



*- a hobby project with a billion users*

Daniel Stenberg,  
Google Tech Talk  
August 26<sup>th</sup> 2015





This is a story  
about an open  
source project



# Daniel Stenberg



# mozilla

Email: [daniel@haxx.se](mailto:daniel@haxx.se)  
Twitter: [@bagder](https://twitter.com/bagder)  
Web: [daniel.haxx.se](http://daniel.haxx.se)  
Blog: [daniel.haxx.se/blog](http://daniel.haxx.se/blog)

Please ask!

...just maybe everything isn't crystal clear at once.





cURL is

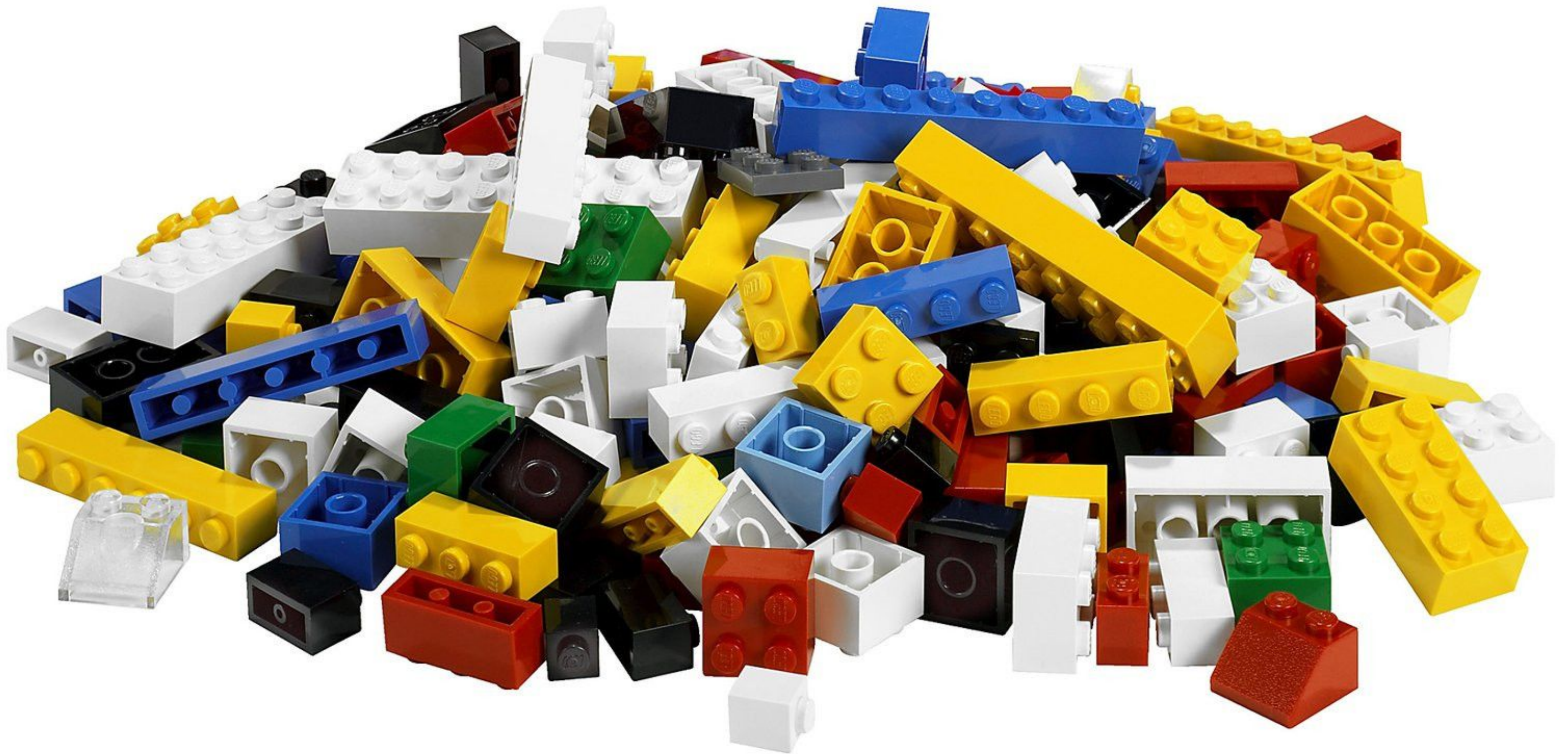
*An open source project  
that makes a command  
line tool and a library for  
transferring data using  
Internet protocols*



Let the story begin



First there was nothing









... became curl 1998

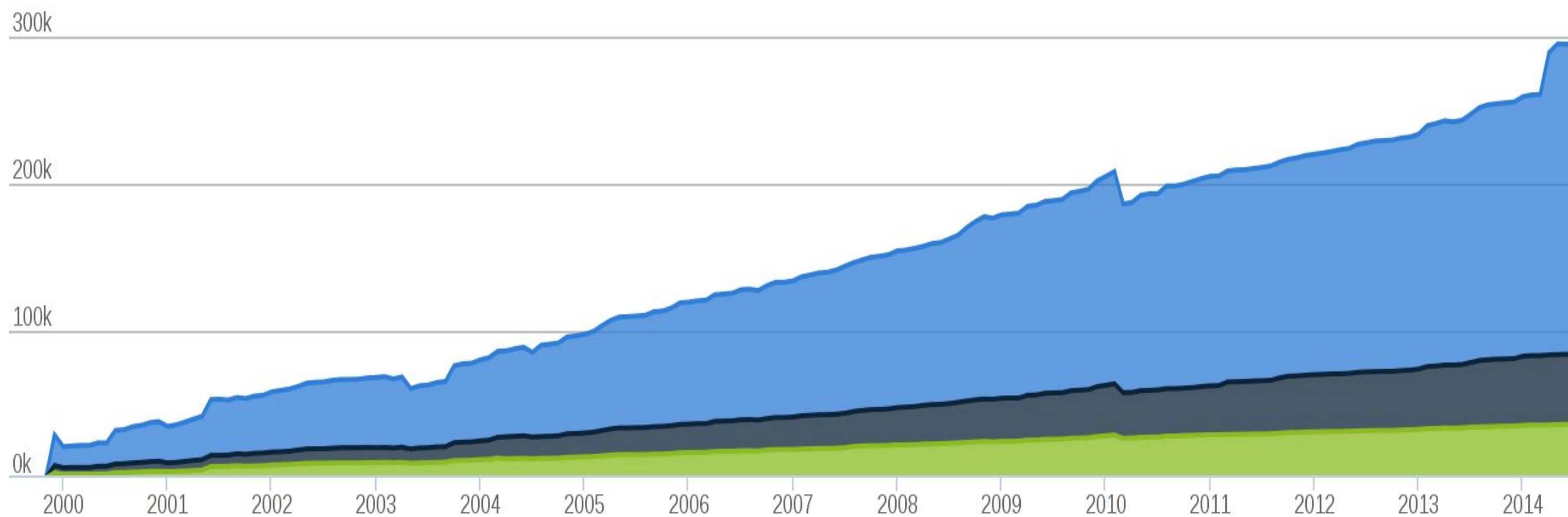
HTTP

Gopher

FTP



... and time passed...





# 2015

DICT, FILE, FTP, FTPS, Gopher, HTTP, HTTPS, IMAP, IMAPS, LDAP, LDAPS, POP3, POP3S, RTMP, RTSP, SCP, SFTP, SMB, SMBS, SMTP, SMTPS, Telnet and TFTP

TLS certificates, HTTP POST, HTTP PUT, FTP uploading, HTTP form based upload, proxies, cookies, authentication (Basic, Digest, NTLM, Negotiate, Kerberos), HTTP/2, happy eyeballs, file transfer resume, proxy tunneling and much more





**one billion users**



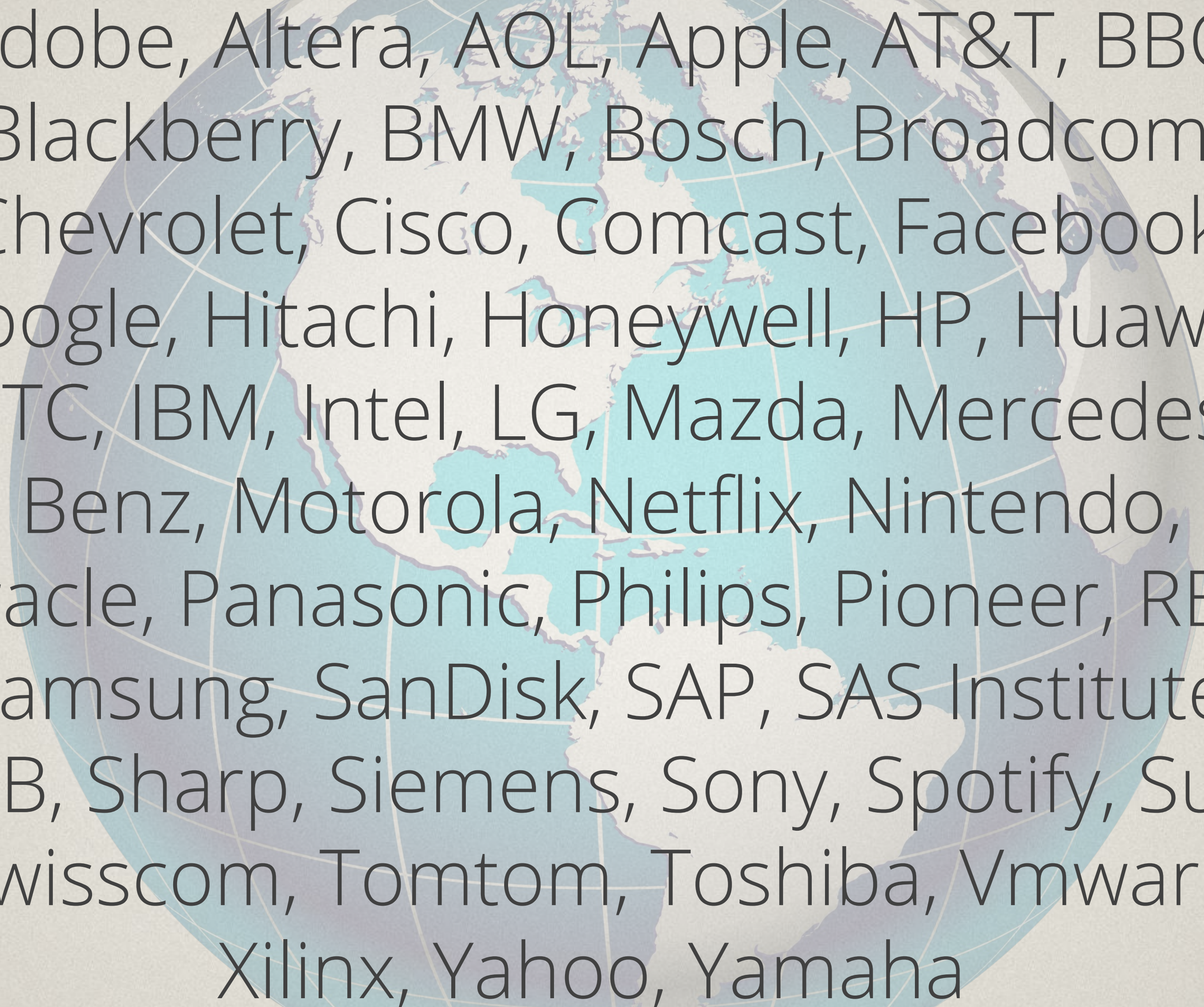


**a bunch of users**



16 Software, 1C Company, ACCESS, Actuate, Adara Networks, AddLive, Adobe, Aditiva, Adknowledge, alaTEST, Altera, Altova, Ananse Productions, AOL, Apple, Archivas, ATX, AT&T, Autodesk, Avaya, BBC, Bietfuchs, Biicode, Bitcartel, Blackberry, Blizzard, Bloglines.com, Blue Digits, Blue Security, BMW, Bosch, Broadcom, bwin, Candela Technologies, Canonical, Carestream Health, Cascade Data Systems, CatchFIRE Systems, CERN, CheckPoint, Chevrolet, Chronos, Cisco, Citrix, CLAAS Tractor SAS, Comcast, Contactor, CounterPath, Cybernetica, Datasphere, Datordax, Denon, DesignQuotes, Device Scape, Digium, EdelWeb, EFS Technology, Eiffel Software, Electronic Arts, Emsoft, Enigma Software, Euroling, Ergon Informatik, ESRI, etikett.de, www.expandtalk.se, Eye-Fi, E2E Technologies Ltd, F-Secure, Facebook, FalconView, Feitian Technologies, FriendFeed, FMWebschool, GeekDrop, GRIN, Groopex, Grooveshark, focuseek, Games Workshop, Garmin, GipsyMedia, Google, Haxx, HPC, Heynow Software, Hitachi, Honeywell, HP, Huawei, HTC, inSORS, IBM, ideelabor.ee, Idruna Software Inc, Id Software, Infomedia Business Systems Division, Informatica, Information Handling Services, Insignia, Instagram, Intel, Internet Security Systems, Intra2net AG, isee systems, Jajja Communications, Jawbone, JET, JLynx Software, Kajala Group Ltd., Kaleidescape, Karelia, Kaseya, kencast inc, Kerio Technologies, Kongsberg Spacetec, LassoSoft, lastpass, LG, LifeSize Software, Linden Lab, Machina Networks, Macromates, Macromedia, Magic TV, Matrix Science, Mandiant, MandrakeSoft, Marantz, Mazda, McAfee, MediaAnalys, Mellanox, Mercedes-Benz, Metaio, Micromuse Inc., Miniclip, Modio, MokaFive, Inc, Memento, Moodstocks, Motorola, Mozilla, Music FX Live, Nagarsoft, Neptune Labs, Nest, Netflix, Netgear, Netiq, Network Mail, Neuros, Nintendo, NoDesign, Nortel, Office2office Plc, OKTET Labs Ltd, One Laptop Per Child, Onkyo, On Technology, OpenLogic, opsmate, Optimsys, Oracle, Outrider, Palm, Panasonic, Pandigital, Parrot, Passiv Systems, Pelco, Philips, Pioneer, Plogue, Pocket Gems, Polaroid Corporation, Polycom, Pure Storage, Quest, QVD, QNX, RBS, Research in Motion, Retarus Network Services GmbH, Riverbed, ROBLOX, Rockstar Games, Rolltech, Inc, RSA Security Inc, RSSS, Samsung, SanDisk, SAP, SAS Institute, SEB, Sharp, Siemens, Silicon Landmark, Sjphone, Slingbox, SmithMicro, Sony, Sophos, Source Remoting, Splunk, Spotify, Steambird, Sun, SurfEasy Inc, Swisscom, Symantec, System Garden, Tango, tasvideos, Tellabs, Telstra, Telvue, Thumbtack, Tilgin, Tomtom, ToolAware, Toshiba, Trend Micro, Tribalmedia, Trion Worlds, Tiempo de Espera, Unisys, UniPlot, Unity3d, ustream, Valve, VETport, Vivisimo, Vmware, Voddler, Volition Inc, Vuo, Wump Research, Xilinx, XonaSoftware, Yahoo, Yamaha, Yubico, Zimbra, Zixcorp, Zonar Systems, Zyxel, Z2,





Adobe, Altera, AOL, Apple, AT&T, BBC,  
Blackberry, BMW, Bosch, Broadcom,  
Chevrolet, Cisco, Comcast, Facebook,  
Google, Hitachi, Honeywell, HP, Huawei,  
HTC, IBM, Intel, LG, Mazda, Mercedes-  
Benz, Motorola, Netflix, Nintendo,  
Oracle, Panasonic, Philips, Pioneer, RBS,  
Samsung, SanDisk, SAP, SAS Institute,  
SEB, Sharp, Siemens, Sony, Spotify, Sun,  
Swisscom, Tomtom, Toshiba, Vmware,  
Xilinx, Yahoo, Yamaha



In all these things!

Mac OS X

TVs

Iphones and Ipads

Other phones

Linux

Games

Version control  
systems

Cars

PHP sites

Set-top boxes

Audio equipment

Bluray players

Printers

Firefox crash  
reporter

Sites: Facebook,  
Yahoo, ...

Your next device





*Everyone here likely has a device using libcurl.*

*Probably even more than one!*



# Why use curl?

Internet doesn't follow specs  
Open source  
MIT licensed  
Simple and **stable** API  
Yet **powerful** API  
HTTP library when libwww was the only choice  
**C library** is still most portable

**Bindings** for every language  
Decent **documentation**  
Decent **stability**  
Supports all the protocols  
**Fast**  
Allows disabling parts for footprint shaving  
Many **TLS backends**  
Small devices still like C



What is success ?

Is success important?

Whose success?







LIBCURL COPYRIGHT AND PERMISSION NOTICE. LibCurl Copyright © 1996 - 2013, Daniel Stenberg, <daniel@haxx.se>. All rights reserved. Permission to use, copy, modify, and distribute the LibCurl 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 LIBCURL SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE. Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization of the copyright holder.

Daniel Stenberg ( library )

Copyright © 1996 - 2011, Daniel Stenberg, <daniel@haxx.se>.

All rights reserved.

Permission to use, copy, modify, and 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", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,





How is all this  
accomplished?



# the project

curl and libcurl

Transfer data using internet application protocols

Stable products

Stable API

Maximum portability

MIT



A group of children are participating in a tug-of-war competition on a grassy field. They are all leaning back, pulling on a thick rope. The children are wearing various casual clothes like t-shirts and shorts. The background is slightly blurred, showing more children and a fence.

Contributors

**1300 in total**

**30-40 per release**

**Increasing**

**Small core team**

**Volunteers**





Everything is in  
the public




A photograph of a makeshift computer workstation. A large cardboard box serves as the desk, with a computer monitor, keyboard, and mouse placed on top. A black folding chair is positioned in front of the box. To the right, a black computer tower with a transparent side panel is visible, showing internal components. The setup is on a red carpeted floor against a light-colored wall with some posters and a string of lights.

**on github**

**a few have push  
rights**





# mailing lists





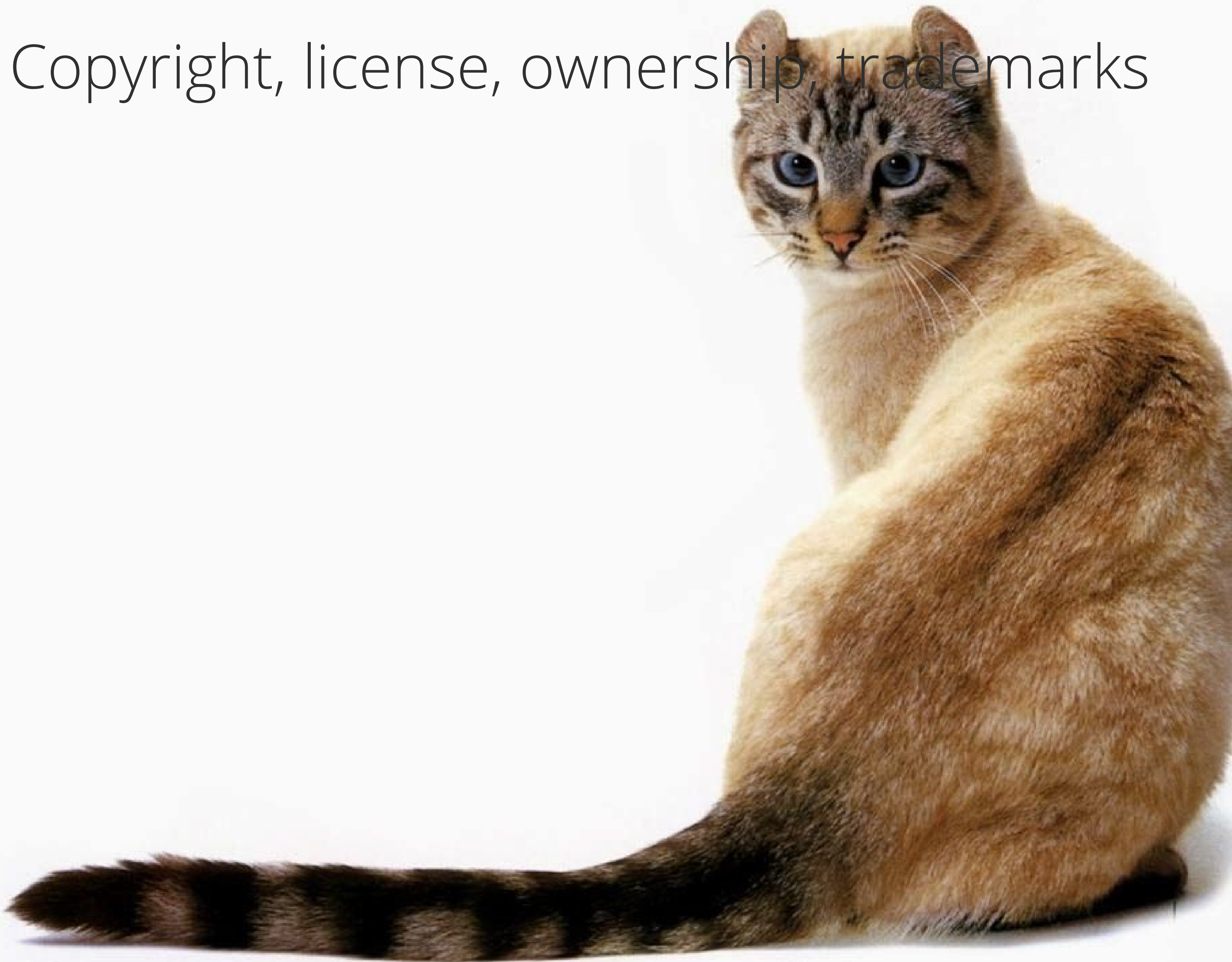
Will curl give us the next  
heartbleed?

Will curl get us sued on  
patent claims?

Are contributors risking  
getting sued?



Copyright, license, ownership, trademarks





# Copyright, license, ownership, trademarks

Daniel owns most copyrights

Larger contributions may get its own copyright claim

We assume donors have the right to hand over their code submissions

The license is fixed and will remain forever

We have no trademarks but there is an American trademark registered for “curl”

Individual contributors to the project contribute on their own free will



# Who pays



Spare time hackers

Company paid contributors

Company paid feature development





Let's make it personal

This is the lead  
developer in this project



# This is my primary hobby

On average, I work two hours on curl per day

Every day of the week, every week of the year

Since 1998

Part time paid by Mozilla since 2014

12,000 spare time hours and counting

24,000 emails sent

15,000 commits



# Why I do it?

I'm enjoying creating something that is appreciated by others. Many others.

I want to make curl as good as possible

Everyone needs a hobby



It's the most fun I can  
imagine





Future

No, it truly never gets done

Protocols **keep evolving**

Open source code **survives**

There's **no slow-down** in sight

You can **help!**



Thank you!



# curl

<http://curl.haxx.se/>





Doing good is part of our code



# License

This presentation and its contents are licensed under the Creative Commons Attribution 4.0 license:

<http://creativecommons.org/licenses/by/4.0/>