ECONOMIC COOPERATION ORAGANIZATION (ECO)

TRAINING COURSE

The National Cartographic Center of Iran with the support of ECO

Secretariat holds a training course on:

The Current Technologies and Trends in Various Levels of Spatial Data Infrastructure (SDI)

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National Cartographic Center of Iran

Revolutionizing the Geospatial Industry: Spatial Data Infrastructure and GeoAI Synergy

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Content

- *The Main Goal of Spatial Data Infrastructure*
- *Importance of Data in Artificial Intelligence*
- *Role of Spatial Data Infrastructure in Artificial Intelligence and GeoAI*
- *Using Data Sources from SDI for GeoAI: A Simple Practical Example*
- *Thematic SDI*
- *Leveraging and sharing Geospatial AI in SDI*

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The Main Goal of Spatial Data Infrastructure

- SDI facilitates efficient sharing, access, and use of geospatial data.
- SDI provides framework for integration and interoperability of geospatial data.
- SDI enhances decision-making processes and promotes collaboration.
- SDI aims to address complex societal challenges and drive economic growth.

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Importance of Data in Artificial Intelligence

- Data fuels AI algorithms for learning and decision-making.
- Quality and quantity of data impact AI performance.
- High-quality data is crucial for successful AI implementations.

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Role of Spatial Data Infrastructure in Artificial Intelligence and GeoAI

- SDI facilitates integration of geospatial data with AI technologies.
- SDI manages, shares, and analyzes geospatial data for AI training.
- SDI links data sources for a comprehensive understanding by AI systems.
- GeoAI offers insights for urban planning, agriculture, disaster management, and environmental monitoring.
- SDI ensures quality, interoperability, and accessibility of geospatial data for successful GeoAI applications.

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Using Data Sources from SDI for GeoAI: A Simple Practical Example

- Objective: Land subsidence susceptibility mapping using GeoAI models
- Needed factors:
  - Land subsidence locations
  - Subsidence predictors
- These factors are produced by different organizations in Iran

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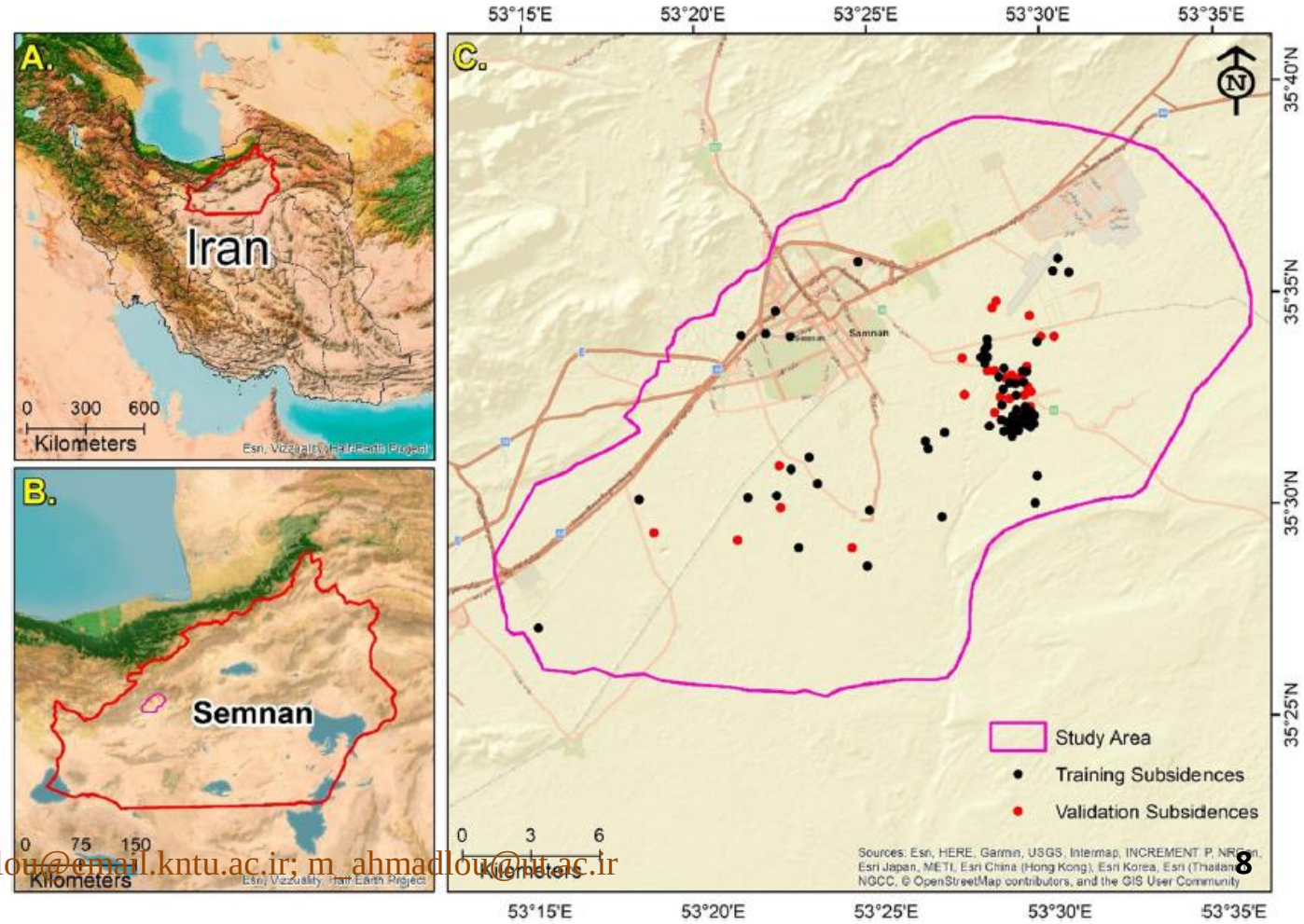
Using Data Sources of SDI for GeoAI: A Simple Practical Example

- Land subsidence areas are produced by NCC



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Using Data Sources of SDI for GeoAI: A Simple Practical Example

- Digital Elevation Model produced by national topographical maps at a scale of 1:25,000 of NCC

- The geological map produced by Geological Survey & Mineral Explorations of Iran
- The lithological map by Geological Survey & Mineral Explorations of Iran
- The distance to roads extracted from the map of roads produced by Ministry of Roads and Urban Development
- The groundwater level map produced by water organization

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Using Data Sources of SDI for GeoAI: A Simple Practical Example

- Data from various organizations
- Analysts must visit each website
- Requires knowledge on how data is prepared
- By placing data in SDI:
  - Modeling made easier
  - Access to data simplified

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Thematic SDI

- SDI should focus on creating thematic data sets
- Thematic data sets are necessary for modelers and researchers in various fields
- The inclusion of data in SDI should have a clear purpose
- Providing thematic data sets will enhance the utility of SDI for researchers and save the time and cost

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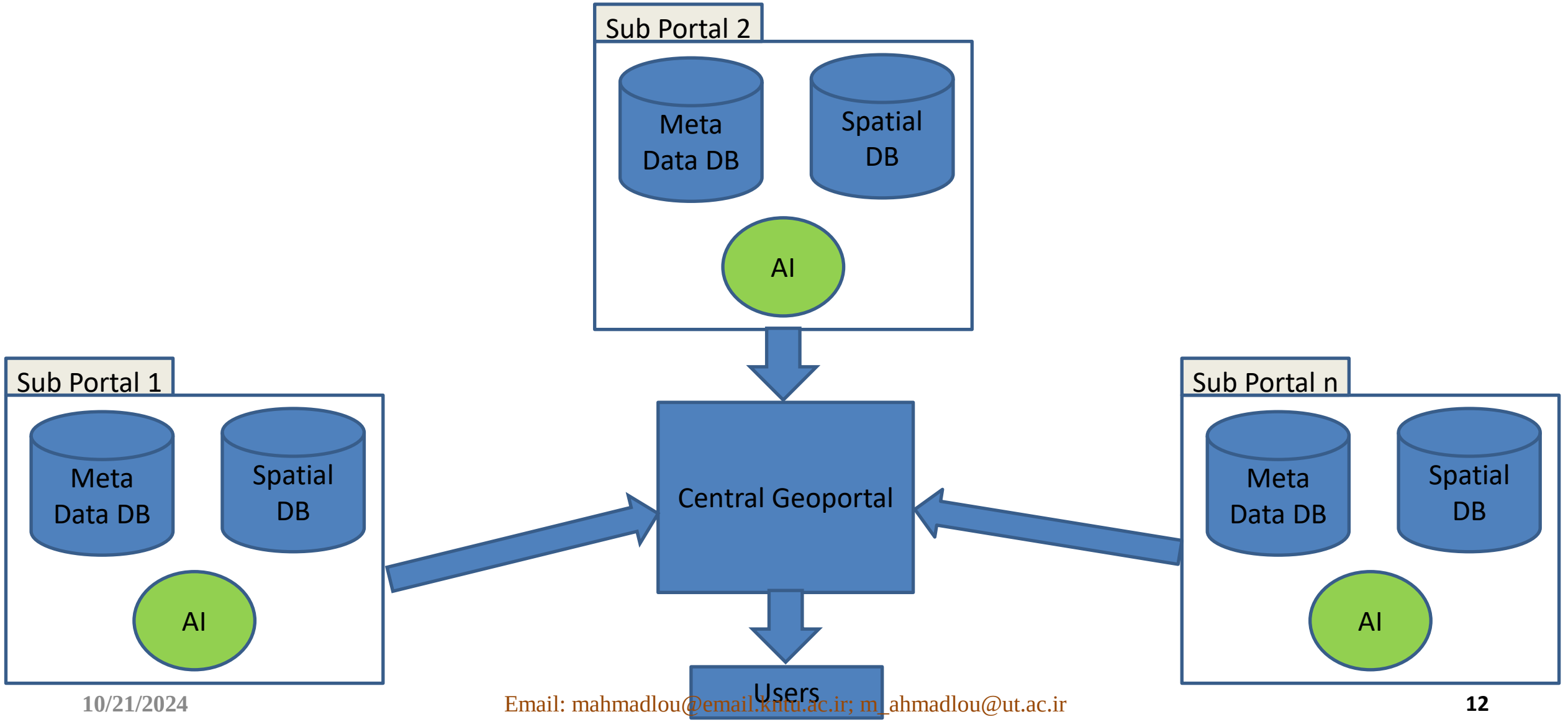
Leveraging and sharing Geospatial AI in SDI



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The benefits of sharing AI using SDI

- Collaboration and knowledge sharing
- Scalability and impact
- Reproducibility and transparency
- Addressing global challenges
- Democratizing access to geospatial capabilities:

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Importance of Establishing Standards for Sharing Geospatial AI Models

- Interoperability
- Reproducibility and transparency
- Ethical and responsible AI
- Ecosystem development
- Scalability and portability
- Data and knowledge sharing

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Advantages of Using a Spatial Data Infrastructure (SDI) for Sharing AI Models

- Standardization and interoperability
- Discovery and accessibility
- Metadata and documentation
- Security and governance
- Scalability and infrastructure
- Ecosystem development
- Alignment with geospatial best practices

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Leveraging SDIs for AI Model Development in the Geospatial Domain

- Model Hosting and Discovery
- Metadata and Documentation
- Standardized Model Formats
- Computational and Storage Resources
- Orchestration and Deployment
- Provenance and Traceability
- Security and Access Control
- Ecosystem Integration

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Any Questions

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