

( ) Graduação (X) Pós-Graduação

**BUILDING INFORMATION MODELLING – BIM – DISSEMINATION STRATEGY  
FROM THE IMPLEMENTATION OF REGIONAL ENGINEERING AND  
ARCHITECTURE OFFICES IN UNIVERSITIES AS AN INNOVATION AND  
GOVERNANCE POLICY: the Projetek-Unicentro case as a development agent in the  
central-south region of Paraná – Brazil**

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**ABSTRACTS**

Seeking to meet purposes of disseminating Building Information Modelling (BIM) in the Brazilian States, the government of the State of Paraná – Brazil –, aiming at the Evolution of processes in the AEC Industry (Architecture, Engineering and Construction), implemented Regional Engineering and Architecture Offices – Projetek – in the state universities serving city halls with up to thirty (30) thousand inhabitants. While universities are fully updating this curriculum and replacing 2D technology in their laboratories. The methodological approach adopted was based on the analysis of the perspectives of a multidisciplinary team characterized by the diversity of training and levels of proficiency in BIM. Additionally, data from projects prepared by the team were collected and examined, providing additional insights into the practical application of BIM. The exploratory approach of this research stands out due to the recent creation of Projetek. The results were satisfactory with regard to the success of implementation, the Evolution of learning, the adaptation to the New Bidding law and the projects delivered whose interoperability and compatibility of disciplines avoided conflicts and, consequently, rework, as well as the preparation of more efficient budgets lean and with the prospect of avoiding additional time and public funds.

**Keywords:** Building Information Modeling (BIM); Smart Cities; Technology transfer; Innovation; Projetek.

## 1 INTRODUCTION

The Brazilian government has been making efforts to disseminate the Building Information Modeling – BIM – methodology, seeking to modernize the Architecture, Engineering and Construction sector, also called the AEC Industry, in general and, particularly, within the scope of public engineering and architecture projects. The year 2017 is emblematic in this process due to the establishment of the BIM Strategic Implementation Committee.

Construction Information Modeling constitutes the foundation of digital transformation in the AEC Industry. However, we can think more about a digital revolution in the AEC Industry. Such a significant change, in Brazil, occurred in the transition from manual drawing to 2D digital drawing.

The legal framework was fundamental in this process by providing the environment for the development and implementation of new technologies based on Constitutional Amendment No. 85 of 2015, which reinforced the role of the State in the field of Science and Technology by making it its duty to promote and encourage Innovation through of public policies causing a cascade effect throughout the structure of the Brazilian State.

In this context, the following legislation emerged: Law 13,243/2016 (Legal Framework for Science, Technology and Innovation), Decree No. 10,531/2020, which established the Federal Development Strategy for Brazil in the period from 2020 to 2031, and Law 14,133/2021 (Tenders and Administrative Contracts Law, widely known as the New Bidding Law).

The next stage occurred with specific legislation aimed at BIM, notably, federal decrees of 2017 (which established the Strategic Committee for the Implementation of Building Information Modeling), 9,377/2018 (established the National Strategy for the Dissemination of Building Information Modeling), 9,983/2019 (which made the National BIM Dissemination Strategy official and established the BIM Strategy Management Committee), 10.306/2020, which established the use of BIM in the direct or indirect execution of engineering works and services carried out by administrative bodies and entities federal public and, finally, 11,888/2024 (provided for the National Strategy for the Dissemination of BIM in Brazil, the BIM BR Strategy and established the BIM Strategy Management Committee) reviewing and amending the previous legislation.

In the State of Paraná, the legal framework was created based on state decree 3080/2019, establishing the State Strategy for the Promotion and Implementation of BIM, called “BIM PR Strategy: Paraná towards digital innovation in public works”. Despite the intriguing path of

legislation regarding Science, Technology and Innovation, for reasons of scope, I leave out municipal legislation. For registration purposes, they are in line with the Federal and State Governments and their objectives concern legal security at the municipal level.

## 2 DISCUSSION AND DATA ANALYSIS

The BIM methodology is inserted in the field of Innovation, Sustainability and, unequivocally, in the studies and efforts of Smart Cities operated by the Brazilian State, notably in public administration and, therefore, favoring transformative actions, particularly in universities. Regarding these, it is worth noting the importance given to technology, but it is worth highlighting that it is in the human dimension where its importance lies (YIGITCANLAR, et al., 2018).

Traditionally, the Brazilian State guides and subsidizes such transformations, mainly through public policies. In this sense, public policy is a tool that drives governments to action, as it analyzes the process and proposes measures to be implemented. These must not only serve one class or interest group, but must be inclusive, participatory, comprehensive and, in a certain way, listen to different groups and social movements (SOUZA, 2006).

Understanding the relationship between governance, innovation and sustainability is essential to guide policies and practices that promote the effective use of technology as tools for regional development with a focus on communities. In each of these sectors, innovation is a driving force that offers unique opportunities and challenges.

In line with these purposes, in 2022, the Government of the State of Paraná launched a notice, through the Araucária Foundation to Support the Scientific and Technological Development of the State of Paraná – FA –, aiming at the implementation and implementation of Regional Engineering Offices, Architecture and Urbanism in all state universities.

Regarding the work of Projetek, Magalhães et al, states: “the regional engineering, architecture and urban planning office is a paradigm in the training of students by ensuring mastery of new technologies and service to the community.” (p.72, 2023).

The impacts of Projetek, despite project deliveries and rapid insertion in the State, have not yet been properly scaled, mainly as an innovative model to be adopted in all higher education institutions in Engineering and Architecture in the country within the scope of University Extension.

### 3 CONCLUSIONS

From this initiative was born and quickly consolidated, in the state of Paraná, Projetek – Regional Offices of Engineering, Architecture and Urbanism – whose service to city halls delivered more than twenty-five projects, of the most varied needs, the society of Paraná providing service to city halls of up to thirty (30) thousand inhabitants whose technical staff needed support in the technological transition, processes and management of public building projects, be in line with current legislation, avoiding falling into the fine mesh of supervisory agencies, be part of the national strategy for disseminating BIM and train technical staff in the BIM Methodology.

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