

- I offer my expertise to participate as a Partner in a Horizon Europe Project
- I am planning to coordinate a project and I am looking for Project Partners

TOPICS OF INTEREST

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| <ul style="list-style-type: none"> • Urban microclimate: the climatic aspects of urban planning and design, including their effect on outdoor thermal comfort of individuals and energy consumption in buildings • Bioclimatic building design: the effects of indoor climate on thermal, visual, and energy building performance and occupants' wellbeing • Building performance simulation: the application of computational tools in the analysis of varied aspects of building performance | <ul style="list-style-type: none"> • History of modern architecture and urban planning • History of building science and technology: the historical developments and transformation of building technologies and building science, focusing on their relation to planning and design practices • Digital humanities: the application of digital analysis tools and big data processing in the writing of urban and architectural history |
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- HORIZON-CL2-2022-HERITAGE-01-02: Europe's cultural heritage and arts - promoting our values at home and abroad
 - HORIZON-CL2-2022-HERITAGE-01-08: Effects of climate change and natural hazards on cultural heritage and remediation
 - HORIZON-CL2-2022-HERITAGE-01-10: The New European Bauhaus – shaping a greener and fairer way of life in creative and inclusive societies through Architecture, Design and Arts
 - HORIZON-CL5-2022-D1-02-03: Improvement of Integrated Assessment Models in support of climate policies
 - HORIZON-CL5-2022-D3-01-13: Energy system modelling, optimisation and planning tools
 - HORIZON-CL5-2022-D4-01-01: Demand response in energy-efficient residential buildings
 - HORIZON-CL5-2022-D4-01-02: Renewable-intensive, energy positive homes
 - HORIZON-CL5-2022-D4-01-03: Smarter buildings for better energy performance
 - HORIZON-CL5-2022-D4-02-01: Designs, materials and solutions to improve resilience, preparedness & responsiveness of the built environment for climate adaptation (Built4People)
 - HORIZON-CL5-2022-D4-02-02: Solutions for the sustainable, resilient, inclusive and accessible regeneration of neighbourhoods enabling low carbon footprint lifestyles and businesses (Built4People)
 - HORIZON-CL5-2022-D4-02-03: Sustainable and resource-efficient solutions for an open, accessible, inclusive, resilient and low-emission cultural heritage: prevention, monitoring, management, maintenance, and renovation (Built4People)
 - HORIZON-CL5-2022-D4-02-04: Smart-grid ready and smart-network ready buildings, acting as active utility nodes (Built4People)

- HORIZON-CL5-2022-D4-02-05: More sustainable buildings with reduced embodied energy / carbon, high life-cycle performance and reduced life-cycle costs (Built4People)
- HORIZON-CL6-2022-GOVERNANCE-01-08: Uptake and validation of citizen observations to complement authoritative measurement within the urban environment and boost related citizen engagement
- HORIZON-HLTH-2022-ENVHLTH-04-01: Methods for assessing health-related costs of environmental stressors

PARTNER INFORMATION

Description of the Legal Entity

The Technion is one of the leading research universities in Israel, with special strengths in engineering and the exact sciences.

<input type="checkbox"/> Higher Education Administration	<input checked="" type="checkbox"/> Research Institution	<input type="checkbox"/> Public
<input type="checkbox"/> Industry /SME	<input type="checkbox"/> NGO	<input type="checkbox"/> Other: <i>Please specify</i>

Description of the (Research) Team

The Big Data in Architectural Research (BDAR) Lab at the Faculty of Architecture and Town Planning conducts multidisciplinary research related to architecture and urban environments based on the collection and analysis of big data. The lab is capable of collection, processing, and analysis of physical, spatial, functional, visual, and semantic data. The equipment includes: mobile meteorological stations, shortwave and longwave radiometers, advanced photography and recording equipment, a high-capacity scanner for printed media, reproduction equipment, high-capacity computers and storage servers, and a wide variety of software used for data collection and analysis, performance simulations, and media processing.

Although these data types are produced according to different research procedures that stem from separate fields of knowledge, the distinction that exists in contemporary architectural research is artificial, and indicates the limitations of traditional research methods, rather than inherent features of the research field itself.

The ability to centralize and manage multiple kinds of data in a single lab that is capable of collecting and processing data stemming from diverse scientific methods (exact sciences, social sciences, and the humanities), creates an unprecedented opportunity to uncover new connections and links between different aspects of architectural research. This ability is almost completely lacking in traditional research methods in the field.

The lab serves to promote architectural and spatial research in a wide array of subjects related to the use of big data, among them:

- Understanding the interconnection between the morphological and material aspects of the urban environment and its functional products, with an emphasis on energy consumption, thermal and visual comfort, and well-being

- Suggesting new and innovative ways of coping with the environmental challenges of climate change, while focusing on its influence on urban microclimates
- Expanding our knowledge about historical changes in the technological and functional aspects of architecture, with an emphasis on the interrelationships between these changes and the theoretical aspects of architectural thought
- Tracking cultural and social trends in the development of architectural theory, based on a comprehensive analysis of the semantic frequency of key terms in architectural thought
- Developing innovative analytical methods relating to the functional aspects of the built environment, and adapting them into concrete tools that can be implemented in professional practice
- Supporting the development of advanced building technologies with improved functional aspects, in cooperation with the construction industry

Expertise of the Team Leader

For the last decade I have been conducting scientific research in two main fields: quantifiable interplays between climatic conditions, building performance, user comfort and behavior, and urban architectural design; and the historiography of building science and technology and urban transformations. Parts of my research exploit my diverse background through the integration of quantitative research methods and history writing.

The challenge of climate change adaptation of the built environment has been directing major part of my research work since my early days as a graduate student. I believe that the only way to promote effective measures in this direction is to adopt a multidisciplinary approach to building and urban design by combining rigorous analysis of quantitative data sources and qualitative appreciation of past and present achievements. This approach should not be limited to research, but rather expanded into the education of future architects and planners and into much stronger engagement of academia with policy makers, stakeholders, industry, and planners and designers.

Potential role in the project

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|---|---|
| <input checked="" type="checkbox"/> Research | <input type="checkbox"/> Training |
| <input checked="" type="checkbox"/> Dissemination | <input type="checkbox"/> Other: <i>Please specify</i> |

Already experience as a	Coordinator	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
	Partner	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
	Expert Evaluator	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO

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