Towards an Open Mobile Measurement Platform

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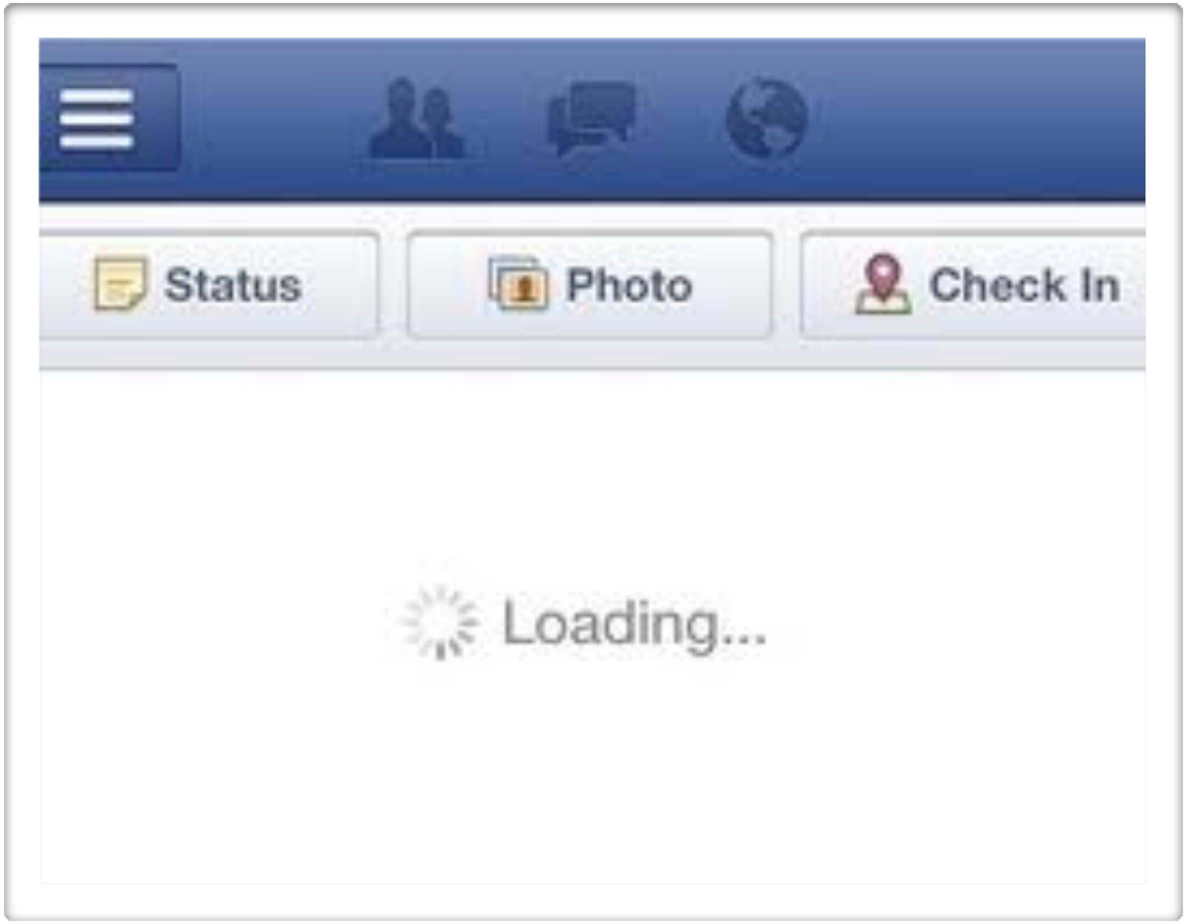
Along with University of Michigan and Google

Mobile Internet can be terrible



Mobile monitoring can help us do better

Goals: Check up on carrier performance, predictive comparison shopping, ...

- Requires us to understand application-perceived performance
  - **Where** the device is used
  - **When** the device is used

Key challenge: Multiple apps have the same/similar goals in mind, want to pervasively monitor the network

A strawman proposal

Let the market decide which app will get the best coverage

- Mobiperf?
- MySpeedTest?
- SamKnows?
- Tempo?
- Netalyzer-droid?

Every app for itself won’t work

- Adoption/barrier to entry
  - Does any one of us really have a killer app?
- Interference
  - Conflicting/synchronous measurements
- Measurement validation
  - Grad student code!
- Data management
  - Collecting, storing, publishing traces

A Sustainable Proposal

One *measurement library* to rule them all

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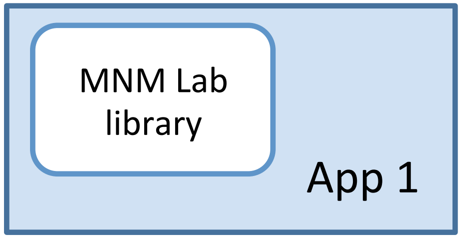

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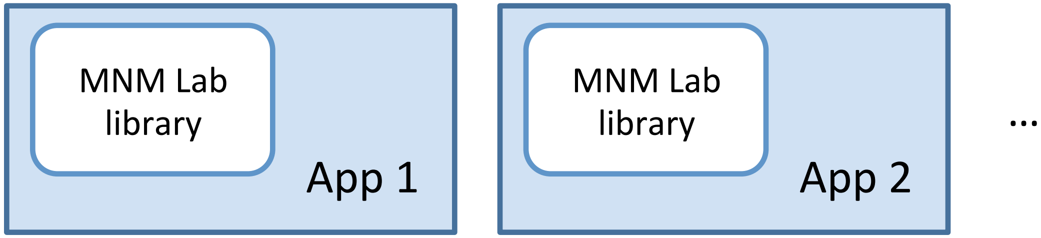

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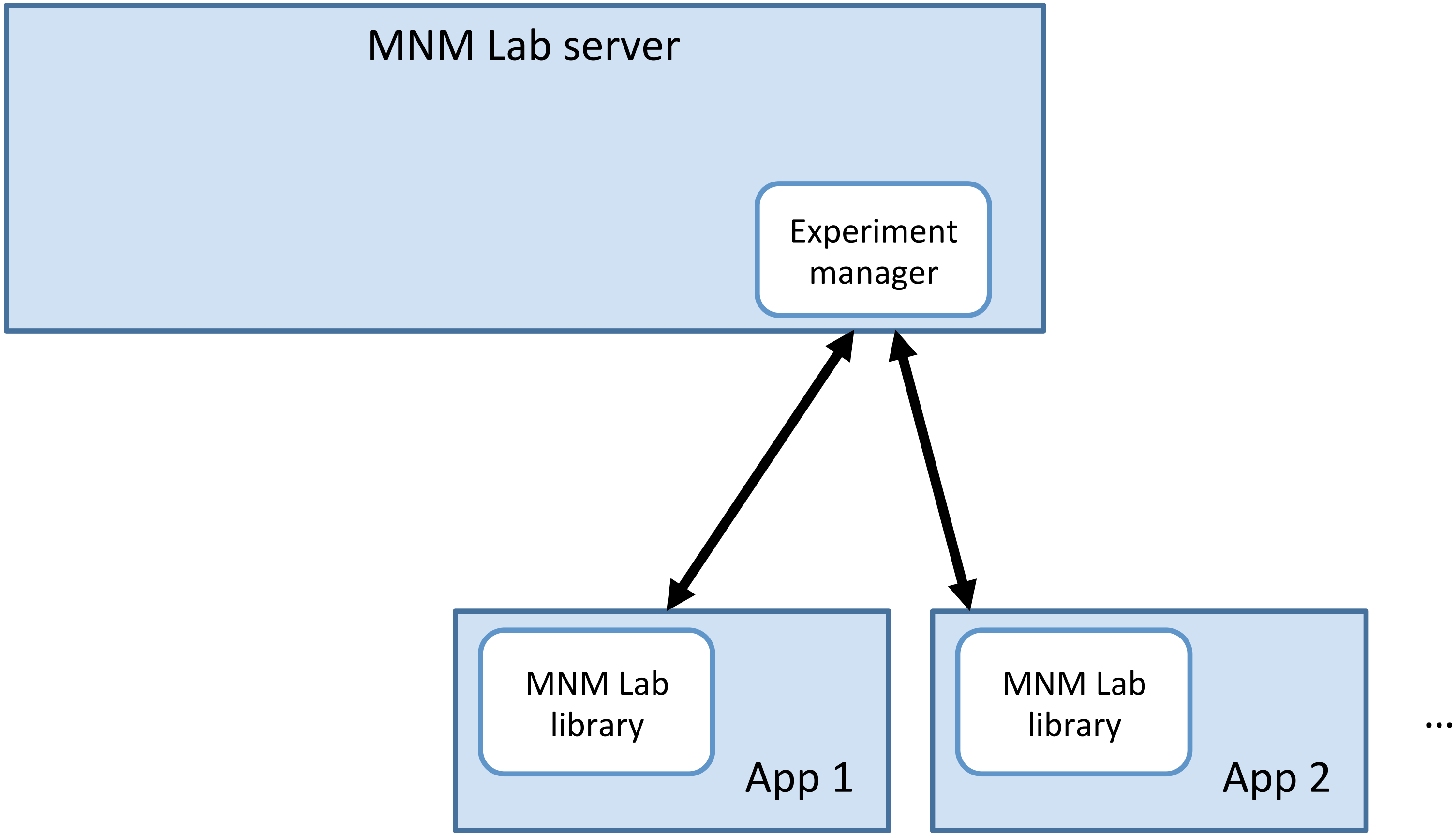

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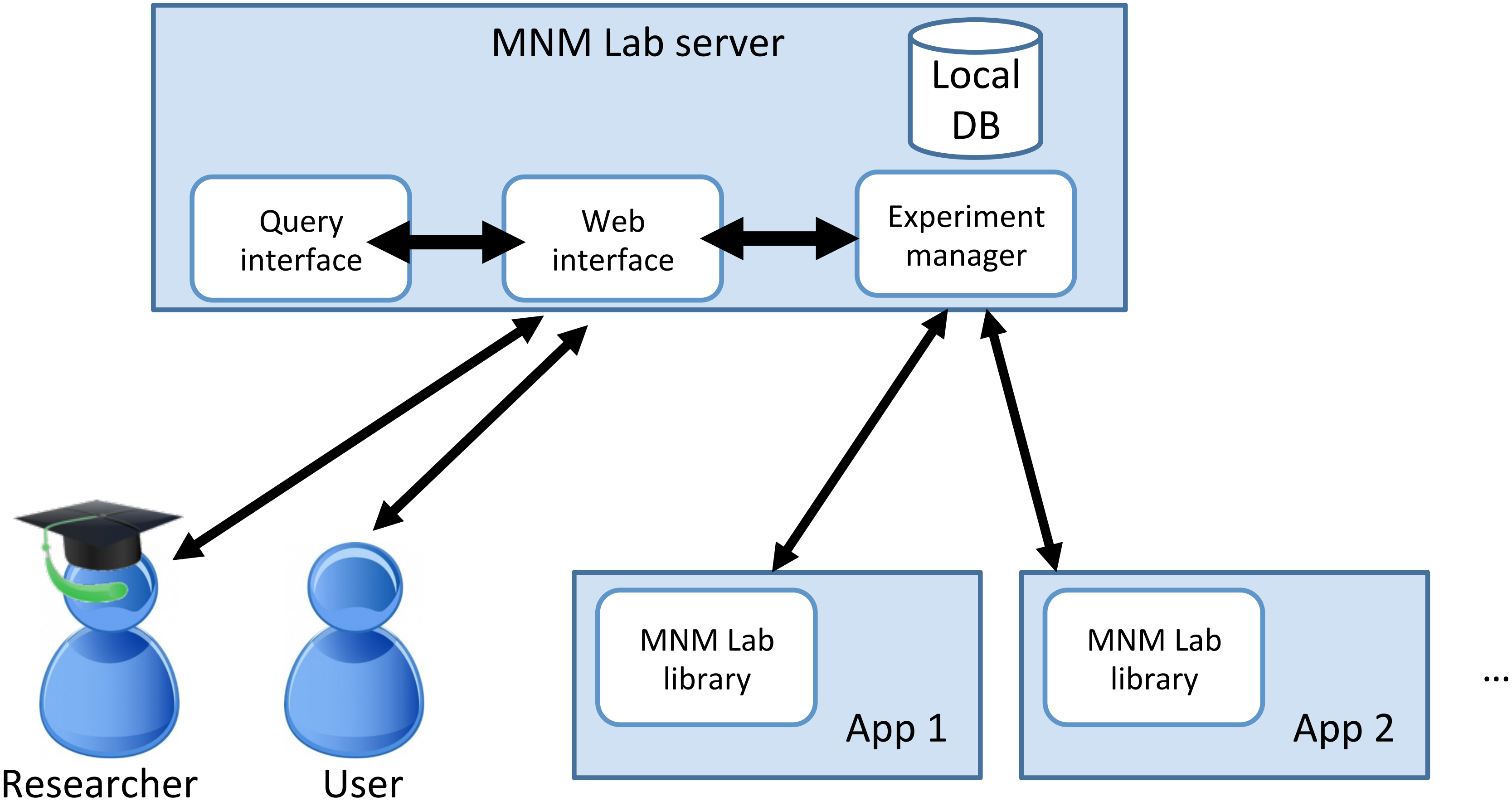

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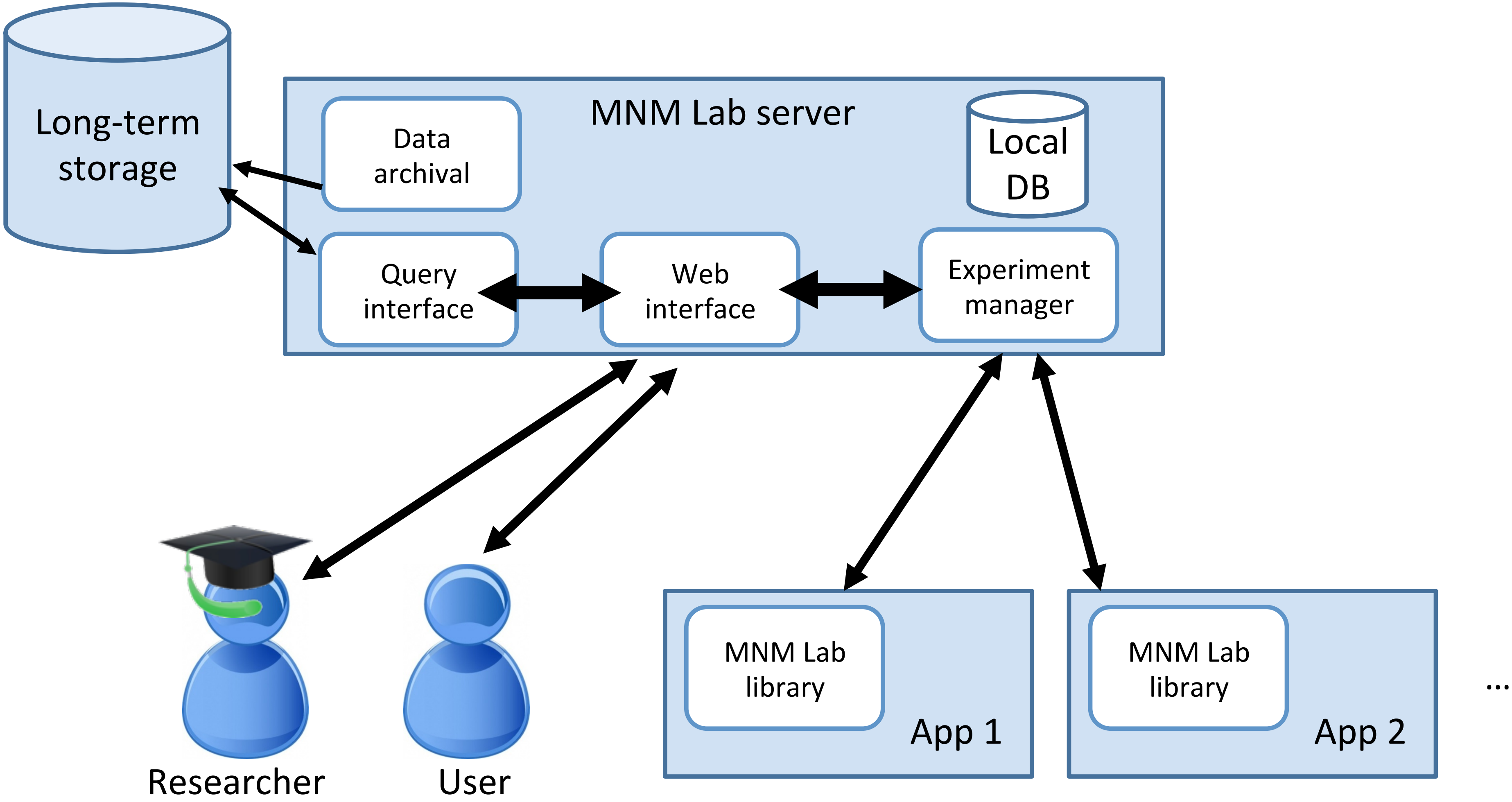


Key advantages

- **Adoption**:
  Easy to integrate into *any* app (Angry Birds?)
  Go forth and make popular apps!
- **Validation**:
  Write-once-use-everywhere validated measurement primitives
- **Management**:
  AppEngine server (h/t Google) provides management/ collection of measurement experiments
- **Data sharing**:
  Continuous feed to Google Storage public bucket
- **Incentives/Open Access**:
  Researchers get quota in proportion to library-enabled app instances they bring to the system (like RIPE Atlas)

A few tricky problems

- Managing user resources efficiently
  - Be smart about when to measure, when not to
  - Don't suck up too much battery, data quota
- Interface for programmers
  - Dasu? (Declarative programming)
  - Other ideas?
- Curated experiments
  - Prevent abuse
  - Allow reuse of existing modules

Current status

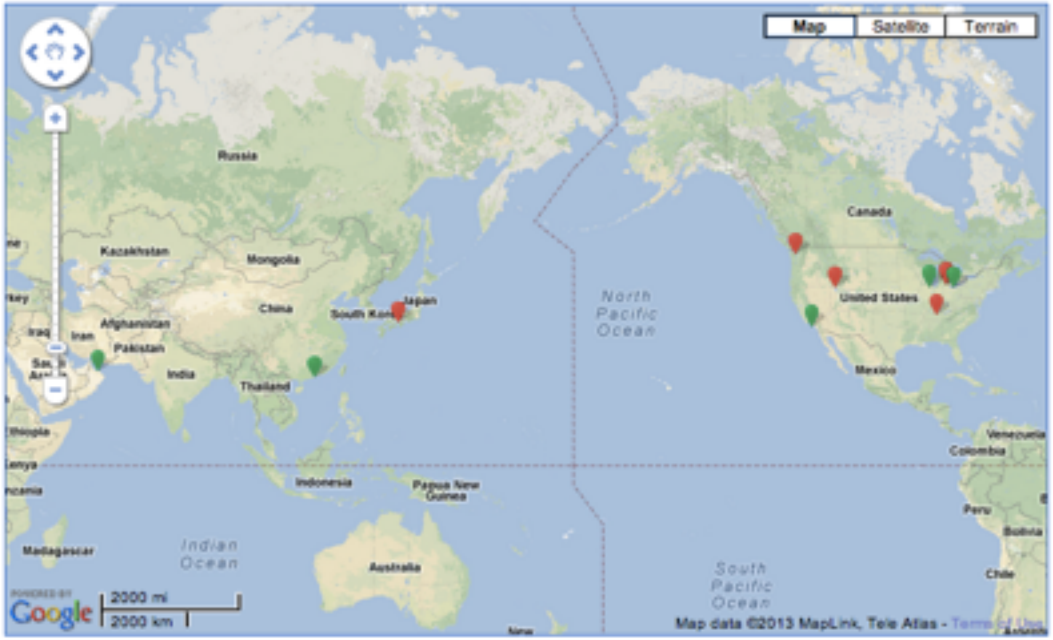
- Mobiperf to become “reference app” for library
  - Primitive measurement scheduler
  - Data already being stripped of PII and published daily

- Dominic Hamon (M-Lab) is building native-code measurement primitives for a library

- Working with 802.16.3 (mobile measurement standard)

Obligatory answers to 3 questions

- Data sharing: gs://openmobiledata_public
- Visualization: http://openmobiledata.appspot.com



- What I want to get out of this:
  Users, measurement primitives, experiments needed