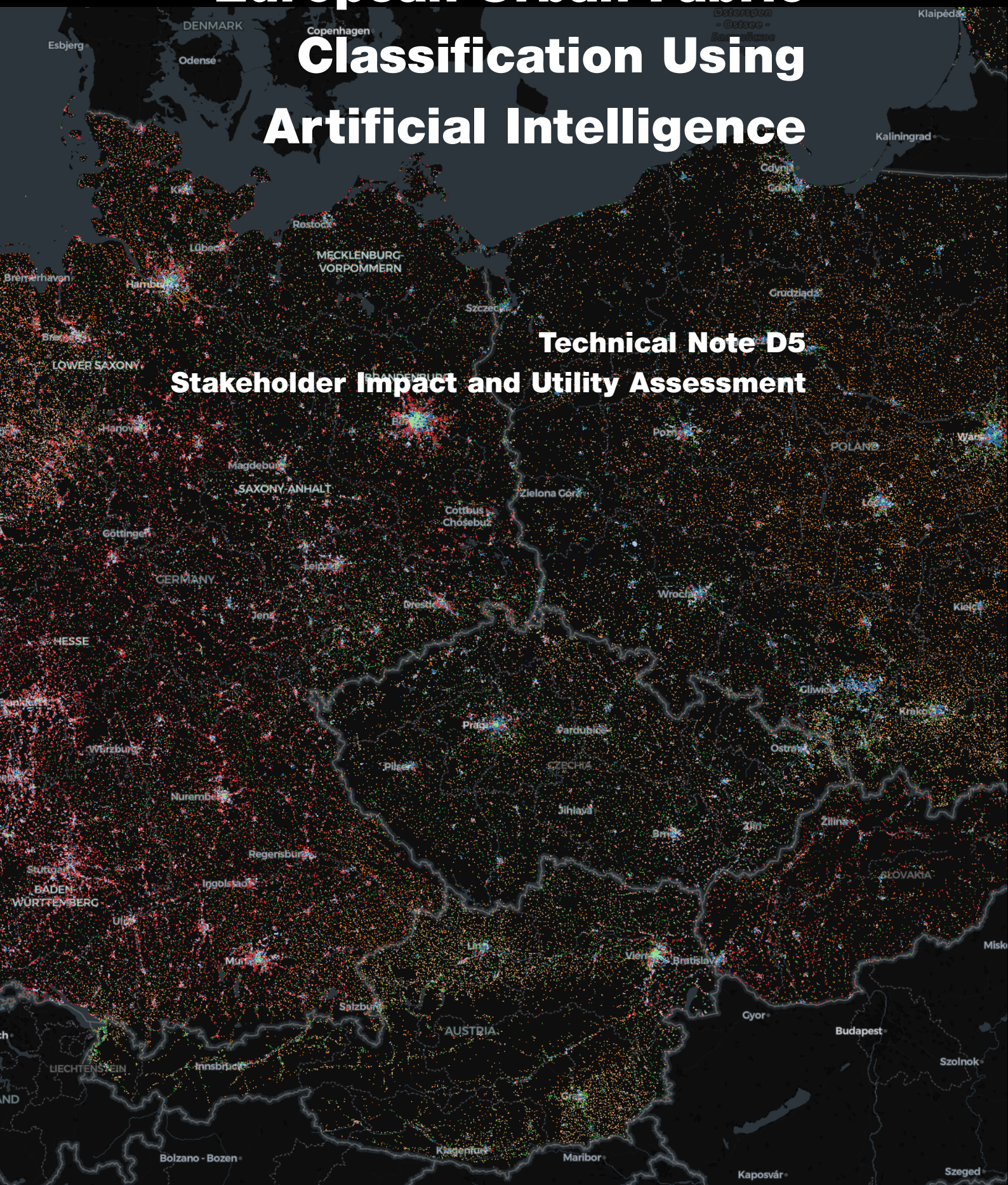# European Urban Fabric Classification Using Artificial Intelligence

Technical Note D5
Stakeholder Impact and Utility Assessment

Stakeholder Impact and Utility Assessment
Technical Note D5

Krasen Samardzhiev[1], Barbara Metzler[2], Martin Fleischmann[1,*] and Daniel
Arribas-Bel[2]

1. Faculty of Science, Charles University, Social Geography and Regional
   Development, Albertov 6, 128 00, Praha, Czechia
2. The Alan Turing Institute, Science of Cities and Regions, British Library, 96 Euston
   Road, London NW1 2DB, UK

* *Correspondence:* Martin Fleischmann martin.fleischmann@natur.cuni.cz

Table of contents

1 Stakeholder Impact and Utility Assessment

We have presented the EuroFab project and related products at various events and sessions. At Urbis 24, the project sparked interest in fulfilling unmet data requirements for energy and climate applications, leading to a potential engagement with Covenant of Mayors members via interviews or surveys. The World Urban Forum facilitated the establishment of new stakeholder relationships, including productive sessions with the SSVA (Construction Sector Development Agency of the Ministry of Environment, Lithuania). Furthermore, we held numerous sessions with the Prague Institute of Planning and Development (IPR) and 4ct.

We have gathered multiple insights from the sessions, related to these areas: - Data Integration - Taxonomy Description and Naming - Comparative Urban Analysis: - Expanding Data Coverage - Reducing Manual Effort in Land Use Analysis - Geographical Scale of Results - Taxonomic Tree & Evaluation - Input data quality

A significant finding from the stakeholder engagements is the strong interest in integrating the EuroFab data with land use, geodemographic, land value and other spatial datasets. However, stakeholders differed in their technical ability to make such a merger themselves. This led to discussions about multiple potential derived data products such as classifications that incorporate both morphological and land use or other functional information.

The stakeholders showed significant interest in the taxonomic tree, discussing both its advantages and disadvantages. Potential use cases included, identifying the relationships between different urban forms, as well as comparisons at different scales between regions and cities. SSVA, in particular, conducted a detailed evaluation of the hierarchy within the Lithuanian context and proposed several modifications so it fits better the local context.

Significant time was spend discussing the issues of how to describe and name the taxonomic tree and the clusters. Different applications required different names, and even the same application (for example, for land use planning), but in different countries required different names and descriptions. One discussed approach to this was to give clusters and the taxonomy abstract names that focus only on the morphology. This would later make it easier for users to adapt and refine the classification names and descriptions according to their specific needs and application contexts.

A key application identified through discussions with 4ct, IPR, and SSVA is the use of EuroFab data for comparative urban analysis - stakeholders expressed a strong interest in leveraging the data to compare cities, regions, and even cross-border areas. This capability is seen as valuable for guiding planning decisions, facilitating knowledge transfer between local planning authorities and land developers, and understanding the factors that shape urban development patterns. This emphases on comparisons also underscored the need to expand the geographic coverage of the data.

We have already taken steps to address this requirement. Due to the new stakeholders from Lithuania, we had to process the urban fabric of the whole country. This required adjustments to the processing pipeline, which improved its scalability and performance and currently, its easier to include new countries in the analysis. We also note that even though Lithuania is excluded from the final modeling results with Microsoft and OvertureMaps data, it is present in the interactive web application.

There were also multiple discussions with stakeholders about the geographical scale of the results. IPR expressed interest in both fine-grained units, such as morphotopes (local contiguous areas of similar urban morphology), and coarser aggregations, such as the hexagon-based aggregation featured in the web application. Conversely, 4ct and SSVA indicated a need for building-level information, as well as access to the raw data.

Related discussions covered input data quality and additional morphological variables to be included in the classification. The issues with the quality and inconsistencies of building footprints was raised multiple times, as well as problems with the street network. This was especially relevant for building height, which is a characteristic all stakeholders expressed interest in. However, we also discussed the unavailability of this data and the accuracy problems of existing building height data products.

Lastly, The Prague Institute of Planning and Development (IPR) highlighted the potential of EuroFab outputs to help with generating the official land use plan for the city. Furthermore, they expressed interest in potentially integrating the EuroFab data into their urban analytics products for Prague.

1.0.0.1 Next steps

Currently, we are developing a formal survey, to gather and categorise this information so that it can guide future iterations of the Eurofab project.