

Leveraging inter- institutional connectivity for transmission of AWS data in Uganda

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General Structure of an AWS

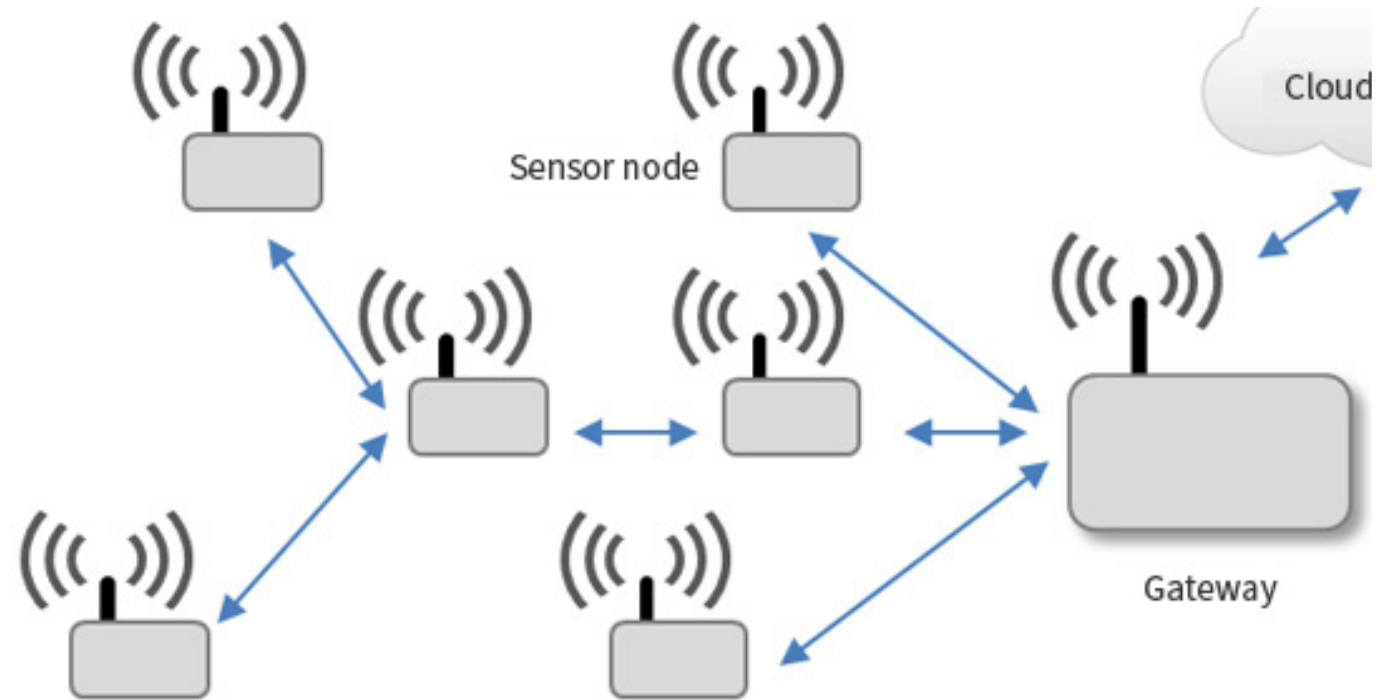
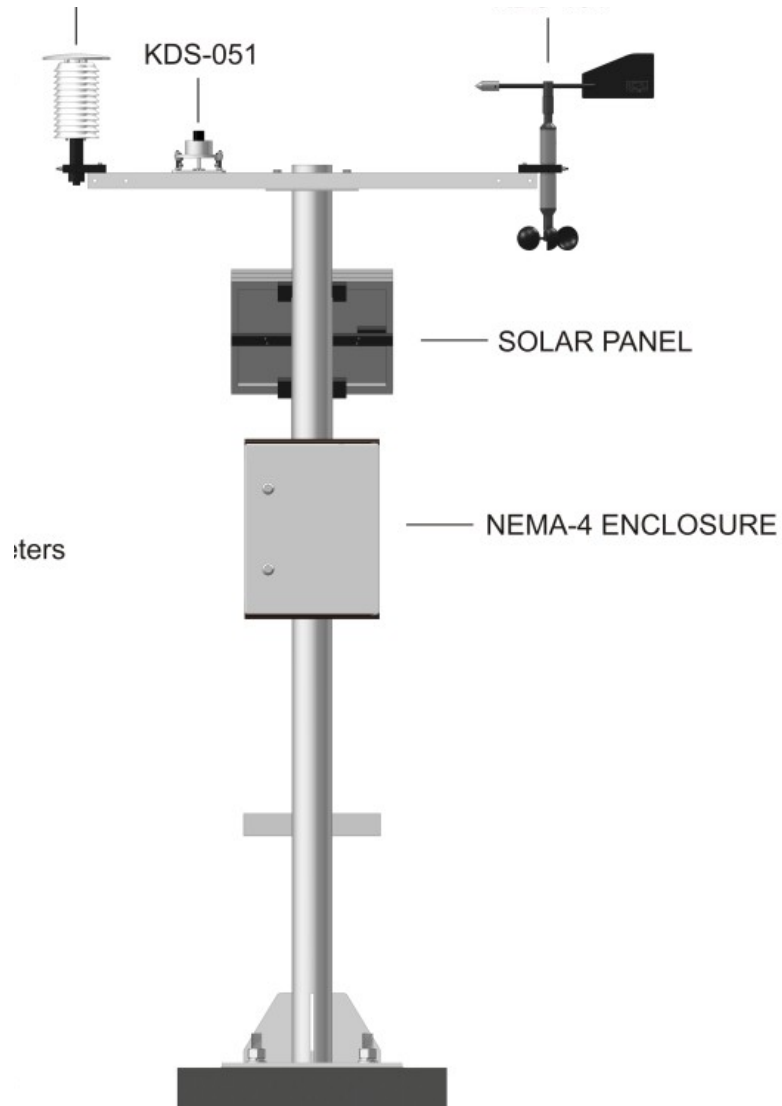


Image credit: yuden.co.jp

Image credit: kamoline.com

Problem and Motivation

Data needs to reach a remote destination promptly

The gateway is the single most power hungry device in the whole AWS

This is majorly because it almost always contains a telemetry device

GSM/GPRS , 3G , Satellite

Remote measurement and communication reliability become an issue due to

1. Cost
2. Downtime
3. Power

There is need to re-think how these devices can send out data.

Re-engineering is an technical option. crowd-sourcing is social option.

objective

To get as much data as possible across to the destination server(s) at the smallest possible cost in money and power.

Suggested solution

RENU 😊

Well, more or less

We need to deploy stations at universities and other research institutions

Site selection for AWS

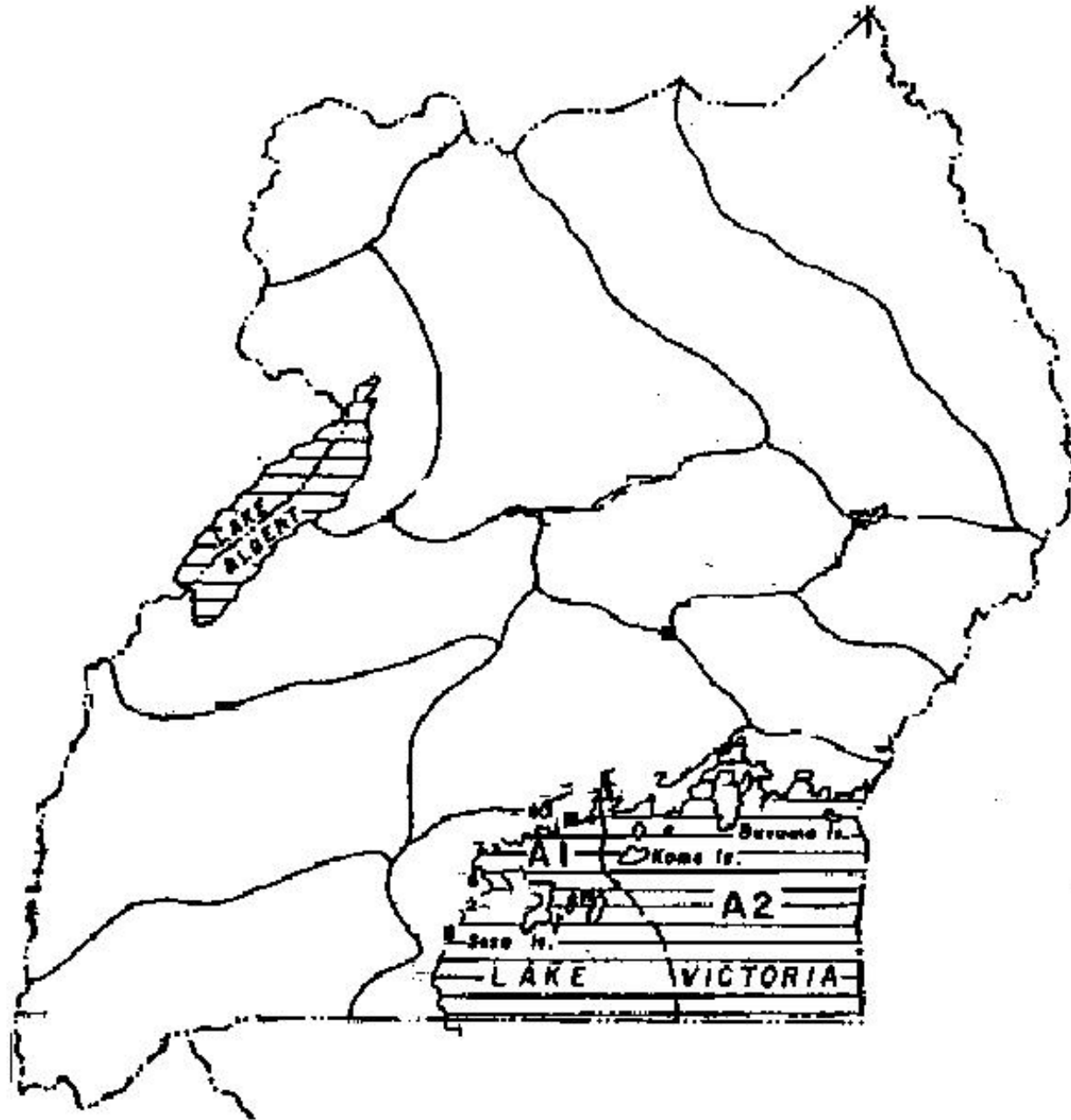
Climatological zones are the most important

- i. Internet availability
- ii. Land policies
- iii. Security
- iv. power

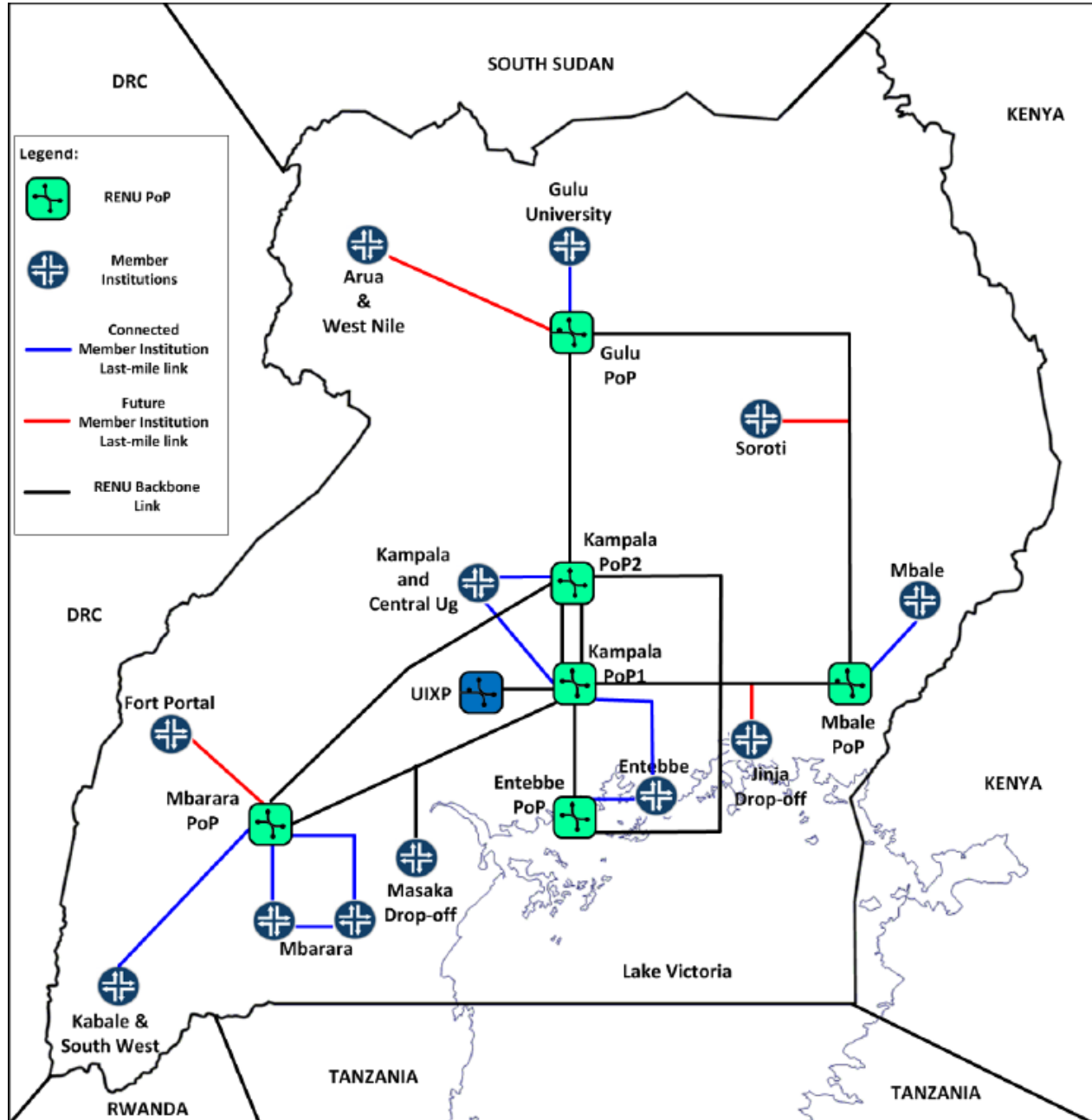
Deploying a station at a university solves almost all

1. More reliable internet than surroundings
2. Non-multiple stakeholders on university land
3. More intellectually cultivated mindsets

Climate zones



RENU Reach



RENU provides connectivity for 61 universities in Uganda – *across many climate zones*

Image credit: RENU

Why is this such a great solution? - Benefits

Cost is almost 0. Very little data. Saves over 5000 UGX per station per month

400 bytes/minute = 25 kB every hour

Higher probability of data reaching the destination

Fiber connections

More dedicated maintenance teams

Real-time data

Reliable back-up at local servers, several mirrors for open data

On-site power

Smaller probability of vandalism

auto-maintenance (e.g. vegetation clearing)

University bureaucracy is less painstaking

Costs

There are no imminently visible additional monetary costs

The primary non-monetary cost is sacrificing the ideal location for measurement. It may be outside the university – a good mitigation strategy is to use Wireless Sensor Networks

challenge

UNMA doesn't have a clear open data policy. We need a mindset change.

Solution

70 stations of accurate, high resolution, consistent, digital weather data will bring everyone on the wagon. Eventually.

conclusion

Untapped crowd sourcing techniques save costs in the short and long run