



## Special presentation and panel discussion

### AI and the Future of Geographical Names Standardization

**Date:** Tuesday, 29 April 2025

**Time:** 10:00 AM – 1:00 PM

**Allocated Time Frame:** 45 minutes

**Chair:** Pier-Giorgio Zaccheddu

**Rapporteur:** Catherine Cheetham

**Presenter:** Fatmah Baothman (Saudi Arabia)

**Panelists:** Peder Gammeltoft (Norway) and Rafe Benli (Australia)

**Presentation Topic:**

Designing AI Generative Agents for Arabic Geographical Names

#### Introduction

The standardization and management of geographical names are critical for supporting sustainable development, enhancing digital infrastructure, and preserving cultural heritage. Within Arabic-speaking regions, geographical names present complex linguistic challenges, such as transliteration ambiguities, inconsistent naming conventions, spelling variations, and dialectal differences. These challenges impede accurate identification, reliable data representation, and effective retrieval in digital systems and geospatial applications.

Aligned with the 2025 UNGEGN Session's overarching theme of advancing inclusive, culturally-informed, and evidence-based solutions, this special presentation and panel discussion contributes to the work programme under Agenda Item 5(b): Geographical names data representations. The initiative directly addresses the need for technical expertise in managing and standardizing Arabic geographical names through innovative AI technologies.

Fatmah Baothman will present the development of a generative AI multi-agent system specifically designed to standardize and contextualize Arabic geographical names. The solution employs semantic AI, generative AI, and other emerging techniques to improve the consistency, accuracy, and cultural sensitivity of Arabic geographical names data, ultimately supporting the achievement of sustainable development goals and enhancing user experiences in geospatial searches and applications.

## **Objectives:**

- To highlight the main challenges affecting Arabic geographical name standardization and representation.
- To present an AI-driven, multi-agent system solution for addressing linguistic and transliteration complexities.
- To demonstrate how semantic AI, actionable AI, agentic AI, and generative AI technologies can strengthen geographical names data management.

## **Key Challenges Addressed:**

- **Ambiguities in transliteration** complicating identification and mapping.
- **Inconsistent naming conventions** hindering data retrieval and system interoperability.
- **Spelling variations** creating confusion in AI model training and geospatial analysis.
- **Dialectal differences** influencing the local use and understanding of geographical names.

## **Proposed AI Solution:**

- Deployment of a **generative AI multi-agent system** designed to:
  - Standardize Arabic geographical names across diverse dialects and linguistic variations.
  - Contextualize geographical names within their historical, cultural, and linguistic frameworks.
  - Apply semantic AI, actionable AI, agentic AI, and models to enhance machine learning capabilities and geospatial data reliability.

## **Expected Outcomes and Benefits:**

- Increased Accuracy in mapping, retrieval, and representation of Arabic geographical names.
- Enhanced User Experience through improved search functionality and application performance.
- Preservation of Cultural Heritage by ensuring respect for linguistic diversity.
- Contribution to Sustainable Development by strengthening digital infrastructures and promoting inclusivity.

## **Thematic issues/questions:**

- How can artificial intelligence address the lack of clarity and support the standardization of Arabic geographical names?
- What are the roles of semantic AI and generative AI in ensuring culturally-informed and context-sensitive standardization?

- How can AI-driven standardization contribute to sustainable development goals within the framework of UNGEGN?
- What challenges remain in applying AI models across different Arabic dialects, and how can they be mitigated?

### **Presentation guideline**

- Pier-Giorgio Zaccheddu (Chair) will open the session, introduce the presenter and panelists, and provide an overview of the objectives and thematic context.
- Fatmah Baothman will deliver a 20-minute presentation on:  
“AI and the Future of Geographical Names Standardization: A Case Study on Designing AI Generative Agents for Arabic Geographical Names.”
- This will be followed by a 20-25 minute discussion, with Peder Gammeltoft and Rafe Benli as panel members, addressing the thematic issues and audience questions.
- The Chair (Pier-Giorgio) and Rapporteur (Catherine Cheetham) will guide the closing, summarizing key points and conclusions from the presentation and discussion.