

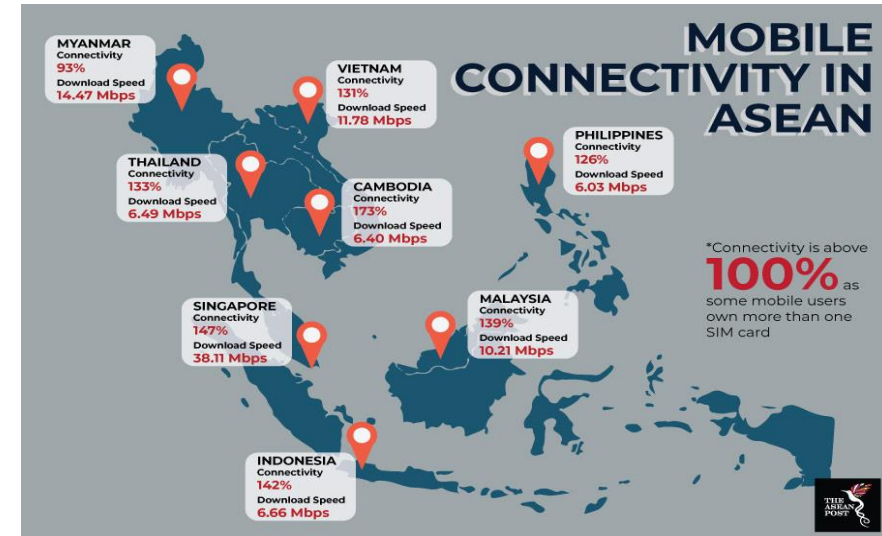
Title : Investigation Wireless Microwave Propagation Characteristic of 5G and Beyond Technology in ASEAN Regions

Full name of Speaker : **Hana Arisesa**

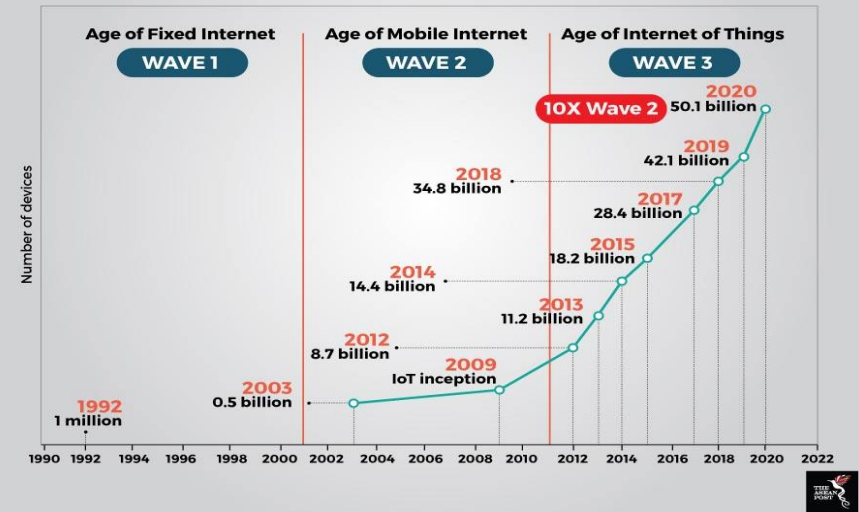
Institution : **National Research and Innovation Agency (BRIN) - Indonesia**

Background :

- **SDG 10:** Reduce Inequality within and among countries (10.6)
- **SDG 11:** Make cities and Human Settlement inclusive, safe, resilient, sustainable. (11.C)
- The advancement of the future wireless technology in ASEAN (road to 5G and beyond).
- The uniqueness of ASEAN environment as a challenge for future wireless technology systems:
 - Extreme temperatures, rainfall intensity, and duration
 - Tropical Forest, maritime cities, and countries
 - Population density
 - Extreme events such as droughts, floods, land, and/or forest fires.
- What's next about telecommunication implementation for ASEAN (Indonesia Case – *Preparation stage*)
 - Open RAN (urban, rural areas)
 - Trial Frequency Test (700MHz, 3,5GHz, 15GHz, and 26,5GHz)
 - Regulations still in discussion



GROWTH IN DEVICE CONNECTIVITY BETWEEN 1990 AND 2022



Source : PwC ([Link: https://www.theaseanpost.com/](https://www.theaseanpost.com/))

Targets :



To provide **propagation loss data** in various environmental conditions in ASEAN for the establishment of the future wireless generation in ASEAN focused on sub-6 GHz and mmWave frequency band (26.5 GHz) (possibility scale up to sub-THz Band).



To exchange and share the **ability of propagation research** among ASEAN countries and JAPAN through cooperation.

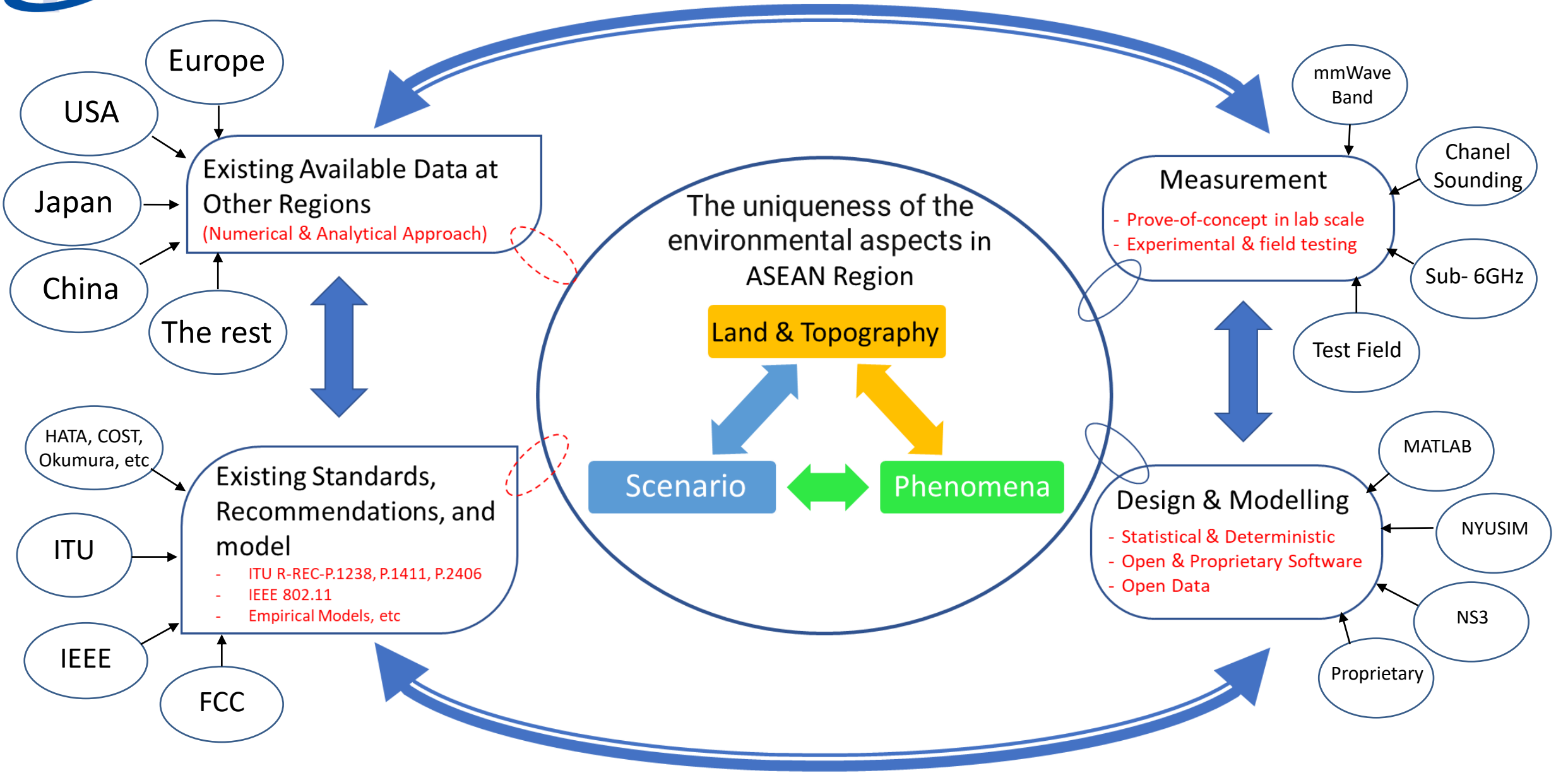


To provide useful research data for **better decision-making** processes of Triple-helix stakeholders (public authority, business, and academia).



To **increase engagement** of triple helix stakeholders for establishing research on wireless technology at local and regional area.

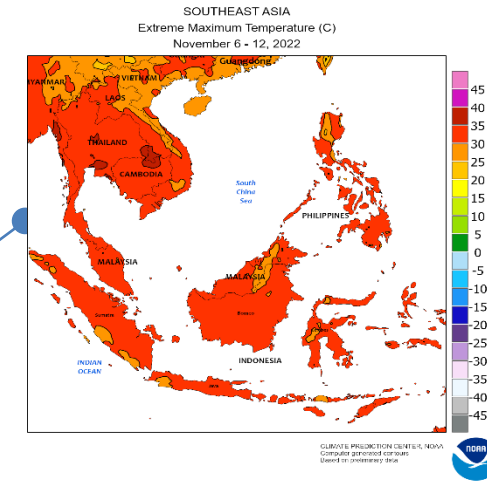
Proposed Method:



The uniqueness of the environmental aspects in ASEAN Region



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CLIMATE DATA FROM CLIMATE, NOAA
CONTAINS SPATIAL DATA
SOURCE: ORION/NOAA



Wildfire ([Source: https://www.rfa.org/](https://www.rfa.org/))



Paddy field, ([This Photo](#) by Unknown Author is licensed under [CC BY-ND](#))



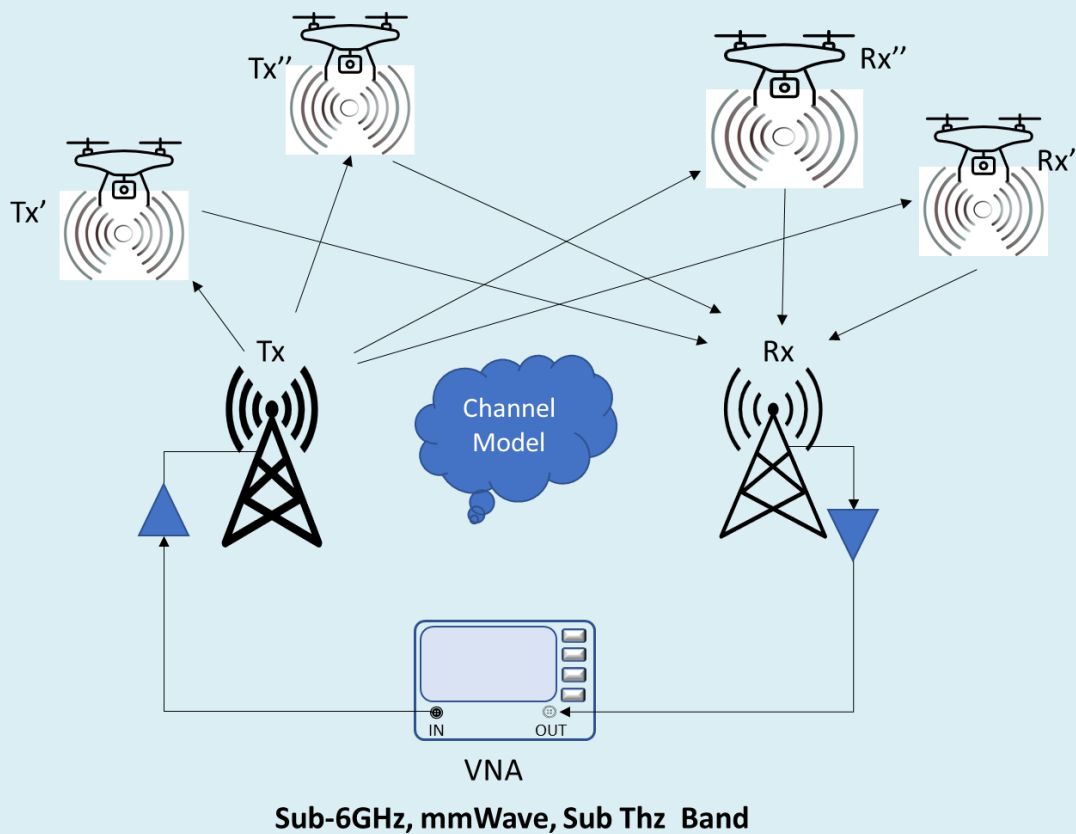
River city



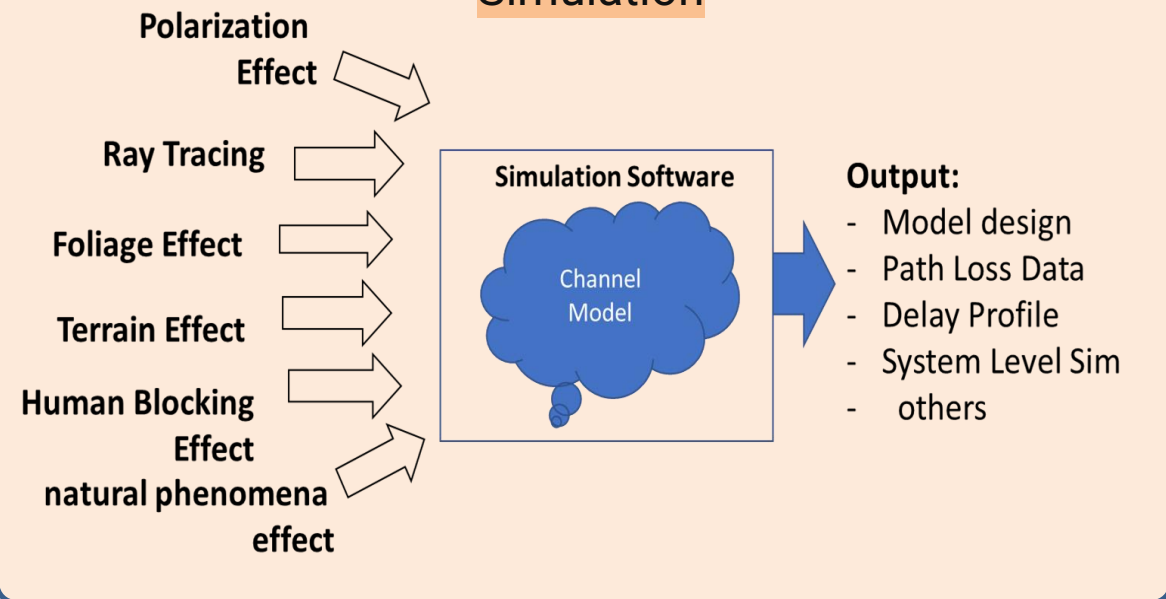
Extreme Torrential Rain ([Source: https://www.sciline.org](https://www.sciline.org))



Measurement



Simulation



Mimicking precipitation in various intensities



Scientific and Technological

- Participation in an academic forum at local, regional, and international conferences. Expected **at least two papers** will be presented from **each participating country** at the research.
- Published at least **one research article** in a reputable journal for **each participating country**.
- **Open data set** for better decision-making processes of triple-helix stakeholder
- **Promoting ASEAN IVO and academic engagement** in the wireless technology research

Collaborative

- Developing new and lasting research collaborations, achieving transfer of knowledge between participating countries:
 - **FGD** for sharing knowledge and experience on the research subject
 - **Workshop** for the internal and public targets to transfer, share, and increase knowledge on the research field
- Contribution to improving research and innovation potential at the local and regional levels
 - Creating and maintaining a regional research group on wireless technology research interest

Policy

- **Study and recommendation** to authority for future implementation on wireless technology through better **Science-Based Policy**.

Scientific

- **Increasing experts** on wireless propagation research among ASEAN researchers.
- Accessible the propagation characteristics data on **unique environmental** conditions in ASEAN region.
- Development of a **new propagation** testing method for challenging environmental conditions according to ASEAN situation (drone propagation measurement method)

Societal

- Data set of propagation characteristics on the targeted environment
- Research study report of the propagation data for authorities

Collaborative

- Increasing participation ASEAN researchers in international, regional, and local scientific events (conferences and Journals) at wireless technology research for each participating country.

1. Targets

- To research and investigate the **propagation characteristic data** based on the **uniqueness of the environmental** aspects in ASEAN Region for the future wireless technology system implementation

2. Method (idea)



- Combining both simulation design and experimental approach on various aspects of the targeted environmental system to develop open data set of the propagation characteristic for a future wireless system.

3. Scientific and societal impact

- Contribution to the important dataset in various unique environments of the ASEAN region.
- Participation in the scientific wireless community of presenting the data
- Supporting national strategic mission and policy on the implementation of future wireless technology in ASEAN.
- Engaging local and regional triple-helix stakeholders to increase technology-sharing knowledge for better human development capacity in ASEAN.

Call for Joint Collaboration

Candidate Collaborators

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