

URBAN PLANNER

tool for optimal land use scenario modelling

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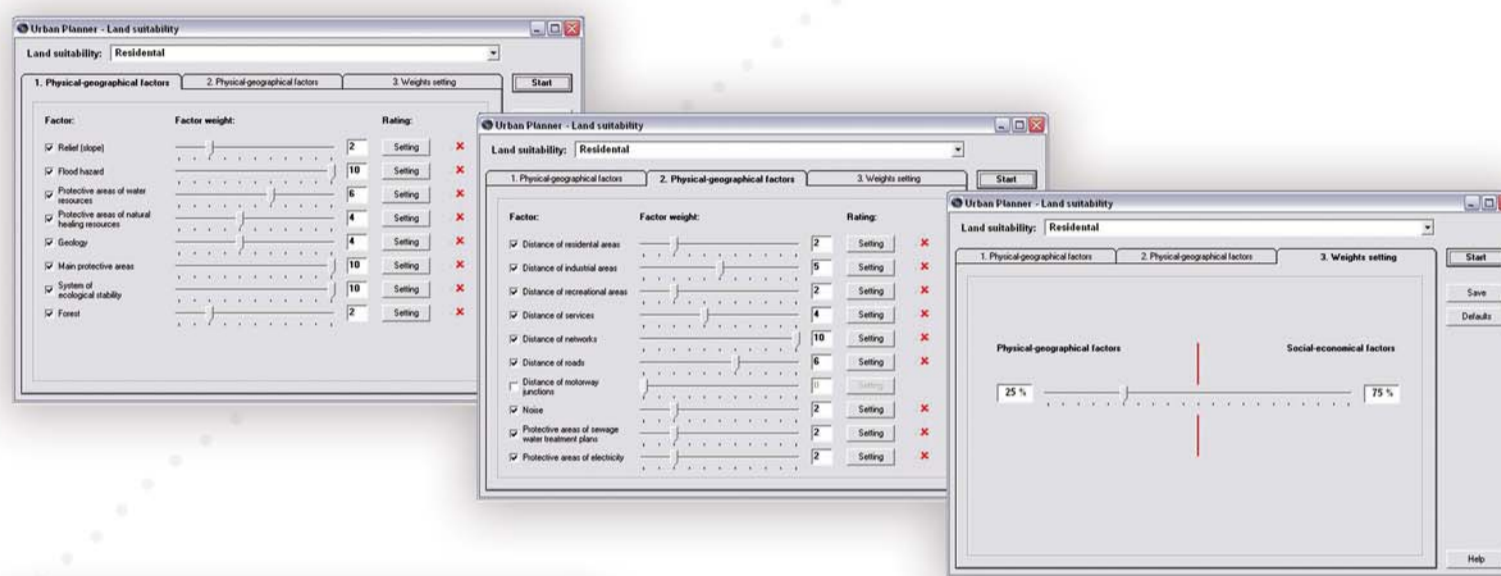


The main aim of the poster is to show the results created by "Urban Planner" - ArcGIS extension for scenarios modelling. Urban Planner ArcGIS 9.3 extension was created at the Department of Geoinformatics, Faculty of Science, Palacký University in Olomouc, Czech Republic. It allows the creation of landscape for future development, facilitates optimal functional land use and creates scenarios for future development.

The extension is divided into two main sections, landscape potential modelling and optimal land use modelling. It uses more than 40 vector layers (Esri shapefile format) for analysis. Most of the layers are optional layers where it is possible to change all default values and their weights. For almost all calculations, the ArcGIS Spatial Analyst extension is needed. The default resolution of all calculations is 10 m per pixel.

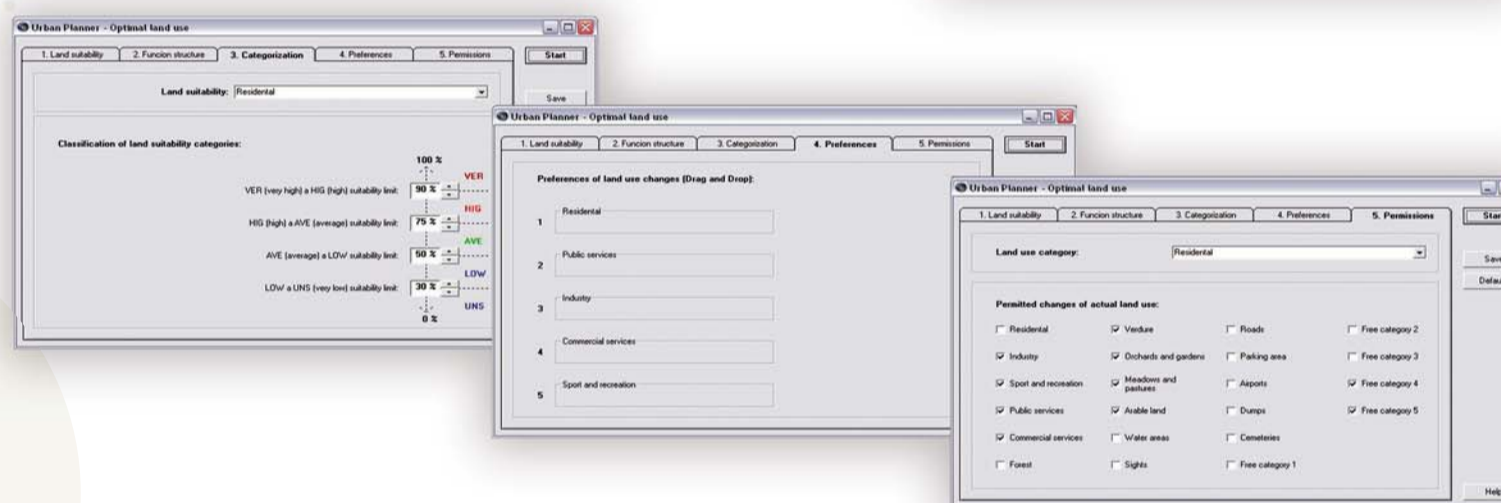
1. Land suitability modelling

The first part of the extension allows for the calculation of the land suitability (landscape potential) for 5 selected activities which are housing, industry, sport and recreation, public services and commercial infrastructure. The model works with vector layers. Most of the overlay calculations are done in raster format. Five raster layers of landscape potential are the result.



2. Optimal land use modelling

The second part of the extension includes the calculation of optimal land use based on previously calculated potential, actual land use and sets rules for changes. Land suitability is classified and then compared with actual land use. Changes that are allowed and forbidden as well as the land use preferences are set up.

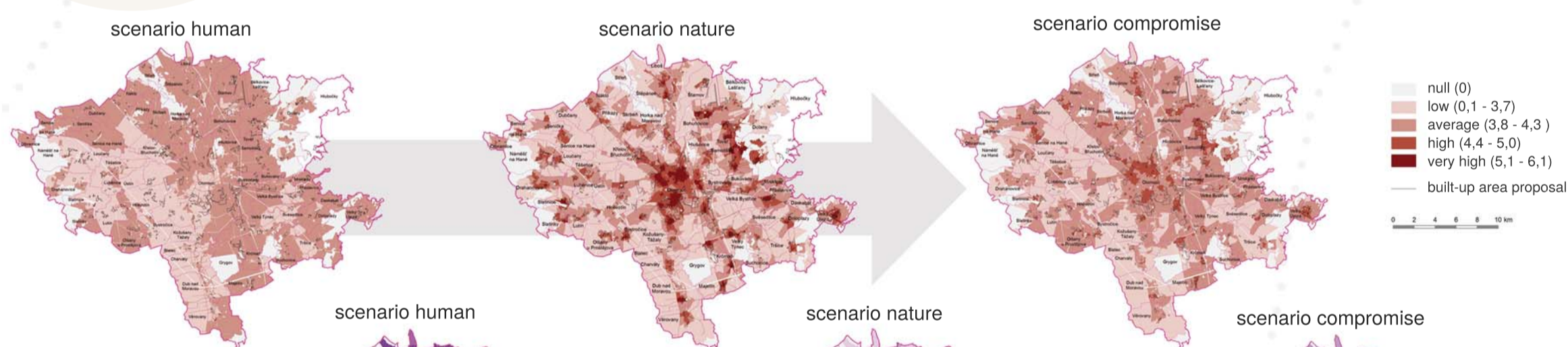


The main results of Urban Planner modelling are raster layers of landscape potential for selected human activities (housing, industry, sport and recreation, public services and commercial infrastructure), vector layers of optimal land use and areas suitable for allocation or land use change.

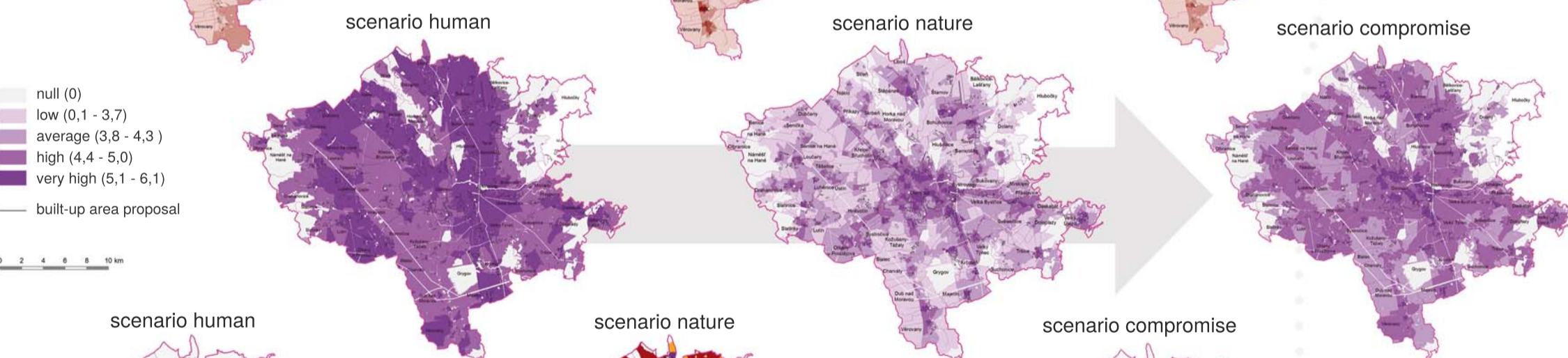
ArcGIS
Extension

Results

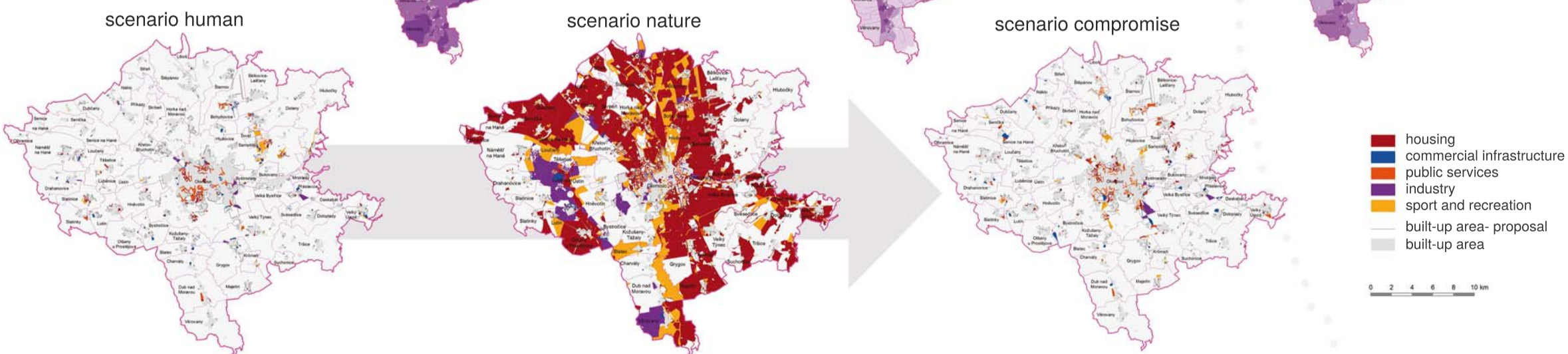
Scenarios of the Olomouc region land suitability for housing



Scenarios of the Olomouc region land suitability for industry



Scenarios of the Olomouc region land use changes



Scenarios

The final results of the Urban Planner extension are **three scenarios or forecasts**, which bring information about some land characteristics which describe optimal land use and values of land potential for each activity. "The middle forecast – **scenario compromise**" prognosticate the most probable land progression with physical and socio-economic parameters that are in a ratio of 50:50. "The human forecast – **scenario human**" reflect the socioeconomic factors with both physical and socio-economic parameters that are in a ratio of 10:90. "The land forecast – **scenario nature**" favor the physical geographical factors where the physical and socio-economic parameters are in a ratio of 90:10.

Testing area

The functionality of the Urban Planner was tested in two town regions - **Hranicko Region** and **Olomouc Region**, located in the Moravian part of the Czech Republic. The extension was developed with the strong cooperation of local **Olomouc government officials**. The scenarios of future development and all particular results (maps, text and tables) were used in urban planning processes (**local urban plan creation**).