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Gilching, 17 November 2017

License Confirmation

We hereby confirm that the University of Thessaly (UTH, LTEA) have purchased 1 License of our software CadnaA with configuration Standard BMP XL (Noise Mapping) plus FLG for aircraft calculation.

It is validated with USB Key #L43468 and includes all available standards for industry, road, rail - also the EU-interims such as ISO9613, NMBP96, SRMII, CNOSSOS-EU as well as CNOSSOS-EU for aircraft calculation.

This license is a perpetual software license running with CadnaA Version 2018.

The license is covered with software maintenance for a period of 1 year until 31st July 2018 in order to receive updates & support during this time.

Tina Hahn
Account Manager
DataKustik GmbH

Cadna A®

State-of-the-art
noise prediction software

The easy-to-use software solution for the calculation and assessment, prediction and presentation of noise exposure and impact of air pollutant.

DataKustik

CadnaA at a glance

Whether your objective is to study the noise Immission level of an industrial plant, a mall including a parking lot, a road and railway scheme or even of an entire town with airport:

CadnaA is designed to handle all these tasks!

Interactive Online Presentation

We present CadnaA online and interactive (15min-45min)
See the most relevant features according to your individual needs
All you need is a PC with internet connection and a telephone

Enquire at info@datakustik.com

Intuitive Handling

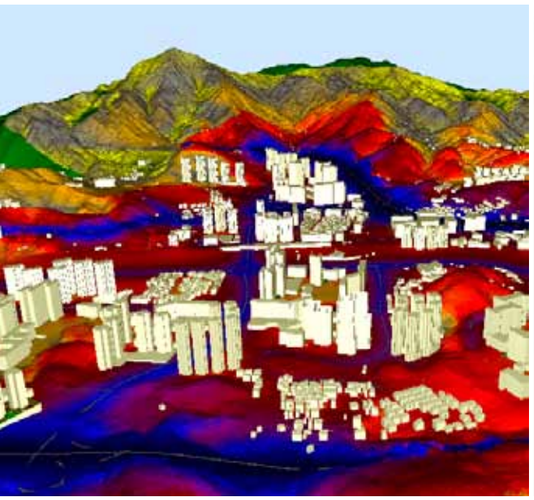
Work within the plain, clearly arranged surface for simple calculations, but benefit at the same time from the sophisticated input possibilities as your analysis becomes more complex.
Focus your time on the project and not on the software. All input and analysis features are easy and intuitive to handle.

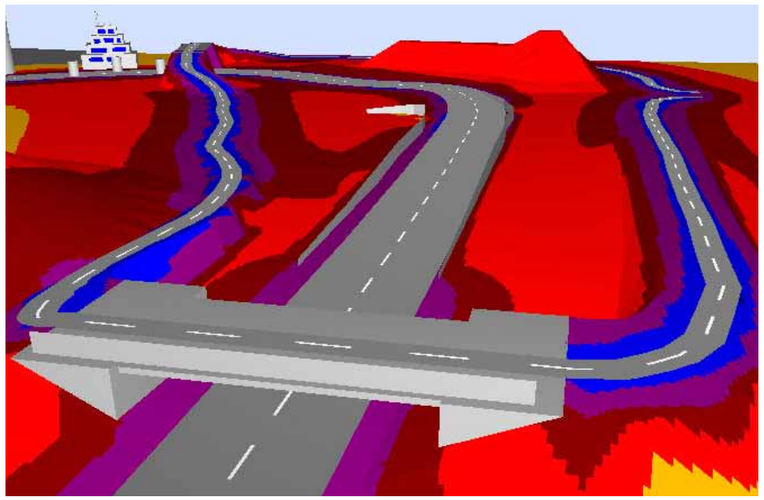
Enhanced Productivity

Change your view from 2D to 3D within a second. Multiply the modeling speed by using various shortcuts and automation techniques. Various time-saving acceleration techniques enable fast calculations for your projects. Access all object data instantly.

Advanced Analysis

Base your analysis on quality-assured national and international standards, calculation methods and guidelines. Execute predefined or customized analysis of all data contained in the model: building evaluation, hot spot detection, conflict map, etc.





Industry

- Plan noise reduction measures
- Maintain emission data in convenient libraries
- Compare different scenarios with variants
- Review your model with various sophisticated 3D features
- Calculate outdoor sound propagation based on sound sources inside
- Take advantage of the data exchange with the indoor noise calculation software Bastian™
- Calculate the uncertainty with standard deviations for emission and propagation

Road & Railway

- Compare different planning scenarios
- Automatically optimize the barrier next to a street or railway
- Visualize and auralize noise reduction scenarios
- Efficient project management with object tree and variants
- Automatically intersect object data with DTM
- Check your model via visualization of all propagation tracks

Noise Mapping

- Accelerate your calculation time with distributed calculation and multithreading
- Employ all RAM available with 64-bit technology
- Efficiently merge various data types using more than 30 different import formats
- Access and alternate all object attributes within the 3D View
- Analyze your model using various noise assessment techniques
- Verify your model via quality assurance while using acceleration techniques
- Profit from a maximum level of complexity in detail and the highest possible clarity when working on large-scale segments.

Industrial Expert System

(Option SET)

- Automatically generate sound power spectra based on technical system parameters of a sound source (e.g. electric power in kW, volume flow in m^3/h, rotation speed in rpm)
- Facilitate your work utilizing 150 predefined modules for technical sound sources such as electric and combustion engines, pumps, ventilators, cooling towers, gear boxes etc.
- Model complex systems including transmissions by combining sources (e.g. ventilator with two ducts connected)

Aircraft

(Option FLG)

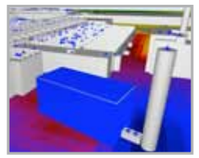
Calculate noise emitted from civil and military airports based on the calculation methods AzB 2008, AzB (1975), ECAC Doc.29 or DIN 45684-1

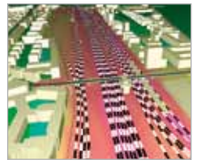
- Cover the most relevant procedures for aircraft noise assessment at European and international level
- Perform an overall assessment of the total noise exposure including, road, railway and aircraft noise
- Use radar data and group classification according to ICAO code to calculate the aircraft noise

Air Pollution

(Option APL)

- Calculate, assess and present air pollutant distribution according to the Lagrangian particle model AUSTAL2000 (other models are being integrated)
- Combine the assessment of measures in the context of noise and air quality mitigation plans
- Enjoy the usability and calculation power of CadnaA also while modeling air pollutant distribution
- Apply all import formats without any additional costs





Free Demoversion
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www.datakustik.com

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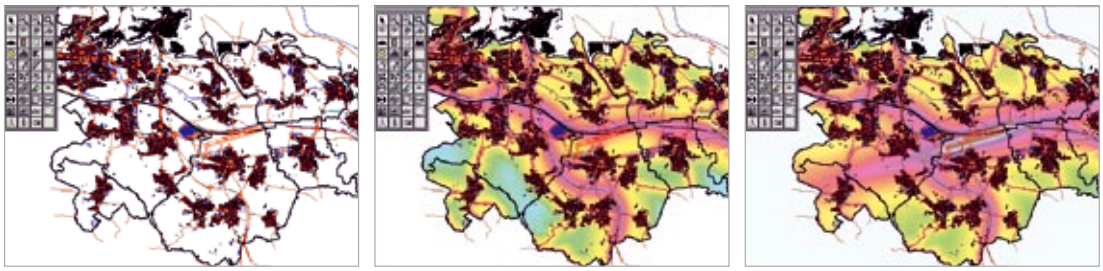
Option XL

Cadna A®
State-of-the-art
noise prediction software

Strategic Noise Mapping

Option XL offers a variety of additional and powerful features. It is the perfect tool particularly (but not only) for all kinds of noise mapping of large areas (e.g. for cities) and for the generation of strategic noise maps according to the EC-Environmental Noise Directive (END 2002/49/EG). With Option XL there are practically no restrictions to the size of your project or to the area of the noise map to be calculated.
Option XL therefore includes very helpful tools for the handling of large projects, like the automatic closing of building polygons when importing data e.g. from CAD drawings, or like the powerful Object-scan feature. Using Object-scan you can sum up any attribute values of selected object types or even the results of user-defined and formula-based combinations of attribute values. With Object-scan complex evaluations can be carried out, like the calculation of the average height of all buildings in a user-defined area or of the number of residents living in buildings lower than 10 m in height who are affected by a certain noise level.



left: Noise mapping area (185 km² and 100,000 buildings)

centre: Noise map for road noise

right: Combined noise map for road and aircraft noise

But Option XL includes even more great features. In order to evaluate noise load, the number of residents exposed to this level is required in addition to the level information. With Option XL population density can be evaluated and displayed on grid maps. Grid maps on noise load are calculated based on this data.
Furthermore, with Option XL conflict maps can be calculated illustrating where the limiting value is exceeded.
The monetary evaluation of noise load is possible with Option XL, too. The increase of value of real estate caused by noise reduction measures is calculated from the decrease of the rents per dB and m² of living areas (method published by BUWAL, Switzerland). This enables the improvement by noise reduction measures to be expressed, even for complex scenarios, in terms of money and so to rank possible alternatives.
With Option XL you can handle projects of any size conveniently and efficiently.

For more information about the leading noise prediction software Cadna A please visit www.datakustik.com

Features

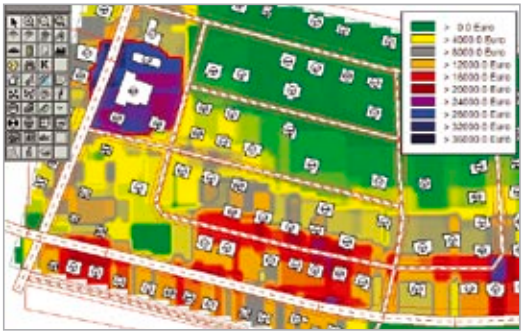
- Calculation with unlimited number of screening objects
- Object-scan feature with numerous analysis options
- Estimation of population density and calculation of area noise load
- Conflict maps for illustrating where limiting values are exceeded
- Monetary assessment of noise load
- Automatic closing of building polygons on import

Examples

from left to right:

Grid map on population density

Representation of the areal noise load by a grid map



Conflict map showing green areas with no conflict. Legend shows amount of exceedings in the areas of conflict

Grid map with monetary evaluation of noise load. In the blue and red colored areas the highest decreases of rent value occurs

About CadnaA

CadnaA (Computer Aided Noise Abatement) is the software for the calculation and presentation, assessment and prediction of noise exposure and air pollutant impact. Whether your objective is to study the noise immission of an industrial plant, of a mall including a parking lot, of a new road or railway scheme, or even of entire towns and urbanized areas: CadnaA is designed to handle all these tasks.

We look forward to being in touch with you. For further information or any questions please do not hesitate to contact us or one of our distribution partners.

Demo version available free of charge! Visit www.datakustik.com

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Design: www.projektil.com

DataKustik <URL: />

Calculation Standards

The following national and international standards and guidelines are implemented in CadnaA:

Industrial Noise

- **ISO 9613 incl. VBUI** (International, EC-Interim)
- **CONCAWE** (International)
- **VDI 2714, VDI 2720** (Germany)
- **DIN 18005** (Germany)
- **ÖAL Richtlinie Nr. 28** (Austria)
- **BS 5228** (United Kingdom)
- **Nordic General Prediction Method** (Scandinavia)
- **NORD 2000** (Scandinavia)
- **Ljud från vindkraftverk** (Sweden)
- **Harmonoise, P2P calculation model** (International)
- **NMPB08 - Industry** (France)
- **CNOSSOS-EU** (2014)

Road Noise

- **NMPB-Routes-96** (France, EC-Interim)
- **RLS-90, VBUS** (Germany)
- **DIN 18005** (Germany)
- **RVS 04.02.11** (Austria)
- **STL 86** (Switzerland)
- **SonRoad** (Switzerland)
- **CRTN** (United Kingdom)
- **TemaNord 1996:525** (Scandinavia)
- **Czech Method** (Czech Republic)
- **NMPB-Routes-08** (France)
- **TNM** (USA)
- **CNOSSOS-EU** (2014)

Railway Noise

- **RMR, SRM II** (Netherlands, EC-Interim)
- **Schall03 (1990), Schall Transrapid, VBUSch** (Germany)
- **Schall03 (2014)** (Germany)

- **DIN 18005** (Germany)
- **ONR 305011** (Austria)
- **Semibel** (Switzerland)
- **NMPB-Fer** (France)
- **NMPB08-Fer** (France)
- **CRN** (United Kingdom)
- **TemaNord 1996:524** (Scandinavia)
- **FTA/FRA, draft** (USA)
- **CNOSSOS-EU** (2014)

Aircraft Noise

- **ECAC Doc. 29, 2nd edition 1997** (International, EC-Interim)
- **ECAC Doc.29 3rd edition** (International, EC-Interim)
  *except military databases
- **INM 7.0 Integrated Noise Model** (International)
  *except military databases
- **ICAN / AzB 2008** (Germany)
- **DIN 45684** (Germany)
- **AzB 1975** (Germany)
- **AzB-MIL** (Germany)
- **LAI-Landeplatzleitlinie** (Germany)
- **VBUF** (Germany)
- **ÖAL 24** (Austria)
- **CNOSSOS-EU** (2014)

Related Information

→ Aircraft noise calculation with Option FLG *<URL: en/products/cadnaa/extensions/flg-aircraft-noise/>*

<URL: javascript:;> <URL: javascript:;>

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New Features of CadnaA 2018

The list of new features offered by **CadnaA**, release 2018, is subdivided into the following sections:

- Calculation/Configuration
- **CadnaA**-Objects
- Further New Features
- Miscellaneous
- Import/Export
- **CadnaA**-Options
- Bug Fixing

Calculation|Configuration

- ISO 9613: new type "Ground Absorption": "WEA interim (Agr=-3 dB)" used by German Interim method for Wind Turbine Predictions (2015)
- Railway ONR 305011, Semibel, FTA/FRA: new option "Calc maximum Pass-By-Level" (based on Leq-based emission per unit length)
- Road Nordic Pred. Method (1996): new option "Threshold" with calculation of maximum Pass-By-Level to calculate NATs (Number above Threshold)
- "Evaluation Parameters" tab: selecting "f(x)" offers new parameters Lden/Ln for evaluations acc. to VDI 3722
- dialog "Multiple Source Effect" (**Calculation** menu): new option "Save total in (Variant)" for sum-grid acc. to VDI 3722
- grid calculation per batch for all variants (using CALC_RASTER=2, not for PCSP)

CadnaA-Objects

- Point, Line, Area Sources: new attribute TEINW_GANG (selects a diurnal pattern)
- object "Symbol": new scale bars available
- Building Evaluation: dialog **Exclude Facades** now accepts up to 256 facades
- Bitmap: new option "Bitmap in internal memory" saves the bitmap as part of the **CadnaA** file
- Bitmap: extended transparency features (e.g. by specifying transparency and "white is transparent globally")
- Road CNOSSOS-EU: attribute STRO_ID selects road surface (e.g. CNS_01 .. CNS_15)
- Facade Points: new attribute FAC_EINW_xy (weighted per facade length or not, all or just active ones)

Further New Features

- new graphical user-interface:
    - scalable object icons (on toolbox and on toolbar)
    - scalable font in dialogs (**Options|Miscellaneous** menu)
- dialog **ObjectTree|Definition**: button "Sync. Graphics" on ObjectTree toolbar
- new context menu command "Import here...": The origin (0,0) of the imported data is placed at the coordinates of a point object or were the mouse click occured.
- Grid Arithmetics: now with access to grids in variants (coding: RxVvvEvalParaNo, x=0..6, vv=01..16, EvalParaNo=1..4)
- Multithreading (**Calculation** menu): offers now up to 64 threads (requiring 64-Bit option)
- command/action "Parallel Object": new option "Distance from curb/border" for road and railway considers a specified additional width (dialog **Appearance/Road** or on road's geometry)
- dialog **Modify Objects**, new action "Break Lines": just breaks line/area objects of the selected object type
- dialog **Modify Objects**: conditions for string possible
- geodetic transformation: offers now NTv2 reference systems (requires that the respective gsb-files are copied to directory <cadnadir>/NTv2)
- dialog **Building Noise Map** (**Options** menu): new options "Facade points acc. to VBEB" and "... acc. to CNOSSOS"

Miscellaneous

- **Grid|Delete** menu: Holding CTRL key depressed deletes all grids in variants.
- dialog **Modify Objects**: With action "Delete" now default condition match(ID$, "RAY*") deleting all rays
- extended keyword #(File, ...): #(File, dpne).cna_autosave generates an autosave-file
- screen scaling uses "DPI aware" for all monitors: makes fonts and icons bigger and easier to read

Import/Export

- import formats "SOSI" and "CityGML": new option "Unknown Attributes to Memo-Variables""
- new export format DOCX: exports reports based on MS-Word template DOCX (new, table specific keywords #(CUSTOM_TABLE, ...) and #(COL, ...)
- PlotDesigner (**File|Print Graphics** menu): new "Preview" button
- printing the graphics per template file (**File** menu) still available for exsting graphics template files
- Result Table: new string variable FAC_LEN, facade length per facade point

CadnaA-Options

- option X/XL: new and extended LUA commands (e.g. import, grid spacing, Exclude Facades, 3D-Special)
- option FLG: new calculation procedure ECAC4
- option FLG: selectable no. of corridor paths with ECAC3 and ECAC4
- option 64-Bit: multithreading now for up to 64 threads

Bug Fixing

- NMPB08-Fer: vertical directivity corrected (no absolute value), toggle back per local text block OPT_OLD_CALC with text: nmpb08_vdir_abs_x157
- Concawe: ground absorption K3 now just consider ray path length across absorbing round

DataKustik
September 2017

Apply also our software Cadna R® for the prediction and presentation of noise inside rooms and workplaces. The functionalities and the handling of Cadna A® and Cadna R® are nearly identical and enable an efficient workflow in both fields of expertise.

Services

Helpdesk

Our experts are at your service. Simply call us or send us your file if you encounter any problems with your projects.

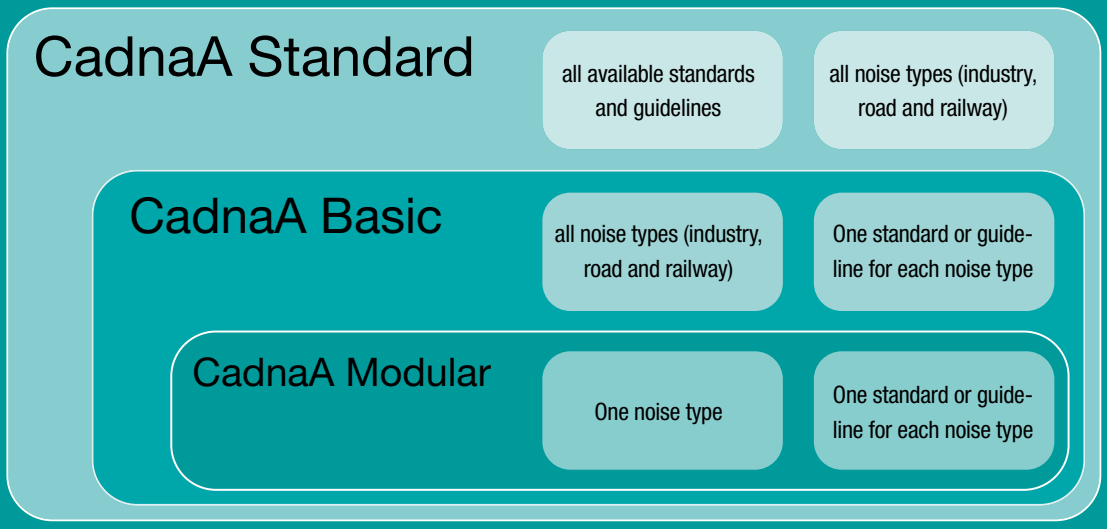
Seminars

We frequently provide basic and expert workshops in order to keep you updated with the latest developments.

Web Seminars

Learn about the latest developments and specific applications without even leaving your office. These online-based live workshops are an efficient way to keep informed about state-of-the-art modeling techniques.

Further information about seminars at:
www.datakustik.com



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