

Anonymity and Censorship: The Tor Network

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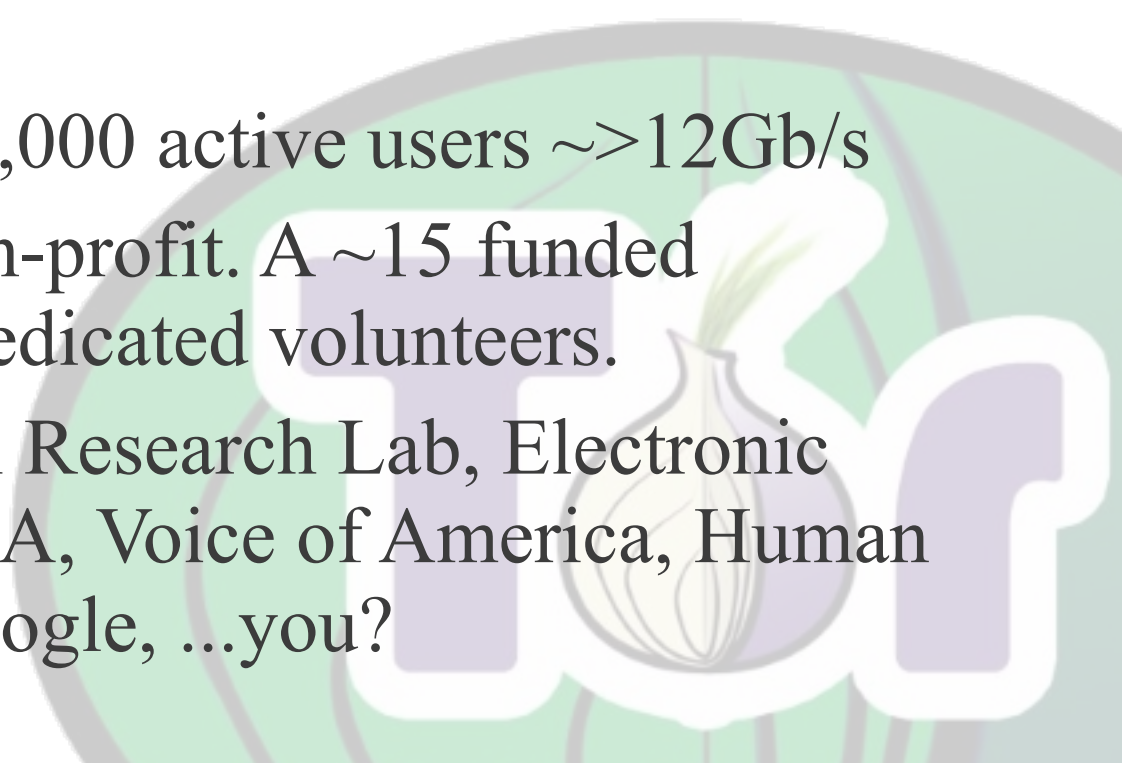
The Tor Project

<https://www.torproject.org/>

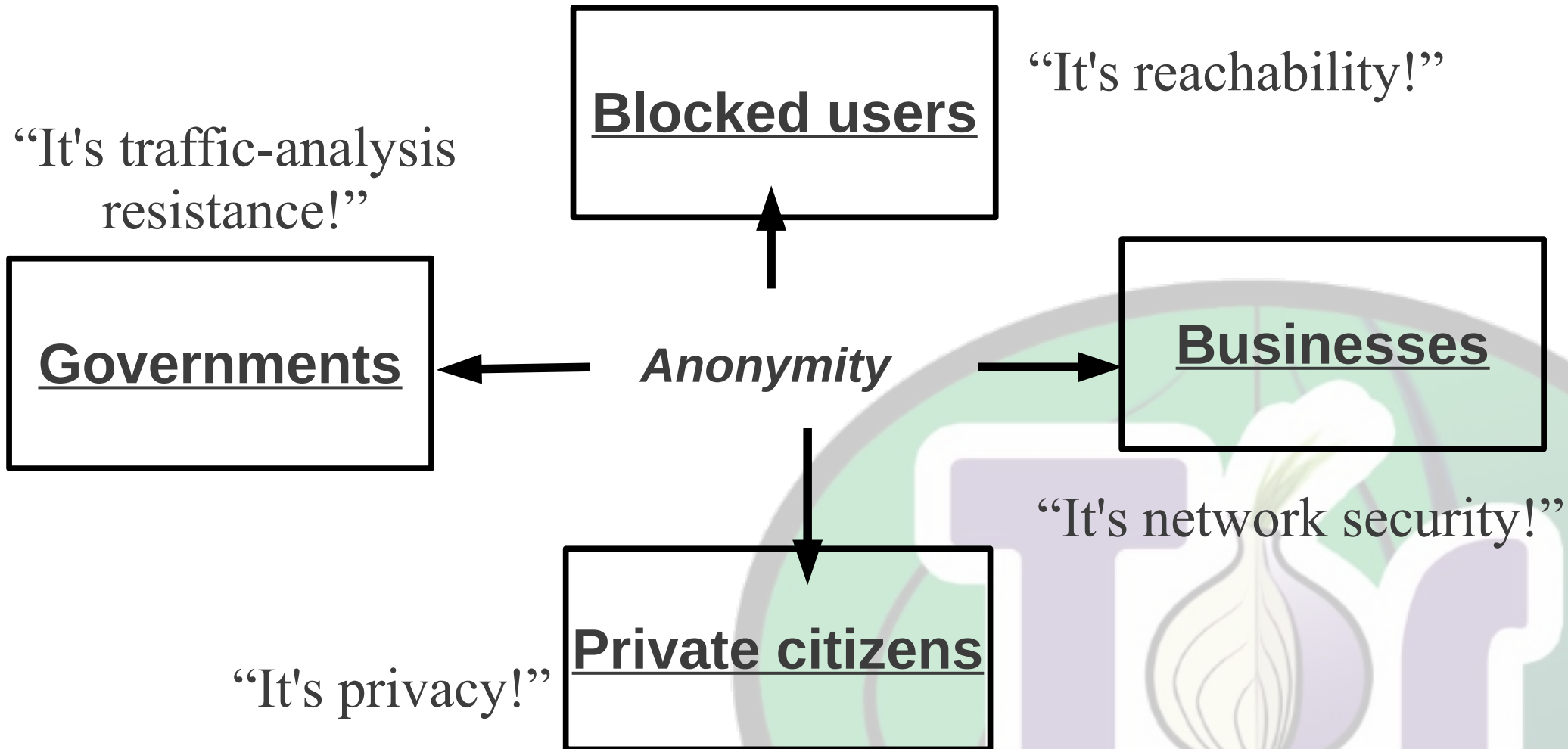


Tor: Big Picture

- Freely available (Open Source), unencumbered.
- Comes with a spec and full documentation: Dresden, Aachen, Yale groups implemented their own compatible Java Tor clients; researchers use it to study anonymity. One person implemented it entirely on his own in a few weeks (!)
- ~3000 active relays ~400,000 active users ~>12Gb/s
- Official US 501(c)(3) non-profit. A ~15 funded developers, ~100 more dedicated volunteers.
- Funding from U.S. Naval Research Lab, Electronic Frontier Foundation, SIDA, Voice of America, Human Rights Watch, NLnet, Google, ...you?



Anonymity serves different interests for different user groups.



خطراً!



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عذرا، هذا الموقع غير متاح في دولة الإمارات العربية المتحدة.
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<http://torproject.org/>

<http://torproject.org/>

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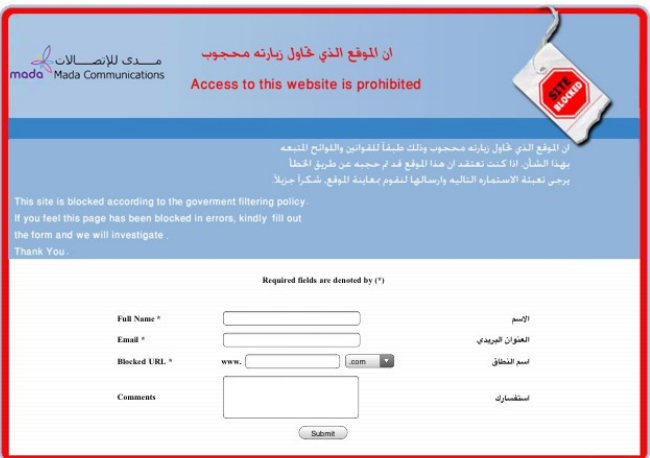
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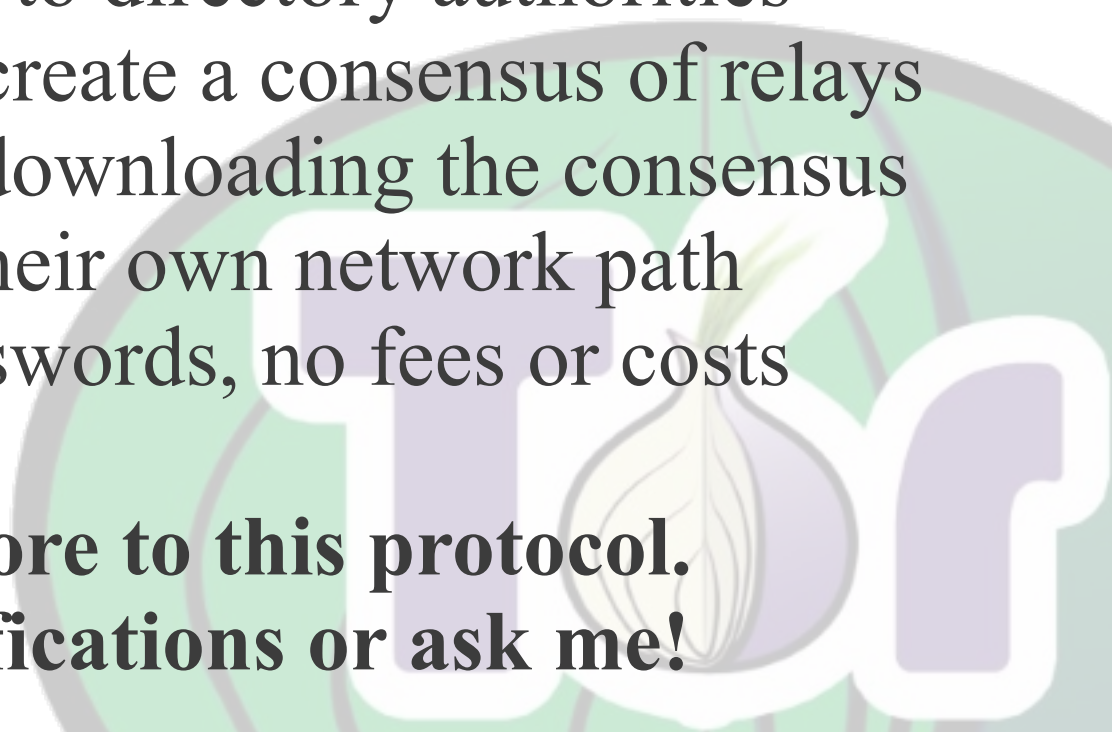
A crash course in Tor

Tor is a peer to peer network with a focus on anonymity, privacy and security.

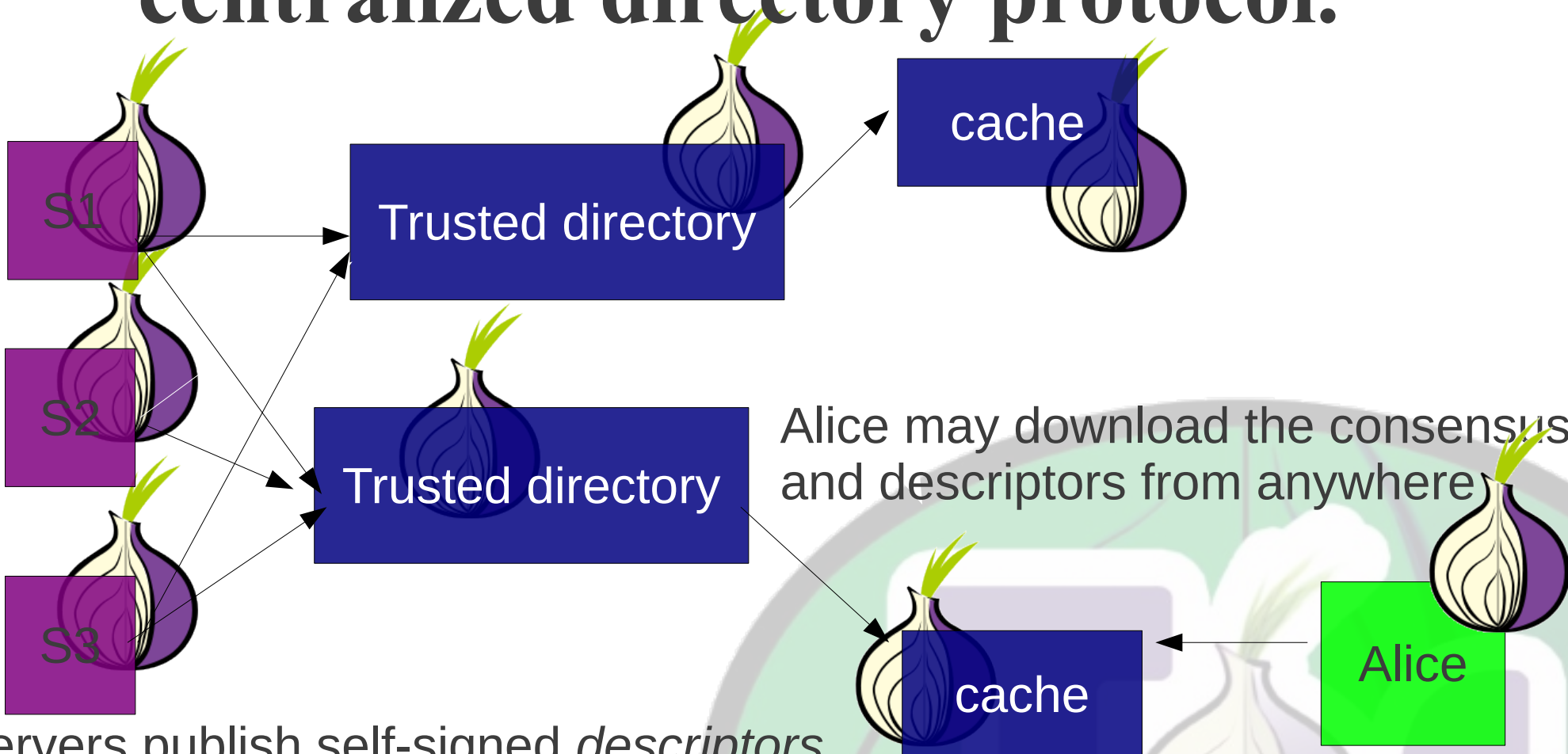
Tor is used for *anonymous* TCP connections

- Tor relays publish to directory authorities
- Directory authorities create a consensus of relays
- Clients bootstrap by downloading the consensus
 - Clients choose their own network path
- No logins, no passwords, no fees or costs

**There's a lot more to this protocol.
Read our specifications or ask me!**



The basic Tor design uses a simple centralized directory protocol.

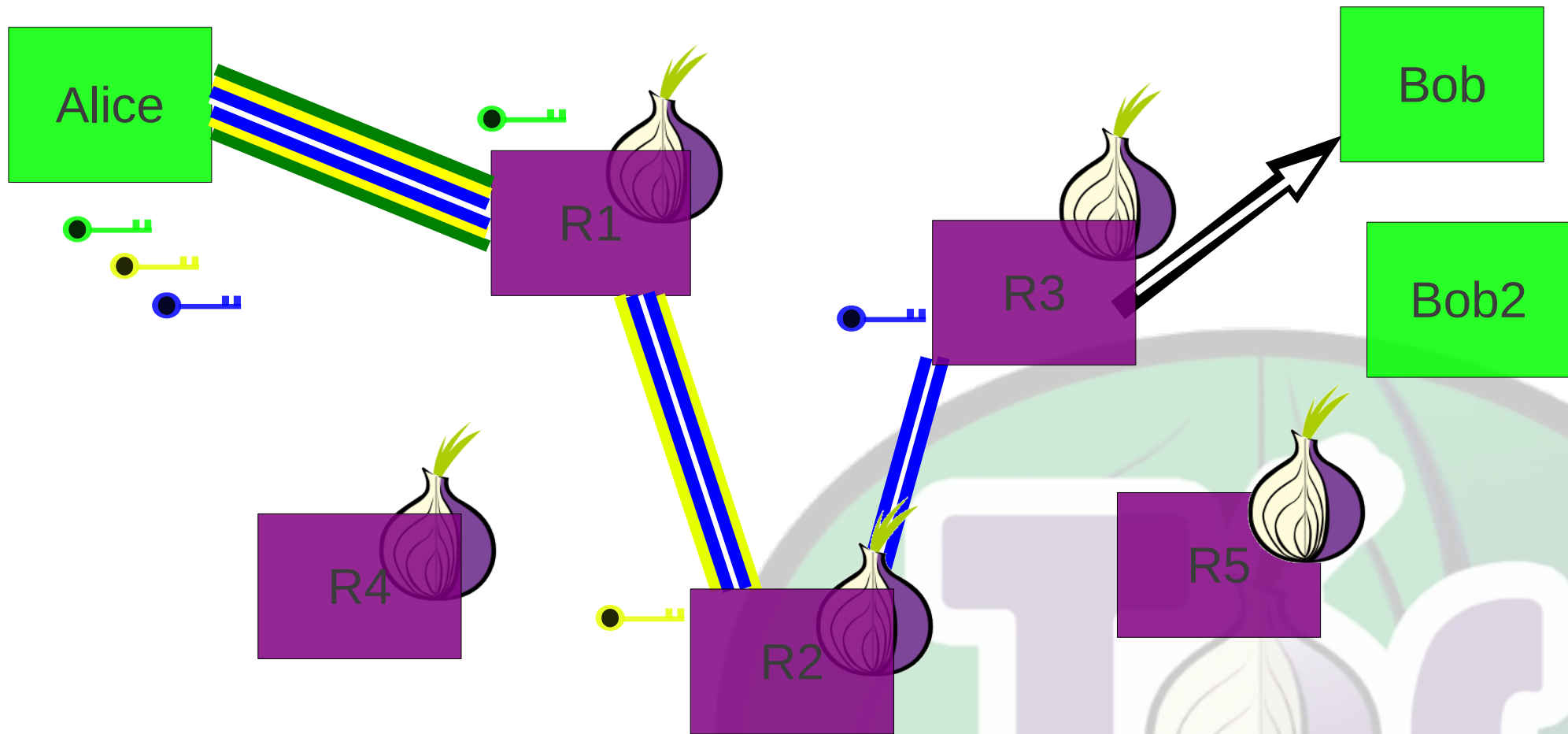


Servers publish self-signed *descriptors*.
We call these servers *relays*.

Alice may download the consensus
and descriptors from anywhere

Authorities
publish a signed *consensus*
list of all relay descriptors

Tor avoids the single hop paradigm; This is Privacy by Design!

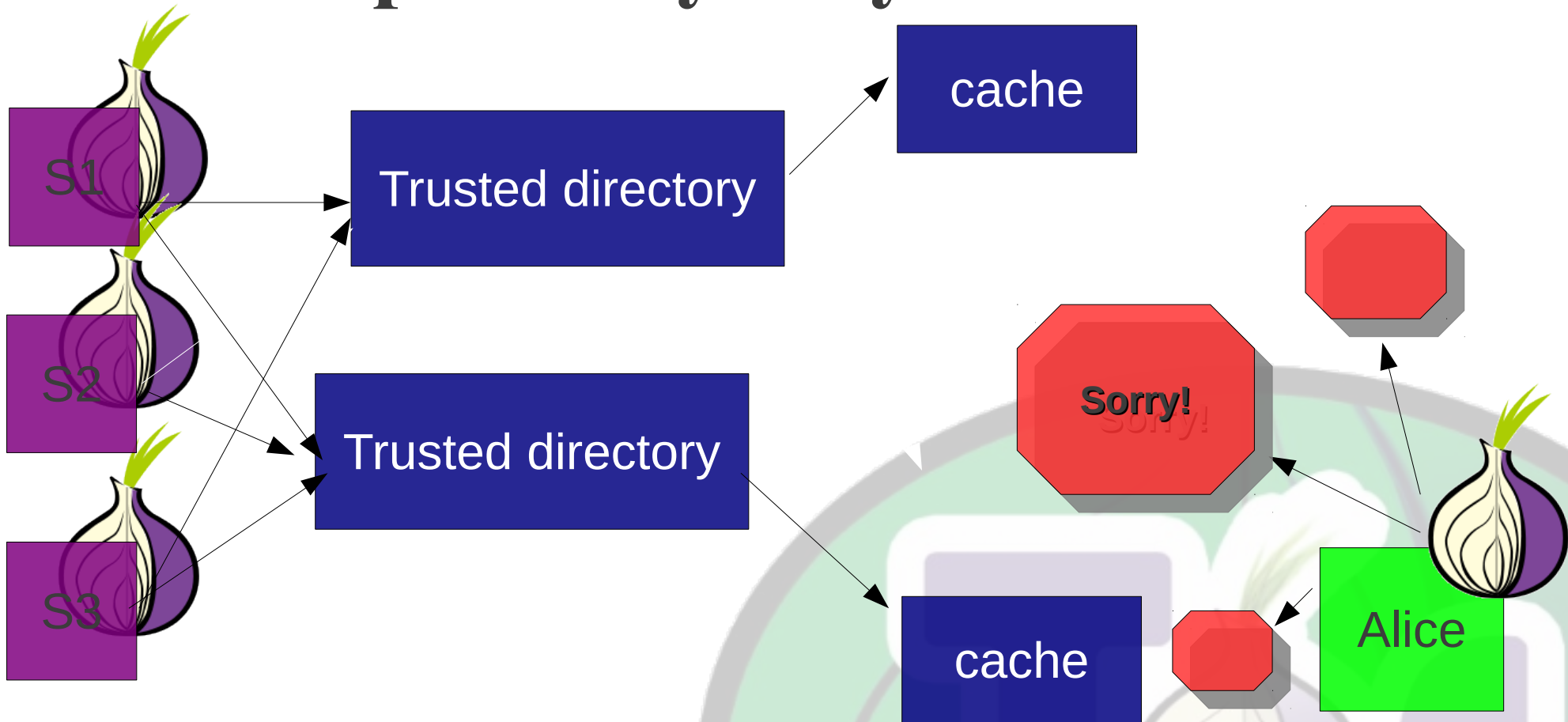


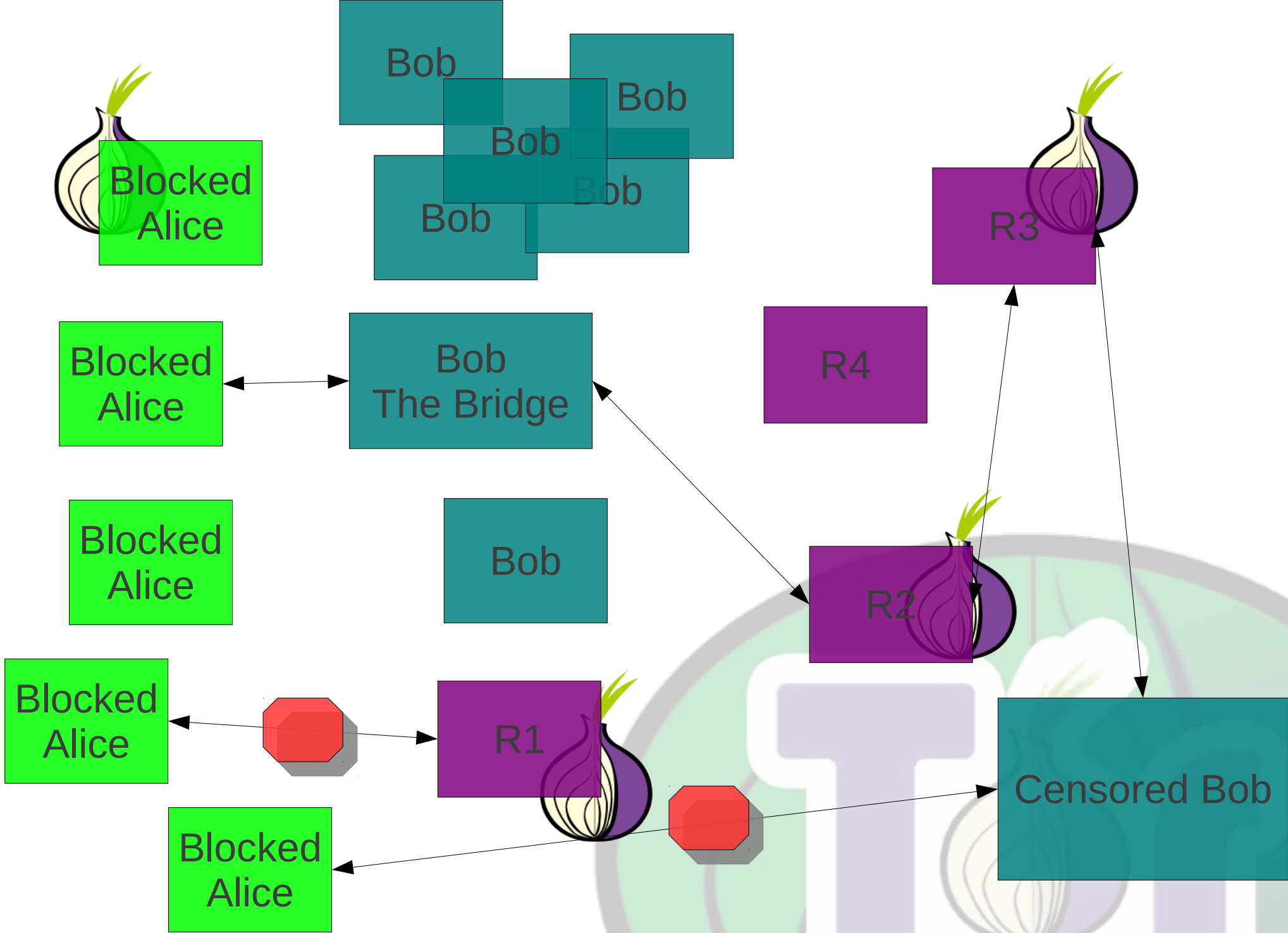
Why bother with all of this?

A single hop proxy *is* a single point of failure. Its use allows for blocking, risks temptation of abuse untrusted operators, or worse: allows for wiretaps to surveil unsuspecting or even ***targeted*** users.

At best a single hop proxy is encrypted, not monitored and the administrator is trusted. Often these proxies are blocked, **not encrypted**, **monitored by multiple parties**, and the administrator is able to **target users**.

The basic Tor design is also exceptionally easy to block.





We have an ecosystem

- I'd encourage everyone to look at the anonbib:
 - <http://freehaven.net/anonbib/>
- Submit papers to FOCI:
 - <https://www.usenix.org/conference/foci12/>
- Check out our code:
 - <https://gitweb.torproject.org/>



We have the agency for change

If you'd like to directly help fight censorship, attacks on freedom of expression, attacks on historical events – you don't have to wait:

Run a Tor bridge or a Tor relay today.

You will directly help a person **who would otherwise be censored**. You do not have to remain silent about your discontent. **You are empowered** to enable others.

