

# Achieving Leadership in Standards Enabling Organisational Frameworks

in partnership with  
**SAMSUNG**

 IIIT Bangalore  
 9<sup>th</sup> May 2024



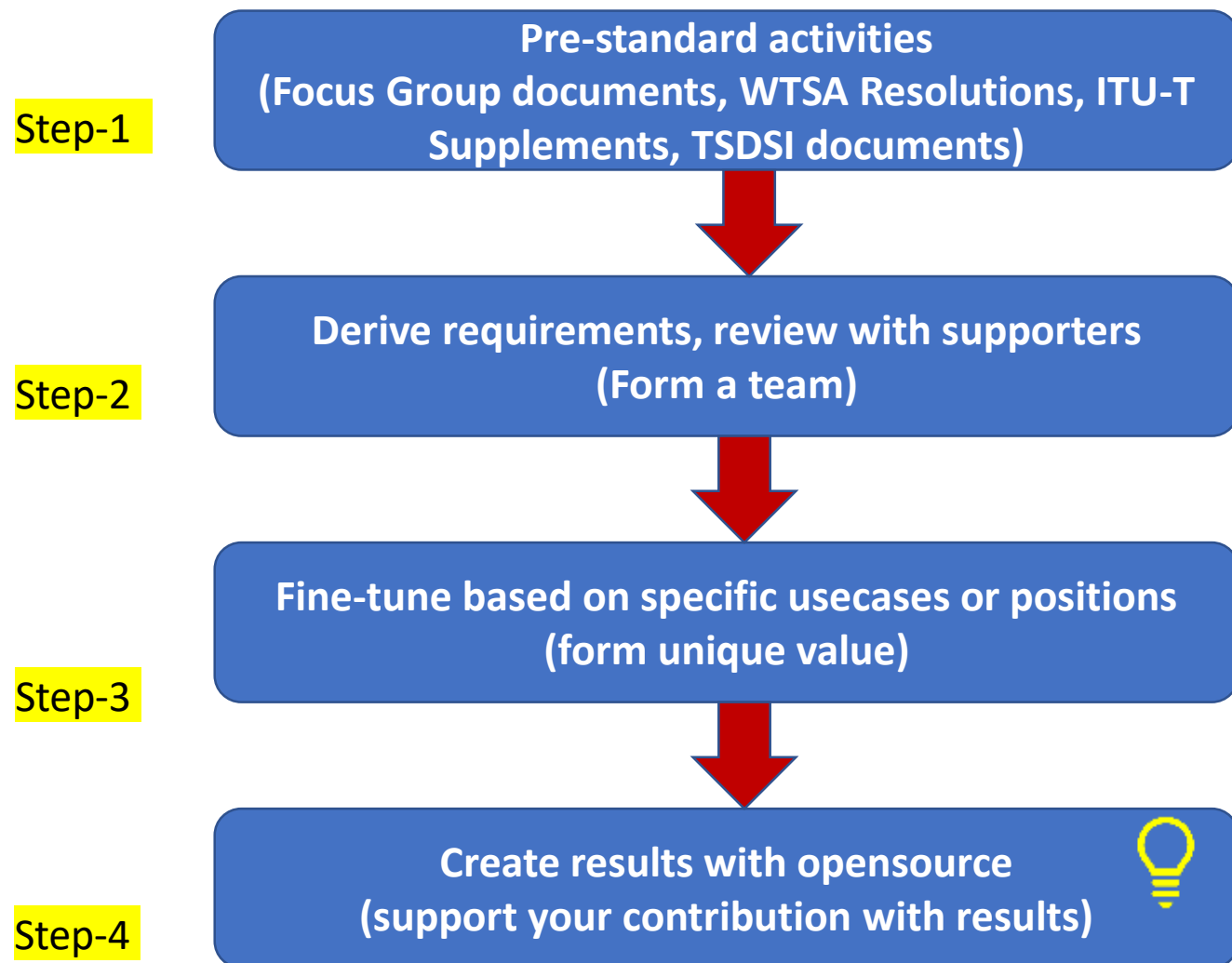
Technical activities @ ITU-T

by  
Vishnu  
TSDSI

# Agenda

1. Opportunity-1: Building blocks of global standards pipeline
2. Opportunity-2: Taking the stage in New Delhi Oct 2024
3. Opportunity-3: Open datasets
4. Opportunity-4: Taking global leadership for Contributions

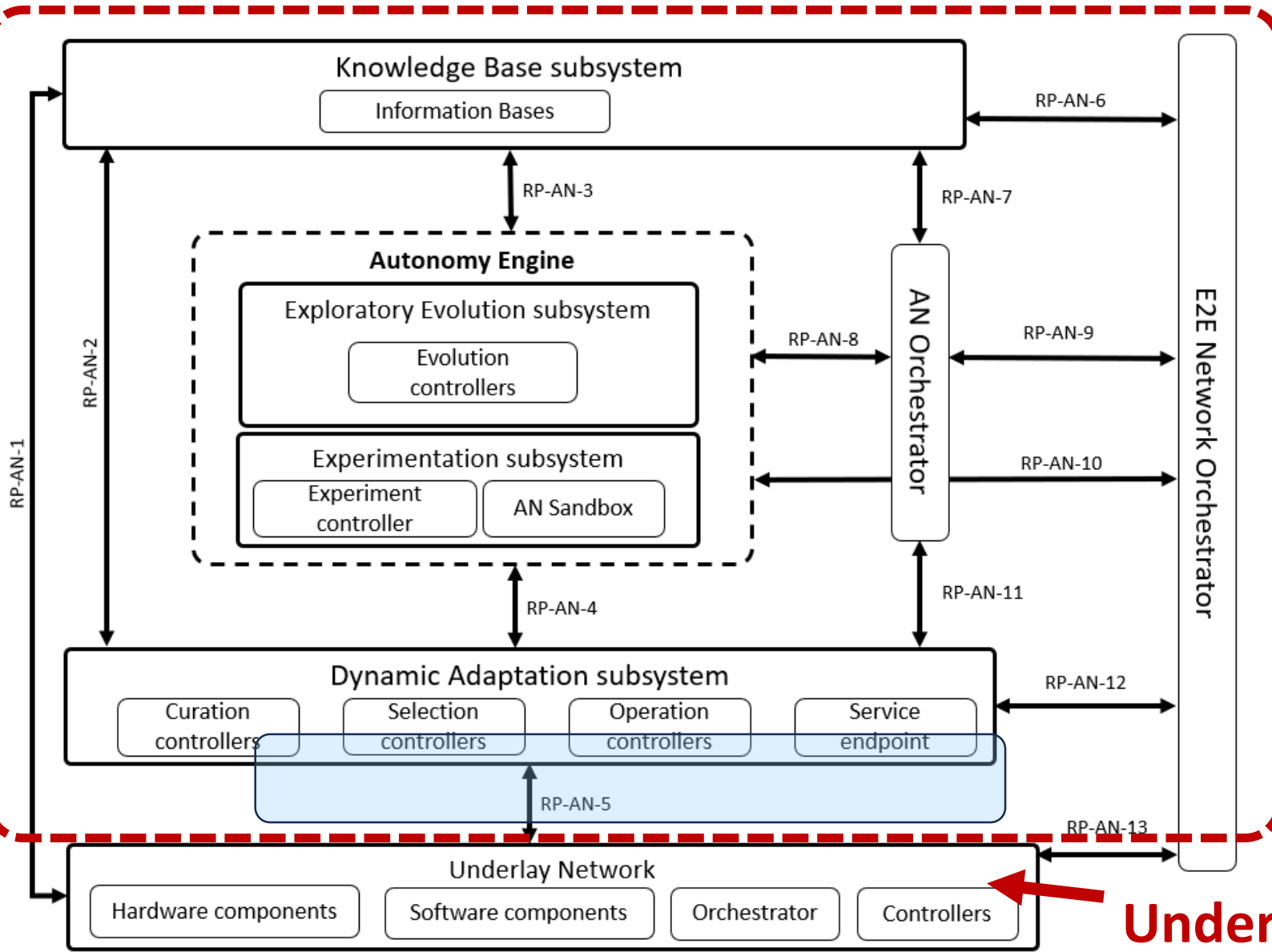
# Opportunity-1: Building standards pipeline



*Overall workflow:*

*Build your ITU-T contribution based on pre-standard research.*

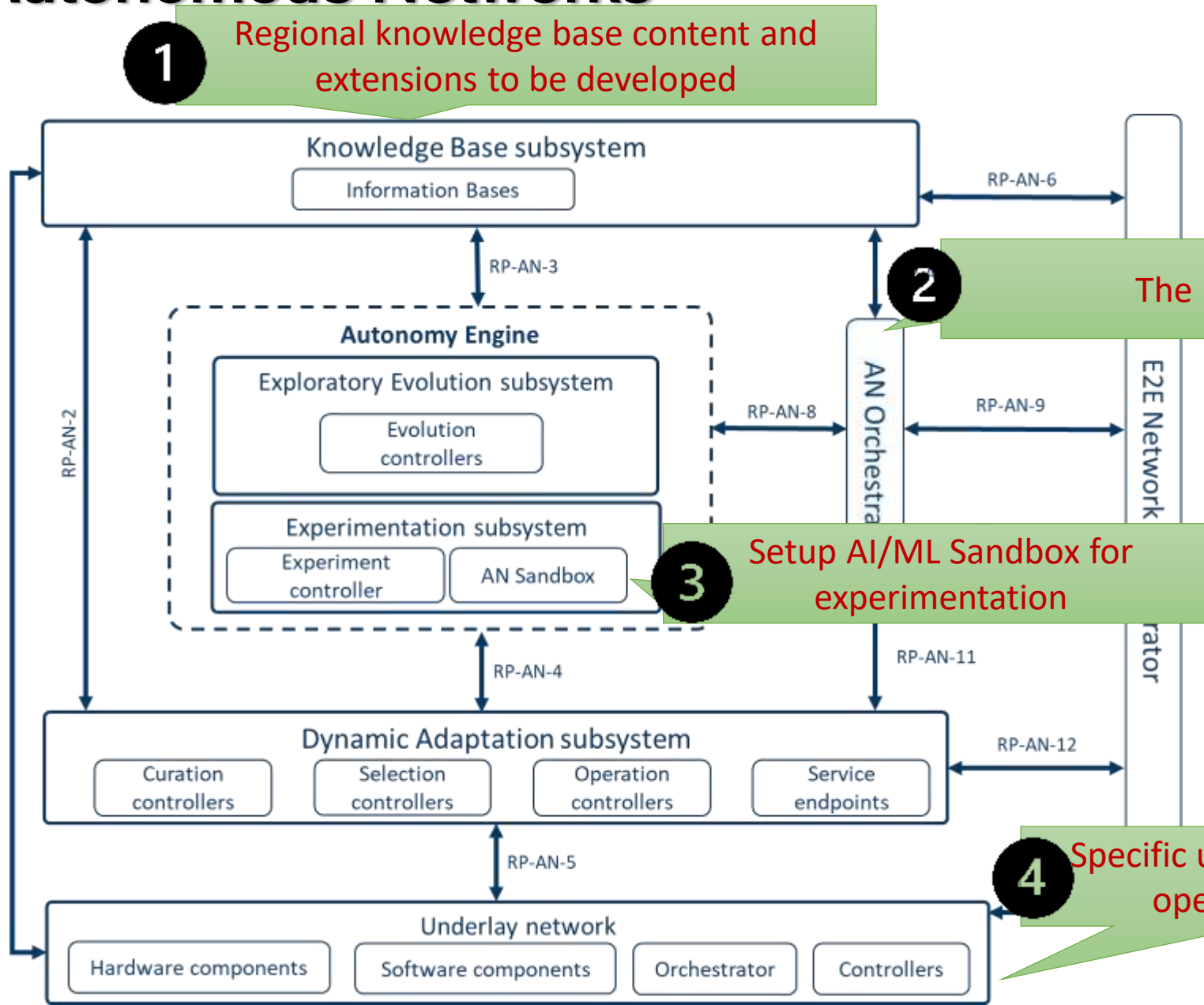
# Opportunity-1: Building standardized - Architecture Framework Autonomous Networks



## Current status:

1. **ITU-T Y.3061 is published**
2. **Developing prototype implementations with global collaborators**
3. **Research on developing interface specifications**

# Building standardized - Architecture Framework Autonomous Networks



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# Opportunity-2: WTSA New Delhi 2024

World Telecom Standardization Assembly (WTSA) 2024 – Awareness Workshop  
organised by TSDSI August 11, 2023

August 11, 2023 @ 2:30 pm - 4:30 pm



<https://tsdsi.in/event/world-telecom-standardization-assembly-wtsa-2024-awareness-workshop-organised-by-tsdsi/>

**WTSA-2024 is being organized in Delhi from 14<sup>th</sup> to 24<sup>th</sup> Oct.**

The WTSA is a **global assembly** organized by the ITU (International Telecommunication Union).

Held every **four years** to define the next period of study for the ITU Telecommunication Standardization Sector (ITU-T).

**Sets the direction and structure for standards development** and addresses critical issues in global telecommunications.

Provides a **platform for members to collaborate** and make decisions on future technologies and standards.



# Opportunity-2: ITU Journal for Future and Evolving technologies



<https://www.itu.int/pub/S-JNL-VOL3.ISSUE2-2022-A21>

## AI-based indoor localization using mmWave MIMO channel at 60 GHz

**Authors:** Shubham Khunteta, Ashok Kumar Reddy Chavva, Avani Agrawal

**Status:** Final


**Date of publication:** 22 September 2022

**Published in:** ITU Journal on Future and Evolving Technologies, Volume 3 (2022), Issue 2, Pages 243-251

**Article DOI :** <https://doi.org/10.52953/AORF8087>

Beyond 5G Team, Samsung R&D Institute India-Bengaluru

ITUEvents



AI for Good  
Discovery

Digital-twin-enabled 6G: Depth Map Estimation in 6G mmWave systems

Monday, 15 May 2023  
14:00 - 15:00 Geneva (CEST)  
8:00 - 9:00 New York (EDT)  
20:00 - 21:00 Beijing (CST)

### Speaker(s)



Steve Blandino  
Contractor  
National Institute of Standards and Technology (NIST)



Yeswanth Guddeti  
Researcher  
Samsung

9 May 2024

# Opportunity-2: ITU Kaleidoscope

- TSDSI is an organizational partner for ITU-T Kaleidoscope.
- TSDSI Secretariat engages with members for bringing in contributions to pre-standards FG (focus groups) and standards (Study Groups) and Kaleidoscope papers.
- TSDSI members submitted entries and usecases for AI for Good calls.
- **WhatsApp Group** is created for timely updates, agenda details, and other valuable information related to the ITU-T meetings. The group link is given below. Kindly join.
- **ITU-T Meeting Announcement Group -**  
<https://chat.whatsapp.com/CKrypatj7KS1KBulq35FRM>

**ITU's premier academic conference series aimed at fostering international collaboration among universities, industry, and research institutions to explore the implications of emerging trends in digital and sustainable transformation.**





# Opportunity-2: 6000 CHF?

- Take the stage during WTSA
- Have a shot at the young authors prize
- Network with peers, and the best
- Get into the pub pipeline
- Future career and research opportunities



# Opportunity-3: Open datasets as standards Enablers

- We consider measurements for **8 days** from **>1000 RRU/AAUs**, comprising **12 different products**
- The following datasets are available:
  - **Base Station basic information**
    - configuration parameters and hardware attributes.
  - **Cell-level data**
    - hour-level counters, including service compliance counters (e.g., load), energy-saving methods counters (e.g., duration of energy saving mode activation)
  - **Energy consumption data**
    - hour-level energy consumption specifications (e.g., total energy consumption of the base stations)

Source: Huawei

<https://challenge.aiforgood.itu.int>

<https://www.youtube.com/watch?v=zSetefnu3y8>



In Progress

## ITU-ML5G-PS-001: AI/ML for 5G-Energy Consumption Modelling

to design a machine learning-based solution that can be trained on a dataset of few scenarios and then generalize successfully to data from scenarios not seen before to achieve more energy-efficient network deployments

Organizer : Huawei



In Progress

## ITU-ML5G-PS-007: Graph Neural Networking Challenge 2023 - Creating a Network Digital Twin with Real Network Data

This edition of the Graph Neural Networking challenge focuses on developing for the first time a GNN-based Network Digital Twin using a dataset from a real network.

Organizer : BNN-UPC



In Progress

## ITU-ML5G-PS-006: Intrusion and Vulnerability Detection in Software-Defined Networks (SDN)

Using provided datasets, participants will provide a machine learning model that can classify traffic flows and detect Intrusion and Vulnerability in SDN

Organizer : ULAK



In Progress

## PS-003: Multi-environment automotive QoS prediction

Berlin V2X offers multi-operator vehicular communication data across urban environments for QoS prediction, lending itself to transfer learning & domain adaptation to generalize across domains.

Organizer : Fraunhofer HHI

# Opportunity-3: Open datasets as standards Enablers

## AI/ML in 5G Grand Challenge Awards

The 2021 ITU AI/ML in 5G Challenge climaxed with the Grand Challenge Finale (awards ceremony) on 14 December, 2021. The following teams were given awards during this ceremony.

### Team Orion

Pedamalli  
Saikrishna  
Ashwini Kumar  
Ashok Kumar  
Reddy Chavva  
Sripada Kadambar  
*Samsung R&D  
Institute India  
India*

### Team Data Explorers

Khalid Albagami  
Bayan AlOquibi  
Abdullah Alajlan  
Raghad Alturki  
*Ericson  
Saudi Arabia*

### Team 数智先锋 (Digi pioneer)

WANG Xidong  
YIN Jiacheng  
LI Wenwen  
XU Shicheng  
ZHU Liyi  
*AsiaInfo Technology  
China Mobile Hunan  
China*

### Team SSN\_ITU

Indu Subramanian  
Charu Jain  
Meghna Govind  
Venkateswaran N  
*India*

### Team The Sixth Sense

Shubham Khunteta  
Avani Agrawal  
Ashok Kumar  
Reddy Chavva  
Ashok Kumar  
Sahoo  
*Samsung R&D  
Institute India*

### Team Automata

Mehmet Karaca  
Doruk Tayli  
Ozge Simay  
Demirci  
*TED University  
Turkey*



# Opportunity-3: Open datasets as standards Enablers

## Problem Statement Information



**In Progress** Optimal Multi-user scheduling in massive MIMO mobile channels

Using machine learning-based algorithms to solve the multi-user beamforming scheduling problem.

Organizer : Rice University



**In Progress** UN Metaverse Think-a-Thon 2024 - Virtual Worlds Revolutionizing Smart Sustainable Cities & Communities

The Metaverse Think-a-Thon 2024 challenges you to push the boundaries of creativity and innovation, designing virtual simulations that transcend traditional brainstorming methods.

Organizer : ITU



**In Progress** Next-Gen tinyML Smart Weather Station Challenge 2024

a challenge aimed at inspiring and promoting the development of innovative, energy-efficient, and cost-effective smart weather stations using Tiny Machine Learning (tinyML) technology. This is a re-run of the 2023 edition

Organizer : CSEM

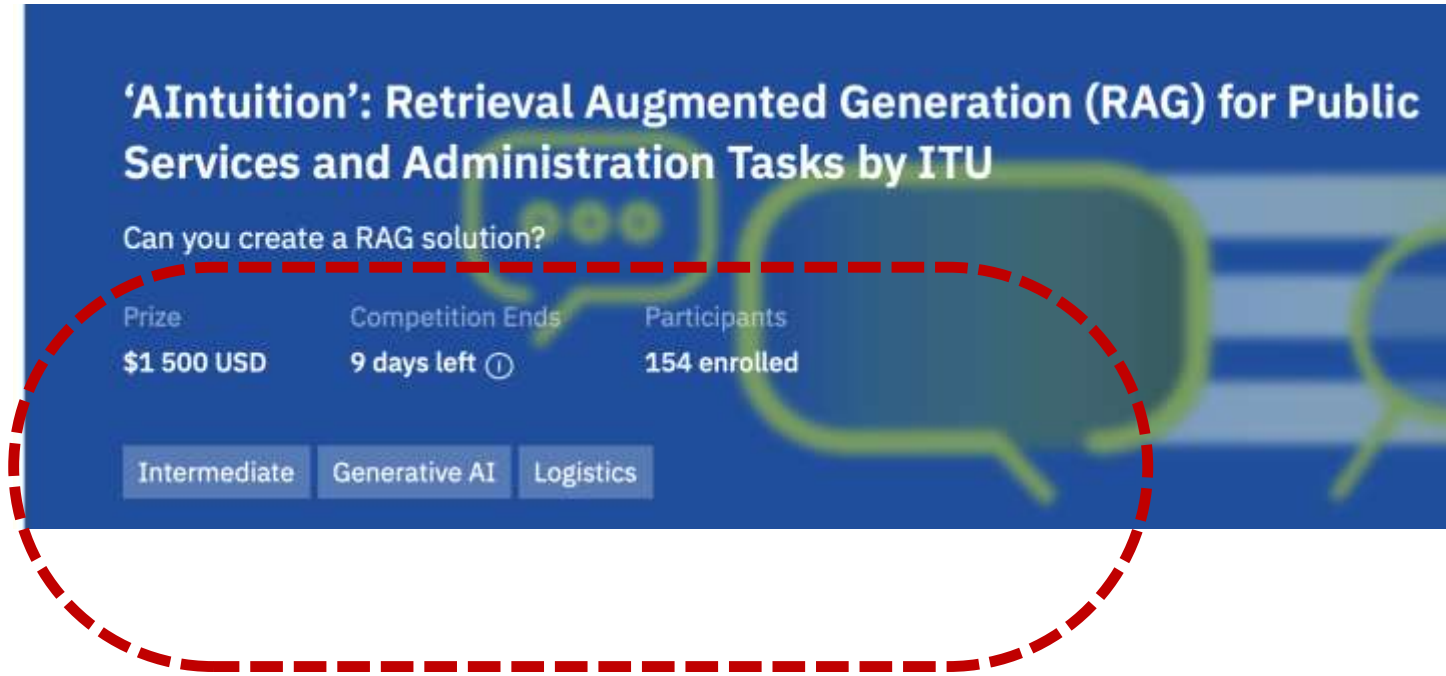
Reward  
1000 CHF  
Time : 2024/04/30 -

Reward  
\$15000  
Time : 2024/03/04 -

Reward  
\$3'000  
Time : 2024/01/24 -



# Opportunity-3: Open datasets as standards Enablers



- Participants are only allowed to use open-source software

- Proposed solutions should be designed in a way that allows to run them fully locally and offline.

- This has implications for size and compute requirements. While larger and more compute-intensive solutions are possible, participants should seek to offer more compact and efficient systems that teams within public sector institutions could install and test on their personal devices.

- For this challenge, if participants opt to use an LLM for query or document pre-processing they should use a local instance of a llama2 (7b) (see on [HuggingFace](https://huggingface.co)).

# Opportunity-3: Open datasets as standards Enablers



1. **Specialize Falcon 7.5B on telecom knowledge:** In this task, the participants will download Falcon 7.5B model [3] (<https://huggingface.co/tiiuae/falcon-7b>), and improve such model on their local computing facilities.

2. The participants will be required to enhance the accuracy of the baseline model when answering to the multiple-choice questions included in the **TeleQnA dataset** by developing novel solutions or combining existing methods such as Retrieval Augmented Generation (RAG) and prompt engineering.

1. **Specialize Phi-2 on telecom knowledge:** In this task, the participants will download Phi-2 [4] (<https://huggingface.co/microsoft/phi-2>), and improve such model on their local computing facilities.



# Opportunity-4: Taking global leadership for Contributions



Study use cases  
for local  
applications

Pool Knowledge  
Base from  
around the  
world

## Study the advances in AI/ML

- **2022:** Created ITU knowledge base and co-pilot and data collection was done for autonomous networks.
- **2023:** ITU FG AN Build-a-thon on-going is generating use cases and validating in human loop

## Study the AI-native features in 6G

- **2022:** Webinars on digital twins, guidance on simulations and sensing helps in cognitive, AI-native features
- **2020-2023:** Published Architecture framework Composition and Evolution of network functions

## Gaps and integration for ML/6G

- **2024:** Ongoing.

## Opportunity-4: Taking global leadership for Contributions

- Use case on “Easing Operations using AI/ML solution for 6G and beyond Network Orchestration and Secure Network Operations” , submitted by TSDSI Member **Tata ELXSI** to the ITU AI for Good “Innovate for Impact” has been accepted for presentation in the ITU workshop "Innovate for Impact: **The AI for Good Challenge to Meet the SDGs**" which will be held on 30th May 2024. This submission is based on weekly mentoring discussions offered by TSDSI. Based on the ITU workshop and further phases, the authors also stand a chance to win prizes totalling USD 80K.

ITU Events



# AI for Good Workshops

*Innovate for Impact:  
The winning AI use cases*

**Thursday, 30 May 2024**  
**14:00 - 18:00 Geneva (CEST)**

# Thank You

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