# AIMO: An African Internet Measurement Observatory

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# Premise behind AIMO

- The Internet in Africa is evolving fast!
- Perhaps too fast…
  - Makes understanding the status quo difficult
  - Makes predictions difficult
  - Makes decision making difficult
    - Shaping standards
    - Optimising deployment of new technologies
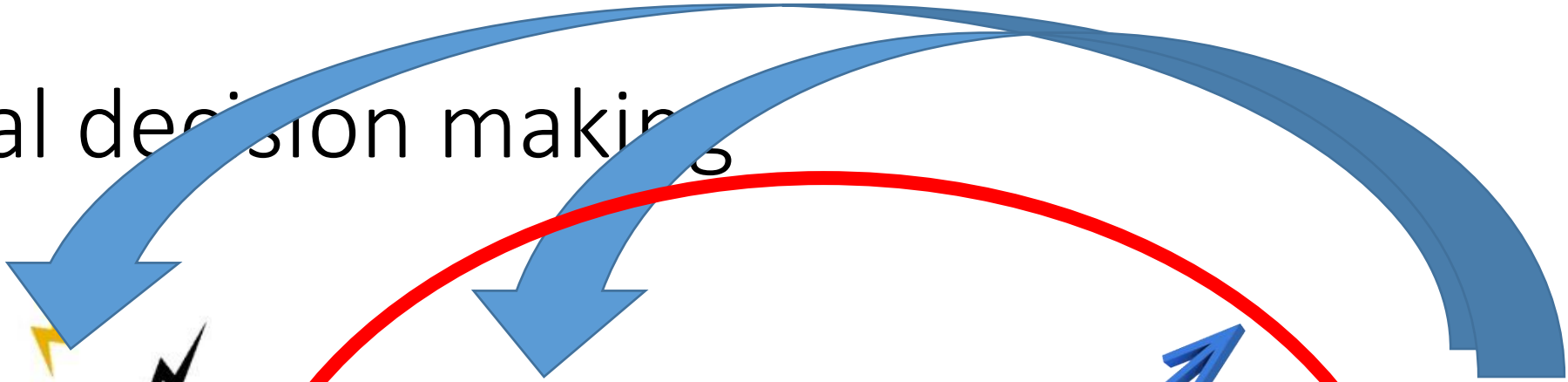
Typical decision making



**Have an idea**

**Experiment & collect data**

**Evaluate evidence**

**Make decision**

# Where should I place my web server in Africa?

- Where are my subscribers?

- Where are the possible locations?

- How much do they cost?

- What is the network like between the locations and the subscribers?

- What is the design of my website, and how will it interplay with the network?

- What devices do my subscribers use?

## What if you didn't have access to the **data**?

# Introducing AIMO…

- The African Internet Measurement Observatory!
- A place where we create, share and analyse data
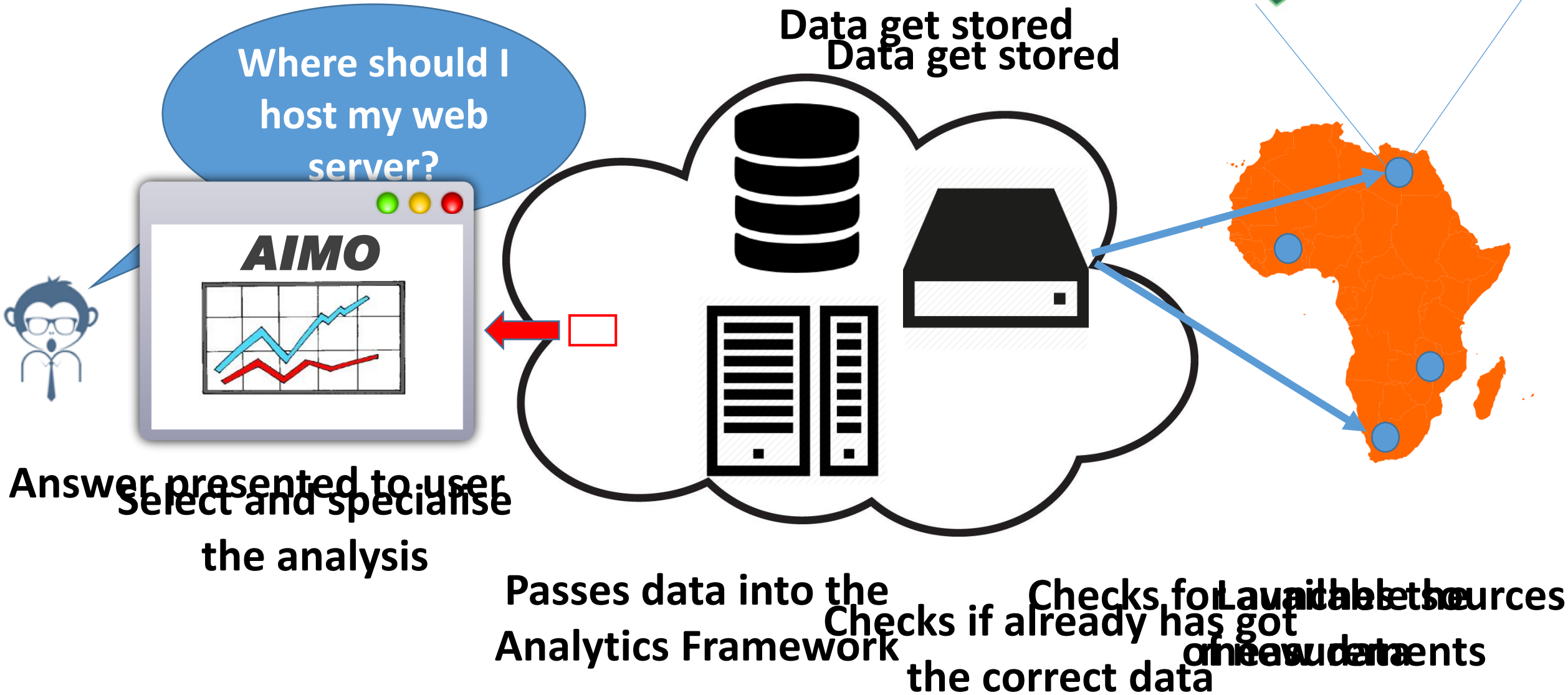  - Of use to the networking/Internet/telecoms community

# Design principles

- Relies on **Open Data**
    - All data is immutable
    - Adheres to predefined community schemas
    - Includes extensive immutable metadata, e.g. measurement bias
- Data sources can be anything…
    - We're building our own probes
    - But also mobile phone apps, fibre taps etc
    - And third party platforms, e.g. BISmark, Atlas
- Thus: AIMO is an open data collection and analysis framework

# But, in practice…?

- AIMO Web Portal
  - Web interface to control measurements, access data, perform analysis, interact with other users

- AIMO Data Sources
  - Hardware/software nodes that can launch measurements
  - Or third party data sources

- AIMO Measurement Manager
  - Controls the mapping of measurement requirements to measurement tasks

- AIMO Analytics Framework
  - Plug-and-play modules to processing data
  - All outputs become inputs for other people

# Example



Where should I host my web server?

**Data get stored**
**Data get stored**

**AIMO**

Answer presented to user

Select and specialise the analysis

Passes data into the Analytics Framework

Checks for available sources

Checks if already has got the correct data

Checks for available sources and measurements

Launches the new student

# A few points to emphasise

- Anybody can develop AIMO Analytical Plugins
    - Rating system help select which to use
    - Plugins can be composed
    - Output of a plugin can go into data store for future use
- Anybody can inject AIMO Data
    - You decide which data you trust
- Anybody can offer themselves as an AIMO Data Source/Measurement Probe

# We're not trying to replace existing testbed

- RIPE Atlas
  - Fantastic distribution
  - Open for use
  - Low capacity devices
- M-Lab
  - Much smaller distribution
  - High capacity servers
- Ark
  - Small distribution
  - Mix of devices
- We wish to augment these
  - Measurements
  - Analysis

# Status

- Received funding to start building a prototype

- Building team to get things moving

- Applying for funding for wide-area deployment
  - https://www.epsrc.ac.uk/funding/calls/globaldevelopmentchallenges/

# Why am I telling you this?

- Would this be useful? Who to?

- Would this be feasible?

- Would people want to be involved?

- What are the major stumbling blocks you can see?

- What are the biggest benefits (or downsides)?

ANY QUESTIONS?

**AND PLEASE COME SPEAK TO ME!**

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