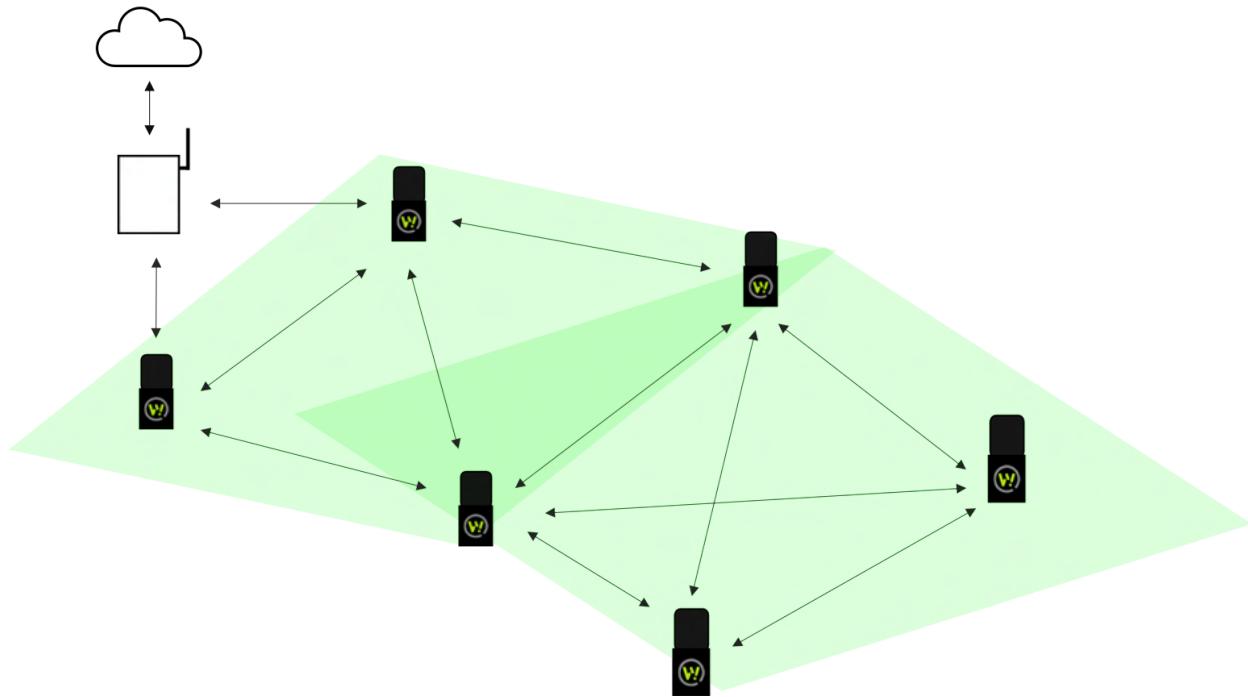


Overview of the system

Wittra's sensor tags, mesh-routers and gateway together form a [mesh network](#) based on 6LoWPAN (IPv6 over Low-Power Wireless Personal Area Networks). The network is IP-enabled down to the sensor tags, where data is communicated wirelessly over IEEE 802.15.4g radios in the Sub-GHz RF band.

The data can easily be accessed via our [Wittra portal](#) by adding an integration; For further information please have a look at [Accessing your data](#).

Mesh network



In a mesh network, data can be routed from one node to another to reach the end destination (in our case a gateway). In comparison, in a star network all nodes would communicate directly with a central hub.

By using a mesh network we extend the range of a network further than one single hop. Mesh networks are self-healing in the sense that data can be re-routed when nodes fail along the path.

In our mesh network we have sensor tags, mesh-routers and a border-router (attached to a gateway).

- A sensor tag acts as a leaf node in a mesh network topology, which means that it will only produce and send data but **not** forward data packets from other devices. Thus, the radio of a

tag does not need to be turned on all the time which decreases power consumption and - as a consequence - increases operational lifetime.

- A mesh-router - in contrast - has the main purpose of forwarding data packets. This is the reason why it needs to be powered all the time.
- A border-router sits inside a gateway. It is the end destination of data packets in a mesh network. The border-router conveys the data to the gateway which then sends the data up securely, via HTTPS, to our Wittra portal.

Network settings

Channels

Our solution operates in the Sub-GHz frequency band, and uses Frequency Hopping (FH) for increased reliability. The devices switch frequency several times per second, to mitigate the impact of any individual bad channel. When a transmission fails on a bad channel, new attempts will be performed over different channels, increasing the likelihood to eventually succeed.

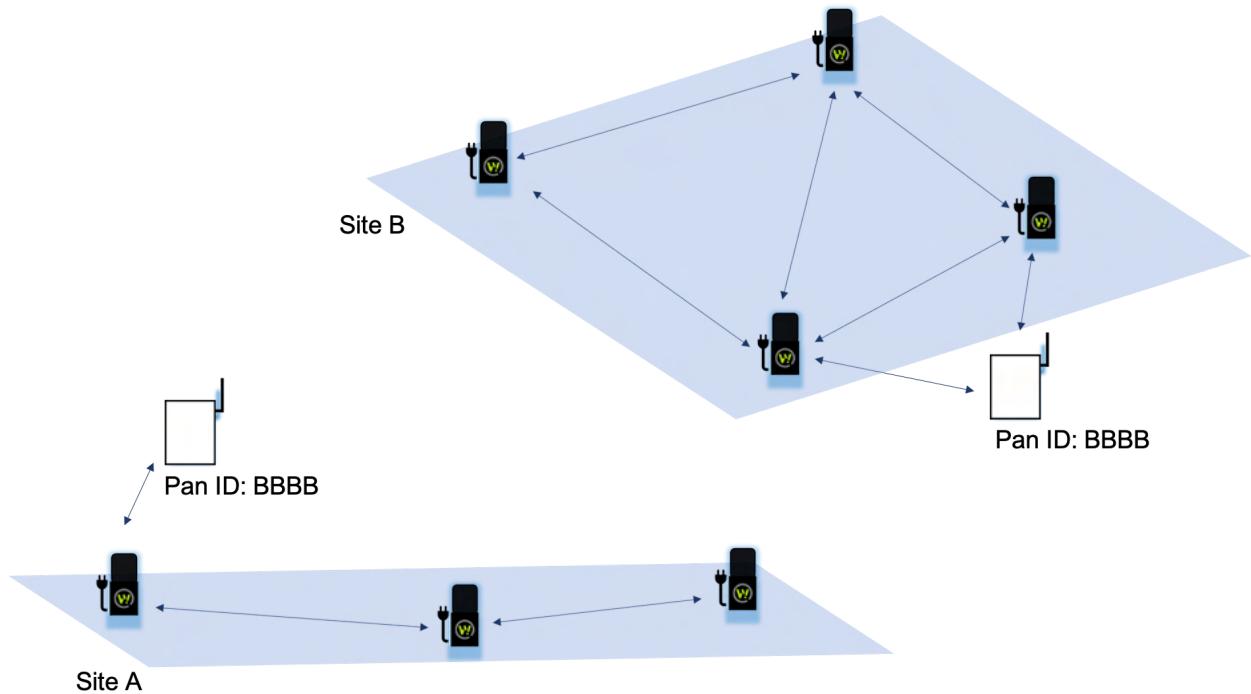
Note that the Sub-GHz band is much less prone to interference than the 2.4 GHz band, since there are fewer products on the market that uses this spectrum and at the same time government regulations impose limits on the radio usage per device. However, interference still exists and that is why FH is key to building robust networks.

We will soon offer the ability to configure the channel set for any given system. This way, you will be able to exclude any channel that you want or must keep unused to various administrative reasons. You will also be able to isolate multiple Wittra systems if desired, by selecting non-overlapping channel sets.

PAN ID

The PAN ID is a unique ID for a group of physically co-located IEEE 802.15.4 devices, each local network should have its own ID. Networks near each other mustn't have the same PAN ID. It is randomly selected at deployment but can be changed at any point of time in the [Wittra portal](#).

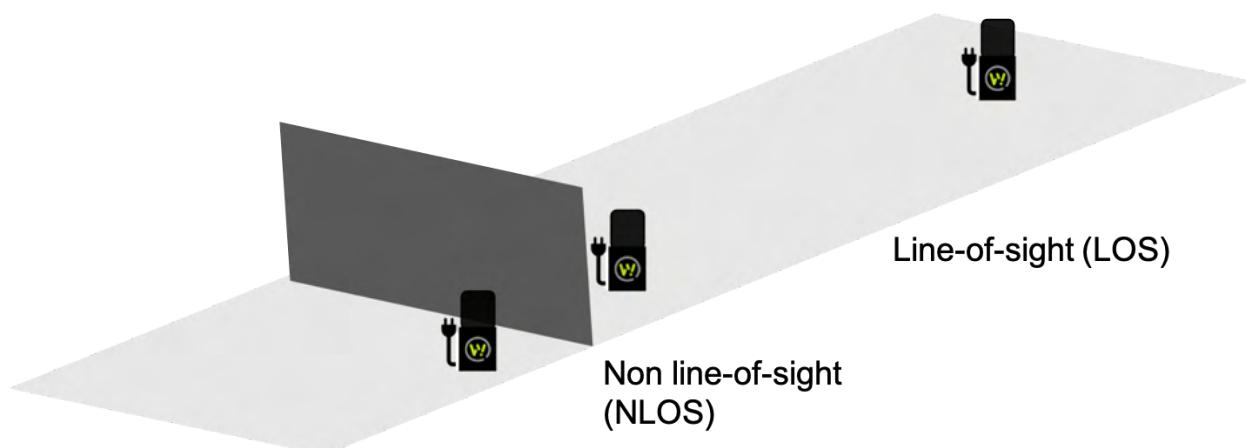
The PAN ID can be used to connect two networks, so a tag can move in between sites.



Expected range

The radio in the sensor tag, mesh-router and border-router runs Sub-GHz in the industrial, scientific and medical (ISM) frequency band. By communicating in this frequency domain you have a better range than for example the higher frequency band of 2.4 GHz. You also have a better penetration meaning you can communicate in harsher radio environments such as construction sites and in cities, where line of sight is not an option.

The expected range of the system depends if you have line of sight or non-line of sight and how high up you can put the mesh-routers. But in average the range is around 100-200m.



Secure system

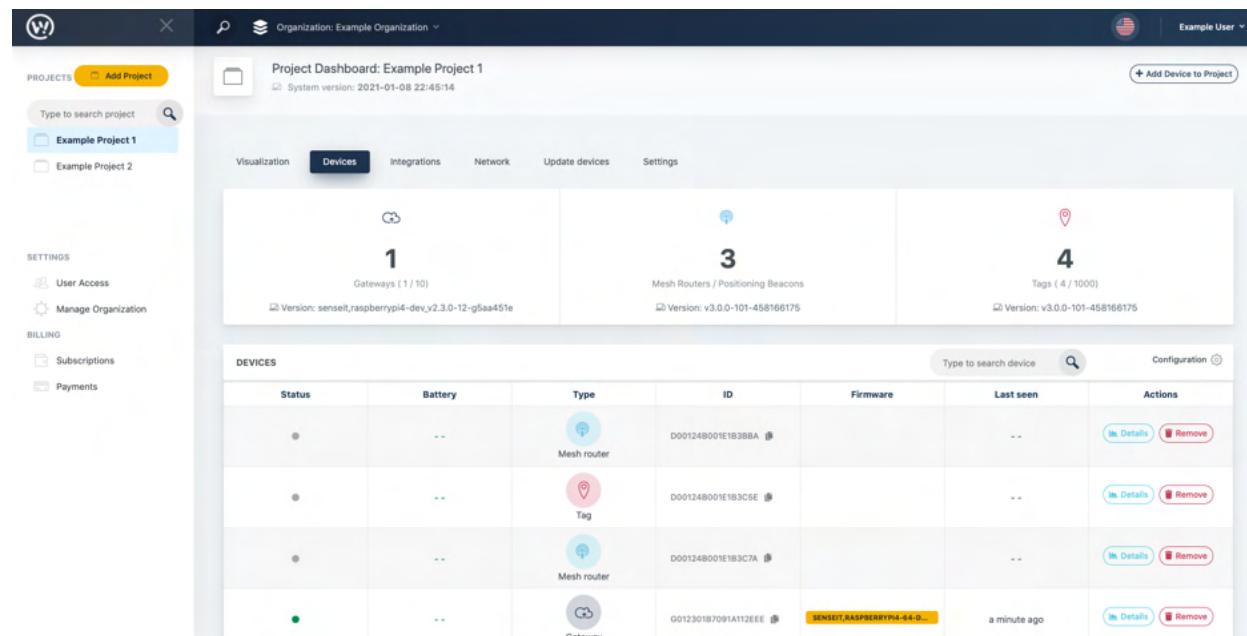
We use a Secure-by-design approach where we incorporate security from the early architecture design stage and throughout the evolution of the products. The key protections we have are

summarized below:

- **Spoofing** is mitigated using an authentication process utilizing JWTs that are signed by a private key stored in a TPM on the gateway which are checked in registered devices on our cloud service, where the respective public key is stored.
- **Tampering** is mitigated using DTLS/TLS to encrypt the data sent between sensor tag and gateway, and between gateway and Wittra portal. One caveat is that with the current protocol bridging between CoAP and HTTP in the gateway, **the gateway has to be a trusted device**.
- **Confidentiality** is obtained by running CoAP over DTLS from sensor tag to gateway and by running HTTP over TLS from gateway to Wittra cloud service. The HTTP/TLS link is verified using an X.509 certificate provided by the server (in this case Google Cloud Platform) and issued by a trusted authority. The CoAP/DTLS link is verified with a Pre-Shared Key (PSK) which is randomly generated at deployment. This key must be kept secret and therefore **the gateway has to be treated as a trusted device**. See [Updating security settings](#) for more information.
- **Elevation of Privileges** is handled by standard Linux account authentication and authorization mechanisms in the gateway. On our Wittra cloud service it is handled by Googles Cloud Identity and Access Management (IAM).

Overview of Wittra portal

Wittra portals provide a rich user interface for administration and maintenance of Wittra solutions. The following screenshot gives you an overview of the Wittra portal portal.



The screenshot shows the Wittra portal interface. At the top, there is a navigation bar with a logo, a search bar, and a dropdown for 'Organization: Example Organization'. On the far right, there is a user profile icon and a dropdown for 'Example User'. The main area is titled 'Project Dashboard: Example Project 1' and shows a system version of '2021-01-08 22:45:14'. Below this, there are four summary cards: '1 Gateways (1 / 10)' with a version of 'senseit,raspberrypi4-dev_v2.3.0-12-g5aa451e', '3 Mesh Routers / Positioning Beacons' with a version of 'v3.0.0-101-458166175', '4 Tags (4 / 1000)' with a version of 'v3.0.0-101-458166175', and a 'Type to search project' input field. Below the summary cards is a 'Devices' section with tabs for 'Visualization', 'Devices' (which is selected), 'Integrations', 'Network', 'Update devices', and 'Settings'. The 'Devices' table lists four devices: a Mesh router (ID: D00124B001E1B3CBA, Firmware: senseit,raspberrypi4-dev_v2.3.0-12-g5aa451e, Last seen: a minute ago), a Tag (ID: D00124B001E1B3C5E, Firmware: senseit,raspberrypi4-dev_v2.3.0-12-g5aa451e, Last seen: a minute ago), a Mesh router (ID: D00124B001E1B3C7A, Firmware: senseit,raspberrypi4-dev_v2.3.0-12-g5aa451e, Last seen: a minute ago), and a Gateway (ID: G012301B7091A112EEE, Firmware: senseit,raspberrypi4-64-0.1.0, Last seen: a minute ago). Each device row has 'Details' and 'Remove' buttons.

Top bar

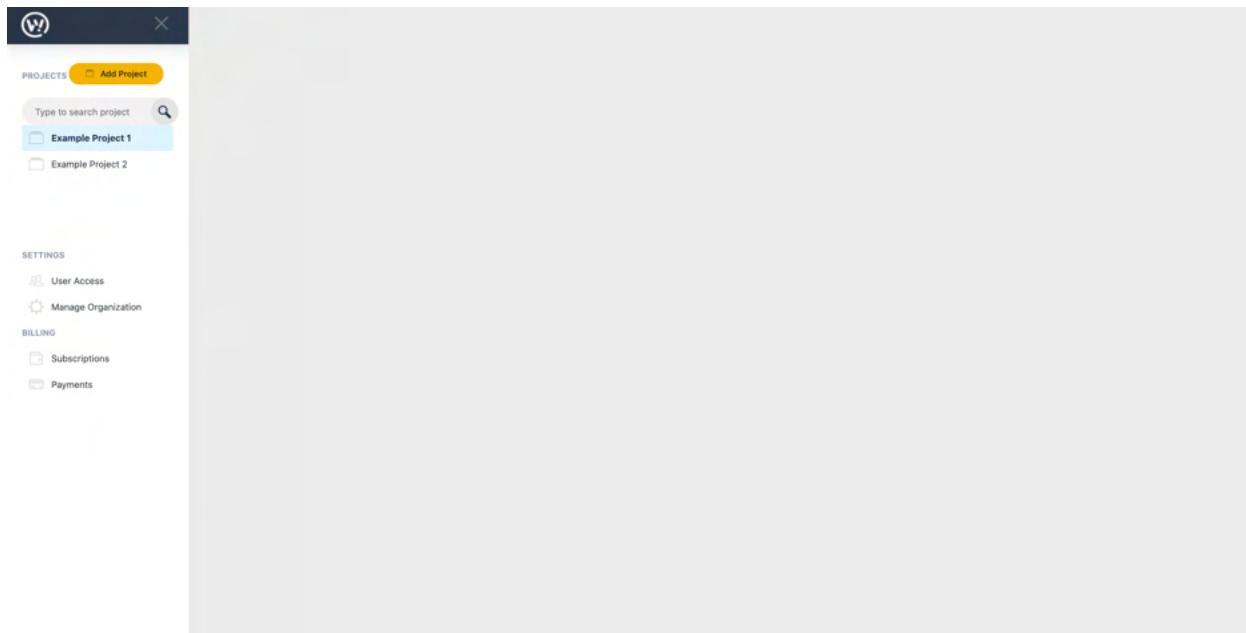


Indicates the name of the organization(s). You can also search through the list using the search functionality.

On the top right there is a  symbol with quick links to guides and walkthroughs.

On the very right you can find your account related information. Here you can edit your user profile information and log out of the portal.

Side panel



Shows the list of projects that is under the current organization. You can also search through the list using the search functionality.

On the bottom left you have an admin view where you can manage your user permissions, organization information and billing.

Project Dashboard

The Project Dashboard is where all the information related to the deployment is displayed. Following sections will describe the functionality of each tabs.

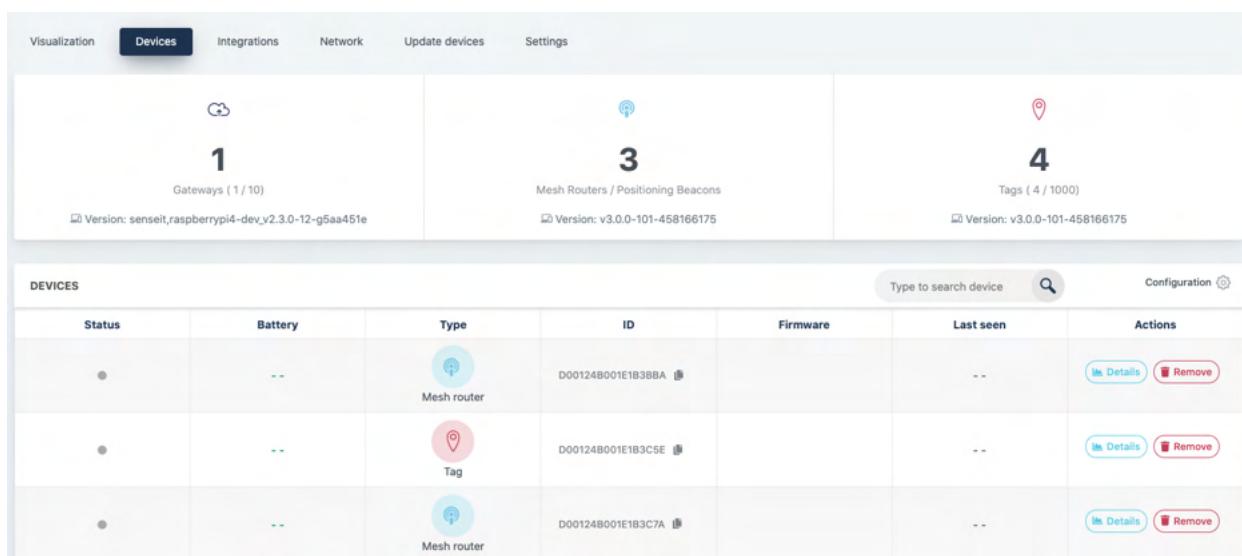
Visualization

Here you can get an overview of the deployment on a map. For further information, please have a look at [Position your devices](#)



Devices

This view provides a list of devices that are added to your project. You can filter them based on the types of devices by clicking on the checkboxes next to device IDs or device names.



Firmware

For each device, there is a field indicating which firmware version it is running. The firmware version could be highlighted in one of the following colors.

- **Green:** Device firmware is up-to-date with the system version for the project, and the system version is the most recent version.
- **Blue:** Device firmware is up-to-date with the system version for the project.
- **Blue, with a percentage:** The device is currently undergoing an automatic firmware update.
- **Yellow:** Device firmware is outdated.

Last seen and Last boot

The gateway, sensor tags and mesh-routers regularly indicate their presence in the network.

In the [Project Dashboard](#) project view, the time when a device last reported can be seen in the [Last Seen](#) column. If the device report interval is within normal limits the device is marked with a green indicator. If a device is disconnected or has left the network, the indicator will turn gray.

Under the [Last Boot](#) column, the device reports the last time it re-started.

Details and Update

The Details view for each device allows you to configure the device, see [Configure your system](#) for more information.

You can select which devices to manually update, see [Updating your system](#) for more information.

Integrations

Here one can create an integration using Webhooks. For further information, please have a look at [Accessing your data](#).

Network

The network tree visualizes the overall architecture of the mesh network, depicting the link quality between the devices. It should be used during the deployment of the system. For further information, please have a look at the [Deployment Guide](#)

Settings

Here you can configure the [System version](#) and [Network settings](#). You can also change the name of the project. If you ever need to delete the project, you can do it here. Note that this step is permanent, and hence, follow the warnings carefully.

Getting started



This guide will help you get started with your IoT Solution from Wittra. This means:

- [Getting started](#)
 - [Meeting your IoT Solution](#)
 - [Powering your devices](#)
 - [Charging the sensor tags](#)
 - [Power the mesh-routers](#)
 - [Connecting your gateway](#)
 - [Setup an Internet connection](#)
 - [Power the Wittra Gateway](#)
 - [Using the Wittra portal](#)
 - [The next steps](#)

NOTE: Do you have any issues getting started? Check out our [Troubleshooting](#) section.

Meeting your IoT Solution

Open the WITTRA™ IOT OUT OF THE BOX, and get to know what it includes.



text

1)	Gateway	x1	2)	Sensor Tag	x4
3)	Mesh-Router	x3	4)	Cradle	x7
5)	Velcro band	x4	6)	Tag tool	x2
7)	Power Supply Unit 12V	x1	8)	Power Supply Unit 5V	x4
9)	External Antenna	x1	10)	Magnet	x1
11)	USB OTG adapter	x1			

A Tag or a Mesh-router?

To distinguish between mesh-routers and sensor tags, remove the cradle the devices sit in. On the back of each device there is a model number.

- Mesh-routers are marked with model number **MESHROUTER-1.0-<EU/US>**
- Sensor tags are marked with model number **SENSORTAG-1.0-<EU/US>**

Powering your devices

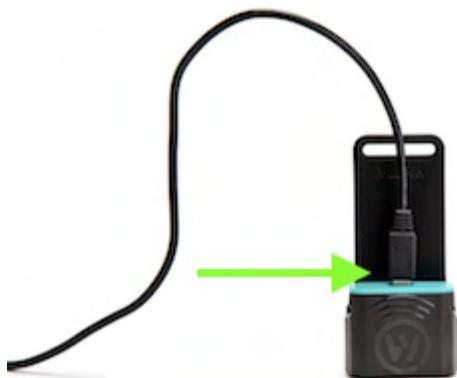
Before you can get started with your IoT Solution you have to charge the devices.

Charging the sensor tags

1. Collect all sensor tags. Initially you need to charge them because they are shipped with low charged batteries.
2. Unmount the protection cover with your hands or by using the accompanying tag tool from the box according to the pictures below. Place the tag tool in front of the tag and push towards the tag and then push up. The protection cover will be released.



3. Connect the Power Supply Unit 5V according to the picture. The Power Supply Unit 5V is included in the box.



4. The first initial charging time is approximately 3 hours. Check out the troubleshooting section to see [how to know when your sensor tag is fully charged](#).

Power the mesh-routers

When the sensor tags are fully charged, plug in the mesh-routers to the power supply. The mesh-routers should always be connected to a power supply.

Set up your gateway

The gateway allows your IoT Solution to connect to the Wittra portal.

Mount the antenna

Start by mounting the antenna on top of the gateway. The antenna is included in the box.



Open your gateway

Press the two metal clips on the bottom of the casing as in shown in picture below.



To assemble the gateway casing once again, please note that the side parts are non symmetrical and need to be mounted on the correct side.

Setup an Internet connection

Plug in an Ethernet network cable in the Gateway according to the picture and connect the other end of the cable to your router or switch. When the cable is connected, continue with the [Power the Wittra Gateway](#) step.



NOTE: The Ethernet cable is not included in your IoT Solution.

Power the Wittra Gateway

1. Connect the 12V Power Supply according to the picture. The 12V Power Supply is included in the box.



2. Wait 3 minutes for the Gateway to boot and start.

This Table depicts the Raspberry Pi's two LED indicators:

LED Color	Blink pattern	Status
Red LED	Steady on	The Gateway is powered.
Green LED	Steady off	The Gateway is not connected to any network. (There might be a link-local connection, but no IP address has been acquired)
Green LED	1 short blink and then 1 second off	The Gateway has connected to the local network but has not yet verified that there is Internet access.
Green LED	Steady on	The Gateway has connected to the network and was also successful in accessing the Internet.

Please refer to the [troubleshooting](#) section for more help.

After you have verified that the gateway is connected to your local network you can reseal the gateway by putting the cover back on.

Using the Wittra portal

You are now ready to register your IoT Solution in the Wittra portal. Go to the [portal](#) and follow the instructions to finish setting up your IoT Solution.

You should perform the following steps in the portal:

1. Setup an organization.
2. Activate a subscription.
3. Setup a project.
4. Register the devices. You will need to enter your batch token to register your devices. The batch token is printed on a sticker inside your WITTRA™ IOT OUT OF THE BOX, it should be visible after removing your gateway from the box, see picture below.



The next steps

- [Overview of Wittra portal](#) for more detailed information on the Wittra portal and its offerings.
- [Accessing your data](#) for inspiration of what you can build with your data and how to set up an integration.
- [Deployment](#) for guidance on how to install your system.
- [Updating your system](#) to have your system run with the latest features.

Updating your system

Wittra regularly releases improved software for all your devices. This page describes the various parts included in updating your devices to the latest releases.

There are two ways to update your Wittra devices (i.e. tags and mesh-routers):

- Manual
- Automatic

Manual update is required for:

- First time use
- PAN ID change
- Security update (e.g. DTLS key update)

An automatic update can take up to 24h. Therefor it's recommended to do a manual update when you want to do a quick update of your system.

What is a system version?

The gateway, mesh-routers and tags each have their own firmware version. The system version indicates a collection of firmware versions intended to work together.

It is recommended to always update the system version when possible, as it may fix bugs in the system, add new features, improve reliability, or contain security updates. To update to the latest system version, navigate to the [Settings](#) tab in the [Project Dashboard](#).

NOTE: When you have updated the system version under [Settings](#), the system will start the automatic update. If you want to speed things up, do a manual update.

Updating your devices

In the Project Dashboard, go to the [Devices](#) tab. You will find information there on the current version for every device in your project. If any device is out-of-date, it will be indicated here, and you can update it by clicking the [Update devices](#) button and follow the wizard.

The gateway and border router will download their new firmware directly and install it. Mesh-routers and tags, however, will need to download the firmware either manually or automatically over 6LoWPAN.

Manual update

The manual update method is the faster one, but is limited in range and requires manual intervention (reboot the device in manual update mode).

To update your sensor tags and mesh-routers manually, you will have to collect the devices you wish to update and place them close to the gateway. Set the sensor tags and mesh-routers in manual update mode by using the included magnet and OTG adapter from the box.

Step 1. Unmount the protection cover using the accompanying tag tool from the box or carefully with you hands. Place the tag tool in front of the tag and push towards the tag and then push up. The protection cover will be released.

Step 2. With the micro-USB port protection cover off, place the included magnet on the device. It should be placed roughly in the area indicated by the picture below. With the magnet in place, insert the OTG adapter into the micro-USB port and then remove it again.



The device's LED should start advertising two short blinks followed by a pause to indicate that it has entered manual update mode, after which a device is ready to start the firmware download. If the device does not enter manual update mode, repeat Step 2 until it successfully enters manual update mode.

Step 3. Do this for all of the devices that you would like to update.

Manual firmware update will take approximately 2 minutes per device.

Automatic update

If you do not take any further action, nodes will be automatically upgraded over 6LoWPAN. There is no need to gather the devices nor reboot them into manual update mode. Note that this procedure is significantly slower, and could take between several hours and up to a day (due to lower bandwidth and spectrum regulations).

NOTE: The devices remain fully operational during the download, though once they are ready to reboot you may experience a short disconnection.

Updating network settings

If you need to change your network and security settings ([Settings](#) tab in the Wittra portal), you must get your devices back into manual update mode, as the new configuration would break 6LoWPAN connectivity.

Select your new settings, apply them, and set your devices into manual update mode as described in [Manual update](#).

Deployment Guide

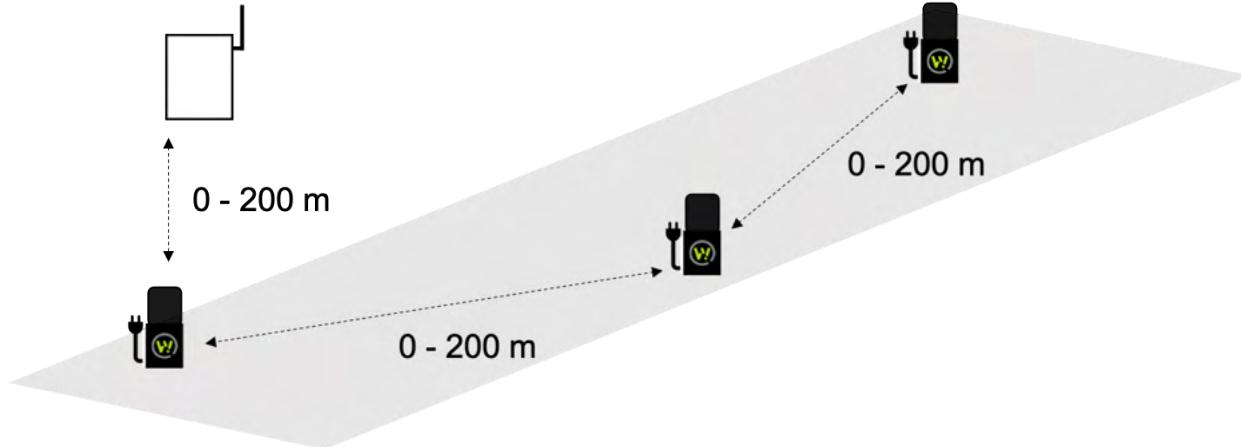
This guide will help you deploy the infrastructure of your system so you can start using your IoT Solution from Wittra. Your gateway and mesh-routers are like base stations, a fixed infrastructure enabling you to create your own network. Note that the tags are not part of the fixed infrastructure; they are mobile devices that send and receive data through the network, using the fixed infrastructure.

NOTE: Do you have any issues? Check out our [Troubleshooting](#) section.

Deploying your system

The following steps describe the setup process.

Step 1. Distribute all Mesh-routers within a range of 0-200 meters distance between Gateway-to-Mesh-router and/or Mesh-router-to-Mesh-router. **All mesh-routers should be powered at all times.**

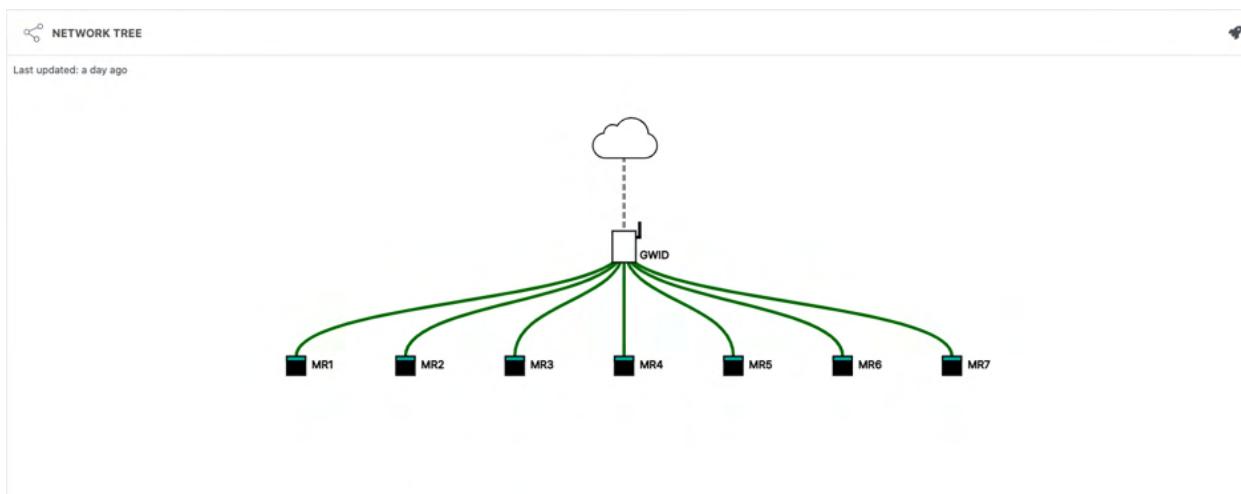


Step 2. Restart each mesh-router in place by inserting the provided OTG adapter.

NOTE: Restart each mesh-router after you put everything in place. Also make sure not to put any other mesh-router in close proximity to the one you are restarting. This is because the mesh-router you are restarting might erroneously choose the other mesh-router as its parent, which would result in an inefficient network topology.

Step 3. Check the link quality status under **NETWORK TREE** view in web-portal.

- Go to the [Wittra portal](#) web-portal
- Select your project and navigate to the **Network** tab. Your deployment will be visible under **NETWORK TREE**, but please note that it could take up to ten minutes before the tree is updated. The connection between each device should be *GOOD* or *OK*, i.e. green or yellow lines.



Step 4. (if necessary) If the indication shows *BAD/ERROR* i.e. red or gray lines, move the affected Mesh-router closer to the Gateway or its closest Mesh-router and repeat Step 2.

NOTE: Radio range and link quality depends on multiple parameters, for example, physical obstructions (like walls, metal frames, building materials, etc.), radio and electronic interference from other appliances, etc.

Updating security settings

We use a secure-by-design approach where we incorporate security from the early architecture design stage and throughout the evolution of the products. Read more about security measures employed in [Secure system](#).

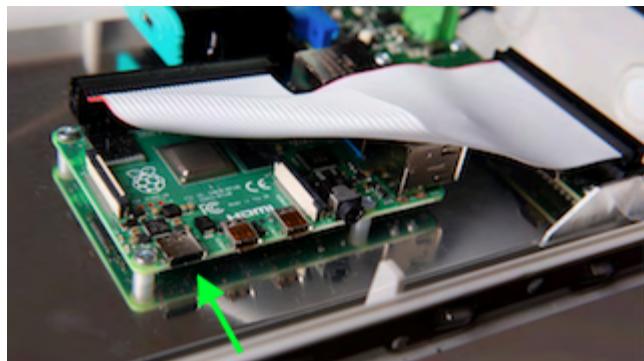
It's good practice to update security settings from time to time. Another reason could be to enable roaming between two sites, see more information on [Roaming](#)

Updating DTLS keys

Follow these steps on the gateway.

1. Disconnect the 12 V Power Supply if it is connected.
2. Connect a USB-A to USB-C cable with the USB-A end into a computer and the USB-C end into the Gateway.

WARNING! The Gateway cannot be powered by the 12 V Power Supply when connecting the USB-C cable to the Raspberry Pi, because this can damage the USB port of the computer!



NOTE: You need to provide the USB-A to USB-C cable yourself.

NOTE: A USB-C to USB-C cable will not work according to [raspberrypi.org](https://www.raspberrypi.org). If the computer doesn't have a USB-A connection, you need to use a USB-C/USB-A adapter.

3. Wait for the gateway to boot. It can take up to 3 minutes.
4. A virtual USB flash drive will be mounted and show up in the device list on your computer.
5. Open the USB flash drive, and open `security.txt` and follow the guidelines in the file.
6. Safely eject/unmount the virtual USB flash drive.
7. Unplug the USB-A to USB-C cable.

8. Continue with [Power the Wittra Gateway](#).
9. Collect all your devices and do a manual update. Follow the steps in [Manual update](#)

NOTE: You will need to manually update all the devices in the network for this change to take effect.

Accessing your data

When your devices are registered and updated they are ready to deliver data. This document describes the different ways you can monitor and make use of the Wittra IoT solution.

You can configure your devices to send data at a set interval or when a certain event occurs. Check out [Configure your system](#) for more information.

Register an integration

The devices send sensor data with a regular interval. To access the data, you need to register an integration. The data is pushed via a Webhook, specified as a URL where a publicly reachable web server is expected to be hosted.

To register an integration, go to your Project Dashboard, `Integrations` tab. Click `Create Integration`, select `Webhook` as type (the only type we currently support), and enter a URL that points to your server. The protocol part of the URL must be `https` .

Consuming the data

There are many ways to set up a Webhook server for receiving the data, we have provided a few examples in our GitHub repository github.com/wittra/examples.

Data payload

The data is streamed to the Webhook in JSON format. The main body of the message contains a `message` key containing various keys, for example, `attributes`, `data` and `publish_time` .

- The `attributes` field contains information about the message, for example, which device sent the message and through which gateway the message was sent.
- The `data` field contains the sensor data, formatted as a Base64 encoded JSON string. See [Sensor data](#) for more information about the data field.

- The `publish_time` or `publishTime` fields contains timestamps of when the message was sent.

Example of a JSON payload:

```
json
{
  "message": {
    "attributes": {
      "deviceId": "D0123456789ABCDEF",
      "gatewayId": "G0123456789ABCDEFEE",
      "version": "v1"
    },
    "data": "eyJiYXR0ZXJ5Ij...",
    "messageId": "1000000000000000",
    "message_id": "1000000000000000",
    "publishTime": "2020-01-01T01:01:01.001Z",
    "publish_time": "2020-01-01T01:01:01.001Z"
  },
  "subscription": "projects/wittra/subscriptions/sub_BS2fnLgSr5e6vC9Sk4Pg"
}
```

Sensor data

The data received from the sensor tag and mesh-router is provided as a Base64 encoded JSON string. When decoded, the data types received in the resulting JSON are the following:

Data type	Unit	Comment
<code>accelerometer</code>	g (9.81 m/s ²)	3D data in x/y/z
<code>battery</code>	V	Battery voltage
<code>gyroscope</code>	°/s	3D data in x/y/z
<code>magnetometer</code>	G (gauss)	3D data in x/y/z
<code>neighbours</code>	dBm	List of neighbour IDs and the signal strength to them
<code>temperature</code>	°C	Temperature measured in the device
<code>timestamp</code>	UTC	Timestamp when a message was received in the cloud
<code>usage</code>	s	Seconds when a device has been in motion or stationary since the last time it posted

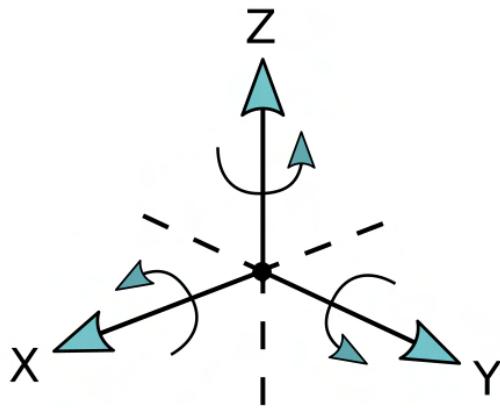
Example sensor data:

json

```
{  
  "battery": 3.876,  
  "accelerometer": {  
    "x": -0.079,  
    "y": 0.004,  
    "z": 1.016  
  },  
  "gyroscope": {  
    "x": -0.317,  
    "y": 0.296,  
    "z": 0.479  
  },  
  "temperature": 25.943,  
  "usage": {  
    "moving": 0,  
    "stationary": 301  
  },  
  "magnetometer": {  
    "x": 0.367,  
    "y": 0.196,  
    "z": 0.802  
  },  
  "neighbours": [  
    {  
      "id": "DFEDCBA9876543210",  
      "rssi": -54  
    },  
    {  
      "id": "D0123012301230123",  
      "rssi": -55  
    }  
  "timestamp": "2020-01-01T01:01:00.000000"  
}
```

Device orientation

The axes provided by the `accelerometer` , `gyro` and `magnetometer` fields can be interpreted by the following picture.



For example, if the tag is lying like the picture shown above, the accelerometer should report a Z value of ~ 1 g, due to the floor pushing up on the tag with a force matching the gravitational pull to the center of the earth.

If the tag is spinning on a turn table with a speed of one full revolution per second in a counter clockwise direction, the gyro should report a Z value of ~ 360 $^{\circ}/s$.

Positioning your devices

This guide will help you set up the system for positioning.

Setting up a system for positioning

Following steps describe the set up process.

Step 1. Go to the [Visualization](#) tab and click the *Edit mode* button on the right-hand side.

Step 2. Choose the **Position devices** in the menu to the right and click on each mesh-router to have them appear on the map. When the mesh-routers have appeared on the map, drag them to their true location. To ensure higher accuracy, it is recommended to use a drawing (e.g. a floor plan of the site) as an overlay. Learn more about overlays in the [Map layers](#) section.

NOTE: All mesh-routers need to be placed on the map for the positioning algorithm to work. It is also important that the mesh-routers are deployed to cover the entire site where you want to position your tags, see [Deployment guide](#).

Step 3. Tags will show up on the map on their derived position in the configured timeframe of the tag. Depending on the link quality between the tag and its neighbors the position will have varied accuracy, which is illustrated as circles around the tag on the map. E.g. a large circle means low accuracy.



Map Layers

Step 1. Under the **Visualization** tab click the *Edit mode* button on the right-hand side and select *Layers*.

Step 2. Click the *Add Layer* button and upload a file of your floorplan or site drawing, in JPG or PNG format. Save the file by clicking *Add Layer*.

Step 3. Zoom into your site location on the map. Select your layer on the left hand side, drag and drop the corners to fit the map.

Step 4. Click *Exit Edit Mode* on the right-hand side menu. Choose the newly added layer in the drop down menu labeled *Select map layer*.

Configure your system

Devices

You configure your devices by pressing the *Details* button under the [Devices](#) tab.

Gateway

The gateway serves as a proxy for the data, passing it on from the network up to cloud. It is not a configurable device in the same sense as a mesh-router and a tag.

What you can configure is a *Name* for your gateway for easier identification, as well as a *Group*. A group can be used when filtering devices on the map in [Visualization](#) tab.

Mesh-Router

The mesh-routers route data in the network and they are an instrumental part of positioning. If the mesh-routers do not have a good connection between each other, the network will not perform as intended. To monitor the network connection, mesh-routers post the signal-strength (dB) and link quality of its neighbors.

There are two ways of setting a posting interval for a mesh-router. Under *Settings*, you can activate *Interval-based data* and/or *Event-based data* posting.

- For interval-based data you set the posting interval by using the slider above.
- For event-based data you set the difference in signal-strength (dB) for what should count as an event. You also set the sampling interval (s) for an event.

NOTE: The battery-lifetime and congestion likelihood is affected by how often you set the posting interval.

You can set a *Name* for your mesh-router for easier identification, as well as add your mesh-router to a *Group*. A group can be used when filtering devices on the map in [Visualization](#) tab.

Tag

You can set a *Name* for your tag for easier identification, as well as add your tag to a *Group*. A group can be used when filtering devices on the map in [Vizualisation](#) tab.

The tag posts sensor data up to the Wittra portal on a configurable interval.

There are two ways of setting a posting interval for a tag: *Interval-based data* and *Event-based data* posting. Event-based data is only applicable for Battery, Temperature, Network, and Usage (Moving/Stationary).

Under *Settings* for each sensor, you can activate *Interval-based data* and/or *Event-based data* posting.

- For interval-based data you set the posting interval for **all** sensors by using the slider under *Sensor data posting interval*.
- For event-based data you set a trigger for a specific event per sensor and set the sampling interval (s) for an event.

Data tab

For each tag, you see all sensors' current values, and how it has changed between postings. We currently support the following sensors.

- Battery
- Temperature
- Usage (moving/stationary)
- Accelerometer
- Gyroscope
- Magnetometer

Network tab

For each tag, you can see a table of its closest neighbors and the signal strength between the tag and its neighbor. The signal strength of a tag's neighbors affects the positioning functionality.

Settings

You can configure your full system under the **Settings** tab in your project.

System version

Here you can set your system's **System version**. Once you have set your system version, an **automatic update** is triggered and the tags and mesh-routers will be automatically upgraded over 6LoWPAN. The automatic procedure may take up to 24 h, so to speed things up you can collect your devices and set them in Manual update mode, as described in **Manual Update**.

Network settings

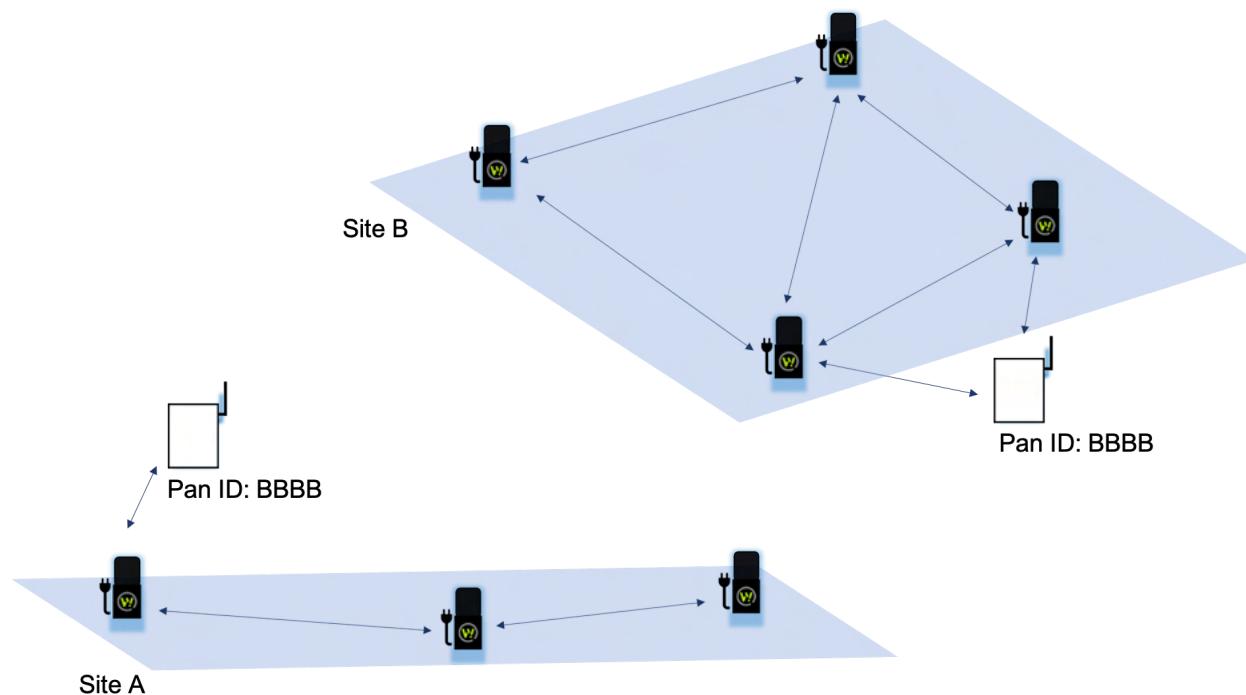
Here you can set a PAN-ID for your network, if you want to connect two networks e.g. on two different sites. To setup roaming between two sites, they both need to have the same PAN-ID.

Roaming

You can enable roaming between two or more networks. Note that these networks should not be within range of each other. To enable roaming, follow these steps:

1. Copy the `security.txt` file from gateway B and replace the `security.txt` file in gateway A with this copy.
2. Change the PAN-ID of gateway A to the one of gateway B

NOTE: You will need to manually update all the devices in network A for this change to take effect.



Re-naming project

Here you can re-name your project.

Delete Project

Here you can delete your project. Note that this step is permanent, and hence, follow the warnings carefully.

Troubleshooting

Have an issue? Look here for support.

General

Unboxing and Getting Started

My IoT Out of the Box is not working

1. Look through this page to see if a more specific question matches the issue you have experienced.
2. See [My Gateway is not working](#).
3. Ensure that all hardware looks intact. If not, please contact the supplier.

Can I set up my sensor network outdoors?

In short, yes. However, there are two main considerations for this:

1. It is only the sensor tag that is weatherproof. If you set up the gateway or the mesh-routers outdoors they need to be protected from different weather conditions, such as rain.
2. The gateway is a **trusted device**, which should be located where you have physical protection against malicious agents.

Where do I find my batch token?

The batch token is printed on a sticker inside your IoT Out of the Box, it should be visible after removing your Gateway from the kit.

I do not have a power supply/power cable

The devices require standard Micro-USB charging devices, see details in the respective device [datasheet](#). The hardware can be purchased from your Wittra hardware supplier or any supplier who offers a standard micro-USB charger that follows the requirements in the datasheet and Micro-USB standards.

I don't have an USB-A to USB-C adapter

The adapter can be purchased from any supplier offering the standard adapter according to the USB standards.

My IoT Out of the Box is missing parts

Please contact the supplier from whom you purchased the "IOT OUT OF THE BOX".

How many sensor tags and mesh-routers can I connect to the network

Your subscription will state the number of devices you can connect to your network. The maximum number of mesh-routers are depending on the number of sensor tags and traffic in your network. Please contact [Wittra Customer Support](#) for further information and network dimensioning.

Other Issues

I can't find a solution to my problem

If you cannot find the solution to the problem(s) you are experiencing you can contact our [customer support](#).

How do I contact customer support?

The email address to our customer support is support@wittra.se. Also, you can find more information on the [support page](#).

I would like to buy more sensor tags, gateways and mesh-routers

Please contact your Wittra hardware supplier for additional sales.

I would like to return my IoT Out of the Box

Please contact your supplier from whom you purchased the "IOT OUT OF THE BOX".

I would like to return my gateway

Please contact your supplier from whom you purchased the gateway.

I would like to return my mesh-router

Please contact your supplier from whom you purchased the mesh-router.

I would like to return my sensor tag

Please contact your supplier from whom you purchased the sensor tag.

I have lost my release key/tag tool for the USB connector cover protection

Please contact your Wittra hardware supplier for additional sales.

Gateway

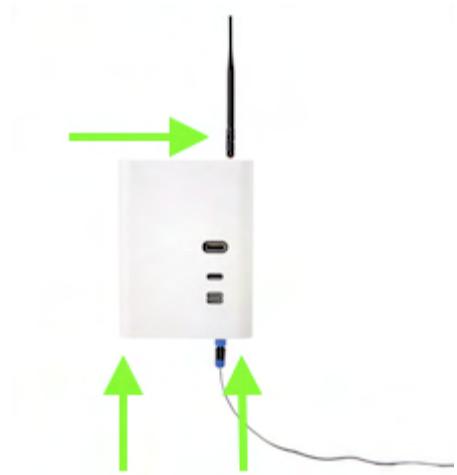
Unboxing and Getting Started

How do I install a new Gateway?

Please have a look at the [Set-up your Wittra Gateway section](#) in the [Getting started guide](#).

I can't open my Gateway

The Gateway is opened by pushing the two side locks upwards. These can be found on the underside of the gateway (marked by two green arrows in the picture below). Note that the right side lock can only be fastened on the right side and the left side lock can only be fastened on the left side.



How do I see if my Gateway is working?

In the [Wittra portal](#), navigate to the project for which you have registered the gateway. Once in the project view, you can see a list of gateways on the left-hand side. You should now be able to locate your gateway ID in the list. If the gateway's status shows up as green it is working.

If you have not yet registered the gateway, go to the [Wittra portal](#) and follow the registration instructions. If you have registered the gateway but it is not in the list of gateways on the portal,

please see section [My gateway is not working](#).

My Gateway is not working

If you have a gateway that is **not** visible on the portal go to part 1, otherwise go directly to part 2.

Part 1. Gateway is offline in portal

Please start by opening the gateway casing and check that the power LED on the Raspberry Pi shows a steady red and that the motherboard's (the board on which the border router is mounted) LED shows a steady green. If not please check that all cables are plugged in correctly and that the gateway is powered up.

If you got the gateway powered up, please proceed with the steps below.

The green LED on the Raspberry Pi itself indicates the network connection state. First check that the green LED on the Raspberry Pi itself is lit a solid green, which indicates that the Raspberry Pi has been able to connect to your LAN and the Internet.

If the LED is not a steady green light this might indicate that something is wrong with the LAN itself. Otherwise it could indicate that the gateway can connect to the LAN, but is not able to connect to the Internet.

This table depicts the two LED indicators of the Raspberry Pi:

LED Color	Blink pattern	Status
RED LED	Steady on	The Gateway is powered.
Green LED	Steady off	The Gateway is not connected to any network. (There might be a link-local connection, but no IP address has been acquired)
Green LED	1 short blink and then 1 second off	The Gateway has connected to the local network but has not yet verified that there is Internet access.
Green LED	Steady on	The Gateway has connected to the network and was also successful in accessing the Internet.

After having verified that the Raspberry Pi is able to connect to the LAN and the Internet, try restarting your gateway to see if the error disappears and that the gateway shows up on the Wittra portal with status green (online).

If that does not help, please revisit the setup instructions in the [Getting started documentation](#) and verify that you have set up the Internet connection correctly.

Part 2. Gateway is online in portal but is not working correctly

If the Gateway is online on the Wittra portal it means it has been set up correctly to the Internet. First try and restart your gateway to see if the error disappears.

If that is not the case, please try and update the gateway on the [Wittra portal](#).

If the gateway still is not working, try to perform the update procedure again.

Configuration and Settings

How do I connect my Gateway to my router via an Ethernet cable?

Please look in the [Setup an Internet connection](/getting-started.md#Setup an Internet connection) section of the [Getting started](#) documentation.

Mesh-Router

General

How do I charge my mesh-router?

The mesh-router could be charged using a standard Micro-USB charger but should always be deployed and installed using fixed power.

How do I see when a mesh-router is fully charged?

When charging, your mesh-router will blink slowly. The LED will be on for three seconds, then off for three seconds, and so on. Once the battery is full, the LED will stop blinking in this pattern.

I need to reset my mesh-router

The mesh-router is reset the same way as a [tag](#).

Mounting and Attaching

Can I use my mesh-router in cold climate

The temperature ranges for the mesh-router is specified in the mesh-router [datasheet](#)

Do I need to protect my mesh-router in heavy rain?

The mesh-router should not be exposed to heavy rain. If you are mounting your mesh-router outdoors, please set it up under some sort of rain cover, e.g. under the eaves of a building.

Upgrade and Updates

After an update of the mesh-router, the mesh-router is not working

Please allow some time to pass after an update to allow the mesh-router to come back online. It might be the case that other devices in the mesh network have not finished updating yet. Please also ensure that the mesh-router is plugged into a power source.

If the problem persists after other mesh-routers are online with the same version, try using your OTG adapter to reboot the device close to a mesh-router which is showing up as online in the portal.

If the device still is not coming online, try to perform the update procedure again.

Sensor Tag

General

How do I charge my tag?

Remove the USB connector cover protection using the included release key tool. This will expose the micro-USB charging port. To charge, plug in the included USB charger using a micro-USB cable.

My sensor tag doesn't seem to charge

If the sensor tag is not indicating a [charge pattern](#) and is not posting data, try to [reset the sensor tag](#) using the OTG adapter.

If the problem persists, please contact the support of your supplier from whom you purchased the sensor tag.

How do I see when a sensor tag is fully charged?

When charging, your sensor tag will blink slowly. The LED will be on for three seconds, then off for three seconds, and so on. Once the battery is full, the LED will stop blinking in this pattern.

I need to reset my tag

Use the OTG adapter included in the kit to plug into the micro USB connector at the top of the device, you should see two quick blinks which indicate that the device has rebooted and the OTG adapter can be unplugged.

Do I need to protect my sensor tag in heavy rain?

Your sensor tag is designed for full exposure to all types of weather. Just ensure that the USB connector cover is properly attached.

Configuration and Settings

Can I change the interval when the tag is sending data?

Yes, in the [Wittra portal](#), it is possible to set the update interval for each sensor and tag.

Upgrade and Update

I need to update my tag

When a tag needs an update its version will be marked in orange in the [Wittra portal](#), at the top of the project page the **Update devices** button will take you through the update wizard.

After an update of the sensor tag, the sensor tag is not working

Please allow some time to pass after an update to allow the sensor tag to come back online. It might be the case that other devices in the mesh network have not finished updating yet. Please also ensure that the sensor tag has a sufficient battery charge.

If the problem persists after other mesh-routers and sensor tags are online with the same version, try using your OTG adapter to reboot the device close to a mesh-router which is showing up as online in the portal.

If the device still is not coming online, try to perform the update procedure again.

API

General

Where do I set my Webhook address?

Please look at [Register an integration](#) for information on how to register a Webhook.

The Webhook is not working

Make sure that the Webhook server is reachable from the internet, i.e. that no firewall blocks incoming TCP traffic on the port used by the server. Take a look at our [examples](#) on how to set up a test Webhook server.

What is the format of the streamed sensor data?

Please look at [Data payload](#) for more information regarding the payload in the data stream.

What type of sensor data do I receive?

Please look at [Sensor data](#) for more information regarding the sensor data in the data stream.

Where do I find examples of what applications and services I can build?

There are examples and accompanying documentation available in Wittra's [examples GitHub repository](#).

Can I have more than one integration/Webhook?

Yes, you can add multiple integrations to your project. Note that the same data will be sent to all integrations. This can be useful if you want your data to go into multiple existing systems.

Datasheets

Datasheets for Wittra Products are available for download in PDF format using the links below.

- [Wittra IoT Out of the Box](#)
- [Wittra Sensor Tag](#)
- [Wittra Mesh-Router](#)
- [Wittra Gateway](#)

Release Notes

System Version 3.4.0

- The calculation that limits a device from sending too much data now takes the region (Europe or North America) into account.
- Increased the size of each data block when sending firmware to devices, resulting in faster automatic updates.
- Adjusted timings when the device is joining a network to save battery power.
- Fixed a bug that caused the gyroscope to report too small values.
- Fixed a bug when devices posts data that could previously cause the device to run out of free memory.
- The initialization sequence for each device has been refactored for improved stability.
- Various bug fixes.
- Cloud config automatically propagates to GW services.
- Gateways can now update up to three devices simultaneously, in Manual Update Mode.
- New version of Tunslip6 for the border-router in the gateway.
- Gateway contains software license information in the file system.
- Various bug fixes.

Portal Version 4.6.1

- Possible to see why a device has rebooted in the in detailed view of a service.
- These release notes are now present in the home page of the portal, as well as in the documentation.
- Users that are added to an organisation are now only invited, and not directly added.
- Some columns/cells in the device table have had descriptions added, visible when hovering above them.
- Possibility to upgrade and downgrade between subscription tiers.

- Each project is now tied to a specific region; Europe or North America.
- Clarifications in the modal for performing manual firmware updates.
- Clarifications when changing the system version for a project.
- Possibility to edit the name of a project.
- Added a column with timestamps indicating when a device was started (uptime).
- Improved and extended documentation.
- Many bug fixes.

1 March 2021

System Version 3.3.0

- Improved Manual Update OAD procedure.
- Bug fixes in security chip.
- Minor changes to the HW PIN driver.
- The network traffic through the border router is now monitored, and if the region specific regulations are exceeded it will turn off radio traffic. (This previously existed only on tags and MRs.)
- Several improvements to RSSI proximity, to achieve higher accuracy and faster responsiveness.
- Fixed an issue where devices would be unable to transmit.
- If a device is put into Manual Update Mode when there is an automatic update running, the device will no longer boot back into the old application.

Portal Version 4.4.2

- Editing the PAN ID of a network is now done in the project settings view.
- Improved the map view when many devices are located close to each other.
- Several bug fixes.

System Version 3.2.0

- TPM bug fixed in mb-watchdogd on the gateway.
- Several improvements have been done to ensure network stability.

Portal Version 4.3.0

- New flow for manually updating device firmware.
- Refined network deployment tool.
- Possibility to leave organizations.

28 January 2021

Portal Version 4.1.1

- Optimization of realtime data propagated to the portal
- Minor bug fixes
- Performance update to the data fetching in the portal

22 January 2021

System Version 3.1.0

Please note that this is a new major version. If you upgrade to this version, you need to upgrade all devices in the IoT network, and not just a subset of them.

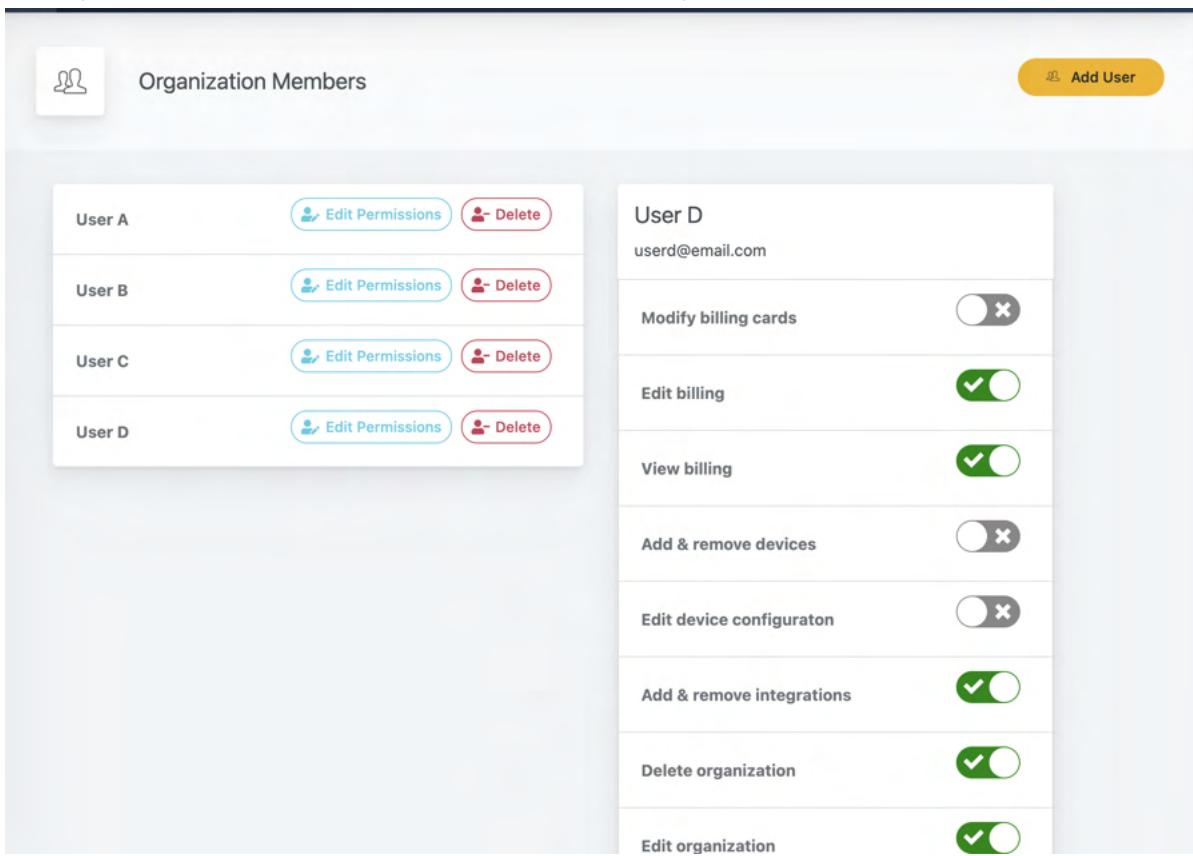
- Introduced experimental support for geographical positioning of tags. This is built upon RSSI tags' and mesh-routers' RSSI values, and requires no additional hardware.
- Introduced support for Frequency Hopping, which removes the need to set a specific frequency for the Sub-GHz network, between tags, mesh-routers and gateways. This increases reliability as well as throughput, allowing for larger networks to be built and more data to be sent.

- Tags now post battery information, with an expected remaining percentage.
- Now supports greater distance 6LoWPAN updates over the Wittra network
- When upgrading firmware automatically, the estimated time until completion is now sent by the devices that are being updated.
- COAP stability enhancements w.r.t. reconnection and timeout
- Tags now post a heartbeat message every five minutes.
- Tags now post the total transmission (TX) time.
- The underlying operating system for tags and mesh-routers has been changed to TI-RTOS.
- Radio usage for each device is now reported to the cloud portal.
- Temperature and battery data can now be received in the cloud portal as event-based data. The configuration is done in the portal.
- Devices now report their uptime for the duration that they have been on.

Portal Version 4.0.3

- The portal has been reworked in its entirety. With the new portal, you will get crucial information about your Wittra IoT devices with fewer clicks, and it is easier to get an overview of your Wittra system.
- It is now possible to put labels on devices, allowing to group devices e.g. in the same building or on the same floor.
- It is now possible to upload image layers on top of the map, e.g. custom blueprints of a building.
- True position of gateways and mesh-routers can be set in the map for a project.
- The portal displays battery information received from the tags.
- If the location of a tag has been measured with the aforementioned experimental RSSI-based positioning, it will show up in the new *Visualization* tab, in the view for a project in the portal.
- The portal is now event-driven in the sense that both changes and new data are now instantaneously displayed.
- Automatic update of the system is now available. With one click, all devices in a project can now be automatically updated within 24-hours.

- It is possible to choose any supported system version for a project, instead of only the latest.
- Deployment tool. A graph showing the relationship between the components in a Wittra IoT network.
- Permissions have been added on an organization level. It is now possible to restrict or grant users permissions to certain views and actions in the portal.



The screenshot shows the Wittra IoT portal's user management interface. On the left, a list of organization members (User A, User B, User C, User D) is displayed, each with an 'Edit Permissions' and a 'Delete' button. On the right, a detailed view for User D is shown, listing various permissions with toggle switches. The permissions and their current status are as follows:

Permission	Status
Modify billing cards	Off (white)
Edit billing	On (green)
View billing	On (green)
Add & remove devices	Off (white)
Edit device configuraton	Off (white)
Add & remove integrations	On (green)
Delete organization	On (green)
Edit organization	On (green)

- In the portal, Data Endpoints have been renamed to Integrations.
- It is possible to configure devices to report data only when changes happen (event-based), in addition to reporting at fixed intervals.
- There is an option to configure multiple devices at the same time.
- New payment system:
 - A dedicated Billing page with all billing information.
 - You can now add one or several payment cards to your organization and choose from which card Wittra will charge at the end of the month.
 - Pay outstanding bills directly in the portal.

Support

If you are having issues getting started with the Wittra IoT Solution, check out our [getting started guide](#). If you cannot find your solution there, we also encourage you to look through the

[Troubleshooting](#) section. You're also welcome to contact us at support@wittra.se for further assistance.

Wittra also offers technical support plans and service packages to help our customers get the most out of the Wittra products. If you are interested in more information about support plans and service packages, please contact support@wittra.se.

Legal

Legal documents about Wittra's products and service, as well as compliance and operating information.

Regulatory Compliance and Safety Information

Responsible party: Wittra Sweden AB

Contact: support@wittra.se

Gateway

	EU	US
Product Name	GATEWAY 1.0 EU	GATEWAY 1.0 US
Model Number	GATEWAY-1.0-EU	GATEWAY-1.0-US
Part Number	1000186	1000347

WARNING Gateway

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This product shall only be connected to the external power supply provided by Wittra, rated at 5V DC, and a maximum current of 1500 – 2000 mA.

This product should not be used within 20 cm of the body.

Instructions for safe use

To avoid malfunction or damage to your Gateway please observe the following:

Keep the device away from water, fire, humidity or hot environments.

Do **not** expose it to exaggerated heat or cold, the Gateway is designed for reliable operation at normal ambient room temperatures.

Do **not** attempt to disassemble, repair or modify the device.

Do **not** use a damaged charger or USB cable to charge the device.

Do **not** use any other chargers than those recommended.

Do **not** use the device where wireless device are not allowed.

Do **not** disassemble, crush, puncture, short external contacts, or dispose of the battery in fire or water.

Take care whilst handling the Gateway to avoid mechanical damage or discharge that might cause electrical damage.

Border Router

	EU and US
Product Name	BORDER ROUTER 1.0
Model Number	BORDER-ROUTER-1.0
Part Number	1000239

WARNING Border Router

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This product shall only be connected to an external power via the Gateway.

This product should not be operated at temperatures below -10 or over +60 Degrees Celsius.

Instructions for safe use

To avoid malfunction or damage to your Border Router please observe the following:

Keep the device away from water, fire, humidity or hot environments.

Do **not** attempt to disassemble, repair or modify the device.

Do **not** use a damaged charger or USB cable to charge the device.

Do **not** use any other chargers than those recommended.

Do **not** use the device where wireless device are not allowed.

Do **not** disassemble, crush, puncture, short external contacts, or dispose of the battery in fire or water.

Do **not** expose it to exaggerated heat or cold, the Border Router is designed for reliable operation at temperatures ranging from -10 to +60 Degrees Celsius.

Do **not** attempt to remove or otherwise separate the device from the casing, this might cause mechanical or electrical damage to the product.

Do **not** remove the Border Router from the inside of the Gateway, this will cause the whole Network to go down and might also damage the Gateway and/or Border Router.

Take care whilst handling to avoid mechanical damage.

Sensor Tag

	EU	US
Product Name	SENSOR TAG 1.0 EU	SENSOR TAG 1.0 US
Model Number	SENSOR-TAG-1.0-EU	SENSOR-TAG-1.0-US
Part Number	1000158	1000348

WARNING Sensor Tag

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This product shall only be connected to an external power supply rated at 5 V DC, and minimum current of 100 mA. Any external power supply used with the Sensor Tag shall comply with relevant regulations and standards applicable in the country of intended use. This product is only deemed waterproof according to IP67 if the protection cover to the microUSB charger is on.

This product should not be operated at temperatures below -10 or over +60 Degrees Celsius.

Instructions for safe use

To avoid malfunction or damage to your Sensor Tag please observe the following:

Keep the device away from water, fire, humidity or hot environments.

Do **not** attempt to disassemble, repair or modify the device.

Do **not** use a damaged charger or USB cable to charge the device.

Do **not** use any other chargers than those recommended.

Do **not** use the device where wireless device are not allowed.

Do **not** disassemble, crush, puncture, short external contacts, or dispose of the battery in fire or water.

Do **not** expose it to water, moisture or place on a conductive surface whilst in operation when the protection cover is off.

Do **not** expose it to exaggerated heat or cold, the Sensor Tag is designed for reliable operation at temperatures ranging from -10 to +60 Degrees Celsius.

Do **not** charge the battery at temperatures outside of room temperature between +10 to +45 Degrees Celsius.

Do **not** attempt to remove or otherwise separate the device from the casing, this might cause mechanical or electrical damage to the product.

Take care whilst handling to avoid mechanical damage.

Mesh-Router

	EU	US
Product Name	MESH-ROUTER 1.0 EU	MESH-ROUTER 1.0 US

Model Number	MESHROUTER-1.0-EU	MESHROUTER-1.0-US
Part Number	1000240	1000349

WARNING Mesh-Router

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This product shall only be connected to an external power supply rated at 5 V DC, and minimum current of 100 mA. Any external power supply used with the Mesh-Router shall comply with relevant regulations and standards applicable in the country of intended use.

This product is only deemed waterproof according to IP67 if the protection cover to the microUSB charger is on.

This product should not be operated at temperatures below -10 or over +60 Degrees Celsius.

Instructions for safe use

To avoid malfunction or damage to your Mesh-Router please observe the following:

Keep the device away from water, fire, humidity or hot environments.

Do **not** attempt to disassemble, repair or modify the device.

Do **not** use a damaged charger or USB cable to charge the device.

Do **not** use any other chargers than those recommended.

Do **not** use the device where wireless device are not allowed.

Do **not** disassemble, crush, puncture, short external contacts, or dispose of the battery in fire or water.

Do **not** expose it to water, moisture or place on a conductive surface whilst in operation when the protection cover is off.

Do **not** expose it to exaggerated heat or cold, the Mesh-Router is designed for reliable operation at temperatures ranging from -10 to +60 Degrees Celsius.

Do **not** charge the battery at temperatures outside of room temperature between +10 to +45 Degrees Celsius.

Do **not** attempt to remove or otherwise separate the device from the casing, this might cause mechanical or electrical damage to the product.

Take care whilst handling to avoid mechanical damage.

Compliance Information

The devices complies with the relevant provisions of the ROHS Directive for the European Union.

This product is in conformity with the protection requirements of Directive 2014/53/EU (RED) on the harmonisation of the laws of the Member States.

WEEE Directive Statement for the European Union

In Common with all Electronic and Electrical products the devices should not be disposed of in household waste. Alternative arrangements may apply in other jurisdictions.

Industry Canada Class B Emission Compliance Statement RSS-Gen & RSS-247 statement: This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

RSS-102 Statement: This equipment complies with Industry Canada radiation exposure limits set forth for an uncontrolled environment.

Cet équipement est conforme à l'exposition aux rayonnements Industry Canada limites établies pour un environnement non contrôlé.

Warnings

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Shielded Ethernet cable must be used with this unit to ensure compliance with the Class B FCC limits.

Terms of Service

Describes the rules you agree to when using our service.

Check out the Wittra [Terms of Service](#).

Privacy Policy

Explains what information we collect and why as well as how we use it.

Check out the Wittra [Privacy Policy](#).

Legal Notice

Check out the Wittra [Legal Notice](#).

Licensing of the Wittra Platform

Witra Portal Copyright (c) 2021 Nida Tech AB. All rights reserved.

Third Party Notices and/or Licenses

The following third party modules are used by the Wittra platform, and come with their own notices and licenses, the table below shows a list of those with their respective licensing terms. The full-text notices are shown below the table. Please note that the modules below may have other dependencies, please refer to their own licensing information for more details.

Provider	Component	License Information
Google Inc	Firebase	Apache License 2.0
Google Inc	Firebase UI React	Apache License 2.0
Kirrollos Risk	Fuse JS	Apache License 2.0
Google Inc.	Firebase Admin	Apache

		License 2.0
Google Inc.	Google Cloud Python Client	Apache License 2.0
Google Inc.	Google Discovery API Python Client	Apache License 2.0
Google Inc.	Google OAuth2 Client	Apache License 2.0
Dropbox Inc., Google Inc., Skyscanner Ltd., WeWork Companies Inc.	gRPC	Apache License 2.0
Kenneth Reitz	Requests	Apache License 2.0
Microsoft Corp.	TypeScript	Apache License 2.0
Paul Ganssle and contributors	Dateutil	Apache License 2.0
Matt Bachmann	Marshmallow Polyfield	Apache License 2.0
Nobatek/INEF4 and contributors	Flask-smorest	MIT License
Steven Loria and contributors	Marshmallow	MIT License
Pusher Ltd.	Pusher	MIT License
Stuart Bishop	PyTZ	MIT License
Stripe	Stripe Python	MIT License
Voodoo	Async Await Retry	MIT License
Dima Grossman	Await-to-JS	MIT License
DashboardPack	Architect UI Theme Dashboard	MIT License
Matt Zabriskie	Axios	MIT License
Jed Watson	Classnames	MIT License
Luke Edwards	CLSX	MIT License
Tim Schaub	GeoJSON	MIT License
i18next	i18next	MIT License
Ionic	Ionicons	MIT License
Uber Technologies, Inc.	Kepler.GL	MIT License
JS Foundation and other contributors	Lodash	MIT License
Mapbox	Mapbox GL	MIT License
Call-Em-All	Material UI	MIT License
Michel Weststrate	Mobx React	MIT License

Michel Weststrate	Mobx State Tree	MIT License
Foundation and other contributors	Moment.js	MIT License
Pusher, Ltd	Pusher	MIT License
Alipay.com	RC Slider	MIT License
yiminghe	RC Tabs	MIT License
Alipay.com	RC Tooltip	MIT License
Facebook, Inc. and its affiliates	React	MIT License
Escalade Sports	React Burgers	MIT License
Aaron Wong	React Card Flip	MIT License
Hector Zarco	React Circle	MIT License
Case Sandberg	React Color	MIT License
Nik Butenko	React Copy-to-Clipboard	MIT License
Glenn Reyes	React Count-up	MIT License
Ben Kremer	React D3 Tree	MIT License
HackerOne Inc and individual contributors	React Datepicker	MIT License
Frank van der Hoek	React Firebase File Uploader	MIT License
Stephen Way	React FlagKit	MIT License
Fonticons, Inc.	React Font Awesome	MIT License
React i18next	i18next	MIT License
kamijin_fanta	React Icons	MIT License
Gil Barbara	React Joyride	MIT License
Jason Sommer	React Ladda	MIT License
Jon Jaques	React Loaders	MIT License
Derrick Pelletier	React Loading Overlay	MIT License
H.Alper Tuna	React MetisMenu	MIT License
Brian Ford	React Palm	MIT License
Allen Yang	React Perfect Scrollbar	MIT License
Dan Abramov	React Redux	MIT License
Denis Rul	React Resize Detector	MIT License
React Training	React Router	MIT License
Stripe	React Stripe JS	MIT License

Nikita Abratzsov	React Sweet Progress	MIT License
Markus Englund	React Switch	MIT License
Tanner Linsley	React Table	MIT License
Fadi Khadra	React Toastify	MIT License
Brian Vaughn	React Virtualized	MIT License
Jason Quense	React Widgets	MIT License
Eddy Hernandez, Chris Burrell, Evan Sharp	Reactstrap	MIT License
Recharts	Recharts	MIT License
Dan Abramov	Redux	MIT License
Espen Hovlandsdal	React Markdown	MIT License
Bugsnag	Bugsnag	MIT License
Cory Dolphin, Olin College	Flask CORS	MIT License
React Community	React Transition Group	BSD 3-Clause License
Pallets	Flask	BSD 3-Clause License
Scott Motte	Dotenv	BSD 2-Clause License
Python Software Foundation	Python	PSF License

Apache License 2.0

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those

patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any

separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.
7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.
8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.
9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

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.

MIT License

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

BSD 3-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.
3. Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

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.

BSD 4-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.
3. All advertising materials mentioning features or use of this software must display the following acknowledgement: This product includes software developed by the organization.
4. Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission. THIS SOFTWARE IS PROVIDED BY COPYRIGHT HOLDER "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 COPYRIGHT HOLDER 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.

FreeBSD License

Copyright 1994-2021 The FreeBSD Project. All rights reserved.

Redistribution and use in source (SGML DocBook) and 'compiled' forms (SGML, HTML, PDF, PostScript, RTF and so forth) with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code (SGML DocBook) must retain the above cop

2. Redistributions in compiled form (transformed to other DTDs, converted

THIS DOCUMENTATION IS PROVIDED BY THE FREEBSD DOCUMENTATION PROJECT "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 FREEBSD DOCUMENTATION PROJECT 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 DOCUMENTATION, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Manual Pages

Some FreeBSD manual pages contain text from the IEEE Std 1003.1, 2004 Edition, Standard for Information Technology — Portable Operating System Interface (POSIX®) specification. These manual pages are subject to the following terms:

The Institute of Electrical and Electronics Engineers and The Open Group,

In the following statement, the phrase "this text" refers to portions of t

Portions of this text are reprinted and reproduced in electronic form in t

This notice shall appear on any product containing this material.

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.

CC-BY-3.0 License

CREATIVE COMMONS CORPORATION IS NOT A LAW FIRM AND DOES NOT PROVIDE LEGAL SERVICES. DISTRIBUTION OF THIS LICENSE DOES NOT CREATE AN ATTORNEY-CLIENT RELATIONSHIP. CREATIVE COMMONS PROVIDES THIS INFORMATION ON AN "AS-IS" BASIS. CREATIVE COMMONS MAKES NO WARRANTIES REGARDING THE INFORMATION PROVIDED, AND DISCLAIMS LIABILITY FOR DAMAGES RESULTING FROM ITS USE.

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.

1. Definitions

a. "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.

b. "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 above) for the purposes of this License.

c. "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.

d. "Licensor" means the individual, individuals, entity or entities that offer(s) the Work under the terms of this License.

e. "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.

f. "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 cinematography; a work of drawing, painting, architecture, sculpture, engraving or lithography; a photographic 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.

g. "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.

h. "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.

i. "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:

a. to Reproduce the Work, to incorporate the Work into one or more Collections, and to Reproduce the Work as incorporated in the Collections;

b. 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.:";

c. to Distribute and Publicly Perform the Work including as incorporated in Collections; and,

d. to Distribute and Publicly Perform Adaptations.

e. For the avoidance of doubt:

markup

i. Non-waivable Compulsory License Schemes. In those jurisdictions

ii. Waivable Compulsory License Schemes. In those jurisdictions in

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:

a. 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(b), 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(b), as requested.

b. 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 (b) 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.

c. 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

a. 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.

b. 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

a. 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.

b. 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.

c. 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.

d. 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. 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.

e. This License may not be modified without the mutual written agreement of the Licensor and You.

f. 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.

Creative Commons Notice

Creative Commons is not a party to this License, and makes no warranty whatsoever in connection with the Work. Creative Commons will not be liable to You or any party on any legal theory for any damages whatsoever, including without limitation any general, special, incidental or consequential damages arising in connection to this license. Notwithstanding the foregoing two (2) sentences, if Creative Commons has expressly identified itself as the Licensor hereunder, it shall have all rights and obligations of Licensor.

Except for the limited purpose of indicating to the public that the Work is licensed under the CCPL, Creative Commons does not authorize the use by either party of the trademark "Creative Commons" or any related trademark or logo of Creative Commons without the prior written consent of Creative Commons. Any permitted use will be in compliance with Creative Commons' then-current trademark usage guidelines, as may be published on its website or otherwise made available upon request from time to time. For the avoidance of doubt, this trademark restriction does not form part of this License.

Creative Commons may be contacted at <http://creativecommons.org/>.

CC-BY-4.0 License

Creative Commons Corporation ("Creative Commons") is not a law firm and does not provide legal services or legal advice. Distribution of Creative Commons public licenses does not create a lawyer-client or other relationship. Creative Commons makes its licenses and related information available on an "as-is" basis. Creative Commons gives no warranties regarding its licenses, any material licensed under their terms and conditions, or any related information. Creative Commons disclaims all liability for damages resulting from their use to the fullest extent possible.

Using Creative Commons Public Licenses

Creative Commons public licenses provide a standard set of terms and conditions that creators and other rights holders may use to share original works of authorship and other material subject to copyright and certain other rights specified in the public license below. The following considerations are for informational purposes only, are not exhaustive, and do not form part of our licenses.

Considerations for licensors: Our public licenses are intended for use by those authorized to give the public permission to use material in ways otherwise restricted by copyright and certain other rights. Our licenses are irrevocable. Licensors should read and understand the terms and

conditions of the license they choose before applying it. Licensors should also secure all rights necessary before applying our licenses so that the public can reuse the material as expected. Licensors should clearly mark any material not subject to the license. This includes other CC-licensed material, or material used under an exception or limitation to copyright. More considerations for licensors.

Considerations for the public: By using one of our public licenses, a licensor grants the public permission to use the licensed material under specified terms and conditions. If the licensor's permission is not necessary for any reason—for example, because of any applicable exception or limitation to copyright—then that use is not regulated by the license. Our licenses grant only permissions under copyright and certain other rights that a licensor has authority to grant. Use of the licensed material may still be restricted for other reasons, including because others have copyright or other rights in the material. A licensor may make special requests, such as asking that all changes be marked or described. Although not required by our licenses, you are encouraged to respect those requests where reasonable. More considerations for the public.

Creative Commons Attribution 4.0 International Public License

By exercising the Licensed Rights (defined below), You accept and agree to be bound by the terms and conditions of this Creative Commons Attribution 4.0 International Public License ("Public License"). To the extent this Public License may be interpreted as a contract, You are granted the Licensed Rights in consideration of Your acceptance of these terms and conditions, and the Licensor grants You such rights in consideration of benefits the Licensor receives from making the Licensed Material available under these terms and conditions.

Section 1 – Definitions.

markup

- a. Adapted Material means material subject to Copyright and Similar Rights
- b. Adapter's License means the license You apply to Your Copyright and Similar Rights
- c. Copyright and Similar Rights means copyright and/or similar rights
- d. Effective Technological Measures means those measures that, in the Licensor's sole discretion, are designed to prevent or control unauthorized copying, distribution, public performance, public display, or derivative works based on the Licensed Material
- e. Exceptions and Limitations means fair use, fair dealing, and/or any other limitation or exception to the rights in the Licensed Rights
- f. Licensed Material means the artistic or literary work, database, or other material that is covered by the Licensed Rights
- g. Licensed Rights means the rights granted to You subject to the term of this Public License
- h. Licensor means the individual(s) or entity(ies) granting rights under this Public License

- i. Share means to provide material to the public by any means or proce
- j. Sui Generis Database Rights means rights other than copyright resul
- k. You means the individual or entity exercising the Licensed Rights u

Section 2 – Scope.

markup

- a. License grant.
 - 1. Subject to the terms and conditions of this Public License, the L
 - A. reproduce and Share the Licensed Material, in whole or in pa
 - B. produce, reproduce, and Share Adapted Material.
 - 2. Exceptions and Limitations. For the avoidance of doubt, where Exc
 - 3. Term. The term of this Public License is specified in Section 6(a)
 - 4. Media and formats; technical modifications allowed. The Licenso
 - 5. Downstream recipients.
 - A. Offer from the Licenso – Licensed Material. Every recipient
 - B. No downstream restrictions. You may not offer or impose any
 - 6. No endorsement. Nothing in this Public License constitutes or ma
- b. Other rights.

b. Other rights.

markup

- 1. Moral rights, such as the right of integrity, are not licensed un
- 2. Patent and trademark rights are not licensed under this Public Li
- 3. To the extent possible, the Licenso waives any right to collect

Section 3 – License Conditions.

markup

a. Attribution.

1. If You Share the Licensed Material (including in modified form),

A. retain the following if it is supplied by the Licenser with

i. identification of the creator(s) of the Licensed Materi

ii. a copyright notice;

iii. a notice that refers to this Public License;

iv. a notice that refers to the disclaimer of warrantie

v. a URI or hyperlink to the Licensed Material to the exte

B. indicate if You modified the Licensed Material and retain an

C. indicate the Licensed Material is licensed under this Public

2. You may satisfy the conditions in Section 3(a)(1) in any reasonab

3. If requested by the Licenser, You must remove any of the informat

4. If You Share Adapted Material You produce, the Adapter's License

Section 4 – Sui Generis Database Rights.

Where the Licensed Rights include Sui Generis Database Rights that apply to Your use of the Licensed Material:

markup

a. for the avoidance of doubt, Section 2(a)(1) grants You the right to

b. if You include all or a substantial portion of the database content

c. You must comply with the conditions in Section 3(a) if You Share al

For the avoidance of doubt, this Section 4 supplements and does not replace Your obligations under this Public License where the Licensed Rights include other Copyright and Similar Rights.

Section 5 – Disclaimer of Warranties and Limitation of Liability.

markup

- a. Unless otherwise separately undertaken by the Licensor, to the exte
- b. To the extent possible, in no event will the Licensor be liable to
- c. The disclaimer of warranties and limitation of liability provided a

Section 6 – Term and Termination.

markup

- a. This Public License applies for the term of the Copyright and Simil
- b. Where Your right to use the Licensed Material has terminated under
 - 1. automatically as of the date the violation is cured, provided it
 - 2. upon express reinstatement by the Licensor.
- c. For the avoidance of doubt, this Section 6(b) does not affect any r
- d. For the avoidance of doubt, the Licensor may also offer the License
- e. Sections 1, 5, 6, 7, and 8 survive termination of this Public Licen

Section 7 – Other Terms and Conditions.

markup

- a. The Licensor shall not be bound by any additional or different term
- b. Any arrangements, understandings, or agreements regarding the Licens

Section 8 – Interpretation.

markup

- a. For the avoidance of doubt, this Public License does not, and shall

- b. To the extent possible, if any provision of this Public License is
- c. No term or condition of this Public License will be waived and no f
- d. Nothing in this Public License constitutes or may be interpreted as

Creative Commons is not a party to its public licenses. Notwithstanding, Creative Commons may elect to apply one of its public licenses to material it publishes and in those instances will be considered the "Licensor." Except for the limited purpose of indicating that material is shared under a Creative Commons public license or as otherwise permitted by the Creative Commons policies published at creativecommons.org/policies, Creative Commons does not authorize the use of the trademark "Creative Commons" or any other trademark or logo of Creative Commons without its prior written consent including, without limitation, in connection with any unauthorized modifications to any of its public licenses or any other arrangements, understandings, or agreements concerning use of licensed material. For the avoidance of doubt, this paragraph does not form part of the public licenses.

Creative Commons may be contacted at creativecommons.org.

AFL-2.1 License

This Academic Free License (the "License") applies to any original work of authorship (the "Original Work") whose owner (the "Licensor") has placed the following notice immediately following the copyright notice for the Original Work:

markup

Licensed under the Academic Free License version 2.1

1. Grant of Copyright License. Licensor hereby grants You a world-wide, royalty-free, non-exclusive, perpetual, sublicenseable license to do the following:
 - a) to reproduce the Original Work in copies; b) to prepare derivative works ("Derivative Works") based upon the Original Work; c) to distribute copies of the Original Work and Derivative Works to the public; d) to perform the Original Work publicly; and e) to display the Original Work publicly.
2. Grant of Patent License. Licensor hereby grants You a world-wide, royalty-free, non-exclusive, perpetual, sublicenseable license, under patent claims owned or controlled by the Licensor that are embodied in the Original Work as furnished by the Licensor, to make, use, sell and offer for sale the Original Work and Derivative Works.

3. Grant of Source Code License. The term "Source Code" means the preferred form of the Original Work for making modifications to it and all available documentation describing how to modify the Original Work. Licensor hereby agrees to provide a machine-readable copy of the Source Code of the Original Work along with each copy of the Original Work that Licensor distributes. Licensor reserves the right to satisfy this obligation by placing a machine-readable copy of the Source Code in an information repository reasonably calculated to permit inexpensive and convenient access by You for as long as Licensor continues to distribute the Original Work, and by publishing the address of that information repository in a notice immediately following the copyright notice that applies to the Original Work.

4. Exclusions From License Grant. Neither the names of Licensor, nor the names of any contributors to the Original Work, nor any of their trademarks or service marks, may be used to endorse or promote products derived from this Original Work without express prior written permission of the Licensor. Nothing in this License shall be deemed to grant any rights to trademarks, copyrights, patents, trade secrets or any other intellectual property of Licensor except as expressly stated herein. No patent license is granted to make, use, sell or offer to sell embodiments of any patent claims other than the licensed claims defined in Section 2. No right is granted to the trademarks of Licensor even if such marks are included in the Original Work. Nothing in this License shall be interpreted to prohibit Licensor from licensing under different terms from this License any Original Work that Licensor otherwise would have a right to license.

5. This section intentionally omitted.

6. Attribution Rights. You must retain, in the Source Code of any Derivative Works that You create, all copyright, patent or trademark notices from the Source Code of the Original Work, as well as any notices of licensing and any descriptive text identified therein as an "Attribution Notice." You must cause the Source Code for any Derivative Works that You create to carry a prominent Attribution Notice reasonably calculated to inform recipients that You have modified the Original Work.

7. Warranty of Provenance and Disclaimer of Warranty. Licensor warrants that the copyright in and to the Original Work and the patent rights granted herein by Licensor are owned by the Licensor or are sublicensed to You under the terms of this License with the permission of the contributor(s) of those copyrights and patent rights. Except as expressly stated in the immediately proceeding sentence, the Original Work is provided under this License on an "AS IS" BASIS and WITHOUT WARRANTY, either express or implied, including, without limitation, the warranties of NON-INFRINGEMENT, MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY OF THE ORIGINAL WORK IS WITH YOU. This DISCLAIMER OF WARRANTY constitutes an essential part of this License. No license to Original Work is granted hereunder except under this disclaimer.

8. **Limitation of Liability.** Under no circumstances and under no legal theory, whether in tort (including negligence), contract, or otherwise, shall the Licensor be liable to any person for any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or the use of the Original Work including, without limitation, damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses. This limitation of liability shall not apply to liability for death or personal injury resulting from Licensor's negligence to the extent applicable law prohibits such limitation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion and limitation may not apply to You.
9. **Acceptance and Termination.** If You distribute copies of the Original Work or a Derivative Work, You must make a reasonable effort under the circumstances to obtain the express assent of recipients to the terms of this License. Nothing else but this License (or another written agreement between Licensor and You) grants You permission to create Derivative Works based upon the Original Work or to exercise any of the rights granted in Section 1 herein, and any attempt to do so except under the terms of this License (or another written agreement between Licensor and You) is expressly prohibited by U.S. copyright law, the equivalent laws of other countries, and by international treaty. Therefore, by exercising any of the rights granted to You in Section 1 herein, You indicate Your acceptance of this License and all of its terms and conditions.
10. **Termination for Patent Action.** This License shall terminate automatically and You may no longer exercise any of the rights granted to You by this License as of the date You commence an action, including a cross-claim or counterclaim, against Licensor or any licensee alleging that the Original Work infringes a patent. This termination provision shall not apply for an action alleging patent infringement by combinations of the Original Work with other software or hardware.
11. **Jurisdiction, Venue and Governing Law.** Any action or suit relating to this License may be brought only in the courts of a jurisdiction wherein the Licensor resides or in which Licensor conducts its primary business, and under the laws of that jurisdiction excluding its conflict-of-law provisions. The application of the United Nations Convention on Contracts for the International Sale of Goods is expressly excluded. Any use of the Original Work outside the scope of this License or after its termination shall be subject to the requirements and penalties of the U.S. Copyright Act, 17 U.S.C. § 101 et seq., the equivalent laws of other countries, and international treaty. This section shall survive the termination of this License.
12. **Attorneys Fees.** In any action to enforce the terms of this License or seeking damages relating thereto, the prevailing party shall be entitled to recover its costs and expenses, including, without limitation, reasonable attorneys' fees and costs incurred in connection with such action, including any appeal of such action. This section shall survive the termination of this License.

13. Miscellaneous. This License represents the complete agreement concerning the subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable.
14. Definition of "You" in This License. "You" throughout this License, whether in upper or lower case, means an individual or a legal entity exercising rights under, and complying with all of the terms of, this License. For legal entities, "You" includes any entity that controls, is controlled by, or is under common control with you. For purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.
15. Right to Use. You may use the Original Work in all ways not otherwise restricted or conditioned by this License or by law, and Licensor promises not to interfere with or be responsible for such uses by You.

This license is Copyright (C) 2003-2004 Lawrence E. Rosen. All rights reserved. Permission is hereby granted to copy and distribute this license without modification. This license may not be modified without the express written permission of its copyright owner.

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:

markup

1. The origin of this software must not be misrepresented; you must not claim that you wrote the original software. If you do not intend to redistribute your modified version, you are free to remove this notice and to refer to [http://www.zlib.net](#) as the original author.
2. Altered source versions must be plainly marked as such, and must not be misrepresented as being the original software.

ISC License

Copyright (c) 2004-2010 by Internet Systems Consortium, Inc. ("ISC") Copyright (c) 1995-2003 by Internet Software Consortium

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND ISC DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL ISC BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

PSF-3.9.2 License

1. This LICENSE AGREEMENT is between the Python Software Foundation ("PSF"), and the Individual or Organization ("Licensee") accessing and otherwise using Python 3.9.2 software in source or binary form and its associated documentation.
2. Subject to the terms and conditions of this License Agreement, PSF hereby grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce, analyze, test, perform and/or display publicly, prepare derivative works, distribute, and otherwise use Python 3.9.2 alone or in any derivative version, provided, however, that PSF's License Agreement and PSF's notice of copyright, i.e., "Copyright © 2001-2021 Python Software Foundation; All Rights Reserved" are retained in Python 3.9.2 alone or in any derivative version prepared by Licensee.
3. In the event Licensee prepares a derivative work that is based on or incorporates Python 3.9.2 or any part thereof, and wants to make the derivative work available to others as provided herein, then Licensee hereby agrees to include in any such work a brief summary of the changes made to Python 3.9.2.
4. PSF is making Python 3.9.2 available to Licensee on an "AS IS" basis. PSF MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, PSF MAKES NO AND DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON 3.9.2 WILL NOT INFRINGE ANY THIRD PARTY RIGHTS.
5. PSF SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON 3.9.2 FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON 3.9.2, OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.
6. This License Agreement will automatically terminate upon a material breach of its terms and conditions.
7. Nothing in this License Agreement shall be deemed to create any relationship of agency, partnership, or joint venture between PSF and Licensee. This License Agreement does not grant permission to use PSF trademarks or trade name in a trademark sense to endorse or promote products or services of Licensee, or any third party.

8. By copying, installing or otherwise using Python 3.9.2, Licensee agrees to be bound by the terms and conditions of this License Agreement.

Artistic 2.0 License

Copyright (c) 2000-2006, The Perl Foundation.

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

This license establishes the terms under which a given free software Package may be copied, modified, distributed, and/or redistributed. The intent is that the Copyright Holder maintains some artistic control over the development of that Package while still keeping the Package available as open source and free software.

You are always permitted to make arrangements wholly outside of this license directly with the Copyright Holder of a given Package. If the terms of this license do not permit the full use that you propose to make of the Package, you should contact the Copyright Holder and seek a different licensing arrangement.

Definitions

markup

"Copyright Holder" means the individual(s) or organization(s) named in the

"Contributor" means any party that has contributed code or other material

"You" and "your" means any person who would like to copy, distribute, or

"Package" means the collection of files distributed by the Copyright Hold

"Distribute" means providing a copy of the Package or making it accessible

"Distributor Fee" means any fee that you charge for Distributing this Pac

"Standard Version" refers to the Package if it has not been modified, or

"Modified Version" means the Package, if it has been changed, and such ch

"Original License" means this Artistic License as Distributed with the St

"Source" form means the source code, documentation source, and configurat

"Compiled" form means the compiled bytecode, object code, binary, or any

Permission for Use and Modification Without Distribution

(1) You are permitted to use the Standard Version and create and use Modified Versions for any purpose without restriction, provided that you do not Distribute the Modified Version.

Permissions for Redistribution of the Standard Version

(2) You may Distribute verbatim copies of the Source form of the Standard Version of this Package in any medium without restriction, either gratis or for a Distributor Fee, provided that you duplicate all of the original copyright notices and associated disclaimers. At your discretion, such verbatim copies may or may not include a Compiled form of the Package.

(3) You may apply any bug fixes, portability changes, and other modifications made available from the Copyright Holder. The resulting Package will still be considered the Standard Version, and as such will be subject to the Original License.

Distribution of Modified Versions of the Package as Source

(4) You may Distribute your Modified Version as Source (either gratis or for a Distributor Fee, and with or without a Compiled form of the Modified Version) provided that you clearly document how it differs from the Standard Version, including, but not limited to, documenting any non-standard features, executables, or modules, and provided that you do at least ONE of the following:

markup

- (a) make the Modified Version available to the Copyright Holder of the St
- (b) ensure that installation of your Modified Version does not prevent th
- (c) allow anyone who receives a copy of the Modified Version to make the

- (i) the Original License or
- (ii) a license that permits the licensee to freely copy, modify and

Distribution of Compiled Forms of the Standard Version or Modified Versions without the Source

(5) You may Distribute Compiled forms of the Standard Version without the Source, provided that you include complete instructions on how to get the Source of the Standard Version. Such instructions must be valid at the time of your distribution. If these instructions, at any time while you are carrying out such distribution, become invalid, you must provide new instructions on demand or cease further distribution. If you provide valid instructions or cease distribution within

thirty days after you become aware that the instructions are invalid, then you do not forfeit any of your rights under this license.

(6) You may Distribute a Modified Version in Compiled form without the Source, provided that you comply with Section 4 with respect to the Source of the Modified Version.

Aggregating or Linking the Package

(7) You may aggregate the Package (either the Standard Version or Modified Version) with other packages and Distribute the resulting aggregation provided that you do not charge a licensing fee for the Package. Distributor Fees are permitted, and licensing fees for other components in the aggregation are permitted. The terms of this license apply to the use and Distribution of the Standard or Modified Versions as included in the aggregation.

(8) You are permitted to link Modified and Standard Versions with other works, to embed the Package in a larger work of your own, or to build stand-alone binary or bytecode versions of applications that include the Package, and Distribute the result without restriction, provided the result does not expose a direct interface to the Package.

Items That are Not Considered Part of a Modified Version

(9) Works (including, but not limited to, modules and scripts) that merely extend or make use of the Package, do not, by themselves, cause the Package to be a Modified Version. In addition, such works are not considered parts of the Package itself, and are not subject to the terms of this license.

General Provisions

(10) Any use, modification, and distribution of the Standard or Modified Versions is governed by this Artistic License. By using, modifying or distributing the Package, you accept this license. Do not use, modify, or distribute the Package, if you do not accept this license.

(11) If your Modified Version has been derived from a Modified Version made by someone other than you, you are nevertheless required to ensure that your Modified Version complies with the requirements of this license.

(12) This license does not grant you the right to use any trademark, service mark, tradename, or logo of the Copyright Holder.

(13) This license includes the non-exclusive, worldwide, free-of-charge patent license to make, have made, use, offer to sell, sell, import and otherwise transfer the Package with respect to any patent claims licensable by the Copyright Holder that are necessarily infringed by the Package. If you institute patent litigation (including a cross-claim or counterclaim) against any party alleging that the Package constitutes direct or contributory patent infringement, then this Artistic License to you shall terminate on the date that such litigation is filed.

(14) Disclaimer of Warranty: THE PACKAGE IS PROVIDED BY THE COPYRIGHT HOLDER AND CONTRIBUTORS "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES. THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT ARE DISCLAIMED TO THE EXTENT PERMITTED BY YOUR LOCAL LAW. UNLESS REQUIRED BY LAW, NO COPYRIGHT HOLDER OR CONTRIBUTOR WILL BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING IN ANY WAY OUT OF THE USE OF THE PACKAGE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

GPL 2.0 License

Copyright (C) 1989, 1991 Free Software Foundation, Inc. 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

1. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you

received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.
5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.
6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.
7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly

or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.
9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.
12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

markup

one line to give the program's name and an idea of what it does. Copyright

This program is free software; you can redistribute it and/or modify it u

This program is distributed in the hope that it will be useful, but WITHO

You should have received a copy of the GNU General Public License along w

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author Gnomovision com

The hypothetical commands 'show w' and 'show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than 'show w' and 'show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program `G

signature of Ty Coon, 1 April 1989 Ty Coon, President of Vice

AGPL-3.0 License

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The GNU Affero General Public License is a free, copyleft license for software and other kinds of works, specifically designed to ensure cooperation with the community in the case of network server software.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, our General Public Licenses are intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

Developers that use our General Public Licenses protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License which gives you legal permission to copy, distribute and/or modify the software.

A secondary benefit of defending all users' freedom is that improvements made in alternate versions of the program, if they receive widespread use, become available for other developers to incorporate. Many developers of free software are heartened and encouraged by the resulting cooperation. However, in the case of software used on network servers, this result may fail to come about. The GNU General Public License permits making a modified version and letting the public access it on a server without ever releasing its source code to the public.

The GNU Affero General Public License is designed specifically to ensure that, in such cases, the modified source code becomes available to the community. It requires the operator of a network server to provide the source code of the modified version running there to the users of that server. Therefore, public use of a modified version, on a publicly accessible server, gives the public access to the source code of the modified version.

An older license, called the Affero General Public License and published by Affero, was designed to accomplish similar goals. This is a different license, not a version of the Affero GPL, but Affero has released a new version of the Affero GPL which permits relicensing under this license.

The precise terms and conditions for copying, distribution and modification follow.

markup

TERMS AND CONDITIONS

1. Definitions.

"This License" refers to version 3 of the GNU Affero General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it

on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. **Source Code.** The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions. All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law. No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies. You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions. You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of

section 4, provided that you also meet all of these conditions:

markup

- a) The work must carry prominent notices stating that you modified it
- b) The work must carry prominent notices stating that it is released
- c) You must license the entire work, as a whole, under this License to others
- d) If the work has interactive user interfaces, each must display Appropriate Legal Notices

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms. You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

markup

- a) Convey the object code in, or embodied in, a physical product (incorporated by reference or otherwise) or a physical distribution medium
- b) Convey the object code in, or embodied in, a physical product (incorporated by reference or otherwise) or a physical distribution medium
- c) Convey individual copies of the object code with a copy of the corresponding Source included in each copy, in a physical medium that can store both
- d) Convey the object code by offering access from a designated place over a network
- e) Convey the object code using peer-to-peer transmission, provided you offer corresponding access to the Corresponding Source from the same place, directly or through a designated interface, and also offer individual copies of the object code with the Corresponding Source included in each copy, in a physical medium that can store both

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually

uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms. "Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

markup

- a) Disclaiming warranty or limiting liability differently from the terms of this License.
- b) Requiring preservation of specified reasonable legal notices or authorship notices in that material.
- c) Prohibiting misrepresentation of the origin of that material, or requiring that authors of updated versions of that material are attributed to it.
- d) Limiting the use for publicity purposes of names of licensors or authors of that material.
- e) Declining to grant rights under trademark law for use of some trade names, trademarks, or registered trademarks of licensors or authors.
- f) Requiring indemnification of licensors and authors of that material by you for liability for damages caused by your acts in the course of your relationship with your users.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Remote Network Interaction; Use with the GNU General Public License.

Notwithstanding any other provision of this License, if you modify the Program, your modified version must prominently offer all users interacting with it remotely through a computer network (if your version supports such interaction) an opportunity to receive the Corresponding Source of your version by providing access to the Corresponding Source from a network server at no charge, through some standard or customary means of facilitating copying of software. This Corresponding Source shall include the Corresponding Source for any work covered by version 3 of the GNU General Public License that is incorporated pursuant to the following paragraph.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the work with which it is combined will remain governed by version 3 of the GNU General Public License.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU Affero General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU Affero General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU Affero General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU Affero General Public License can be used, that proxy's public statement of acceptance of a version permanently

authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17. Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

markup

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

markup

```
<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>
```

This program is free software: you can redistribute it and/or modify it under the terms of the GNU Affero General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Affero General Public License for more details.

You should have received a copy of the GNU Affero General Public License along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If your software can interact with users remotely through a computer network, you should also make sure that it provides a way for users to get its source. For example, if your program is a web application, its interface could display a "Source" link that leads users to an archive of the code. There are many ways you could offer source, and different solutions will be better for different programs; see section 13 for the specific requirements.

You should also get your employer (if you work as a programmer) or school, if any, to sign a "copyright disclaimer" for the program, if necessary. For more information on this, and how to apply and follow the GNU AGPL, see <http://www.gnu.org/licenses/>.

MPL-2.0 License

1. Definitions

1.1. "Contributor" means each individual or legal entity that creates, contributes to the creation of, or owns Covered Software.

1.2. "Contributor Version" means the combination of the Contributions of others (if any) used by a Contributor and that particular Contributor's Contribution.

1.3. "Contribution" means Covered Software of a particular Contributor.

1.4. "Covered Software" means Source Code Form to which the initial Contributor has attached the notice in Exhibit A, the Executable Form of such Source Code Form, and Modifications of such Source Code Form, in each case including portions thereof.

1.5. "Incompatible With Secondary Licenses" means

(a) that the initial Contributor has attached the notice described

(b) that the Covered Software was made available under the terms of

1.6. "Executable Form" means any form of the work other than Source Code Form.

1.7. "Larger Work" means a work that combines Covered Software with other material, in a separate file or files, that is not Covered Software.

1.8. "License" means this document.

1.9. "Licensable" means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently, any and all of the rights conveyed by this License.

1.10. "Modifications" means any of the following:

(a) any file in Source Code Form that results from an addition to,

(b) any new file in Source Code Form that contains any Covered Soft

1.11. "Patent Claims" of a Contributor means any patent claim(s), including without limitation, method, process, and apparatus claims, in any patent Licensable by such Contributor that would be infringed, but for the grant of the License, by the making, using, selling, offering for sale, having made, import, or transfer of either its Contributions or its Contributor Version.

1.12. "Secondary License" means either the GNU General Public License, Version 2.0, the GNU Lesser General Public License, Version 2.1, the GNU Affero General Public License, Version 3.0, or any later versions of those licenses.

1.13. "Source Code Form" means the form of the work preferred for making modifications.

1.14. "You" (or "Your") means an individual or a legal entity exercising rights under this License. For legal entities, "You" includes any entity that controls, is controlled by, or is under common control with You. For purposes of this definition, "control" means (a) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (b) ownership of more than fifty percent (50%) of the outstanding shares or beneficial ownership of such entity.

2. License Grants and Conditions

2.1. Grants Each Contributor hereby grants You a world-wide, royalty-free, non-exclusive license:

markup

- (a) under intellectual property rights (other than patent or trademark)
- (b) under Patent Claims of such Contributor to make, use, sell, offer

2.2. Effective Date The licenses granted in Section 2.1 with respect to any Contribution become effective for each Contribution on the date the Contributor first distributes such Contribution.

2.3. Limitations on Grant Scope The licenses granted in this Section 2 are the only rights granted under this License. No additional rights or licenses will be implied from the distribution or licensing of Covered Software under this License. Notwithstanding Section 2.1(b) above, no patent license is granted by a Contributor:

markup

- (a) for any code that a Contributor has removed from Covered Software
- (b) for infringements caused by: (i) Your and any other third party
- (c) under Patent Claims infringed by Covered Software in the absence

This License does not grant any rights in the trademarks, service marks, or logos of any Contributor (except as may be necessary to comply with the notice requirements in Section 3.4).

2.4. Subsequent Licenses No Contributor makes additional grants as a result of Your choice to distribute the Covered Software under a subsequent version of this License (see Section 10.2) or under the terms of a Secondary License (if permitted under the terms of Section 3.3).

2.5. Representation Each Contributor represents that the Contributor believes its Contributions are its original creation(s) or it has sufficient rights to grant the rights to its Contributions conveyed by this License.

2.6. Fair Use This License is not intended to limit any rights You have under applicable copyright doctrines of fair use, fair dealing, or other equivalents.

2.7. Conditions Sections 3.1, 3.2, 3.3, and 3.4 are conditions of the licenses granted in Section 2.1.

3. Responsibilities

3.1. Distribution of Source Form All distribution of Covered Software in Source Code Form, including any Modifications that You create or to which You contribute, must be under the terms of this License. You must inform recipients that the Source Code Form of the Covered Software is governed by the terms of this License, and how they can obtain a copy of this License. You may not attempt to alter or restrict the recipients' rights in the Source Code Form.

3.2. Distribution of Executable Form If You distribute Covered Software in Executable Form then:

markup

- (a) such Covered Software must also be made available in Source Code Form.
- (b) You may distribute such Executable Form under the terms of this License.

3.3. Distribution of a Larger Work You may create and distribute a Larger Work under terms of Your choice, provided that You also comply with the requirements of this License for the Covered Software. If the Larger Work is a combination of Covered Software with a work governed by one or more Secondary Licenses, and the Covered Software is not Incompatible With Secondary Licenses, this License permits You to additionally distribute such Covered Software under the terms of such Secondary License(s), so that the recipient of the Larger Work may, at their option, further distribute the Covered Software under the terms of either this License or such Secondary License(s).

3.4. Notices You may not remove or alter the substance of any license notices (including copyright notices, patent notices, disclaimers of warranty, or limitations of liability) contained within the Source Code Form of the Covered Software, except that You may alter any license notices to the extent required to remedy known factual inaccuracies.

3.5. Application of Additional Terms You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more recipients of Covered Software. However, You may do so only on Your own behalf, and not on behalf of any Contributor. You must make it absolutely clear that any such warranty, support, indemnity, or liability obligation is offered by You alone, and You hereby agree to indemnify every Contributor for any liability incurred by such Contributor as a result of warranty, support, indemnity or liability terms You offer. You may include additional disclaimers of warranty and limitations of liability specific to any jurisdiction.

4. Inability to Comply Due to Statute or Regulation If it is impossible for You to comply with any of the terms of this License with respect to some or all of the Covered Software due to statute, judicial order, or regulation then You must: (a) comply with the terms of this License to the maximum extent possible; and (b) describe the limitations and the code they affect. Such

description must be placed in a text file included with all distributions of the Covered Software under this License. Except to the extent prohibited by statute or regulation, such description must be sufficiently detailed for a recipient of ordinary skill to be able to understand it.

5. Termination

5.1. The rights granted under this License will terminate automatically if You fail to comply with any of its terms. However, if You become compliant, then the rights granted under this License from a particular Contributor are reinstated (a) provisionally, unless and until such Contributor explicitly and finally terminates Your grants, and (b) on an ongoing basis, if such Contributor fails to notify You of the non-compliance by some reasonable means prior to 60 days after You have come back into compliance. Moreover, Your grants from a particular Contributor are reinstated on an ongoing basis if such Contributor notifies You of the non-compliance by some reasonable means, this is the first time You have received notice of non-compliance with this License from such Contributor, and You become compliant prior to 30 days after Your receipt of the notice.

5.2. If You initiate litigation against any entity by asserting a patent infringement claim (excluding declaratory judgment actions, counter-claims, and cross-claims) alleging that a Contributor Version directly or indirectly infringes any patent, then the rights granted to You by any and all Contributors for the Covered Software under Section 2.1 of this License shall terminate.

5.3. In the event of termination under Sections 5.1 or 5.2 above, all end user license agreements (excluding distributors and resellers) which have been validly granted by You or Your distributors under this License prior to termination shall survive termination.

6. Disclaimer of Warranty Covered Software is provided under this License on an "as is" basis, without warranty of any kind, either expressed, implied, or statutory, including, without limitation, warranties that the Covered Software is free of defects, merchantable, fit for a particular purpose or non-infringing. The entire risk as to the quality and performance of the Covered Software is with You. Should any Covered Software prove defective in any respect, You (not any Contributor) assume the cost of any necessary servicing, repair, or correction. This disclaimer of warranty constitutes an essential part of this License. No use of any Covered Software is authorized under this License except under this disclaimer.

7. Limitation of Liability Under no circumstances and under no legal theory, whether tort (including negligence), contract, or otherwise, shall any Contributor, or anyone who distributes Covered Software as permitted above, be liable to You for any direct, indirect, special, incidental, or consequential damages of any character including, without limitation, damages for lost profits, loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses, even if such party shall have been informed of the possibility of such damages. This limitation of liability shall not apply to liability for death or

personal injury resulting from such party's negligence to the extent applicable law prohibits such limitation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion and limitation may not apply to You.

8. Litigation Any litigation relating to this License may be brought only in the courts of a jurisdiction where the defendant maintains its principal place of business and such litigation shall be governed by laws of that jurisdiction, without reference to its conflict-of-law provisions. Nothing in this Section shall prevent a party's ability to bring cross-claims or counter-claims.
9. Miscellaneous This License represents the complete agreement concerning the subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. Any law or regulation which provides that the language of a contract shall be construed against the drafter shall not be used to construe this License against a Contributor.

10. Versions of the License

10.1. New Versions Mozilla Foundation is the license steward. Except as provided in Section 10.3, no one other than the license steward has the right to modify or publish new versions of this License. Each version will be given a distinguishing version number.

10.2. Effect of New Versions You may distribute the Covered Software under the terms of the version of the License under which You originally received the Covered Software, or under the terms of any subsequent version published by the license steward.

10.3. Modified Versions If you create software not governed by this License, and you want to create a new license for such software, you may create and use a modified version of this License if you rename the license and remove any references to the name of the license steward (except to note that such modified license differs from this License).

10.4. Distributing Source Code Form that is Incompatible With Secondary Licenses If You choose to distribute Source Code Form that is Incompatible With Secondary Licenses under the terms of this version of the License, the notice described in Exhibit B of this License must be attached.

Exhibit A - Source Code Form License Notice

markup

This Source Code Form is subject to the terms of the Mozilla Public License

If it is not possible or desirable to put the notice in a particular file, then You may include the notice in a location (such as a LICENSE file in a relevant directory) where a recipient would be

likely to look for such a notice.

You may add additional accurate notices of copyright ownership.

Exhibit B - "Incompatible With Secondary Licenses" Notice

markup

This Source Code Form is "Incompatible With Secondary Licenses", as defin

LGPL-2.1 License

Copyright (C) 1991, 1999 Free Software Foundation, Inc. 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C

Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

1. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices

that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) The modified work must itself be a software library.
- b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.
- c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.
- d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

markup

- a) Accompany the work with the complete corresponding machine-readable so
- b) Use a suitable shared library mechanism for linking with the Library.
- c) Accompany the work with a written offer, valid for at least three years
- d) If distribution of the work is made by offering access to copy from a
- e) Verify that the user has already received a copy of these materials or

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

- a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.
- b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices.

Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.
13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE

LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

markup

one line to give the library's name and an idea of what it does.

Copyright (C) year name of author

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307, USA.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

signature of Ty Coon, 1 April 1990 Ty Coon, President of Vice That's all there is to it!

LGPL-3.0 License

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

This version of the GNU Lesser General Public License incorporates the terms and conditions of version 3 of the GNU General Public License, supplemented by the additional permissions listed below.

1. Additional Definitions.

As used herein, "this License" refers to version 3 of the GNU Lesser General Public License, and the "GNU GPL" refers to version 3 of the GNU General Public License.

"The Library" refers to a covered work governed by this License, other than an Application or a Combined Work as defined below.

An "Application" is any work that makes use of an interface provided by the Library, but which is not otherwise based on the Library. Defining a subclass of a class defined by the Library is deemed a mode of using an interface provided by the Library.

A "Combined Work" is a work produced by combining or linking an Application with the Library. The particular version of the Library with which the Combined Work was made is also called the "Linked Version".

The "Minimal Corresponding Source" for a Combined Work means the Corresponding Source for the Combined Work, excluding any source code for portions of the Combined Work that, considered in isolation, are based on the Application, and not on the Linked Version.

The "Corresponding Application Code" for a Combined Work means the object code and/or source code for the Application, including any data and utility programs needed for reproducing the Combined Work from the Application, but excluding the System Libraries of the Combined Work.

1. Exception to Section 3 of the GNU GPL. You may convey a covered work under sections 3 and 4 of this License without being bound by section 3 of the GNU GPL.
2. Conveying Modified Versions. If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

markup

- a) under this License, provided that you make a good faith effort to
- b) under the GNU GPL, with none of the additional permissions of this License.

3. Object Code Incorporating Material from Library Header Files. The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material is not limited to numerical parameters, data structure layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:

markup

- a) Give prominent notice with each copy of the object code that the
- b) Accompany the object code with a copy of the GNU GPL and this lic

4. Combined Works. You may convey a Combined Work under terms of your choice that, taken together, effectively do not restrict modification of the portions of the Library contained in the Combined Work and reverse engineering for debugging such modifications, if you also do each of the following:

markup

- a) Give prominent notice with each copy of the Combined Work that th
- b) Accompany the Combined Work with a copy of the GNU GPL and this :
- c) For a Combined Work that displays copyright notices during execut
- d) Do one of the following:
 - 0) Convey the Minimal Corresponding Source under the terms of
 - 1) Use a suitable shared library mechanism for linking with the
- e) Provide Installation Information, but only if you would otherwise

5. Combined Libraries. You may place library facilities that are a work based on the Library side by side in a single library together with other library facilities that are not Applications and are not covered by this License, and convey such a combined library under terms of your choice, if you do both of the following:

markup

- a) Accompany the combined library with a copy of the same work basec
- b) Give prominent notice with the combined library that part of it i

6. Revised Versions of the GNU Lesser General Public License. The Free Software Foundation may publish revised and/or new versions of the GNU Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library as you received it specifies that a certain numbered version of the GNU Lesser General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that published version or of any later version published by the Free Software Foundation. If the Library as you received it does not specify a version number of the GNU Lesser General Public License, you may choose any version of the GNU Lesser General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide whether future versions of the GNU Lesser General Public License shall apply, that proxy's public statement of acceptance of any version is permanent authorization for you to choose that version for the Library.

0BSD License

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

CC0-1.0 License

markup

CREATIVE COMMONS CORPORATION IS NOT A LAW FIRM AND DOES NOT PROVIDE LEGAL SERVICES. DISTRIBUTION OF THIS DOCUMENT DOES NOT CREATE AN ATTORNEY-CLIENT RELATIONSHIP. CREATIVE COMMONS PROVIDES THIS INFORMATION ON AN "AS-IS" BASIS. CREATIVE COMMONS MAKES NO WARRANTIES REGARDING THE USE OF THIS DOCUMENT OR THE INFORMATION OR WORKS PROVIDED HEREUNDER, AND DISCLAIMS LIABILITY FOR DAMAGES RESULTING FROM THE USE OF THIS DOCUMENT OR THE INFORMATION OR WORKS PROVIDED HEREUNDER.

Statement of Purpose

The laws of most jurisdictions throughout the world automatically confer exclusive Copyright and Related Rights (defined below) upon the creator and subsequent owner(s) (each and all, an "owner") of an original work of authorship and/or a database (each, a "Work").

Certain owners wish to permanently relinquish those rights to a Work for the purpose of contributing to a commons of creative, cultural and scientific works ("Commons") that the public can reliably and without fear of later claims of infringement build upon, modify, incorporate in other works, reuse and redistribute as freely as possible in any form whatsoever and for any purposes, including without limitation commercial purposes. These owners may contribute to the Commons to promote the ideal of a free culture and the further production of creative, cultural and scientific works, or to gain reputation or greater distribution for their Work in part through the use and efforts of others.

For these and/or other purposes and motivations, and without any expectation of additional consideration or compensation, the person associating CC0 with a Work (the "Affirmer"), to the extent that he or she is an owner of Copyright and Related Rights in the Work, voluntarily elects to apply CC0 to the Work and publicly distribute the Work under its terms, with knowledge of his or her Copyright and Related Rights in the Work and the meaning and intended legal effect of CC0 on those rights.

1. **Copyright and Related Rights.** A Work made available under CC0 may be protected by copyright and related or neighboring rights ("Copyright and Related Rights"). Copyright and Related Rights include, but are not limited to, the following:

i. the right to reproduce, adapt, distribute, perform, display, communicate, and translate a Work; ii. moral rights retained by the original author(s) and/or performer(s); iii. publicity and privacy rights pertaining to a person's image or likeness depicted in a Work; iv. rights protecting against unfair competition in regards to a Work, subject to the limitations in paragraph 4(a), below; v. rights protecting the extraction, dissemination, use and reuse of data in a Work; vi. database rights (such as those arising under Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, and under any national implementation thereof, including any amended or successor version of such directive); and vii. other similar, equivalent or corresponding rights throughout the world based on applicable law or treaty, and any national implementations thereof.

2. **Waiver.** To the greatest extent permitted by, but not in contravention of, applicable law, Affirmer hereby overtly, fully, permanently, irrevocably and unconditionally waives, abandons, and surrenders all of Affirmer's Copyright and Related Rights and associated claims and causes of action, whether now known or unknown (including existing as well as future claims and causes of action), in the Work (i) in all territories worldwide, (ii) for the maximum duration provided by applicable law or treaty (including future time extensions), (iii) in any current or

future medium and for any number of copies, and (iv) for any purpose whatsoever, including without limitation commercial, advertising or promotional purposes (the "Waiver"). Affirmer makes the Waiver for the benefit of each member of the public at large and to the detriment of Affirmer's heirs and successors, fully intending that such Waiver shall not be subject to revocation, rescission, cancellation, termination, or any other legal or equitable action to disrupt the quiet enjoyment of the Work by the public as contemplated by Affirmer's express Statement of Purpose.

3. Public License Fallback. Should any part of the Waiver for any reason be judged legally invalid or ineffective under applicable law, then the Waiver shall be preserved to the maximum extent permitted taking into account Affirmer's express Statement of Purpose. In addition, to the extent the Waiver is so judged Affirmer hereby grants to each affected person a royalty-free, non transferable, non sublicensable, non exclusive, irrevocable and unconditional license to exercise Affirmer's Copyright and Related Rights in the Work (i) in all territories worldwide, (ii) for the maximum duration provided by applicable law or treaty (including future time extensions), (iii) in any current or future medium and for any number of copies, and (iv) for any purpose whatsoever, including without limitation commercial, advertising or promotional purposes (the "License"). The License shall be deemed effective as of the date CC0 was applied by Affirmer to the Work. Should any part of the License for any reason be judged legally invalid or ineffective under applicable law, such partial invalidity or ineffectiveness shall not invalidate the remainder of the License, and in such case Affirmer hereby affirms that he or she will not (i) exercise any of his or her remaining Copyright and Related Rights in the Work or (ii) assert any associated claims and causes of action with respect to the Work, in either case contrary to Affirmer's express Statement of Purpose.

4. Limitations and Disclaimers.

a. No trademark or patent rights held by Affirmer are waived, abandoned, surrendered, licensed or otherwise affected by this document. b. Affirmer 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, non infringement, or the absence of latent or other defects, accuracy, or the present or absence of errors, whether or not discoverable, all to the greatest extent permissible under applicable law. c. Affirmer disclaims responsibility for clearing rights of other persons that may apply to the Work or any use thereof, including without limitation any person's Copyright and Related Rights in the Work. Further, Affirmer disclaims responsibility for obtaining any necessary consents, permissions or other rights required for any use of the Work. d. Affirmer understands and acknowledges that Creative Commons is not a party to this document and has no duty or obligation with respect to this CC0 or use of the Work.

Copyright (C) 2004 Sam Hocevar sam@hocevar.net

Everyone is permitted to copy and distribute verbatim or modified copies of this license document, and changing it is allowed as long as the name is changed.

DO WHAT THE F*CK YOU WANT TO PUBLIC LICENSE TERMS AND CONDITIONS FOR COPYING,
DISTRIBUTION AND MODIFICATION

1. You just DO WHAT THE F*CK YOU WANT TO.

PSF License

1. This LICENSE AGREEMENT is between the Python Software Foundation ("PSF"), and the Individual or Organization ("Licensee") accessing and otherwise using Python 3.9.2 software in source or binary form and its associated documentation.
2. Subject to the terms and conditions of this License Agreement, PSF hereby grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce, analyze, test, perform and/or display publicly, prepare derivative works, distribute, and otherwise use Python 3.9.2 alone or in any derivative version, provided, however, that PSF's License Agreement and PSF's notice of copyright, i.e., "Copyright © 2001-2021 Python Software Foundation; All Rights Reserved" are retained in Python 3.9.2 alone or in any derivative version prepared by Licensee.
3. In the event Licensee prepares a derivative work that is based on or incorporates Python 3.9.2 or any part thereof, and wants to make the derivative work available to others as provided herein, then Licensee hereby agrees to include in any such work a brief summary of the changes made to Python 3.9.2.
4. PSF is making Python 3.9.2 available to Licensee on an "AS IS" basis. PSF MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, PSF MAKES NO AND DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON 3.9.2 WILL NOT INFRINGE ANY THIRD PARTY RIGHTS.
5. PSF SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON 3.9.2 FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON 3.9.2, OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.
6. This License Agreement will automatically terminate upon a material breach of its terms and conditions.

7. Nothing in this License Agreement shall be deemed to create any relationship of agency, partnership, or joint venture between PSF and Licensee. This License Agreement does not grant permission to use PSF trademarks or trade name in a trademark sense to endorse or promote products or services of Licensee, or any third party.

8. By copying, installing or otherwise using Python 3.9.2, Licensee agrees to be bound by the terms and conditions of this License Agreement.