Anastasia Koltsova
PhD Candidate

Telephone: +41 44 633 29 02
Email: koltsova@arch.ethz.ch

iA **Chair of Information Architecture**

ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Inverse Urban Design

The relation between people and their environment has long been a focus of urban design studies. Their main objective is to understand what makes a good space for people to be drawn to and what are relevant properties of such spaces. However, the **concept of good public space** is poorly formalized, as evidenced by the lack of a universally accepted definition. The definition of this concept as well as associated attributes of public space vary for different researchers depending on the focus of their study. That leads to the development of a number of works suggesting attributes which are often subjective and not empirically tested. There is a need for new (mixed-method) research studies that would combine previous knowledge and provide possibilities for a more in depth and systematic exploration of public space and its attributes.The proposed research tries to close a gap between different research studies and the resulting suggestions on the properties of good public space.

The main goal of the research is to develop a methodology that allows measuring the quality of public space using non-subjective attributes. The secondary goal is to **objectify public space qualities** established by prior research and to provide recommendations for suitable public attributes within an analyzed context.

These goals are accomplished by developing **the inverse method** for urban form attribute detection. The inverse urban design is based on the analysis of information available for the target context combined with the review of literature in research area with an aim **to uncover a set of attributes** most relevant to urban form design within the given context. The subsequent application of the methodology is done using data mining methods and provides a way **to detect patterns in formal and structural organizations** of public spaces in the city of Zurich.

For the purpose of this research it is assumed that the **degree of vitality** (number of people and activities in place) serves as an indicator of public space quality. This may only be applied to public places with no monopoly function. The scope of research is thus limited to the following two types of public space: **urban square and urban park**. The vitality is measured for a number of public spaces using established methods and correlated to derived public space attributes. The following are the major components of the propoded research study:

a) the establishment of a set of attributes through literature review, on site observations and, interviews with local planning/design practitioners;

b) attributes measurement and pattern detection through application of data mining methods;

c) results interpretation and review during joint workshops with local planning authorities.

This comprehensive and integrated approach enables the incorporation of vast amount of heterogeneous data on public space quality that has been accumulated in research and local practice until recent. It also allows to analyze public space in an objective manner and fosters a more **context sensitive design** of future public spaces.
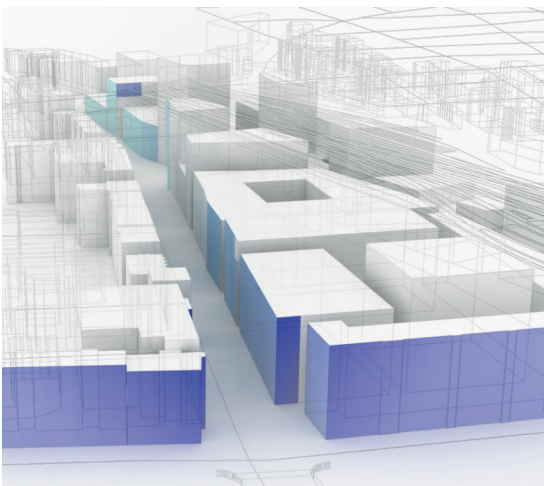

Image 1 shows the exemplary attributes measurements for a planned public space in Zurich. Image 2 shows the suggested design concept based on measurements.