

MLAB

Meredith Whittaker

Thomas Gideon

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What's M-Lab? Who's M-Lab?

Measurement Lab empowers **regulators, researchers, and consumers** with open data on network performance.



At every level, data is necessary

For researchers & data analysts

- **Replicable science at scale**

For policy makers

- **Data based policy**

For Internet users

- **Scientifically-founded answers** to important questions

M-Lab's founding principle: Openness

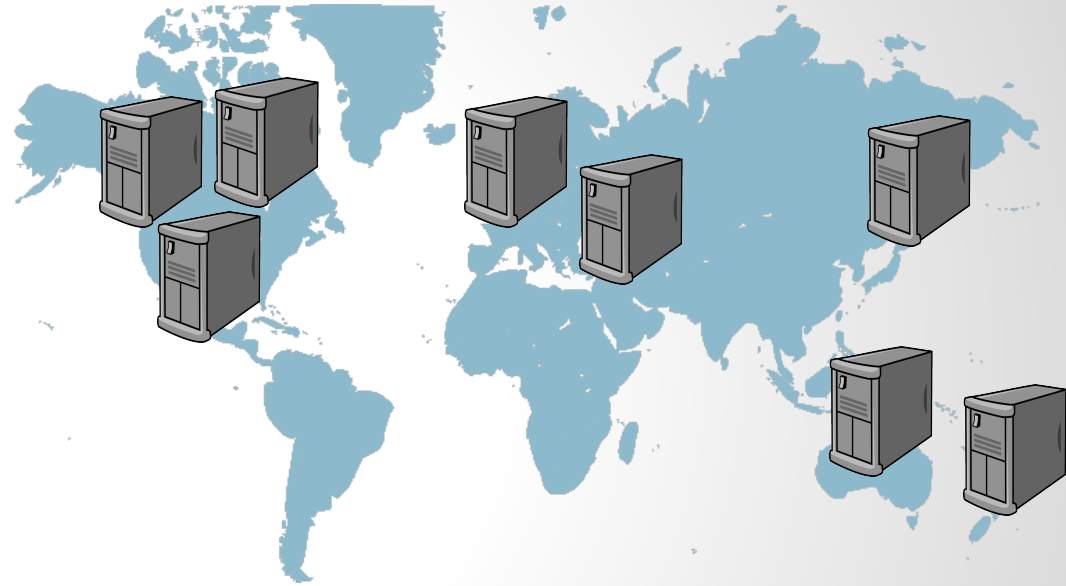
Openness means making room for real science

*Real science means replicable facts,
not conjecture*

How does M-Lab do this?

- Open source, publicly documented **server platform**
- Open source **experiments** built by researchers
- Openly available, freely accessible **data**

Open, global server platform

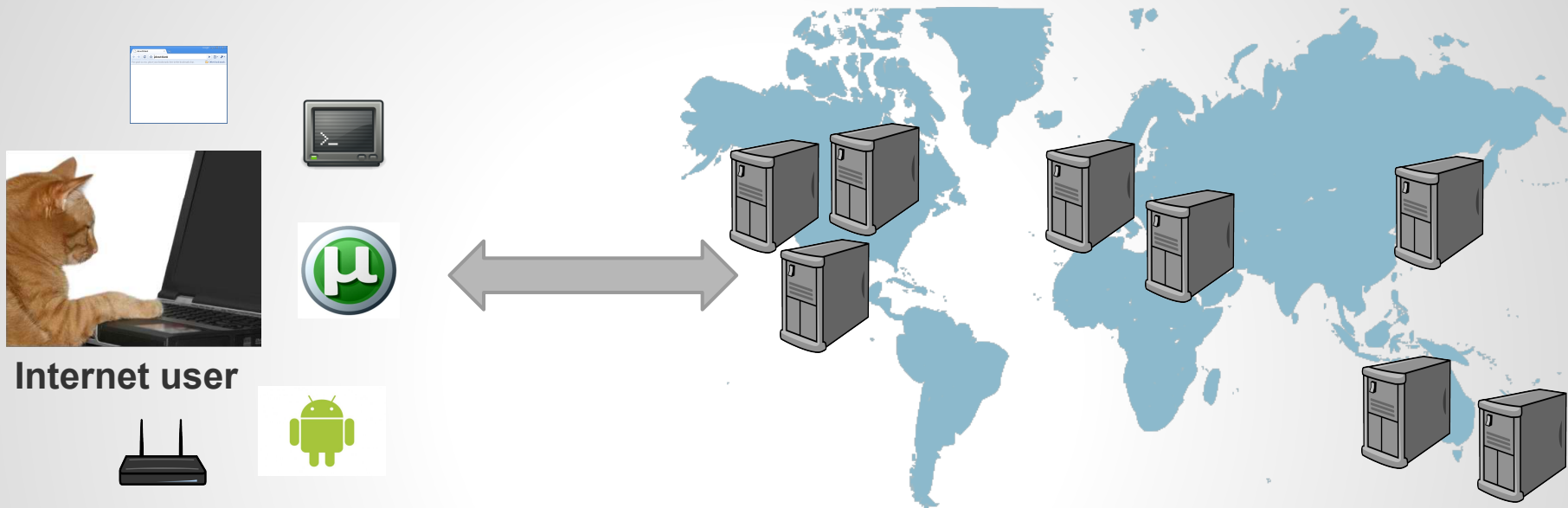


- Globally-consistent
- Well-provisioned
- Instrumented for rich information

M-Lab: a bird's eye view

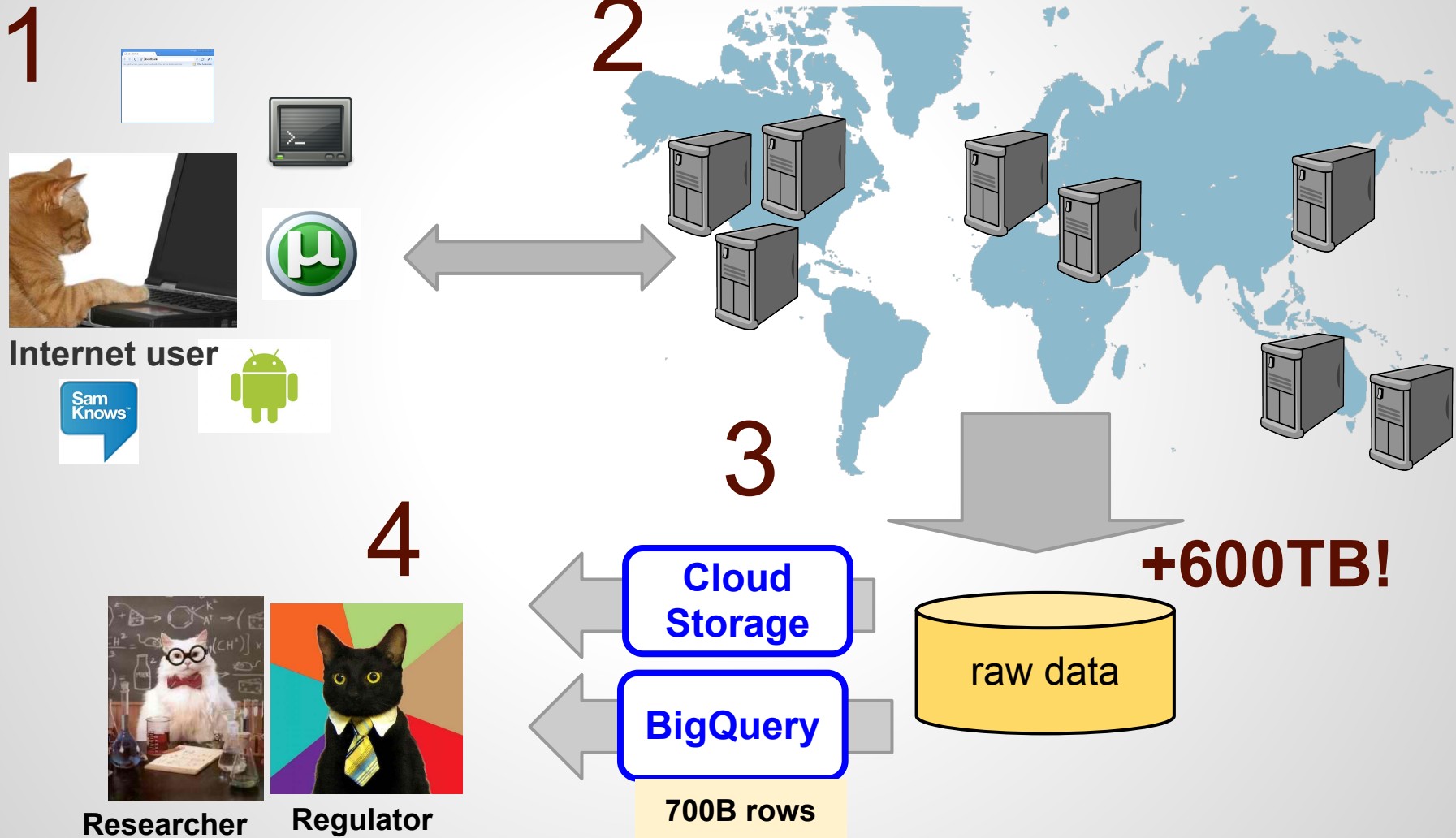


Open-source measurement tools



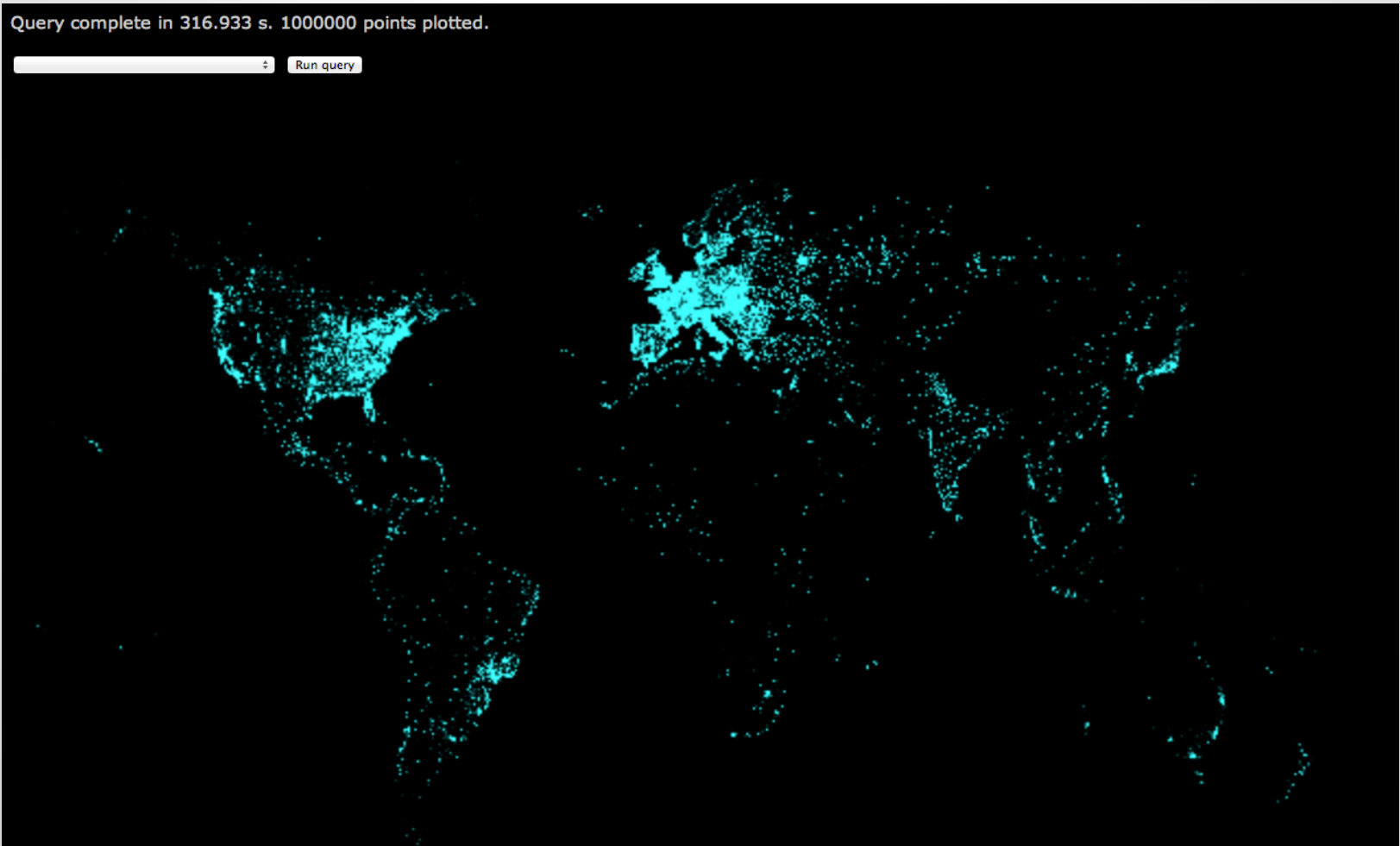
- Client-server, web-based, CPE & mobile
- Active
- Open-source

M-Lab's open data ecosystem



Open data, world-wide

Global tests over 3 months, [more here](#).



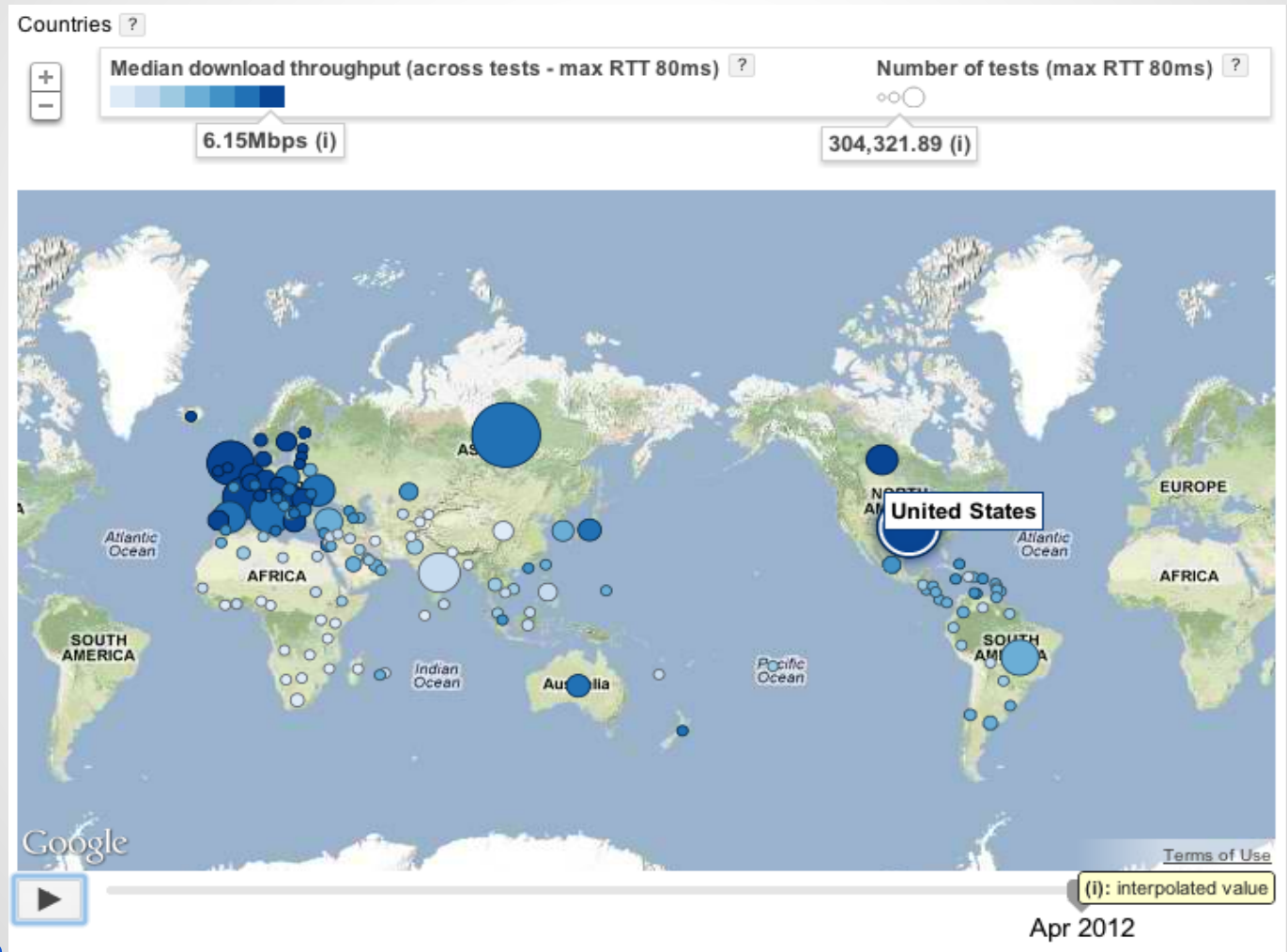
Open data promotes research

- H. Asghari, M. van Eeten, M. Mueller. **Unraveling the Economic and Political Drivers of Deep Packet Inspection**. GigaNet 7th Annual Symposium. 2012
- E. Katz-Bassett, C. Scott, D. Choffnes, I. Cunha, V. Valancius, N. Feamster, H. Madhyastha, T. Anderson, A. Krishnamurthy. **LIFEGUARD: Practical Repair of Persistent Route Failures**. ACM SIGCOMM 2012.
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- B. Lehr, S. Bauer, D. Clark. **Measuring Internet Performance when Broadband is the New PSTN**. MIT technical report. 2012.
- P. Bardowski, J. Klink, M. J. Podolska, T. Uhl. **Broadband Access to the Internet via Mobile Interfaces**. IEEE WMCNT 2012
- P. Kanuparth, C. Dovrolis. **ShaperProbe: End-to-end Detection of ISP Traffic Shaping using Active Methods**. IMC 2011
- M. L. Mueller, H. Asghari. **Deep Packet Inspection and Bandwidth Management: Battles over BitTorrent in Canada and the United States**. TPRC 2011.
- S. Sundaresan, W. Donato, N. Feamster, R. Teixeira, S. Crawford, A. Pescapè. **Broadband Internet Performance: A View From the Gateway**. SIGCOMM 2011.
- M. Dischinger, M. Marcon, S. Guha, K. P. Gummadi, R. Mahajan, S. Saroiu. **Glasnost: Enabling End Users to Detect Traffic Differentiation**. NSDI 2010.
- E. Katz-Bassett, H. V. Madhyastha, V. K. Adhikari, C. Scott, J. Sherry, P. van Wesep, T. Anderson, A. Krishnamurthy. **Reverse Traceroute**. NSDI 2010.
- S. Bauer, D. Clark, W. Lehr. **Understanding Broadband Speed Measurements**. MIT technical report 2010.
- C. Dovrolis, K. Gummadi, A. Kuzmanovic, S. D. Meinrath. **Measurement Lab: Overview and an Invitation to the Research Community**. SIGCOMM CCR 2010.
- M. Dischinger, A. Mislove, A. Haeberlen, K. P. Gummadi. **Detecting BitTorrent Blocking**. IMC 2008.
- M. Mathis, J. Heffner, P. O'Neil, P. Siemsen, Pathdiag. **Automated TCP Diagnosis**, PAM 2008.

Open data means accountable policy

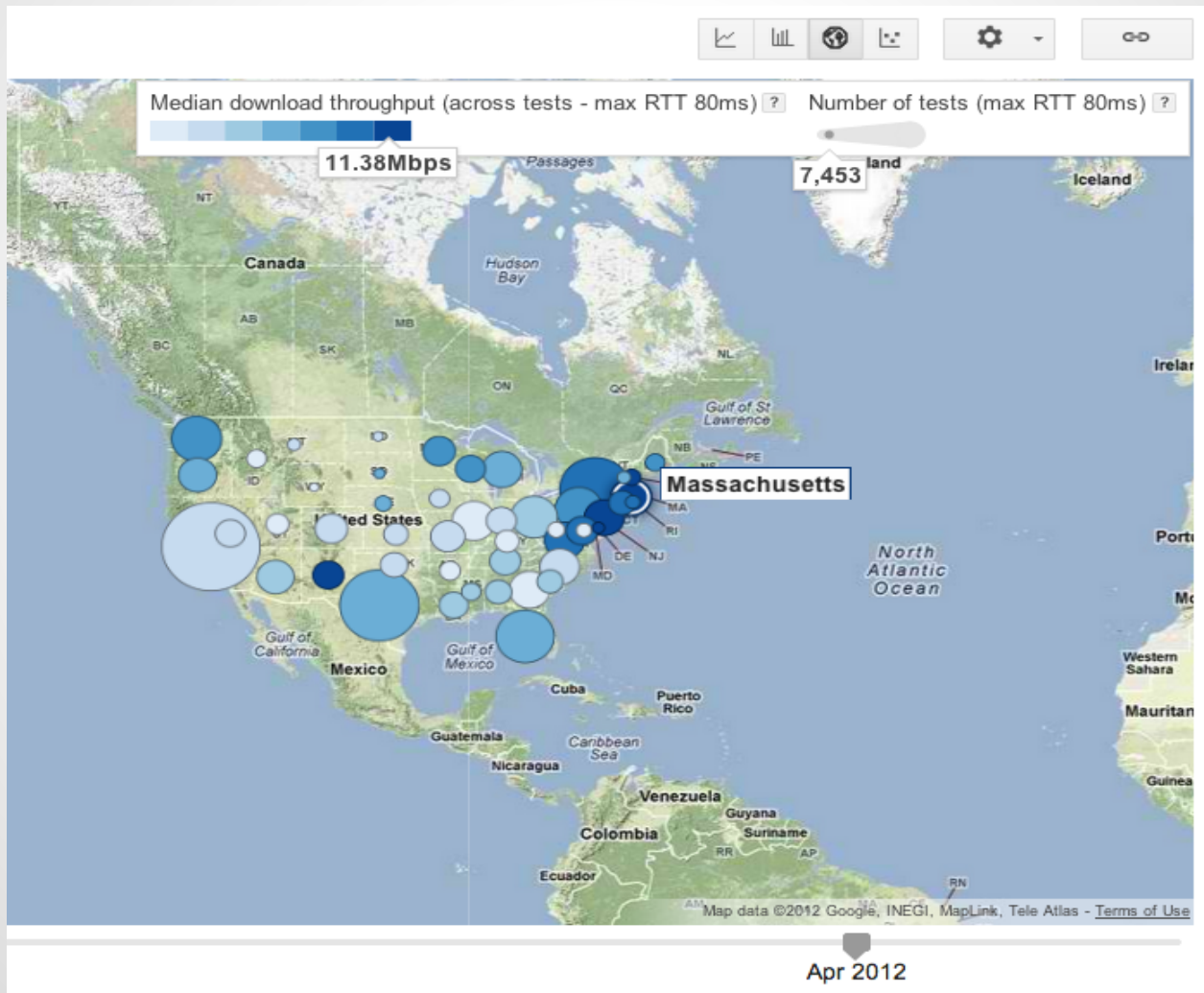
- **Greece's Telecom regulator**, EETT, built (and open-sourced) [SPEBS](#)
- **FCC's [Measuring Broadband America 2011 report](#)**
 - [New study](#) in 2012.
- **[European Commission study](#)**
 - 30 countries
 - 10,000 users
 - 3 years, starting in 2012
- **Austria's Telecom regulator**, RTR, support an M-Lab node and have developed a mobile measurement tool
- **Cyprus' Telecom regulator** support an M-Lab node
- **Canada's CIRA** are deploying servers and utilising M-Lab and baseline for measurement

Visualizing open data for the people

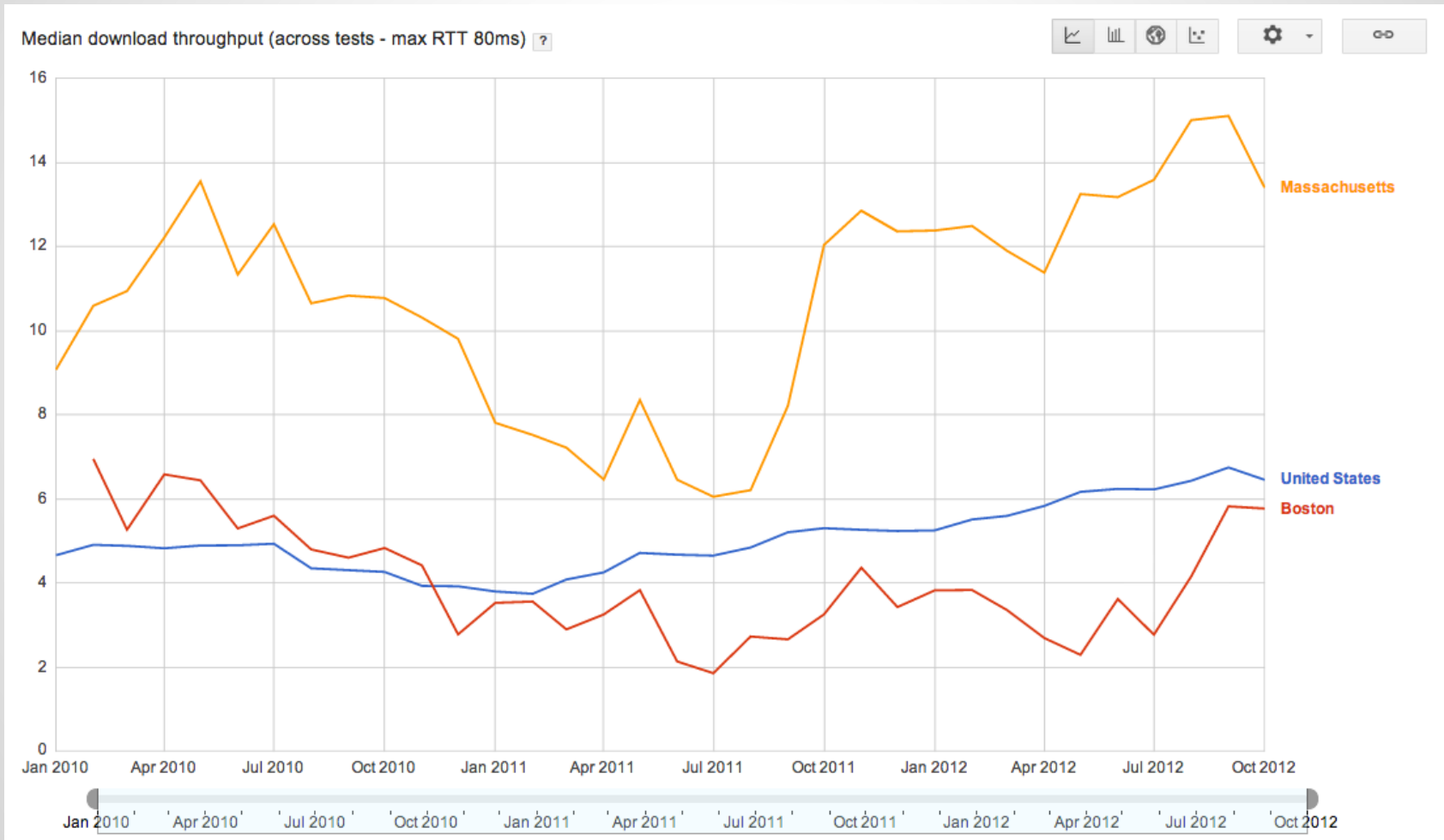


[Live here](#)

Visualizing open data for the people

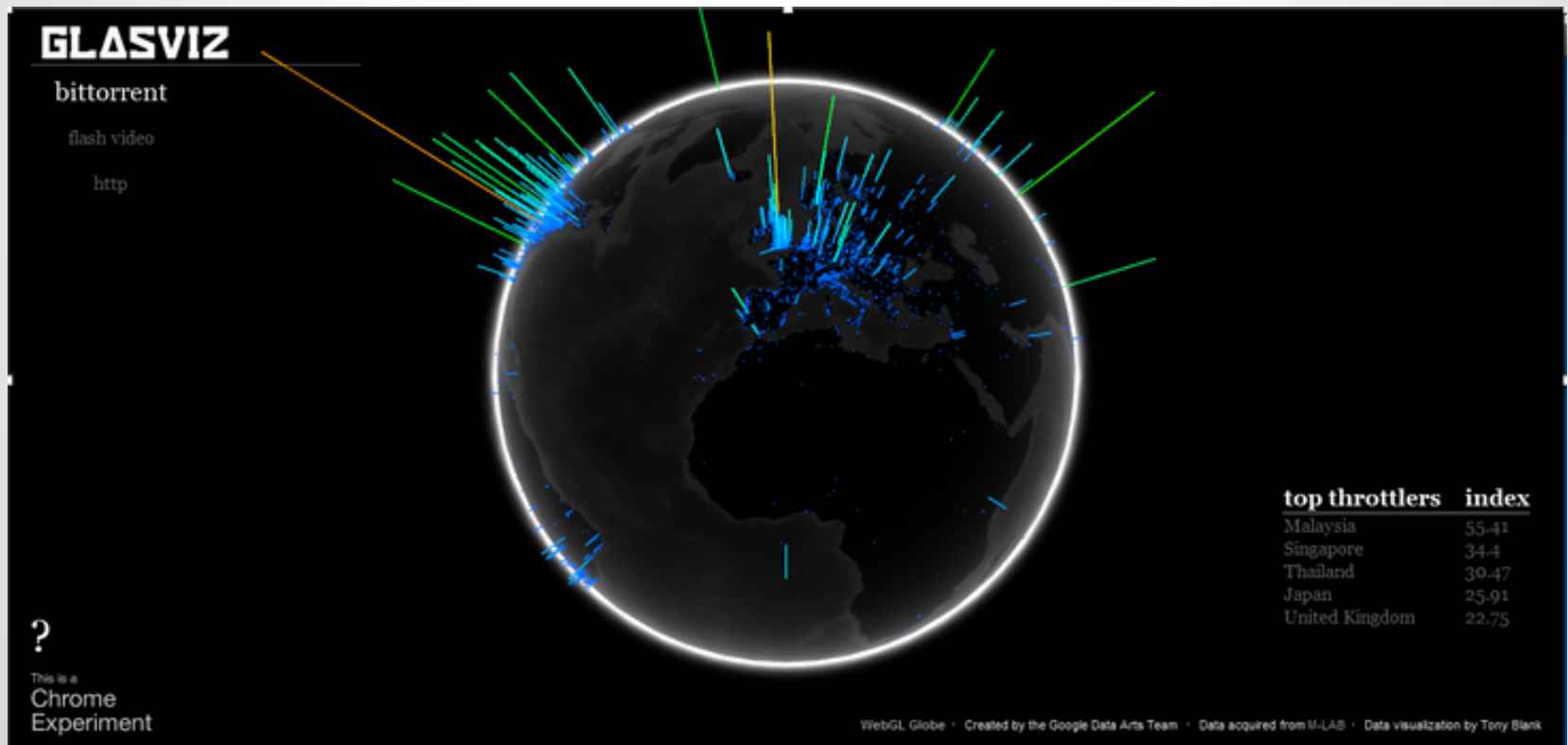


Visualizing open data for the people



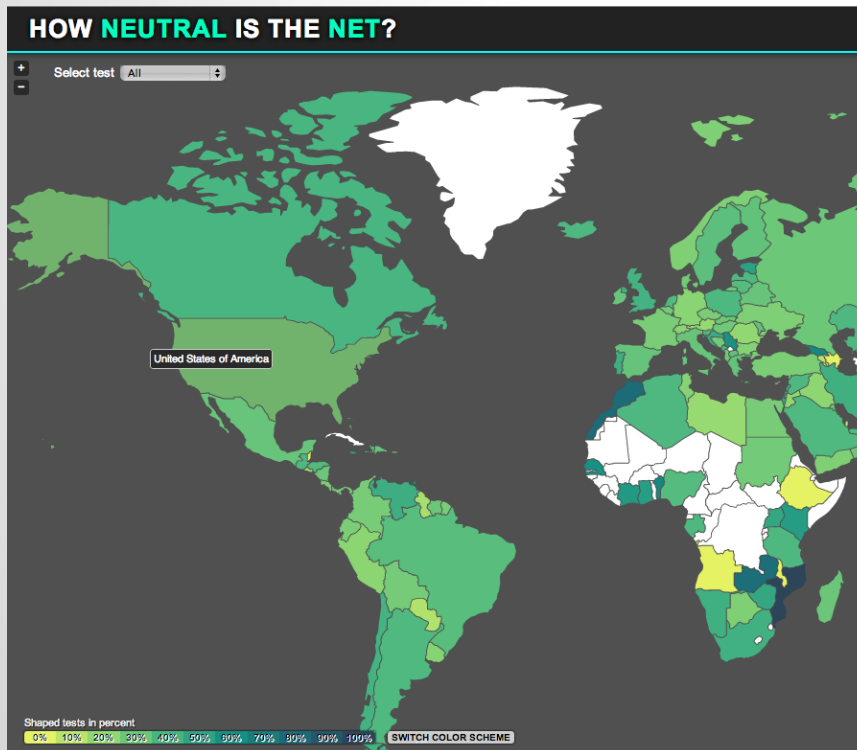
Visualizing open data for the people

Dynamic view of application-specific throttling, navigable across the globe by application type, [live here](#).



Visualizing open data for the people

View of throttling and shaping, by provider, by country, [live here](#).

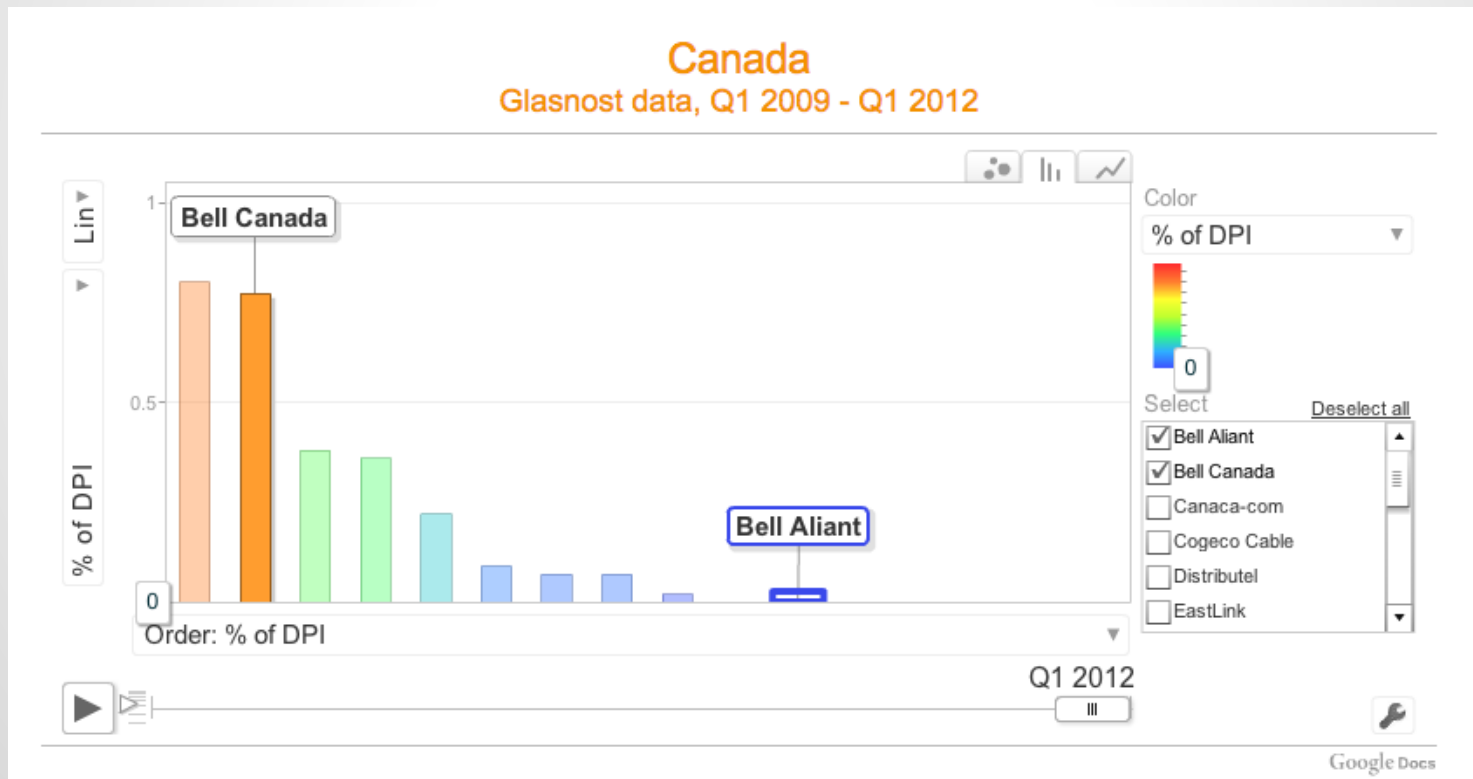


US

Provider	Total tests	Shaped tests	Percent tests shaped
MIAMI-UNIVERSITY - Miami University	6	2	33.3%
VTCNET - Valley Telecom Internet	1	1	100%
TROYCABLE-NET - Troy Cablevision, Inc.	11	2	18.2%
SAT-TEL - Satellite Communication Systems, Inc.	4	1	25%
YELMNET - Yelm Telephone Company	5	1	20%
RIPVIDCAB - Ripley Video Cable Company, Inc.	1	0	0%
UMBC-AS - University of Maryland Baltimore County (UMBC)	2	0	0%
ASN-SCAD - Savannah College of Art and Design	4	2	50%
HOTWIRE-COMMUNICATIONS - Hotwire Communications	8	2	25%
INDCONET - IND. CO. CABLE TV, INC.	3	0	0%
BEK-COMMUNICATIONS-INTERENET-ROUTER - BEK Communications Cooperative	2	1	50%
VIRTELA-NET-VGAATL1 Virtela Communications	1	1	100%
WILLIAMSCOLLEGE - Williams College Center for Computing	4	2	50%
KAMOPOWER - KAMO Electric Cooperative, Inc.	4	1	25%
OC3-NETWORKS-AS-NUMBER - OC3 Networks & Web Solutions, LLC	15	14	93.3%
RBLHST-NY - Reliablehosting.com	4	2	50%
LSU-1 - Louisiana State University	2	1	50%
SIERRA-ADVANTAGE - Sierra Advantage, Inc.	3	1	33.3%
BRIGHTOK-AS - BrightNet Oklahoma	6	1	16.7%
UVM-EDU-AS - University of Vermont	1	0	0%
CABLE-NET-1 - Cablevision Systems Corp.	759	297	39.1%
ASN-CROS-1 - Cros.net, Inc.	1	0	0%
ASN-NEXTWEB-R2 - Nextweb, Inc	1	0	0%
LHTC - LAUREL HIGHLAND TELEPHONE COMPANY	1	0	0%
ASN-GIGENET - GigeNET	3	3	100%

Visualizing open data for the people

Sample chart from global study looking at DPI used to facilitate BitTorrent throttling and blocking, [live here](#).



What's next for M-Lab? You *can* help!

- Analysis and visualizations
- Expanding the platform
- Hosting more tools
- Ask the question: is the data open, and why not?

More info

More info about M-Lab

- measurementlab.net
- Charming marketing video

