Freenet Project: Leap over Censorship

The technical part of the solution for freedom of the press in the internet

Arne Babenhauserheide | 25. September 2014
Outline

1. Why?
2. About
3. Applications
4. Tech
5. Appendix
I worry about my child and the Internet all the time, even though she’s too young to have logged on yet. Here’s what I worry about. I worry that 10 or 15 years from now, she will come to me and say ‘Daddy, where were you when they took freedom of the press away from the Internet?’ –Mike Godwin, Electronic Frontier Foundation, “Fear of Freedom” (1995)
Why now? Dark Times

“There is now no shield from forced exposure. . . . The foundation of Groklaw is over. . . . the Internet is over” –Groklaw, Forced Exposure (2013-08-20)
Why now? A New Old Hope

- 1995: At a Crossroad: Surveillance or Freedom.
- 2013: Snowden. Precious time to turn back the wheel.
What is Freenet?

Freenet is the technical part of the solution for freedom of the press in the internet.
THE technical part? Other projects

Pure Transport

- e.g. tor, i2p
  - No offline hosting
  - Vulnerable to DoS
  - Correlation attacks

*This killed the Black Goblin Market*

Hosting with cost

- e.g. TAHOE-LAFS, MaidSafe
  - Fixed storage: When it is full, it is full
  - DoS-resistance?

Pure messaging

- e.g. bitmessage, invisible.im
  - No publishing
  - No offline hosting

Server-based

- e.g. SecureDrop
  - Requires powerful infrastructure
  - DoS-able
  - Timing attacks (correlation)

GNUnet?

- Good, but more filesharing than publishing.

Good content often comes from small publishers.
THE technical part? Freenet

Communication

- persistent pseudonyms
- spam resistance via WoT
- multiple applications (Sone, FMS, Freemail, FlogHelper, ...)

Publishing

- offline hosting
  Join, drop content, leave.
- decaying storage
  lifetime depends on user demand

Proven track record of providing censorship resistant publishing and communication since 2000.
The TECHNICAL part?

Tech alone is not enough
Complete blocking and surveillance is possible.

Politics alone is not enough
If surveillance and censorship are trivial, they will be done.

Tech and Politics
Privacy technology provides the background on which politics can work: Making surveillance and censorship expensive and hard enough that we can win the political battle.

*The NSA surveillance doesn’t scale.*
– Constanze Kurz (*EuroPython 2014*)
Now Concrete

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**Freenet**

**Browsing**
- Browse Freenet
- Upload a Freesite
- Search Freenet

**Filesharing**
- Downloads
- Uploads
- Upload a file

**Friends**
- Connections to friends
- Add a Friend

**Discussion**
- Forums

**Status**
- Messages
- Connections to

**My bookmarks**
- **operhiemi**
  - operhiemi's Blog
- **active link**
  - Freenet development over Freenet
- **Stats**
  - Freenet usage statistics (probe-results)
  - Freenet performance stats (fetch-pull)
- **active link**
  - Infoarchism - the child of Freenet
  - Freenet Meltdown (On the Effect of the Kitiporn-Patch (please get rid of it!))
- **active link**
  - Winterface Updates
  - Winterface Updates
- **Technophob**
  - Technophob

---

- **127.0.0.1:8888**
- **ssh -NL 8888:localhost:8888 <host>**
Who are we?

- 2 donation-funded part time developers: toad and xor.
- About a dozen free time developers.
- Some anonymous contributors.
- Communication mostly over IRC (#freenet @ irc.freenode.net) and FMS (in Freenet).

Abbildung: Some Freenet developers at CTS4. From left to right: ArneBab, toad, leuchtkaefer and digger3.
Current State

When did freenet get so fast? Impressive speed improvements since I last used.

4:24 AM - 23 Sep 2014

1 RETWEET 1 FAVORITE
Project Summary

- Freenet provides essential features for freedom of press.
- Tech creates the background needed to win the political battle.
- Freenet was created 14 years ago and improved constantly.
Applications

- File Hosting
- Site hosting
- Confidential Messaging
- DVCS

- Email
- Microblogging
- Spam resistance
- Forums
File Hosting

Upload a file to Freenet

There are several different ways to upload (insert) a file to Freenet depending on whether you have uploaded the file before and what your security requirements are:

- **Insert a canonical key**: This will always produce the same key for the same file, so is convenient for filesharing. However, if the bad guys can predict what files you are going to insert, they may be able to use this to trace you a lot more easily.

- **Insert a random, safe key**: This is much safer than the first option, but the key will be different every time you or somebody else inserts the key. Use this if you are the original source of some sensitive data.

Upload a file from disk: Browse files...
Or upload a file through the browser (SLOW):
Browse... No file selected. Insert File

**pastebin, file hoster, encrypted chunks, redundancy.**
we call them freesites.
Site creation

Site menu

- Homepage
- 1. Activelink
- 2. First page
- 3. Insertion
- Going further

Easy freesite insertion - maintain yours!

Creating a freesite is very easy, you don't have to be a programmer to write or publish ("insert") your freesite. Publishing one or more freesites can also be fun, getting feedback, seeing your content being linked and published on indexes...

The content: freenet still needs more content, if you don't have a topic for your freesite right now, write something about the last tv-show you watched, your neighbour, your job, a hobby,... it'll get read, and probably improve overall content quality.

Simplicity in mind

Don't care about the design right now, interesting freesites aren't necessarily the good looking ones.

Publishing your freesite will consist of 3 easy steps:
- creating a small picture
- writing a simple html page
- inserting it to freenet.

Next page: First step: create an activelink

Published on: Mar. 2008 - updated on Aug 2010
Easier sites: Sharewiki

Go back to freesite menu

- Save changes
- Save and Preview
- Find keys and save

Name / Title:
ShareWiki freesite

Short description of your freesite:
Write a short description shown in search results here.

Full description, text and links:

Your ShareWiki freesites

- Create a new freesite
- Insert to Freenet
- [for the selected freesites]

<table>
<thead>
<tr>
<th>Name</th>
<th>Status</th>
<th>Link</th>
<th>Preview</th>
</tr>
</thead>
<tbody>
<tr>
<td>ShareWiki freesite</td>
<td>Newly created freesite</td>
<td>(no link yet)</td>
<td>#0</td>
</tr>
</tbody>
</table>

After you have inserted a ShareWiki freesite for the first time, you need to tell others about it for them to find it. The best way is to post the link to your freesite on the site's board on FMS or another forum, and it will get added to the indexes.

Backup and restore (advanced users)

- Get backup of all freesites

The restored freesites will be added after the current ones. Nothing is overwritten. You will experience problem if you have multiple copies of the same freesite, delete all copies but the one you want to keep.

- Browse...
- No file selected
- Restore backup
brick through the starbucks window

Index

an anarchist's flog

Capitalism, Theory and Practice

Permanent link | Tags: capitalism, anarchy
Creation date: 2013-11-10 08:34:34 UTC

It's been a long time since I've been able to write something I'm happy with, but I'm working on an idea that's really been getting to me the past couple weeks, and I HAVE to be able to get it out. It may take a couple posts to get through it though.
Confidential Messaging

**Darknet messaging**
- Talk to friends who run Freenet
- Hide metadata in Freenet traffic

**with file hosting**
- confidential pastebin
- invisible and encrypted like all file uploads before sharing the key

---

My Friends (trusted peers added by me)

Nickname for this node: ArneBab [Change]

<table>
<thead>
<tr>
<th>Status</th>
<th>Name</th>
<th>Trust level</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONNECTED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONNECTED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEVER CONNECTED</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Send N2NTM to selected peers ✉️ Go
Change trust to HIGH ✉️
Change visibility to YES ✉️

Send Node to Node Text Message

Composing N2NTM to send to the following peers:

You may attach a file, but you don't have to.
Upload a file from disk: Browse files...
Send message

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Why? About Applications Tech Appendix

Arne Babenhauserheide – Freenet Project: Leap over Censorship
25. September 2014 21/42
<table>
<thead>
<tr>
<th>Subject</th>
<th>From</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Re: Freenet Umzug</td>
<td>ArneBab <a href="mailto:ArneBab@5ptegyo3ycamufd4n2gqjbc5uscvnjp4bg4zbitung5j57xc33a.freemail">ArneBab@5ptegyo3ycamufd4n2gqjbc5uscvnjp4bg4zbitung5j57xc33a.freemail</a></td>
<td>19.07.2014 17:48:46</td>
</tr>
<tr>
<td>infocalypse-dvcs-over-freenet R1/10</td>
<td>HieronymusCH <a href="mailto:hieronymus.ch@74av12pm6bjiif4zvoph25cfw5whrjegx3mku7qq66ew6tv4aq.freemail">hieronymus.ch@74av12pm6bjiif4zvoph25cfw5whrjegx3mku7qq66ew6tv4aq.freemail</a></td>
<td>18.07.2014 16:07:12</td>
</tr>
<tr>
<td>Freenet Umzug</td>
<td>Vincenzo_Peacock <a href="mailto:Vincenzo_Peacock@hmhv7cbmdudp8ingje5edzqb7ndm6sicx8b8dhx2aryeixwegwscs.freemail">Vincenzo_Peacock@hmhv7cbmdudp8ingje5edzqb7ndm6sicx8b8dhx2aryeixwegwscs.freemail</a></td>
<td>16.07.2014 11:36:37</td>
</tr>
<tr>
<td>Freenet Umzug</td>
<td>Vincenzo_Peacock <a href="mailto:Vincenzo_Peacock@hmhv7cbmdudp8ingje5edzqb7ndm6sicx8b8dhx2aryeixwegwscs.freemail">Vincenzo_Peacock@hmhv7cbmdudp8ingje5edzqb7ndm6sicx8b8dhx2aryeixwegwscs.freemail</a></td>
<td>15.07.2014 20:31:04</td>
</tr>
<tr>
<td>Hello</td>
<td>hisoka11 <a href="mailto:hisoka11@mqapmnmmkkdhhkh2fjcx48u2xxtncxzzqwrmwdv3wffos4frpsa.freemail">hisoka11@mqapmnmmkkdhhkh2fjcx48u2xxtncxzzqwrmwdv3wffos4frpsa.freemail</a></td>
<td>06.07.2014 22:29:58</td>
</tr>
<tr>
<td>Welcome to Freemail</td>
<td>Martin Nyhus <a href="mailto:zidel@b5zswai7ybkmwcofdllz5euw3ifzn5z5m3bzdgpucb26mzqvsfiq.freemail">zidel@b5zswai7ybkmwcofdllz5euw3ifzn5z5m3bzdgpucb26mzqvsfiq.freemail</a></td>
<td>07.06.2014 09:33:34</td>
</tr>
</tbody>
</table>
$ cd /tmp
$ hg clone freenet://USK@j2Mfv0b81MNSslh3Qg9gs1vgQj36whsuosP8ydZq158,Xb~vh8XEXmdwGFca4HAx-ILOZD6AWPVuRzIuLerl4PU,AQACAAE/infocalypse-repo.R1/17
Current USK version: 17
Fetching bundles...
...
Pulled bundle: (-1, 0, 1)
...
Pulled bundle: (0, 9, 0)
...
Pulled bundle: (9, 16, 0)

As basic protection, infocalypse automatically set the username 'anonymous' for commits in this repo, changed the commands 'commit' and 'ci' to fake UTC time and added 'clt' which commits in the local timezone. To change this, edit /tmp/freenet-funding/.hg/hgrc

Mercurial
- infocalypse
- pyFreenetHg (old)

Git
- egit-freenet
Microblogging: Sone

many identities.
about a week ago · [link author] · Comment · Toggle Parser · Like · ✓

Guoray_Sigismund I can put a piece of paper over my webcam, but what can I do about the microphone?
☆ · about a week ago · [link post] · [link author] · Comment · ↑↓ · Like · ✓

Saul_Particle @Guoray_Sigismund You could pull the tiny microphone plug from the board. On notebooks this is sometimes below the keyboard, so you don't have to disassemble too many parts. *At your own risk*
Maybe removing the sound driver (kernel module) could be a first step without having to modify hardware (but you'll lose sound out that way)
about a week ago · [link author] · Comment · Toggle Parser · Like · ✓

NowWhat @Guoray_Sigismund Is the microphone really that big a deal though? I can't imagine most are good at picking up stuff that isn't close to the mic anyway. Also, anybody who could access your microphone is likely able to view it... » show more
about a week ago · [link author] · Comment · Toggle Parser · ↑↓ · Like · ✓

Guoray_Sigismund @Saul_Particle It's one idea, but quite a bit of effort. Also I'd have to do it with phone, tablet, laptop etc.

If a laptop is compromised, surely it could just modprobe the module itself?
5 days ago · [link author] · Comment · Toggle Parser · Like · ✓

Saul_Particle @Guoray_Sigismund Indeed, quite a bit of effort. That's why the mainstream user will not do it.
You also cannot cut the wire on the phone you want to phone with... you'd need a second phone with working microphone (maybe be a €/£ 20 'feature phone') you only switch on if you want to make a call.
I read Jacob Applebaum, while on stage at the Chaos Communication Congress, pulled out a cheap phone and a loose battery from his pocket, put the battery into the phone, sent an SMS, then removed the battery again. « show less
5 days ago · [link author] · Comment · Toggle Parser · Like · ✓

Saul_Particle @Guoray_Sigismund *pocket
5 days ago · [link author] · Comment · Toggle Parser · Like · ✓
Spam resistance

Web of Trust
- Propagating trust
- Generalized
- Used by plugins (i.e. Sone)

FMS
- Explicit Trust Lists
- One Shot IDs

Shared Properties
- CAPTCHAs for introduction
- Take a while to find existing People
## Web of Trust

### Summary

<table>
<thead>
<tr>
<th>Name</th>
<th>Last change</th>
<th>Last insert</th>
<th>Publishes Trustlist</th>
<th>Trusters</th>
<th>Trustees</th>
</tr>
</thead>
<tbody>
<tr>
<td>ArneBab</td>
<td>2014-09-13 00:55:13</td>
<td>2014-09-13 00:55:13</td>
<td>Yes</td>
<td>494</td>
<td>514</td>
</tr>
</tbody>
</table>

### Restore an own identity from Freenet

Use this if you lost your database for some reason but still have your identity's insert URI.

- **Insert URI:** [Insert URI]
- **Restore:** [Restore]
<table>
<thead>
<tr>
<th>New</th>
<th>Forum</th>
<th>Posts</th>
<th>Last Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>bitcoin</td>
<td><a href="http://www.bitcoin.org">www.bitcoin.org</a></td>
<td>25 posts</td>
<td>Last post on 2014-04-30 21:28:23 in 'Dark Wallet' is About to M... by MyID@PRJ1&amp;2LyTZe-k6221...</td>
</tr>
<tr>
<td>encrypted.messages</td>
<td>shared board for private messaging</td>
<td>0 posts</td>
<td></td>
</tr>
<tr>
<td>flip</td>
<td>Freenet Lightweight IRC Program</td>
<td>0 posts</td>
<td></td>
</tr>
<tr>
<td>fms</td>
<td>Freenet Message System</td>
<td>190 posts</td>
<td>Last post on 2014-06-12 18:49:32 in Re: How to autostart FMS on... by <a href="mailto:Ada_Crandell@1Dn5Fj.bpeF1Xh">Ada_Crandell@1Dn5Fj.bpeF1Xh</a>...</td>
</tr>
<tr>
<td>freemail</td>
<td>Freemail</td>
<td>16 posts</td>
<td>Last post on 2014-06-07 12:38:32 in Re: How does it work? by Groove@dNcXSeDF4A50Li-bkQ41p...</td>
</tr>
<tr>
<td>freenet</td>
<td>Discussion about Freenet</td>
<td>680 posts</td>
<td>Last post on 2014-06-15 01:25:21 in Re: problem with freenet va... by oparihem1-nctrrz@LkDnTCJ3...</td>
</tr>
<tr>
<td>freenet.0.7.bugs</td>
<td></td>
<td>0 posts</td>
<td></td>
</tr>
<tr>
<td>freetalk</td>
<td>freetalk</td>
<td>0 posts</td>
<td></td>
</tr>
<tr>
<td>frost.freenet</td>
<td></td>
<td>455 posts</td>
<td>Last post on 2014-06-15 14:03:17 in Re: Patched 1402 by Anonymous</td>
</tr>
<tr>
<td>leak</td>
<td>Leaked documents</td>
<td>3 posts</td>
<td>Last post on 2014-06-06 23:04:44 in Re: [X-post from Frost] Lea... by Yomper@t-R8mLc0eLwMuJnWc0d0Z...</td>
</tr>
<tr>
<td>news</td>
<td>News</td>
<td>241 posts</td>
<td>CRYPTO-GRAM, June 15, 2014 by r_st@A42x-7dBwep1WJcm44xlz... Last post on 2014-06-15 09:38:52 in</td>
</tr>
<tr>
<td>politics</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Comments on the Clearweb

Arne (Drak) Babenhauserheide Testing Freecom: A draketo.de/...

Arne (Drak) Babenhauserheide The Seeker what @David 'Bombe' Roden says 😊

Arne (Drak) Babenhauserheide @David 'Bombe' Roden It would need fast search for URLs — there are nice ways how this can be done, but even without that, this already loads faster than disqus.

See draketo.de/proj/freecom and draketo.de/english/freenet/spam-resistant-decentral-comments
Language Bindings

- **Java - in core**
  
  https://github.com/freenet/fred

- **Plugin Writing:**
  
  wiki.freenetproject.org/Plugin_development_tutorial

- **Freenet Client Protocol:**
  
  wiki.freenetproject.org/FCPv2

- **Python - pyFreenet**
  
  https://github.com/freenet/lib-pyFreenet

- **Perl*: https://github.com/freenet/lib-perlFreenet


*: I did not test these, yet. I don’t know whether they actually work.
Application Summary

- Do you miss anything?
- Join us and create it!
Why not as big as tor?

Focus

- Hard problems solved, but not polished
- Lots of low hanging fruit

Money

- Freenet: 2 part time developers
- Tor: 20 full time developers

Tor is military funded. Freenet does not help hack foreign servers. Do the math :)

Fundraising

We try to get more focus and money.
Tech

- capabilities
- routing
- simulation
About the tech

Datastore
- decentralized on the computers of users
- encrypted chunks of files key (URL) to assemble, decrypt and identify
- anonymous pseudonyms public/private key publishing
- lifetime by demand

Routing
- small world: scale free
- optional friend-to-friend (Darknet)
- location: [0..1) for each file chunk and node
- find route: from node to file chunk
- forward data: travels along the route

Applications
- subscribe to keys: 30s to 30 min round trip time.
- base for applications: Websites, Forums, Microblogging, Chat.
- spam resistance: Web of Trust (2 implementations).
Small World Routing

Freenet Routing

Abbildung: Finding the route to a chunk of data. Greedy Routing on Scale Free structure.
Network structure optimization

Opennet
- Optimize peer-connections via success-metric
- Distance Constraint: maximum number of long connections

Darknet (friend-to-friend)
- Assume small world connections to people known in real life
- Reconstruct the structure by swapping locations
Routing Simulation

Random Routing

Abbildung: 10 paths between locations on a random network with 1000 nodes. Average path length: 105.

Small World Routing

Abbildung: 10 paths between locations on a small world network with 1000 nodes. Average path length: 5.
Link lengths in the Simulations

Abbildung: Link length distribution in the simulated small world and random networks.
Abbildung: Link length distribution in Freenet. The green line would be an ideal network. Blue would be a random network. Red is the measured distribution. Randomization from local requests, churn and inhomogenity in the network skew the distribution.
Additional notes

**Performance**
- Upload 150 MiB in 1 day
- Download 1 GiB in 1 day

*With max bandwidth set to 80kBps and average 50-60kBps.*

**Optimizations**
- FOAF routing
- Caching
- ...

*Missing in the simulation.*

**Capacity**

![Capacity graph](chart.png)
Tech Summary

- Small World Structure
- Measured fits simulated
- It scales
Summary

Freenet is the technical part of the solution for freedom of the press in the internet.

- Decentral, anonymous datastore.
- Many applications.
- Started in 2000.
- Scales.

Fundraising

We want to raise money to make Freenet perfect for Journalists.

Info: draketo.de/proj/freenet-funding
Get Freenet!

freenetproject.org

This presentation: github.com/ArneBab/freenet-fundraising
Donate: freenetproject.org/donate.html
Bitcoin: 1966U1pj15tLxPXZ19U48c99EJDkdXeqb
Contribute

- Write Code
- Run a Node
- Build the Darknet
- Spread the Word
Write Code

- https://github.com/freenet
- https://freenetproject.org/developer.html
- IRC: #freenet @ irc.freenode.net
Run a node

Running a Node

```
wget https://freenetproject.org/jnlp/freenet_installer.jar -O installer.jar
de java -jar installer.jar -console
# (follow the prompts)
# info: https://freenetproject.org/download.html
./run.sh # { console | start | stop | restart | status | dump }
```

As Seednode

simple howto found on

https://piratenpad.de/p/pirates4freenet
Build the Darknet

Connect to a Friend

Enter node reference directly:

OR enter the URL of the node reference here:

OR browse for the node reference file here:

How much do you trust this friend? A higher trust level will improve performance for you and your friend. But this makes you more vulnerable if they are untrustworthy, or their computer is hacked or seized.

- HIGH: I trust my friend, and I trust his ability to secure his computer. Share as much information as possible to maximise performance.
- NORMAL: I trust my friend a little. Share some information, but take some precautions. Moderate performance gain.
- LOW: I don't trust my friend. Share as little as possible. Lower performance. Note that this is still safer than connecting to strangers in almost all cases.

Do you want your other friends to be able to see and connect to this friend? If you let your friends see this friend, and this friend see your friends, it will improve performance significantly. However you might not want your other friends to know about this one (but bear in mind that anyone who can see your internet connection might be able to link you). (S)he can also disable being seen by your friends.

- YES: Tell my other friends about this friend, and tell this friend about my other friends. They will be able to connect immediately even if I am offline, improving performance significantly.
- NAME ONLY: Tell this friend our other friends' nicknames, and tell our other friends this friend's nicknames, so they can connect if they know each other.
- NO: Don't tell my friends about this friend, and don't let them tell their other friends about me: they are a secret contact.

Enter description:

Add

My Node Reference (as text)

Nickname for this node: ArneBab [Change]
Spread the Word

Because we are crappy at PR.

These slides:

draketo.de/proj/freenet-funding/slides.pdf
github.com/ArneBab/freenet-fundraising
Summary

- Write Code
- Run a Node
- Build the Darknet
- Spread the Word
Fundraising

- Goal
- What we need
- 2 year vision
Goal: Journalists and Whistleblowers

- maintain journalist site
- contact a journalist via the site
- traceless persistent pseudonym (QR or written key)
- Freenet-stick, preseeded
- invisible darknet (steganography)
- grow the darknet over mobile
What we need

**Minimal**
- 2 coders
  - one part time
- 1 outreach
- 1 coordinator and coder
- 2 years
- 620k Euro

**Good**
- 2 coders
- 1 UX
- 1 outreach
- 1 coordinator
- 3 years
- 1.5M Euro

**Ideal**
- 3 coders
- 2 UX
- 2 outreach
- 1 coordinator
- 5 years
- 3.8M Euro

If you are in contact with human rights groups who might want to fund us, please get in touch!
2 year vision

Nick, Journalist
- Republish on Freenet
- Email from Janice
- Ask to verify the leak
- Help her keep out of trouble
- Run the story

Janice, Whistleblower
- Use Freenet in cafés
- Select Nick by site
- Send leaked documents
- Reply to questions
- Lie Low
- Leak again

All already possible, but not easy.
Going further

**publication and collaboration:**
- platform for political bloggers
- social network with privacy by design
- programming platform

**backend for the web:**
- comment system for websites
- exchanging files with friends

**harder to detect and block:**
- hide data in VoIP stream
- hiding data in email attachments
- pre-filled USB-sticks to exchange with colleagues and friends
- ... and many more - see Steganography
What is in it for me?

Secure Environment
If it’s safe enough for whistleblowers, it’s safe enough to give you privacy.

Hide in the Forest
The more people use Freenet, the safer it gets for everyone. Bigger anonymity set.

Privacy by Default
Easy enough for everyday communication. Journalists need that.
Fundraising Summary

- Freenet for Journalists and Whistleblowers
- Already possible but not easy
- Finance a group of full time Freenet hackers
- 3-8 people, 2-5 years
- 620k Euro to 3.8M Euro