



# LAB – Louvain research institute for Landscape, Architecture, Built environment

## 1 Research scope

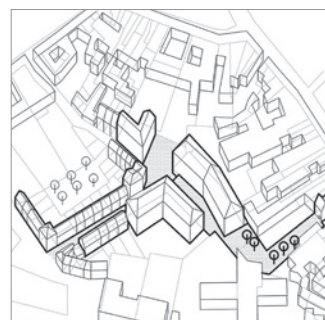
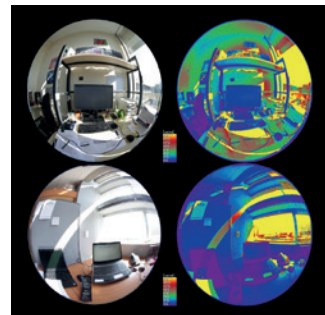
The institute LAB aims to nourish reflections, support experimentation, and propose methods and tools to respond to – and anticipate – the present and future challenges of our territories, cities, and buildings, promoting excellence in research through systemic, critical, sensitive, innovative, and rigorous thinking. Structured on three sites – Brussels, Louvain-la-Neuve, and Tournai – and nurturing strong relations with the Faculty of Architecture, Architectural Engineering, and Urban Planning (LOCI) at UCLouvain, the research activities of the institute LAB are articulated into three interrelated areas: *Landscape*: urban planning, landscape and territorial design; *Architecture*: theory, history, and design of architecture; *Built environment*: building technologies, architectural physics, and architectural engineering.

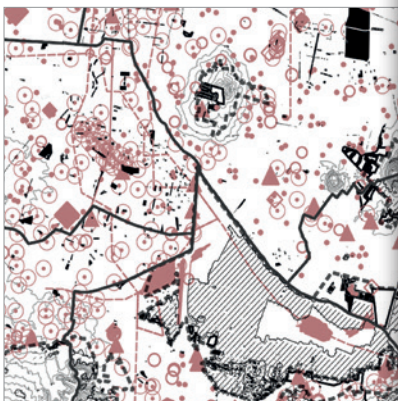
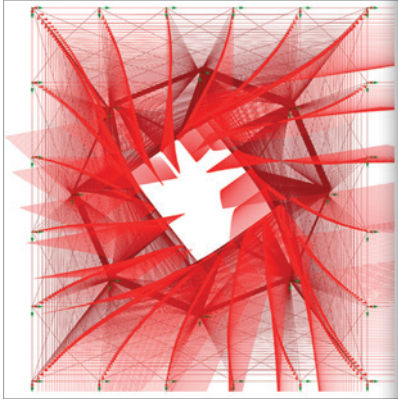
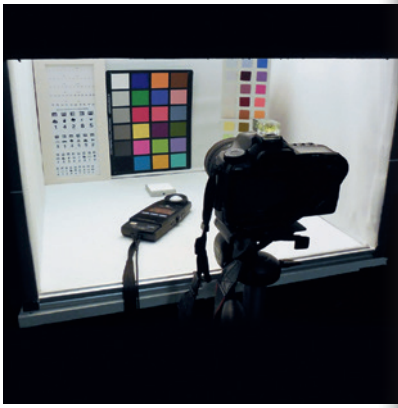
Promoting multi/inter/trans-disciplinary dialogue between technical, human, and health sciences, LAB actively collaborates with several faculties and institutes, and with cross-sectorial platforms, at UCLouvain, and can count on a global network of academic, scientific, industrial, professional, and governmental partners. The results of its research aspire to bring significant impacts on cultural, environmental, technical, and economic advancement, fostering the transition towards more sustainable, resilient, and circular cities and societies.

## 2 Research topics

The axes of scientific investigation of the institute LAB include:

- Sustain current transitions of territories (resource management, living styles, housing development, governance, etc.), ensuring their resilience (territorial strategies, mobility, natural landscapes, etc. ), and promoting the inclusiveness and quality of inhabited spaces (urban design and requalification, public spaces, environmental values, etc.).
- Articulate hypotheses, strengthen knowledge, and develop methods to analyse, understand, and act on territories at local and global level, particularly across borders and towards the Global South.
- Investigate the potential of urban metabolism theories and models to advance evidence-based understanding of the relations between urban communities and natural resources.
- Analyse the links between the biophysical foundations of socio-economic development, natural capital, and human well-being via ecosystem service and green infrastructure perspectives.
- Enhance the design of cities, and of green and blue landscapes, crossing multiple dimensions, and reflecting on scales and tools of representation as a process of production of collective knowledge.
- Examine the histories, critical theories, and practices of architecture – intended as the expression of a vision – and of materials, construction technologies, and building equipment, reflecting on the creation and perception of spaces in an urban context.
- Define the strategies and tools for a chronological and typological taxonomy – and for the conservation, restoration, renovation, and reuse – of the historic built heritage.





- Explore the hypotheses on which a contemporary theory of architecture can be founded, building on a constant dialogue with other disciplines, including anthropology, history of art, linguistic, psychoanalysis, and philosophy.
- Study the architectural design process, its histories and methods, its complexity (uncertainties, discontinuities, system thinking, etc.), its contextualisation (technical, economic, cultural, sustainability, post-humanism, etc.), its actors (networks of agents, etc.), its representation (perception, mental image, medias, geometry, scale, etc.) and its digitalisation (machine learning, digital culture, etc.).
- Analyse the practices and the spaces for living, drawing expertise from spatial and human sciences, and working on methodological, epistemological, and operational interconnections, to address multifaceted contemporary challenges related to housing and learning spaces (typologies, user habits, innovations, etc.), aging and disability, gender and care.
- Examine historical and contemporary methods, and promote the advancement of theoretical knowledge and tools, for the design of architectural structures and infrastructures in relation to the requirements of resilience of buildings.
- Define new approaches, including the development and application of new digital tools, to sustain the structural performance of built systems, using conventional (concrete, steel, masonry, etc.) and natural materials (wood, earth, etc.).
- Characterise the buildings of yesterday, today, and tomorrow, sustaining their design, construction, operation, and renovation to improve the quality of their indoor and outdoor environment, their energy and environmental performance, the reduction of emissions, and the comfort, health, and well-being of their users.
- Promote strategies and tools, including advanced parametric modeling techniques, for the sustainable management of resources (building materials, treatment and reuse of water and waste, circular economy, urban mining, etc.) embracing environmental, social, and economic challenges, at different temporal and spatial scales, and within a life-cycle approach.

### 3 Key numbers

Officially launched in January 2021, the institute LAB can count on 122 academic, scientific, and administrative staff members, among which 63 PhD researchers. Over the last 5 years, the publication record of its personnel includes 126 scientific articles in peer-reviewed scientific journals, 12 monographs, 85 contributions to books, 86 presentations at peer-reviewed national and international conferences.

### 4 Contact



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*“The study and design of the built and unbuilt environmental settings that embrace our lives – enriching our human experiences, sustaining our biological rhythms, accompanying our social interactions, stimulating our cultural inspiration, nourishing our imagination, offering us delight, but also exposing us to dangers – are part of a wider set of challenges that we, as a species, are collectively summoned to respond to”*  
(Sergio Altomonte, 2022)

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