

March 9, 2022

IAM WG Meeting @ APAN53, Virtual / Bangladesh

# eduroam/OpenRoaming combined deployment in Cityroam

Hideaki Goto Tohoku University / NII, Japan



A part of this work was supported by the Beyond 5G R&D Promotion program at National Institute of Information and Communications Technology (NICT) in Japan.

# WBA OpenRoaming



- **eduroam-like, seamless connection experience for everyone**, not limited to R&E community.
- Inter-connect telcos, ISPs, City Wi-Fi, **eduroam**, etc.
- Based on Passpoint and 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. 👍



vs



eduroam is only for R&E,  
while OpenRoaming is for everyone... Then,

Is OpenRoaming alone enough? 🤔

No!

Some universities are showing interest  
in the monetization model in OpenRoaming. 😇

Yes, it might work, but...

# Why eduroam?

- eduroam has a matured **autonomy**.
  - Virtually monolithic.  
If you see “eduroam” SSID, **the service is always there.**
  - Single basic policy + minor variants.  
(won't bother users so much)
  - eduroam can be “**a collection of reliable IdPs**”  
that provides good credentials with strict user verification,  
probably accompanied with enlightenment.
  - A large number of students and staff are carrying devices  
already configured with eduroam.
- OpenRoaming is still new. (improving, hopefully)
  - Pros and cons in its “**diversity**” in various aspects.
  - Multiplexed roaming system. (would make some confusions)

## New documents from eduroam.org

- OpenRoaming and eduroam – Useful Information for eduroam Identity Providers and Service Providers  
<https://eduroam.org/openroaming-and-eduroam-useful-information-for-eduroam-identity-providers-and-service-providers/>
- OpenRoaming and eduroam – Useful Information for eduroam National Roaming Operators (NROs)  
<https://eduroam.org/openroaming-and-eduroam-useful-information-for-eduroam-national-roaming-operators-nros/>
- eduroam + OpenRoaming End-User Information  
<https://eduroam.org/eduroam-openroaming-end-user-information/>

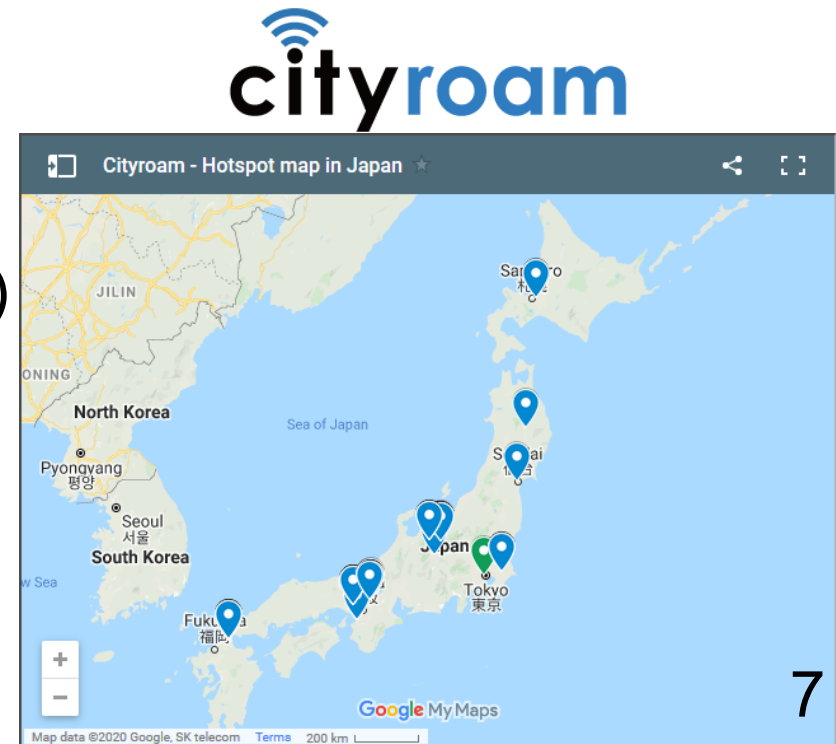
# Comparison

	<b>Eduroam</b>	<b>OpenRoaming</b>
Locations	Academic institutions, high-profile public spaces	Arbitrary Locations
Services	Minimum list of open ports, typically “full Internet”	At discretion of hotspot
Cost	Always free at point of use	eduroam-provided user accounts will only ever connect to OpenRoaming hotspots which are free of charge
Terms of Use	<a href="#">Terms and Conditions</a>	<a href="#">ToC-2020</a>
Privacy	<a href="#">eduroam Privacy Notice</a>	<a href="#">Privacy Policy 2020</a>
Support	The identity provider can escalate issues	The identity provider can escalate issues
QoS	Typically very-high-speed research networks – no minimum guarantees	Very basic minimum guarantee

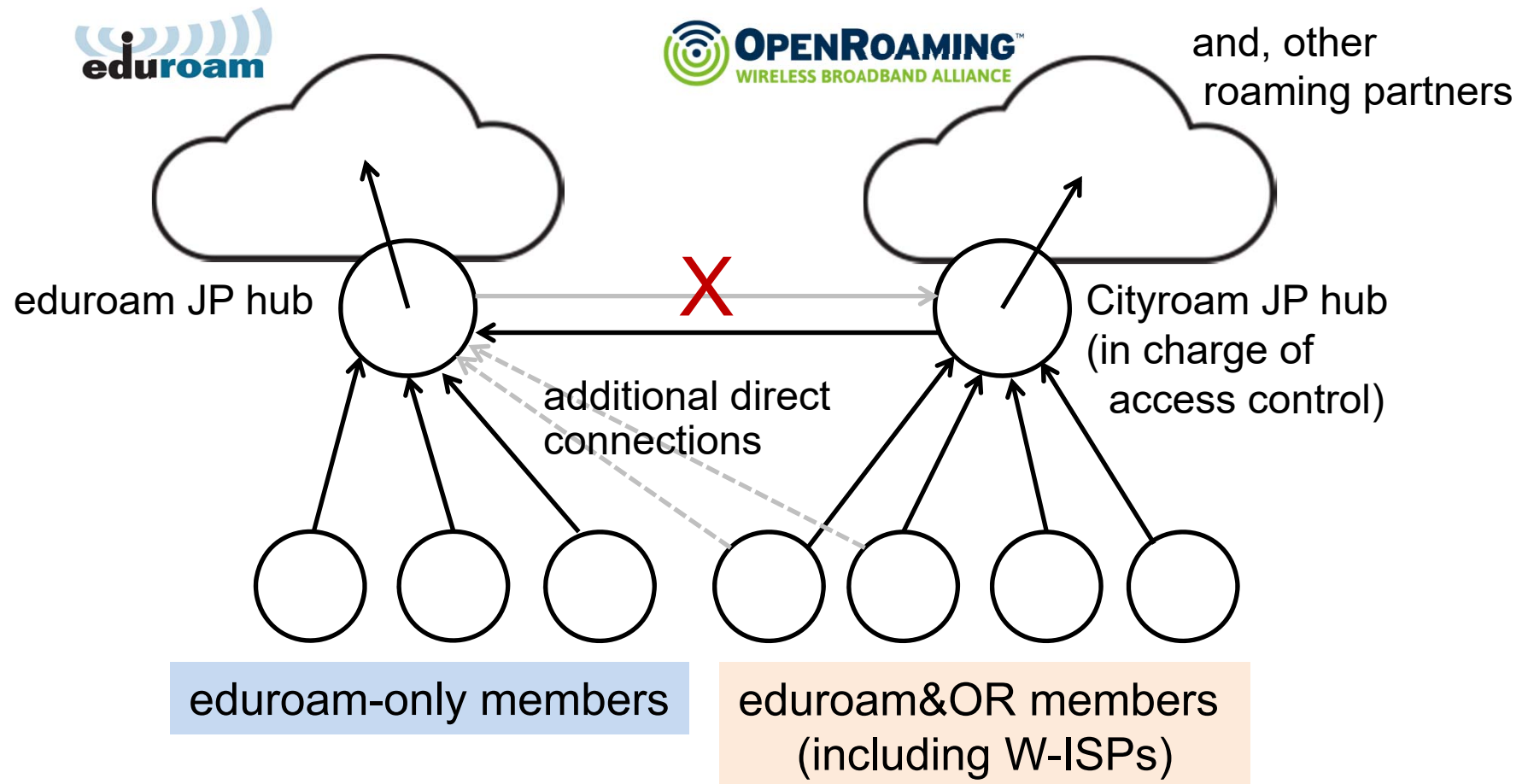
# Cityroam, the secure roaming system for Public Wi-Fi

- 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**)
- eduroam/OpenRoaming combined architecture
- 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)



# RADIUS routing in the eduroam/OpenRoaming combined architecture





# eduroam and OpenRoaming on buses

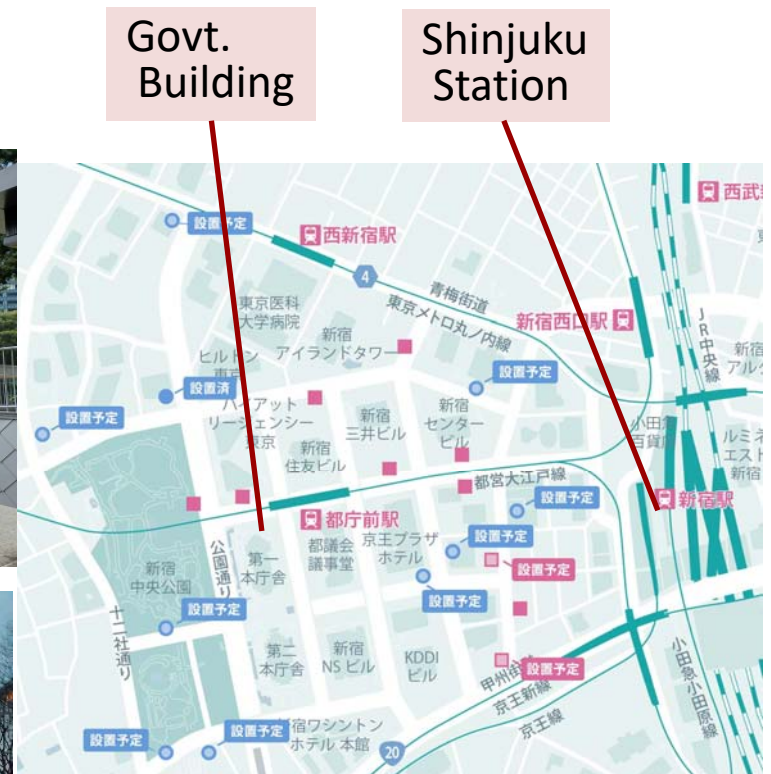
- First OpenRoaming deployment on buses.
  - Sightseeing / chartered buses in Ibaraki Prefecture.
  - 4G/LTE backhaul network & remote management via VPN.
  - Power stabilizer for continuous operation.



Tsubasa-kanko Co., Ltd.  
and Telhi Corporation (a member of Cityroam)  
Dec. 2021

# Nishi-Shinjuku Smart Pole project by Tokyo Met. Govt.

- PoC and pilot service in the Smart City project.
- eduroam, Cityroam, and OpenRoaming
- Two poles in Summer, 2021,  
**and more poles since Dec. 2021**



eduroam  
accesses:  
75.4%



# How to get on OpenRoaming?

eduroam members (ROs, universities, etc.)

- By simply adding DNS NAPTR records, institutions will be able to accept AuthN requests from OpenRoaming.
- Connection via your national RO, or AP vendor's solution.
- RO can get the digital certificates from eduroam.org and connect to the OpenRoaming network directly.

Non-eduroam operators

- Become a WBA member to get the digital certificates for onboarding.
  - Membership fee applies. WBAID is assigned.
  - *Implementer Member* is an affordable category.
- Get the digital certificates from a WBA agent.
  - WBAID with SubID is assigned.
  - Subscription fee applies.

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



<https://cityroam.jp/en/>

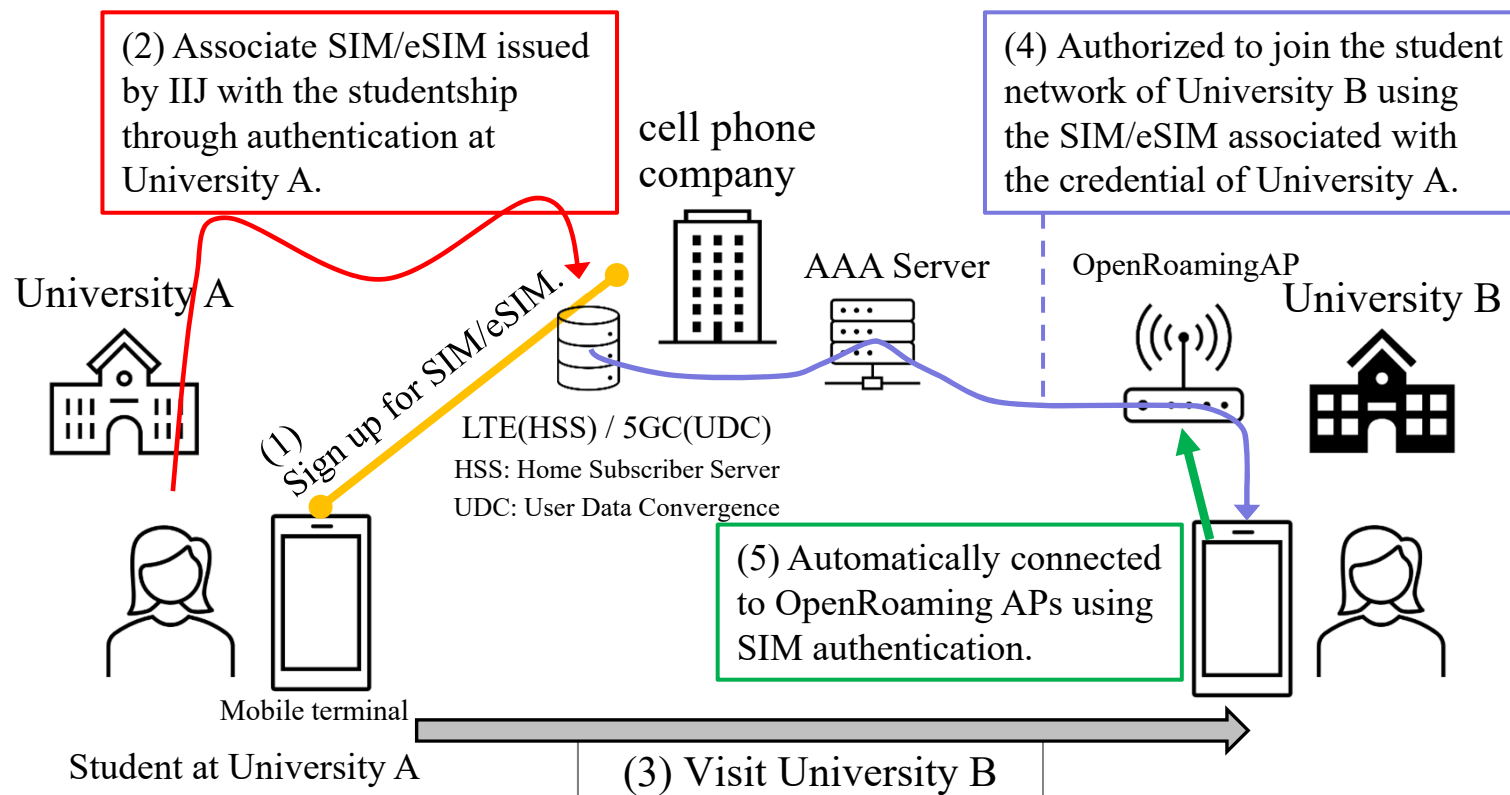
If you are interested in trying OpenRoaming, please ask Hideaki (me) or Paul@SURFnet

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

- Supplementary slides

# Our developments in the NICT Beyond 5G project (2022 –)

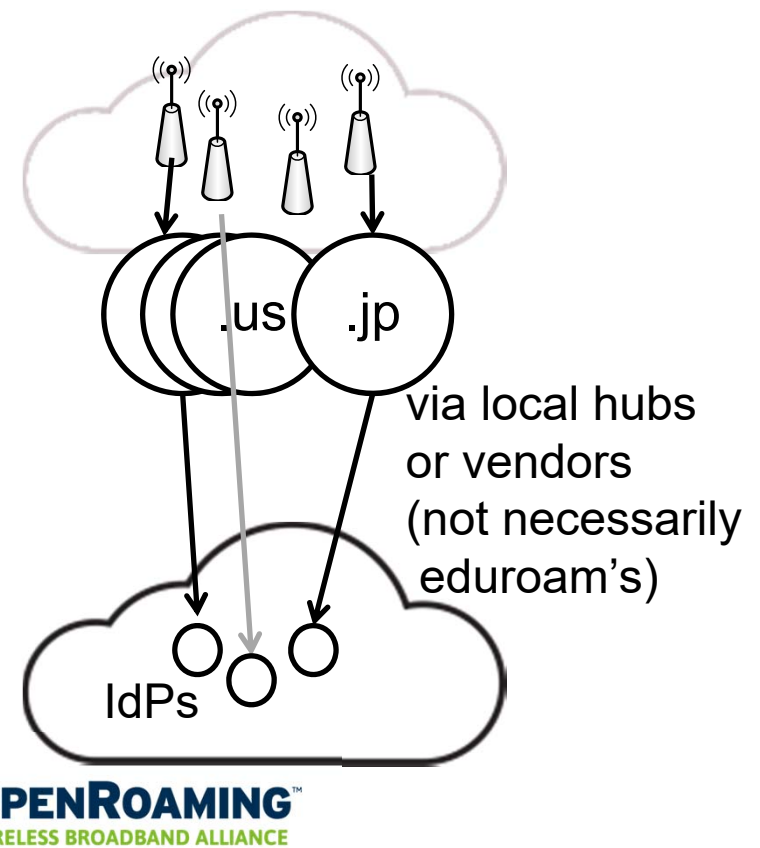
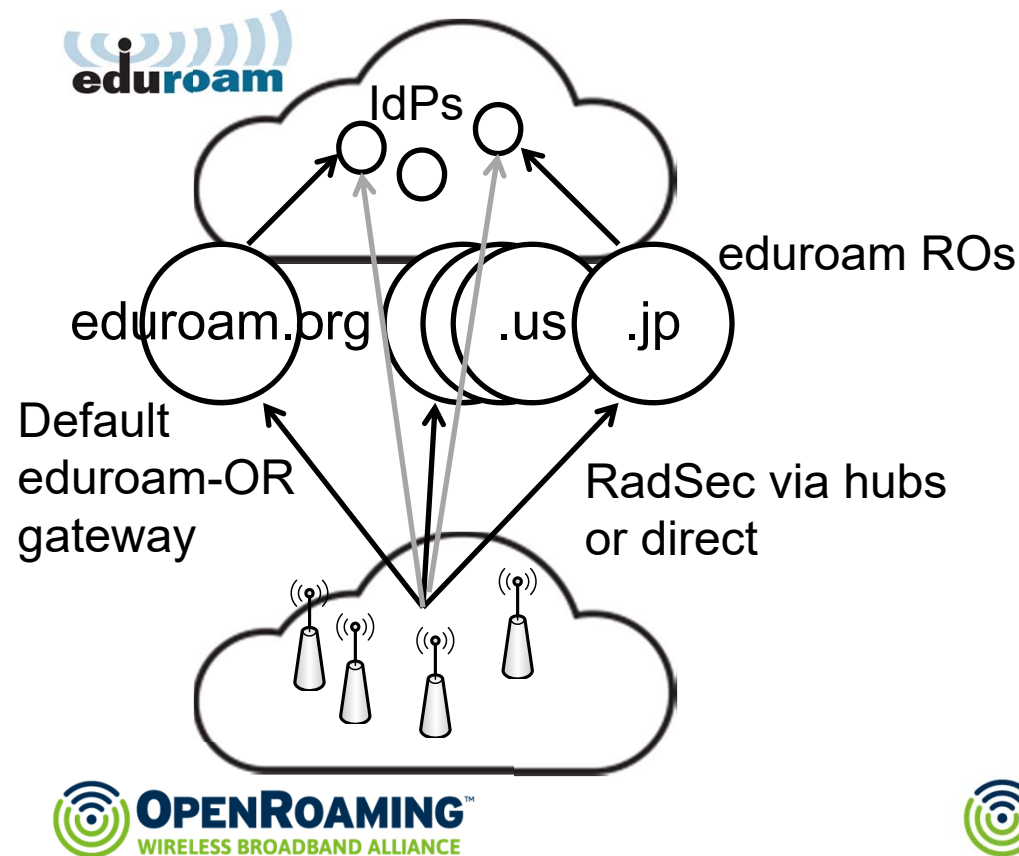
- Joint project by Kyoto Univ., Local24 Inc., Tohoku Univ., NII, and GÉANT.
- Efficient and stable 5G/Wi-Fi convergence together with QUIC multipath.
- eduroam-OpenRoaming integration + SIM/eSIM AuthN.



# eduroam–OpenRoaming interconnection

eduroam via OpenRoaming ANPs

Universities providing OpenRoaming service for visitors and residents.)



ANP: Access Network Provider