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RICI

RED INTERNACIONAL DE CIUDADES INTELIGENTES

BIM MACRO ADOPTION
MEXICO

Information Session

July 2024

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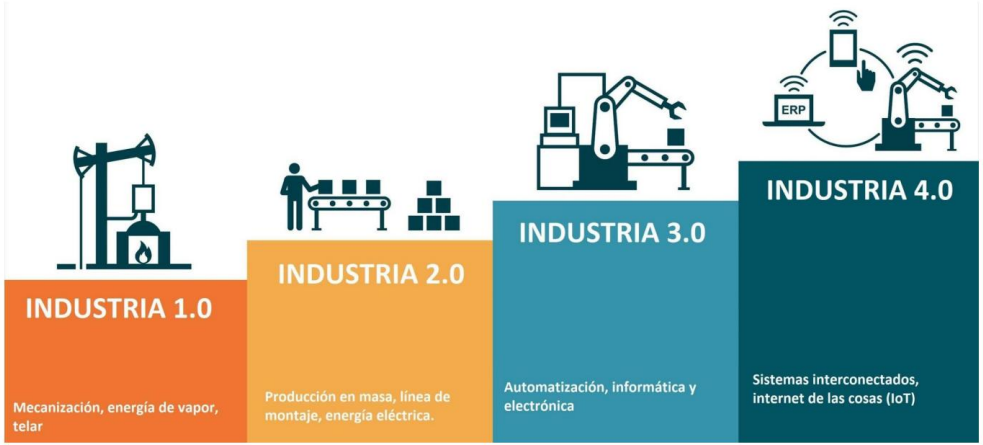
BACKGROUND

We are currently in 4th. Industrial Revolution, called Industry 4.0 that seeks to modernize all economic sectors



DIGITALIZATION

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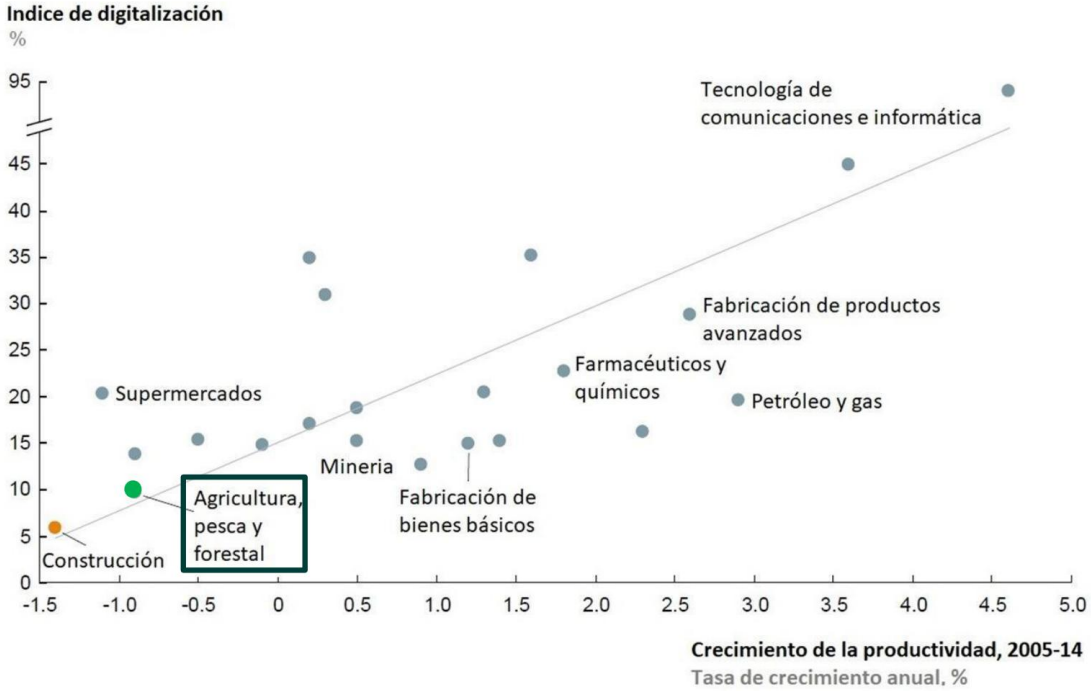
DIGITALIZATION INDEX



Source: MGI (2017), "Reinventing Construction: A Route to Higher Productivity", Executive Summary McKinsey Global Institute, Translated by Elias Tavera

BACKGROUND

INDUSTRY 5.0 is currently arriving in some regions of the world:

ARTIFICIAL INTELLIGENCE

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PREMISES IN THE CONSTRUCTION INDUSTRY

* Strengthen RESEARCH and KNOWLEDGE networks

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PREMISES IN THE CONSTRUCTION INDUSTRY

* Strengthen RESEARCH and KNOWLEDGE networks

* Technological innovation to be more efficient:
  optimize RESOURCES, TIME AND EFFORT

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PREMISES IN THE CONSTRUCTION INDUSTRY

* Strengthen RESEARCH and KNOWLEDGE networks

* Technological innovation to be more efficient:
optimize RESOURCES, TIME AND EFFORT

*BIM Methodology as a TOOL for increasing PRODUCTIVITY and SUSTAINABLE construction

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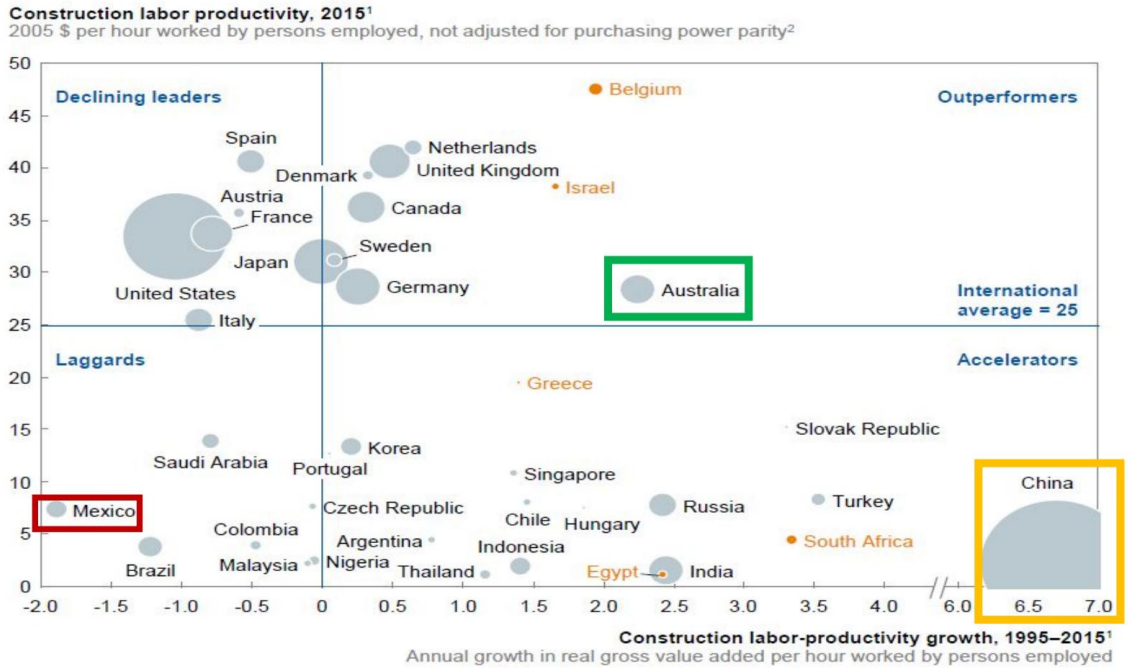
SITUATION OF THE INDUSTRY OF THE CONSTRUCTION IN MEXICO



Source: MGI (2017), "Reinventing Construction: A Route to Higher Productivity", Executive Summary McKinsey Global Institute

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STATE OF THE QUESTION

1. The 4.0 revolution is already a reality

2. Construction 4.0 and 5.0 + BIM is a necessity

3. Mexico needs to move towards transformation

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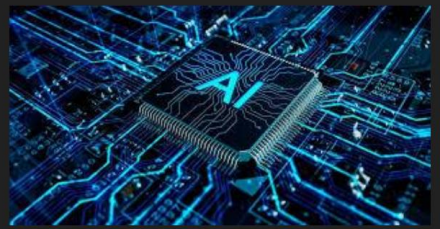
CUTTING-EDGE TECHNOLOGIES

- > BIM (BUILDING INFORMATION MODELING)
- > DIGITAL TWINS
- > POINT CLOUD
- > ARTIFICIAL INTELLIGENCE
- > METAVERSE



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WHAT IS BIM? (SMART Building)

> BIM is a collaborative work methodology for the creation and management of a construction project. (BuildingSmart)

> Its objective is to centralize all project information in a management model digital information created by everyone involved.

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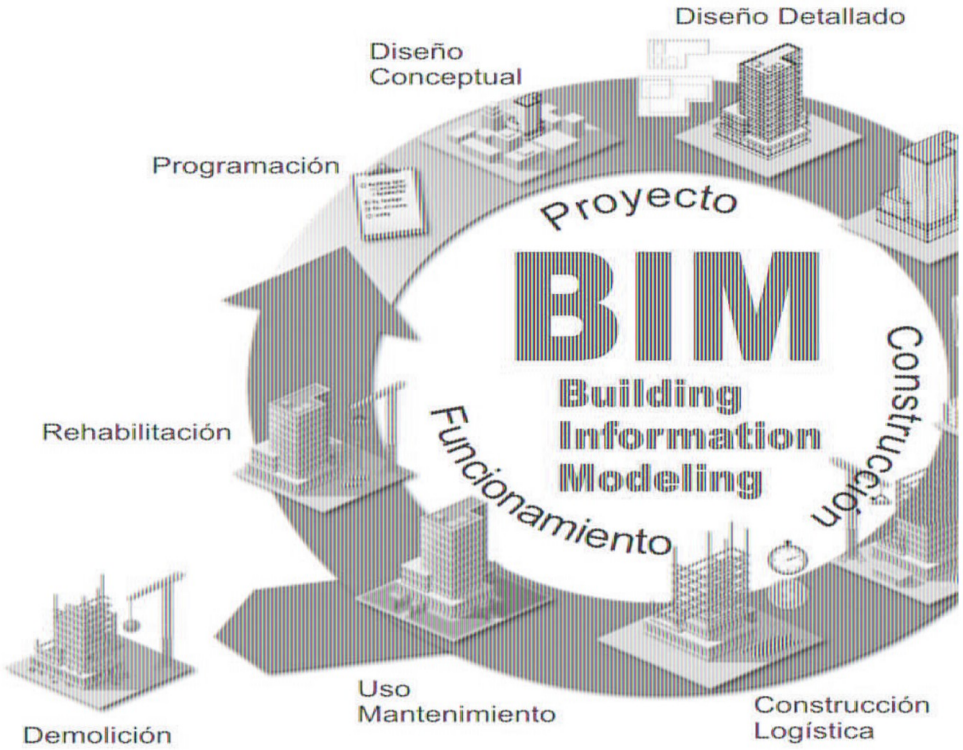

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IMPORTANCE OF BIM FOR CONSTRUCTION

BIM is an alternative for increasing the
PRODUCTIVITY of the industry

Improves organizational culture in COMMUNICATION and
COLLABORATION

The SUSTAINABLE DEVELOPMENT approach is integrated
into the development of each construction project.

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BIM MACRO ADOPTION

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A GLOBAL BIM STUDY

BIMe INITIATIVE

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During the months of July to November 2024, the First BIM Macro Adoption Study is being carried out in Mexico.

This study is based on the five Macro BIM Adoption models developed by Succar B. and Kassem M. (2015) and described in their article "Macro BIM adoption: Comparative market analysis".

The survey is being applied through the International Network of Smart Cities and has the participation of representatives from academia, industry and government, under the advice for Latin America of Dr. Danny Munguía.

The research instrument is a standardized questionnaire developed by the BIMe Initiative, which has been applied in more than 20 countries.

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Dr. Bilbal Succar
World expert in BIM Methodology

BIMe INITIATIVE

BIMexcellence.org

> **Dr. Bilal Succar** founded the BIMe Initiative , a non-profit organization that brings together a research and practice community of more than 160 experts, academics and industry specialists from 42 countries.

> The BIMe Initiative aims **to accelerate the digital transformation** of the construction industry, through process innovation and exchange of knowledge.

> Researches, develops and offers free tools and resources, (e.g. *BIMdictionary.com* and *Macroadoption.com).*

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INTERNATIONAL MACRO BIM ADOPTION PROJECT

MEXICO

> Led by **BIM Initiative** and **Dr. Bilal Succar,**

> Latin American advisor **Dr. Danny Murguía,** senior researcher at the Center for Construction Engineering and Technology, University of Cambridge, and professor at the Department of Engineering at the Pontifical Catholic University of Peru.

> Coordinators for BIM macro adoption in Mexico: **Industry-** Mtra. Dulce Barocio / **Government-** Mtro. Osvaldo Mireles/ **Academia-** Mtro. Elias Tavera

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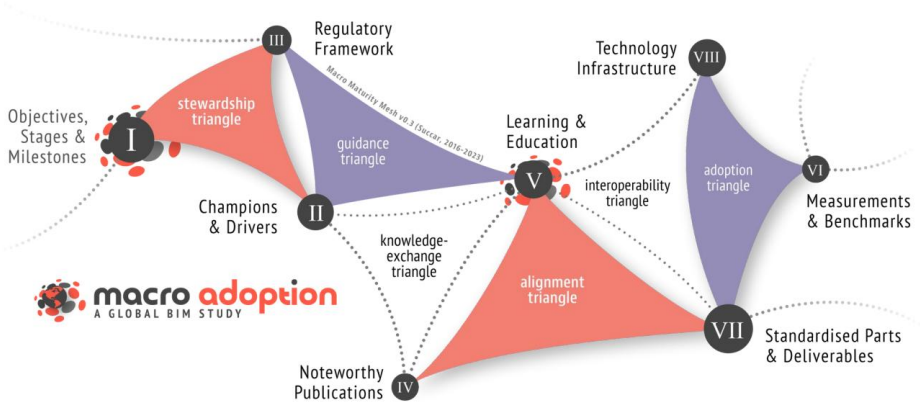
WHAT IS BIM MACRO ADOPTION?

> Systematic implementation of the BIM methodology at the national level, involving policies, standards, training and technological adoption



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WHAT IS BIM MACRO ADOPTION?

> The five models that are evaluated and from which information will be obtained are:

Model A – **Diffusion Areas:** modeling, collaboration and integration stages

Model B – **Macro Maturity Components:** the 8 components are evaluated:

1) Objectives, Stages and Milestones: Availability of BIM policies.
2) Champions and Drivers: People, groups or organizations.
3) Regulatory Framework: Contractual scope, regulatory framework that clarifies the rights and responsibilities of the actors of a project.
4) Notable Publications: Public documents developed by Stakeholders
5) Learning and Education: Educational activities carried out by Universities, trainers, associations.
6) Metrics and references: Measure project results and capabilities of staff, teams and companies
7) Standardized Parts and Deliverables: BIM Objects
8) Technological Infrastructure: Availability, accessibility of hardware and software.

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WHAT IS BIM MACRO ADOPTION?

Model C – **Macro Diffusion Dynamics:** It is mentioned how diffusion is carried out.

Model D – **Actions of Policy Makers:** Level of communication, commitment and monitoring.

Model E – **Dissemination Responsibility:** Level of involvement for the dissemination of BIM of the main actors

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BENEFITS OF BIM MACRO ADOPTION

Efficiency and Productivity:

- Cost reduction
- Increased productivity

Quality Improvement:

- Better coordination
- Quality control

Sustainability:

- Sustainable design
- Waste reduction

Transparency and Collaboration:

- Centralized data
- Better communication

Security Improvement:

- Security planning
- Monitoring and control

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PARTICIPATION IN THE BIM MACRO ADOPTION

NATIONAL DIAGNOSIS

> **Government:** You will investigate what governments (3 levels) are doing to facilitate the adoption of the BIM Methodology and accelerate digital transformation.

> **Academy:** You will investigate how the BIM Methodology and digital transformation topics are being taught in universities and with technical training providers.

> **Industry:** You will investigate the digital transformation tools, workflows and standards within the framework of the BIM Methodology that companies in the construction industry are using.

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STRATEGIC PARTNERS

BIM TASK GROUP México

ALIANZA BIM NUEVO LEÓN

Plan BIM México

cmic · DELEGACIÓN · CIUDAD DE MÉXICO

cmic · DELEGACIÓN · SONORA

COMUNIDAD BIM cmic Sonora

UADY UNIVERSIDAD AUTÓNOMA DE YUCATÁN

Tecnológico de Monterrey

Universidad La Salle México

SEFI SOCIEDAD DE EXALUMNOS DE LA FACULTAD DE INGENIERÍA DE LA UNAM

UNAM

IPN

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STRATEGIC PARTNERS

EL GOBIERNO DEL NUEVO NUEVO LEÓN

NL MOVILIDAD Y PLANEACIÓN URBANA
GABINETE DE GENERACIÓN DE RIQUEZA SOSTENIBLE

IMPLAN INSTITUTO MUNICIPAL DE PLANEACIÓN LOS CABOS

IMPLAN MORELIA MX INSTITUTO MUNICIPAL DE PLANEACIÓN

IMPLAN Salamanca Guanajuato

IMPLAN SAN LUIS POTOSÍ

APATZEO

Apaseo el Grande 2021 - 2024

Ayuntamiento de SAN FRANCISCO DE LOS ROMO 2021 • 2024

ciudades capitales de México

ICLEI Local Governments for Sustainability

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NATIONAL DIAGNOSIS

> What does the participation of a city in BIM macro adoption imply?

- Select a representative of the agency or organization for collaboration

- Identify specialists who have knowledge of the
  BIM methodology and on the other hand, if no one is a specialist yet, it does not matter, identify the personnel most involved with the construction industry of your organization, agency or company.

- Application of the survey (online).

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PARTICIPATION IN THE BIM MACRO ADOPTION

NATIONAL DIAGNOSIS

> What are the steps and requirements requested to participate?

- Pre-registration of the institutional representative
- Signature of Collaboration Letter between the organization and RICI
- Integration to the work team (WhatsApp)