Licence agreement

between

Deutsches Zentrum für Luft- und Raumfahrt e.V.
Linder Höhe
51147 Cologne
Germany

- hereinafter referred to as "Licensor" -

and

Licensee

- hereinafter referred to as "Licensee" -

- hereinafter jointly referred to as "Contracting Party" -

for the software "DLR Visualization2 Library"

Preamble

The licensor, the German Aerospace Center (DLR), is the research centre of the Federal Republic of Germany for aerospace. As a non-profit research institution, the licensor carries out innovative research and development work in various scientific and technical fields of aerospace, energy, transport, security and digitalisation.

The Licensor has developed the software "DLR Visualization2 Library" at its Institute of Flight Systems in Oberpfaffenhofen, which is specifically described in Annex 1 (hereinafter referred to as "Contract Software"). The contract software has a prototype character and has not been developed for operational use in a commercial business operation. The Licensee is aware of this fact.

With the present agreement, the Licensor grants the Licensee, free of charge a simple/ non-exclusive right to use the contractual software.

On this basis, the following is agreed:

§ 1 Subject matter of the contract

The subject of the contract is the contractual software. It is the software specifically described in Annex 1, delivered partly in the source code and partly in binary code, in the state in which it is at the time of the entry into force of the contract.

§ 2 Type of licence

1. The Licensor grants the Licensee a non-exclusive right to use the contractual software from the time this Agreement comes into force.

   To the extent that the Contract Software implements a technology that is protected by patent in favour of the Licensor, the right of use granted herein shall also apply with respect to the patent protection referred to in Annex 1.

2. The right of use includes the installation, loading, display and running of the contractual software as well as the creation of backup copies. A translation of the contractual software is not permitted. Also not permitted is decompilation, reverse engineering or otherwise recreating the source code of the Contract Software.

3. Passing on/ providing/ tranferring the contractual software to third parties is not permitted. In particular, the licensee is not permitted to sell, lend, rent or otherwise sub-license the contractual software or to publicly reproduce or make the contractual software accessible.

4. The providing of software does include the third-party software mentioned in Annex 1, which is subject to different license conditions, which must be observed by the Licensee.

§ 3 Copyright protection and ownership

The contracting parties agree that the contractual software is subject to/ covered by copyright protection and is the property of the licensor. The Licensee shall always include and disclose the following copyright notice:

> Copyright (c) 2023, Deutsches Zentrum für Luft- und Raumfahrt e.V., Cologne, Germany
>
> Kümper, Sebastian und Hellerer, Matthias und Bellmann, Tobias (2021) *DLR Visualization 2 Library - Real-Time Graphical Environments for Virtual Commissioning.* In: Proceedings of 14th Modelica Conference 2021, Seiten 197-204. Modelica Association and Linköping University Electronic Press. 14th Modelica Conference, 20.–24. September, 2021, online. doi: 10.3384/ecp21181197. ISBN 978-91-7929-027-6. ISSN 1650-3740.
>
> https://ecp.ep.liu.se/index.php/modelica/issue/view/37

§ 4 Handover of the Contract Software

The Licensor shall hand over the Contract Software to the Licensee via an established download link after the entry into force of the Agreement.

§ 5 Technical support

The Licensor shall not be obliged to provide technical assistance or to rectify any errors. The Licensor shall not be obliged to provide updates/ bug fixes.

§ 6 Confidentiality

The Licensee undertakes to treat the Contrat Software as well as all information and technical data relating to the Contract Software which has been provided to it by the Licensor within the scope of this Agreement as confidential and shall not disclose them to third parties. The Licensee shall take necessary and reasonable precautions to prevent third parties from accessing the Conrtact Software/ information/ data.

§ 7 Prototypical character of the contract software

The contract software is a research result that is not ready for series/ serial production and has not been tested under real conditions. The Licensor therefore does not guarantee freedom from/ absence of errors and does not assume any warranty for the executability and usability of the Contract Software for the Licensee's intended use.

§ 8 Liability

With regard to the gratuitous nature of the contract, the liability of the licensor is limited to intent and gross negligence.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT GUARANTEE OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

§ 9 Duties in the event of third party claims

1. The Licensor does not warrant that the Contract Software or its use does not infringe the rights of third parties. However, the Licensor is not aware of any such third party rights at the time the contract comes into force. The licensor is not obliged to carry out a corresponding property right search/ IP review/ IP audit.
2. Should the Licensee be held liable for the infringement of third party rights due to the use of the contractual software, the Licensee shall inform the Licensor thereof without delay. The Licensor shall be entitled to join any legal dispute. The respective costs for the conduct of the legal dispute shall be borne by each contracting party itself.
3. If a claim for damages is made against the Licensor by a third party due to the use of the contractual software by the Licensee, the Licensee shall indemnify the Licensor against such third party claims and the associated costs of legal action. This shall not apply if the Licensor has assumed the risk thereof under the contract or if a risk under its control has materialised.

§ 10 Entry into force and duration of the contract

The contract shall enter into force when Contract Software is downloaded by the Licensee.

§ 11 Termination and Termination of Contract

1. The contract may be terminated with immediate effect by either contracting party for good cause. Good cause shall be deemed to exist if the contracting party giving notice of termination cannot reasonably be expected to adhere to the contract. The contractual partner intending to terminate the contract for good cause shall, in the case of remediable defects, set the other contractual partner a reasonable deadline for remedying or eliminating the reason for termination under threat of termination.
2. Notice of termination may only be given within six months of becoming aware of the reason for termination and must be in writing to be effective.

3. Upon termination of the contract, the licensed rights shall automatically revert to the Licensor. The licensee is obliged to refrain from any use of the contractual software from the end of the contract and to return all copies of the contractual software as well as any documents provided to the licensor or to destroy them. At the request of the Licensor, the Licensee shall confirm this doing in writing.

§ 12 Miscellaneous

1. No ancillary agreements have been made between the contracting parties, either in writing or verbally. Amendments or supplements to this contract must be made in writing. This also applies to amendments or additions to this clause.
2. Should any provision of this contract be or become invalid or unenforceable or should the contract contain a loophole, the legal validity of the remaining provisions and of the contract as a whole shall remain unaffected thereby. In place of the invalid or unenforceable provision, the contracting parties shall agree on a valid and enforceable provision which comes as close as possible to the provision intended by the contracting parties. The same shall apply in the event of a loophole in the contract.
3. The exclusive place of jurisdiction for all disputes arising from and in connection with this contract is Cologne.
4. The contractual relationship shall be governed by German law to the exclusion of the UN Convention on Contracts for the International Sale of Goods (CISG).
5. Any delivery or notification based on this contract shall be made to the addresses of the contracting parties stated in the heading of the contract, unless this is expressly regulated otherwise.

Annex 1:

Description of the contract software

DLR Visualization 2 Library
The DLR Visualization 2 library is a commercial Modelica library from DLR-FT providing an advanced model integrated visualization for Modelica models, especially in the mechanical, fluid and electrical area. The components are available for offline, online, and real-time animation and are usually attached to a Modelica model with a Frame connector of the MultiBody library. The library provides 100+ blocks for all kinds of different visualization applications and is commercially available via LTX.

Key Feature 1: Rigid Visualizer blocks
- Parametrical shapes (boxes, spheres, gearwheels, springs etc.)
- CAD files (current formats: glb, 3ds, obj, stl)
- (Georeferenced) terrain databases

Key Feature 2: Flexible Visualizer blocks
- Flexible surfaces with texture (image and video, render to texture of camera image)
- Flexible, free deformable CAD models

Key Feature 3: 2D Overlays and graphical user interfaces
- 2D Overlays such as lines, polygons, textures
- Predefined elements such as graphs, maps and diagrams
- GUI elements such as buttons, slider, checkboxes, etc. for interactive simulations.

Key Feature 4: Video Export
- Video export in the most common video formats as H.264, H.265, WMV, MPEG4,…
- Automatic video export / screenshots during / after the simulation

Key Feature 5: Cameras and VR
- Cameras, free movable or fully controlled by the simulation)
- Multiple views on the scene, e.g. picture in picture
- Fullscreen and multi-monitor support
- Support for OpenVR (HTC Vive, Oculus Rift) for effortless VR simulations

Open Source/ Third Party Software

Assimp

http://www.assimp.org/

License: 3-clause BSD

Open Asset Import Library (short name: Assimp) is a portable Open Source library to import various well-known 3D model formats in a uniform manner.

Boost

https://www.boost.org/

License: Boost Software License version 1.0

Boost provides free peer-reviewed portable C++ source libraries.

FFmpeg

https://ffmpeg.org/

License: (in the configuration used here) LGPL version 2.1

FFmpeg is the leading multimedia framework, able to decode, encode, transcode, mux, demux, stream, filter and play pretty much anything that humans and machines have created.

FlatBuffers

http://google.github.io/flatbuffers/

License: Apache License version 2.0

FlatBuffers is a cross platform serialization library architected for maximum memory efficiency. It allows you to directly access serialized data without parsing/unpacking it first, while still having great forwards/backwards compatibility.

Intel MKL

https://www.intel.com/content/www/us/en/developer/tools/oneapi/onemkl.html

Intel®-Optimized Math Library for Numerical Computing

LZ4

https://www.lz4.org

License: BSD 2-Clause and GPL version 2

LZ4 is lossless compression algorithm, providing compression speed > 500 MB/s per core, scalable with multi-cores CPU. It features an extremely fast decoder, with speed in multiple GB/s per core, typically reaching RAM speed limits on multi-core systems.

OpenVR

https://github.com/ValveSoftware/openvr

License: BSD 3-Clause

OpenVR is an API and runtime that allows access to VR hardware from multiple vendors without requiring that applications have specific knowledge of the hardware they are targeting.

spdlog

https://github.com/gabime/spdlog

License: MIT License

Very fast, header only, C++ logging library.

libcurl

https://curl.se/

License: BSD 3-Clause

Curl is a command-line tool for transferring data specified with URL syntax

cesium-native

https://github.com/CesiumGS/cesium-native

License: Apache License version 2.0

Cesium Native is a set of C++ libraries for 3D geospatial

bzip2

https://sourceware.org/bzip2/

License: BSD style

bzip2 is a freely available, patent free (see below), high-quality data compressor.

fmt

https://github.com/fmtlib/fmt

License: MIT License

{fmt} is an open-source formatting library providing a fast and safe alternative to C stdio and C++ iostreams.

lame

https://lame.sourceforge.io/

License: LGPL 2.1

LAME is a high quality MPEG Audio Layer III (MP3) encoder.

libopus

https://opus-codec.org/

License: BSD

Opus is a totally open, royalty-free, highly versatile audio codec

libvorbis

https://xiph.org/vorbis/

License: BSD

Ogg Vorbis is a fully open, non-proprietary, patent-and-royalty-free, general-purpose compressed audio format

libvpx

https://github.com/webmproject/libvpx

License: BSD-3-Clause license

libvpx is a free software video codec library from Google and the Alliance for Open Media (AOMedia).

libwebp

https://developers.google.com/speed/webp

License: BSD-3-Clause license

WebP is a modern image format that provides superior lossless and lossy compression for images on the web.

lzma

https://tukaani.org/lzma/

License: (in the configuration used here) LGPL version 2.1

LZMA Utils are legacy data compression software with high compression ratio

libogg

https://www.xiph.org/ogg/

License: BSD-3-Clause license

Ogg is a multimedia container format, and the native file and stream format for the Xiph.org multimedia codecs.

openh264

http://www.openh264.org/

License: BSD-2-Clause license

OpenH264 is a codec library which supports H.264 encoding and decoding

openjpeg

https://www.openjpeg.org/

License: 2-clauses BSD license

OpenJPEG is an open-source JPEG 2000 codec written in C language

openssl

License: Apache License v2

https://www.openssl.org/

OpenSSL is a robust, commercial-grade, full-featured toolkit for general-purpose cryptography and secure communication

sdl2

https://www.libsdl.org/

License: zlib license

Simple DirectMedia Layer is a cross-platform development library designed to provide low level access to audio, keyboard, mouse, joystick, and graphics hardware via OpenGL and Direct3D

zlib

https://www.zlib.net/

License: zlib license

zlib is designed to be a free, general-purpose, legally unencumbered -- that is, not covered by any patents -- lossless data-compression library for use on virtually any computer hardware and operating system

zstd

https://github.com/facebook/zstd

License: BSD-3-Clause license

Zstandard, or zstd as short version, is a fast lossless compression algorithm, targeting real-time compression scenarios at zlib-level and better compression ratios