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Book of Abstracts

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Gliwice, April - November 2025



DREAM Silesia
Design-Research-Education
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Multiconference 2025

BOOK OF ABSTRACTS

Gliwice, April – November 2025

Faculty of Architecture
Silesian University of Technology

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Silesian University
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Faculty of
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Ladies and Gentlemen,

We are pleased to present the third edition of the international Design Research Education in Architecture Multiconference DREAM Silesia 2025, which is a recurring event focused on the transformation of urban spaces. Previous two editions of the conference (2019, 2022) had an international character and were a continuation of the series of conferences ATZ (Architecture and Technology in Health), BIWA (Interdisciplinary Research in Architecture), NwA (Innovative Ideas in Architecture), RMW (Region-Town-Country), and NAC (Nature – Architecture - Culture). The established brand and tradition of this event contribute to its further development. The planned edition in 2025 adopts a slightly different edition, consisting of three thematic conferences, with a clear emphasis on the interdisciplinary dimension of research in architecture and collaboration between scientific institutions both nationally and internationally. A series of three events will be organized throughout 2025, each dedicated to a different research area.

- **Heritage of architecture of the second half of the XX century - research and preservation 7.04.2025**

Chairman: Prof. Dr. Hab. Eng. Arch. Magdalena Żmudzińska-Nowak

The presentations will focus on the architectural heritage of the second half of the 20th century in Europe, in the context of research and efforts related to its preservation. During the session, we will present these issues from a European perspective, with the participation of guests from Portugal, Italy, Lithuania, Turkey, and Poland.

- **The logic of locality in the age of globalization, 2.06.2025**

Chairman: Dr. Hab. Eng. Arch. Małgorzata Balcer-Zgraja

The topics will focus on the identification of key phenomena associated with globalization and the determination of their significance for shaping architectural solutions on a local scale. A summary of the research conducted at the RAr-2 Department of the Faculty of Architecture at Silesian University of Technology will be presented, discussing the threats and local opportunities for the development of architecture in the context of new paradigms: mobility (redefining transportation and its associated socio-cultural phenomena) and the circular economy.

- **Interdisciplinary Research in Urban Planning – Examples of Completed Projects, 3.11.2025**

Chairman: Dr. Hab. Eng. Arch. Michał Stangel, Prof. SUT

The theme will address the issues of sustainable mobility, as well as the challenges of sustainable development and energy-climate transformation. Examples of completed interdisciplinary research will be presented, involving the staff of the Department of Urban Planning and Spatial Planning at the Faculty of Architecture, Silesian University of Technology.

We invite you to participate in the individual events, hoping that they will provide an opportunity for a broader discussion on the proposed topics and that we will have the pleasure of meeting you during the full edition of DREAM SILESIA in April 2026 in Gliwice.

Dr hab. Eng. Arch. Tomasz BRADECKI, Prof. of SUT

Dean of the Faculty of Architecture of the Silesian University of Technology

Dr hab. Eng. Arch. Anna Szewczenko, Prof. of SUT

Vice Dean for Science and Cooperation of the Faculty of Architecture of the Silesian University of Technology



Politechniki
Śląskiej



Conference 7.04.2025

Heritage of architecture of the second half of the XX century - research and preservation

Climate change impacts on concrete heritage: methodological considerations for vulnerability assessment and preventive conservation

Dr Stefania Landi (University of Milan) stefania.landi@polimi.it

Abstract

This paper aims to present the preliminary considerations, in terms of research methodology and objectives, of a research project recently started aimed to investigate the impacts of climate change on concrete heritage. The contribution is focused, in particular, on the specific issues raised by the architectural heritage of the second half of the 20th century. The approach proposed implies the intersection of climate science, heritage data management and conservation science. The starting idea of the project is to cross-reference already available data, such as hazard maps and climate change previsions, with existing inventories and catalogues of 20th century heritage, to develop risk assessment in different geographical areas. Specific climate change impacts will be analysed in consideration of the well-known vulnerabilities of concrete and reinforced concrete structures. Finally, potential strategies for preventive and planned conservation will be discussed.

Keywords: climate change; concrete architectural heritage; preventive conservation

Recovering the modern: exploring design methodologies in the projects for “Escola Secundária José Falcão”, “Cinema Batalha” and “EDP Building (Almada)”, in Portugal

Dr Mariana de Oliveira Couto Muszynski (University Beira Interior, Covilha, Portugal)

Abstract

The following paper addresses three rehabilitation projects for modern buildings in Portugal exposing the main problems found by the architects or research teams in these interventions and discussing the proposed solutions. The chosen examples are:

a) **Escola Secundária José Falcão**, in Coimbra, designed in 1936 by architect Carlos Ramos (founding Professor of Porto Architecture School) and recently the subject of a new project (2023) coordinated by João Mendes Ribeiro by a multidisciplinary team leading intensive research, including a group of architects and researchers from the University of Coimbra;

b) **Cinema Batalha**, in Porto, located in the historical city center, designed by Artur Andrade between 1942 and 1947 and recently recovered by Alves Costa+Sérgio Fernandez/Atelier 15 (2022) according to an internationally prized project;

c) the old **Electrical Plant in Almada (EDP Building)**, conceived and built by modernist architect Keil do Amaral between 1953 and 1961 and recently redesigned (2024) by Bak Gordon Architects to become a space for municipal services;

While the projects by Ricardo Gordon include a change in use (from electrical plant to administrative services and residential building), the designs by Atelier 15 and João Mendes Ribeiro keep the primary function of the buildings.

Through analysis of these interventions, this paper discusses current design methodologies for recovering modern buildings in Portugal so that modern heritage can remain actual and respond to present-day demands while respecting its character.

Keywords: rehabilitation, recovering interventions

Towards a Sustainable Preservation of Concrete Heritage in Lithuania

Dr Aušra Černauskienė, (Vilnius University, Lithuania) ausra.cernauskiene@if.vu.lt

Abstract

Concrete heritage in Lithuania is abundant, typologically diverse, experimental, politically charged and vulnerable. It faces the challenges of the post-Soviet context and the Anthropocene age. Post-Soviet context issues include a lack of appreciation, inherited shortcomings of the preservation and evaluation system, poor craftsmanship and maintenance traditions, and lack of heritage management. Anthropocene age challenges cover the responsible use of heritage and selection of sustainable preservation strategies, responsible use of conservation and repair materials, and solutions to lower energy consumption.

Preservation Guidelines for Concrete Architecture in Lithuania were developed to address these challenges and move towards a more sustainable approach to concrete heritage protection. The guidelines follow an internationally recognized step-by-step conservation process and offer a holistic evaluation matrix; a description of three strategies: conservation, adaptive reuse, and rehabilitation; concrete preservation categories, and lists of significant concrete architecture in Lithuania with recommendations for further interventions and development.

Keywords: post-Soviet, holistic evaluation, conservation, adaptive reuse, rehabilitation

Research and Preservation of Modernism Values in 20th Century Housing in Izmir, Türkiye

Prof. Gülnur Ballice (Yasar University of Technology, Izmir, Türkiye), PhD Stud. Gizem Guler Nakip (Silesian University of Technology Gliwice, Poland); Eda Paykoç Özçelik (Yasar University of Technology, Izmir, Türkiye) gulnur.ballice@yasar.edu.tr

Abstract

The architectural research of the second half of the 20th century has gained renewed significance, highlighting an increasingly urgent need for conservation efforts. Architectural products during this period were shaped by a complex interplay of social, economic, and political forces, serving as key conduits for transmitting cultural and societal values. This study addresses the architectural heritage of the latter half of the 20th century as a subject of research and a focal point for conservation initiatives. Specifically, it presents the outcomes of a scientific research project conducted by the authors, which aimed to identify, document, analyze, and advocate for the value preservation of mid-20th-century high-rise apartment buildings in Izmir, Türkiye.

The urban and architectural transformations experienced during the modern era, coupled with the prevailing political, cultural, social, and economic conditions, significantly influenced housing architecture in Izmir. Consequently, the city boasts a rich collection of exemplary modernist architecture that merits conservation. This research aims to foster a deeper understanding and appreciation of 20th-century modernist architectural heritage by contextualizing these findings within broader global discussions. By situating the local architectural evolution of Izmir within the European and international framework, the study contributes to global discourses on modern architectural conservation. Such scholarly research is crucial for preserving the rapidly transforming architectural heritage values and raising public awareness about its significance. It underscores the importance of integrating both global and local approaches to modernist architectural conservation, thereby fostering international collaboration and ensuring the safeguarding of this architectural legacy for future generations.

Keywords: 20th century housing architecture; modernist architectural heritage; apartment buildings; research project; Izmir, Türkiye.

Documentation and Protection of Architectural Heritage of the Second Half of the 20th Century in the Works of the Institute of Architecture Documentation

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Abstract

The architectural heritage of the second half of the 20th century is still waiting to be properly studied and its value assessed. Meanwhile, it is disappearing before our eyes without protection. The problem is common and difficult to resolve. In our paper, we would like to present three types of activities undertaken in the field of preservation and documentation of this heritage in relation to the region of Upper Silesia and illustrate them with examples:

- Digital documentation of vanishing heritage (on the example of the Silesian Scientific Institute building in Katowice, demolished in 2022)
- Architectural and conservation study with the aim of entering buildings into the Register of Monuments of the Silesian Voivodeship, which is the main form of legal protection. (using the example of the Ustroń Zawodzie Resort and the Silesian Park in Chorzów.)
- Widespread education and popularisation of knowledge of the modernist architecture heritage (by organising open lectures, seminars, workshops, as well as popularisation in social media)

We believe that such activities will result in the future in an increased awareness of the value of the architectural heritage of Modernism and, as a result, in its enhanced protection.

Keywords: Please; place; key; words; here – maximum 5 words; Do not repeat words that are already in the title.

The Car-Centered City. A Contested Heritage of the Second Half of the 20th Century

Dr. Svenja Hönig (Research Associate Technical University Berlin Faculty VI | Institute of Urban and Regional Planning Chair of Urban Conservation and Cultural Heritage)

Abstract

In the first decades after the Second World War, the “car-centered city” (in German: *Die autogerechte Stadt*) was one of the most important goals of urban planning regarding the expansion of individual transportation. Today, it is a legacy that drives urban planners: Especially concerning the transformation of the city, a mobility transition, climate justice and a “human-centered city”, the ideal of a car-centered city seems outdated and its architectural relics seem not sustainable.

However, from a heritage conservation perspective, the car-centered city can also be viewed differently: Not as something to be exclusively overcome, but as a heritage that can be discussed in terms of its urban planning and architectural qualities and historical significance. In this perspective,

the focus is not on redesign, but on the potential preservation of architectural structures. Current discussions about the car-centered city often neglect this aspect. If such structures are discussed from the perspective of preservation, they are mostly looked at as singular buildings and the total idea and concept of urban planning, they are embedded in, is not concerned with.

I would therefore like to devote this article to some case studies of the car-friendly city in Berlin and ask what historical significance and architectural value the buildings had and have, especially in their urban context. In addition to examples that are already being preserved, such as the highway superstructure *Schlagnbader Straße*, I would like to highlight examples that are still highly controversial, such as *Bundesplatz*, where the potential qualities of the location have so far received little attention.



Conference 2.06.2025

The Logic of Locality in the Age of Globalization

Redefinitions of transport as a determinant of architectural solutions. Summarizing of the study prepared in the RAr-2 (Faculty of Architecture SUT)

dr hab. inż. arch. Beata Majerska-Pałubicka (Faculty of Architecture, Silesian University of Technology SUT, Gliwice), prof. PŚ; dr hab. inż. arch. Małgorzata Balcer-Zgraja, prof. PŚ (Faculty of Architecture, Silesian University of Technology SUT, Gliwice), dr hab. inż. arch. Tomasz Wagner, prof. PŚ (Faculty of Architecture, Silesian University of Technology SUT, Gliwice), dr inż. arch. Damian Radwański, dr inż. arch. Jan Kubec (Faculty of Architecture, Silesian University of Technology SUT, Gliwice):

Abstract

The logic of locality in the age of globalisation has been a continuing research topic for several years at the Department of Residential and Public Utility Architecture Design RAr-2 of the Faculty of Architecture at the Silesian University of Technology. Reflections on the transformation of contemporary architecture are carried out on the basis of scientific and research work and studies carried out in cooperation with the socio-economic environment. In particular, they concern public utility architecture and its solutions in the context of global changes, urban restructuring, and the paradigm of sustainable development. Research questions focus on phenomena related to the unification of patterns and the local individualisation of solutions based on diverse site contexts. At the root of the formation of a new typology of multifunctional and mixed-use facilities are, among other things, phenomena related to mobility and the modernisation and redevelopment of transport infrastructure. Often innovative, hybrid solutions are being developed at the interface of architecture and communication, transitional spaces, connectors, the integration of functions, the increasing importance of open spaces and solutions related to a new project category: infrastructural landscape architecture. Societal demands for accessibility, reduced environmental impact, efficient movement and use of public spaces mean that redefinitions of transport are forcing transformations of public architecture solutions. In this context, the questions arise: what connects the solutions developed in the department within the subject: Architecture of multifunctional public utility complexes functional-spatial solutions for: the marina in Gliwice, for facilities in the vicinity of the Katowice railway junction and for the vicinity of the airport in Pyrzowice, with the project for the reconstruction of urban infrastructure in Żołyńia? How is architecture integrated into transport solutions in an era of globalisation and mobility? How can local, architectural stops be shaped at the interface between transformed infrastructure and new mobility?

Key words: architecture, infrastructure, landscape, mixed- use, mobility

The impact of the railway stations on the quality of the city centre public spaces

dr inż. arch. Julian Franta (Faculty of Architecture, Cracow University of Technology CUT)

Abstract

In contemporary city centres, it's becoming an increasingly important problem in finding space for new urban and architectural projects. Hence the importance of such areas which so far have been dominated by one function and with the change of its meaning, character or requirements may be modified. These include railway and post-railway areas, as well as the railway station buildings themselves and the associated with them – public spaces.

The continuing importance of connecting cities with rail transport and city support by mass rail transport (including rapid urban rail) means that railway stations are becoming increasingly large generators of traffic – not only travelers from other cities but above all residents of a given city commuting to work every day. This then causes a situation in which the space of a railway station and its surroundings must be adapted to the many requirements of a diverse users, becoming a *symbiotic city structure*¹.

The railway station has always been an important point in the structure of the city – a recognizable object facilitating orientation and, at the same time functionally active 24 hours a day. Skillfully conducted transformations of railway station areas bring positive results. They increase the value and functional efficiency of the city centre to the benefit of its residents and users. Downtown railway stations, becoming modern multimodal hubs, attract an increasing number of users with diverse needs. Satisfying these needs means that, by transforming into symbiotic city structures, they constitute a significant potential conducive to enriching the attractiveness and improving the quality of the downtown public spaces.

Keywords: *railway station; public space, symbiotic city structure; hybrid complex, hybridization*

The legacy of local communication systems in the era of globalization based on selected examples from Silesia, Poland and Europe

dr hab. Marzena Lamparska, prof. UŚ (Faculty of Natural Sciences, University of Silesia US, Katowice; Bractwo Gwarków Związku Górnośląskiego)

Abstract:

An integral part of the urban space is usually elements of railway infrastructure: tracks, stations, depots, signal boxes, or locomotive sheds. Where the railway has maintained its importance and function, these facilities are maintained properly and undergo constant maintenance and modernization. The situation is different with railway facilities that do not meet the requirements of modernity and do not fit into the restructuring or modernization processes. The presentation shows

¹ *Symbiotic (urban) city structure* - separated set of buildings/public spaces with various functions that benefit from being combined into a larger whole despite having a clear formal and functional autonomy (def. by author);

examples of adaptation and implementation of such areas into the structure of European and Polish cities. Railway areas and facilities have gained a second life, and cities – public spaces and facilities, with interesting architecture and often not only local significance.

Keywords: revitalization, elements of railway infrastructure, urban layouts, public space in the city, Europe

Circular architecture - global trends in local solutions

dr inż. arch. Aleksandra Witeczek (Faculty of Architecture, Silesian University of Technology SUT, Gliwice)

Abstract

Contemporary trends in architectural constructions, based on the principles of the circular economy have now become one of the most frequently discussed topics in the architectural community. New European Union taxonomy regulations force the use of solutions based on the circular economy in construction, using recycled building materials for the construction of new facilities and renovation. At the same time, these regulations place emphasis on the design of objects intended for subsequent dismantling.

The presentation will present a look at an architectural object in the context of its life cycle, from the materials used for its construction, to the end of use and demolition. It will be signaled how important the use of local materials and raw materials from sustainable sources for construction, as well as recycled materials from other applications, is for shaping sustainable architecture. Are DfD (Design for Disassembly) facilities really an alternative to traditional construction solutions and is this the next step after modular and prefabricated facilities to a more sustainable architecture? How the latest construction technologies, based on the assumptions of the circular economy, affect the possibilities of subsequent adaptation to new functions and multifunctionality. The considerations will be supported by examples of practical construction solutions used in green facilities in Europe.

The considerations will be based on issues raised during two speeches, in the expert panel at the PLGBC Green Building Summit 2023 in Warsaw, and at Manufacturing Brighter Future, Krakow Conference on the Future of the Building, the Manggha Museum in 2024.

Keywords: sustainable building materials, design for disassembly, prefabrication, circular economy

Architecture of a local cultural centre in the context of global trends, revitalisation of AI. Przyjaźni and the ruins of the Victoria theatre in Gliwice

dr hab. inż. arch. Beata Majerska-Pałubicka, prof. PŚ (Faculty of Architecture, Silesian University of Technology SUT, Gliwice); dr hab. inż. arch. Małgorzata Balcer-Zgraja, prof. PŚ (Faculty of Architecture, Silesian University of Technology SUT, Gliwice), dr hab. inż. arch. Tomasz Wagner, prof. PŚ (Faculty of Architecture, Silesian University of Technology SUT, Gliwice), dr inż. Anna Kossak (Faculty of Architecture, Silesian University of Technology SUT, Gliwice), *Faculty of Architecture, SUT* dr Anna Waligóra (Faculty of Management and Organisation, Silesian University of Technology SUT, Gliwice);

Abstract

The problems of globalisation and locality in architecture take on particular significance in relation to the design of solutions for culture. In an age of cross-fertilisation, mobility enables the exchange of experience and creative products while leading to the disappearance of unique traditions. The design challenge is becoming one of harnessing the potential of new, globally spreading technologies and ideas, meeting the local needs of institutions, social demands and embedding design solutions in the urban and spatial context of the location. It was undertaken in the RAr-2 department (FA SUT) as part of a study in collaboration with the Victoria Cultural Center. The problem of creating a local centre was developed on an urban scale (topic: public space in the urban-architectural detail of Al. Przyjaźni), an architectural scale (topic: Cultural Promotion Centre as a multifunctional public utility complex), and a small architecture scale (*Al. Przyjaźni in Gliwice as a Silesian Innovation Space. A model for revitalisation*, an EU-funded project carried out interdisciplinary with FAM SUT, FFW Warsaw, CRIS Rybnik). Architecture as a field of social innovation is an accessible, blue-green cultural space adaptable to the needs of residents and institutions through the use of universal spatial and circular, modular solutions that ensure the continuation of local patterns, interpenetration, transparency, adaptability, mobility and guarantee the user's influence on the cultural space. The logic of locality in the age of globalisation is to take advantage of contexts, to develop a model for flexibly adapting solutions to the needs of institutions, residents and visitors to the city, to create effective mechanisms using the potential of new technologies.

Keywords: architecture, culture, innovation, multifunctionality



Conference 3.11.2025

Interdisciplinary Research in Urban Planning – Examples of Completed Projects

Operationalizing the Concept of 15-Minute Cities in the Sustainable Urban MObility Development in Outskirts (SUMODO) Project

dr hab. inż. Grzegorz Sierpiński (¹Silesian University of Technology, Faculty of Faculty of Transport and Aviation Engineering, Katowice, Poland), dr hab. inż. arch. Michał Stangel (Silesian University of Technology, Faculty of Architecture, Gliwice, Poland):

Abstract

The SUMODO project, conducted under the Horizon Europe partnership Driving Urban Transition (DUT), addresses the urgent need for sustainable urban mobility solutions in suburban areas. With Katowice, Poland, as a key partner, the project seeks to operationalize the concept of 15-minute cities by equipping urban planners with advanced tools for identifying and optimizing suburban districts. The central question explores how innovative tools and methodologies can transform suburban areas into sustainable, accessible, and multimodal urban environments.

A key element of the project is the collaboration with urban designers to align theoretical frameworks with practical applications. Urban designers contribute by developing urban planning principles for the placement of points of interest (POIs), grounded in the literature on 15-minute city theory. This ensures that the tools incorporate robust, evidence-based criteria for achieving sustainable urban forms. Additionally, urban designers work on defining urban planning criteria for the location of POIs, leveraging Open Street Map database elements to create context-sensitive and realistic urban solutions.

SUMODO integrates four interrelated components to achieve its objectives. First, the SUMODO 15-Minute Composite Index enables comprehensive evaluation and comparative analysis of urban areas. Second, the SUMODO Behavioral Model captures the relationship between demographic factors, travel demands, and transportation choices, facilitating targeted interventions for 15-minute city success. Third, the SUMODO Multimodal Travel Planner empowers citizens with enhanced trip-planning tools, fostering awareness of sustainable mobility options and local points of interest (POI). Finally, the SUMODO Optimization Platform employs multi-agent simulation and evolutionary algorithms to optimize the implementation of 15-minute city boundaries and infrastructure. These components are implemented in a GIS-based simulation platform, validated through case studies in Katowice, Poland; Veszprém, Hungary; and Szeged, Hungary. The project anticipates delivering actionable insights and scalable solutions, advancing the global agenda for sustainable urban transformation by enabling the development of cohesive, multimodal, and accessible suburban districts.

Keywords: Proximity urbanism, compact city, multimodal transport, GIS simulation, accessibility optimization

Concept for Improving the Energy Management of the "Knurów-Szczygłowice" Coal Mine Considering the Possibility of Creating an Energy Hub

dr hab. inż. Jacek Kalina, dr hab. inż. arch. Michał Stangel, prof. SUT (Silesian University of Technology, Faculty of Architecture, Gliwice, Poland)

Abstract

The research work concerned the development of a variant technical and organisational concept for the modernisation of the energy system of the Knurów-Szczygłowice mine by investing in technologies allowing for the use of locally available waste and renewable energy, including substance and energy storage. The project defines the possible structure of the energy system, including the selection of components (technologies) for the conversion and storage of substances and energy and the definition of the connections between them. In the spatial part, preliminary functional and spatial guidelines for the components of the Energy Hub and accompanying new educational and recreational facilities in the post-mining sites, as well as an energy park with an educational trail, were defined.

Fostering Local Urban Centers in Post-Industrial Cities: The Case of Katowice within the Urban & Business Lab Framework

Dr hab. Adam Drobniak (University of Economics in Katowice, Faculty of Spatial Economy and Regions in Transition, Katowice, Poland), dr hab. inż. arch. Michał Stangel (Silesian University of Technology, Faculty of Architecture, Gliwice, Poland)

Abstract

This research explores the application of Local Urban Centers (LUCs) to transform post-industrial cities into sustainable, liveable environments. The study focuses on Katowice, a city undergoing a transition from its industrial legacy to a modern service-based economy. This transformation faces challenges, including imbalances in spatial development and socio-economic disparities. LUCs, based on the concept of the 15-minute city and aligned with transit-oriented development, were integrated into Katowice's Development Strategy 2030. The framework was further tested through interdisciplinary Urban & Business Lab workshops involving students of architecture and economics.

Initial findings reveal that while the ideal model suggests seamless integration between service nodes and public transport, Katowice's current urban fabric frequently deviates from this pattern. However, the analysis identified existing functions and spaces around planned railway stops with latent potential to foster LUCs. Two scenarios emerged: one where existing infrastructure supports natural LUC development, emphasizing enhancements such as greenery and pedestrian-oriented spaces; and another where fragmented urban conditions necessitate the creation of linear LUCs—sequences of public spaces complemented by targeted urban amenities.

This study demonstrates a novel approach to operationalizing LUCs by embedding them into urban planning strategies and assessing their centrality potential. It highlights the importance of context-sensitive planning and collaboration between stakeholders. The research also underscores the adaptability of LUCs across varying urban contexts and their potential to address sustainability and liveability challenges in post-industrial cities. Future research will evaluate LUCs' long-term impacts on urban liveability and explore replication in other post-industrial cities. The findings confirm that strategically located LUCs can catalyze urban transformation, providing a replicable blueprint for sustainable development.

Keywords: Urban regeneration, Transit-oriented design, Socio-economic transformation, Spatial development strategies, Community-centric planning

Challenges in the study of urban structure using data and models in virtual and augmented reality based on examples of sites and objects in the GZM Metropolis

dr hab. inż. arch. Tomasz Bradecki, prof. SUT (Silesian University of Technology, Faculty of Architecture, Gliwice, Poland)

Abstract

Modern studies of the structure of cities are changing due to increasingly available software and access to databases, which allow more and more sophisticated execution of urban analysis. The article presents the problem of urban structure studies using augmented reality and virtual reality data and models on the examples of sites and objects located in the GZM metropolitan area. Due to the large spatial diversity of the GZM metropolis (41 cities and municipalities), modeling of selected representative areas with data on each location was adopted. For each location, attempts were made to realize models based on GIS data supplemented by in situ surveys for selected sites. This approach makes it possible to undertake a synthetic snapshot of the entire metropolis, forming its image, which can be referred to the theory of 'imaging' elements of the structure of the city by Kevin Lynch. The described method is based on data available in GIS systems, as well as publicly available information. The conclusions of the research can be useful in urban studies, for decision makers involved in city management: planners, urban planners, architects, management staff or infrastructure.

Keywords: Urban studies, urban analysis, GIS analysis, image of the city, image of the metropolis

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