

SoundPLAN Version 7.0

SP Net info 82

Uploaded: 30.10.2009
Latest revision:

SoundPLAN 7.0 is here. The CD's will be spread some time during week 44.

The SoundPLAN Manager has got a new design, but behind the surface the contents and functions are nearly unchanged. However, two new buttons found their way to the front page. Noise Allotment and Building Acoustics can now be approached from the manager.

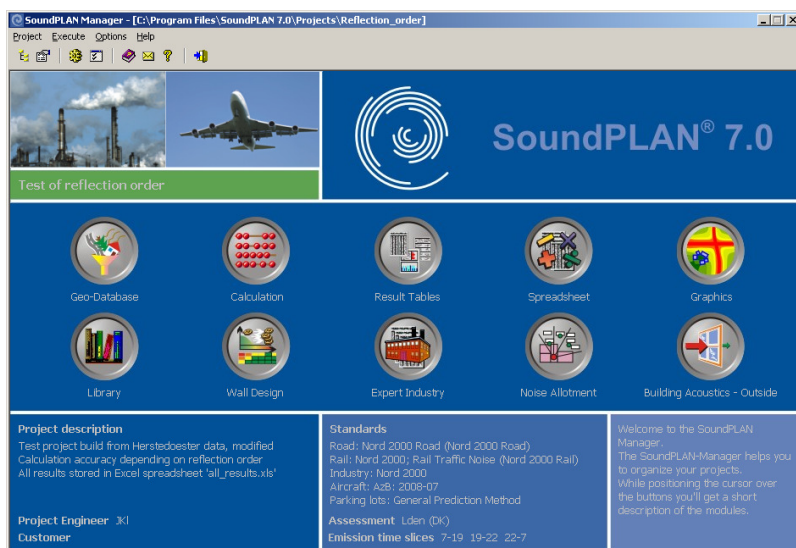


Fig 1 SoundPLAN Manager in Version 7

Version 7.0 can be installed on the same harddisk as older versions 6.x. Detailed installation guidelines can be accessed via the homepage www.soundplan.dk > User Guides.

On the CD you will find the usual pdf-document that sums up the changes and new features, see Fig 2. It is of course also possible to approach the document directly on the CD: <bin\Info SP\Update_7.0>. It is recommended to go through the update news; this Net Info presents only a summery.

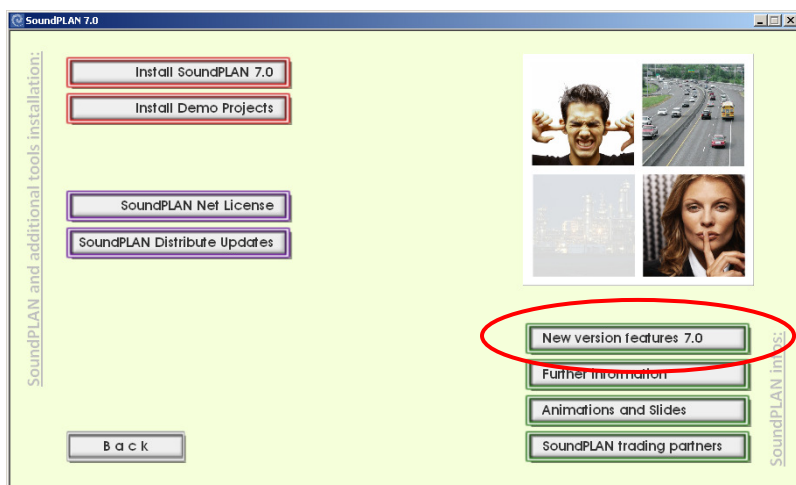


Fig 2 New version features

First start

When you launch SoundPLAN 7.0 for the first time you will be asked to key in the path to the Globdata folder <SoundPLAN Globdata 7.0>. Default it will be created under My Document, but you can pick any location on your harddisk.



Fig 3 Where do you want to create the Globdata folder?

Next you will be asked if you want SoundPLAN 7.0 to take over the Global settings (selection of standards, time slice, parameters for run set ups, etc) you work with in version 6.5:

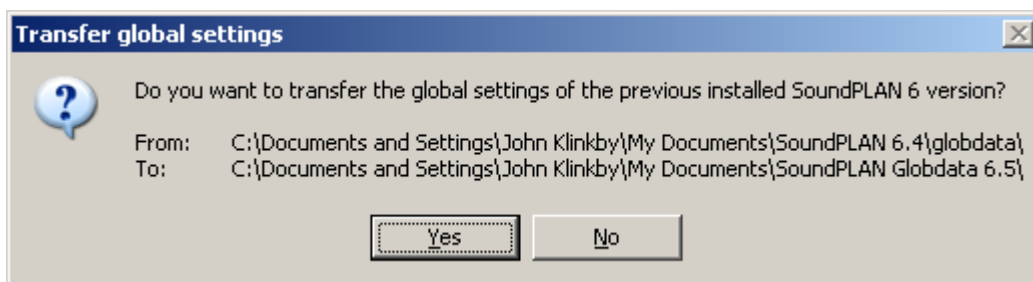


Fig 4 Take over global settings from version 6.5?

'No' will make your installation take over the default settings composed by the producer, which most likely is not relevant for you. It is recommended to click 'Yes'.

Now you must select languages for your first start, for example:

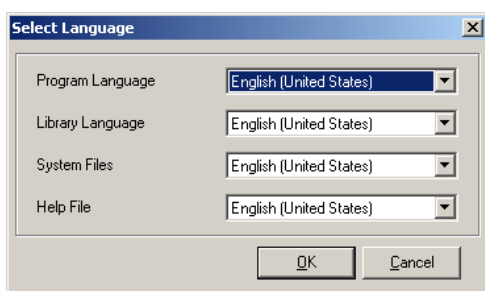


Fig 5 Select languages

After that you will be asked if you want to overwrite your global settings with country specific settings:

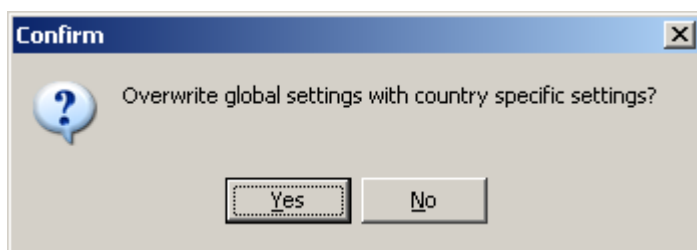


Fig 6 Do you want the producer's country specific settings?

This offer is mainly for new customers or for installation on PC's that do not have a running version of 6.5 with sensible global settings. These customers can click Yes and thereby use the default settings stored in the country specific System lib. If you already clicked Yes to the question if you want to copy the global settings from version 6.5 to 7.0 (Fig 4), you should definitely **click No** in this box.

Now you are ready to create new projects in version 7.0. If you try to open an existing and zipped project it will be unpacked and converted:

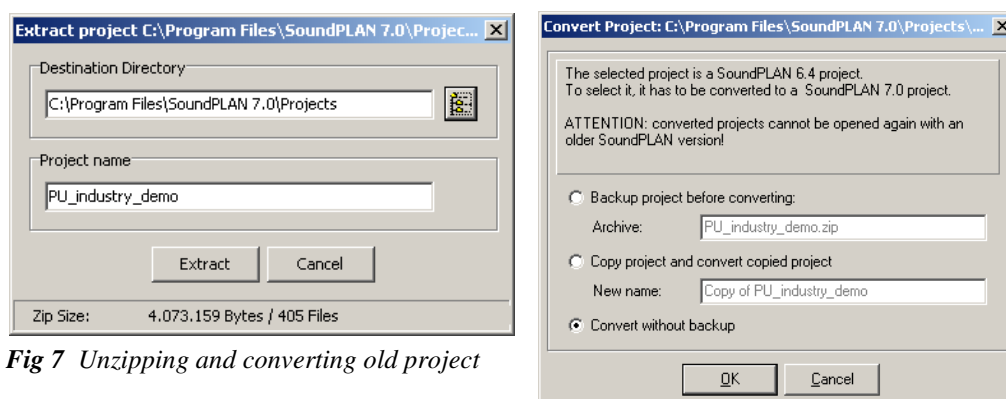


Fig 7 Unzipping and converting old project

New features in version 7.0

There are a lot of new things here and there, but two changes seem to be bigger than the others: The calculation core is completely new and now SoundPLAN can benefit from all cores in your PC.

Calculation Core. Former versions of the run kernel used a fixed angle ('angle increment') when scanning the model for sources, screens, terrain elevation etc. During calculations with no tolerance ('Tolerance' = 0) the time spend on each calculation source was the same no matter the significance of the contribution to the total level. As a consequence it took the same time to calculate the contribution from a quiet road segment far away from the receiver as from a highway near by.

The new run kernel finds the total level in a more 'dynamic' way. It works a bit like former calculations with tolerance. Contribution levels from each calculation source are as a first guess based on free field conditions ('6 dB per distance doubling'). Next the contribution levels are ranked according to their magnitude and step by step the most important sources are fully calculated (taking screening and ground effect into account) until the sum of the remaining sources in no way can change the total level by more than the defined tolerance.

In projects where all calculation sources are more or less of the same significance, the new kernel is not faster than the old one. But in most projects you will experience a shorter calculation time with the dynamic search, in some situations the improvement is not only by a few percent but by magnitude!

Multithreading technology. The new run kernel is designed to make use of all cores in your PC, even without using our Distributed Computing module. The number of cores in your PC is automatically recognized and used during a calculation. If you want to use your PC for other jobs while SoundPLAN calculates in the background, it might be a good idea to reserve one core for these other jobs. Otherwise you might find other applications annoyingly slow to work with. In the Calculation program under Options > Run settings you can reduce the number of threads by 1.

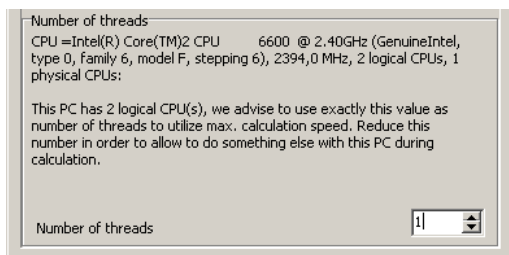


Fig 8 Adjusting the number of cores/threads

Attribute Explorer. You find the Attribute Explorer under the menu 'Tools' in the GeoDatabase. It arranges the properties of an object type in a table. This new feature is basically meant as a tool for editing object properties. But it can also be used to provide an overview of all input data for a single object type and therefore it is a convenient tool when checking input data. So far the Attribute Explorer is capable of handling only those objects with an attribute definition at the starting point. In a later version it will be extended so also properties that are changing between points of the same object can be shown.

ID	Building type	Name	Number	Road name	House	Building height	Reflecto	Property No	Area usage	Number of occupants	Weighting factor	Receiver height abv	Floor	Number of floor	Decisive floor	dm [m/mf]
1575	1	1 Kings Road	1	Kings Road	1	5.53	1.00	-1	General residential	0.00	1.00	2.40	2.80	1	1	170.96
1576	1	2 Kings Road		Kings Road	2	6.12	1.00	-1	General residential	0.00	1.00	2.40	2.80	1	1	382.73
1577	1	3 Kings Road		Kings Road	3	3.48	1.00	-1	General residential	0.00	1.00	2.40	2.80	1	1	65.47
1578	1	4 Kings Road		Kings Road	4	4.55	1.00	-1	General residential	0.00	1.00	2.40	2.80	1	1	140.73
1579	1	5 Kings Road		Kings Road	5	16.46	1.00	-1	General residential	0.00	1.00	2.40	2.80	1	1	52.50
1580	1	6 Kings Road		Kings Road	6	5.26	1.00	-1	General residential	0.00	1.00	2.40	2.80	1	1	407.15
1581	1	7 Kings Road		Kings Road	7	7.02	1.00	-1	General residential	0.00	1.00	2.40	2.80	1	1	85.12
1582	1	8 Kings Road		Kings Road	8	5.70	1.00	-1	General residential	0.00	1.00	2.40	2.80	1	1	51.78
1583	1	9 Kings Road		Kings Road	9	5.61	1.00	-1	General residential	0.00	1.00	2.40	2.80	1	1	80.35
1584	1	10 Kings Road		Kings Road	10	5.96	1.00	-1	General residential	0.00	1.00	2.40	2.80	1	1	351.19
1585	1	11 Kings Road		Kings Road	11	4.34	1.00	-1	General residential	0.00	1.00	2.40	2.80	1	1	200.46
1586	1	12 Kings Road		Kings Road	12	4.42	1.00	-1	General residential	0.00	1.00	2.40	2.80	1	1	384.61
1587	0	13 Kings Road		Kings Road	13	5.83	1.00	-1	General residential	9.10	1.00	2.40	2.80	2	1	113.71
1588	0	14 Kings Road		Kings Road	14	6.38	1.00	-1	General residential	15.90	1.00	2.40	2.80	2	1	198.78
1589	0	15 Kings Road		Kings Road	15	7.94	1.00	-1	General residential	13.31	1.00	2.40	2.80	2	1	166.37
1590	0	16 Kings Road		Kings Road	16	8.43	1.00	-1	General residential	24.48	1.00	2.40	2.80	3	1	204.00
1591	0	17 Kings Road		Kings Road	17	5.45	1.00	-1	General residential	21.57	1.00	2.40	2.80	1	1	539.34
1592	0	18 Kings Road		Kings Road	18	6.59	1.00	-1	General residential	8.26	1.00	2.40	2.80	2	1	103.24
1593	0	19 Kings Road		Kings Road	19	5.70	1.00	-1	General residential	4.22	1.00	2.40	2.80	2	1	52.81
1594	0	20 Kings Road		Kings Road	20	7.07	1.00	-1	General residential	14.44	1.00	2.40	2.80	2	1	180.52
1595	0	21 Kings Road		Kings Road	21	6.66	1.00	-1	General residential	10.86	1.00	2.40	2.80	2	1	135.71

Fig 9 Attribute Explorer

Terrain edges. This object type is no longer available. In former versions this object type was used partly to define discontinuities in the terrain profile, partly to make sure an elevation line provided screening even if this line did not break the line between source and receiver (negative extra path length). With version 7 elevation lines or DGM triangle edges above the terrain base elevation will automatically be evaluated for screening. To save calculation time no other elevation lines/DGM triangle edges will be evaluated for screening.

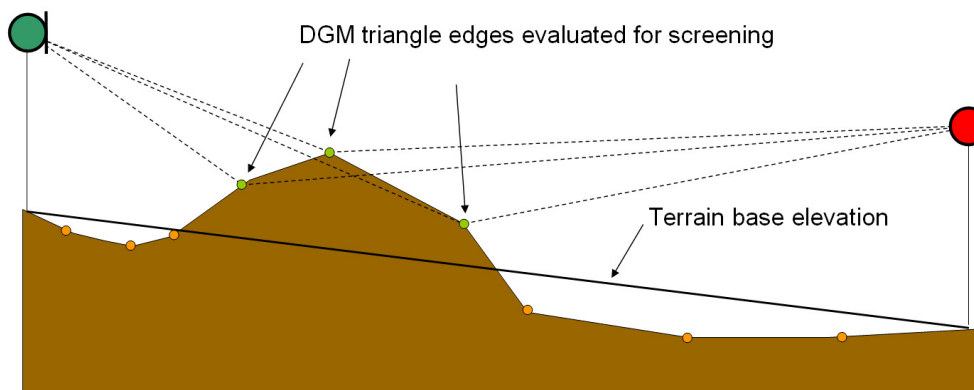


Fig 10 Definition of 'Terrain base elevation' and lines evaluated for negative extra path length

For receivers with little perpendicular distance to the line from source to elevation line/DGM triangle edge it will have a significant effect if the screening is being calculated or not. With General Prediction Method the difference is up to 5 dB. If you up to now haven't been aware of this difference between elevation lines and terrain edges you might experience **severe differences between results calculated with Version 7 and older versions**.

If older projects with terrain edges are converted into Version 7 format, these terrain edges are replaced by two elevation lines.

Tunnel openings. The GeoDatabase offers a brand new object type: Tunnel openings.

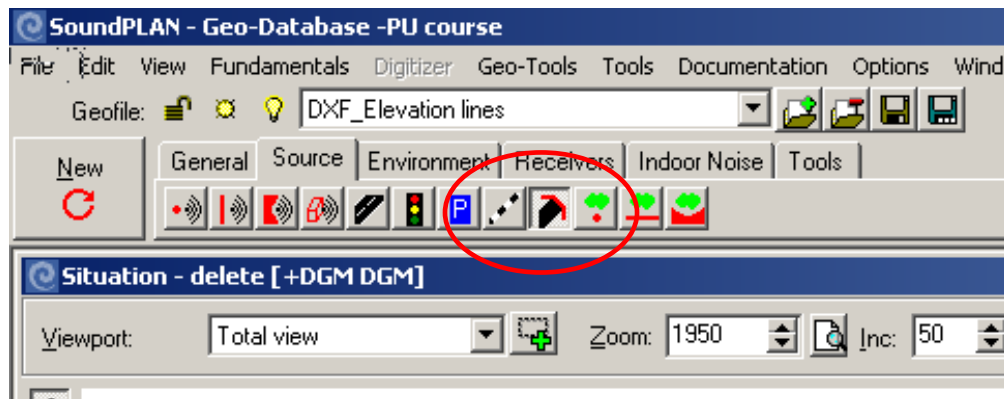


Fig 11 Tunnel object button

The tunnel is defined by two points, start and end point ('left' and 'right' side of the tunnel mouth). The tunnel picks up the emission data from the source it is crossing. Therefore the line between the start and end point must cross the road or railway. From the geometry of the opening, the length of the tunnel and the absorbing properties of the tunnel wall near the opening, the emission is calculated and assigned to 4 point sources in the opening. Directivity is attached to these sources.

Floating and cantilevered walls. Walls can now be more freely designed. It is possible to stack segments on top of each other and to adjust the angle between these segments. In this way you can design walls like the ones below.

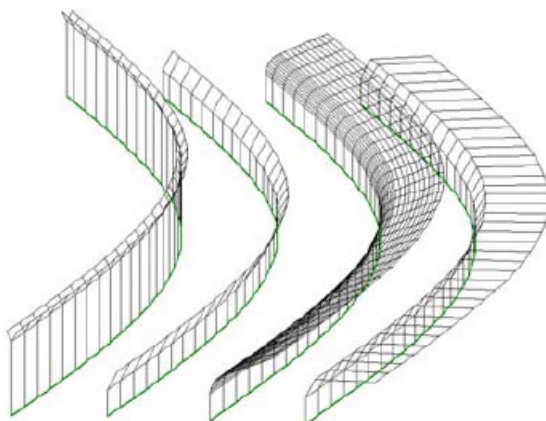


Fig 11 Walls with stacked segments

Furthermore some calculation standards allow walls to be floating. If the foot of the wall is above DGM (object elevation higher than terrain) and you tick for 'Wall floats above ground' then transmission through the gap underneath the wall will be taken into account. The program does that by searching for the shortest path between source and

receiver including paths passing under an obstacle; in case of a floating wall there might be a transmission with little extra path length underneath the foot of the barrier which then will be calculated according to the chosen standard.

Height

Wall floats above ground ☒

Wall height [m]: Constant element height ☒

Fig 12 Walls can be lifted above ground

The old Nordic standards deal only with the paths passing above or around (side screening) obstacles. Therefore in cases where there is a possible transmission underneath an obstacle you must decide if you want to 'follow rules' or calculate what you most likely would have measured. If your job demands you stick to the official standard you should not tick for 'Wall floats.....', then the transmission underneath the obstacle will not be taken into account (= wall is automatically 'extended' to the ground').

The basic reports on NORD2000 outlines how transmission under obstacles can be handled, but so far this is not implemented in SoundPLAN. Therefore we cannot benefit from this new facility in NORD2000 projects. Please note that floating screens still has no influence on the noise propagation in NORD2000 projects.

Lmax road noise with RTN96. Up to now SoundPLAN has for Lmax returned the level exceeded by only 5% of all passages, Lmax,5%. However, Swedish legislation expresses limits for the maximum levels by the fifth noisiest passage, Lmax,5th. From Version 7 on you can select which of those two values you want calculated.

Definition of "Road Traffic Noise - Nordic Pred. Method; 1996"-standard

Cmet Emission

Calculate Emission according to RTN - Nordic 1996

LAFmax

☒ LAFmax,5%

☐ LAFmax,5th

Defaults OK Cancel Help

Fig 13 Select between the level exceeded by 5% of all passages or the fifth noisiest level

The emission calculation mask has got a new index card 'LAFmax5th'. All you need to do is to key in the relevant percentage of ADT during the time period of interest (normally the night 22-06). Only if there are no heavy passages at all it is relevant to key in a percentage for light vehicles.

Emission calculation according to "RTN - Nordic 1996"			
Traffic	Speeds, Correction	LAFmax,5th	
	N	p[% of ADT]	LAFmax5th
light	0,0	0,0	78,0
heavy	427,4	13,0	86,8

Fig 14 Index card for estimating Lmax,5th

What has been implemented as a first step is a relatively simple function which does not make it possible to calculate for both the rush hour and the entire night time in a single calculation. If you need both values you must set up runs with two different percentages, one for the rush hour and another for the entire night time. The inserted values for p[% of ADT] does not affect the Leq. Common values range from approx. 15% for highways to almost 0% for minor roads.

Danish System Library, Emission. This library has adopted new records for lorries driving at speed below 40 km/h. These data are published by 'Miljøstyrelsens Referencelaboratorium for støjmåling' and are approved by the Danish Environmental Protection Agency. Data can be used when mapping industry noise from internal transportation.

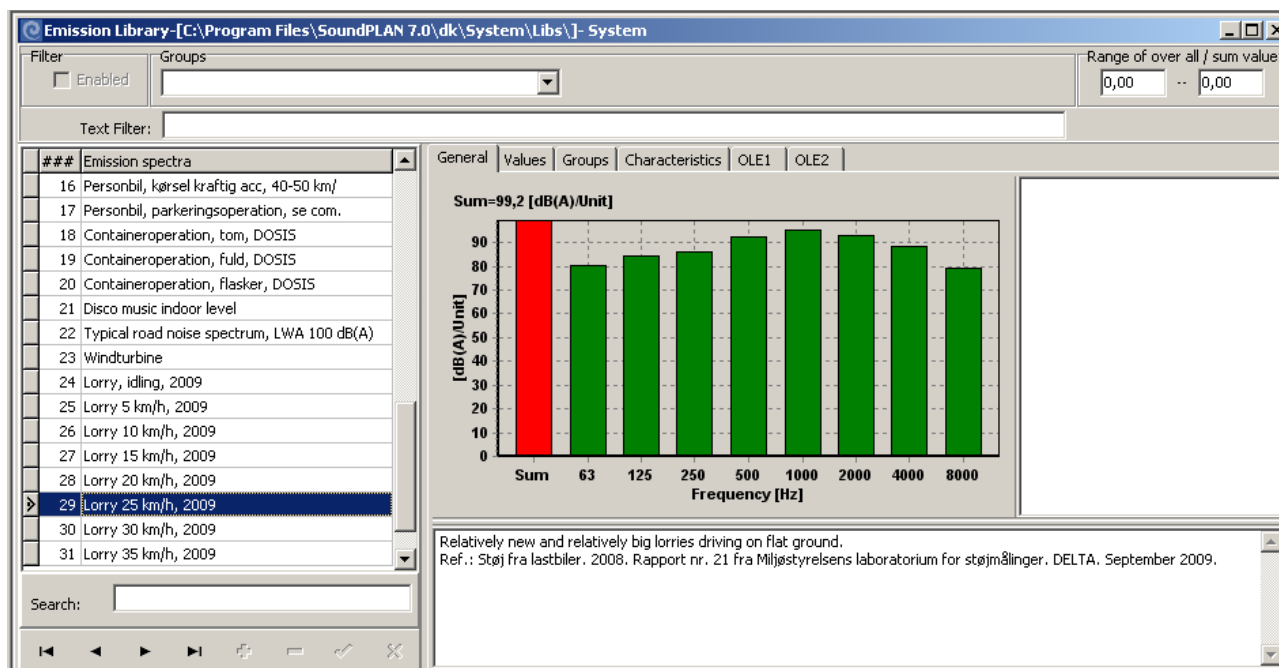


Fig 15 The Danish System Library has got new records for noise from lorries