Open Measurement Gatherings (OMG)
Convening 2
Public Report

Photo Credit: Melissa Newcomb (Measurement Lab)

Introduction

Open Measurement Gatherings

This report is for the second Open Measurement Gathering which took place in December 2024. The OMG project is funded by the [Open Technology Fund (OTF)](#) and is an opportunity for participating open Internet and censorship measurement groups to coordinate more closely and become more knowledgeable about one another's work. The goal of the OMG project is to increase trust and coordination between Internet measurement groups so that we can support the Internet Freedom community more sustainably and efficiently. With this motivation in mind, the events are organized with the following principles:

1. **Better together**: Collaboration is essential to the Internet freedom community's goals. The convenings are designed with the belief that no group or individual can do it alone.
2. **Collaborative learning environment**: To improve trust and coordination among Internet measurement groups, the OMG convenings foster a tone of humility and kindness.
3. **Learning in the open**: To enhance trust with the wider Internet freedom community, the OMG convenings share work and solicit feedback openly.
4. **Impact centered research**: To mitigate the decentering of the people most impacted by Internet disruption events, the covenings will consider how our research and capabilities could be useful to those "on-the-ground".

OMG Convening 2 at Georgia Tech

OMG Participating Groups

M-Lab, IODA, OONI, and Censored Planet will participate in all four convenings as these organizations' primary mission is to provide open source tools and open data, based on open methodologies on Internet censorship events. In addition to these core groups, convenings will include relevant experts from the Internet freedom and network research community.

Core participating groups:
- **M-Lab.** [Measurement Lab (M-Lab)](#) is an open, distributed server platform comprising hundreds of servers located in 70+ cities in 40+ countries globally. M-Lab's [Network Diagnostic Test (NDT)](#) speed test data is the most popular measurement service running on M-Lab, with ~3 million measurements each day globally. It tests a user's network connectivity by downloading and uploading an object and measuring the time it takes. In technical terms, it uses a WebSocket over TLS to measure how fast a user's device can send/receive data using a single TCP connection (bulk transport as defined in IETF's [RFC 3148](#)).
- **IODA.** [Internet Outage Detection and Analysis](#) (IODA) is a system that monitors the connectivity of the Internet infrastructure, in near-real time, to identify Internet outages affecting networks, nations, and subnational regions. It is run out of the [Internet Intelligence Lab](#) at Georgia Tech's College of Computing, in the School of Computer Science.

- **OONI.** The [Open Observatory of Network Interference (OONI)](#) is a nonprofit organization that builds free software (called [OONI Probe](#)) designed to [measure](#) various forms of Internet censorship, such as the blocking of websites, instant messaging apps, and circumvention tools. Since 2012, OONI Probe users have contributed [more than 2 billion network measurements](#).
- **Censored Planet.** Censored Planet is a censorship measurement platform that continuously measures reachability to over 2,000 websites from more than 95,000 vantage points in 221 countries. It uses remote measurement techniques that do not require users in Iran to run tests.

Guests Organizations:
- [**Internet History Initiative**](#). Founded in 2024, the Internet History Initiative is an effort to preserve and curate the historical measurement datasets that document the Internet's regional evolution, making their stories accessible to future historians.
- **Access Now.** The #KeepItOn Data helps fight internet shutdowns globally through data analysis, research, and advocacy. In particular, the Shutdown Tracker Optimization Project (STOP) dataset, which documents and contextualizes internet shutdowns around the world.
- **Sinar Project.** Sinar Project is a civic tech initiative using open technology, open data and policy analysis to systematically make important information public and more accessible to the Malaysian people.

Agenda

The convening agenda was designed collaboratively with input from each group, with an emphasis on flexibility and knowledge sharing.

Day 1
Project updates, learning how to be champions for one another's work, exploring data workflows, and collectively addressing shared threats and challenges.

Day 2
Project updates, comparisons of data analysis and techniques, and collectively discussing our theories of change.

Day 3
"Unconference", allowing for salient topics that emerged during Day 1 and 2 to be further explored.

Summary

December 10 - Day 1
To start off the convening, we introduced ourselves and our guests and shared our goals for the week, many of which included themes of learning and collaborating with others. Censored Planet shared progress on their CenAlert project, which they introduced at the first convening. OONI gave updates about their research reports, third-party use of OONI data and tools, their work on a major revision of their data processing pipeline v5, improvements released as part of OONI Run v2 and their growing community partnerships program. Next, participants broke into pairs for an outreach exercise to practice communicating the work and mission of other OMG groups. Then, the OMG groups worked together on a network interference case study to practice with one another's data analysis workflows. This session gave an opportunity to be introduced to Access Now's forthcoming dashboard visualization of the STOP database, which includes Access Now's 1,500 verified internet shutdowns from 2016 to 2023. In their definition of shutdown they include full network shutdowns, bandwidth throttling, service-based blocking for two-way communication platforms. To finish out the day, we discussed our shared challenges through a threat modeling exercise and identified potential opportunities for collaborative, proactive responses.

December 11 - Day 2
The second day began with updates from IODA and M-Lab, followed by introductions to the Internet History Initiative and the iMAP (Internet Monitoring Action Project). IODA's updates included improvements to their dashboards for user experience, new strategies for digital presence, lessons from piloting a tracking team with a Georgia Tech-based data service provider (DataWorks), updates to data granularity at the AS-country level and AS-region level, new datasets that will be visible in IODA later in 2025 including: traceroute views with upstream delay, and latency captured through Active Probing. M-Lab shared the Internet Quality Barometer research initiative, efforts to diversify contributors, and engage with the shared challenges of the Internet measurement community. To close the day, OMG groups discussed theories of change and the aspirations of each project to impact the Internet for the public good. Finally, participants planned for the unconference sessions on the following day.

December 12 - Day 3
On Day 3 OMG groups explored salient topics that were touched on during Day 1 and 2 but merited further discussion. To accommodate all participant's interests there were two parallel tracks; technical and programmatic on topics.
- Technical Track
  - Technical detailed overview of each project's data pipeline.
  - A preview of OONI's v5 pipeline and the observation and analysis tables.
  - Review of anomaly detection methodologies.
  - Brainstorm about the possibility of consolidating databases that map IP geolocation to AS.
  - Mapping of each organization's definition of throttling.
- Programmatic Track
  - User experience and design feedback session of recent or proposed updates to organization's websites and data visualizations.
  - Theory of Change deep dive and threat modeling.

- Partnership pipelines and successful community building.
- Donor mapping and joint funding opportunities.

Key Takeaways

Across our three days together we identified several key findings and top takeaways.

Shared Challenges

> Similar to the first OMG, during OMG 2 participants discussed the current global trends and the issues each group faces.

- **Uncertainty about the funding landscape.** With big changes in political leadership across the world, historic sources of funding for each group were no longer certain to remain. Donors/ sponsors may change their mandates and OMG groups will need to be prepared to find new funding sources or adapt.
- **Evolving Infrastructural Constraints.** As Internet measurement datasets continue to grow, they will demand increasing resources to maintain and make available to the public. In addition, new technologies such as AI put further strain on finite resources in infrastructure. OMG groups may need to adapt what kind of data they make publicly available and how they store archived data.
- **Infrastructure Resilience.** The platforms and data for OMG groups are vulnerable to several risks such as: DDOS attacks, blocks from adversarial governments, and software dependencies, insufficient staff, and

data losses. Each groups' threats are unique, but sharing the challenges and risks helped highlight common areas where OMG groups can build collaboration to increase resilience.

Theory of Change for an open Internet

> All OMG groups agreed that their ultimate goal is a free, open, transparent, accountable, resilient, equitable Internet.

- During the initial Theory of Change discussion, each group shared a scenario of how to achieve that ultimate goal in a broad sense, exploring individual action and social conditions that it would require. In a breakout session during the Unconference Day, select participants went through a Strength, Weakness, Opportunity, and Threat (SWOT) analysis to expose entry points for OMG groups to achieve their shared vision.
- Our preliminary long term goal is an Internet that is uncensored, open, transparent, accountable, resilient, and equitable. OMG groups will continue the conversation in OMG 3 to better refine a shared Theory of Change which will inform future collaboration.

Usability Updates, New Methodologies and Techniques

- **Censored Planet:** Presented progress and collected feedback on CenAlert, an upcoming censorship alert system based on Google Trends data. CenAlert detects notable increases in search interest for circumvention technologies

such as VPNs, which often coincide with censorship events.

- **OONI:**
  - Collected essential feedback useful to move forward the work on a major revision of the data processing pipeline (OONI Pipeline v5).
  - Collected input on the Censorship Alert System they are working on
  - Identified how there are several areas of work which could benefit from ongoing collaboration mostly related to data analysis workflows.
  - Discussed some shared dependencies across projects, such as the reliance on proprietary GeoIP databases which makes comparison of measurement data harder and how that might be addressed going forward.
- **IODA:**
  - Updates to UI based on user-centered research include new search functionality, creation of animated shorts that explain our signals and a new user guide for journalists.
  - Addition of new data sources: traceroutes and upstream delay, latency captured through Active Probing to be used to capture generalized throttling.
  - Greater granularity of data for AS-country and AS-region matches,
  - Analysis to support forthcoming integration of mozilla telemetry data.
  - Research that Classification of Autonomous Systems/ ISPs that, once integrated at a future date, will give IODA users greater context into the impact of an AS/ISP outage.
- **M-Lab:**
  - The [Internet Quality Barometer (IQB)](#), a research project funded by ISOC Foundation to redefine internet

quality beyond "speed." The goal of the IQB project is to create an actionable framework for use by policymakers and high level decision makers globally.
  - M-Lab's platform is evolving to expand the platform to measure more of the Internet from new network locations. Historically M-Lab servers were placed only at interconnection points. Now the platform welcome servers in cloud, edge, access networks. In addition, M-Lab is piloting a program for Infrastructure Partners to donate host-managed servers to the platform. The Host Managed Deployment program will be open to the public in 2025.
  - Lastly, M-Lab is working with Superbloom Design to update its website in early 2025.

Collaborations

- Current: Ongoing, long-term collaboration between OONI, [Sinar Project](#), and [Access Now](#).
- Current: Ongoing, long-term [collaboration between IODA and OONI](#) on methodologies and censorship reporting.
- Potential: The IP to location, IP to ASN and IP to network metadata databases used by each of the projects are different due to cost and licensing constraints. It would be beneficial to collaborate on creating an open alternative to accommodate all the specific licensing and cost constraints of each project. This would make it easier to compare the internet measurements across different projects.

- Potential: OMG groups pooled together known funding opportunities and partnerships. This knowledge sharing session allowed each group to discover new funding opportunities, where each had been successful or unsuccessful, and a brainstorm of how OMG groups could approach funders and/or partners together.

Looking Forward

Four key thematic topics were identified as opportunities to explore at the next OMG convening.

1. **Defining a shared Theory of Change:** We want to build off our shared vision of an uncensored, open, transparent, accountable, resilient, equitable Internet, by creating a ToC for OMG groups which will strengthen the groups' ability to pursue joint projects, build partnerships with other stakeholders, and overall clarify how Internet measurement groups can achieve their shared mission.

2. **Data complementarity and joint research:** One issue that arose during discussions comparing each OMG group's datasets was that they are not easily comparable. To accurately deduce correlations across datasets requires a high degree of expertise in each one. Data complementarity would improve the ability for OMG groups to validate one another and enable joint research projects. OMG groups will explore this more in the next OMG convening.

3. **Telling the story of the open Internet:** There is a gap in the public's understanding about what Internet measurement is and how it supports Internet freedom. However, there are impactful stories about Internet access and censorship that are validated and unlocked by the work of Internet measurement groups. Experts in the field often focus on the details of their technical work. OMG groups can learn to tell their stories in a way that connects with broader audiences.

4. **Responding to a changing funding landscape:** During both OMG convenings, participants discussed how a shifting fundraising landscape is a threat to open Internet measurement. OMG groups recognize they are more compelling to donors and stakeholders if they can show how working together will have a larger impact–potentially opening up new funding opportunities. OMG groups will further the discussion on how to fundraise together in the next convening to be more resilient institutions.

Appendix A: OMG Convening 2 Agenda
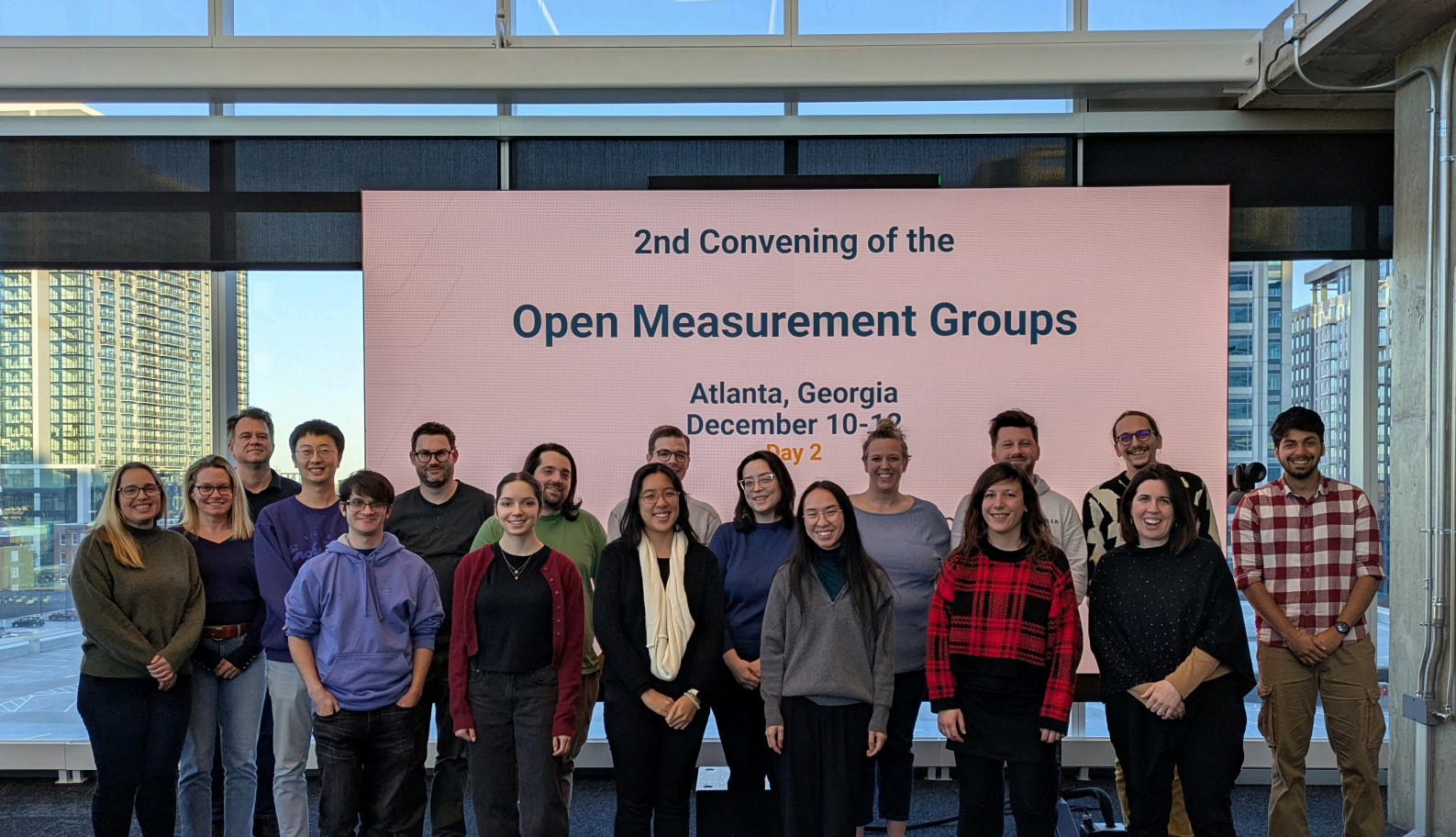
Dec 10th- Day 1

Time	Session/ Description
9:00 - 10:00 AM	Welcome/ Orientation/ Logistics/ Intros
10:00 AM - 12:00 PM	Updates + Priorities and Plans for the Year Ahead • Censored Planet • OONI
12:00 PM - 1:00 PM	Lunch
1:00 PM - 2:00 PM	Activity: Outreach Training
2:00 PM - 2:15 PM	Break
2:15 PM - 3:30 PM	Data Workflows w/ case study
3:30 PM - 3:40 PM	Break
3:40 PM - 4:40 PM	Discussion: Threat Modeling
4:40 PM - 5:00 PM	Close of Day

Dec 11th - Day 2

Time	Session/ Description
9:00 - 9:15 AM	Orientation to Day 2
9:15 AM - 9:45 AM	Sinar Project Data Workflows
9:45 AM - 9:50 AM	Break
9:50 AM - 10:45 AM	Throttling case study
10:45 AM - 11:00 AM	Break
11:00 AM - 12:00 PM	Updates + Priorities and Plans for the Year Ahead • IODA
12:00 PM - 1:00 PM	Lunch
1:00 PM - 2:00 PM	Updates + Priorities and Plans for the Year Ahead • M-Lab
2:00 PM - 2:15 PM	Break
2:15 PM - 2:45 PM	Internet History Initiative
2:45 PM - 3:45 PM	Discussion: Theory of Change
3:45 PM - 4:00 PM	Break
4:00 PM - 5:00 PM	Unconference Planning

Dec 12th - Day 3

Time	Track 1 Session/ Description	Track 2 Session/ Description
9:00 - 9:10 AM	Welcome/ Orientation/ Logistics	
9:10 AM - 10:40 AM	Data pipeline comparison	TOC + Threat Model
10:40 AM - 10:55 AM	Break	
10:55 AM - 12:00 PM	New OONI Pipeline v5 observation and analysis tables data	M-Lab website feedback + CenAlert design + Access Now
12:00 PM - 1:00 PM	Lunch	
1:00 PM - 2:00 PM	Anomaly detection methodologies	Funding resources
2:00 PM - 3:00 PM	GeoIP/AS database consolidation and next step	Partner Structure
3:00 PM - 3:30 PM	Throttling Taxonomy	
3:30 PM - 3:45 PM	Break	
3:45 PM - 4:00 PM	Feedback Survey	
4:00 PM - 5:00 PM	Review of Convening 2; Future Plans	

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