



Clean Insights

Privacy-Preserving Analytics



Guardian Project creates apps and code that can be used around the world by any person looking to protect themselves from unjust intrusion, interception & monitoring.

We have millions of users, but no acceptable way to measure their satisfaction or our impact.



**THE GUARDIAN
PROJECT**
<https://guardianproject.info>

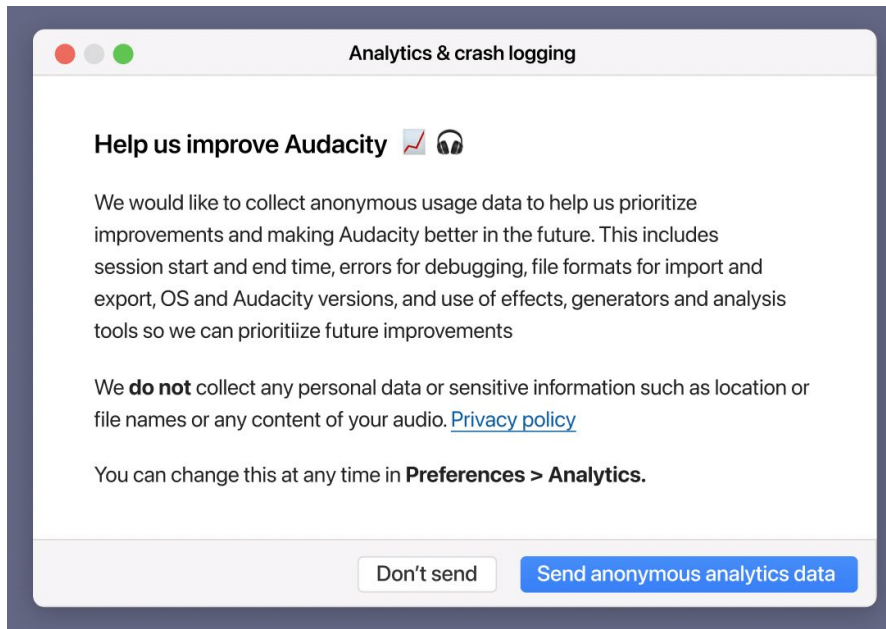
**What's the problem with
modern analytics?**

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<https://www.berkmankleinassembly.org>

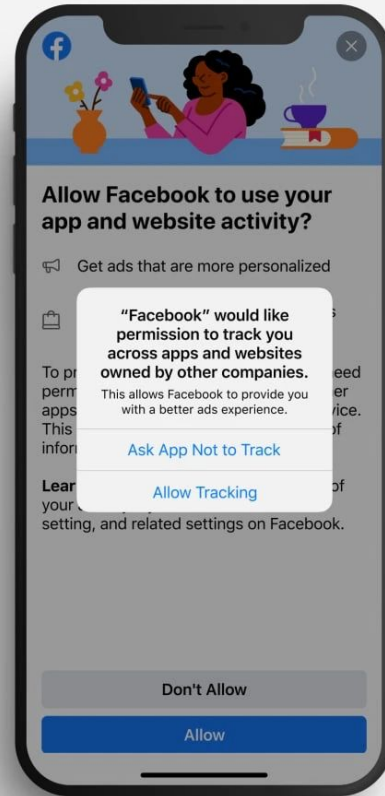
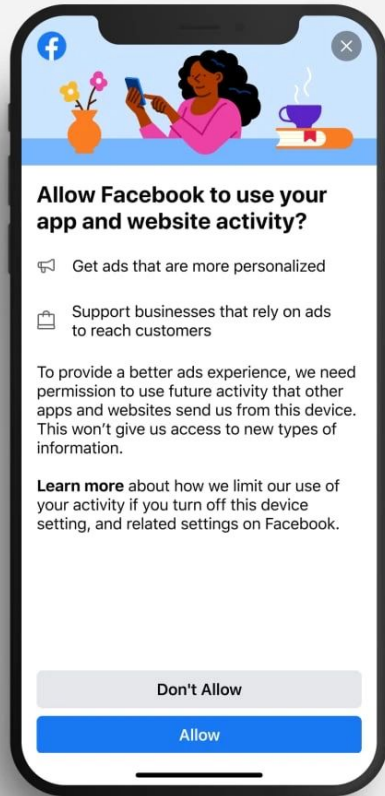




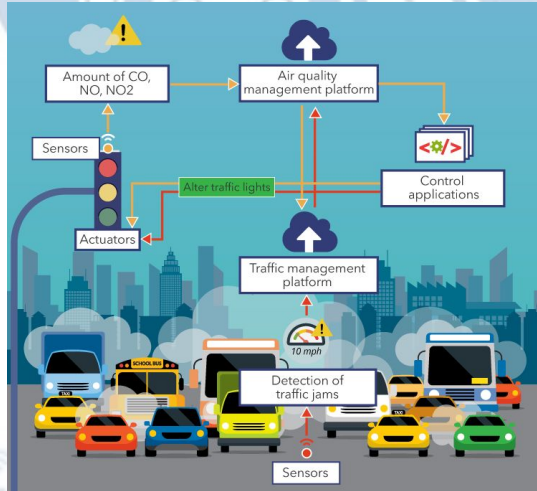
Universal Google Analytics is used to track the following events: *Session start and end; Errors, including errors from the sqlite3 engine, as we need to debug corruption issues reported on the Audacity forum; Usage of effects, sound generators, analysis tools, so we can prioritize future improvements; Usage of file formats for import and export; OS and Audacity versions*

A UUID stored on the local machine would be used to identify sessions and web analytics service **Yandex Metrika** used to estimate daily active users.

Failure to Communicate: AUDACITY 'A massive middle finger' to their longtime user base?



Apple v. Facebook: Advertising CONFLATED with Improving Usability



Can we have smart cities and civic services without privacy harm?

**Collaboratively
Designed and Developed**



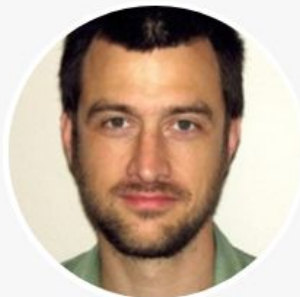
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Lead Developer



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Project Lead



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Privacy Researcher



Dr. Gina Helfrich (she/her)
Outreach & Sustainability



Iain Learmonth (he/him)
Python Developer, SysAdmin



Clean Insights Symposium Extraordinaire (May 2020)

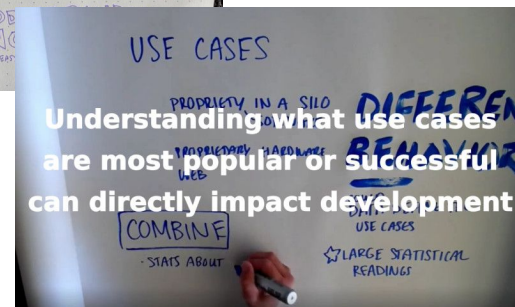


What Should They Know?

🕒 👤

We want to hear from you! Send a short video or audio message answering the following questions about an app you use everyday:

- 1 **What do you think they* know about you?**
*They refers to the company or developer behind the app.
- 2 **What do you think they need to know about you?**
Consider what would be useful for them to understand about how to improve the product or know its impact.
- 3 **Share**
Ways to share:



LEARNINGS *from*

OPEN-SOURCE TOOL TEAMS

about

PRIVACY PRESERVING MEASUREMENT



TunnelBear



OONI



Least Authority
PRIVACY MATTERS



QUBES OS
A PROBABLY SECURE OPERATING SYSTEM



KeePassXC



MISP
Threat Sharing



APRIL 2020

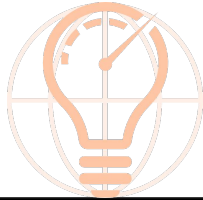
Interviews conducted by Okthanks on behalf of Clean Insights pioneered by Guardian Project, supported by Internews as part of the BASICS project.



Data



Clean Insights
Process



Knowledge
and Privacy!



Toxic Data and
Liability



Data Minimization Take only what you need



Source Aggregation No Needles, Only Haystack



Active Generalization Dilute, Rinse, Repeat



Engaged Transparency Get Consent Early & Often



ONE

Terms and policies are long and hard to understand.

TWO

Too much data is collected without purpose, and *with* bias.

THREE

Consent can be weaponized.

Consent #FAILs

**Clean Insights gives
developers a way to plug their
app or service into a secure,
private measurement platform.**

—



JavaScript SDK

For Progressive Web Apps, Browser Extensions, React apps, Websites and NodeJS Server Apps.

[Get it on Gitlab](#)

[API Docs](#)



Android SDK

Compatible with Java and Kotlin apps, on phones and other devices, across many Android SDKs.

[Get it on Gitlab](#)

[API Docs](#)



Apple SDK

Implemented in Swift compatible with Mobile, Desktop and other Apple platforms.

[Get it on Gitlab](#)

[API Docs](#)



Python SDK

For a variety of uses cases from command line tools, desktops apps and server infrastructure.

[Get it on Gitlab](#)

[API Docs](#)



Matomo Proxy

Service to receive data from clients and pre-process it for enhanced privacy before passing it to Matomo

[Get it on Gitlab](#)



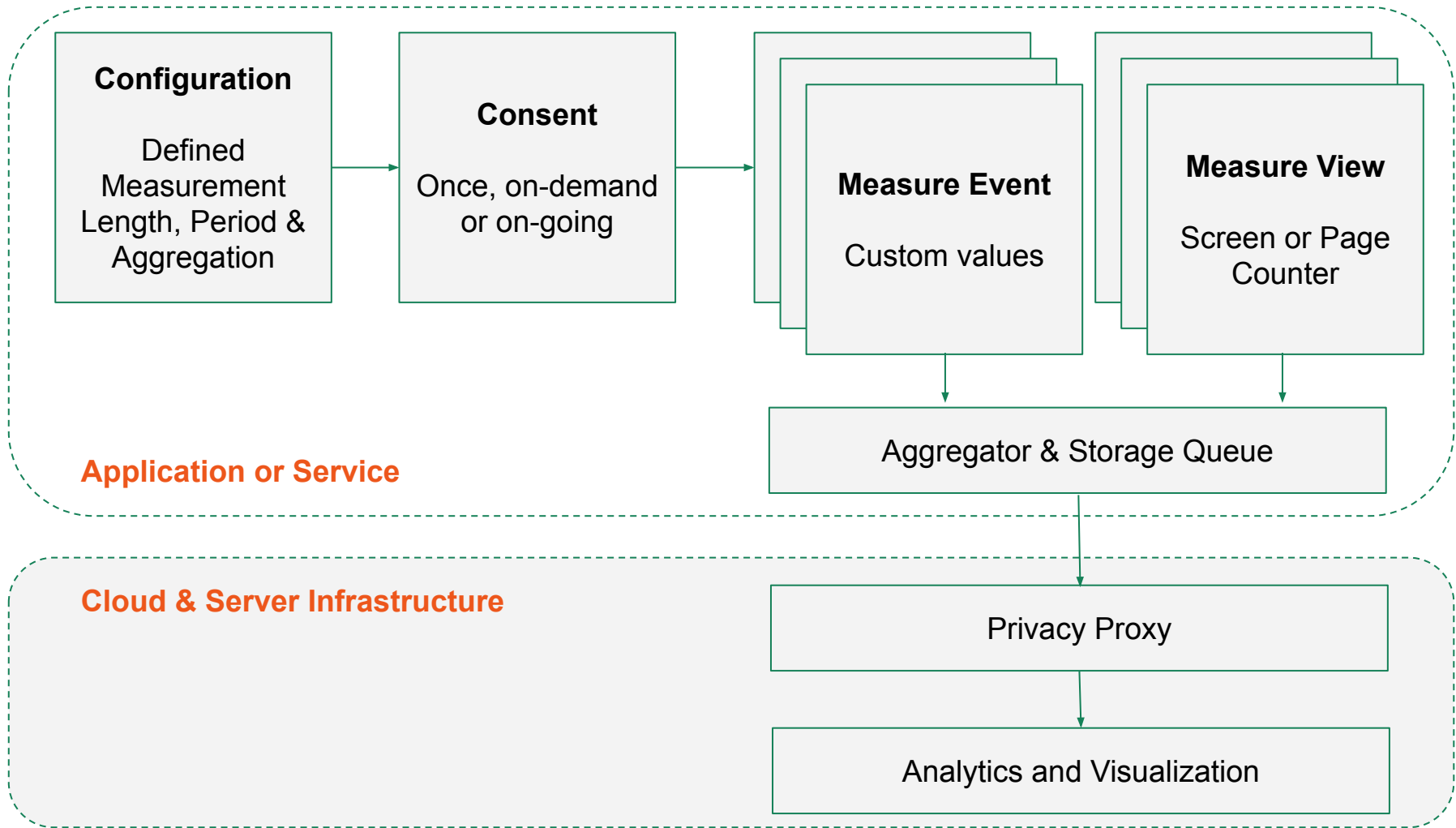
Specification and Design

Collection of specs and docs to provide more depth and detail for your consideration

[Get it on Gitlab](#)

[JSON Schema Docs](#)

<https://gitlab.com/cleaninsights>



1) Configure the toolkit and campaign

```
const {CleanInsights} = require('clean-insights-sdk')

const conf = {
  "server": "http://localhost:8080/ci/cleaninsights.php",
  "siteId": 1,
  "timeout": 5,
  "persistEveryNTimes": 1, // Always persist. Local
  storage should be fast enough to do that.
  "debug": true,
  "campaigns": {
    "test": {
      "start": "2021-01-01T00:00:00-00:00",
      "end": "2021-12-31T23:59:59-00:00",
      "aggregationPeriodLength": 1,
      "numberOfPeriods": 90,
      "onlyRecordOnce": false,
      "eventAggregationRule": "avg"
    }
  }
}

const ci = new CleanInsights(conf)
```

2) Get opt-in consent from the user

```
let consent

if (checkbox.checked) {
  consent = ci.grantCampaign(checkbox.name)
}
else {
  consent = ci.denyCampaign(checkbox.name)
}
```

3) Add event and view measurement in your app

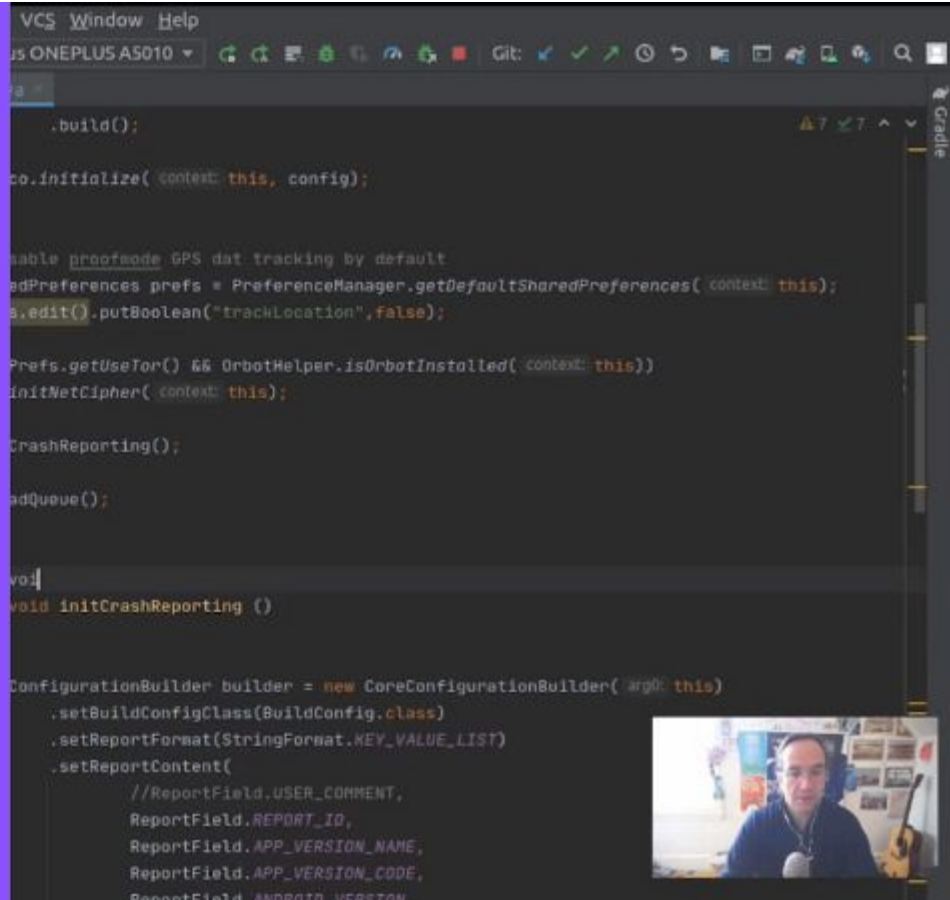
```
let time = Date.now() - start

ci.measureEvent('app-state', 'startup-success', 'test',
  'time-needed', time)
```

4) On defined period, transmit aggregated measurements to server

MEASURE APP USAGE WITHOUT SPYING ON YOUR USERS

INTEGRATING THE
CLEAN INSIGHTS SDK
FOR ANDROID



Case studies, Podcasts, How To's and More at cleaninsights.org



Contribute for 14 days

Contribute data starting February 15, 2021.
After the 14 days, nothing more will be recorded.



We will not

- ✓ Attach personal info to the data
- ✓ Attach your IP address to the data
- ✓ Collect more data without your permission
- ✓ Sell your data



Would you like to contribute?

By contributing data, you give permission for the app to capture measurements.

[See What We Measure](#)

Yes

No

CONFIRM

If you change your mind, you can opt out of this study in your profile.

[We ♥ GDPR! See how we're compliant.](#)



Health checks help us understand why uploads fail.

Contribute your data to be part of the solution.

With your permission, we'll run a check each time you encounter an error while uploading.

Health checks capture

- ✓ Size and type of media
- ✓ Time spent trying
- ✓ Network type
- ✓ Throughput
- ✓ Locale

[Choose what I send >](#)

Allow health checks?

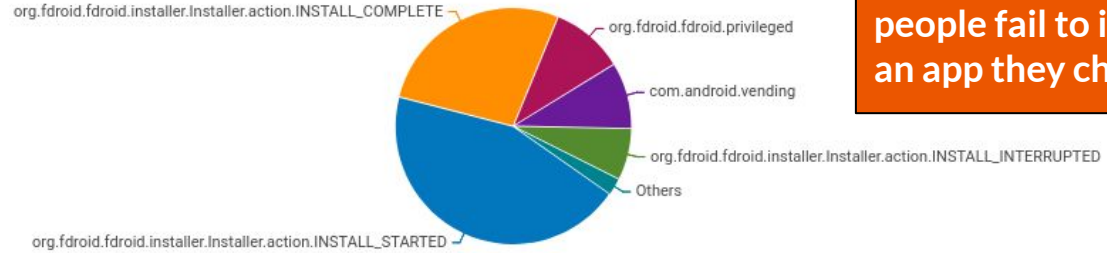
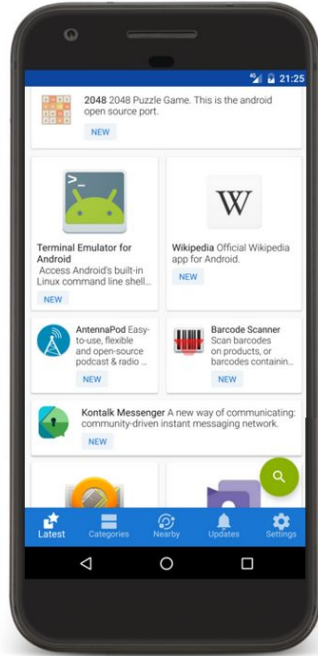
By allowing health checks, you give permission for the app to securely send health check data to the Save team.

Allow for 2 months ▼

NOT NOW

YES

[Learn how we uphold your privacy](#)



How often do people fail to install an app they choose?

com.termux	+106	+392.6%
org.fdroid.fdroid	+11	+100%
cityfreqs.com.pilfershushjammer	+4	+100%
im.vector.alpha	+3	+100%
org.torproject.torbrowser_alpha	+3	+100%
de.schildbach.oeffi	-45	-95.7%
org.thoughtcrime.securesms	-31	-64.6%
com.nextcloud.client		
info.dvkr.screenstream		
com.whatsapp		

What are the most popular apps this week across all repositories?

An open-source decentralized app store can now understand **when their users are having difficulty** and **which apps are popular**.

What new computational privacy techniques can we support?

Which
Computational
Privacy?

All of them!



Noise & Probabilistic Privacy

Introducing... **Pluggable Filters for Clean Insights!**

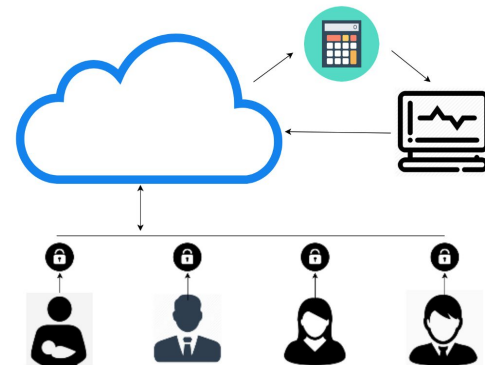
- Measure Event Filter (at time of measurement)
- Batch Measurements Filter (at time of transmission)

Allow researchers, developers, data scientists to provide **easy to integrate add-ons** for Clean Insights, in order to test their work easily, and provide exposure for use by practical applications

 **TensorFlow**Lite



Machine Learning



Secure Multi-Party Computation

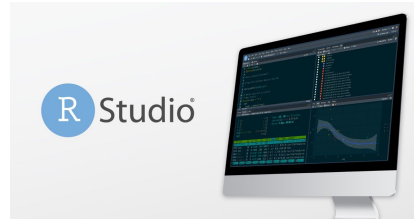
**How can we grow
adoption and awareness?**

How to grow
adoption and
awareness?

More
Interoperability!

Announcing... **Clean Insights Measurement Service**

- Simple Service for Storage of Measurements
- Quickly deployed with Common Infrastructure
- Makes measurement data available in common, open formats (CSV, JSON)
- Allows for easy import to popular data analysis and visualizations solutions



How to grow
adoption and
awareness?

Extra
Outreach!

- Free Developer and UX Support for Product Teams
- Free Hosting at <https://metrics.cleaninsights.org>
- Another Symposium in 2021!
- RightsCon, Developer Forums and More!





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<https://guardianproject.info/contact/>