



Network science at scale
Good data for everyone

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At every level, data is necessary



- **For Internet users**

- Which Internet Service Provider should I use?
- Am I getting what I am paying for?
- What's going on with my connection?!

- **For policy makers**

- Sound broadband regulation to foster competition and economic growth.



- **For researchers**

- Better understanding of Internet dynamics.

What and who is M-Lab?

Measurement Lab (M-Lab) is a collaborative, researcher-driven effort to empower **Internet users**, **researchers**, and **regulators** with open and scientifically-sound data about broadband performance.



M-Lab's commitment: Openness

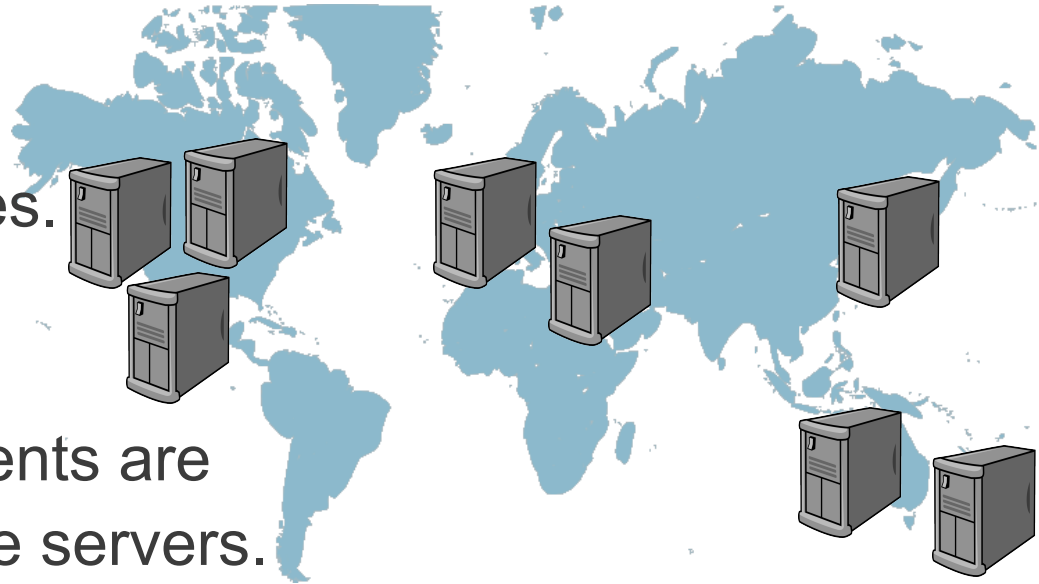
the key to good science, the key to good data

- **Open, broadly deployed server platform**
- **Open-source measurement tools** built by researchers
 - Empower consumers with real-time information.
 - Expose researchers to real-users.
- **Openly available, real-world data**

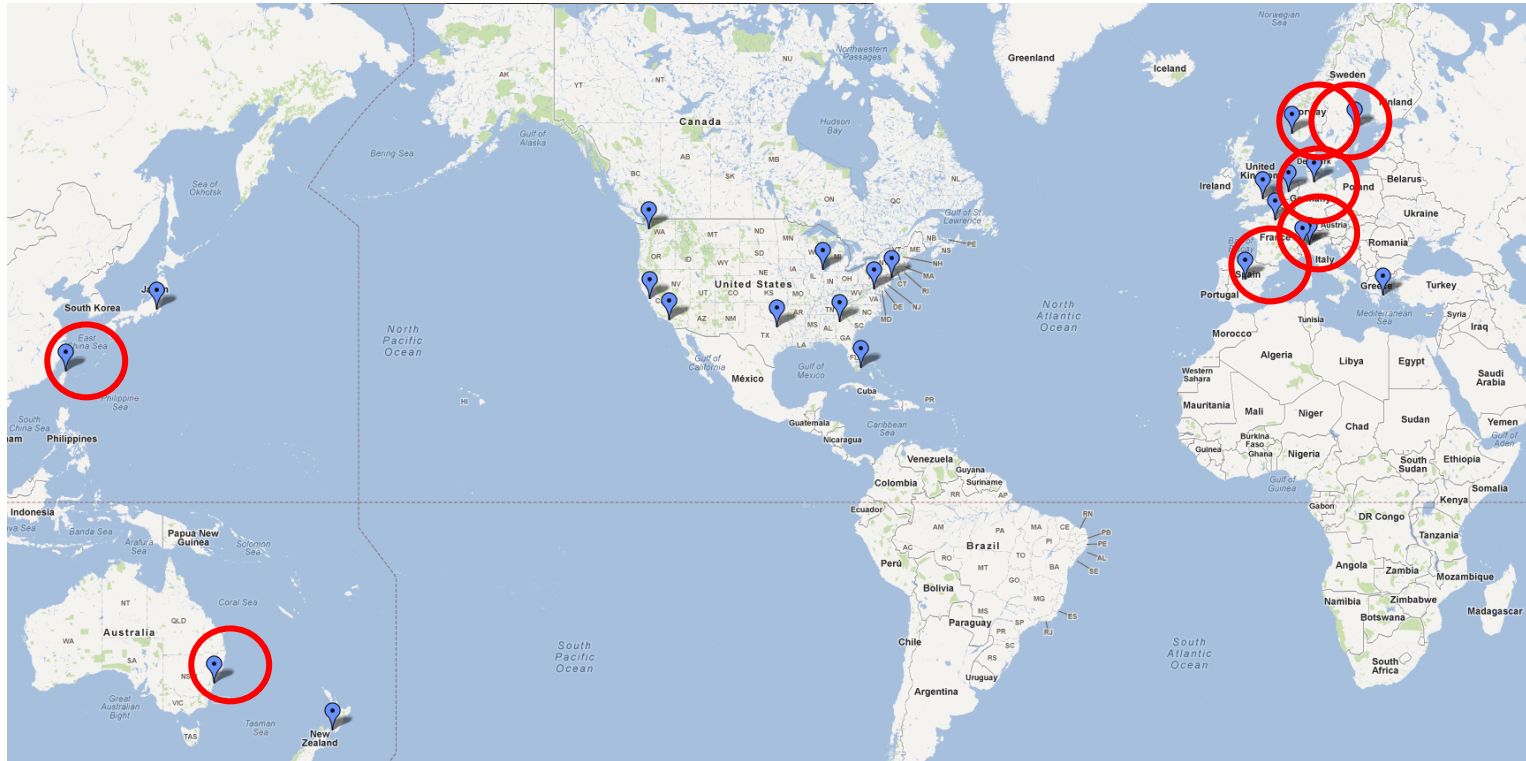
Open tools and open data facilitate peer-review, independent analysis & better research.

Open, globally-distributed platform

- **Globally-consistent** to collect comparable data across geographies.
- **Well-provisioned** to ensure that measurements are not bottle-necked by the servers.
- Instrumented to provide **rich information** about measurements (web100 kernel instrumentation, RFC4898).

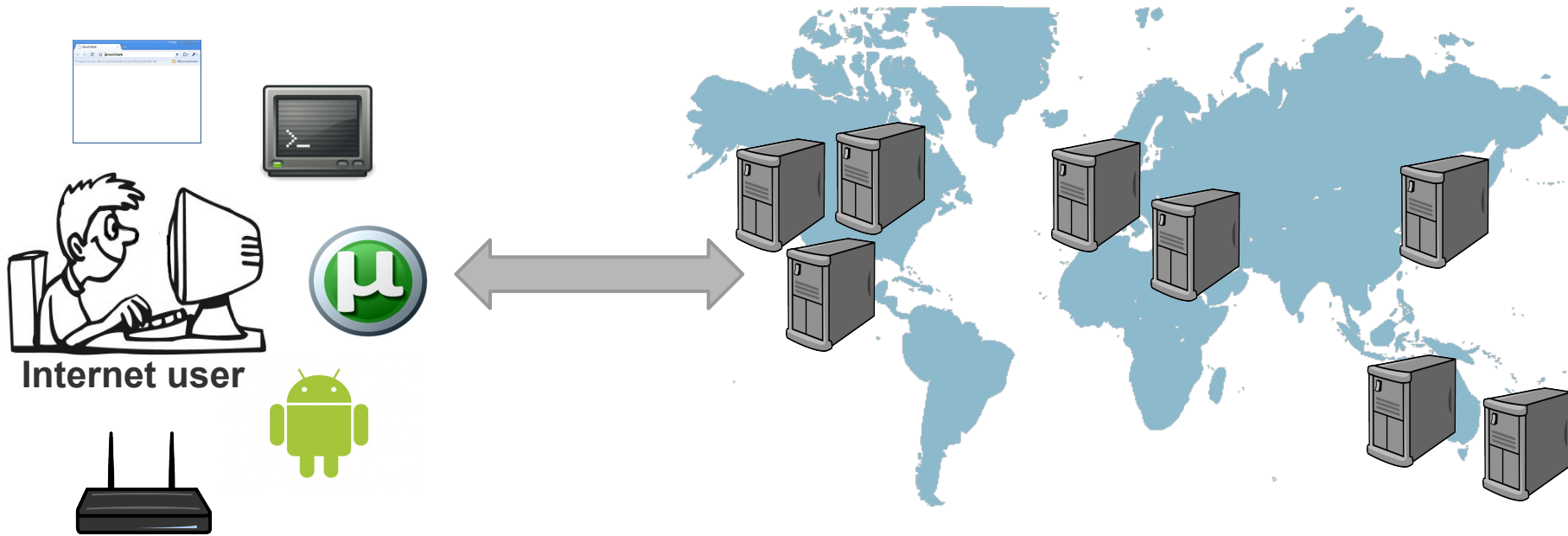


M-Lab: a bird's eye view



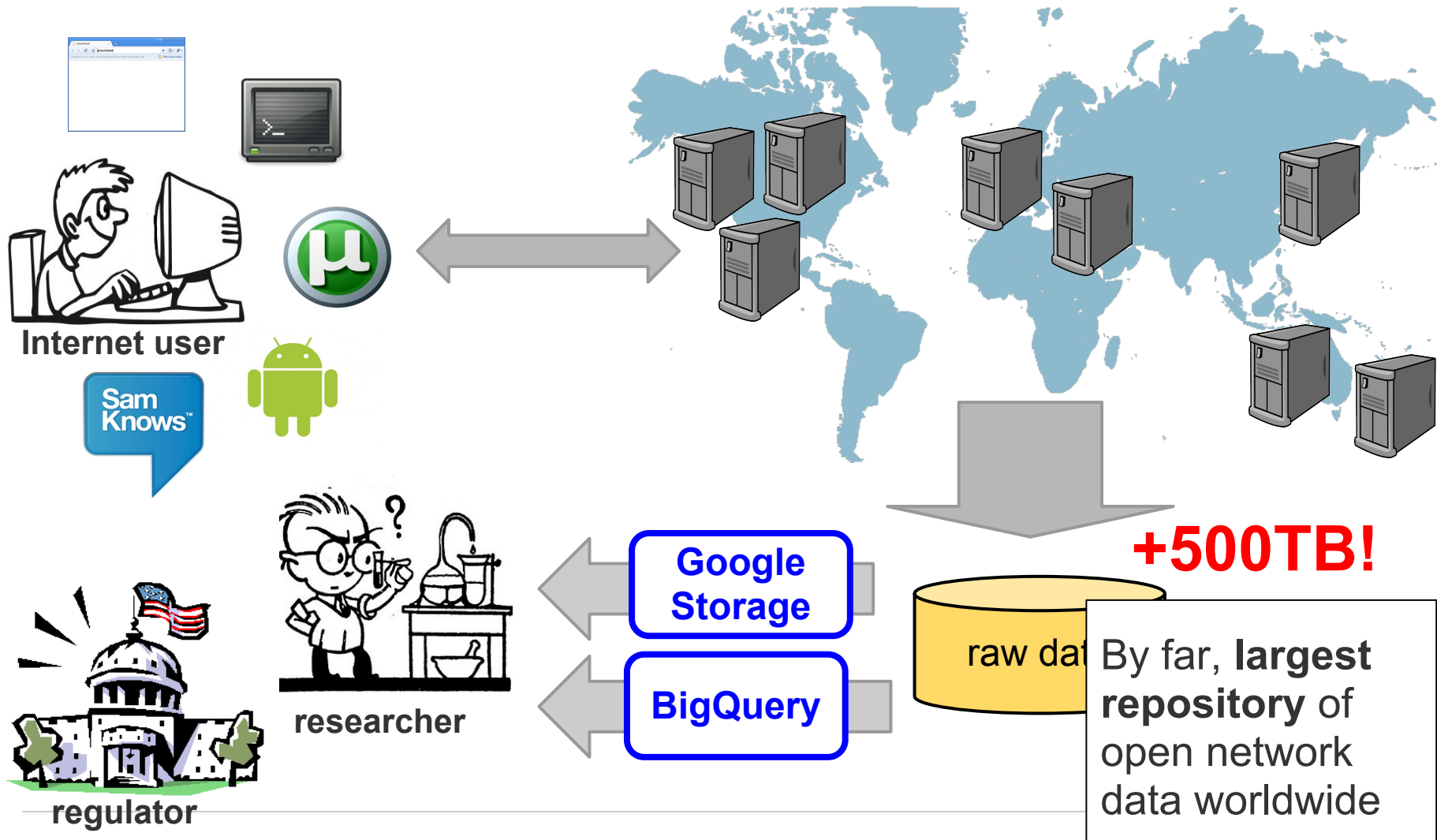
- 81 servers in 27 locations.
- **25%** increase over last 6 months, and growing.
- In 2012 deploying in Canada, Asia & beyond.

Open-source measurement tools



- **Client-server** applications.
 - **Active** measurement only.
 - **Open-source**.
 - Country-customized clients (FCC, EETT).
 - **+200k** tests/day.
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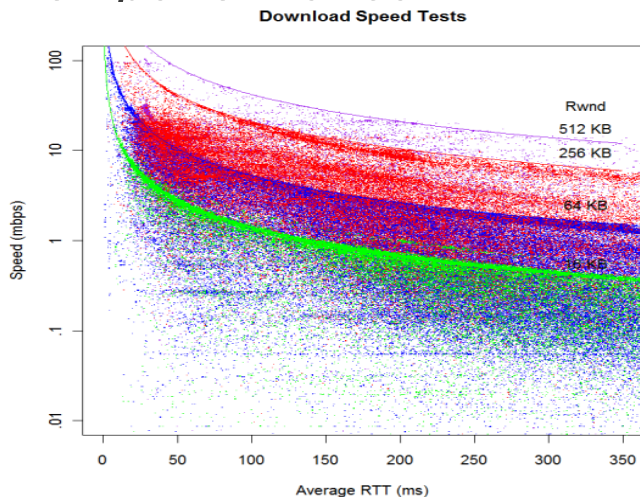
M-Lab's open data ecosystem



Open data promotes research

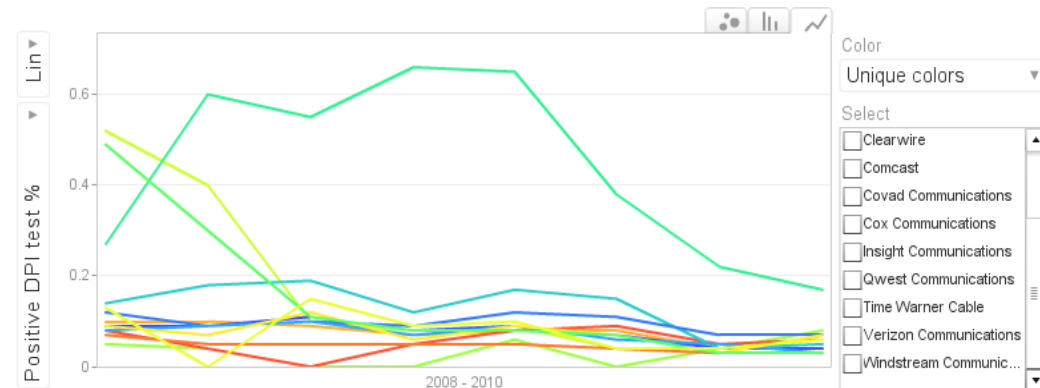
D.Clark, S.Bauer et al - MIT

Determined that in many cases the TCP receiver window is the limiting factor on performance.



M.Mueller and H.Asghari - Syracuse University and TU Delft

Studied usage of DPI to perform BitTorrent throttling.



P.Kanuparth, C.Dovrolis - Georgia Tech
Analyzed % traffic shaping per-ISP.

ISP	Upstream (%)	Dwnstrm. (%)
Comcast	71.5 (34874)	73.5 (28272)
Road Runner	6.5 (7923)	63.9 (5870)
AT&T	10.1 (8808)	10.9 (7748)
Cox	63 (5797)	47.4 (4357)
MCI-Verizon	5.6 (8753)	8.4 (7733)

Regulators making use of M-Lab tools and data

Greece's Telecom regulator, EETT built (and open-sourced!) [SPEBS](#)

- Dashboard provides crowd-sourced broadband performance information to all citizens, including application-specific throttling and per-user historical data.



System for Performance Evaluation
of Broadband Connection Services

New measurement

Map

Graphs

Details

Select measurement tool

NDT

Measure the performance of your connection. With NDT you can find out the actual download and upload speeds of your connection, response time and packet loss.

Glasnost

Use Glasnost to find out if your ISP uses traffic shaping on selected services like P2P, video streaming etc.

M-Lab Notifier

The M-Lab Notifier is a helper utility for the periodic measurement of your broadband connection, available for use on operated systems supporting the Java 6 technology.



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Measurements of registered users in your area



SPEBS users are fully responsible for the accuracy of their declared broadband connections' characteristics (i.e. location, downlink/uplink speed, etc.).
* Based on the estimated distance from the Local Exchange.

MLAB



Regulators making use of M-Lab tools and data

FCC's [Measuring Broadband America 2011 report](#)

based on SamKnows.

[New study](#) in 2012.



[European Commission study](#)
using SamKnows

- 30 countries
- 10,000 users
- 3 years, starting in 2012



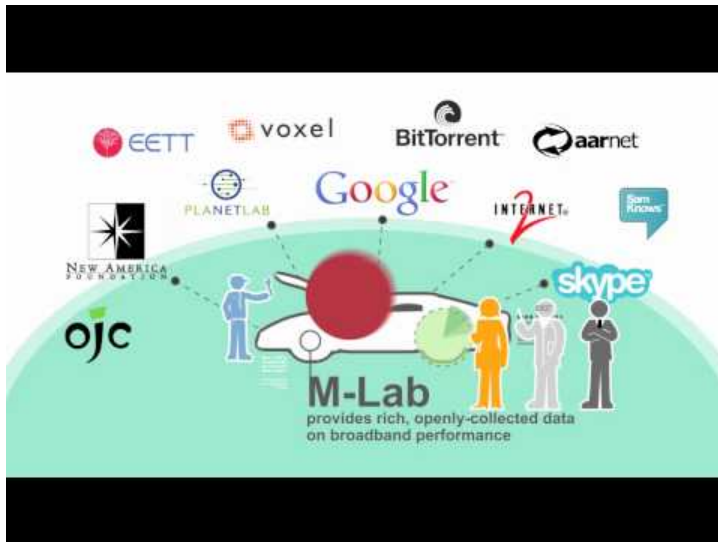
What's next for M-Lab? You *can* help!

- More **servers** for better global coverage.
 - More **measurement tools**.
 - New tools. New clients for existing tools.
 - JavaScript-based clients and portable libraries, for easier integration.
 - More **data analysis and visualizations**.
 - More partnerships with **researchers** and **developers** to analyze the data and to create visualizations that make the data intelligible to Internet users and regulators. (M-Lab-specific research awards are coming!)
 - More partnerships with **regulators** to promote data-based policy making.
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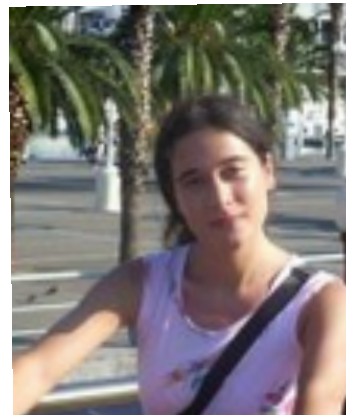
More info & M-Lab @ RIPE64

More info about M-Lab

- M-Lab site:
measurementlab.net
- Charming marketing video:



M-Lab @ RIPE64



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