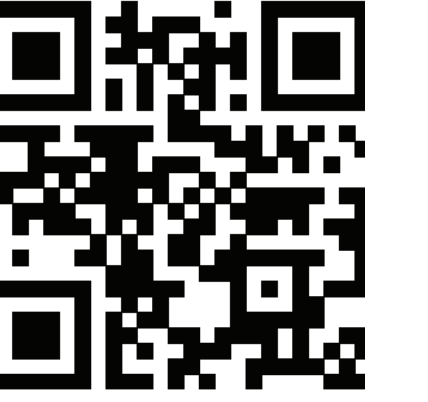




rcrisp

automates the morphological delineation of riverside urban areas.

<https://cityriverspaces.github.io/rcrisp>



CityRiverSpaces/rcrisp

CRAN

0.3.1

Rbanism

R package

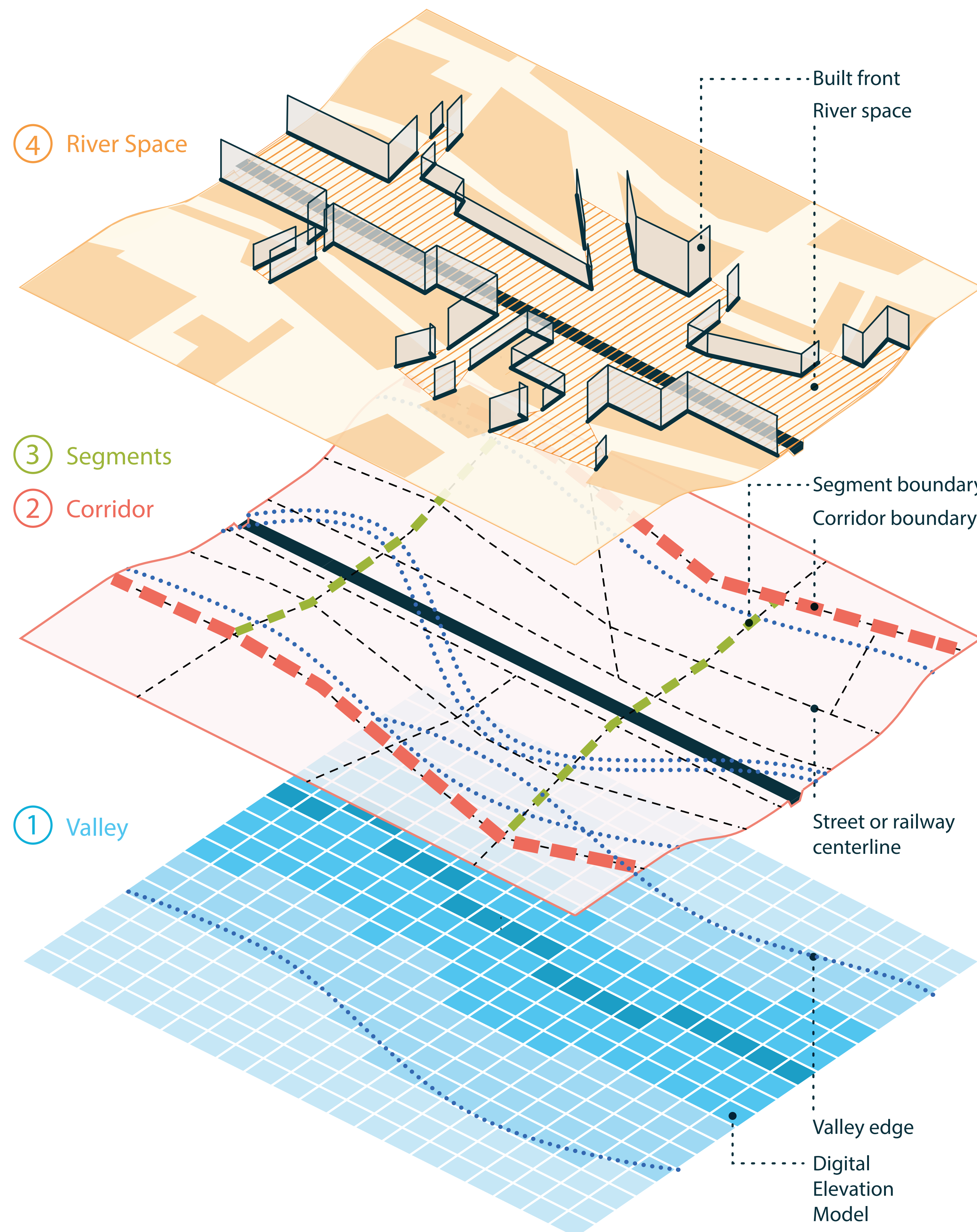
R

Under Review

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The motivation

Spatially designing and planning urban transformations around rivers while capturing the complexities of riverside urban areas remains challenging. An essential part of **the challenge is how boundaries are drawn in the analysis of urban areas surrounding rivers**. To overcome this challenge, we developed the rcrisp R package to derive **spatial morphological units** that delineate and segment urban river spaces. These units are defined **based on the combined morphologies of the river valley and urban form**. The resulting delineations **can be used in downstream single- or cross-case analyses** of riverside urban areas that can benefit from consistent and comparable spatial units, including land use, accessibility, and ecosystem services assessments.



The method

The method consists of the following steps:

1. The **valley** is delineated using a cost distance accumulation analysis on a Digital Elevation Model. The resulting valley edge is used as one of the inputs in the next step.
2. The urban **corridor** surrounding the river is delineated on the street network along a path following road centerlines that is closest to the valley edge.
3. The delineated corridor is divided into corridor **segments** bounded by the main transversal streets.
4. The **river space**, i.e., the space between the river and the first line of buildings, is determined.

Example of morphological delineation using rcrisp



City: Bucharest
River: Dâmbovița

River
Valley
Riverspace
Corridor
Segment

Examples of alternative delineations

Buffer-based corridor and riverspace

- ✗ The influence of the terrain on spatial phenomena is ignored.
- ✗ Visibility or spatial continuity in the riverspace is ignored.

Segmentation using neutral cutouts

- ✗ Boundaries between segments are arbitrary.
- ✗ Edges are not spatially meaningful.
- ✗ The corridor as a whole is not coherent.