



Scope of Performance

Cloud Licensing

CadnaA is available with Cloud Licensing on subscription basis or with On-Premise Licensing for purchase. CadnaA products with Cloud Licensing (CadnaA CL products) are distinguished in two groups: Light and Professional. Additionally, the product CadnaA CL CALC allows to outsource the calculation to external machines.

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1 CadnaA CL Products overview

Product group	CadnaA CL Light			CadnaA CL Professional				CadnaA CL CALC
	CadnaA CL Industry Light	CadnaA CL Road Light	CadnaA CL City Light	CadnaA CL Industry Professional	CadnaA CL Road Professional	CadnaA CL City Professional	CadnaA CL City & Airport Professional	
Noise types								
Industrial noise	☑	☑	☑	☑	☑	☑	☑	☑*
Road noise	×	☑	☑	×	☑	☑	☑	☑*
Railway noise	×	×	☑	×	×	☑	☑	☑*
Aircraft noise	×	×	×	×	×	×	☑	☑*
								*calculation only, no modelling etc.
Number of Sources								
Point sources	100	100	100	16 Mio.	16 Mio.	16 Mio.	16 Mio.	16 Mio.
Other source object types, each	60	60	60	16 Mio.	16 Mio.	16 Mio.	16 Mio.	16 Mio.
Calculation standards and guidelines included	All	All	All	All	All	All	All: industry, road, railway One: aircraft	All
Number of obstacles								
Buildings	2000	2000	2000	2000*	2000*	2000*	2000*	16 Mio.
Barriers	2000	2000	2000	2000* *16 Mio. with Option L	2000* *16 Mio. with Option L	2000* *16 Mio. with Option L	2000* *16 Mio. with Option L	16 Mio.
64-bit program version	☑	☑	☑	☑	☑	☑	☑	☑
Multithreading								
Number of cores	16	16	16	64	64	64	64	64
Import and handling of Bitmaps, GoogleMaps / WMS	☑	☑	☑	☑	☑	☑	☑	×
Efficiency tools (Automatic closing of aux. polygons, thin out height points)	×	×	×	☑	☑	☑	☑	×
Functionality expandable by Options	×	×	×	☑	☑	☑	☑	×

- ☑ included
- × not available

2 CadnaA Options overview (available for CadnaA CL Professional products)

L (Large scale projects)

- ✓ Calculation with unlimited number of screening objects (16 Mio. Buildings, 16 Mio. barriers) for large scale projects.

X (Extended analysis and postprocessing features)

- ✓ Extended features for analysis and postprocessing, especially valuable for e.g. noise mapping: Object-scan, population density estimation, monetary evaluation, conflict maps.
- ✓ LUA scripting language for automation of CadnaA tasks and many more user-definable functionalities.

BPL (Back-tracing of sound power levels)

- ✓ Manual or automatic optimization of noise emission.
- ✓ Calibration of area sources of which the sound power level is unknown.
- ✓ Automatic fixation of noise quota for urban development projects.

SET (Sound Emission & Transmission)

- ✓ Calculation of frequency spectra of radiated sound power determined from the technical parameters of a sound source.
- ✓ Modeling of complex devices with multiple sound sources and radiating areas, reproducing their inner sound flux and transmission to connected parts.
- ✓ User-defined sound source models.

FLG-Radar Tracks

- ✓ Aircraft noise calculation based on radar data.
- ✓ RADAR Import formats: Fanomos, Stanly, Topsonic, user-defined.
- ✓ Time period selection.
- ✓ Group classification according to ICAO-code.
- ✓ Automatic filtering of RADAR tracks.

Requires CadnaA CL City & Airport Professional

3 Implemented standards and guidelines

Industrial noise	Road noise	Railway noise	Aircraft noise
ISO 9613-2, VBUI CONCAWE VDI 2714, VDI 2720 DIN 18005 (1987) ÖAL Richtlinie Nr. 28 (1987) BS 5228 Nordic General Prediction Method (1996) Nord 2000 Ljud från vindkraftverk Harmonoise, P2P model NMPB08-Industry HJ2.4 (2009 & 2021) Schall 03 (2014) CNOSSOS 2015/996 EU CNOSSOS 2021/1226 EU	NMPB-Routes-96 RLS-90, VBUS RLS-19 DIN 18005 (1987) RVS 04.02.11 (2006) STL 86 SonRoad SonRoad 18 CRTN (1998) TemaNord 1996:525 Czech Method (1996) NMPB-Routes-08 TNM 2.5 (2004) HJ2.4 (2009 & 2021) CNOSSOS 2015/996 ¹ CNOSSOS 2021/1226 EU CNOSSOS 2021/1226 DE (BUB 2021) CNOSSOS 2021/1226 AT (RVS 2021)	RMR, SRM II Schall 03 (1990), VBUSch Schall03 2014 DIN 18005 (1987) ONR 305011 Semibel NMPB-Fer CRN TemaNord 1996:524 FTA/FRA (2018) NMPB08-Fer HJ2.4 (2021) CNOSSOS 2015/996 ¹ CNOSSOS 2021/1226 EU CNOSSOS 2021/1226 DE (BUB 2021) CNOSSOS 2021/1226 AT (RVE 2022) CNOSSOS 2021/1226 BE (Infrabel 2022) CNOSSOS 2021/1226 FR (SCNF 2022)	DIN 45684 AzB 2008 / ICAN ÖAL 24 ECAC Doc. 29 2 nd Edition 1997 ECAC Doc. 29 3 rd Edition ECAC Doc. 29 4 th Edition Integrated Noise Model (INM 7.0d) AzB 1975, AzB-MIL, LAI-Landeplatzlinie VBUF CNOSSOS 2015/996 EU & DE (BUF 2018) CNOSSOS 2021/1226 EU & DE (BUF 2021)
	¹ containing: CNOSSOS 2015/996 EU CNOSSOS 2015/996 DE (BUB 2018) CNOSSOS 2015/996 AT (RVS 2019)	¹ containing: CNOSSOS 2015/996 EU CNOSSOS 2015/996 DE (BUB 2018) CNOSSOS 2015/996 AT (RVE 2019) CNOSSOS 2015/996 FR (SCNF 2021)	

4 Technical Specifications of CadnaA CL Light products and CadnaA CL Professional products

4.1 Calculation technology

Feature	CadnaA CL Light			CadnaA CL Professional				Options				
	CadnaA CL Industry Light	CadnaA CL Road Light	CadnaA CL City Light	CadnaA CL Industry Professional	CadnaA CL Road Professional	CadnaA CL City Professional	CadnaA CL City&Airport Professional	X	L	BPL	SET	FLG-Radar Tracks
64-Bit program version	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Multi-threaded calculation (up to 16 cores)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>									
Multi-threaded calculation (up to 64 cores)				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Ray Tracing calculation method	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Angle Scanning calculation method	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Projection at line and area sources	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Maximum order of reflection	20	20	20	20	20	20	20					
Batch calculation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
PCSP distributed calculation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Maximum 2000 buildings and 2000 barriers per project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Unlimited number (16 Mio.) of buildings and barriers per project				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>			
DYNMAP Update of calculated noise maps based on measurements	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					

included (in CadnaA CL product or Option)

needed as pre-requisite (only one is needed in case of multiple entries in a row)

4.2 Source object types

Feature	CadnaA CL Light			CadnaA CL Professional				Options				
	CadnaA CL Industry Light	CadnaA CL Road Light	CadnaA CL City Light	CadnaA CL Industry Professional	CadnaA CL Road Professional	CadnaA CL City Professional	CadnaA CL City&Airport Professional	X	L	BPL	SET	FLG-Radar Tracks
Point source												
Line source												
Area source (horizontal)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Vertical area source												
Tennis point of serve												
Optimizable area source				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>		
Sound power level input modes: Direct PWL, PWL based on interior sources, PWL based on sound pressure level	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Sound power level based on moving machinery for line and area industrial sources	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Sound power level estimation based on transmission loss and interior level	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Estimation of sound power from the technical parameters of a sound source (32 modules) Fans and Blades (5) Diesel Motors (4) Electric Motors (6) Pumps (13) Trafo (4)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Extended database of source modules based on technical parameters (306 source modules included)				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	
User-defined sound source modules based on technical parameters				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	
Calculation of sound power level of complex interconnected source systems, accounting for Radiation and Transmission				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	
Road source												
Road crossing		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Parking lot												
Railway source			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Airport							<input checked="" type="checkbox"/>					
Air route source												
RADAR track							<input type="checkbox"/>					<input checked="" type="checkbox"/>

included (in CadnaA CL product or Option)

needed as pre-requisite (only one is needed in case of multiple entries in a row)

4.3 Further object types

Feature	CadnaA CL Light			CadnaA CL Professional				Options				
	CadnaA CL Industry Light	CadnaA CL Road Light	CadnaA CL City Light	CadnaA CL Industry Professional	CadnaA CL Road Professional	CadnaA CL City Professional	CadnaA CL City&Airport Professional	X	L	BPL	SET	FLG-Radar Tracks
Receiver	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Building evaluation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Barrier Barrier with cantilever Barrier with curved cantilever (3D) Floating barrier Roof edge (3D)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Building	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Embankment	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Bridge plate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
3D-Reflector	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Area of ground absorption	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Foliage area	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Built—up area	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Cylinder	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Contour line	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Line of fault	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Height point	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Area of designated land use	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Bitmap Object	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Section	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Text box	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Level box	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					

- included (in CadnaA CL product or Option)
- needed as pre-requisite (only one is needed in case of multiple entries in a row)

Feature	CadnaA CL Light			CadnaA CL Professional				Options				
	CadnaA CL Industry Light	CadnaA CL Road Light	CadnaA CL City Light	CadnaA CL Industry Professional	CadnaA CL Road Professional	CadnaA CL City Professional	CadnaA CL City&Airport Professional	X	L	BPL	SET	FLG-Radar Tracks
Auxiliary polygon	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Symbol	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
3D Symbol	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Station	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Calculation area (horizontal)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Vertical calculation area	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
CadnaB building Sound source and obstacle object for the interoperability with CadnaB (requires CadnaB as additional separate software)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					

- included (in CadnaA CL product or Option)
- needed as pre-requisite (only one is needed in case of multiple entries in a row)

4.4 Calculation results and postprocessing

Feature	CadnaA CL Light			CadnaA CL Professional				Options				
	CadnaA CL Industry Light	CadnaA CL Road Light	CadnaA CL City Light	CadnaA CL Industry Professional	CadnaA CL Road Professional	CadnaA CL City Professional	CadnaA CL City&Airport Professional	X	L	BPL	SET	FLG-Radar Tracks
Calculation at receiver points	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Partial levels at receiver points	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Calculation protocol for receiver points	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Building noise maps	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Horizontal grid calculations	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Vertical grid calculations	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Unlimited number of grid receivers	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Calculation of up to 4 evaluation parameters	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Arithmetic of grids Up to 7 grid collections (4 eval. parameters and terrain)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Noise evaluation parameters <small>L_{day} L_{evening} L_{night} L_{en} L_o L_{rn} L_{den} L_{io} (CRTN)</small>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Calculation of the loudest hour level L _{1hMax} for day, evening and night	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Calculation of L _{max} for industrial sources	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
User defined noise evaluation parameters	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Partial noise-type related evaluation parameters e.g. Industry Noise Map in projects with other types of noise sources (such as roads)		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Multiple source effect Calculation according to VDI3722, Miedema and EU Directive 2020/367	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Frequency maps	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Uncertainty maps (combined uncertainty for source and propagation) <small>SigmaD SigmaE SigmaN</small>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Calculation of terrain maps	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Automatic optimization of noise barriers	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					

- included (in CadnaA CL product or Option)
- needed as pre-requisite (only one is needed in case of multiple entries in a row)

Feature	CadnaA CL Light			CadnaA CL Professional				Options				
	CadnaA CL Industry Light	CadnaA CL Road Light	CadnaA CL City Light	CadnaA CL Industry Professional	CadnaA CL Road Professional	CadnaA CL City Professional	CadnaA CL City&Airport Professional	X	L	BPL	SET	FLG-Radar Tracks
Pass-by level calculation time-based sound pressure levels based on passing sound sources like cars or trains.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Pass-by level based auralization	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Aircraft related noise evaluation parameters DNL CNEL LAEQ LAEQd LAEQn SEL LAMAX EPNL PNLTM *relevant with INM/ECAC 3-/CNOSSOS Standards							<input checked="" type="checkbox"/>					
Calculation of wake-up reactions during night period							<input checked="" type="checkbox"/>					
Number of Aircraft Events Above Threshold NATd NATe NATn SigmaNATd SigmaNATe SigmaNATn							<input checked="" type="checkbox"/>					
Evaluation of maximum Level statistics FlgStatD FlgStatE FlgStatN SigFlgStatD SigFlgStatE SigFlgStatN							<input checked="" type="checkbox"/>					
Automatic generation of noise protection zones							<input checked="" type="checkbox"/>					
Automatic generation of conflict maps				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				
Estimation of the population density				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				
Monetary evaluation according to BUWAL method Evaluation of noise reduction measures with regards to the reduction in value of rented flats caused by high noise levels				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				
Noise impact evaluation by single number ratings				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				
Object Scan Statistical Evaluation of object attributes or calculated values by using expressions. Includes predefined settings for EU-Directives 2015/996, 2020/367 and 2021/1226 as well as BEB 2021				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				
3D animated noise maps Noise map video captured from the 3D view for moving sources				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				

- included (in CadnaA CL product or Option)
- needed as pre-requisite (only one is needed in case of multiple entries in a row)

4.5 Import formats

Feature	CadnaA CL Light			CadnaA CL Professional				Options				
	CadnaA CL Industry Light	CadnaA CL Road Light	CadnaA CL City Light	CadnaA CL Industry Professional	CadnaA CL Road Professional	CadnaA CL City Professional	CadnaA CL City&Airport Professional	X	L	BPL	SET	FLG-Radar Tracks
AutoCAD (.dxf)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Trimble SketchUp	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
GIS formats ESRI Shape files (.shp) Atlas GIS (.bna) GYPsiNOISE MapInfo (.mif) AED-Sicad	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
ASCII formats ASCII-Objects ASCII-Grid DTM (.asc) ASCII-Spectra Building Height Points Wininput-DGM Numbers of Trains (.txt) Height points (.xyz)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
XML formats Open Street Map (.osm) GML CityGML NMPB08-Trains (.xml)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Other formats EDBS T-Mobil Slip SOSI NTF STRATIS (.cst) Noise Mapping England (.nme)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
QSI Interchange format according to DIN 45687	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Other CAD formats AutoCAD (.dwg) Microstation (.dgn)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Google Maps interface	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Import from Web Mapping Services (WMS)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Bitmap formats CALs Raster, DCX, DWF, ECW, IMG, GIF, ICA, JFIF, JPEG, JTIF, LEAD CMP, PCT, MAC, MSP, MPT, OS/2 Bitmap, PCD, PCX, PSD, PNG, PostScript Raster, RAS, TIFF, TIFF CCITT, LZW, TARGA, BMP, WMF), WinFax Group 3, WinFax Group 4, WPG WordPerfect raster files	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Raster formats CadnaA Grids (.cnr) ESRI-ASCII Grids (.asc, .hdr) ASCII-Grids (.rst) LimA Grids (.ert) SoundPLAN Grids IMMI Grids (.ird) AUSTAL Grids (.dmna) Miskam Grids (.zwk) NMGF Grids (.grd)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Aircraft INM import formats ANP Database INM Study INM Operations <i>*Only with INM Calculation Standard</i>							<input checked="" type="checkbox"/>					
Import of RADAR tracks FANOMOS STANLY Topsonic User-Defined							<input type="checkbox"/>					<input checked="" type="checkbox"/>
Import from MS Excel files	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					

included (in CadnaA CL product or Option)

needed as pre-requisite (only one is needed in case of multiple entries in a row)

Feature	CadnaA CL Light			CadnaA CL Professional				Options				
	CadnaA CL Industry Light	CadnaA CL Road Light	CadnaA CL City Light	CadnaA CL Industry Professional	CadnaA CL Road Professional	CadnaA CL City Professional	CadnaA CL City&Airport Professional	X	L	BPL	SET	FLG-Radar Tracks
ODBC— interface Import of external databases of object's attributes and libraries (I.e. Sound Power Levels, Absorptions, Noise Reduction Indices, directivities and measurements from sound analyzers.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Import of directivities of loudspeakers in CLF format (*.CF1, *.CF2 and *.XHN)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					

- included (in CadnaA CL product or Option)
- needed as pre-requisite (only one is needed in case of multiple entries in a row)

4.6 Modelling tools and project organization

Feature	CadnaA CL Light			CadnaA CL Professional				Options				
	CadnaA CL Industry Light	CadnaA CL Road Light	CadnaA CL City Light	CadnaA CL Industry Professional	CadnaA CL Road Professional	CadnaA CL City Professional	CadnaA CL City&Airport Professional	X	L	BPL	SET	FLG-Radar Tracks
Actions applied to single objects Edit, Delete, Import here, Show on Google Maps, Zoom to Object, Duplicate, Force Rectangle, Orthogonalize, Convert to, Transformation, Generate Label, Parallel Object, Break Lines, Break Areas, Simplify Geo, Spline, Modify Order of Points, Change ObjectTree assignment, Break into Pieces, Connect Lines, Fit DTM to Object, Fit Object to DTM, Hyperlink, Generate Station, Edit Facades, Generate Radiating Building, Set Length, Generate Rails, Cross Section, Generate Floors, Snap Object to Façade	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Actions applied to multiple objects (“modify objects” command) Delete, Modify Attributes, Duplicate, Force Rectangle, Orthogonalize, Object Snap, Modify order of Points, Spline, Simplify Geo, Break into Pieces, Connect Lines, Transformation, Convert to, Generate Rails, Generate Station, Generate Building Evaluation, Multiselect, Change ObjectTree assignment, Generate Label, Generate Floors, Parallel Object, Activation, Swap Name/ID, Delete Duplicates, Fit DTM to Object, Fit Object to DTM	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Object Tree Project Organization in hierarchical structure	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Up to 16 variants/scenarios per CadnaA project file	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Assignment of groups to variants Including copy group activation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
User-defined Global and Local libraries Sound Levels (Sound Power Levels and Sound Pressure Levels), Absorptions, Sound Reduction Indices, Directivities, 2D & 3D Symbols, Diurnal Patterns, Road Surfaces, Road Types and Vehicle Classes, Parking Lot Movements, Train Classes, Color Palettes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Default Library Always includes latest datasets for many of the above-mentioned libraries including e.g. Road and Railway related Datasets for many national implementations of EU Directives 2015/996 and 2021/1226.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Library Manager	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Lua scripting (e.g. for task automation)				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				
Additional action for multiple objects (“modify objects” command) Lua command				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				
Automatic closing of auxiliary polygons				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Thin out height points				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Find errors in DTM				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Transfer attributes				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Migration assistant RLS90->RLS19 data conversion for existing project file when switching calculation standard				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Automatic filtering of RADAR—tracks							<input type="checkbox"/>					<input checked="" type="checkbox"/>

included (in CadnaA CL product or Option)

needed as pre-requisite (only one is needed in case of multiple entries in a row)

4.7 Presentation of results and 3D visualization

Feature	CadnaA CL Light			CadnaA CL Professional				Options				
	CadnaA CL Industry Light	CadnaA CL Road Light	CadnaA CL City Light	CadnaA CL Industry Professional	CadnaA CL Road Professional	CadnaA CL City Professional	CadnaA CL City&Airport Professional	X	L	BPL	SET	FLG-Radar Tracks
Display of calculated rays in 2D view	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
2D Horizontal noise maps Iso dB-Lines, noise contours, Raster Oversampling	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
2D Vertical noise maps Iso dB-Lines, noise contours, Raster Oversampling	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Building noise maps in 2D view Ribbons, Spheres, Octagons, Level boxes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Pass-by level graph for line sources	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Pass-by based 3D auralization of traffic sources	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
2D animated noise maps for line moving sources	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
PlotDesigner	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
User defined table of results	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Open-GL based 3D visualization	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Selection and editing of objects in the 3D view	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Recalculation of DTM and objects directly in 3D view	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Free movement and save up to 10 predefined views	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Appearance of objects in 3D depending on attributes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Display of calculated rays in the 3D view	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Display of 3D directivities in the 3D view	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Display of horizontal noise maps in 3D view Projected or at the real height	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Display of vertical noise maps in 3D view	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Noise map of buildings Color map, Spheres, Octagons, Level boxes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Display of text labels in 3D view	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					

included (in CadnaA CL product or Option)

needed as pre-requisite (only one is needed in case of multiple entries in a row)

Feature	CadnaA CL Light			CadnaA CL Professional				Options				
	CadnaA CL Industry Light	CadnaA CL Road Light	CadnaA CL City Light	CadnaA CL Industry Professional	CadnaA CL Road Professional	CadnaA CL City Professional	CadnaA CL City&Airport Professional	X	L	BPL	SET	FLG-Radar Tracks
Display of ground maps in 3D view	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Import and visualization of 3D symbols (*.obj format)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Animation of 3D symbols (rotation)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Stereoscopic 3D display with passive 3D glasses *Compatible 3D TV required	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Interactive scene video recording (.avi) from 3D view	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Display of light sources (street lights)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Import of skybox ambient images	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Import of facade images to the buildings	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Projection of background images i.e. Google Maps or aerial imagery	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					

- included (in CadnaA CL product or Option)
- needed as pre-requisite (only one is needed in case of multiple entries in a row)

4.8 Export formats

Feature	CadnaA CL Light			CadnaA CL Professional				Options				
	CadnaA CL Industry Light	CadnaA CL Road Light	CadnaA CL City Light	CadnaA CL Industry Professional	CadnaA CL Road Professional	CadnaA CL City Professional	CadnaA CL City&Airport Professional	X	L	BPL	SET	FLG-Radar Tracks
AutoCAD— DXF	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
GIS formats ESRI /ArcInfo (.shp) ArcView Grid (.asc, .hdr) GypSINOISE	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
ASCII formats Text Files (.txt) Building Height Points Numbers of Trains (.txt) Rich Text Format (.rtf) Compact Protocol	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Export of full reports to MS Office MS Word (.docx) MS Excel (.xlsx)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
QSI Interchange Format According to DIN 45687	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Google SketchUp Materials (.skm)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Bitmap Files (.bmp)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Google Earth (.kml)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Web Bitmaps PNG files at different magnification levels	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
AzB related export formats AzB-QSI, AzB-DES, AzB-XML, AzB-Lmax, AzB-Segment, AzB-Zones							<input checked="" type="checkbox"/>					
SET-T Graph (.gv)				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	
Grid formats CadnaA Grids (.cnr) ASCII-Grids (.rst) Lima Grids (.ert) NMGF Grids (.grd)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
QSI Statistical Analysis report DIN 45687	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					

- included (in CadnaA CL product or Option)
- needed as pre-requisite (only one is needed in case of multiple entries in a row)

5 Technical Specification of CadnaA CL CALC

The special product CadnaA CL CALC allows to outsource the calculation to external machines. With CadnaA CL CALC it is possible to open CadnaA in the so-called “Batch-Mode” which comes with a limited set of features exclusively for calculations. With CadnaA CL CALC it is possible to:

- automatically open CadnaA files which have previously been created with another CadnaA CL product (or CadnaA Standard/Basic/Modular with On-Premise Licensing) and stored in a definable working directory,
- Automatically perform calculations of the opened files,
- Automatically save the files after the calculation.

The following calculations can be performed with CadnaA CL CALC:

- Calculation at receiver points (for the current variant or all variants)
- Calculation at grid receiver points (horizontal and vertical, for the current variant or all variants)

Which of the above listed calculations are to be executed is defined during the preparation of the CadnaA file (using another CadnaA CL product or CadnaA Standard/Basic/Modular with On-Premise licensing).

CadnaA CL CALC can calculate any noise type (industry noise, road noise, railway noise, aircraft noise) with any calculation standard or guideline for any noise type. Which calculation standard or guideline is used for the calculation is defined during the preparation of the CadnaA file (using another CadnaA CL product or CadnaA Standard/Basic/Modular with On-Premise licensing) and can not be changed during the use of CadnaA CL CALC.

The features of Option L are implicitly included in CadnaA CL CALC, therefore projects with up to 16 Mio. buildings and 16 Mio. barriers can be calculated.

Creating or editing projects, im- or exporting data, post-processing etc. are not possible with this product.

With CadnaA CL CALC, CadnaA can be opened in Batch-Mode at one machine the same time to perform calculations as described above.

CadnaA CL CALC can also be applied on virtual machines of various commercial cloud providers.

Due to application of updates and patches to the DataKustik Cloud License Server (see chapter 7), CadnaA CL CALC may have to be manually restarted by the customer once a month.

6 System requirements and internet connection

CadnaA can be installed on any system which fulfils the following requirements:

- Multi-core processor from Intel (Core i series, 6th generation, „Skylake“ architecture or newer) or from AMD (Ryzen series, starting from the 1st generation, „Zen“ architecture or newer) with at least 4 cores, instruction set extensions SSE 4.2 and AVX as well as 64-bit extensions (Intel 64 or AMD64)
- 8 GB RAM
- OpenGL 3.3 graphics card with minimum 1 GB real graphic memory to use the hardware accelerated 3D-view. Using processor graphics or graphics card with no dedicated graphics memory ("shared memory") may result in display errors. When using CadnaA CL CALC or CadnaA in Batch-Mode, this requirement does not apply.
- Windows 64-bit operating system
 - Microsoft Windows 10 (Version 22H2)
 - Microsoft Windows 11 (Version 21H2 or newer)

During the use of CadnaA CL Products, the DataKustik Cloud License Server must always be accessible from the customer location. A permanent and uninterrupted internet connection during the use of CadnaA CL Products is mandatory.

7 DataKustik Cloud License Server availability

DataKustik ensures, that the Cloud License Server is available at least 99% of the time on average over the month. Each first Tuesday of the month at 0:00 UTC updates and patches will be installed on the Cloud License Server which may require restarting the Cloud License Server. Upon restarting the server, it will be temporarily not available and existing connections will be lost.

8 Cloud Licensing management and company account on DataKustik website

On the DataKustik website, a company account will be created upon ordering the first Cloud License. The initial administrator of the company account will be set by DataKustik according to information provided by the customer during the ordering process. After the initial setup of the company account and its initial administrator by DataKustik, the further administration of Cloud Licensing (e.g. adding further administrators, users, or requesting identities) via the company account is in the control and responsibility of the customer. Additionally, each user of Cloud Licenses must have a user account on the DataKustik website and install the application "DataKustik Launcher" for setting up Cloud Licenses. For more details, please see [1].

9 Bibliography

- [1] www.datakustik.com. [Online] 07 2023. <http://www.datakustik.com/en/e-learning-center/technical-notes-1>. Technical Note TN 2301.