eduroam over Health Networks in Australia

Alex Reid

Advisor, eResearch & Middleware, AARNet

&

Honorary Professorial Fellow, University of Western Australia

QRNO

Queensland Regional Network Organisation

aarnet

Australia's Academic and Research Network

# Outline

1. Network responsibility in Australia
2. QRNO
3. The network access problem
4. QRNO Health Research Access Project
5. The magnitude of the problem
6. *eduroam* to the rescue!
7. The Mater Hospital *eduroam* deployment
8. Queensland Health university access project
9. Further *eduroam* deployment

AARNet Provides National R&E Network

eduroam over Health Networks in Australia – 24-Nov-10
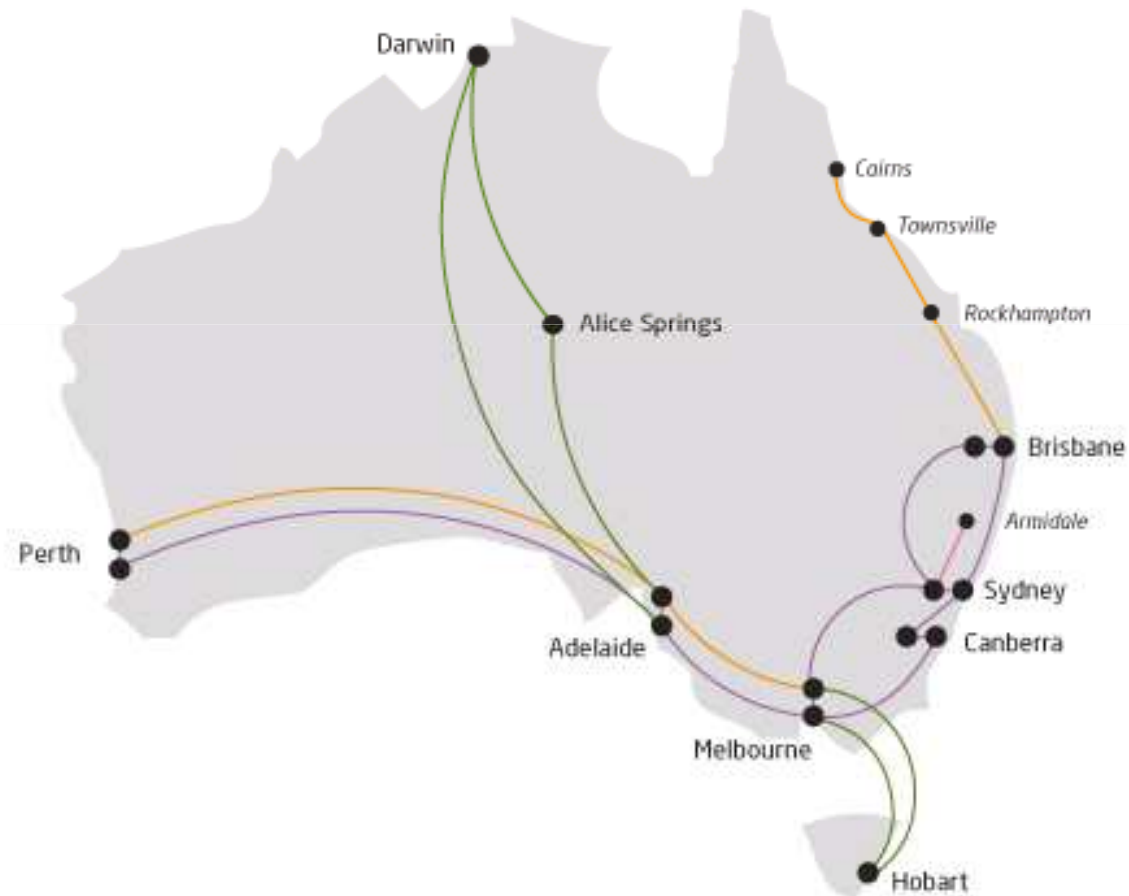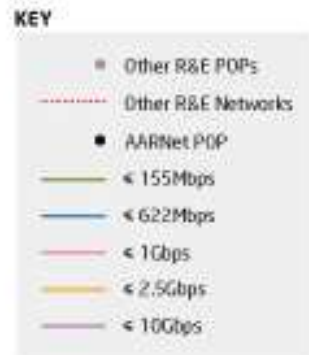
Regional Network Organisations

In each State or Territory, the local members collaborate with each other and with AARNet to provide varying degrees of local connectivity, with varying degrees of formality and autonomy:

1. NSW: eg Sydney Basin fibre ring
2. Victoria: eg VERNet fibre network
3. Queensland: QRNO projects
4. SA: eg Sabrenet fibre runs
5. WA: eg iVEC leased fibres
6. Tasmania: eg education fibres
7. ACT: eg TransACT fibres
8. NT: eg fibres from Alice Springs

QRNO
Queensland Regional
Network Organisation

Queensland Regional Network Organisation, QRNO

1. The QRNO **mission** is to enhance and extend the network connectivity between its members' various sites and to collaborate on the development of shared services using this network.

2. It achieves this by:

    a. Undertaking network or services projects where a collective approach provides cost savings and delivers an outcome of benefit to members;

    b. Initiating pilot projects that demonstrate the benefits of a larger scale undertaking to funding bodies;

    c. Maintaining an active Technical Advisory Committee;

    d. Actively partnering with AARNet, government agencies and other organisations as necessary to extend and evolve the existing data network between member sites.

Queensland Regional Network Organisation, QRNO

Members:

Australian Catholic University *

Australian Institute of Marine Science *

Bond University

Central Queensland University

Commonwealth Scientific and Industrial Research Organisation *

Griffith University

James Cook University

Queensland University of Technology

Southern Cross University *

The University of Queensland
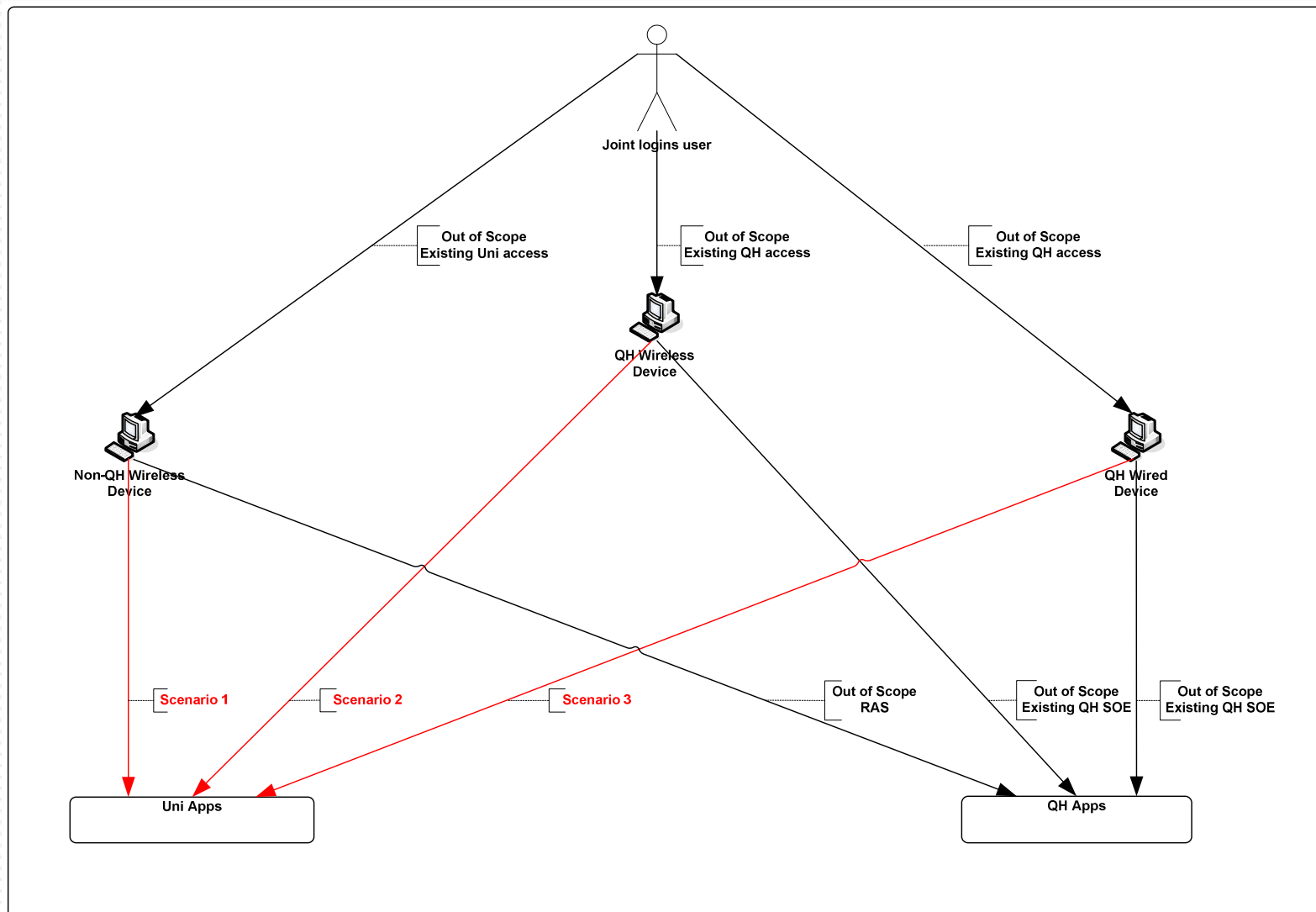
University of Southern Queensland

University of the Sunshine Coast

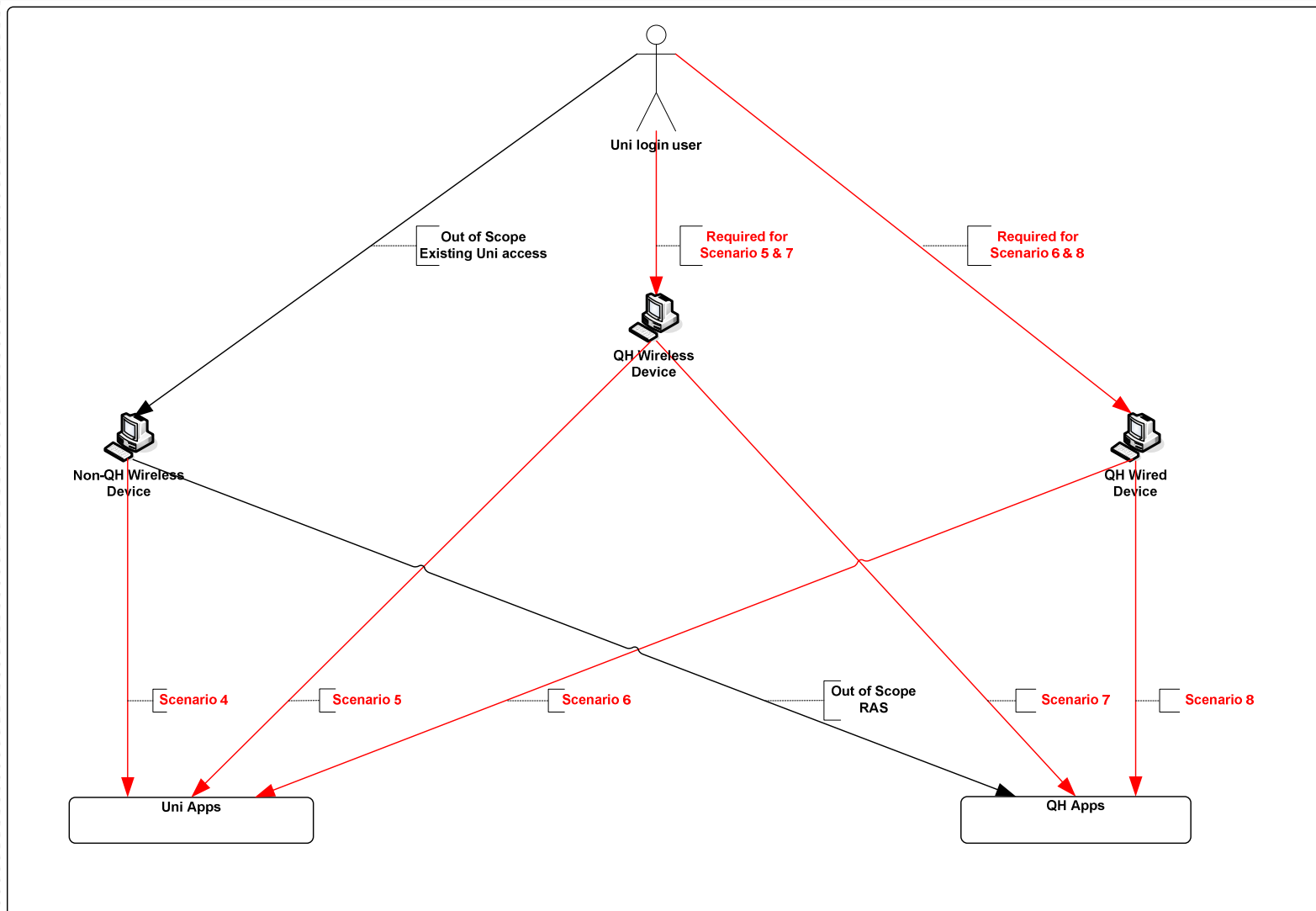*** institutions with HQ outside Qld**

QRNO's Health Research Access Project

1. **Goal:** to provide high-speed and reliable network access for university staff & students within health precincts and from health precincts back to their university and the Internet with minimal duplication of effort and infrastructure.

2. **Context:** growing collaboration between universities, Queensland Health (QH) and private hospitals in Research, Joint staff appointments, student placements.

3. **Benefits:**
   a. Potential shared access to university infrastructure;
   b. Known and simple processes for dealing with universities looking for access at hospitals;
   c. Known support processes to minimise impact on hospital help desks and support;
   d. Providing an enhanced experience for clinician and joint staff appointments;
   e. Providing an enhanced experience for students.

4. **Commenced in 2007**

Nature of the Access Problem

eduroam over Health Networks in Australia – 24-Nov-10

Nature of the Access Problem - more

Uni login user

Out of Scope
Existing Uni access

**Required for
Scenario 5 & 7**

**Required for
Scenario 6 & 8**

QH Wireless
Device

Non-QH Wireless
Device

QH Wired
Device

Scenario 4   **Scenario 5**   **Scenario 6**   Out of Scope
RAS   **Scenario 7**   **Scenario 8**

Uni Apps

QH Apps

eduroam over Health Networks in Australia – 24-Nov-10
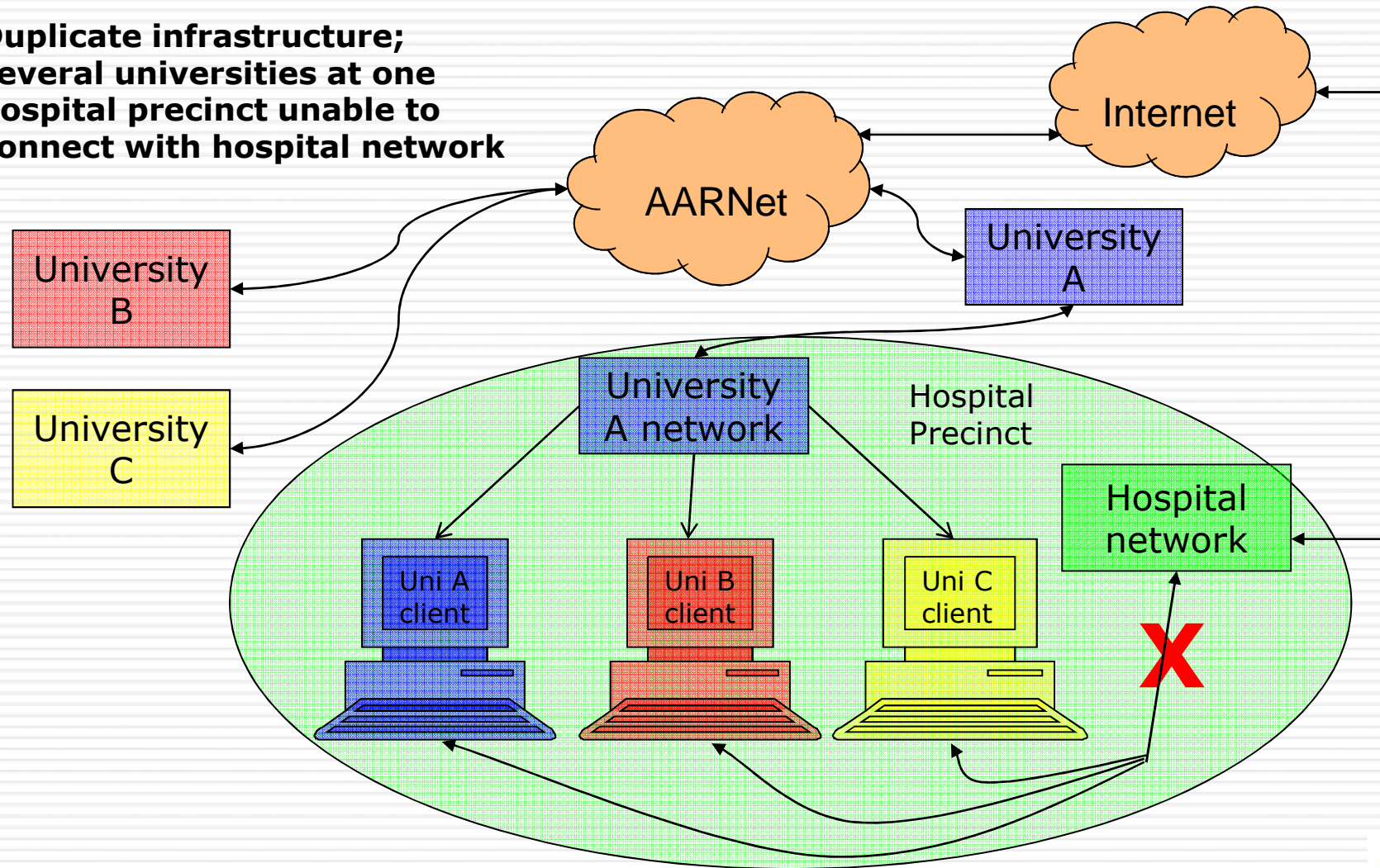
Nature of the Access Problem – Multiple unis

Duplicate infrastructure; several universities at one hospital precinct unable to connect with hospital network

Internet

AARNet

University A

University B

University C

University A network

Hospital Precinct

Hospital network

Uni A client

Uni B client

Uni C client

X

QRNO
Queensland Regional Network Organisation

Nature of the Access Problem – Growing R&D

## Substantial Investment in Health R&D:

1. $334M proposed Translational Research Institute (PAH, Woolloongabba)
2. $145M proposed QIMR Smart State Medical Research Centre (Herston)
3. $105M Queensland Bioscience Precinct (UQ, St Lucia)
4. $82M Australian Institute for Bioengineering and Nanotechnology (UQ, St Lucia)
5. $76.6M Australian Tropical Science and Innovation Precinct (JCU, Townsville)
6. $70M Institute for Health and Biomedical Innovation (QUT, Kelvin Grove)
7. $66M UQ Centre for Clinical Research (UQ, Herston)
8. $63M Queensland Brain Institute (UQ, St Lucia)
9. $39M Mater Medical Research Institute (South Brisbane)
10. $36M Australian e-Health Research Centre (CSIRO, Brisbane CBD)
11. $34.75M Eskitis Institute for Cellular and Molecular Therapies (Griffith, Nathan)
12. $25.5M Medical Engineering Research Facility (TPCH, Chermside)
13. $22M Institute for Glycomics (Griffith, Gold Coast)
14. $21.4 The Wesley Research Institute Health and Medical Research Centre (WRI, Auchenflower)
15. $7.98M The Wesley Research Institute Tissue Bank (WRI, Auchenflower)

Nature of the Access Problem – Growing R&D

Queensland's existing and emerging health and medical research zones:

- **$1,128m infrastructure investment**
- **$25.65m for a Health and Medical Research Program over 4 years**
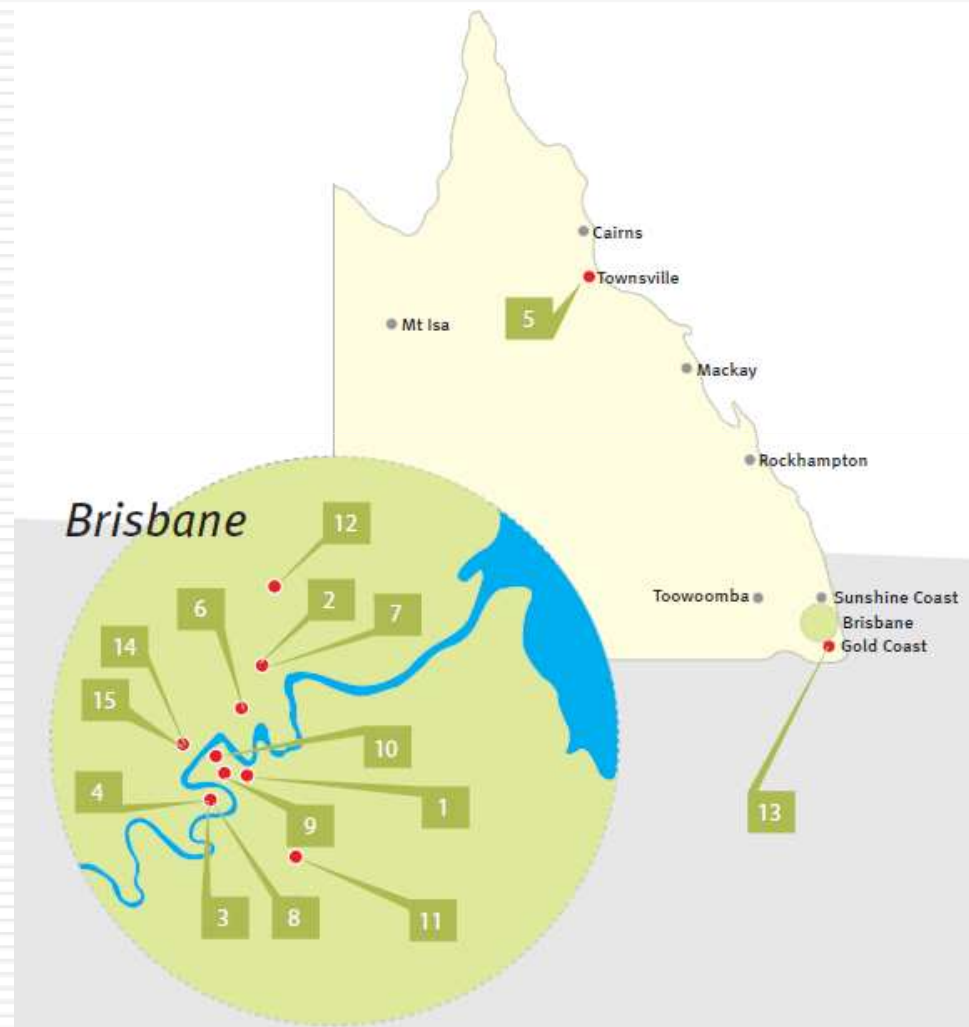
QRNO Health Research Access Project

Stage 1 – Discovery & Involvement

1. **Determine who and what was out there:**

   ❖ the number and university staff and student placements;

   ❖ university installed infrastructure at health precincts.

2. **Develop a suitable network design and architecture to meet the needs of placed personnel.**

3. **Establish:**

   ❖ Common support model;

   ❖ Process for obtaining network access;

   ❖ Possible cost sharing model.

4. **Develop close relationships with a range of health staff in universities, Qld Health and the private hospitals.**

5. **Get involved in the IT infrastructure planning for the new SE Qld hospitals at Gold Coast, Kawana Waters and South Brisbane.**

6. **Get Involved in other collaborative developments, eg Translation Research Institute building at Princess Alexandra Hospital.**

QRNO Health Research Access Project

Results from a survey of in-scope Hospitals:

Hospital	Admin staff	Academic staff	Clinical staff	Research students	Coursework Students	Total	Universities
Cairns	2	2	10	3	93	110	JCU, UQ, GU
Gold Coast	1	3	11	10	766	791	GU, UQ, QUT, JCU
Greenslopes	2	8	12	2	155	179	UQ, QUT, GU, CQU
Ipswich	1	0	7	0	197	205	UQ, QUT, GU, JCU, USQ
Logan	1	3	5	2	222	233	GU, UQ, QUT
Mackay	2	0	4	0	86	92	CQU, JCU, GU QUT, UQ
Mater (Bris)	10	6	29	20	684	749	UQ,QUT, ACU, GU
Princess Alexandra	50	216	40	100	1203	1609	UQ, GU, QUT, JCU, CQU
Prince Charles	3	4	21	17	750	795	QUT, UQ, ACU, GU, JCU, CQU
QE II	1	0	2	0	229	232	GU, UQ, JCU
RBWH	150	155	98	212	2117	2732	QUT, UQ, GU, JCU
Rockhampton	0	1	16	0	102	119	CQU, UQ, JCU, GU
St Andrews (Bris)	0	0	2	0	103	105	ACU, QUT, UQ
Toowoomba	5	1	92	1	149	248	UQ, USQ, GU, JCU, CQU
Townsville	5	7	10	10	132	164	JCU, GU, UQ, QUT, CQU
Tweed Heads	0	0	0	0	30	30	GU
Wesley	0	8	13	3	296	320	QUT, UQ, ACU

Total of Administrative, Academic / Research, Clinical Academic, Coursework & Research Students = 11,618

QRNO Health Research Access Project

Stage 2 – build on in-principle agreements:

1. **With Queensland Health:**
   - ❖ **To share cabling infrastructure and network equipment space;**
   - ❖ **To share wide-area links (fibre) where possible;**
   - ❖ **To establish wireless access points on Qld Health sites;**
   - ❖ **To investigate with universities the viability of using a single PC with multiple virtual environments.**
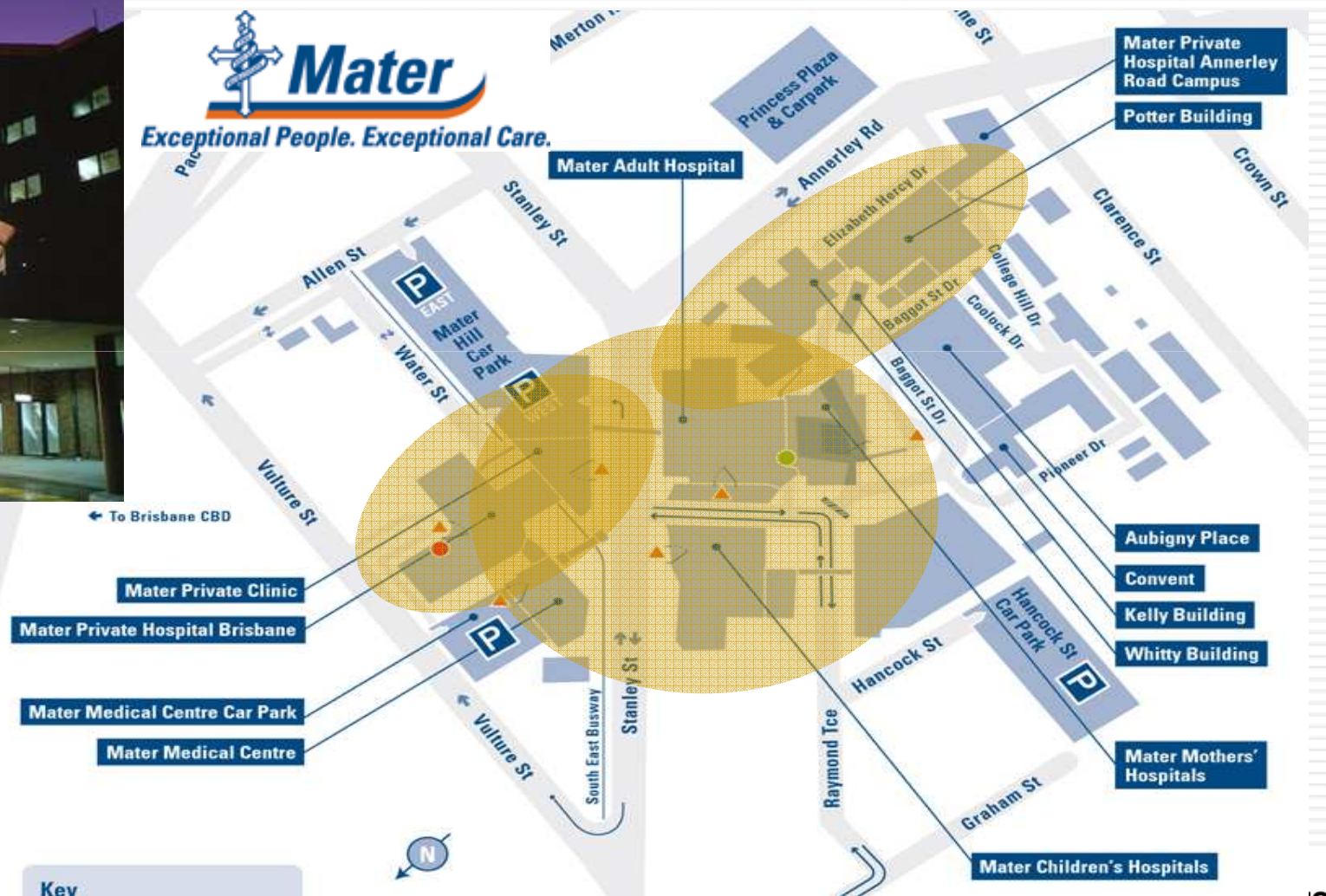
2. **With Mater Health Services:**
   - ❖ **To establish and trial wireless access.**
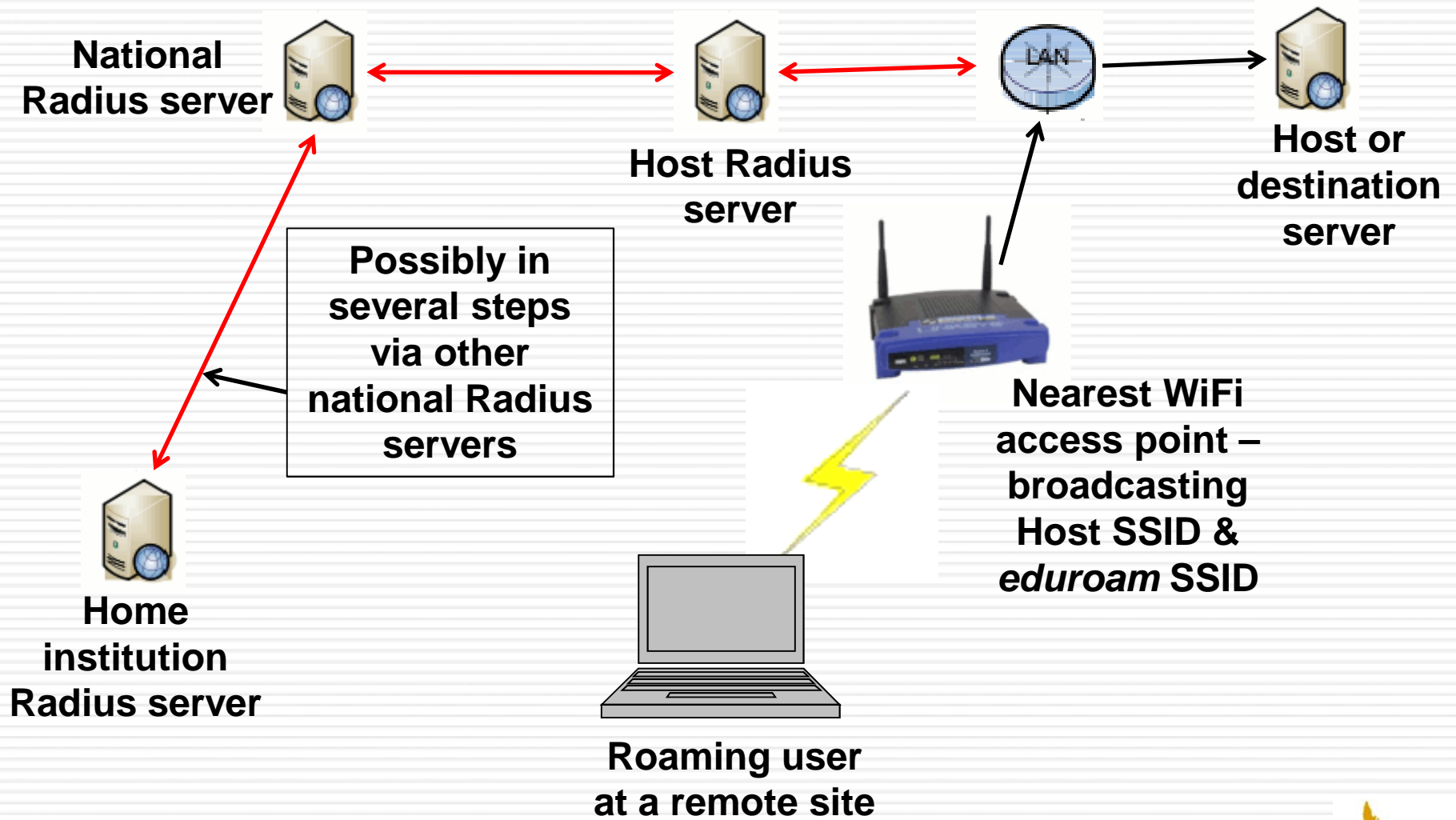
Mater Trial Wireless Access Project

Mater Trial Wireless Access Project

eduroam over Health Networks in Australia – 24-Nov-10

What is *eduroam*?

1. *eduroam* (**edu**cation **roam**ing) is the secure, world-wide roaming WiFi access service developed for the international research and education community.

2. eduroam allows researchers, staff and students from participating institutions to obtain Internet connectivity when visiting other participating (host) institutions by simply opening their laptop.

3. Internet connectivity could be back to their Home institution, to the Internet more widely, or to the Host institution (assuming they also have the necessary credentials to access them).

4. It is based on using Radius servers located at the host and home institutions and a chain of such servers, possibly across the world, which send secure authentication information (originating in an X.509 certificate installed on the user's laptop) to validate the user.

What is *eduroam*?

National Radius server

Host Radius server

LAN

Host or destination server

Possibly in several steps via other national Radius servers

Nearest WiFi access point – broadcasting Host SSID & *eduroam* SSID

Home institution Radius server

Roaming user at a remote site

QRNO
Queensland Regional
Network Organisation

International *eduroam* Deployment

1. Australia
2. Austria
3. Belgium
4. Bulgaria
5. Canada
6. China
7. Croatia
8. Cyprus
9. Czech Republic
10. Denmark
11. Estonia
12. Finland
13. France
14. Germany

15. Greece
16. Hong Kong
17. Hungary
18. Iceland
19. Ireland
20. Israel
21. Italy
22. Japan
23. Latvia
24. Lithuania
25. Luxembourg
26. Malta
27. New Zealand
28. Norway

29. Philippines
30. Poland
31. Portugal
32. Romania
33. Slovenia
34. Spain
35. Sweden
36. Switzerland
37. Taiwan
38. The Netherlands
39. Turkey
40. United Kingdom
41. Canada
42. USA

QRNO
Queensland Regional
Network Organisation

Current *eduroam* Deployment in Australia

- ❖ **75% of AARNet members have deployed *eduroam*.**
- ❖ **Where it is deployed, it is available across the vast majority of the wireless infrastructure.**
- ❖ **Only 25% have made it the default wireless SSID.**
- ❖ **The quality of the experience is variable:**

	Poor		Satisfactory	Excellent		Have not used it
Rating	12.0% (3)	16.0% (4)	20.0% (5)	20.0% (5)	20.0% (5)	12.0% (3)

- ❖ **Rated as a very important by 50% of survey respondents.**
- ❖ **Is there a better way? – 90% said NO.**

Mater Trial Wireless Access Project

eduroam at Mater – Plan:

Timeline:

1. **March 2009:**
   - ❖ **Commenced planning and design work.**

2. **October 2009:**
   - ❖ **Agreement reached for:**
     - ▪ **Solution design;**
     - ▪ **Maintenance and Support.**

3. **January 2010:**
   - ❖ **MoU between QRNO and Mater Health Services signed;**
   - ❖ **Deployment and configuration.**

4. **February 2010:**
   - ❖ **Go Live.**

# Mater Trial Wireless Access Project

eduroam at Mater – Status:

1. Coverage encompass the Mater precinct at South Brisbane and Redlands Private Hospital:

   ❖ Over 800 wireless access points.

2. Mater is the first hospital with eduroam in Queensland and the largest with eduroam in Australia.

3. Equipment and Network engineer costs ~$15,000.

4. Number of placements – 750 (2008 numbers).

Impact on *eduroam* Usage in Australia

eduroam over Health Networks in Australia – 24-Nov-10

Impact on *eduroam* Usage in Australia

Attributable to *eduroam* at Mater
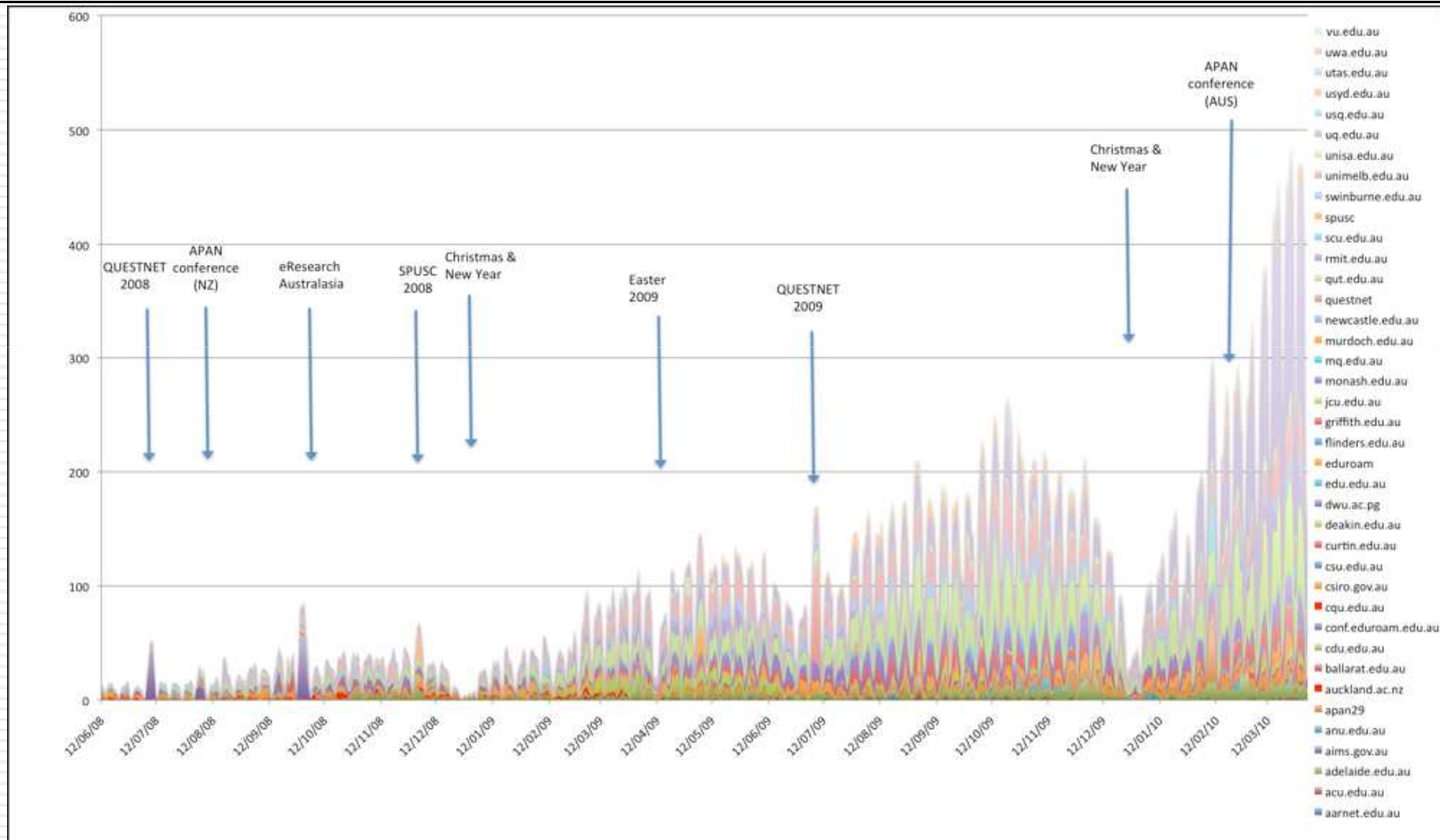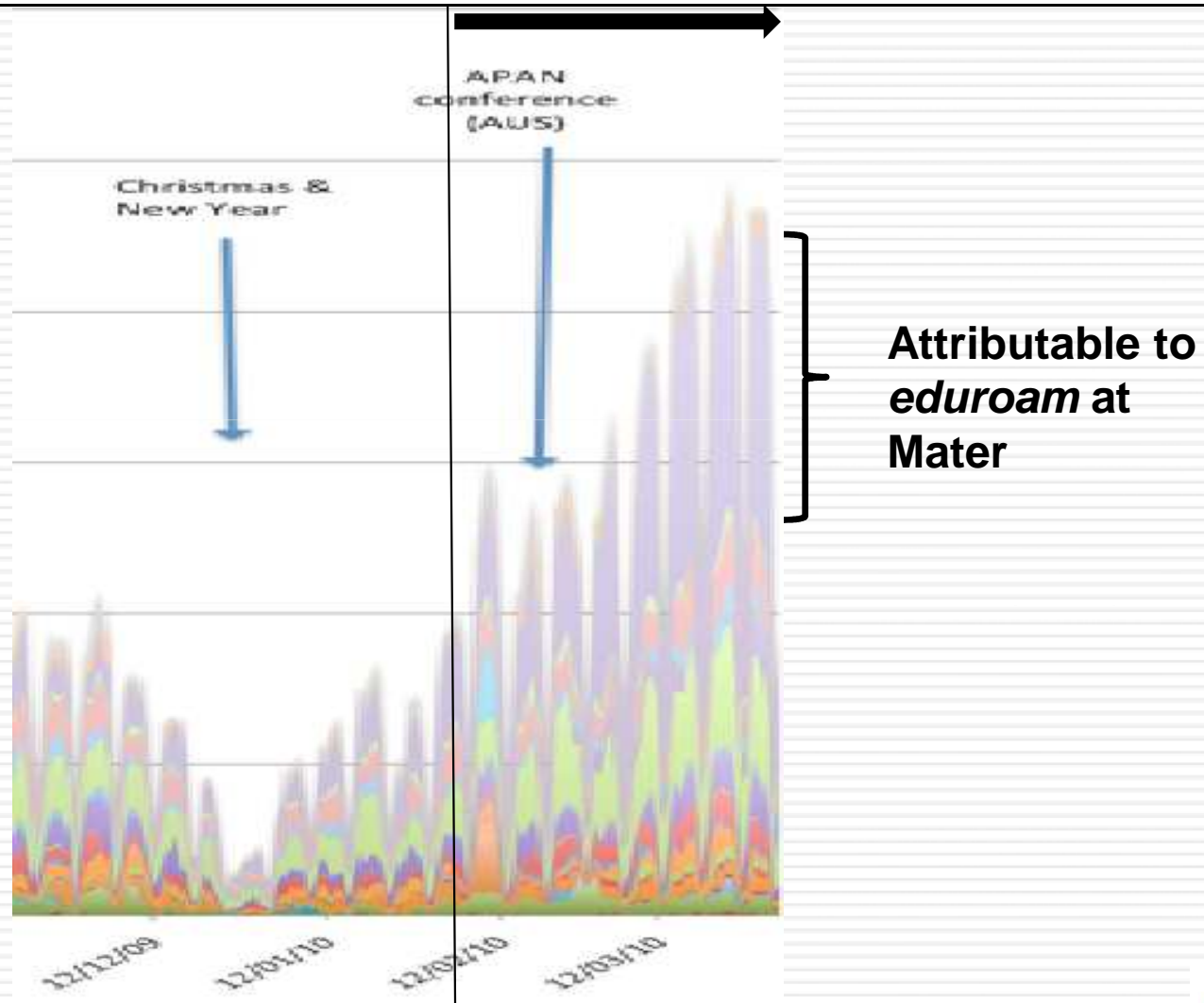
QRNO Health Research Access Project

University Access Services Project (UniConnect):

1. **In 2009 Queensland Health committed $1.1m to establish the UniConnect project:**
    - ❖ **Result of strong linkages established with QH through Queensland Health Education and Research Council, and Clinical Education & Training Queensland (ClinEdQ).**
2. **Two major objectives:**
    - ❖ **Trial of *eduroam* at QH precincts;**
    - ❖ **Business analysis and requirements gathering regarding research and T&L to inform further work.**

QH University Access Services Project

Project Phases:

1. **Phase 1:**
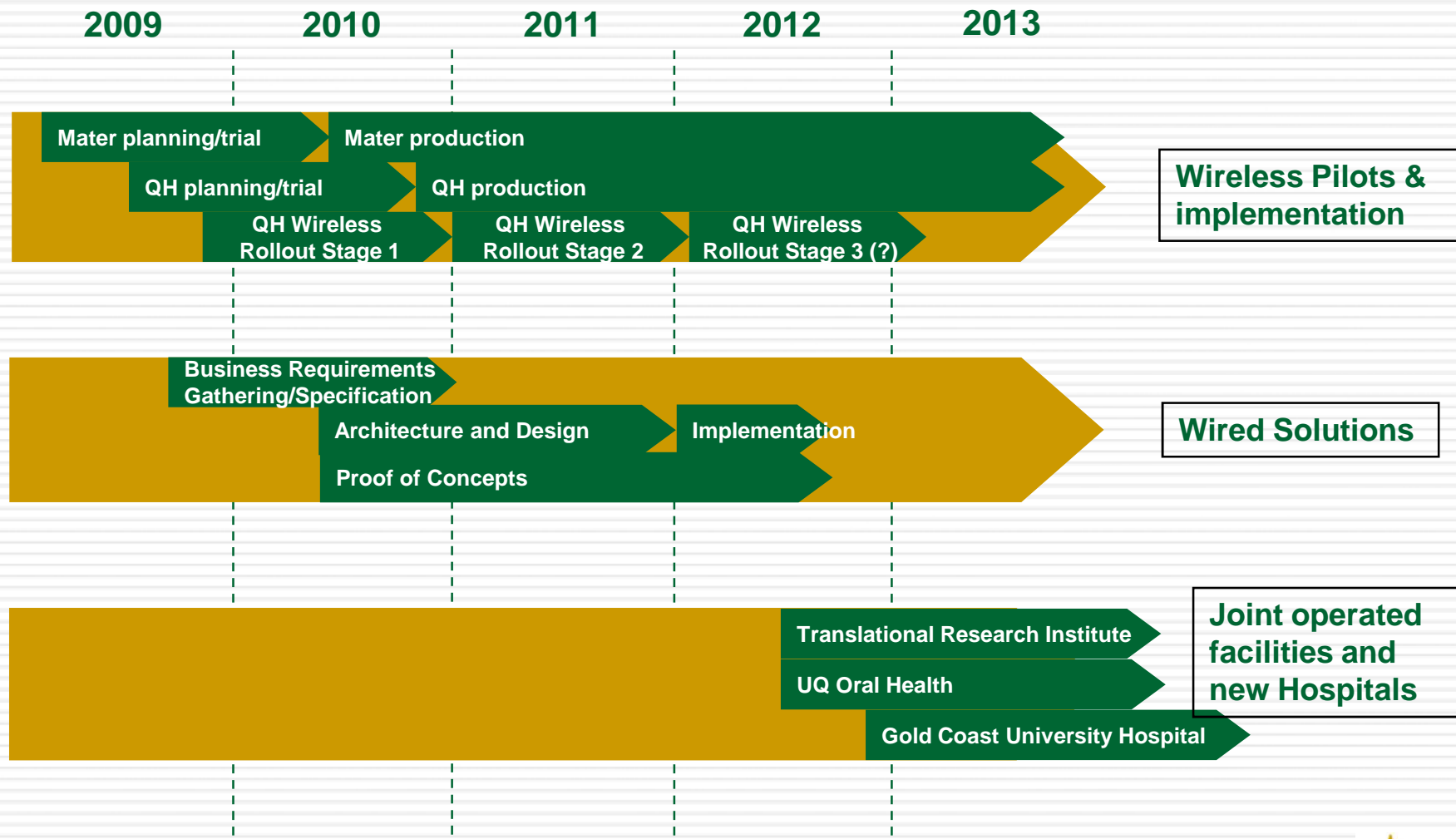
   ❖ **Business requirements to connect via a wireless device to University and QH IT network resources;**

   ❖ ***eduroam* service implementation as the 'anticipated' solution.**

2. **Phase 2:**

   ❖ **Address business requirements to connect via a QH wired device to University and QH network resources.**

QRNO Health Research Access Project

	2009	2010	2011	2012	2013

Wireless Pilots & implementation

- Mater planning/trial
- Mater production
- QH planning/trial
- QH production
- QH Wireless Rollout Stage 1
- QH Wireless Rollout Stage 2
- QH Wireless Rollout Stage 3 (?)

Wired Solutions

- Business Requirements Gathering/Specification
- Architecture and Design
- Implementation
- Proof of Concepts

Joint operated facilities and new Hospitals

- Translational Research Institute
- UQ Oral Health
- Gold Coast University Hospital

QRNO
Queensland Regional
Network Organisation

QRNO Health Research Access Project

**Fibre Tails to Hospitals:**

1. Motivation:
   - ❖ Allow QRNO traffic to be routed from QH sites reducing impact on QH network;
   - ❖ Have 'shovel ready' QRNO/AARNet project prepared.
2. List provided to AARNet for hospitals without fibre links and more than 20 placements.
3. Sought budgetary estimates for site to uni connections.

QRNO Health Research Access Project

Installation Cost and Cost per Weighted Person by Site

Install Fee   Install Fee per Weighted Person

QRNO
Queensland Regional
Network Organisation
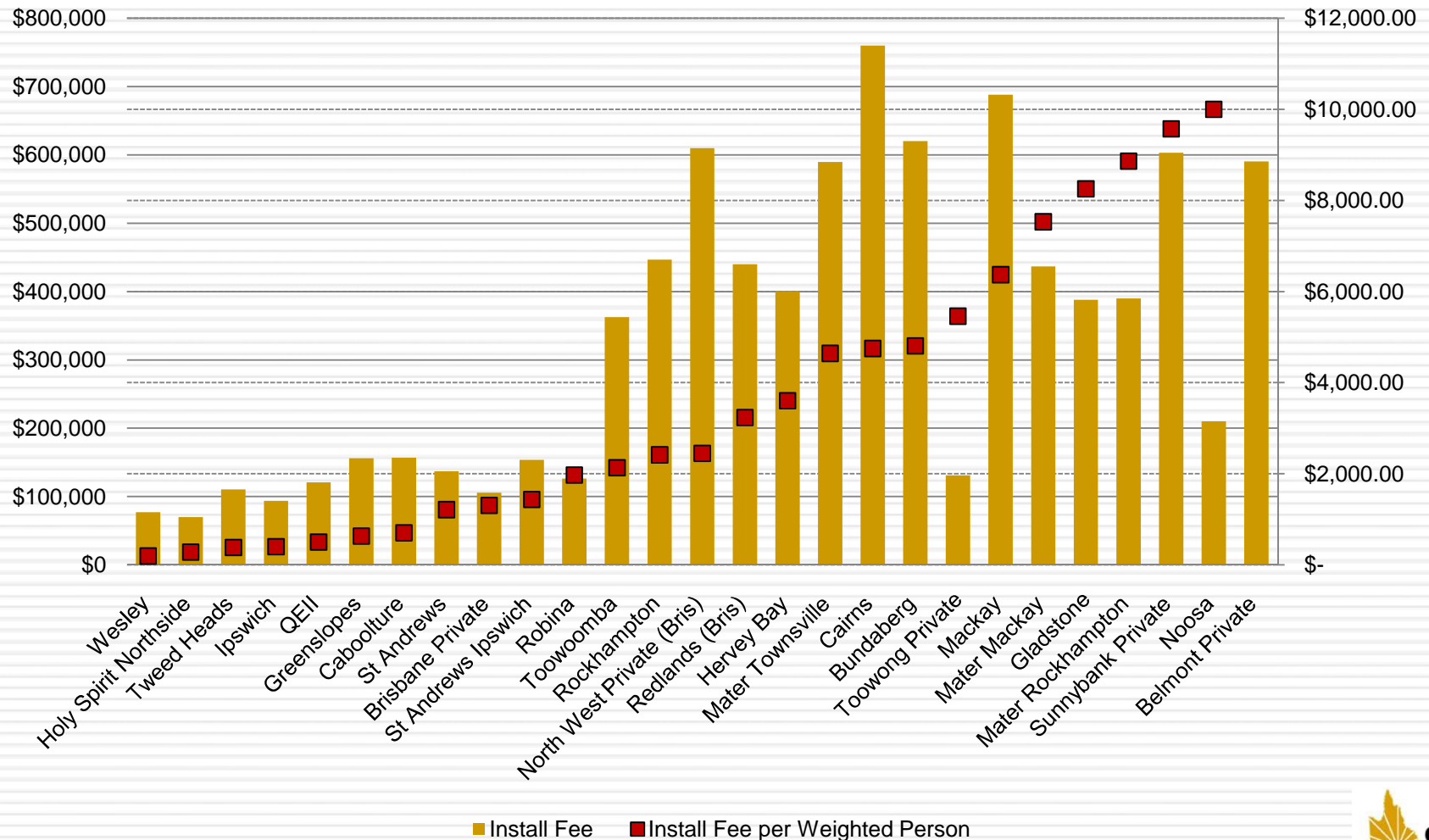
eduroam Further Deployment

1. Currently, *eduroam* is deployed across the Mater Hospital WiFi network in Brisbane.

2. Deployment at Queensland Health sites across significant parts of SE Queensland is undergoing final testing.

3. Plans are underway for deployments at the new Royal Children's Hospital in Melbourne and at the Northern Hospital also in Melbourne.

4. *eduroam* is also deployed at the Royal Adelaide Hospital and the Royal Hobart Hospital, but those deployments are across University owned WiFi infrastructure.

5. Overall there is a ground swell of interest in this occurring right across the country – this seems to have been fanned by the decision of the Mater Hospital in Brisbane to advertise the *eduroam* SSID on its own wireless infrastructure.

Questions????

Contacts:

Alex Reid
AARNet Advisor, eResearch & Middleware
<alex.reid@uwa.edu.au>

Many Thanks To:

Ross Gorham
QRNO Executive Officer
<executive.officer@qrno.net.au>

Andrew Fiedler
QRNO Health Research Access Project Manager
<a.fiedler@qut.edu.au>

Half of these slides were contributed by Andrew...

QRNO
Queensland Regional
Network Organisation