



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

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TASK 02/A1.4 REPORT ON THE DEGREE OF IMPLANTATION OR USE OF BIM AT PROFESSIONAL LEVEL IN SPAIN

## Task 02/A1.4

# REPORT ON THE DEGREE OF IMPLANTATION OR USE OF BIM AT PROFESSIONAL LEVEL IN SPAIN



Universitatea  
Transilvania  
din Braşov



ROMANIA  
GREEN  
BUILDING  
COUNCIL



Centro Tecnológico  
*del mármol, piedra y materiales*



Warsaw University  
of Technology



Consortium members: Universitatea Transilvania din Braşov (UTBV), Asociația România Green Building Council (RoGBC), Universidad de Sevilla (USE), Asociación Empresarial de Investigación Centro Tecnológico del Mármol, Piedra y Materiales (CTM), Politechnika Warszawska (WUT), Datacomp sp. z o.o. (Datacomp).



## 1. Introduction

BIM (Building Information Modeling). It is an intelligent 3D model-based process that gives architecture, engineering, and construction (AEC) professionals the insight and tools to more efficiently plan, design, construct, and manage buildings and infrastructure". BIM is technology which is used to generate and use data about the building. It is design, construction and operation during the full cycle of operation. This system allows all interested investment participants to have access to the same information, at the same time, through the interoperability of technology platforms.

Designing structures for many years has undergone various improvements, primarily through the development of tools and software. This is due to the development of digitization and technology. Improving computing equipment allows you to increase the accuracy of calculations and present results in a transparent and understandable way for recipients. With time, when it turned out that the consumers were getting better and more, as well as more and more demanding architectural visions, tools were created that could more easily visualize architectural thoughts and present them to customers. Originally, the aim was to create drawings more quickly and to operate them more easily. Everything was heading towards a change involving the creation of virtual models in 3D. The transition from presenting the project in 2D to 3D is considered a breakthrough because it was the beginning of creating software that not only allows for more precise presentation of ideas but also is the basis for a better understanding of industries and all participants in the construction process.

The core and main goal of BIM technology is the communication between the participants of the investment process and better understanding of the general design idea. The project at BIM introduces support in the form of various programs or reports facilitating and accelerating this interpretation as well as collecting and exchanging data by collaborating designers. Architects as well as other participants of the investment process working on the 3D model can check virtually all the technical aspects of the planned implementation virtually before the heavy equipment starts work.

The greatest advantage of Building Information Modeling is the ease of making any changes. The virtual model in the computer is open to changes in various positions. It is easy to rotate the model, select any element and its correction. Any changes to the 2D documentation are extremely complicated, because you must make sure that the change is made on each plan and cross-section so that the drawings are consistent with each other. Using BIM technology, since each member of the investment and construction process is involved from the beginning, rather than one after the other, it is easy to make any changes with the certainty that the created project is consistent with each other.

The implementation in Spain in the next few years of the BIM methodology and systems is going to be another phase in the digitization of the building process, allowing a faster and more accurate integration of all the project documentation and construction process. It will also imply an important change in the way in which architecture professionals will be able to access certain contracts and public tenders.

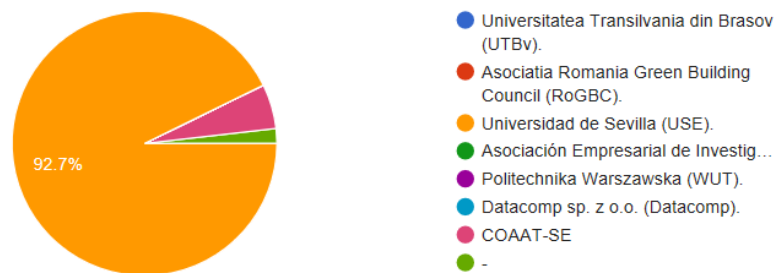
The Ministry of Public Works estimates that its partial implementation in the public sector in Spain will take place around 2019.

## 1. Results

A survey has been carried out to make a first assessment of the current situation, to propose the work to be developed, as well as strategies and future actions.

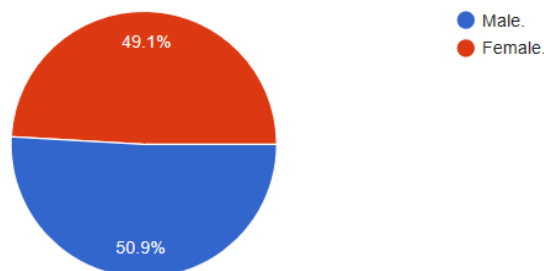
Q00 Questionnaire supplied by:

55 responses



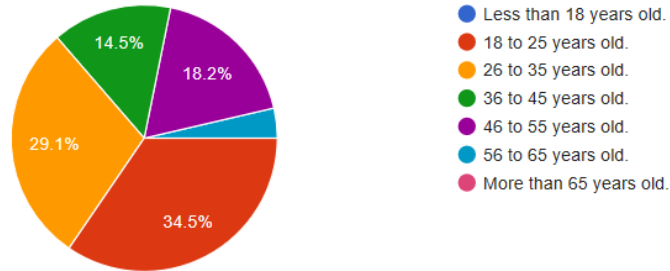
Q01 What is your gender?

55 responses



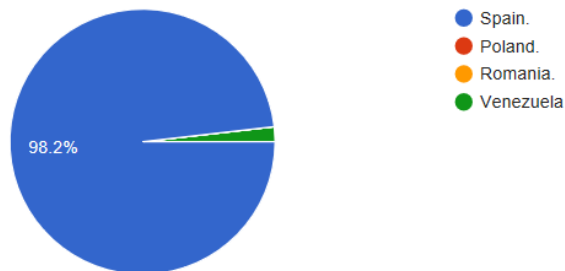
### Q02 What is your age?

55 responses



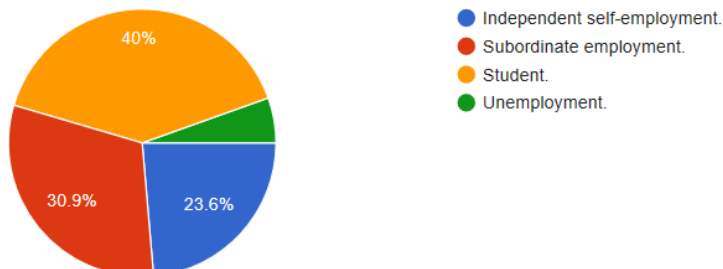
### Q03 In which country do you study/work?

55 responses



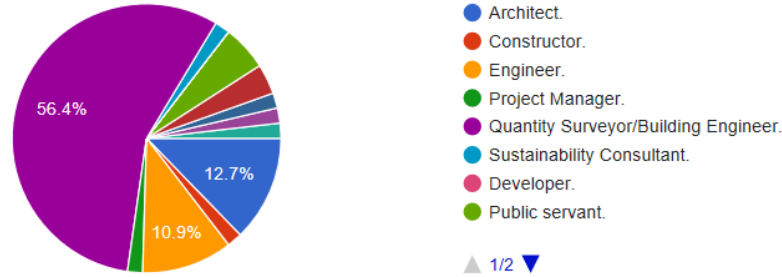
### Q04 What is your current employment situation?

55 responses



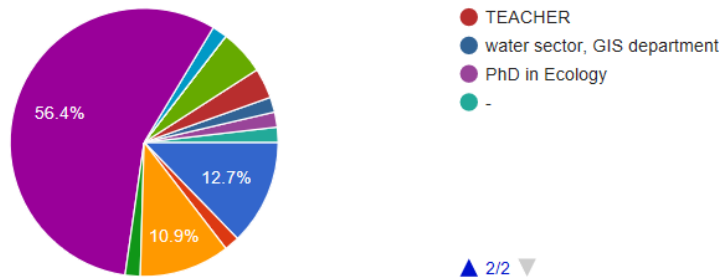
### Q05 What profession are you linked to?

55 responses



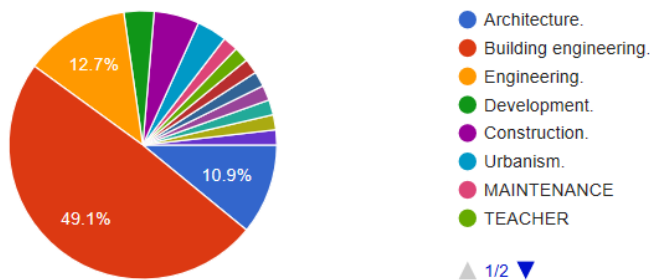
### Q05 What profession are you linked to?

55 responses



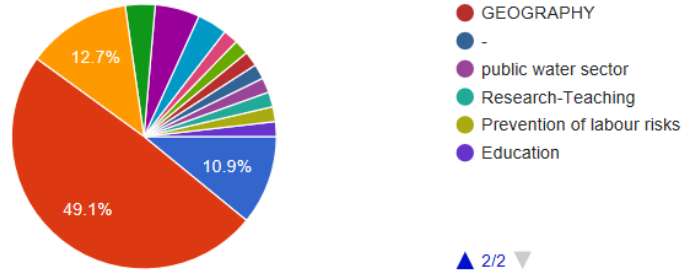
### Q06 Which discipline best fits the organisation in which you work/study?

55 responses



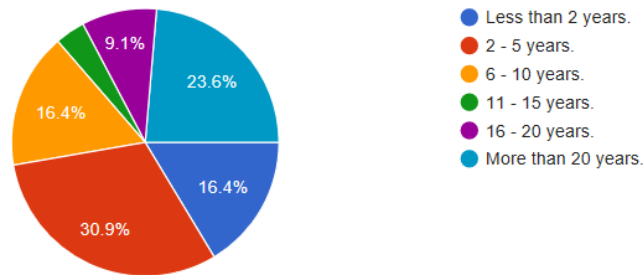
### Q06 Which discipline best fits the organisation in which you work/study?

55 responses



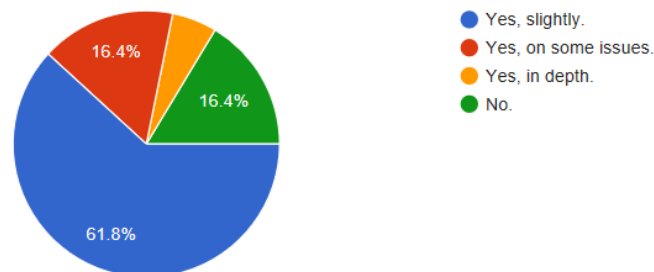
### Q07 For how many years have you worked linked to in construction sector?

55 responses



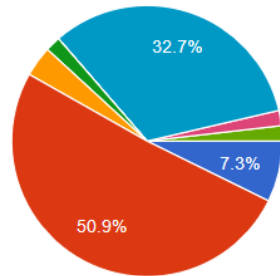
### Q08 Do you know BIM (Building Information Modelling) methodology?

55 responses



### Q09 Have you received BIM training? What kind of training?

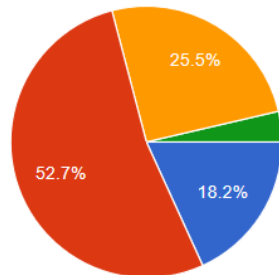
55 responses



- Yes, self-taught.
- Yes, induction course.
- Yes, expert course.
- Yes, master.
- Yes, doctorate.
- I don't have received any type of BIM training.
- A lesson in a master's degree
- Information days only

### Q10 Do you plan to expand your BIM training?

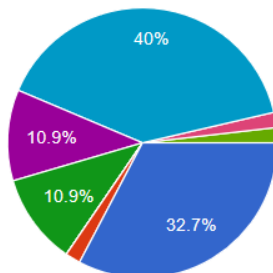
55 responses



- Yes, in the long term.
- Yes, in the medium term.
- Yes, in the coming months.
- No.

### Q11 What is the main reason that has led you to implement BIM in your projects/designs?

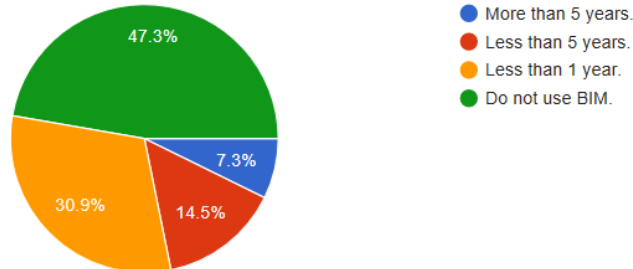
55 responses



- Own initiative.
- Customer requirement.
- Promoter requirement.
- Administration requirement.
- Requirement by other construction agents.
- Do not use BIM.
- STUDIES
- be ready for the future

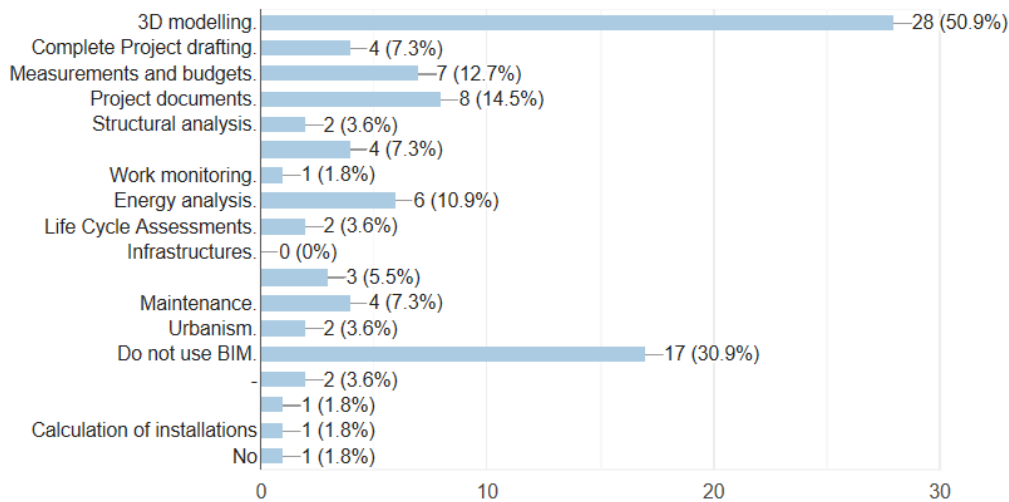
### Q12 How long have you been using BIM?

55 responses



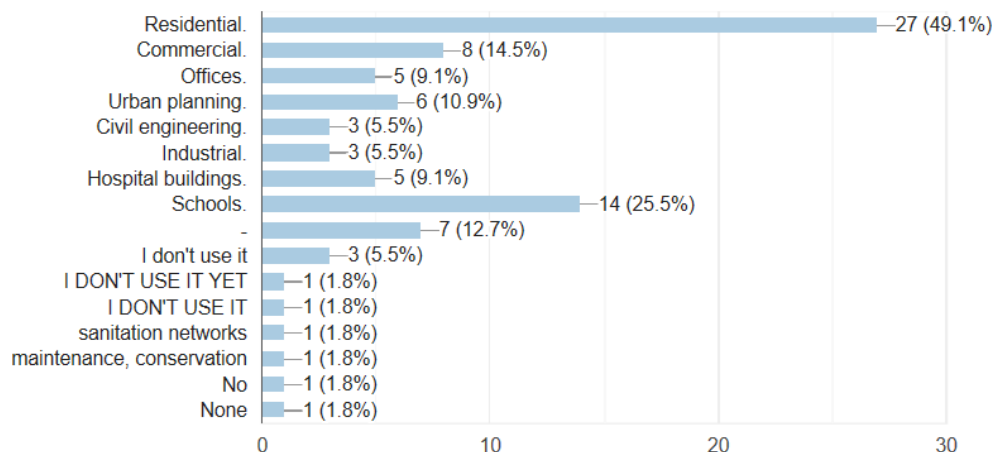
### Q14 For which phase of the Project do you mainly use BIM? (multiple choice)

55 responses



### Q13 In what type of projects do you mainly use BIM? (multiple choice)

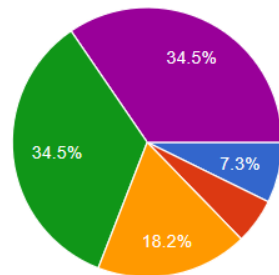
55 responses





### Q15 What is the level of implementation of BIM in your organisation/studies centre?

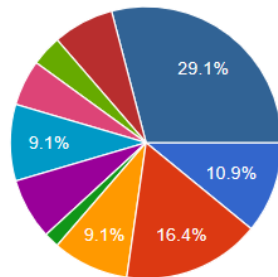
55 responses



- Used in 100% of the projects.
- Used in more than 50% of the projects.
- Used in less than 50% of the projects.
- Used in less than 10% of the projects.
- Do not use BIM.

### Q16 How many people work in your organization/studies centre?

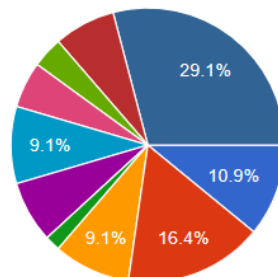
55 responses



- 1 (independent self-employment).
  - 2 - 5.
  - 6 - 15.
  - 16 - 25.
  - 26 - 50.
  - 51 - 100.
  - 101 - 250.
  - 251 - 500.
- ▲ 1/2 ▼

### Q16 How many people work in your organization/studies centre?

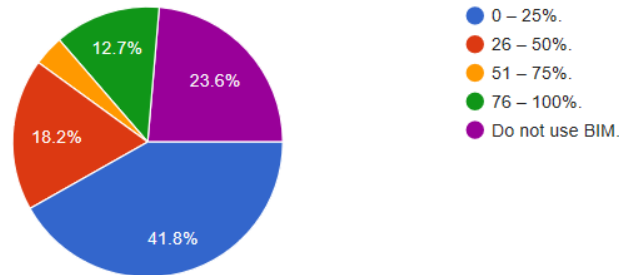
55 responses



- More than 500.
  - Dk/Da.
- ▲ 2/2 ▼

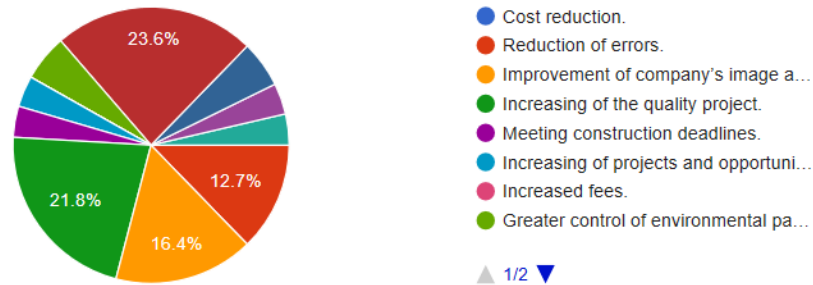
### Q17 What is the proportion of people in your organisation/studies centre who use BIM?

55 responses



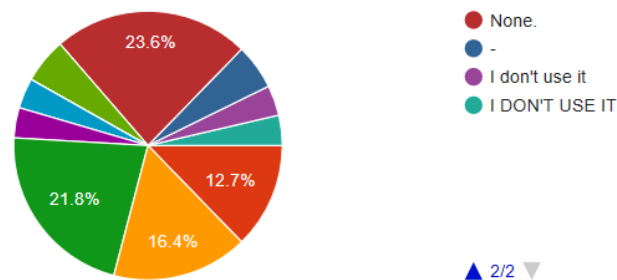
### Q18 What are the main benefits that BIM has brought to your projects?

55 responses



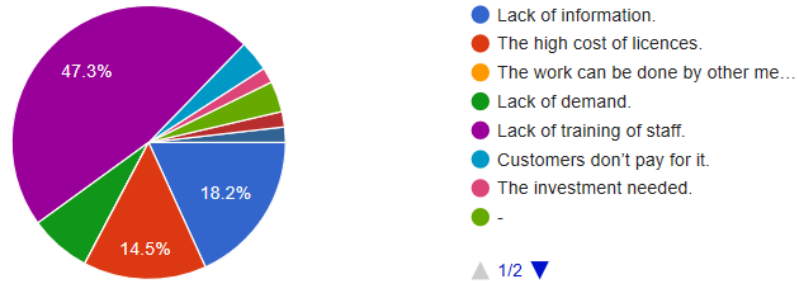
### Q18 What are the main benefits that BIM has brought to your projects?

55 responses



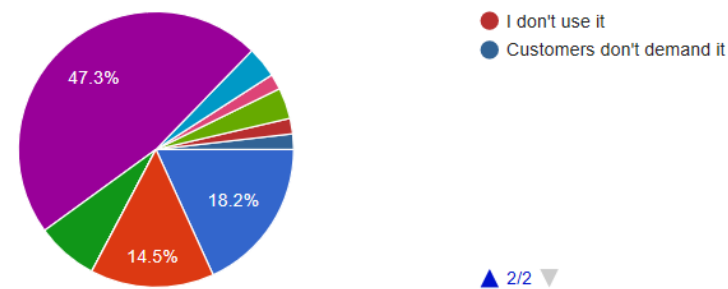
### Q19 Which of the following do you consider to be the primary cause for a company's failure to adopt BIM?

55 responses



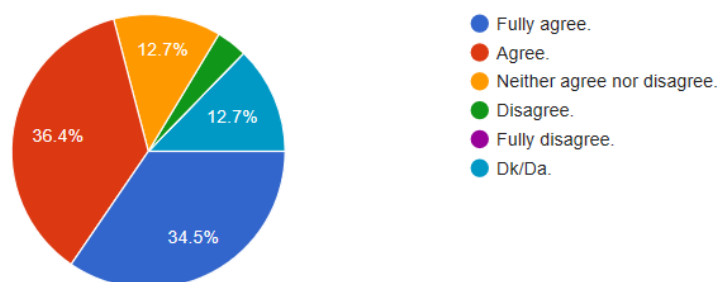
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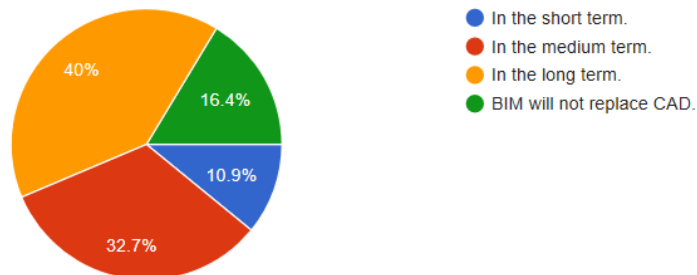
### Q20 Indicate your degree of agreement/disagreement with the following assertion: "BIM is not sufficiently standardized yet":

55 responses



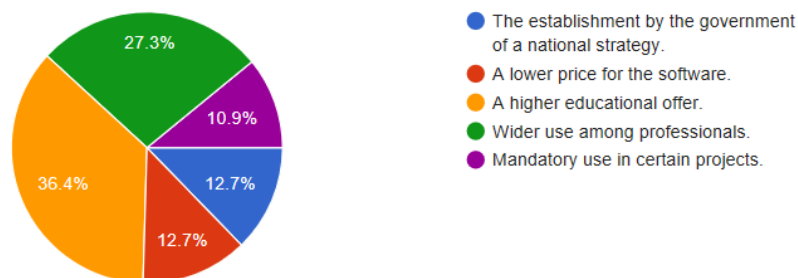
### Q21 Do you think BIM will replace CAD?

55 responses



### Q22 What factors do you think may influence more widespread use of BIM?

55 responses





### 3. Conclusions

According to data from the BIM survey conducted, the degree is still low among architectural firms, especially in small offices.

The level of satisfaction of the architects who have implemented these systems is high, so it follows that will increase the percentage of projects that from these studies are carried out with BIM.

However, the collaboration through BIM systems with other professionals involved in the process of the building project is still low, so the implementation in the whole building sector is taking place slowly. This fact is also reflected in the fact that the use of BIM is mainly carried out in the project phases most linked to conception and design and to a lesser extent in other project phases in which it is usual to collaborate with other professionals.

It is foreseeable that the implementation rate will increase in the short and medium term, as a high percentage of respondents plan to receive training, mainly in BIM tools.

It is important to note that the majority of respondents (47%) stress that the primary cause for a company's failure to adopt BIM is the lack of staff training.

In addition, 34.5% of respondents agree that "BIM is not sufficiently standardized yet".

Another noteworthy point is a fairly widespread opinion (63.7%) that BIM will replace CAD in the medium/long term.



#### 4. Bibliography

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3. <https://www.autodesk.com/solutions/bim>
4. [http://damassets.autodesk.net/content/dam/autodesk/www/campaigns/bim-event/BIM\\_raport\\_final.pdf](http://damassets.autodesk.net/content/dam/autodesk/www/campaigns/bim-event/BIM_raport_final.pdf)