

## PROTOCOL – SEMINAR KICK OF MEETING

12.07.2022

### Members:

Prof. dr hab. inż. Józef Hernik – UR Kraków

Dr inż. Karol Król, prof. URK – UR Kraków

Dr inż. Anita Kukulska-Kozieł, prof. URK – UR Kraków

Dr inż. Katarzyna Cegielska – UR Kraków (**protocol officer**)

Prof. Dr.-Ing. Hans Joachim Linke – TU Darmstadt

M.Sc. Miriam Mayer - TU Darmstadt

Maximilian Guntrum – CORA Maps

1. Introduction of the research team – UR Kraków
2. Introduction of the research team – TU Darmstadt and CORA Maps
3. Overview of Work Packages – UR Kraków
  - a. Timetable for implementation of individual Work Packages (WP1 – WP5)
    - Workpackage 1: Analysis of the spatial development in the study regions on a macro-level
    - Workpackage 2: AI detection of land cover changes and their spatial relationships based on urban and landscape features
    - Workpackage 3: Identification of the focus areas in the study regions in Germany and Poland and definition of requirement profiles (micro scale)
    - Workpackage 4: Development of analysis and visualisation tools
    - Workpackage 5: Trial of the analysis and visualisation tools as well as documentation of the results
4. Detailed overview of WP1 (Analysis of the spatial development in the study regions on a macro-level) – UR Kraków
  - a. discussion on the selection of research areas at macro scale
    - the polish perspective - Voivodships: małopolskie, świętokrzyskie, śląskie (obligatory, as indicated in the project), podkarpackie (proposed for add)
    - the german perspective – Lands: Hessen, Rheinland-Pfalz (obligatory, as indicated in the project)
  - b. discussion on possible methods and data to be used
    - macro-level analysis in two dimensions - spatial analysis using land cover geodata and statistical analysis
    - parallel analyses, with continuous knowledge transfer between Partners
  - c. reminder of the content of milestones indicated in WP1
    - analysis of source data including identification of trends and tendencies in land use changes - analysis of 5 test areas with a total area of at least 50 km<sup>2</sup>
    - identification of key urban and landscape features to classify changes in land

use and urban-rural relations based on analysis of source data - selection of a minimum of 5 features

5. Detailed overview of WP2 (AI detection of land cover changes and their spatial relationships based on urban and landscape features) – UR Kraków
  - a. reminder of the content of milestones indicated in WP2
    - detection of roof areas with an accuracy of more than 70% for the test area - detection of a minimum of 7 out of 10 roof surfaces in a test area of at least 1 km<sup>2</sup>
    - Detection of land-use and land-cover changes with an accuracy of more than 70% for the test plot - detection of a minimum of 7 out of 10 land-use and land-cover changes on a test plot of at least 1 km<sup>2</sup>
6. Tasks to be carried out in the next stages
  - a. Workshops - organisation of workshops (one workshop each in PL and DE)
  - b. Microscale analysis - identification of areas for detailed micro-level analysis
  - c. WebGIS platform - launching the WebGIS platform and presentation of results on it
  - d. Testing - involvement of external partners in the testing proces
  - e. Dissemination - organisation of conferences, participation in conferences, scientific publications
7. Technical and economical limitations about the land cover data – CORA Maps
  - a. the problem of data accuracy, enhancing data quality and precision
8. Initial ideas for focus on research – TU Darmstadt
  - a. Increased corn cultivation including slopes
  - b. Development of building land
  - c. Change of the vine cover in the course of land consolidation procedures
  - d. Forest conversion / natural succession
  - e. Water supply and droughts, depending on the soil
  - f. Landscape development projects
    - deforestation, mulching, sowing for the preservation of species and plants
    - protection and care of the Eastern Eifel juniper heaths
  - g. Major projects of natural reserve
    - Weir systems and stream piping
    - Riparian strips of the Upper Ahr high Eifel
  - h. Rural conversion projects
    - settlement abandonment, unsealing
    - expansion of military training area
  - i. Urban land development
    - how quickly are new development areas being used for construction?
    - how many buildings plots are still available in a municipality?
  - j. Rural land development
    - observation of changes in land use, agricultural or forestry
    - identification of vacant land and its change over time
    - sustainable reduction of vacant land through land consolidation
9. Project promotion – logo, promotional content – UR Kraków

10. Both teams tentatively concluded that a good solution from the point of view of the problems and challenges in both Poland and Germany is to focus on built-up areas.

11. Summary, distribution of tasks and further work:

- a. TU Darmstadt - further research with other experts in the field
- b. UR Kraków - acquisition of statistical and spatial data
- c. proposed date for next meeting - start of September