eduroam: The Value of WLAN measurements for the R&E Community

RIPE69 – MAT-WG – Wednesday, 5 November 2014

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About me…

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Australian living in The Netherlands.
Grew up on the island state of Tasmania.
1st Chair of the AARNet eduroam Project Group.
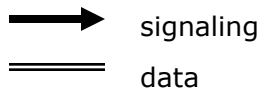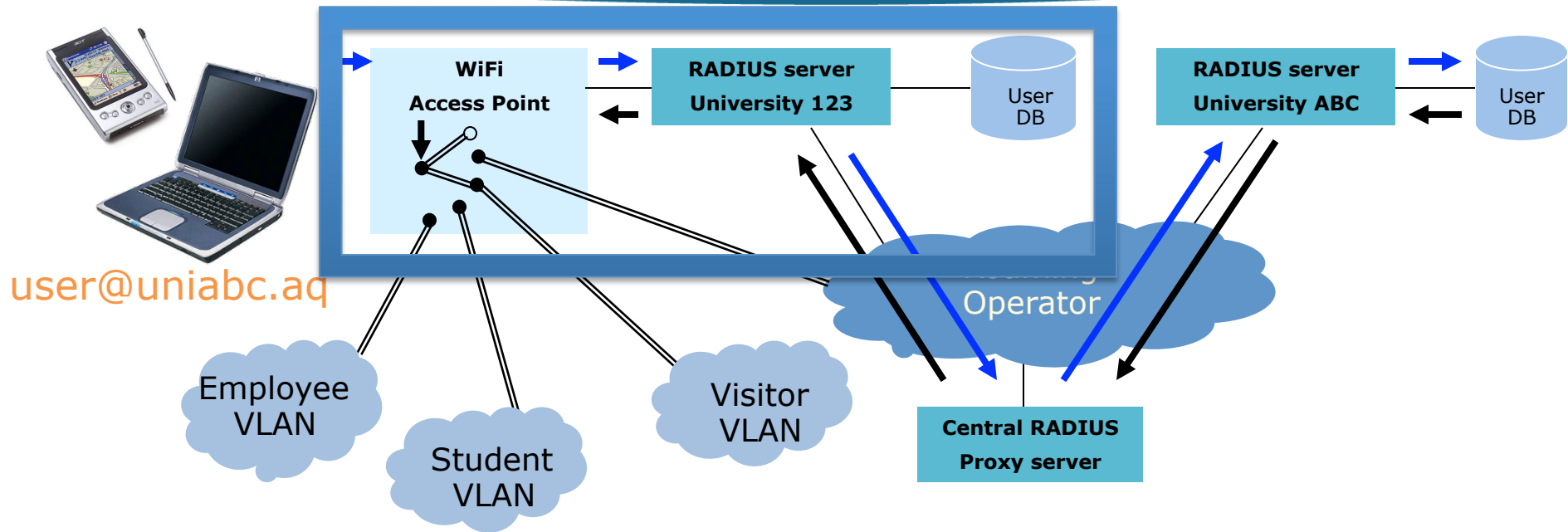Secretary of the Global eduroam Governance Committee.

Visit http://youtu.be/TVCmcMZS3uA
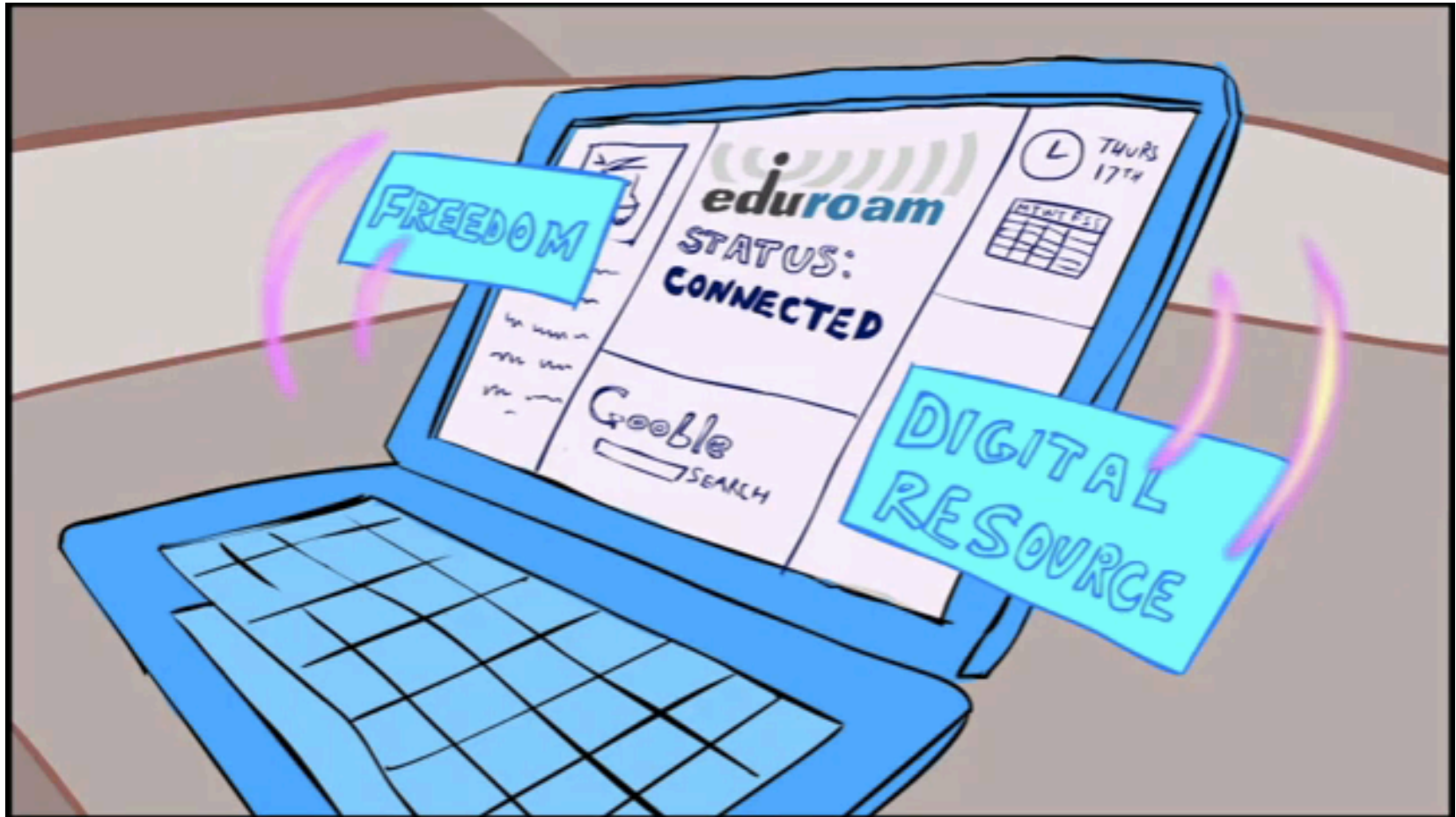
What is eduroam?

- **eduroam is a global wireless roaming network, based on:**
  - **WPA2 & 802.1X (network access control)**
  - **RADIUS (infrastructure to transport credentials)**
  - **Trust fabric (RADIUS hierarchy and policy)**
  - **No web splash screen portal or shared passwords**
- **Started in the TERENA Task Force "Mobility"**
- **eduroam = education roaming**

eduroam Infrastructure

user@uniabc.aq

- **WiFi Access Point**
- **RADIUS server University 123**
- User DB
- **RADIUS server University ABC**
- User DB
- Employee VLAN
- Student VLAN
- Visitor VLAN
- Roaming Operator
- **Central RADIUS Proxy server**

→ signaling

⇒ data

- Trust based on national policy
- Security based on 802.1X/RADIUS
- VLAN assignment to separate users

What else is like eduroam?

- **eduroam is similar to other wireless hotspots**

- **...but eduroam is a service via an overlay**
  - **We don't run our own hotspot infrastructure**

eduroam

- ## Worst "franchise" in the world

Ashley Lawrence @AshNLawrence · Oct 13
I hate **eduroam**. Thank you for ruining my life.

Expand   Reply

harry @mamoswines · Oct 17
imagine a world where **eduroam** actually worked consistently

Expand   Reply   Retweet

ZooMass @ZooMass · Sep 15
I'm going to start calling my girlfriend **eduroam** so maybe she'll go down on me 12 times a day too.

Expand   Reply   Retweet   Favorite   ••• More

- **2009 - RIP**
- **AARNet**
- **SheevaPlug**
- **≅€100**
- **Didn't Scale**
- **Not a community**

Active Monitoring eduroam Node (AMeN)

- **2009 – 2014 (still running)**
- **Alix System**
- **SURFnet**
- **≅€150**
- **Deployed at 14 sites**
- **Deployment continues**

Srce Raspberry Pi ("Frankenprobe")

- **2012 → Current**
- **Raspberry Pi**
- **Srce**
- **≅€100**
- **Not a solution**
- **Scanning for SSIDs & Signal Quality**

Janet/Loughborough Uni Probe
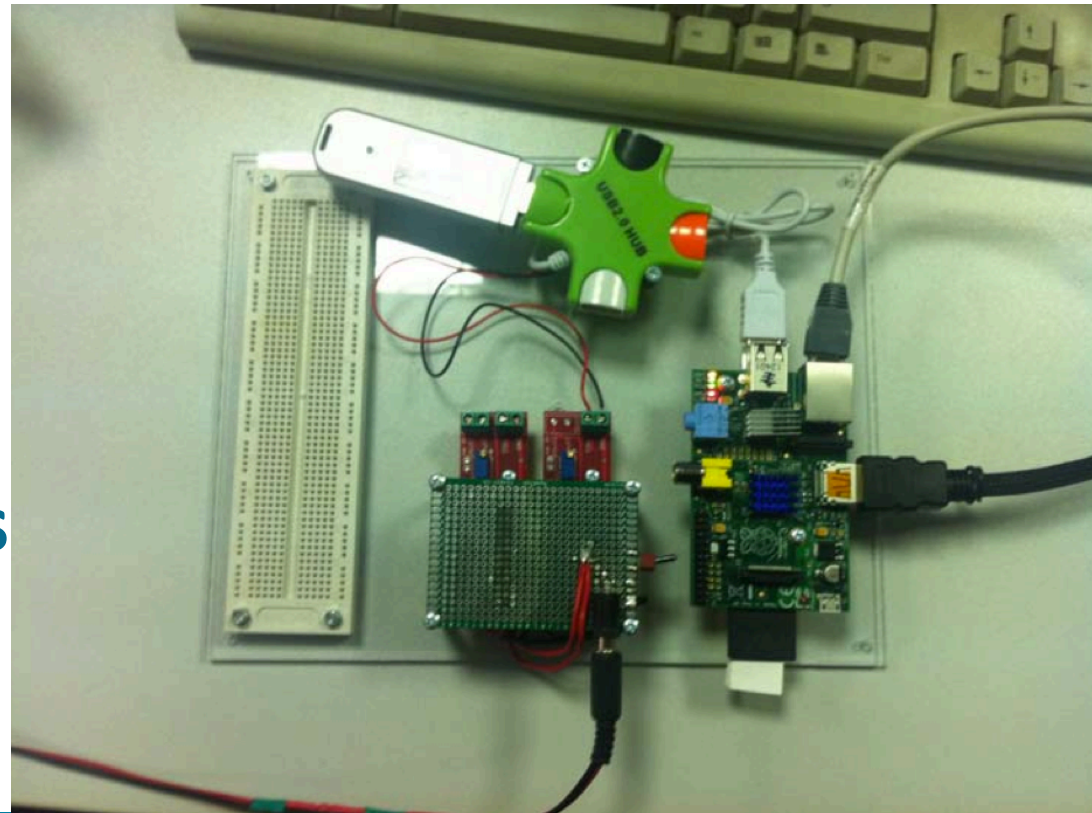
- **2012 – 2014 (still running)**

- **wpa_supplicant & scripts**

- **Growing from 20 to 200 probes now**

- **TP-Link MR3020**

- **≈ Atlas v3**

lboro.ac.uk
- General
- eduroam UK NAGIO
- ▶ eduroam UK config
- eduroam UK probes
- my account
- log out
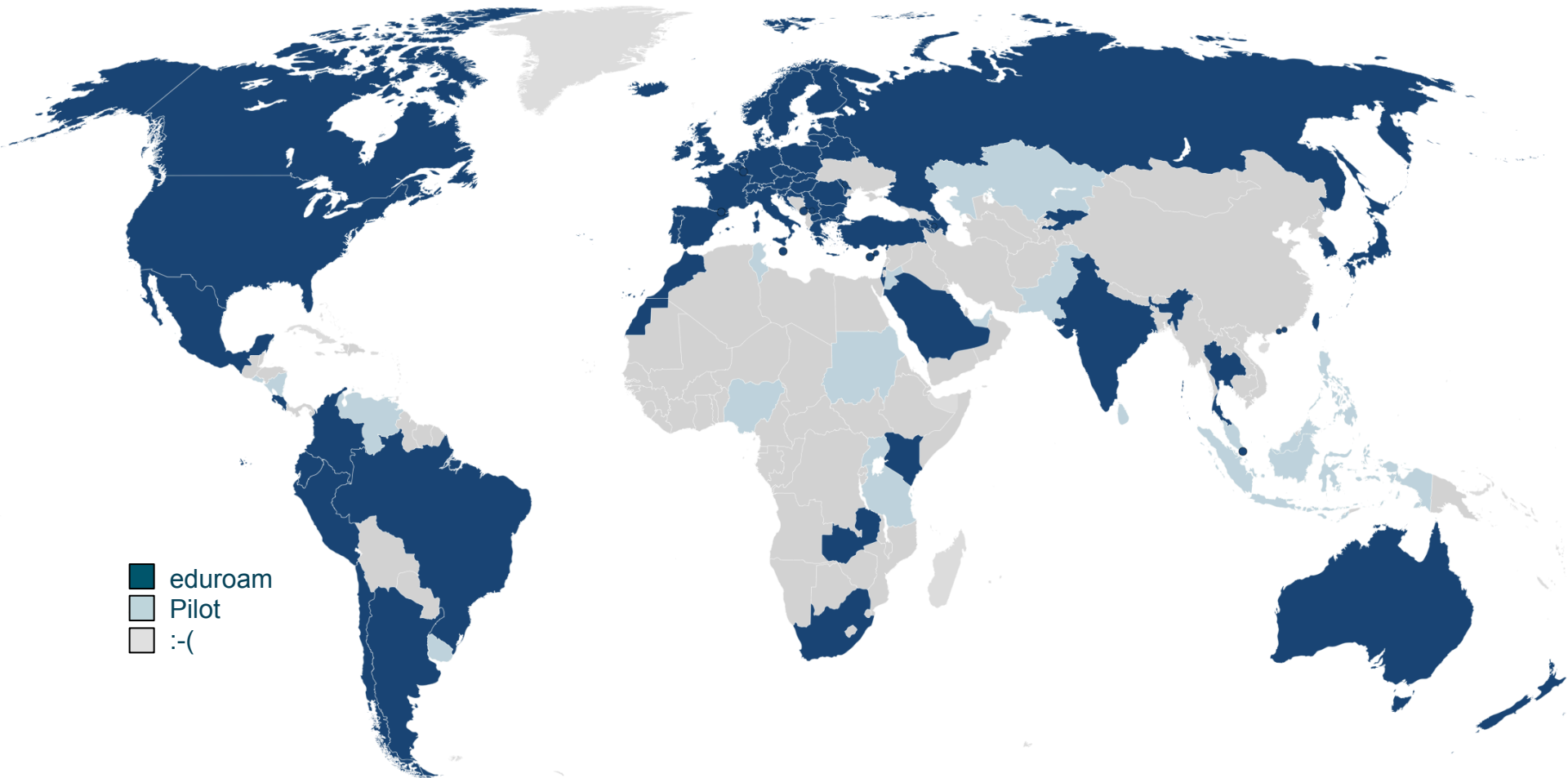
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Why WLAN measurements on Atlas?

- **Janet/Loughborough Uni as PoC**
  - **Proof that it can work…**
    - …previous solutions show utility – but not scale.

- **eduroam ≅ Hotspot 2.0**
  - **Hotspot 2.0 + Next Generation Hotspot both 802.1X**
    - WLAN hotspot providers might be interested in sponsoring

- **Atlas has the footprint + infrastructure**
  - **Can scale to >7k probes**
  - **Datasets can be public + available over time**

What is in it for RIPE Atlas?

- **Bigger footprint in the R&E space**
  - Currently many countries, ASNs and networks connected to GÉANT without an Atlas Probe
  - GÉANT and associated networks reach xx countries

- **Sponsorship from the eduroam community**
  - Desire to define eduroam quality will encourage Atlas deployment
  - We willing to financially support Atlas

Where is eduroam?

Legend:
- **eduroam** (dark blue)
- **Pilot** (light blue)
- **:-(** (grey)

Where is eduroam?

What if RIPE say "No" to WLAN?

- **Anti-Pattern Deployment**
  - **AMeN, Loughborough & "Frankenprobe" will continue to be investigated and deployed**
    - SURFnet willing to get out of the AMeN business
  - **These tools don't benefit RIPE or Atlas**
    - Parallel network for measurements
  - **Expenditure of "public" money on duplication**
    - Atlas is more than probes…
    - Huge backend infrastructure & improvements

What next?

- **PoC code → Running on Atlas Dev/Test**
  - **What's the current status?**
- **An API for WLAN measurements**
  - ~~Scan~~
  - Associate
  - Authenticate (open or 802.1X)
  - Measurement (dns, ping, traceroute, cert - optional)
  - Report
- **Orchestration + Visualisation of WLAN Tests**
  - Still a responsibility of eduroam Operations Team
  - Community can built on this infrastructure

- **How to roll out WLAN capability?**
  - – **User Tag?**
  - – **Opt-in vs Opt-out**
  - – **Other options...**
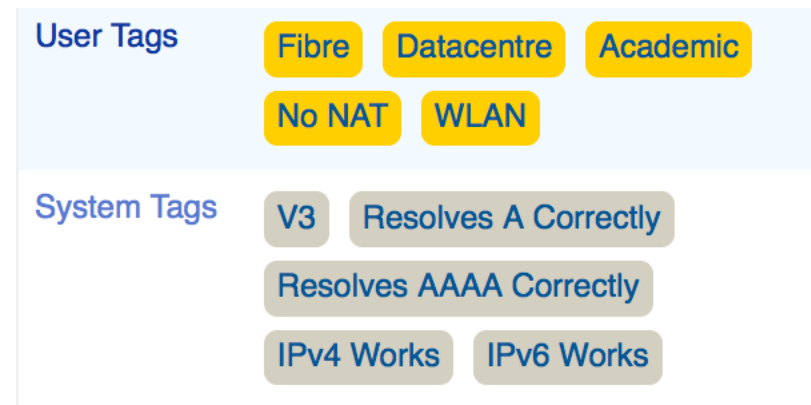
- **Timeline**
  - – **How important in relation to the roadmap?**
  - – **Currently "In Progress"**

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