

TI-Android-GingerBread-2.3-DevKit-1.0 ReleaseNotes



TI Android GingerBread 2.3 DevKit 1.0 Release Notes

Release Notes - March 31, 2011

Introduction

This is TI-Android-GingerBread-2.3-DevKit-1.0 release based on Android GingerBread 2.3 for AM35x EVM, AM37x EVM, OMAP35x EVM, Beagleboard Rev Cx and Beagleboard XM platforms.

This release serves to provide

- Fundamental software platform to build Android based products with TI devices.
- Give Android application developer a stable integrated foundation software.
- Provide benchmark numbers to evaluate Android based solutions with other distributions on TI devices
- A single release package that comprises of all TI components (bootloader, kernel, Tools), TI differentiators (like 3D graphics based on SGX, Overlay libraries, Adobe Flash 10) and Android standard components.

Component	Version	Base Repository	Base Tag (or commit id)
OMAP Linux Kernel	2.6.32(Android Linux kernel version)	The baseline was chosen from "PSP" release from [1]	OMAPPSP_03.00.01.06_baseline
U-Boot	2010.06.rc2	[2]	PSP 04.00.00.09
Android	GingerBread 2.3	http://gitorious.org/rowboat	TI-Android-GingerBread-2.3-DevKit-1.0.xml (without multimedia DSP acceleration),

The filesystem was built by integrating the sources from rowboat.org project hosted on rowboat gitorious Project [3] using TI-Android-GingerBread-2.3-DevKit-1.0.xml manifest file.

The codebase for Linux kernel, SGX kernel drivers, U-Boot included in this release is also hosted at the following repositories:

Component	Repository (Branch)	Commit ID / Baseline
Bootloader	[4]	PSP 04.00.00.09
OMAP Linux Kernel	[5] (rowboat-eclair-2.6.32)	d9b04d8b50d19b7056ee051106057f703877dabc
SGX Release	[6]	3674b877cb6b7c6e0267cb46c02c0f2ef9958a7e
Adobe Flash 10	[7]	v10.1.r105

For detailed information on the various software components included in the release and how to use them, please refer to the

http://processors.wiki.ti.com/index.php/TI-Android-GingerBread-2.3-DevKit-1.0_UserGuide.

The Android sources, SGX drivers, Kernel and U-Boot have been compiled with GNU Toolchain for ARM Processors from Android pre-built package

<http://gitorious.org/rowboat/prebuilt/trees/rowboat-froyo/linux-x86/toolchain/arm-eabi-4.4.0>

Documentation

- **User guide**

Provides instructions on how to use the TI Android GingerBread 2.3 DevKit 1.0 package. A copy of the User Guide is included in the docs folder of the DevKit package. The User Guide also gives instructions on building the Android root filesystem using Android sources maintained on rowboat repositories.

Location : http://processors.wiki.ti.com/index.php/TI-Android-GingerBread-2.3-DevKit-1.0_UserGuide

- **Developer guide**

Provides instructions for Android developers to get access to Android sources for TI devices, setting up host environment for compilation and enabling debug environment to ease the app development, debugging and deployment. [edit]

Location : http://processors.wiki.ti.com/index.php/TI-Android-GingerBread-2.3-DevKit-1.0_DeveloperGuide

- **Performance guide**

Gives the benchmark numbers for various parameters and peripherals

Location : http://processors.wiki.ti.com/index.php/Android_Benchmarks_DevKit2.3

- **Porting guide**

Provides information on porting packages like WLAN/BT, Camera, PowerManagement, NAND UBIFS for other platforms,

Location : http://processors.wiki.ti.com/index.php/TI-Android-GingerBread-2.3-DevKit-1.0_Porting_Guides

What's Supported

This SDK package includes support for the OMAP35x EVM, AM35x EVM, AM37x EVM, DM37x EVM, Beagleboard Rev Cx and Beagleboard XM.

Software features/components supported in this DevKit are

- Android GingerBread 2.3 release from Google Android
- Android Linux Kernel 2.6.32 integrated with PSP (03.00.01.06) drivers
- Bootloader (u-boot) and x-loader
- SGX Open GL Driver & Libraries
- Adobe Flash 10 (upon approval)
- WLAN and Bluetooth Firmware and Drivers for TI's WL1271
- Example Applications and Demos
 - Desk Clock, Browser, Calendar, Calculator, Contacts, Gallery, GlobalSearch, Launcher, Music, Settings
 - 3D Graphics - OpenGL ES demos.
- Documentation
 - User Guide
 - Release Notes
 - Developer Guide
 - CTS report
 - RowboPERF (Performance measurement) application user guide
 - Software Manifest files
- Host Tools
 - NAND Flashing Tool

- Pin Mux Utility
- SignGP
- Android Debugging
 - ADB Debugging over USB, Ethernet and Ethernet over USB
 - Connecting Eclipse (as provided by Android) with the EVMs, Beagleboards
- Test and Performance Reports
 - Performance, benchmarking results
 - Test results from our validation

Complete directory structure of DevKit

```

TI_Android_GingerBread_2_3_DevKit_1_0
|-- Android_Source_Manifest
|   `-- TI-Android-GingerBread-2.3-DevKit-1.0.xml
|-- Documents
|   |-- RowboPERF_User_Guide.pdf
|   |-- Software_Manifests
|   |-- Test_Performance_Results
|   |   |-- CTS_Report.tar.gz
|   |   |-- Performance_Results.pdf
|   |   `-- Test_Results.pdf
|   |-- TI-Android-GingerBread-2.3-DevKit-1.0_ReleaseNotes.pdf
|   |-- TI-Android-GingerBread-2.3-DevKit-1.0_UserGuide.pdf
|   `-- TI-Android-GingerBread-2.3-DevKit-1.0_DeveloperGuide.pdf
|-- Performance_Apps
|   |-- 0xbench
|   |-- 3D
|   |-- Launcher2
|   |-- rowboatBench
|   |-- RowboPERF
|   `-- StorageIO
|-- Prebuilt_Images
|   |-- AM35X
|   |-- AM37X
|   |-- beagleboard-rev-c4
|   |-- OMAP35X
|-- Tools
|   |-- flash-utility.tar.gz
|   |-- mk-bootscr
|   |-- mk-mmc
|   |-- pinmux-utility.tar.gz
|   |-- signGP
`-- Wireless
    `-- WL1271Android-patches.tar.gz

```

New in this Release

- The following items are newly added in this release:
 - Mouse cursor support for the gingerbread
 - Power Management features like DVFS,CPU idle states
 - Bluetooth audio gateway for HSP/HFP(Bluetooth SCO audio),AVRCP profiles on AM37x EVM
- The following features from previous release are provided:
 - Fastboot
 - WLAN (WL1271) on AM37x EVM
 - NAND UBIFS booting
 - UI and video on S-video
 - Adobe Flash 10
 - USB Mass Storage
 - Audio Record feature in Android
 - Bluetooth connectivity for OPP, A2DP profiles
 - Camera Image capture on Beagle XM
 - Performance measurements using RowboPERF, 0xbench and rowboatbench
 - Media clips for Audio, Video and JPEG
 - Keypad support on AM35x EVM
 - Hardware accelerated dynamic rotation for Video pipeline.

What's Not Supported

- The following items are not supported:
 - AM/DM37x Processor card with Micron Memory

Installation and Usage

The DevKit release is maintained as a single "TI-Android-GingerBread-2.3-DevKit-1.0.tar.gz" at http://software-dl.ti.com/dsps/dsps_public_sw/sdo_tii/TI_Android_DevKit/TI_Android_GingerBread_2_3_DevKit_1_0/index_FDS.html and individual component packages.

On a Linux Host PC download the single release package and execute the following components

```
#> tar -xzf TI-Android-GingerBread-2.3-DevKit-1.0.tar.gz
```

Please refer to the TI-Android-GingerBread-2.3-DevKit-1.0 User Guide ^[8] for more information on how to install and use the DevKit

Other individual packages can be used to refer to respective components.

The md5 checksums are provided for users to double check or verify the completeness of downloaded package.

Device Support

This release supports the following Texas Instruments devices

- OMAP35x, AM35x, AM37x

This release supports the following platforms

- Texas Instruments AM37x EVM (on the Mistral Rev G AM3715EVM)
- Texas Instruments AM35x EVM
- Texas Instruments OMAP35x EVM (on the Mistral Rev G OMAP35x)
- Beagleboard Rev Cx
- Beagleboard XM

Known Issues

Component	Issue Description	Workaround	Comments
Hardware	USB EHCI Host port doesn't work on few AM37x EVMs	No workaround	No fix available currently, suggestion is to use TI USB PHY
Software	Pinmux Utility: could not resize the GUI, so could not see what the other button on the bottom right corner is.	User may need to adjust the display resolution of their Windows PC	To be fixed in future releases
Software	Pinmux Utility: could not resize the GUI, so could not see what the other button on the bottom right corner is. Pinmux utility requires Left-click to select a peripheral interface cell. The cell should be auto selected when user right-click it.	No impact to functionality. Just a note on the user interface.	To be fixed in future releases
Software	AM35x EVM platform booting doesn't continue after below shown messages AudioPolicyService not published, waiting...	This happens if the Filesystem was not unmounted properly. Look for the process ID in the console messages. Kill the process with "kill" command. This will not appear again.	
Software	ARM performance data is not shown sometimes when RowboPERF runs ARM benchmarks	The CPU tests in Rowboat Bench will generate ARM benchmarks, this can be used for same purpose	
Software	Netperf Ethernet performance is low when using a buffer size of 8192	No workaround	Other buffer sizes give better performance, see the performance results sheet for this release
Software	System does not obtain IP address automatically after booting	Use netcfg <eth0> dhcp on the console.	See user guide for more details
Software	Graphics Screen resolution is changed after suspend/resume sequence	No workaround	This is only with one of the demo app, this will not affect UI. The other 3D tests in RowboPerf work good.
Software	SUSPEND power consumption is too high (~85mw)	No workaround	To be done
Software	Acquiring different WakeLocks doesn't change power consumption	No workaround	To be done
Hardware	Video display is not clear when displayed over s-video Not observed on LCD TVs	No workaround	Not consistent on all TVs

Tool	Flashing NAND using flash utility v1.3 doesn't work over UART	USB can be used with same utility to flash the NAND	
Software	"Four Dalvik VM unit tests failed during testing failed: 057-iteration-performance failed: 062-character-encodings failed: 063-process-manager failed: 071-dexfile	No workaround	To be done
Software	When the system is set to display through the S-video output, the display start flickering after a wake-up from suspend	No workaround	To be done
N/A	system boot-up takes too long, UI is less responsive, or video playback is sluggish	use the SD cards listed in the "SD Card Recommendations" section in the User Guide	
N/A	Currently Beagle-XM prebuilt image is not included in the release.	The Beagle-XM prebuilt package will be available soon	We noticed kernel crashes on Beagle XM, it could be due to OpenGL drivers, we are currently working on this issue. The release page will be updated soon with the fix. Please keep tracking this column for more updates.

Version

This is Release TI Android GingerBread 2.3 DevKit 1.0

The release is available from http://software-dl.ti.com/dsp/dsp_public_sw/sdo_tii/TI_Android_DevKit/TI_Android_GingerBread_2_3_DevKit_1_0/index_FDS.html

Technical Support and Product Updates

For further information or to report any problems, contact <http://e2e.ti.com/android> or <http://support.ti.com>.

For community support join <http://groups.google.com/group/rowboat>

For IRC #rowboat on irc.freenode.net

To raise any defect for this release please use <http://code.google.com/p/rowboat/issues/list>

References

- [1] <http://arago-project.org/git/projects/linux-omap3.git>
- [2] <http://arago-project.org/git/projects/u-boot-omap3.git>
- [3] <http://gitorious.org/rowboat>
- [4] <http://gitorious.org/rowboat/u-boot-omap3>
- [5] <http://gitorious.org/rowboat/kernel>
- [6] <http://gitorious.org/rowboat/hardware-ti-sgx.git>
- [7] <http://focus.ti.com/docs/toolsw/folders/print/adobe-flash-a8.html>
- [8] http://processors.wiki.ti.com/index.php/TI-Android-GingerBread-2.3-DevKit-1.0_UserGuide

Article Sources and Contributors

TI-Android-GingerBread-2.3-DevKit-1.0 ReleaseNotes *Source:* <http://processors.wiki.ti.com/index.php?oldid=55280> *Contributors:* Arunjoseph, Satish npatel, Vishveshwarbhat

Image Sources, Licenses and Contributors

Image: TIBanner.png *Source:* <http://processors.wiki.ti.com/index.php?title=File:TIBanner.png> *License:* unknown *Contributors:* Nsnehaprabha

License

THE WORK (AS DEFINED BELOW) IS PROVIDED UNDER THE TERMS OF THIS CREATIVE COMMONS PUBLIC LICENSE ("CCPL" OR "LICENSE"). THE WORK IS PROTECTED BY COPYRIGHT AND/OR OTHER APPLICABLE LAW. ANY USE OF THE WORK OTHER THAN AS AUTHORIZED UNDER THIS LICENSE OR COPYRIGHT LAW IS PROHIBITED. BY EXERCISING ANY RIGHTS TO THE WORK PROVIDED HERE, YOU ACCEPT AND AGREE TO BE BOUND BY THE TERMS OF THIS LICENSE. TO THE EXTENT THIS LICENSE MAY BE CONSIDERED TO BE A CONTRACT, THE LICENSOR GRANTS YOU THE RIGHTS CONTAINED HERE IN CONSIDERATION OF YOUR ACCEPTANCE OF SUCH TERMS AND CONDITIONS.

License

1. Definitions

- "**Adaptation**" means a work based upon the Work, or upon the Work and other pre-existing works, such as a translation, adaptation, derivative work, arrangement of music or other alterations of a literary or artistic work, or phonogram or performance and includes cinematographic adaptations or any other form in which the Work may be recast, transformed, or adapted including in any form recognizably derived from the original, except that a work that constitutes a Collection will not be considered an Adaptation for the purpose of this License. For the avoidance of doubt, where the Work is a musical work, performance or phonogram, the synchronization of the Work in timed-relation with a moving image ("synching") will be considered an Adaptation for the purpose of this License.
- "**Collection**" means a collection of literary or artistic works, such as encyclopedias and anthologies, or performances, phonograms or broadcasts, or other works or subject matter other than works listed in Section 1(f) below, which, by reason of the selection and arrangement of their contents, constitute intellectual creations, in which the Work is included in its entirety in unmodified form along with one or more other contributions, each constituting separate and independent works in themselves, which together are assembled into a collective whole. A work that constitutes a Collection will not be considered an Adaptation (as defined below) for the purposes of this License.
- "**Creative Commons Compatible License**" means a license that is listed at <http://creativecommons.org/compatlicenses> that has been approved by Creative Commons as being essentially equivalent to this License, including, at a minimum, because that license: (i) contains terms that have the same purpose, meaning and effect as the License Elements of this License; and, (ii) explicitly permits the relicensing of adaptations of works made available under that license under this License or a Creative Commons jurisdiction license with the same License Elements as this License.
- "**Distribute**" means to make available to the public the original and copies of the Work or Adaptation, as appropriate, through sale or other transfer of ownership.
- "**License Elements**" means the following high-level license attributes as selected by Licensor and indicated in the title of this License: Attribution, ShareAlike.
- "**Licensor**" means the individual, individuals, entity or entities that offer(s) the Work under the terms of this License.
- "**Original Author**" means, in the case of a literary or artistic work, the individual, individuals, entity or entities who created the Work or if no individual or entity can be identified, the publisher; and in addition (i) in the case of a performance the actors, singers, musicians, dancers, and other persons who act, sing, deliver, declaim, play in, interpret or otherwise perform literary or artistic works or expressions of folklore; (ii) in the case of a phonogram the producer being the person or legal entity who first fixes the sounds of a performance or other sounds; and, (iii) in the case of broadcasts, the organization that transmits the broadcast.
- "**Work**" means the literary and/or artistic work offered under the terms of this License including without limitation any production in the literary, scientific and artistic domain, whatever may be the mode or form of its expression including digital form, such as a book, pamphlet and other writing; a lecture, address, sermon or other work of the same nature; a dramatic or dramatico-musical work; a choreographic work or entertainment in dumb show; a musical composition with or without words; a cinematographic work to which are assimilated works expressed by a process analogous to photography; a work of applied art; an illustration, map, plan, sketch or three-dimensional work relative to geography, topography, architecture or science; a performance; a broadcast; a phonogram; a compilation of data to the extent it is protected as a copyrightable work; or a work performed by a variety or circus performer to the extent it is not otherwise considered a literary or artistic work.
- "**You**" means an individual or entity exercising rights under this License who has not previously violated the terms of this License with respect to the Work, or who has received express permission from the Licensor to exercise rights under this License despite a previous violation.
- "**Publicly Perform**" means to perform public recitations of the Work and to communicate to the public those public recitations, by any means or process, including by wire or wireless means or public digital performances; to make available to the public Works in such a way that members of the public may access these Works from a place and at a place individually chosen by them; to perform the Work to the public by any means or process and the communication to the public of the performances of the Work, including by public digital performance; to broadcast and rebroadcast the Work by any means including signs, sounds or images.
- "**Reproduce**" means to make copies of the Work by any means including without limitation by sound or visual recordings and the right of fixation and reproducing fixations of the Work, including storage of a protected performance or phonogram in digital form or other electronic medium.

2. Fair Dealing Rights

Nothing in this License is intended to reduce, limit, or restrict any uses free from copyright or rights arising from limitations or exceptions that are provided for in connection with the copyright protection under copyright law or other applicable laws.

3. License Grant

Subject to the terms and conditions of this License, Licensor hereby grants You a worldwide, royalty-free, non-exclusive, perpetual (for the duration of the applicable copyright) license to exercise the rights in the Work as stated below:

- to Reproduce the Work, to incorporate the Work into one or more Collections, and to Reproduce the Work as incorporated in the Collections;
- to create and Reproduce Adaptations provided that any such Adaptation, including any translation in any medium, takes reasonable steps to clearly label, demarcate or otherwise identify that changes were made to the original Work. For example, a translation could be marked "The original work was translated from English to Spanish," or a modification could indicate "The original work has been modified.";
- to Distribute and Publicly Perform the Work including as incorporated in Collections; and,
- to Distribute and Publicly Perform Adaptations.
- For the avoidance of doubt:
- Non-waivable Compulsory License Schemes.** In those jurisdictions in which the right to collect royalties through any statutory or compulsory licensing scheme cannot be waived, the Licensor reserves the exclusive right to collect such royalties for any exercise by You of the rights granted under this License;
- Waivable Compulsory License Schemes.** In those jurisdictions in which the right to collect royalties through any statutory or compulsory licensing scheme can be waived, the Licensor waives the exclusive right to collect such royalties for any exercise by You of the rights granted under this License; and,
- Voluntary License Schemes.** The Licensor waives the right to collect royalties, whether individually or, in the event that the Licensor is a member of a collecting society that administers voluntary licensing schemes, via that society, from any exercise by You of the rights granted under this License.

The above rights may be exercised in all media and formats whether now known or hereafter devised. The above rights include the right to make such modifications as are technically necessary to exercise the rights in other media and formats. Subject to Section 8(f), all rights not expressly granted by Licensor are hereby reserved.

4. Restrictions

The license granted in Section 3 above is expressly made subject to and limited by the following restrictions:

- You may Distribute or Publicly Perform the Work only under the terms of this License. You must include a copy of, or the Uniform Resource Identifier (URI) for, this License with every copy of the Work You Distribute or Publicly Perform. You may not offer or impose any terms on the Work that restrict the terms of this License or the ability of the recipient of the Work to exercise the rights granted to that recipient under the terms of the License. You may not sublicense the Work. You must keep intact all notices that refer to this License and to the disclaimer of warranties with every copy of the Work You Distribute or Publicly Perform. When You Distribute or Publicly Perform the Work, You may not impose any effective technological measures on the Work that restrict the ability of a recipient of the Work from You to exercise the rights granted to that recipient under the terms of the License. This Section 4(a) applies to the Work as incorporated in a Collection, but this does not require the Collection apart from the Work itself to be made subject to the terms of this License. If You create a Collection, upon notice from any Licensor You must, to the extent practicable, remove from the Collection any credit as required by Section 4(c), as requested. If You create an Adaptation, upon notice from any Licensor You must, to the extent practicable, remove from the Adaptation any credit as required by Section 4(c), as requested.
- You may Distribute or Publicly Perform an Adaptation only under the terms of: (i) this License; (ii) a later version of this License with the same License Elements as this License; (iii) a Creative Commons jurisdiction license (either this or a later license version) that contains the same License Elements as this License (e.g., Attribution-ShareAlike 3.0 US); (iv) a Creative Commons Compatible License. If you license the Adaptation under one of the licenses mentioned in (iv), you must comply with the terms of that license. If you license the Adaptation under the terms of any of the licenses mentioned in (i), (ii) or (iii) (the "Applicable License"), you must comply with the terms of the Applicable License generally and the following provisions: (I) You must include a copy of, or the URI for, the Applicable License with every copy of each Adaptation You Distribute or Publicly Perform; (II) You may not offer or impose any terms on the Adaptation that restrict the terms of the Applicable License or the ability of the recipient of the Adaptation to exercise the rights granted to that recipient under the terms of the Applicable License; (III) You must keep intact all notices that refer to the Applicable License and to the disclaimer of warranties with every copy of the Work as included in the Adaptation You Distribute or Publicly Perform; (IV) when You Distribute or Publicly Perform the Adaptation, You may not impose any effective technological measures on the Adaptation that restrict the ability of a recipient of the Adaptation from You to exercise the rights granted to that recipient under the terms of the Applicable License. This Section 4(b) applies to the Adaptation as incorporated in a Collection, but this does not require the Collection apart from the Adaptation itself to be made subject to the terms of the Applicable License.
- If You Distribute, or Publicly Perform the Work or any Adaptations or Collections, You must, unless a request has been made pursuant to Section 4(a), keep intact all copyright notices for the Work and provide, reasonable to the medium or means You are utilizing: (i) the name of the Original Author (or pseudonym, if applicable) if supplied, and/or if the Original Author and/or Licensor designate another party or parties (e.g., a sponsor institute, publishing entity, journal) for attribution ("Attribution Parties") in Licensor's copyright notice, terms of service or by other reasonable means, the name of such party or parties; (ii) the title of the Work if supplied; (iii) to the extent reasonably practicable, the URI, if any, that Licensor specifies to be associated with the Work, unless such URI does not refer to the copyright notice or licensing information for the Work; and (iv), consistent with Section 3(b), in the case of an Adaptation, a credit identifying the use of the Work in the Adaptation (e.g., "French translation of the Work by Original Author," or "Screenplay based on original Work by Original Author"). The credit required by this Section 4(c) may be implemented in any reasonable manner; provided, however, that in the case of a Adaptation or Collection, at a minimum such credit will appear, if a credit for all contributing authors of the Adaptation or Collection appears, then as part of these credits and in a manner at least as prominent as the credits for the other contributing authors. For the avoidance of doubt, You may only use the credit required by this Section for the purpose of attribution in the manner set out above and, by exercising Your rights under this License, You may not implicitly or explicitly assert or imply any connection with, sponsorship or endorsement by the Original Author, Licensor and/or Attribution Parties, as appropriate, of You or Your use of the Work, without the separate, express prior written permission of the Original Author, Licensor and/or Attribution Parties.
- Except as otherwise agreed in writing by the Licensor or as may be otherwise permitted by applicable law, if You Reproduce, Distribute or Publicly Perform the Work either by itself or as part of any Adaptations or Collections, You must not distort, mutilate, modify or take other derogatory action in relation to the Work which would be prejudicial to the Original Author's honor or reputation. Licensor agrees that in those jurisdictions (e.g. Japan), in which any exercise of the right granted in Section 3(b) of this License (the right to make Adaptations) would be deemed to be a distortion, mutilation, modification or other derogatory action prejudicial to the Original Author's honor and reputation, the Licensor will waive or not assert, as appropriate, this Section, to the fullest extent permitted by the applicable national law, to enable You to reasonably exercise Your right under Section 3(b) of this License (right to make Adaptations) but not otherwise.

5. Representations, Warranties and Disclaimer

UNLESS OTHERWISE MUTUALLY AGREED TO BY THE PARTIES IN WRITING, LICENSOR OFFERS THE WORK AS-IS AND MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND CONCERNING THE WORK, EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF TITLE, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT, OR THE ABSENCE OF LATENT OR OTHER DEFECTS, ACCURACY, OR THE PRESENCE OF ABSENCE OF ERRORS, WHETHER OR NOT DISCOVERABLE. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES, SO SUCH EXCLUSION MAY NOT APPLY TO YOU.

6. Limitation on Liability

EXCEPT TO THE EXTENT REQUIRED BY APPLICABLE LAW, IN NO EVENT WILL LICENSOR BE LIABLE TO YOU ON ANY LEGAL THEORY FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR EXEMPLARY DAMAGES ARISING OUT OF THIS LICENSE OR THE USE OF THE WORK, EVEN IF LICENSOR HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

7. Termination

- This License and the rights granted hereunder will terminate automatically upon any breach by You of the terms of this License. Individuals or entities who have received Adaptations or Collections from You under this License, however, will not have their licenses terminated provided such individuals or entities remain in full compliance with those licenses. Sections 1, 2, 5, 6, 7, and 8 will survive any termination of this License.
- Subject to the above terms and conditions, the license granted here is perpetual (for the duration of the applicable copyright in the Work). Notwithstanding the above, Licensor reserves the right to release the Work under different license terms or to stop distributing the Work at any time; provided, however that any such election will not serve to withdraw this License (or any other license that has been, or is required to be, granted under the terms of this License), and this License will continue in full force and effect unless terminated as stated above.

8. Miscellaneous

1. Each time You Distribute or Publicly Perform the Work or a Collection, the Licensor offers to the recipient a license to the Work on the same terms and conditions as the license granted to You under this License.
2. Each time You Distribute or Publicly Perform an Adaptation, Licensor offers to the recipient a license to the original Work on the same terms and conditions as the license granted to You under this License.
3. If any provision of this License is invalid or unenforceable under applicable law, it shall not affect the validity or enforceability of the remainder of the terms of this License, and without further action by the parties to this agreement, such provision shall be reformed to the minimum extent necessary to make such provision valid and enforceable.
4. No term or provision of this License shall be deemed waived and no breach consented to unless such waiver or consent shall be in writing and signed by the party to be charged with such waiver or consent.
5. This License constitutes the entire agreement between the parties with respect to the Work licensed here. There are no understandings, agreements or representations with respect to the Work not specified here. Licensor shall not be bound by any additional provisions that may appear in any communication from You. This License may not be modified without the mutual written agreement of the Licensor and You.
6. The rights granted under, and the subject matter referenced, in this License were drafted utilizing the terminology of the Berne Convention for the Protection of Literary and Artistic Works (as amended on September 28, 1979), the Rome Convention of 1961, the WIPO Copyright Treaty of 1996, the WIPO Performances and Phonograms Treaty of 1996 and the Universal Copyright Convention (as revised on July 24, 1971). These rights and subject matter take effect in the relevant jurisdiction in which the License terms are sought to be enforced according to the corresponding provisions of the implementation of those treaty provisions in the applicable national law. If the standard suite of rights granted under applicable copyright law includes additional rights not granted under this License, such additional rights are deemed to be included in the License; this License is not intended to restrict the license of any rights under applicable law.