



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

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ROMANIAN REGULATIONS REGARDING BIM TECHNOLOGIES IN CONSTRUCTION SECTOR

## Task O2/A1.3

# ROMANIAN REGULATIONS REGARDING BIM TECHNOLOGIES IN CONSTRUCTION SECTOR



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ROMANIA  
GREEN  
BUILDING  
COUNCIL



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## 1. Introduction

Building Information Modelling is the digital representation of the physical and functional characteristics of a facility - shared knowledge resource for information about it forming a reliable basis for decisions during its life cycle, from earliest conception to demolition. Technology is transforming the way that buildings and infrastructure are designed, constructed, and operated. And it's helping to improve decision making and performance across the building and infrastructure lifecycle.

BIM maturity is associated to the fact that it not possible to move brutally from a traditional modelling approach towards an open BIM approach. The BIM maturity is often presented as a "wedge". Compared to the UK wedge, some levels have been subdivided (Level 0 and Level 3) and a new level has been added (Level 4). To evaluate which wedge level is reached, indicators have been introduced. These indicators measure four aspects: the content, the digitalization, the interoperability and the collaboration. There are four aspects of evaluation (content, digitization, interoperability and collaboration) for the project stages and for the asset management. This picture could be a metric to define where the project is, assuming that the level reached could be different for each aspect.

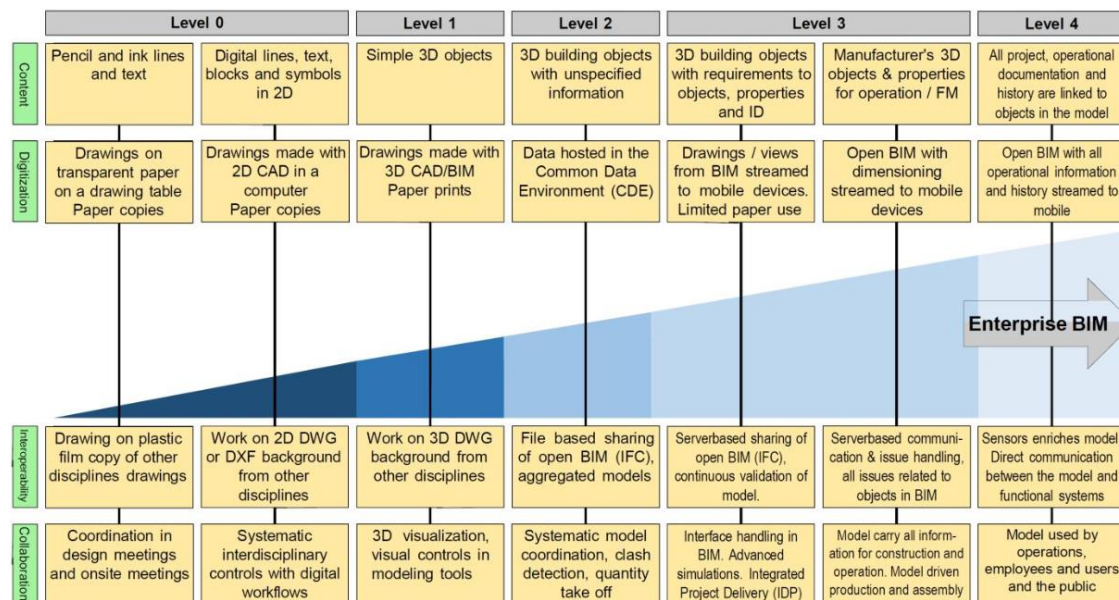


Fig. 1. BIM maturity levels (Source: EU Commission JRC Technical Report, Building Information Modelling (BIM) standardization)



Although BIM was originally devised for buildings the benefits such as less rework, fewer errors, enhanced collaboration, and design data that can ultimately be used to support operations, maintenance, and asset management made it an attractive option also for infrastructure projects. As geographic information system (GIS) is a key element in any infrastructure project there is the need to integrate BIM and GIS. Both technologies use standard and open data formats, but they are different and presently there is no direct translation.

The main purpose of organizational BIM guideline documents is to establish working methods for project participants that will be mandated by reference to the guideline documents in design and construction contracts.

Just about every source, including industry leaders, has its own definition of BIM, which can leave users with a slew of misconceptions: BIM is just for architects, BIM is just a design tool or BIM comes in a box.

## 2. ROMANIAN regulations regarding BIM technologies in construction sector

Following the global expansion of the world construction industry, Romania is also looking to bring forward global construction projects and the need for effective tools such as Building Information Modeling (BIM) for information management. At the Romanian Standards Association (ASRO - Romanian national organism for standardization) level, a technical committee CT334-Building Construction, Performance, Building Durability has been set up as a European-level CEN / TC 442 Building Information Modeling (BIM) Technical Committee.

At the beginning of 2019 ASRO published a new set of international standards to permit BIM to develop within projects and across borders, bringing benefits to the entire industry. Providing a framework for information management to collaborate with BIM published the first two parts of ISO 19650-Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) - Information management using building information modelling. (which was developed on the basis of British Standard BS 1192)

	
ISO 19650-1:2018, Organizarea și digitalizarea informațiilor despre clădiri și lucrări de inginerie civilă, inclusiv BIM – Managementul informațiilor utilizând BIM Partea 1: Concepte și principii	EN ISO 19650-1:2018 Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) - Information management using building information modelling - Part 1: Concepts and principles (ISO 19650-1:2018)



<p><a href="#">ISO 19650-2:2018</a>, Organizarea și digitalizarea informațiilor despre clădiri și lucrări de inginerie civilă, inclusiv BIM – Managementul informațiilor utilizând BIM Partea 2: Fazele de livrare a elaboratelor.</p>	<p>EN ISO 19650-2:2018 Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) - Information management using building information modelling - Part 2: Delivery phase of the assets (ISO 19650-2:2018)</p>
<p><a href="#">SR EN ISO 12006-3:2017</a>, Construcția clădirilor. Organizarea informațiilor legate de lucrările de construcții. Partea 3: Cadru pentru informațiile despre elementele lucrărilor de construcții</p>	<p>EN ISO 12006-3:2016 Building construction - Organization of information about construction works - Part 3: Framework for object-oriented information (ISO 12006-3:2007)</p>
<p><a href="#">SR EN ISO 29481-1:2018</a>, Modele informaționale ale clădirilor. Manual de transmitere a informațiilor. Partea 1: Metodologie și format</p>	<p>EN ISO 29481-1:2017 Building information models - Information delivery manual - Part 1: Methodology and format (ISO 29481-1:2016)</p>
<p><a href="#">SR EN ISO 29481- 2:2017</a>, Modele informaționale ale clădirilor. Manual de transmitere a informațiilor. Partea 2: Cadru de colaborare</p>	<p>EN ISO 29481-2:2016 Building information models - Information delivery manual - Part 2: Interaction framework (ISO 29481-2:2012)</p>
<p><a href="#">SR EN ISO 16739:2017</a>, Industry Foundation Classes (IFC) pentru partajarea informațiilor între industriile de construcții și de management al facilităților</p>	<p>EN ISO 16739:2016 Industry Foundation Classes (IFC) for data sharing in the construction and facility management industries (ISO 16739:2013)</p>
<p><a href="#">SR EN 15804+A1:2014</a>, Dezvoltarea durabilă a lucrărilor de construcție. Declarații de mediu pentru produse. Reguli de bază pentru categoria produselor pentru construcții</p>	<p>SR EN 15804 + A1: 2014. Sustainable development of construction works. Product environmental statements. Basic rules for the category of construction products.</p>
<p><a href="#">SR EN 15942:2012</a>, Dezvoltarea durabilă a lucrărilor de construcție. Declarații de mediu pentru produse. Formate de comunicare între agenți economici</p>	<p>SR EN 15942: 2012. Sustainability of construction works. Environmental product declarations. Communication format business-to-business.</p>

Future standards of 19650 include Part 3 on operational asset management and Part 5, dedicated to building information modeling, the digitally built environment, and intelligent asset management.

The main promoters of BIM in Romania are professional associations (The Chamber of Architects in Romania, Association of Structural Design Engineering from Romania, BIMTECH - Association for Research, Development and Implementation of Technologies in Constructions) and program providers for AUTODESK® REVIT®, ALLPLAN® NEMETSCHER®, STABIPLAN® that organize various conferences and meetings.



### 3. Conclusion

- All existing Romanian regulations are those transposed from European standardization;
- The Romanian construction sector has continued a classic design being in the maturity level 0 up to level 2; BIM awareness depending on the size of the company;
- The study show that Romania is at the beginning of establishing rules for the BIM implementation;
- The National Strategy for Research, Development and Innovation for 2014 - 2020 (*Strategia națională de cercetare, dezvoltare și inovare 2014-2020*) - support for the construction of new and development of existing infrastructure as a key priority area, but there is no clear reference to BIM;
- The Directive 2014/24/Eu, article 22, para. 4, allows the requirement for the use of BIM provided it does not create discrimination and that alternative means of access are offered to those that do not have access to such technology (this includes free access via a token for instance the day when the publication of the notice to tender);
- Governments and public sector organizations can provide leadership to encourage the sector towards the untapped opportunity of digital, and in turn provide better public services and better value for public money. However, governments cannot do this alone: working together with industry at European and national levels is essential to achieve this digital transformation with due consideration given to commercial models, education, skills development and changes to current practices.

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