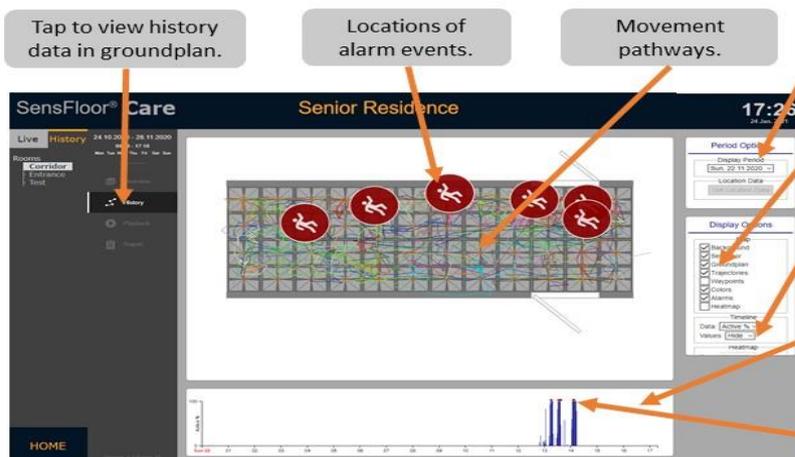
Calendar view is selected.

All days of the set are shown in white if no alarm happened or in the alarm color if alarms of the selected type occured.

E_Ward_Terminal_QuickStart_v02 © Future-Shape GmbH, 01.2020

Ward Terminal Quick Start – History - Analyzing

SensFloor® by FUTURE·SHAPE

Tap to view history data in groundplan.

Locations of alarm events.

Movement pathways.

Select period to analyse.

Tick to display groundplan, SensFloor, trajectories and/or alarm event locations.

Select data type to display in the timeline.

Depending on selected data type either activity or number of people is indicated in the timeline.

Alarms are indicated as colored dots on top of the bars.

- The "History"-tab shows details about the movement of people and locations of alarm events in the room.
- Event locations are indicated by the corresponding symbol and color
- By default, all data for the selected day is shown at once. For clarity, items can be removed from the display.
- The time window of data to be displayed can be narrowed (see next page).

E_Ward_Terminal_QuickStart_v03 © Future-Shape GmbH, 01.2021

Ward Terminal Quick Start – History – Time Window

SensFloor® by FUTURE·SHAPE
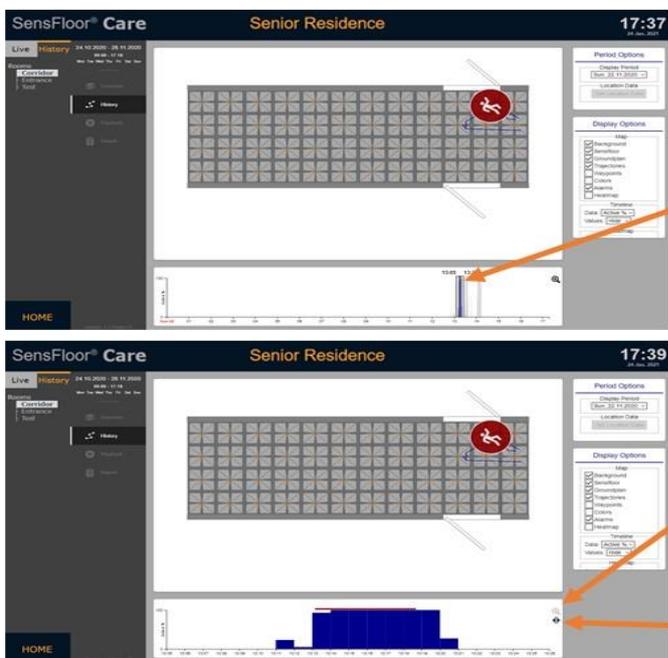
By tapping and dragging, a smaller time window around interesting events can be selected. Only location- and event-data within that period is displayed in the groundplan. The rest of the timeline is greyed out. The highlighted selection can be resized and moved across the timeline. Start-and end-time of the window is indicated. This function can be used, for instance, to analyse the movement before a fall occured.

By tapping the magnifying glass symbol, the timeline zooms in on the selected window and its limits can be refined again by tapping and dragging until the accuracy scale of minutes has been reached. This way, a detailed analysis around alarm events is possible.

Tap here to revert to the full timeline.

Ward Terminal Quick Start – History – Heatmap

SensFloor® by FUTURE·SHAPE
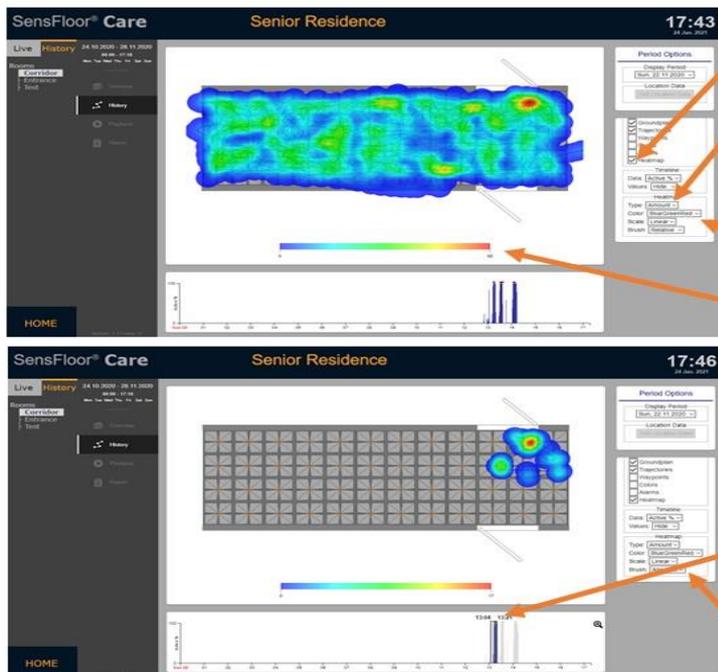
If „Heatmap" is selected, most frequent locations are shown.

Either „Amount" of activity or time of stay at the locations can be selected.

Select colormap, linear or log-scaling.

The figure legend indicates the color scaling values.

If a time window is selected, the heatmap is displayed for the locations visited in this interval only. The window can be slided across the timeline.

Select „Absolute" brush to normalize the heatmap on the selected window.

Ward Terminal Quick Start – Playback

SensFloor® by FUTURE·SHAPE

Tap to play back recorded movements.

Recent Ppathway (trail)

Moving person.

Tick „Objects" to display the moving object (person), tick „Trails" to show the recent pathway.

Playback controls:
⟲ ⟳ jump back/forward 10s
◀ ▶ jump to start/end of window
◀| |▶ jump back/forward 100ms
▶ ❚❚ play/pause
↺ ↻ jump to next event

Tap for slow motion or time lapse

Playback options:
Skip: skip boring intervals.
Filter: filter timeline for activity, objects or alarms with parameters.

Get raw sensor signals and display sensor activity with display option „Floor Signals".

Timestamp of current position in timeline, also indicated by red vertical line (time cursor) in time window. Timestamp is red when playback is running.

Tap here to toggle between „time window selection mode" (black symbol) and „time cursor sliding mode" (red symbol).

Ward Terminal Quick Start – History – Report

SensFloor® by FUTURE·SHAPE

Select „Activity" or „Alarms" as report topic

Select the type of alarm or „All"

Tapping here generates a text file containing the data currently viewed.

Tapping here generates a pdf ready to be printed.

Tap here to obtain reports of aggregated data.

Data displayed as a list can be exported to facilitate documentation of events (e.g., falls).

Coordinates of events are in meters relative to the coordinate origin selected when installing the SensFloor.