



## INNOVATIVE EDUCATIONAL INTEGRATION OF URBAN PLANNING BASED ON BIM-GIS TECHNOLOGIES AND FOCUSED ON CIRCULAR ECONOMY CHALLENGES

2018-1-RO01-KA203-049458

Online Final International Seminar. Presentation of final Results of UrbanBIM project: UrbanBIM Learning Application and LCA

17th December 2020



Universitatea  
Transilvania  
din Braşov



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Centro Tecnológico  
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Warsaw University  
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# GENERAL INFORMATION OF THE PROJECT SUMMARY

- Project title:** Innovative educational integration of urban planning based on BIM-GIS technologies and focused on Circular Economy challenges
- Coordinator:** Transilvania University of Brasov
- Call:** Erasmus+ 2018. Strategic Partnerships for Higher Education (KA203)
- Key Action:** Cooperation for innovation and the exchange of good practices
- Reference:** 2018-1-RO01-KA203-049458
- Start date:** 01-10-2018
- End date:** 31-12-2020 (postponed due to COVID19 situation)
- Funding by:** European Union



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## GENERAL INFORMATION OF THE PROJECT CONSORTIUM



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P01. Transilvania University of Brasov (UNITBV). ROMANIA [www.unitbv.ro](http://www.unitbv.ro)



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P02. Romania Green Building Council (RoGBC). ROMANIA [www.rogbc.org](http://www.rogbc.org)



P03. University of Sevilla (USE). SPAIN [www.us.es](http://www.us.es)



Centro Tecnológico  
del mármol, piedra y materiales

P04. Business Association of Research Technological Center of Marble, Stone and Materials (CTM) . SPAIN [www.ctmarmol.es](http://www.ctmarmol.es)

Warsaw University  
of Technology

P05. Warsaw University of Technology (WUT). POLAND [www.pw.edu.pl](http://www.pw.edu.pl)



P06. Datacomp sp. z o.o. (Datacomp). POLAND [www.datacomp.com.pl](http://www.datacomp.com.pl)



# GENERAL INFORMATION OF THE PROJECT BACKGROUND

- the construction sector contributes with **35-40% of total CO2** emissions to the environmental impact
  - a need to reduce this impact
- evaluation of environmental impact in a complete manner, from urban planning to construction or building rehabilitation
- it is necessary to study the **footprint** and materials efficiency of the constructions in new urban developments and / or rehabilitations
- tools that can do life cycle analyse (LCA) are necessary
  - professional
  - expensive
  - hard to use by non-professionals



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# GENERAL INFORMATION OF THE PROJECT

## MAIN OBJECTIVE

- the general aim of the UrbanBIM project is to deepen the inter-connection between the three major factors in the constructions sector:
  - universities
  - professionals (companies)
  - administrative entities / public bodies
- and to implement interoperability between metadata generated by the emerging technologies of BIM and GIS, so that all information can be flow into these systems and used in future urban developments and rehabilitations from an environmental point of view.

# GENERAL INFORMATION OF THE PROJECT

## MAIN OBJECTIVES

UrbanBIM project aims:

- to integrate **BIM / GIS** technologies, calculation of total **CO2 emissions** and principles from **circular economy** into urban planning and buildings' rehabilitation in order to produce some useful learning instruments for students and tools for professionals working into the construction sector;
- to improve the quality of training systems through the development of **innovative contents, methods** and **curricula** within Higher Education Institutions (HEI);
- to increase the awareness regarding the **environmental impact**.





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# GENERAL INFORMATION OF THE PROJECT

## SPECIFIC OBJECTIVES

- integration of BIM/GIS tools across all strands of the triple helix in the construction sector:  
**public bodies / entities - companies – universities**
- implementation of the calculation of CO2 emissions into municipal public bodies, at all stages, at urban level, both for new developments and for rehabilitations;
- increase the awareness of climate change problem due to construction sector and the importance of a rational use of energy and material resources;
- provide information about the CO2 emissions for each construction product / building / urban plan;
- improve interoperability between emerging technologies (BIM) and those already implemented in public bodies (GIS).



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# GENERAL INFORMATION OF THE PROJECT

## SPECIFIC OBJECTIVES

- a **computer tool**, free to access and open to students, researchers, architects, engineers and civil servants in the construction sector, who can improve and refine the project beyond its ending;
- contribute to the implementation of **digital cities** making everything related to urban planning and urban management as a database that can be useful in future development of other research areas such as **Big-Data** and **IoT**;
- gradual implementation in municipalities and then grow nationally and internationally, contributing to a new and more advanced document management model of our cities at urban level.





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# GENERAL INFORMATION OF THE PROJECT

## EXPECTED RESULTS

The UrbanBIM project means the production and development of learning and collaborative outcomes based on BIM and taking into account challenges related to LCA (Life Cycle Analysis) of urban construction materials, to be used as training material for both HEI students and professionals in the sector, in order to satisfy a series of main objectives.

### HEI organisations:

- new curricula and material for their study and training programs related to LCA and EE of construction materials by mean of BIM technologies;
- new skills and competences acquired by students and professionals;
  - more training, more employment possibilities.
- construction sector enterprises needs workers with skills and capacities related to UrbanBIM project



# GENERAL INFORMATION OF THE PROJECT

## EXPECTED RESULTS

### Companies:

- BIM has multiple benefits in comparison with traditional working methods;
  - better informed decision-making
  - enhanced analysis
  - faster accessibility of information
  - simpler certification
  - market value
- it improves the quality of projects' management, saving time and costs during the building processes;
- it allows to control the services and the whole project's overview as well as offers information about the project's elements, environmental impact, etc., simplifying the complex work in AEC (Architecture, Engineering and Construction).



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# GENERAL INFORMATION OF THE PROJECT

## EXPECTED RESULTS

### Public bodies:

- the implantation of BIM in the last years has grown and the prevision is that in a few year public institutions only accept the submittal of the projects in BIM, because it will make the analysis and the evaluation of proposals much easier;
- in several European countries it is mandatory
- public servants who don't have skills in BIM and environmental impact can be trained based on the proposed curricula



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# GENERAL INFORMATION OF THE PROJECT PRODUCTS

The main products / tasks of the project are:

- O1. Online Educational Collaborative Platform of UrbanBIM project.
- O2. Establishment of common learning outcomes on methodologies of utilisation of BIM for calculation of LCA during urban development planning.
- O3. IT production of integrated training materials in UrbanBIM.
- O4. Developing of Educational software of UrbanBIM learning application.



THANK YOU FOR YOUR  
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