52°North’s perspective on Geospatial Data Spaces

EUROGI’s Geospatial Data Spaces Conference
52°North Spatial Information Research GmbH

- non-profit private research company in the field of Geoinformatics
- participating in publicly funded R&D projects
- providing professional services to develop (mostly) open source solutions
- fostering open science through open data and open source software
- supporting education in the field of Geoinformatics
- annual turnover of ~1.4 million €, ⅓ public funded R&D and ⅔ professional services
- ~30 staff members with different backgrounds
Geospatial Data Spaces
52N’s notion of Geospatial Data Spaces

secure exchange and
easy chaining of
geospatial data and processes
within federated networks
Geospatial Data Spaces - by examples
Co-Designing Local Climate Services

Objectives:
- Defining resilient pathways to adapt to climate change and extreme events
- Incorporating social and behavioral factors, local needs, local knowledge and end-user customs
- Empowering citizens, stakeholders and decision-makers to take informed actions

Tools:
- Available (large scale) climate services
- Local data and knowledge
- Co-design with 7 living labs
- Scientific expertise
- Development of an open source API-based highly customisable cloud-based web platform
Living Labs and their challenges

- Upper and Middle Guadalquivir Basin, Spain
  Agriculture, Livestock, Forestry and Water Scarcity
- Rhineland Basin, the Netherlands
  Water recreation, shipping, nature conservancy
- Budapest, Hungary
  Tourism, health, and urban planning
- Lefkada
  Food security, drought & humanitarian aid
- Emilia Romagna, Italy
  Agriculture and Domestic water resources
- Crete, Greece
  Multi hazard Sectoral climate change assessment for Tourism
- Alazani River Basin, Georgia
  Water supply, hydropower energy and forestry

EUROGI’s Geospatial Data Spaces Conference 2023-10-27

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I-CISK “Data Space”: Climate Service Platform
Providing interoperable tools and governance for CCA and DRR

**Objectives:**
- fostering capabilities to communicate, utilise and exchange data, information and knowledge between different actors
- boosting the integration, accessibility and interop. of models
- facilitating knowledge sharing
- access, transform and integrate data and models into customized workflows for creating actionable solutions for multi-hazard risks

**Tools:**
- Available (large-scale) climate services
- local data and local knowledge
- co-design with 4 living labs
- scientific expertise
- development of an open source API-based federated platform
Real World Labs and their hazards
DIRECTED “Data Space”: The Data Fabric.

- **DIRECTED Web Framework**
- **Real World Lab 1 System**
- **Real World Lab 2 System**

<table>
<thead>
<tr>
<th>Users</th>
<th>Authorised Personnel</th>
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<tbody>
<tr>
<td>Findable Accessible</td>
<td>Restrict Access</td>
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<td>Graphical User Interface</td>
<td>Unify Interfaces</td>
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<td>Model &amp; Data Catalogue</td>
<td>Respect Licenses</td>
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<td>Models</td>
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<td>External Services</td>
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Working on and with gaia-x

- 52N joined gaia-x AISBL
- Contract with Esri Inc. to prototype gaia-x
- Evaluate the current gaia-x developments in Europe
- Technical understanding of the architecture
- Identify relevant criteria for gaia-x compliance
- Assess the impact of gaia-x
- Develop approach for proof-of-concept
Data Spaces in Science: Research Data Infrastructures

- Enable the FAIR handling of (geospatial) research data
- SDI concepts managing research data
- Research on extensions to fulfil the specific needs of RDIs
  - handling of rich metadata
  - Specific needs for access control (e.g., embargos)
  - Data quality and description of measurement processes (metrology)
  - Authorship information and identification
Lessons learned

- comparable requirements on different scales
  - inside institutions/companies
  - across (a predefined set of) institutes
  - European/global open access
- federated systems for data sovereignty
- safe exchange of data, models and information products
- Highly dynamic specification process of gaia-x

Very interesting field for future R&D projects and professional services. Providing valuable insights from data (which becomes available) is key motivation of our work.
About myself

- Mathematician by training (UMS)
- PhD in Geoinformatics (UMS)
- Post-Doc in Hydrology (RUB)
- since May 2021: General Manager and Head of Research at 52°North GmbH
- European representative of DDGI (German Umbrella Org. on GI)