

LABEX IMU

INTELLIGENCE OF URBAN WORLDS

Supported by the University of Lyon, the cluster of excellence IMU (or the LabEx Intelligence of Urban Worlds) won the first "Excellence Laboratory" call for projects, launched in 2010 by the French national government. It brings together almost 535 researchers (from 31 laboratories) as well as many communities and business partners.

The LabEx IMU contributes to making the Lyon Saint-Etienne metropolis one of the leading scientific clusters in France and Europe on issues related to cities and urban environments. It makes its resources available to political, economic and social players who are thinking about and designing the city of tomorrow.

The LabEx IMU is intensifying urban research by supporting scientific diversity and developing multidisciplinary methods and cultures, all across the Lyon Saint-Etienne metropolis.

The goal of the LabEx IMU is to develop and share knowledge. This cluster is based on interactions between all professions and disciplines that work on city and urban issues. Methodological, technical, organisational and social inventions as well as new concepts and new paradigms are expected to arise from these encounters.



PARTNERSHIP RESEARCH CHAIR: «LIVING TOGETHER IN THE CITY OF TOMORROW»

The chair analyses the conditions for «Living Together in the City of Tomorrow» through a multidisciplinary approach in consultation with professionals working on cities and habitat.

4 areas of research:

- Policies for urban renewal in urban forms
- Living in tower blocks: production, representations, ways of life (France and the United Kingdom)
- The political regulation of social housing and population in cities: comparative perspectives
- Innovations/reinventions in participatory habitat in Europe



LABEX IMU AREAS OF INVESTIGATION

- ◇ NATURE IN THE CITY, HEALTH
- ◇ CITY AND MOBILITY
- ◇ GREEN BUILDING AND LIVING
- ◇ DIGITAL CITY, DATA
- ◇ URBAN RISKS AND ENVIRONMENT
- ◇ METROPOLITISATION, URBANISATION, TECHNICAL AND SOCIETY
- ◇ URBAN FORMS, DENSITY

LABEX IMU DISCIPLINES

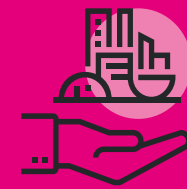
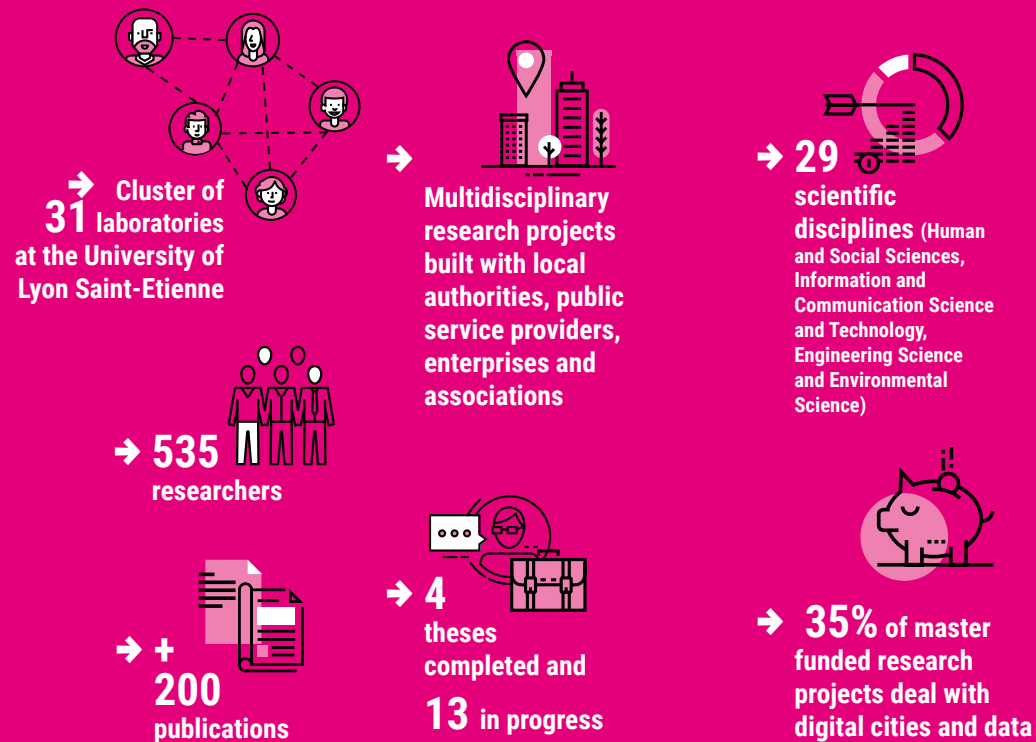
- ◇ ARCHAEOLOGY
- ◇ ARCHAEOLOGY
- ◇ ARCHITECTURE
- ◇ CIVIL ENGINEERING - CONSTRUCTION
- ◇ COMPUTER SCIENCES
- ◇ DESIGN
- ◇ ECOLOGY
- ◇ ECONOMICS
- ◇ ENERGY
- ◇ ENVIRONMENTAL ENGINEERING
- ◇ ENVIRONMENTAL SCIENCE
- ◇ GEOGRAPHY
- ◇ HISTORY
- ◇ IT
- ◇ LAW
- ◇ LIFE SCIENCES
- ◇ LITERATURE
- ◇ PHILOSOPHY
- ◇ POLITICAL SCIENCE
- ◇ INFORMATION AND COMMUNICATION SCIENCE
- ◇ ENGINEERING SCIENCE
- ◇ SOCIAL PSYCHOLOGY
- ◇ SOCIOLOGY
- ◇ SPATIAL PLANNING
- ◇ TELECOMMUNICATIONS
- ◇ THERMAL SCIENCE
- ◇ TRANSPORT
- ◇ URBAN HYDROLOGY
- ◇ URBAN PLANNING

LABEX IMU AREAS OF APPLICATION

- ◇ BUILDING, CONSTRUCTION
- ◇ ECOTECHNOLOGY
- ◇ DIGITAL CITY
- ◇ ECOTECHNOLOGY
- ◇ ENERGY
- ◇ ENVIRONMENT
- ◇ HABITAT
- ◇ MOBILITY
- ◇ NEW SERVICES AND USES
- ◇ SMART CITY
- ◇ SPATIAL PLANNING
- ◇ TRANSPORT
- ◇ URBAN POLICY
- ◇ URBAN RISKS
- ◇ ETC.

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SCIENTIFIC ACTORS AND ACTIVITIES



PROJECTS SUPPORTED AND FUNDED (2012-2017):

- 46 multidisciplinary projects
- 140 master internships
- 120 labelled events
- «Cities and Urban Environments» Masters program

LABEX IMU INTELLIGENCE OF URBAN WORLDS

Overcoming disciplinary boundaries to build the city of Tomorrow

A cluster of 31 laboratories in the Lyon-St Etienne Metropolis promoting interaction between all actors and disciplines working on cities and urban issues.

imu.universite-lyon.fr



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GREEN CITIES/ SMART RESOURCES

ARMATURE

Spatial, temporal and ecological dynamics of the green band (armature verte) of the Lyon metropolis (2014)

Disciplines: Geography - Biology
Urbanisation - Landscape - Biodiversity - Development - Green grids

CANOPY

Exploration of the capacity for and experience of reusing urban rooftops in Lyon (2017)

Disciplines: Geography - Computer studies - Urban planning - Law - Architecture - Sociology
Urban agriculture - Canopy - Assessment - Experience - Roofs - Vertical city

RIVIERE

Re-naturing the city, a risk or a factor for social well-being in the eyes of residents and users? Contribution of landscape mediation (2013)

Disciplines: Geography - Computer sciences - Ecology
Perception - Re-naturation - Risk - Quality - Oculometrics

→ IMU member of the Jury for the Trophées Incity awards for «Smart, sustainable city» initiatives (Lyon, 2016)

→ IMU LABEL

French-Colombian multidisciplinary colloquium: The sustainable city as a project current challenges. Different view and perspectives (Lyon, 2017)

→ IMU scientific coordinator for the Smart Electric Lyon demonstrator concerning «smart grids» (2013-2017)

SMART MOBILITY & LOGISTICS

ASTRAL

Spatial-temporal analysis of traffic data for smart mobility (2014)

Disciplines: Information technology - Transport
Smart mobility - Traffic conditions - Trajectories - Optimisation - Accessibility - Prediction

MOBICAMPUS-U DL

Process data gathered from web surveys and mobile phone tracking to understand and manage the mobility of academics at the University of Lyon Campus (2016)

Disciplines: Economics - IT - Spatial planning - Sociology
Campus - Higher education - Mobility - Observatory - Public universities - Transport - University of Lyon

VÉLÉVAL

Assessment of the feasibility of cycling in urban spaces (2017)

Disciplines: Geography - Information and communication science and technology - Urban planning - Law - Architecture - Sociology
Cyclability - Geomatics - GPS - Oculometry - Cyclist practices - Representations

→ IMU LABEL

International colloquium on «Urban governance in a networked society: France, Thailand, Japan» (Lyon, 2017)

PARTICIPATORY DEMOCRACY/ FABLAB

FAB-PAT

Sharing the shaping of heritage - Approach and issues concerning the historical urban landscape (2016)

Disciplines: Sociology - Data and imaging science - Geography
Atlas - Cross-sharing of knowledge - Participatory democracy - Heritage-building - Reconnecting the city

REVEURS

Recognition and inventory of plants in urban environments - citizen science and social customs of a smartphone interface (2014)

Disciplines: Sociology - Geography - Information technology
Recognition - Image - Tree - Citizen science - Naturalist inventories

IDENUM

Digital urban identities (2016)

Disciplines: IT - Information and communication science - Geography
Documentation - Urban identities - Digital modelling - Photography - Social networks - Spatial knowledge

→ «Smart cities and learning cities» course details for the Cities and Urban Environments Masters program

→ IMU LABEL

Theme school on «Collective invention challenge» IMU-MAGIS (2016)

RISKS/RESILIENCE

PLURISQ

Risks and multidisciplinary - Building a global understanding of the potential dangers in the northeast area of the Lyon conurbation (2015)

Disciplines: Spatial planning - Ecology/ecotoxicology - Ethnology - Physical geography - Social geography - Contemporary history - Political science - Sociology
Drinking water - Expertise - Rhône river - Flooding - The Ain plain - NaTech risk

URPOLSENS

Wireless sensor networks for urban pollution monitoring (2015)

Disciplines: IT - Fluid mechanics - Sociology - Anthropology - Geography
Exposure disparities - Optimisation - Atmospheric pollution - Urban pollution - Wireless sensor networks - Uses

VIBIOM

The biomimetic city: theory, risks, applications (2014)

Disciplines: Philosophy - Urban hydrology - Energy and building - Solar energy
Industrial Chair University of Lyon 3 - Research and Teaching Chair INSA Lyon

→ IMU LABEL

Workshop «Future cities and spatial reconfiguration in East Asia: Practices and Representations, Risks and Opportunities» (Lyon, 2013)

→ IMU LABEL

NOVATECH 2016 international conference «Water in the city»

BIG DATA

ELUD

Urban logistical efficiency of sustainable food (2017)

Disciplines: IT - Civil engineering
Urban agriculture - Canopy - Assessment - Experience - Roofs - Vertical city

PRIVA'MOV

Mobility and privacy: from data collection to analysis (2013)

Disciplines: Information technology - Economics
Mobility records - Analysis of mobility habits - Mobile networks - Privacy

→ IMU LABEL

Colloquium on «urban data: which practices and what knowledge? Multidisciplinary perspectives on digital traces» (2016)

INFORMATION MODELLING

IDEFFE

Estimated usages and aggregation of buildings' energy data via experimental identification of physical models (2013)

Disciplines: Thermal engineering - Information technology - Social sciences/Humanities
Experimental identification - Energy performance guarantee - Energy monitoring

UNIMAP

Integration of location-based services from several suppliers with a view to creating an unified data - Application to tourist points of interest (POI) (2012)

Disciplines: Information technology - Urban planning - Geography
Databases - Integration of points of interest - Semiology of map keys - Cartography

RESALI

Food systems and networks - Innovative and exploratory information systems for greater food justice in metropolises (2015)

Disciplines: IT - Geography - Spatial analysis - Modelling
Spatial and temporal analysis - Big data - Data mining - Food justice - Urban food systems - VGI/Twitter

VILO3D

Urban construction: from processes to 3D representations (2017)

Disciplines: Geography - IT - History
Exploitation of 3D data - Urban construction - Modelling - Visualisation of geospatial data

HIL

Artificial intelligence to facilitate real estate research - Recommendation system with spatial and non-spatial visualisation (2017)

Disciplines: Sociology - Informatics - Neighbourhood and offer modeling - Ontology - User profile - Real Estate research - Spatial relationships

→ IMU LABEL

Symposium «Towards integrated modelling of urban systems» (Lyon, 2014)

→ IMU LABEL

Theme school of the Communication Networks cluster (Rescom) of the GDR on «Networks, services and data for smart cities» (2015)

→ **Studio IMU IngenU3D:** multidisciplinary research-actions on the subject of 3D and augmented reality for the city

CULTURAL HERITAGE

ALARIC

From past to future: identifying mechanisms of incremental change (2013)

Disciplines: Development - Urban planning - Information technology
Urban change - Industrial space - Modelling - Socio-technical change - Socio-spatial compromises

HIREAU

How to reconstitute the history of sanitation and drinking water networks - Application to the Lyon metropolis (2016)

Disciplines: Geography - Civil engineering - IT
Sanitation - Drinking water - History - Machine learning - Network - Urbanisation

SOUNDCITYVE

Archeology of the sound landscape: a sensitive restoring of the Sounds of the past in the City of Lyon (2017)

Disciplines: IT - Architecture - History - Linguistics - Information and communication science
Approach to the urban environment via the senses - Archeology of the sound landscape - Data and image mining - History or urban planning - Heterogenous substances

→ IMU LABEL

Seminar on «Utopias and perceptions of the smart city» (Lyon, 2016)

→ IMU LABEL

ICHT 2016 International colloquium: Perception: building and inhabiting the earth. «Smart» cities and urban poetry (Sao Paulo - Brazil, 2016)

→ IMU LABEL

European Heritage Days 2017 «Sharing the Shaping of Heritage»

→ IMU LABEL

BRETEZ project (archeology of the sound landscape), a 3D and 5D reconstitution bringing to life the sounds of 18th century Paris

→ **Cities of yesterday, today and tomorrow in 3D** «at Pop' Sciences 2017, Lyon