Release Notes

3 November 2016
Version History/Revision History
These are the main releases of Intel® SDK for OpenCL™ applications:

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 2016</td>
<td>2016 R3</td>
<td>7th Generation Intel® Core™ Processor support, Microsoft Windows* 10 Anniversary Update, OpenCL 2.1 experimental CPU only runtime for Linux*</td>
</tr>
<tr>
<td>July 2016</td>
<td>2016 R2</td>
<td>GPU Kernel debugger Beta and kernel level analysis for Linux</td>
</tr>
<tr>
<td>June 2016</td>
<td>2016 R2</td>
<td>OpenCL 2.1 support, new features in Kernel Development Framework</td>
</tr>
<tr>
<td>April 2016</td>
<td>2016</td>
<td>GPU Kernel debugger Beta and standalone release for Linux</td>
</tr>
<tr>
<td>Nov. 17, 2016</td>
<td>2015 R3</td>
<td>Standalone release for Windows</td>
</tr>
<tr>
<td>April 28, 2015</td>
<td>2015 R2</td>
<td>Visual Studio 2015 support</td>
</tr>
<tr>
<td>Jan 22, 2015</td>
<td>2015 R1</td>
<td>Released as part of Intel® Integrated Native Developer Experience (Intel® INDE)</td>
</tr>
</tbody>
</table>

Customer Support
For technical support, including answers to questions not addressed in this product, visit the technical support forum, FAQs, and other support information at: Intel OpenCL Support or http://www.intel.com/software/products/support/.

Please remember to register your product at https://registrationcenter.intel.com/ by providing your email address. Registration entitles you to free technical support, product updates and upgrades for the duration of the support term. It also helps Intel recognize you as a valued customer in the support forum.

To provide feedback and suggestions or submit an issue, go to the Intel OpenCL Forum.
## Contents:

<table>
<thead>
<tr>
<th></th>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>New in This Release</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Known Issues</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>Related Documentation</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>Where to Find the Release</td>
<td>9</td>
</tr>
<tr>
<td>6</td>
<td>System Requirements</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>Installation Notes</td>
<td>13</td>
</tr>
<tr>
<td>8</td>
<td>Attributions</td>
<td>17</td>
</tr>
<tr>
<td>9</td>
<td>Legal Information</td>
<td>23</td>
</tr>
</tbody>
</table>
1 Introduction

Intel® SDK for OpenCL™ applications assists with creating, building, debugging, and analyzing PC and mobile applications developed with OpenCL™ API on Windows®, Linux® and Android® OSes.

Please note: a driver/runtime package must also be installed to run applications developed with the SDK.

This document contains information about new features, system requirements, installation instructions, fixed bugs, limitations and known issues.

To learn more about the product, see:

- New features listed in the New in This Release section below, or in the help
- Reference documentation listed in the Related Documentation section below
- Installation instructions at Installation Notes
2 New in This Release

2.1 New Features

- **Support for 7th Generation Intel® Core™ Processors on Microsoft Windows* and Linux* operating systems**
- **Windows 10 Anniversary Update support**
- **Yocto Project* support**
  - These processors are supported as target systems when running the Apollo Lake Yocto BSP (other OSes are not supported for these processors): 7th Generation Intel® Pentium® Processor J4000/N4000 and 7th Generation Intel® Celeron® Processor J3000/N3000 Series for Desktop
  - Offline compiler support with GPU assembly code generation
  - Debug OpenCL™ kernels using the Yocto* GPU driver on host targets (6th and 7th Generation Intel® Core Processor)
- **OpenCL™ 2.1 and SPIR-V* support on Linux* OS**
  - OpenCL 2.1 development environment with the experimental CPU-only runtime for OpenCL 2.1
  - SPIR-V generation support with Intel® Code Builder for OpenCL™ offline compiler and Kernel Development Framework including textual representation of SPIR-V binaries
- **New analysis features in Kernel Development Framework for Linux* OS**
  - HW counters support
  - Latency analysis on 6th and 7th Generation Intel® Core™ Processors

Intel® SDK for OpenCL™ Applications 2016 R3 includes all the features for OpenCL development for Windows* previously available in Intel® SKD for OpenCL™ Application 2016 R2 and all features for Linux* development which available in Code Builder for Intel® Media Server Studio. For a full list of features, refer to the Intel® SDK for OpenCL™ Applications Developer Guide.
3 Known Issues

3.1 General Limitations

- To work with the Google Android* NDK, the path to the SDK installation should not contain spaces.
- When working with the default Intel OpenCL™ Platform together with OpenCL 2.1 experimental platform there may be performance issues.
- If you are using the Eclipse* Mars IDE on the Linux* Ubuntu x64 system, set the $SWT_GTK3$ environment prior running the IDE:
  
  ```
  SWT_GTK3 = 0
  ```

3.2 Code Builder IDE Plug-in Limitations

- Build feature limitations:
  - To work with the Intel® SDK for OpenCL™ - offline compiler plug-in for Microsoft Visual Studio* IDE on 64-bit OS, configure the Visual Studio for 64-bit applications (64-bit compiler and tools).
  - LLVM view for Intel® Processor Graphics device in the Offline Compiler plug-in for the Visual Studio IDE is not supported on “Compile” and “Link” options. To see the Intel® Processor Graphics LLVM code, use the Build option.
  - In order to work with Kernel Builder tool on Ubuntu* 14.04.3 version, need to set:
    
    ```
    export LD_PRELOAD=/usr/lib/x86_64-linux-gnu/mesa/libGL.so.1
    ```
    (find more information on Ubuntu Forums).
- Kernel Debugger Framework plug-in for Eclipse* IDE
  - On Ubuntu 14.04.x, if you encounter the following error:
    
    ```
    Inconsistency detected by ld.so: dl-version.c: 224: _dl_check_map_versions: Assertion `needed != ((void *)0)' failed!
    ```
    set the following environment variable to fix this issue:
    
    ```
    LD_PRELOAD=/usr/lib/x86_64-linux-gnu/mesa/libGL.so.1
    ```
- GPU Kernel Debugger for the Visual Studio IDE
  - The GPU kernel debugger is supported on 64-bit applications only.
- CPU Kernel Debugger for the Visual Studio IDE does not support:
  - Edit and continue capability
  - Multithreaded debugging
  - Two instances of Visual Studio running simultaneously
  - Unions
- OpenCL API Debugger
  - Concurrent debug sessions with API Debugger are not supported. This includes attaching the Visual Studio debugger to more than one process, or opening multiple instances of Visual Studio and debugging processes concurrently.
- Code Analyzer Limitations:
  - Kernel analysis features are not supported on 3rd Generation Intel Core processors with Intel® HD Graphics 4000
  - Latency and occupancy reports cannot be generated for built-in kernels which are generated with clCreateProgramWithBuiltInKernels
o Calling the API `clCreateProgramWithBuiltInKernels` or `clCreateAcceleratorINTEL` generates additional OpenCL APIs in the API Analyze report, these APIs do not appear in the code

- Occupancy analysis is not supported on an application that includes a call to Microsoft D3D11 API `GetData()`. Running Occupancy analysis on such an application leads to application crash with an exception
- Kernel analysis, HW counters and some of the hints are available only for kernels that run on GPU (shared context is not supported)
- Host and kernel level analysis are not supported on an application that uses the motion estimation extension

### 3.3 Known Installation and Configuration Issues

- If you encounter an issue with detecting OpenCL™ GPU devices after installing the SDK on your Microsoft Windows* OS machine, update the GFX driver for your platform to the latest version from https://downloadcenter.intel.com/.
- If the PATH environment variable exceeds 256 character length upon installation, you might encounter issues related to System32 directory use.
- In case of uninstallation through Control panel > Uninstall a program you may face the "Error opening installation log file. Verify that the specified log file location exists and is writable" error. It is a known issue in the Microsoft* data base at http://support.microsoft.com/kb/2564571. Use uninstallation icon in the Start menu or reboot the machine to proceed with the uninstallation.
- If the Mozilla Firefox* browser shows the Network Error (dns_unresolved_hostname) screen with the message “Your requested host “localhost” could not be resolved by DNS. For assistance, contact your network support team.” instead of a report, please use the “Auto-detect proxy settings for this network” option: Options > Advanced > Network tab > Settings…

### 3.4 Intel® Processor Graphics Device Limitations

- For details on known issues with the OpenCL™ standard on the Intel® Processor Graphics, refer to the relevant driver release notes.
- Timeout Detection & Recovery (TDRs) may be observed when running OpenCL™ benchmarks including Kishonti CLBenchmark, Kishonti CompuBench CL*, and SiSoftware Sandra* (GP (GPU/CPU/APU) Processing OpenCL™ benchmarks). Also some OpenCL™ workloads may cause TDRs, especially workloads with complex, time-consuming kernels and large local work size or workloads that use profiling feature. Increase the TDR delay to avoid the TDRs. For details, refer to the article at https://msdn.microsoft.com/en-us/library/windows/hardware/ff570087(v=vs.85).aspx
- The OpenCL™ Driver is available on systems with Intel® Processor Graphics and discrete graphics cards (Microsoft Windows* OS only):
  - Capabilities of both discrete and integrated graphics are available if display is connected to:
    - Integrated graphics card display port.
    - Discrete and integrated graphics cards simultaneously.
  - Capabilities of a discrete card only are available if the display is connected to:
    - Discrete graphics card display port.
    - Integrated graphics card, and a discrete graphics card without display ports.
4 Related Documentation

Here is the documentation related to Intel® SDK for OpenCL™ applications:

- [Getting Started with Intel® Code Builder for OpenCL™ API](#)
- [Developer Guide for Intel® SDK for OpenCL™ Applications](#)
- [Developer Guide for Intel® Processor Graphics](#)
5 Where to Find the Release


For more info on how to choose which driver/runtime package you need and how to download it, please see https://software.intel.com/en-us/articles/opencl-drivers.
6 System Requirements

6.1 Supported Architectures and Terminology
For an explanation of architecture names, see http://software.intel.com/en-us/articles/intel-architecture-platform-terminology/.

The following matrix determines Intel processors support on Microsoft Windows*, Linux* and Android* operating systems.

6.1.1 Intel® SDK for OpenCL™ Applications for Windows*:

<table>
<thead>
<tr>
<th>Intel® Platform</th>
<th>OpenCL version</th>
<th>SDK Platform Windows* 8.1/10</th>
<th>Target Application Platform Windows* 8.1/10</th>
</tr>
</thead>
<tbody>
<tr>
<td>[NEW] 7th Generation Intel® Core Processors with Intel® Iris™ Pro Graphics and HD Graphics</td>
<td>2.1</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>6th Generation Intel® Core Processors with Intel® Iris™ Pro Graphics and HD Graphics</td>
<td>2.0</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>5th Generation Intel® Core Processors with Intel® Iris™ Pro Graphics and HD Graphics</td>
<td>2.0</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1st and 2nd Generation Intel® Core™ Processors &amp; Intel® Xeon® Processor (CPU only)</td>
<td>1.2</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Intel® Xeon® Processor E3-1200 v4 Family with C226 chipset and E3-1500 v5 Family with C236 chipset</td>
<td>2.0</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
### 6.1.2 Intel® SDK for OpenCL™ Applications for Linux*

<table>
<thead>
<tr>
<th>Intel® Platform</th>
<th>OpenCL version</th>
<th>SDK Platform</th>
<th>Target Application Platform</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ubuntu 14.04</td>
<td>CentOS 7.2</td>
</tr>
<tr>
<td>[NEW] 7th Generation Intel® Core™ Processors with Intel® Iris™ Pro Graphics and HD Graphics</td>
<td>2.0</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>[NEW] Intel® Pentium™ Processor N4200/5, N3350/5, N3450/5</td>
<td>2.0</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>5th and 6th Generation Intel® Core™ Processors with Intel® Iris™ Pro Graphics and HD Graphics</td>
<td>2.0</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Intel® Xeon® Processor E3-1200 v4 Family with C226 chipset and E3-1500 v5 Family with C236 chipset</td>
<td>2.0</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1st-4th Generation Intel® Core™ Processors (CPU only)</td>
<td>1.2</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Intel® Xeon® Processor Product Family (CPU only)</td>
<td>1.2</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Note the following:

- To run and use the Intel® Code Builder for OpenCL™ API IDE plug-in, you must have a PC based on an IA-32 or Intel 64 architecture processor.
- Incompatible or proprietary instructions in non-Intel processors may cause the analysis capabilities of this product to function incorrectly. Any attempt to analyze code not supported by Intel processors may lead to failures in this product.
- You must have administrator privileges to install and use the Intel® SDK for OpenCL™ Applications 2016 R3 on Microsoft Windows* operating systems.
- You must have root privileges (or use the `sudo` command) to run the Intel® SDK for OpenCL™ Applications 2016 R3 on Linux* operating systems (including launching the Eclipse* IDE).
- Intel® SDK for OpenCL™ Applications for Linux* is compatible with the following OpenCL drivers and runtimes:
  - OpenCL™ 2.0 Driver for Intel® HD, Iris™, and Iris™ Pro Graphics for Linux (64-bit)
  - OpenCL™ Runtime 16.1.1 for Intel® Core™ and Xeon™ processors

- Intel® SDK for OpenCL™ Applications provides Android* OS support only on rooted devices with Intel® processors.
- Intel® SDK for OpenCL™ Applications plugin for the Eclipse* IDE requires Java Runtime Environment 1.8 installed on your Microsoft Windows* or Linux* machine.

### 6.2 Driver Requirements

#### 6.2.1 Windows* Driver Requirements:
For OpenCL™ support on Intel® processors with Intel® Processor Graphics you must have an Intel® Graphics Driver (version 15.36 or higher) installed. For more information please see the driver support matrix at


#### 6.2.2 Linux* Driver and Runtime Requirements:
For OpenCL™ support on Intel® processors with Intel® Processor Graphics you must have an OpenCL graphics driver or CPU-only runtime package installed.


#### 6.2.3 Eclipse* Plug-in Requirements
The Eclipse* plug-in requires Java Runtime Environment 1.8 or higher installed.
7 Installation Notes

7.1 Installation on Microsoft Windows* OS
For OpenCL™ support on Intel® processors with Intel® Processor Graphics you must have the Intel® Graphics Driver (version 15.36 or higher) installed.

You can obtain the latest driver version using the Intel® Driver Update Utility, or manually here

You can obtain Intel® SDK for OpenCL™ Applications installer from the SDK web page: https://software.intel.com/en-us/intel-opencl

You must have administrator privileges to install and use the SDK on Microsoft Windows* operating systems.

Before installing the Intel® SDK for OpenCL™ Applications for Windows operating systems it is recommended to remove any previous version of the SDK from your computer.

To install the Intel® SDK for OpenCL™ Applications on Windows operating systems, run the installation package and follow the installer prompts.

The SDK installation includes the following components:

- OpenCL code C header files and libraries
- Kernel Builder standalone utility 32- and 64-bit version
- Offline Compilation command-line utility 32- and 64-bit version
- OpenCL Code Builder plug-in for Microsoft Visual Studio* 2012 and higher including comprehensive environment for building, debugging and analyzing OpenCL applications.
- OpenCL Code Builder plug-in for Eclipse* 4.2 and higher including Kernel Development Framework for building OpenCL applications.

**NOTE:** Intel graphics driver includes OpenCL support for both CPU and Intel® Processor Graphics.

7.1.1 Uninstalling Intel® SDK for OpenCL Applications
To remove SDK components use the Control Panel or select Start > All Programs > Intel SDK for OpenCL Applications 2016 R3 > Uninstall

7.1.2 Setting Environment Variables on Microsoft Windows* OS Manually
The product installation process makes a few system environment modifications. If the environment variables become corrupted on the installed system, you can correct this issue by ensuring that the environment variables are defined as follows.

The INTELOCLSDKROOT variable must be set to the target installation directory. The default installation directory is C:\Program File(x86)\Intel\OpenCL SDK\6.3

Also make sure that the installation folder is in the system PATH environment variable.

7.1.3 Default Installation Folders
The default top-level installation folder for this product is:
If you are installing on a system with a non-English language version of Windows OS, the name of the Program Files folder may be different. On Intel® 64 systems, the directory name is Program Files (X86) or the equivalent.

### 7.2 Installation on Linux* OS

You can obtain the Intel® SDK for OpenCL™ applications installer from the SDK web page:

A driver or runtime package must also be installed. [https://software.intel.com/en-us/articles/opencl-drivers](https://software.intel.com/en-us/articles/opencl-drivers)

Intel® SDK for OpenCL™ applications 2016 R3 for Linux* installation package is delivered in the form of archives containing RPM packages with installer scripts for easy installation/uninstallation procedures. Installer provides both command-line and graphical user interface modes. You can use any of the approaches (use command-line or graphical user interface directly).

There are two installation packages available – one for Ubuntu* 14.04 OS and one for CentOS* 7.2. Please note: SDK install on other Linux distros like RHEL 7.2* and SLES 12.1* may also be possible but this does not imply driver support.

All RPM packages of the Intel® SDK for OpenCL™ applications are digitally signed.

To install the product:

1. Extract the TGZ archive contents:
   ```
   # tar xzf intel_sdk_for_opencl_2016_6.3.0.<VERSION>_x64.tgz
   # cd intel_sdk_for_opencl_2016_6.3.0.<VERSION>_x64
   ```

2. Run the following command (for command-line interface) and follow the installer prompts:
   ```
   # ./install.sh
   ```

3. Alternatively (for installation with graphical user interface) run the following command:
   ```
   # ./install_GUI.sh
   ```

To install the Eclipse plugin:

1. Copy the plugin from /etc/alternatives/opencl-intel-tools/eclipse-plugin/CodeBuilder_6.3.0.jar to the Eclipse* dropins folder.

2. Remove previous versions of the plugin from the Eclipse* dropins folder.

**NOTE:** All RPM packages of the Intel SDK for OpenCL Applications are digitally signed.

After downloading, you can verify the signature of the RPM package:
1. Extract the public key from the installation archive file.
2. Import public key into rpm database by use of the following command:
   
   # sudo rpm --import Intel-E901-172E-EF96-900F-B8E1-4184-D7BE-0E73-F789-186F.pub
3. Verify signature of RPM package:
   
   # rpm --checksig <rpm name>.rpm

   where `<rpm name>` is the name of the RPM package.

   Expected output for RPM with a valid digital signature is:
   `<rpm name>.rpm`: rsa sha1 (md5) pgp md5 OK

7.2.1 Uninstalling from Linux* OS

To uninstall the product, do the following:

1. Go to the folder to which you extracted the TGZ archive content.
2. Run the following command (for command-line interface) from the installed product location and follow
   the installer prompts:
   
   # /etc/alternatives/opencl-intel-tools/uninstall.sh
3. Alternatively (for uninstallation with graphical user interface), run the following command from the
   installed product location and select uninstall option:
   
   # /etc/alternatives/opencl-intel-tools/uninstall_GUI.sh

7.3 Installing OpenCL™ on the Android* Emulator

To install the Intel’s OpenCL runtime on the Android* Emulator using the script, do the following:

1. Go to the `android-preinstall` subfolder of the Intel® SDK for OpenCL™ applications installation
   folder.
2. Use the `OpenCL_Android_Install` script to configure the emulator or Android device or use the
   following options to start the emulator manually:
   
   `OpenCL_Android_Install -d <your device/emulator>`
   
   • Root permissions are required on Android devices and emulator.
   • Note that on Microsoft Windows* OSs only one device can be running at installation time.

To manually install the OpenCL runtime on the emulator, do the following:

1. Copy the following files from the SDK installation folder to `/system/vendor/lib` using the Android*
   Debug Bridge:
   
   o `__ocl_svml_g9.so`
   o `__ocl_svml_n8.so`
3. Use the following command to copy the files:

```bash
adb -s <Emulator-Name> push <file1> /system/lib
```

4. In the /system/lib folder on the Android device, create two links:

```
adb -s <Emulator-Name> shell 'cd /system/vendor/lib; ln -s libOpenCL.so.1 libOpenCL.so; ln -s libOpenCL.so.1.2 libOpenCL.so.1'
```

5. Create the ICD using the following command:

```
adb -s <Emulator-Name> mkdir -p /system/vendor/Khronos/OpenCL/vendors
adb -s <Emulator-Name> shell "echo libintelocl.so > /system/vendor/Khronos/OpenCL/vendors/intel.icd"
```

---

**NOTE:** If you close the emulator, you must reinstall the OpenCL runtime after you run it again.
8 Attributions

Android NDK
Android NDK is used for Android support, from ANDROID NDK distribution:

Terms and Conditions

This is the Android Software Development Kit License Agreement

DISCLAIMER OF WARRANTIES

YOU EXPRESSLY UNDERSTAND AND AGREE THAT YOUR USE OF THE SDK IS AT YOUR SOLE RISK AND THAT THE SDK IS PROVIDED "AS IS" AND "AS AVAILABLE" WITHOUT WARRANTY OF ANY KIND FROM GOOGLE. 10.2 YOUR USE OF THE SDK AND ANY MATERIAL DOWNLOADED OR OTHERWISE OBTAINED THROUGH THE USE OF THE SDK IS AT YOUR OWN DISCRETION AND RISK AND YOU ARE SOLELY RESPONSIBLE FOR ANY DAMAGE TO YOUR COMPUTER SYSTEM OR OTHER DEVICE OR LOSS OF DATA THAT RESULTS FROM SUCH USE. 10.3 GOOGLE FURTHER EXPRESSLY DISCLAIMS ALL WARRANTIES AND CONDITIONS OF ANY KIND, WHETHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO THE IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT.

LIMITATION OF LIABILITY

YOU EXPRESSLY UNDERSTAND AND AGREE THAT GOOGLE, ITS SUBSIDIARIES AND AFFILIATES, AND ITS LICENSORS SHALL NOT BE LIABLE TO YOU UNDER ANY THEORY OF LIABILITY FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, CONSEQUENTIAL OR EXEMPLARY DAMAGES THAT MAY BE INCURRED BY YOU, INCLUDING ANY LOSS OF DATA, WHETHER OR NOT GOOGLE OR ITS REPRESENTATIVES HAVE BEEN ADVISED OF OR SHOULD HAVE BEEN AWARE OF THE POSSIBILITY OF ANY SUCH LOSSES ARISING.

Indemnification

To the maximum extent permitted by law, you agree to defend, indemnify and hold harmless Google, its affiliates and their respective directors, officers, employees and agents from and against any and all claims, actions, suits or proceedings, as well as any and all losses, liabilities, damages, costs and expenses (including reasonable attorneys fees) arising out of or accruing from (a) your use of the SDK, (b) any application you develop on the SDK that infringes any copyright, trademark, trade secret, trade dress, patent or other intellectual property right of any person or defames any person or violates their rights of publicity or privacy, and (c) any non-compliance by you with this License Agreement.

Changes to the License Agreement

Google may make changes to the License Agreement as it distributes new versions of the SDK. When these changes are made, Google will make a new version of the License Agreement available on the website where the SDK is made available.
Boost

Boost is used, from boost distribution:

Boost Software License - Version 1.0 - August 17th, 2003

Permission is hereby granted, free of charge, to any person or organization obtaining a copy of the software and accompanying documentation covered by this license (the "Software") to use, reproduce, display, distribute, execute, and transmit the Software, and to prepare derivative works of the Software, and to permit third-parties to whom the Software is furnished to do so, all subject to the following: The copyright notices in the Software and this entire statement, including the above license grant, this restriction and the following disclaimer, must be included in all copies of the Software, in whole or in part, and all derivative works of the Software, unless such copies or derivative works are solely in the form of machine-executable object code generated by a source language processor.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE AND NON-INFRINGEMENT. IN NO EVENT SHALL THE COPYRIGHT HOLDERS OR ANYONE DISTRIBUTING THE SOFTWARE BE LIABLE FOR ANY DAMAGES OR OTHER LIABILITY, WHETHER IN CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

MIT License

The following components are used and have MIT license:

Codrops Stapel, Unspecified
DataTables, 1.10.3
Eclipse IDE Auto-generated Code, Unspecified
Eclipse Public License 1.0, Unspecified
JsLib, Unspecified
Modernizr, Unspecified
flot, 0.8.3
flot, Unspecified
jQuery UI - jquery/jquery-ui on GitHub, Unspecified
modernizer, Unspecified
syntaxhighlighter, Unspecified

From MIT License (MIT):

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions: The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.
THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Windows Ook Language Integration is used. It has Apache license. From Apache License 2.0:

Copyright [APPACHE] [name of copyright owner] Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

Zlib License
tinyxml2 is used. From Zlib license:

This software is provided 'as-is', without any express or implied warranty. In no event will the authors be held liable for any damages arising from the use of this software.

Permission is granted to anyone to use this software for any purpose, including commercial applications, and to alter it and redistribute it freely, subject to the following restrictions:

1. The origin of this software must not be misrepresented; you must not claim that you wrote the original software. If you use this software in a product, an acknowledgment in the product documentation would be appreciated but is not required.

2. Altered source versions must be plainly marked as such, and must not be misrepresented as being the original software.

3. This notice may not be removed or altered from any source distribution.

BSD 2-Clause License

CodeProject - Drag and drop in WPF is used. From BSD 2-Clause License:

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

MICROSOFT DIRECTX SOFTWARE DEVELOPMENT KIT (SDK)

These license terms are an agreement between Microsoft Corporation (or based on where you live, one of its affiliates) and you. Please read them. They apply to the software named above, which includes the media on which you received it, if any. The terms also apply to any Microsoft

• updates,
• supplements,
• Internet-based services, and
• support services

for this software, unless other terms accompany those items. If so, those terms apply.

BY USING THE SOFTWARE, YOU ACCEPT THESE TERMS. IF YOU DO NOT ACCEPT THEM, DO NOT USE THE SOFTWARE.

If you comply with these license terms, you have the rights below.

1. INSTALLATION AND USE RIGHTS.

a. Installation and Use. You may install and use any number of copies of the software on your devices.

b. Included Microsoft Programs. The software contains other Microsoft programs. The license terms with those programs apply to your use of them.

2. ADDITIONAL LICENSING REQUIREMENTS AND/OR USE RIGHTS.

a. Media Elements and Templates. You may copy and use images, clip art, animations, sounds, music, shapes, video clips and templates provided with the software and identified for such use in documents and projects that you create. You may distribute those documents and projects non-commercially. If you wish to use these media elements or templates for any other purpose, go to www.microsoft.com/permission to learn whether that use is allowed.
Windows Installer XML

WiX Toolset License
The WiX toolset is released under the Microsoft Reciprocal License (MS-RL). A reciprocal license is used to ensure that others who build on the effort of the WiX community give back to the WiX community. Specifically the license changes and improvements to the WiX toolset must be published using the same license.

Sometimes the reciprocal license is incorrectly interpreted to also apply to bundles, packages, custom actions built using the WiX toolset. The Outercurve Foundation has provided this statement to clarify:

The WiX toolset (WiX) is licensed under the Microsoft Reciprocal License (MS-RL). The MS-RL governs the distribution of the software licensed under it, as well as derivative works, and incorporates the definition of a derivative work provided in U.S. copyright law. OuterCurve Foundation does not view the installer packages generated by WiX as falling within the definition of a derivative work, merely because they are produced using WiX. Thus, the installer packages generated by WiX will normally fall outside the scope of the MS-RL, and any of your source code, binaries, libraries, routines or other software components that are incorporated in installer packages generated by WiX can be governed by other licensing terms.

The full text of the MS-RL license is reproduced below. It can also be found in the LICENSE.TXT file included with the source code.

8.1.1 Microsoft Reciprocal License (MS-RL)
This license governs use of the accompanying software. If you use the software, you accept this license. If you do not accept the license, do not use the software.

1. Definitions
The terms "reproduce," "reproduction," "derivative works," and "distribution" have the same meaning here as under U.S. copyright law.

A "contribution" is the original software, or any additions or changes to the software.

A "contributor" is any person that distributes its contribution under this license.

"Licensed patents" are a contributor's patent claims that read directly on its contribution.

2. Grant of Rights
(A) Copyright Grant- Subject to the terms of this license, including the license conditions and limitations in section 3, each contributor grants you a non-exclusive, worldwide, royalty-free copyright license to reproduce its contribution, prepare derivative works of its contribution, and distribute its contribution or any derivative works that you create.

(B) Patent Grant- Subject to the terms of this license, including the license conditions and limitations in section 3, each contributor grants you a non-exclusive, worldwide, royalty-free license under its licensed patents to make, have made, use, sell, offer for sale, import, and/or otherwise dispose of its contribution in the software or derivative works of the contribution in the software.

3. Conditions and Limitations

(A) Reciprocal Grants- For any file you distribute that contains code from the software (in source code or binary format), you must provide recipients the source code to that file along with a copy of this license, which license will govern that file. You may license other files that are entirely your own work and do not contain code from the software under any terms you choose.

(B) No Trademark License- This license does not grant you rights to use any contributors' name, logo, or trademarks.

(C) If you bring a patent claim against any contributor over patents that you claim are infringed by the software, your patent license from such contributor to the software ends automatically.

(D) If you distribute any portion of the software, you must retain all copyright, patent, trademark, and attribution notices that are present in the software.

(E) If you distribute any portion of the software in source code form, you may do so only under this license by including a complete copy of this license with your distribution. If you distribute any portion of the software in compiled or object code form, you may only do so under a license that complies with this license.

(F) The software is licensed "as-is." You bear the risk of using it. The contributors give no express warranties, guarantees or conditions. You may have additional consumer rights under your local laws which this license cannot change. To the extent permitted under your local laws, the contributors exclude the implied warranties of merchantability, fitness for a particular purpose and non-infringement.
9 Legal Information

No license (express or implied, by estoppel or otherwise) to any intellectual property rights is granted by this document.

Intel disclaims all express and implied warranties, including without limitation, the implied warranties of merchantability, fitness for a particular purpose, and non-infringement, as well as any warranty arising from course of performance, course of dealing, or usage in trade.

This document contains information on products, services and/or processes in development. All information provided here is subject to change without notice. Contact your Intel representative to obtain the latest forecast, schedule, specifications and roadmaps.

The products and services described may contain defects or errors known as errata which may cause deviations from published specifications. Current characterized errata are available on request.

Copies of documents which have an order number and are referenced in this document may be obtained by calling 1-800-548-4725 or by visiting www.intel.com/design/literature.htm.

Intel, the Intel logo, Intel Atom, Intel Atom Inside, Intel Core, Intel vPro, Intel Xeon Phi, Itanium, Pentium, Celeron, Ultrabook, VTune, Xeon, are trademarks of Intel Corporation in the U.S. and/or other countries.

* Other names and brands may be claimed as the property of others.

© 2016 Intel Corporation

OpenCL and the OpenCL logo are trademarks of Apple Inc. used by permission from Khronos.

Microsoft, Windows, and the Windows logo are trademarks, or registered trademarks of Microsoft Corporation in the United States and/or other countries.