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SYSTEMIC APPROACH THROUGH UNIVERSAL DESIGN IN URBAN OPEN SPACES

Janez P. Grom

Janez.Grom@fa.uni-lj.si

University of Ljubljana, Faculty of architecture

The systemic approach to universal design in urban spaces, as explored in the case study of Trbovlje, Slovenia, presents a methodology for improving accessibility in public environments by integrating inclusive design principles directly into urban planning strategies. Rather than treating accessibility as an afterthought, this approach emphasizes the importance of embedding universal design from the earliest stages of spatial analysis and development, ensuring that urban environments serve people of all abilities and ages.

Universal design, a concept formalized by Ronald Mace in 1997, promotes the idea that the built environment should be accessible to everyone without the need for special adaptation. Its core principles — equitable use, flexibility, simplicity, perceptibility, tolerance for error, low physical effort, and appropriate space — form the conceptual backbone of the study and the presentation. These principles are framed not merely as abstract ideals but as practical tools for shaping real urban interventions.

In the case of Trbovlje, a narrow and topographically challenging valley settlement, the project analyzed the spatial structure with a focus on identifying obstacles to mobility and sensory navigation. The study considered public transport connectivity, sidewalk conditions, elevation challenges, and the distribution of public functions. A comprehensive analysis was conducted through behavioral mapping, infrastructure assessments, visual evaluations, and programmatic and connectivity studies. The goal was to understand how urban space functions for all users, particularly the most vulnerable — people with disabilities, the elderly, or parents with strollers.

The findings revealed that while vehicular access was generally adequate, pedestrian access was severely limited in many areas, especially for those with reduced mobility. Sidewalk coverage was inconsistent, tactile and contrast markings were absent or insufficient, and many public buildings lacked essential features like ramps or reserved parking spaces. The accessibility assessment of 26 public buildings revealed that physical barriers and lack of navigational aids were widespread.

To address these shortcomings, the study proposed a phased intervention strategy aligned with the town's morphological and functional segmentation. Trbovlje was divided into three zones — northern, central, and southern — allowing for targeted, scalable improvements. The proposed interventions included installing tactile paving and audible signals, redesigning sidewalks, adding wheelchair ramps, and increasing designated parking for the disabled. Importantly, each phase was designed to be independently functional, enabling incremental implementation without compromising usability.

The study and the project related to it reinforces these conclusions with visual analysis — maps of elevation, connectivity, and spatial function — illustrating how interventions can be prioritized based on spatial data. It also presents the strategy as a replicable model for other municipalities, stressing the importance of moving from reactive fixes to a proactive, systemic inclusion of universal design in urban plans.

The project demonstrates that universal design is not just a matter of social responsibility but a pragmatic planning tool. By making accessibility an integral part of urban design, municipalities can foster more inclusive, adaptable, and resilient urban environments. The systemic approach used in Trbovlje offers a framework that balances ambition with feasibility and places human diversity at the center of urban development.