

Feb. 3, 2021

IAM WG Meeting @ APAN51, Virtual / Islamabad

Off-campus eduroam deployment and WBA OpenRoaming

Hideaki Goto Tohoku University / NII, Japan



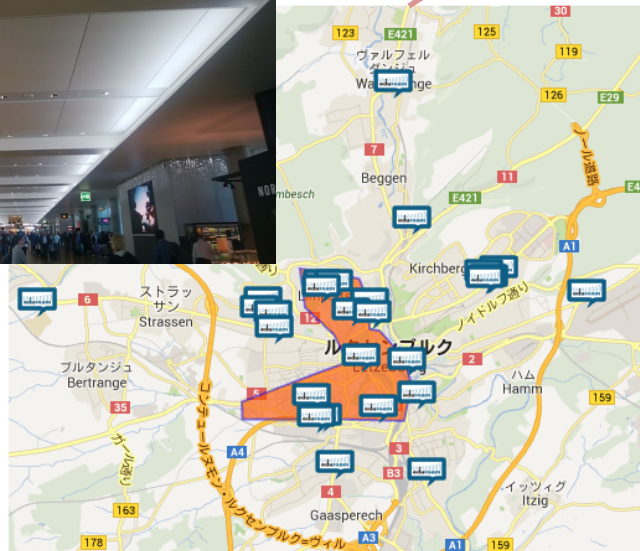
Early-days off-campus eduroam deployment



- 130+ eduroam hotspots at rental meeting rooms, cafes, etc. in the central area of Tokyo since 2011 (migrating to Cityroam)
- eduroam at airports, train stations, etc. in Sweden
- eduroam on HotCity (municipal Wi-Fi) in Luxemburg
- eduroam at airports in Norway
- eduroam in downtowns of York, Munich, Porto, etc.
- 132 hospitals in the UK (as of 2017)



Hotspots in Luxemburg



A lot more!

Off-campus eduroam as digital infrastructure

New!

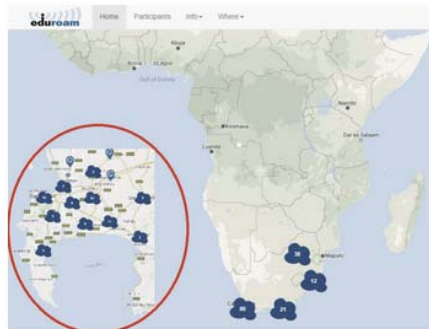
South Africa:
eduroam at most universities, addressing digital divides and COVID-19 (July, 2020)



Connecting Cape Town's periphery with eduroam in public libraries

TENET (SOUTH AFRICA) COMMUNITY ENGAGEMENT, EDUCATION, TECHNOLOGY

In June 2019, the City of Cape Town and South Africa's NREN, Tertiary Education and Research Network of South Africa (TENET), turned on the eduroam WiFi service in 57 of Cape Town's public libraries. eduroam is a wireless roaming service that provides free Internet access to the research and education community globally.



Cape Town:
eduroam in 57 public
libraries (Aug. 2019)



Today a University of Cape Town student living in Khayelitsha can access eduroam, the high-speed Internet offered by nearly all South African universities and an additional 105 countries around the world, at their local library. A University of Witwatersrand (Wits) student living in Sebokeng needs only to travel 30 minutes to North-West University's Vaal Triangle Campus to download their course content and videos quickly and for free on the eduroam network, while a University of South Africa (UNISA) student anywhere can check the [eduroam interactive map](#) to see where their closest Internet access point is.

RENU in Uganda:
Town-wide eduroam
to help students
learning under COVID-19 (Oct. 2020)

Are you a Student, Researcher or University Staff?

Covid-19 has pushed us off campus, and **reliable** off-campus connectivity is a problem.

eduroam has now gone beyond your campus borders.

Look out for the **eduroam** Wi-Fi network in your neighborhood.

Free, simple, seamless connection at your convenience.

www.renu.ac.ug SECURE & TRUSTED

“Extended virtual campuses” in Ireland (Jan. 2021)

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NEWS JAN 5, 2021

Government to Extend WiFi Initiative for Students to 90 New Locations

Difficulty accessing the internet in rural communities has become a major talking point in higher education circles since the outbreak of the pandemic.

Cormac Watson
EDITOR

The government will extend internet access for students to 90 new locations across the country in order to create “extended virtual campuses”, Higher Education Minister Simon Harris announced today.

HEAnet will lead the initiative, rolling out **eduroam** – a WiFi connection that students can automatically connect to – to locations accessible to students, such as libraries, museums, public offices, coffee shops and shopping centres.

Eduroam is already available to students in a number of locations, including libraries in Longford and Galway, the Convention Centre and Custom House Quay in Dublin



<http://www.universitytimes.ie/2021/01/heanet-to-extend-wifi-initiative-for-students-to-90-new-locations/>

Why City/Free Wi-Fi & off-campus eduroam?

- Tourism (not at the moment under COVID-19...)
- Smart Cities, IoT
- Provide citizens with access means for various digital services.
- “Wi-Fi for all.” (WiFi4EU by European Commission) resolving digital divides
- Community supports for Research & Education.

What are needed?

- ✓ Secure connections with good usability
- ✓ Free roaming
- ✓ User identity verification and traceability
(for security, trusts between operators, and compliance)

Cityroam, the secure roaming system for Public Wi-Fi

- Both Passpoint and dot1X
- Affordable roaming platform for various Roaming Consortia and operators (SMB, cities, etc.)
 - IdP: eduroam, ANYROAM, Cityroam Cloud IdP, etc.
(planned: telcos/ISPs and cities via **OpenRoaming**)

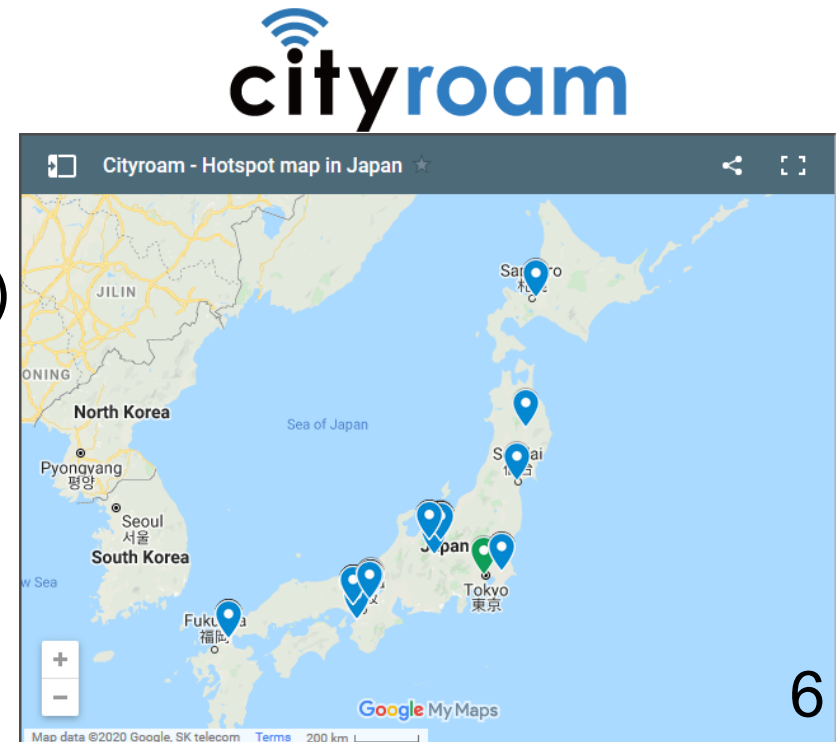
- Our strategies:

No roaming fee.

(We make the most of the local ecosystem each Free Wi-Fi has.)

Utilize existing accounts as much as possible.

(roaming with telcos/ISPs)



Cityroam sites

■ Passpoint services on the Cityroam APs in 12 cities/towns.

- Cafes, hotels, shopping malls, etc.
- Sapporo Gakuin University (for better services for citizens)
- Ski resorts (Hakuba47)
- Kita-Kyushu Monorail stations
- Conference venues (temporary deployment)
Internet Week 2018 & 2019, AXIES 2018,
95th-97th Comic Market, etc.

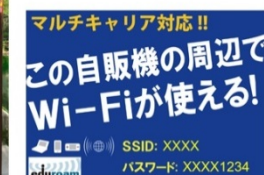
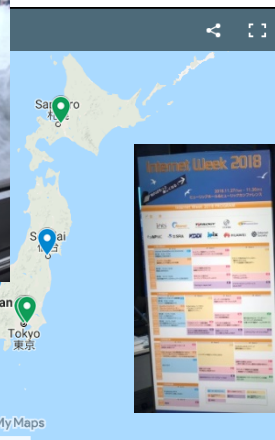
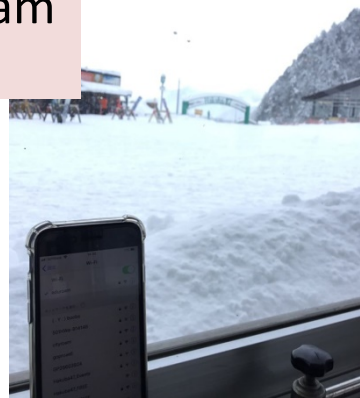
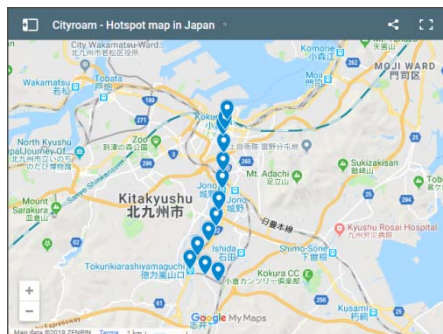
New direction:
Univ.&Schools
should provide
Public Wi-Fi, too.

Cityroam supports quick
deployment of eduroam
+ Public Wi-Fi.

Mobile eduroam
/Passpoint AP



eduroam on
vending machines



WBA OpenRoaming

- eduroam (GÉANT), Cityroam, ANYROAM, Janet are already the members of OpenRoaming.
 - Developing eduroam/govroam via OpenRoaming network.
 - Enabling eduroam/govroam services at OpenRoaming service areas (cities, facilities, shops, ...).
(eduroam CAT now supports eduroam/OpenRoaming)



OVERVIEW

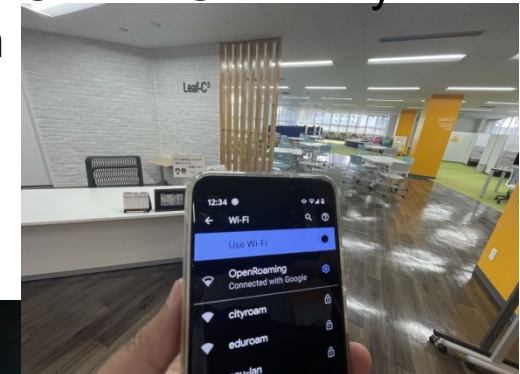
WBA OpenRoaming™ creates the framework to connect billions of users and things to millions of Wi-Fi networks globally

WBA OpenRoaming™ is a roaming federation service enabling an automatic and secure Wi-Fi experience globally. With WBA OpenRoaming™, we are creating an open connectivity framework for all organizations in the wireless ecosystem to power new opportunities in the 5G era.

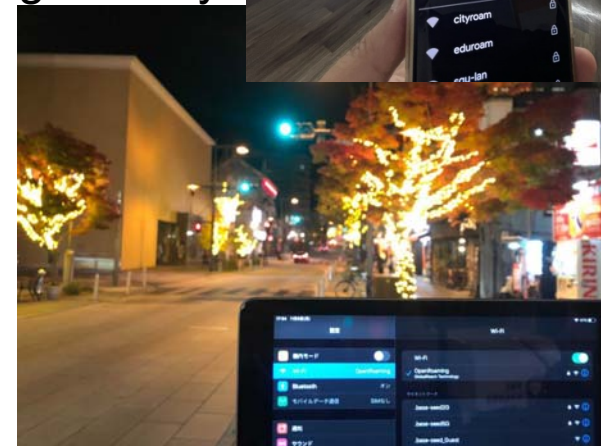
It encompasses three key elements:



Sapporo Gakuin University
in Japan



Nagano City



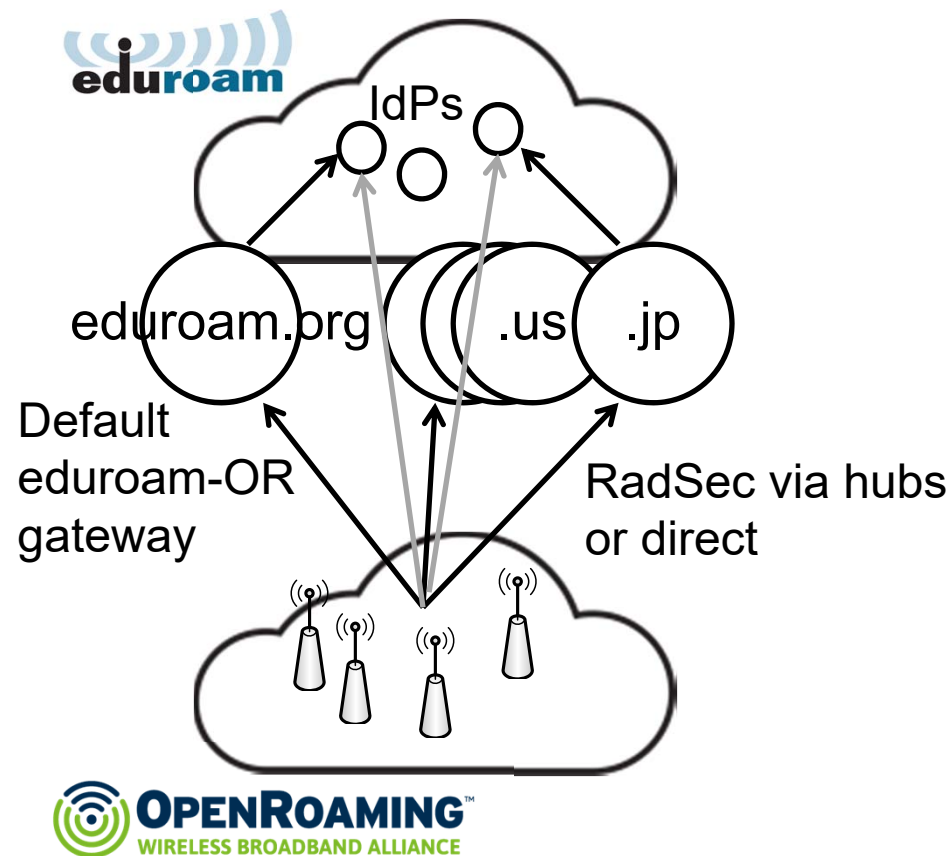
WBA OpenRoaming



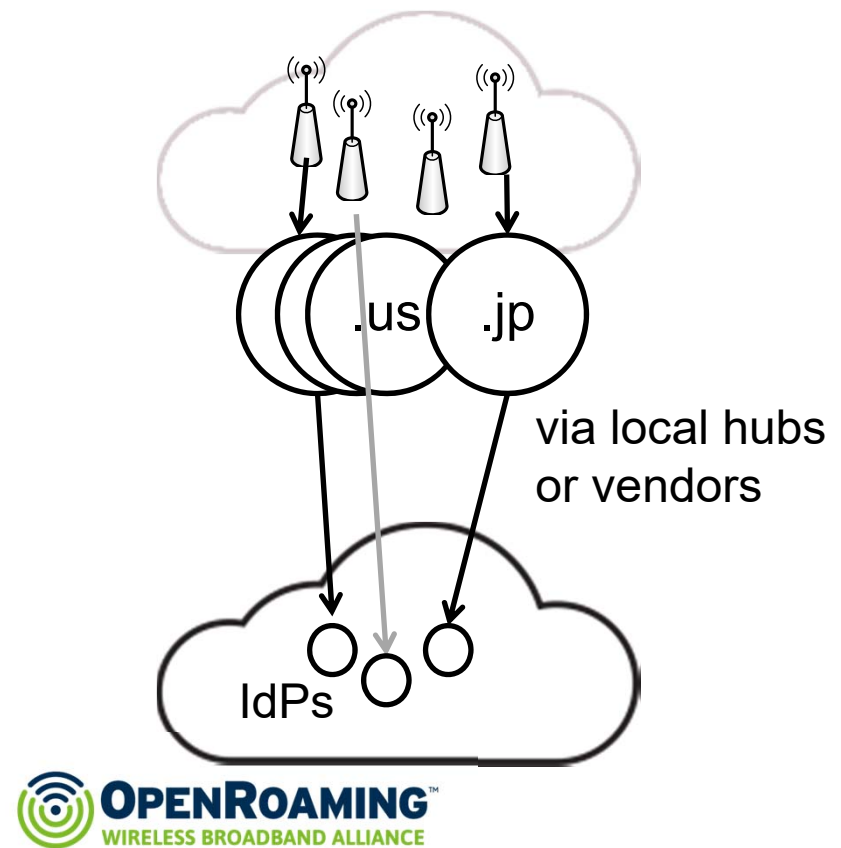
- Inter-connect telcos, ISPs, City Wi-Fi, etc.
- Based on the Passpoint and the Wireless Roaming Intermediary eXchange (WRIX) framework.
- PKI and RadSec + Dynamic Peer Discovery
 - Similar to eduroam, but in larger scale.
- Two policies using different RCOIs
 - Settled: Accounting and intermediary are required.
 - Settlement-free: No roaming fee. Easier onboarding.

eduroam–OpenRoaming interconnection

eduroam via OpenRoaming ANPs



Universities providing OpenRoaming service for visitors and residents.)



ANP: Access Network Provider

Enabling eduroam at OpenRoaming venues

Scheme	Coverage	SSID / Passpoint	
standard eduroam	All	SSID="eduroam"	Most preferred. Operators need to join eduroam as SP (registration required).
eduroam RCOI	Opted-in IdPs / all ? (under devel.)	Passpoint with eduroam RCOI	Passpoint profile is needed on user devices. Operators need to join eduroam as SP (registration required).
OpenRoaming settlement-free RCOI	^	Passpoint with OR's RCOI	Not an eduroam service. Need to encourage operators NOT to drop eduroam service. Otherwise, users would be disappointed (not authenticated).
OpenRoaming RCOI for education	^	^	^ Least recommended as it kicks out non-edu users.

How to join OpenRoaming?

- **eduroam is already a member! 😊**

By adding DNS NAPTR records, institutions will be able to accept AuthN requests from OpenRoaming.

- Connection via a local federation, operator, or AP vendor's solution.

- Become a WBA member to get the digital certificates for onboarding.

- Membership fee applies. WBAID is assigned.

- *Implementer Member* is a new and affordable category.

- Get the digital certificates from a WBA agent.

- WBAID with SubID is assigned.

- Subscription fee applies.

New directions of eduroam and public Wi-Fi

■ Managed IdP

- Wi-Fi industry's movement
- eduroam Managed IdP
- Utilizing federated IDs, IdPaaS, etc.
(geteduroam)

■ Managed Wi-Fi (SP)

- Integration of various wireless services. (AP for any)
- Also under discussion at eduroam.org
- AP operations would be liberated from
often-excessively-strict AUP at institutions.
- Easy deployment and operation
 - Only APs at institutions.
 - Check -> ☒ Enable eduroam
 - Check -> ☒ Enable OpenRoaming

Please call us if you want to develop a federation like Cityroam in your region.

 <https://cityroam.jp/>

If you are interested in trying OpenRoaming, please ask Hideaki (me) or Paul@SURFnet

Join <https://eduroam.slack.com/>