

New in SoundPLANessential 4.1 / 4.0

December 2017

Installation

SoundPLANessential 4.1 can be installed parallel to earlier SoundPLANessential versions, older versions do not need to be uninstalled.

For the installation you must be logged on with **Administrator** privileges. Insert the CD/DvD and attach the HASP key to a USB port. The installation program will guide you through the installation.

At the end of the installation you will be asked to select the folder where you have stored the license file (BABExxxx.007). **Make sure to use the license file supplied for the version SoundPLANessential 4. License files for older versions cannot be used with the version 4!**

Convert projects to SoundPLANessential 4.1

If you want to continue with an older SoundPLANessential project that was done with an earlier version of SoundPLANessential, it must be converted to the structure of SoundPLAN SoundPLANessential 4.1. Please observe that after the conversion the project cannot be opened again with the earlier version.

You decide how the conversion is done. Depending on the selection the project will be first packed or copied. Afterwards the database tables are converted.

Projects that have been processed with an older version are marked with a gray SoundPLAN project folder. When you click on the gray folder the program will ask if you want to convert the project.

New developments and improvements

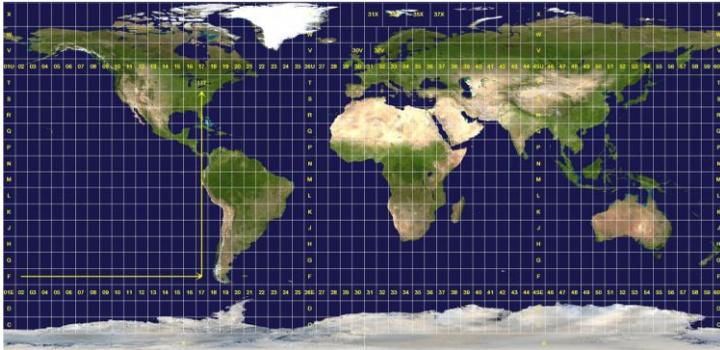
New developments 4.1

Import Google Earth bitmaps and elevations

When using Google Earth, please observe their usage and licensing conditions. SoundPLAN supplies the tools but is not responsible for the licensing conditions. This is entirely the responsibility of the Google Earth user. As Google Earth licensing may vary between countries, SoundPLAN can't even assist.

In the project settings select the coordinate system and the zone.

For UTM coordinates, the earth is mapped in sixty 6 ° wide zones. Zone 1 is located between 180 ° and 174 ° west of Greenwich. The zones are numbered consecutively to the east. The polar regions are not covered by UTM.



Overview of the UTM zones

Photo credits: <https://commons.wikimedia.org/wiki/File:Utm-zones.jpg#/media/File:Utm-zones.jpg>

A missing zone or stripe specification may lead to distortions and incorrect transformations!

The website <https://www.geoplaner.com/> offers a very helpful converter in different coordinate systems. For example, specify a location in your study area. The coordinates are displayed in different coordinate

systems. This will allow you to quickly find out in which coordinate system the data is available.

Go to the Editor and click on the Google button on the upper right side to open Google Earth.

Zoom Google Earth to the study area. Use Edit -> Get Google Earth bitmap to put the bitmap in the background of the Editor.

If geometry data is already present in UTM coordinates in the project, you can use **EDIT -> MOVE GOOGLE EARTH CAMERA TO CURRENT VIEWPORT CENTER** to move Google Earth to the project data and then save a bitmap.

Elevations from Google Earth

Google Earth elevations are based on free SRTM elevation data. These elevations have a resolution of approx. 90 m, which means, that the measured points have a distance of 90 meters. In-between a spline interpolation is done. Changing topography cannot be represented with these elevations. However, these elevations are an alternative for relatively small projects in flat terrain.

Call edit -> Get terrain points from Google Earth; the elevations of the selected viewport are imported and automatically mashed to a digital terrain model.

Google Earth Version

Newer Google Earth versions may lose the connection to SoundPLANessential. Therefore, please install the following version: https://dl.google.com/earth/client/GE6/release_6_2_2/googleearth-win-bundle-6.2.2.6613.exe.

Google Earth Settings

Please make the following settings in the Google Earth options:

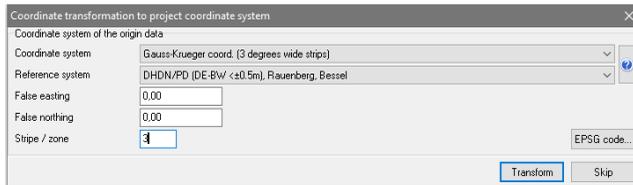
- *3D View* tab: Set the elevation exaggeration to 0.01 and deactivate "Use 3D Imagery".
- *Navigation* tab: Activate "Do not automatically tilt while zooming".
- *General* tab: Deactivate "Show start up tips".

If you rotated or tilted the Google Earth viewport, please reset in „View | Reset | Tilt and Compass“, bevor you get the bitmap.

If you work with the Pro-Version, deactivate the terrain and the 3D buildings in the layers on the left-hand side.

Transformation during the import

To make it possible to use data that is available in another coordinate system than UTM together with Google Earth, you can transform these mostly country-specific coordinates to UTM if the UTM coordinate system is selected in the project settings.



Enter the source coordinate and reference system and if needed the stripe or zone in the automatically opened dialog.

Import und calculation of d&b audiotechnik stages

The environmental noise at a festival created by one or multiple stages can be calculated in SoundPLAN in accordance to either the Nord2000 or ISO 9613-2.

Calculations with the Nord2000 offer higher accuracy because the formulae used in the propagation are closer to the propagation of a wave than what the ISO 9613-2 offers. The ground effect is using Fresnel zones to calculate the reflection of the wave on the ground, the ISO 9613 only regards a single reflection point. The ISO 9613-2 also calculates the scenario as a downwind case which automatically means that you are assessing the worst-case scenario with downwind in all directions. The Nord2000 allows for more detailed modeling of the meteorological conditions with wind velocity, wind direction or alternatively with downwind conditions.

A stage is a combination of the position of the noise sources, the properties of the loudspeaker array and the area for the spectators. The data are defined in the ArrayCalc file.

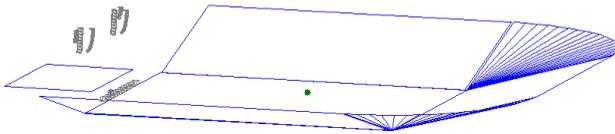
ArrayCalc is a software product from d&b audiotechnik GmbH, in which all properties and settings of the d&b speaker arrays. For example, the

number of arrays, the directivity and the tilt of individual speakers as well as the location of the concert attendees.

You can download the software for free from the website of d&b audiotechnik under

<http://www.dbaudio.com/en/support/downloads/category/detail/software/simulation.html>.

In SoundPLAN essential the entire stage from the ArrayCalc file is defined as a point object.



ArrayCalc must be installed, in order that the object type stage is visible.

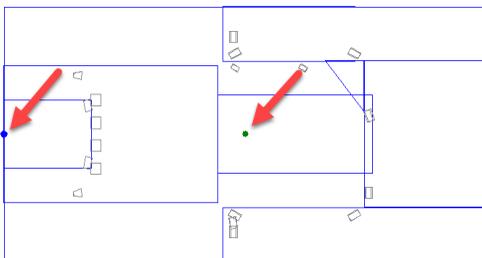


Select the symbol stage from the object bar and with the mouse place the stage on the screen. The entry point is the zero point of the stage. Open the ArrayCalc file. Depending on the complexity of the stage this may take some time. With the ArrayCalc symbol you can open ArrayCalc to if needed change the stage in ArrayCalc or adjust the “NoizCalc reference point” see below.

Customize the **DIRECTION** of the venue.

Via the library symbol select a frequency spectrum. As the spectra often are relative spectra with the sound power of LAeq = 0 dB, use the field for **LEVEL CORRECTION** to set the level selected at the sound mixing booth. A non-normalized spectrum that was measured with a sound level meter can also be set to the level defined at the sound mixing booth.

Calibrate the stage



In the picture above, you see the venue with the loudspeakers and additionally a blue and a green dot. The blue dot represents the position that you see in SoundPLAN, the green dot is the position of the sound mixing booth or respectively the location used to calibrate the stage to, this point is called the “NoizCalc reference point”.

In ArrayCalc under “settings -> advanced features”, the „NoizCalc reference point” must be activated for SoundPLAN to be able to calculate the stage. You can customize the “NoizCalc reference point” in ArrayCalc in the “3D plot”. SoundPLAN uses this location to calibrate the noise level to the total sound pressure of all loudspeakers. Usually this calibration point is positioned at ear level at the sound mixing booth. The calibration point must be at least 0.1 meters above the ground. The calibration is done in a pre-calculation of the SoundPLAN calculation core.

New standard “Nord 2000”

Activate the standard Nord 2000 in the project settings with the button standards and calculation settings in the tab *country / standards*. Subsequently go to the tab *noise type combinations* and select Nord 2000 as industry noise standard.

In the tab *calculation* there are additional meteorology parameters, only valid for Nord2000.

Meteorology settings (Nord 2000)

Wind speed [beaufort] 5 [Fresh breeze] m/s 9,3

Downwind Wind direction [deg] 90,0

Temperature gradient [K/m] 0,070

The Beaufort scale classifies wind speeds from 0 (calm) to 12 (hurricane). Typically, events are evacuated at wind classes higher than 4 or 5. T

The Downwind option enables a hypothetical and non-physical worst case scenario, which is quite commonly used for calculations of environmental noise such as traffic noise and industry noise: The calculation includes downwind in every direction from the source to the receiver (like a vortex)! For open-air events this is not very fitting due to the short duration of the event. Different specific scenarios should be considered, e.g. two different wind directions or no wind.

The temperature gradient defines the vertical temperature change. It affects distant receivers.

In the properties of the **volume attenuation area** (foliage) the attenuation A is calculated using the path length through the volume attenuation area d [m]:

According to Nord2000: $A = d \cdot a(f)$

a(f) is calculated from the mean tree density, mean stem radius, factor kp and mean absorption coefficient.

For the consideration of different acoustical ground properties according to Nord 2000, the effective flow resistivity and a roughness length is evaluated in the properties of **ground effect areas** (default values that are used if no ground effect area is entered are highlighted in gray).

N2k: A: very soft (snow, moss-like)

N2k: B: soft forest floor (short, dense heather like or thick moss)

N2k: C: uncompacted, loose ground (turf, grass, loose soil)

N2k: D: normal uncompacted ground (forest floors, pasture field)

N2k: E: compacted field and gravel (compacted lawns, park area)

N2k: F: compacted dense ground (gravel road, parking lot)

N2k: G: hard surface (most normal asphalt, concrete)

N2k: H: very hard and dense surface (dense asphalt, concrete, water)

Roughness class Nk2:

N: Nil ± 0.25 m

S: Small ± 0.5 m

M: Medium ± 1 m

L: Large ± 2 m

Small new developments in 4.1

Single points and grid noise maps can now also be calculated with other dB-weightings than dB(A). For example in dB(C).

The project type „without/with noise protection“ can now also be calculated in spectra.

In the calculation settings road and railway edges can now be optionally evaluated for the DGM. If you use this option, emission lines in changing terrain can no longer be spilled from the terrain.

When entering new objects, points and lines of existing objects can be captured. If the cursor comes close to an existing point or line, the cursor changes to a capture cursor that captures the coordinate. If the first point of the new object is already to be captured, the selection mode must be switched off (upper check mark next to the input cross symbol).

The north arrow can be rotated in the graphics settings regardless of the rotation of the sheet.

New developments 4.0

New German railway standard Schall 03-2012

Please read the 16. BImSchV, Annex 2: Calculation of the assessment level for railways (Schall 03) dated 18.12.2014 as well as the explanatory report of the BMVI dated 23.02.2015.

Geotool "Create receivers"

EDITOR -> CREATE RECEIVERS AT SELECTED BUILDINGS automatically positions one receiver in the center of each façade with a length larger than a defined minimum length (default setting is 1 m, **OPTIONS -> SETTINGS**, Tab *Editor*).

The receiver name is generated with a consecutive number from the building name. The number of floors is calculated from the building height. If more than one building is selected, the receivers are only created for main buildings. If only one single building is active receivers can also be created for auxiliary buildings.

Building facades are filtered with a filter width of 1 cm to avoid unnecessary small facades where otherwise receivers would be created.

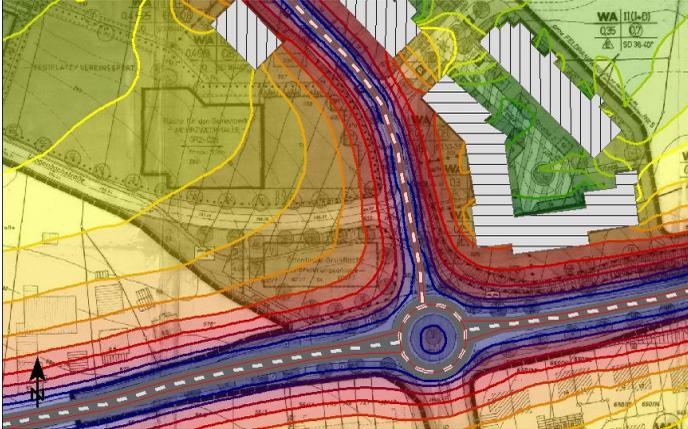
Geotool "Take over limits to selected receivers"

Select the receivers and invoke **EDITOR -> TAKE OVER LIMITS TO SELECTED RECEIVERS**. The limits you entered in the project settings are taken over to the receivers.

Transparent grid maps

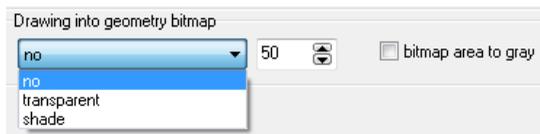
If a geometry bitmap is in the background of the editor, the display of the grid map can be included in the geometry bitmap either transparent or

shaded provided that the geometry bitmap is larger than the calculation area.



The contour lines are drawn on top of the bitmap in the selected color or in scale color.

Go to the object types (mouse click on the legend), select **TRANSPARENT** or **SHADE** in the settings for the grid noise map and enter the percentage for shaded or transparent.



You can additionally select whether the colors of the bitmap should be taken into account or only the gray values (check box **BITMAP AREA TO GRAY**).

TRANSPARENT is suitable for fully colored darker geometry bitmaps (aerial photos). **SHADED** is suitable for digital base maps in which only lines and bright colors (e.g. light gray for built-up areas or light green for forests) are included. If the result colors are too falsified, you can change the settings in the object type geometry bitmap for the options **BRIGHTEN** (useful for aerial photos) or **CONTRAST** (useful for base maps).

Hint: In the background the geometry bitmap is automatically set to "normal" in the object type settings and the output sequence of the contour lines is set to higher than the output sequence of the grid noise map.

Display of the geometry bitmap in 3D



If a geometry bitmap is in the background in the Editor it can also be displayed in the 3D map. Please activate the check box **SHOW IN 3D** in the menu bar of the 3D map and the check box **3D** in the object type geometry bitmap.



Length scale bar

The length scale can now also be displayed in feet (click on the length scale and activate the check box **FEET**).

Improvements

- Selecting multiple objects has been improved. Keep the **shift** key pressed and pull open a frame with the right mouse button to only select the objects of the current object type. With pressed **shift** and **Ctrl** key additional objects of this object type can be selected (pull open a frame or left mouse click).
- You can now rotate texts with **Ctrl** + left mouse button on the pink diamond.
- **Ctrl+O** opens the object type settings in the Editor and in the graphics tab.