

# New features in SoundPLANessential 5.0

May 2019

---

## Installation

**SoundPLANessential 5.0 can be installed in parallel to earlier SoundPLANessential versions, so you do not need to uninstall the previous version.**

To install, please log in as **administrator**. Insert the DVD and plug the dongle into a USB interface. The installation program guides you through the installation.

At the end of the installation you will be asked to select the directory where you saved the license file (BABExxxx.007). **Be sure to use the license file you received for version 5.0, older license files will not run SoundPLANessential 5.0!**

### Convert projects to 5.0

If you want to open an older SoundPLANessential project with version 5.0, you have to convert it. This is necessary because data structures have changed. Please note that 5.0 projects can no longer be opened with earlier versions.

Projects edited with the previous version are marked with a gray SoundPLAN project folder. If you click on a gray project folder, you will be asked if you want to convert the project.

Specify how you want to convert. Depending on the setting, the project is first packed or copied and then converted.

---

## Google Maps / OpenStreetMap

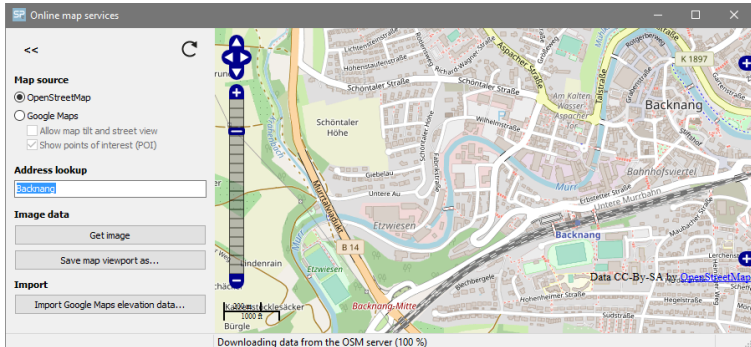
Instead of Google Earth, you can now use background images from Google Maps or OpenStreetMap.

Please note the terms of use of Google and OSM. SoundPLAN only provides the tools; the users themselves are responsible for compliance with the license terms.

First select the coordinate system (UTM northern or southern hemisphere) and the zone in the project settings.



Switch to the *Editor* and click on the icon at the top right or via **EDIT** -> **CONNECTION TO OSM & GOOGLE MAPS** to open Google Maps / OSM.



Zoom to the investigation area or enter the town name in the address lookup. With **GET IMAGE** the bitmap is stored in the editor. If geometry data in UTM coordinates are already available in the project, the online map services open automatically in the data area.

### Elevations from Google Maps

Google Maps elevations are based on free SRTM elevation data. These have a resolution of approx. 90 m. This means that every 90 meters is a measured elevation point, between which a spline interpolation is performed. Changing topography cannot be reproduced with these elevations. For smaller, relatively flat areas, these elevations offer an alternative.

In the Online Map Services window, click **IMPORT GOOGLE MAPS ELEVATION DATA**; the elevations of the selected area will be imported and meshed directly into a digital ground model.

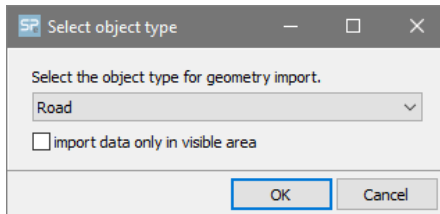
### Geometry import from OSM

The model geometry of objects from OpenStreetMap (e.g. buildings or roads) that have been saved as an XML file can be imported into SoundPLANessential.

First go to the website [www.openstreetmap.org](http://www.openstreetmap.org) or another page from which you can save OSM XML and select the section from which you want to import geometry data.

Be careful not to select a section that is too large, as the computing time and the processing time are greatly increased by unnecessary amounts of data!

Select the object type for which you want to import geometry. In the property block, you can define properties that are valid for all imported objects. Call **FILE -> IMPORT** in the *Editor*. If necessary, you can change the object type again here - the standard properties used by SoundPLAN as default are transferred to the objects during import.



With the checkmark **IMPORT DATA ONLY IN VISIBLE AREA** you can restrict the import to the section selected in the editor. Then select the OSM file to import.

---

## Bridges for roads and railways

For roads and railways, bridge situations can now also be taken into account in the propagation calculation.



In the property block for roads and railways, click on the **BRIDGE** checkbox at the corresponding coordinate.

Station / Cross section	
Kilometer	0,223
<input type="checkbox"/> Single emission band	
Road width	8,0
Distance of emission lines	3,5
<input checked="" type="checkbox"/> Bridge	Bridge width 9,0

The bridge width is preset to road width + 1 m or 4 m for railways. Turn off the check mark at the last bridge coordinate. The bridge is visualized in the editor with a dark band. The bridge edges have a shielding effect. For rail bridges, the bridge addition must be entered in addition to the bridge checkbox.

Recalculate the DGM. Roads and railways within the bridge areas are not included in the DGM; the elevation points are meshed at the bottom of the valley. Then select the road / railway with bridge and place the objects on the DGM. The heights within the beginning and the end of the bridge are interpolated. It is best to check the bridge situation using the 3D plan.

---

## Line and area sources following the terrain

For line and area sound sources as well as for parking lots, the height definition can be following the terrain. This ensures that the emission of each segment or partial area of the sources generated by the decomposition during the calculation is always at the specified relative height above the DGM, even in changing topography.

Height definition	<input checked="" type="checkbox"/> follow terrain		
X	Y	Gr.Elev.	rel.Z
32530948,63	5421388,03	0,00	1,50
32530975,39	5421388,03	0,00	1,50

To change the height definition, switch the slider from absolute to following terrain.

The relative height above ground is the same for all coordinates. If the relative height at one coordinate is changed, it also changes for all other coordinates.



Even if sources in the 3D view look partially buried in the editor, they are calculated correctly over terrain, because the exact determination of the source height is only done during the calculation.

---

## Time correction calculator for industrial noise sources

Sound sources rarely run at 100% per time slice. Previously you had to calculate the time correction manually - the time correction calculator now does this for you. Click on the calculator symbol in the emission definition for the industrial sources.

**SP Calculate time correction** [Close] [Maximize] [Minimize]

**Basic level**

per unit  per meter

**Time correction**

Entry type: Events per time slice

	Day 6-22	Night 22-6
Count	7,0	2,0
Corr. [dB]	-3,6	-6,0
L <sup>w</sup>	96,4	94,0

✓ ✗

Activate the selection of the basic level and enter the base sound power level; if a spectrum was previously selected, the base level is taken from the spectrum.

From the selection list, select the **ENTRY TYPE** you want to use to calculate the time correction:

- Events per hour
- Events per time slice
- Minutes per hour
- Minutes per time slice
- Hours per time slice

Enter the number of events (**COUNT**) for the individual time slices.

For assessments that take into account the loudest night hour (e.g. TA noise, ÖAL3), the night period is interpreted as the loudest night hour. This means that the number you enter is not distributed over the night period.

For line sources, tick **MOVING POINT SOURCE** to calculate the length-related sound power level L'w per meter at a certain speed from the sound power level of a vehicle.

The screenshot shows a software dialog box titled "Calculate time correction". It has two main sections: "Basic level" and "Moving point source".

- Basic level:** A checked checkbox, a text input field containing "100,0", and two radio buttons: "per unit" (selected) and "per meter".
- Moving point source:** A checked checkbox, a text input field containing "15,0", the text "km/h => L'w =", and a text input field containing "58,24".
- Time correction:** A dropdown menu labeled "Entry type" with "Events per hour" selected. Below it is a table:

	Day 6-22	Night 22-6
Count	6,0	1,0
Corr. [dB]	7,8	0,0
L'w	66,0	58,2

At the bottom right of the dialog box are green and red checkmark icons.

Enter the basic level per unit and the speed of the vehicle.

---

## Mean propagation table for industrial projects

For industry noise calculations the mean propagation table documents the various influences on the propagation path (air absorption, Cmet, ground effect, ...) for each receiver point. The propagation parameters are interdependent and cannot be considered separately.

The sound pressure at the receiver from a source is the sum over the contributions from any reflected paths from source to receiver and the direct sound.

$$p_{tot} = p_{Dir} + p_{Refl}$$

Area and line sources will be dissected in a number of sub-sources due to geometry etc. Each sub-source contributes with its sub-sound power and the corresponding propagation losses (m1..mn) to the sound pressure at the receiver. Therefore, the direct sound is the sum over all sub sources i and frequencies f:

$$p_{Dir} = \sum_i \sum_f dP_w(i, f) \cdot m_1(i, f) \cdot m_2(i, f) \cdot \dots \cdot m_n(i, f)$$

where

$dP_w(i, f)$ : Sub sound power of sub source i at frequency f  
 $m_1(i, f) \cdot m_2(i, f) \cdot \dots \cdot m_n(i, f)$ : Propagation losses 1..n in the propagation path e.g. due to geometrical spreading, screening, ground effect, air absorption, etc.

During the calculation the following intermediate values are calculated:

$$P_{w0} = \sum_{i,f} dP_w(i, f)$$

$$P_{w1} = \sum_{i,f} dP_w(i, f) \cdot m_1(i, f)$$

$$P_{w2} = \sum_{i,f} dP_w(i, f) \cdot m_1(i, f) \cdot m_2(i, f)$$

..

$$P_{wn} = \sum_{i,f} dP_w(i, f) \cdot m_1(i, f) \cdot m_2(i, f) \cdot \dots \cdot m_n(i, f)$$

The sound pressure at the receiver can therefore be expressed as:

$$p_{tot} = \overline{P_w} \cdot \overline{M_1} \cdot \overline{M_n} + p_{Ref}$$

with

$$\overline{P_w} = P_{w0}$$

$$\overline{M_1} = P_{w1} / P_{w0}$$

$$\overline{M_2} = P_{w2} / P_{w1}$$

..

$$\overline{M_n} = P_{wn} / P_{wn-1}$$

The Mi depend therefore on each other and cannot be viewed independently.

In SoundPLAN holds:

$10\lg(\overline{P_w}) = \overline{L_w}$  : mean sound power

$10\lg(\overline{M_1}) = \overline{A_{div}}$  : mean geometrical propagation loss

$10\lg(\overline{M_2}) = \overline{k0}$  : mean k0 (ISO 9613 - 2 alternative)

$10\lg(\overline{M_3}) = \overline{A_{gnd}}$  : mean ground effect

$10\lg(\overline{M_4}) = \overline{A_{scn}}$  : mean screening effect

$10\lg(\overline{M_5}) = \overline{A_{air}}$  : mean air absorption

$10\lg(\overline{M_6}) = \overline{A_{miti}}$  : mean mitigation loss

$10\lg(\overline{M_7}) = \overline{A_{net}}$  : mean wind effect

By means of a reverse function the mean acoustical distance is calculated from the mean geometrical propagation loss.

## New guidelines

CNOSSOS-EU for road, railway and industry with all currently known variants (Germany (BUB), Austria (RVE, ÖAL 28))

Israeli Railway Directive (based on the American FRA Directive)

## Small innovations

In the emission table, the area size of an area source or the length of a line source can be displayed using a check mark.

**Ctrl+C** copies the current graphic sheet to the clipboard, **Shift+Ctrl+C** copies only the plan without legend block.

## Convert projects to SoundPLANnoise

Projects edited in SoundPLANessential can now be more easily transferred to SoundPLANnoise, for example to continue them with SoundPLANnoise and forward them to another office using SoundPLANnoise.

Situations are automatically created during conversion.

- DGM.sit contains the elevation data and, if applicable, roads and railways.
- Objects.sit contains all objects for calculation and display.
- All objects.sit contains all objects entered in SoundPLANessential.



- Objects with Wall.sit additionally contains the planned walls for a calculation without and with a noise barrier.

The corresponding evaluation is automatically created; in addition, the SoundPLANessential calculations are converted into run file lines.

The graphic sheets are not generated automatically, save them in the *Graphics plot* tab index card via **GRAPHICS -> SAVE SHEETS AS SOUNDPLAN NOISE SHEETS** before you convert the project.