Kissandra
Bridgmohan

9TH CESA YOUNG PROFESSIONALS SUSTAINABILITY IMBIZO 2021

Introducing

Kissandra Bridgmohan, Pr Tech Eng

Professional Civil Engineering Technologist
at Knight Piésold Consulting.

Kissandra Bridgmohan is a Professional Engineering Technologist at Knight Piésold Consulting's KZN branch in the Power and Water Resources Division.

She graduated with a Bachelor of Technology Degree from the Durban University of Technology in 2013 with Cum Laude.

She has experience in water and sanitation infrastructure, which includes bulk water feasibility studies, the design of bulk water steel and ductile iron pipelines, sewer reticulation networks, rising mains and pump stations, preparation of tender documentation, technical specifications and contractual claims in the GCC form of contract.

Outside of her professional life, Kissandra enjoys spending quality family time with her husband and 2-year-old son.

Kissandra has been assisted in preparing the presentation Is the South African young professional ready for digital engineering? by her colleagues Tevan Govender (Pr Tech Eng and Current CESA YPF KZN Chair) and Ishkaar Devnath.

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Is the SA YP ready for digital Engineering?

August 2021

YPF
Young Professionals Forum

#YPIMBIZO

Outline

1. What is digital engineering(DE)?
2. Is there a need for DE in South Africa?
3. Analysis of DE at Tertiary level
4. Analysis of DE in Industry
5. Steps a YP can take to move into DE
6. Role of ECSA and VA's in taking DE forward

What is digital engineering?

Definition

- Digital engineering (DE) is the practice of utilising digital processes to efficiently plan, design, construct, operate and maintain infrastructure assets.

- The aim of digital engineering is to create an accessible database of all information pertinent to an asset and a platform for all parties involved to access the information for true project collaboration.

What is digital engineering?

Aspects

Building Information Modelling (BIM)

- Is a 3D model-based process that gives architecture, engineering, and construction (AEC) professionals the insight and tools to plan, design, construct, and manage buildings and infrastructure more efficiently.

Augmented reality (AR)

- Is the use of advanced camera and sensor technology to combines one's physical surroundings with computer-generated information to visually present it in real-time.

What is digital engineering?

Aspects

Virtual Reality (VR)

- Is placing the user directly inside the virtual environment, so that the user experiences a full immersion into the virtual space.

3D Printing

- Can be used to create construction components or to 'print' entire buildings.

Is there a need for DE in South Africa?

Advantages of Digital Engineering

Digital engineering has already shown to have numerous advantages in the global AEC space:

- Reduced risk to human life in hazardous site investigations.
- Improved communication between stakeholders
- Digital clash detection
- Reduction in project costs
- Improved understanding of the project's impacts by IAPs
- Improved knowledge of expected field conditions allows for the opportunity of prefabrication of materials offsite.

What is digital engineering?

Aspects

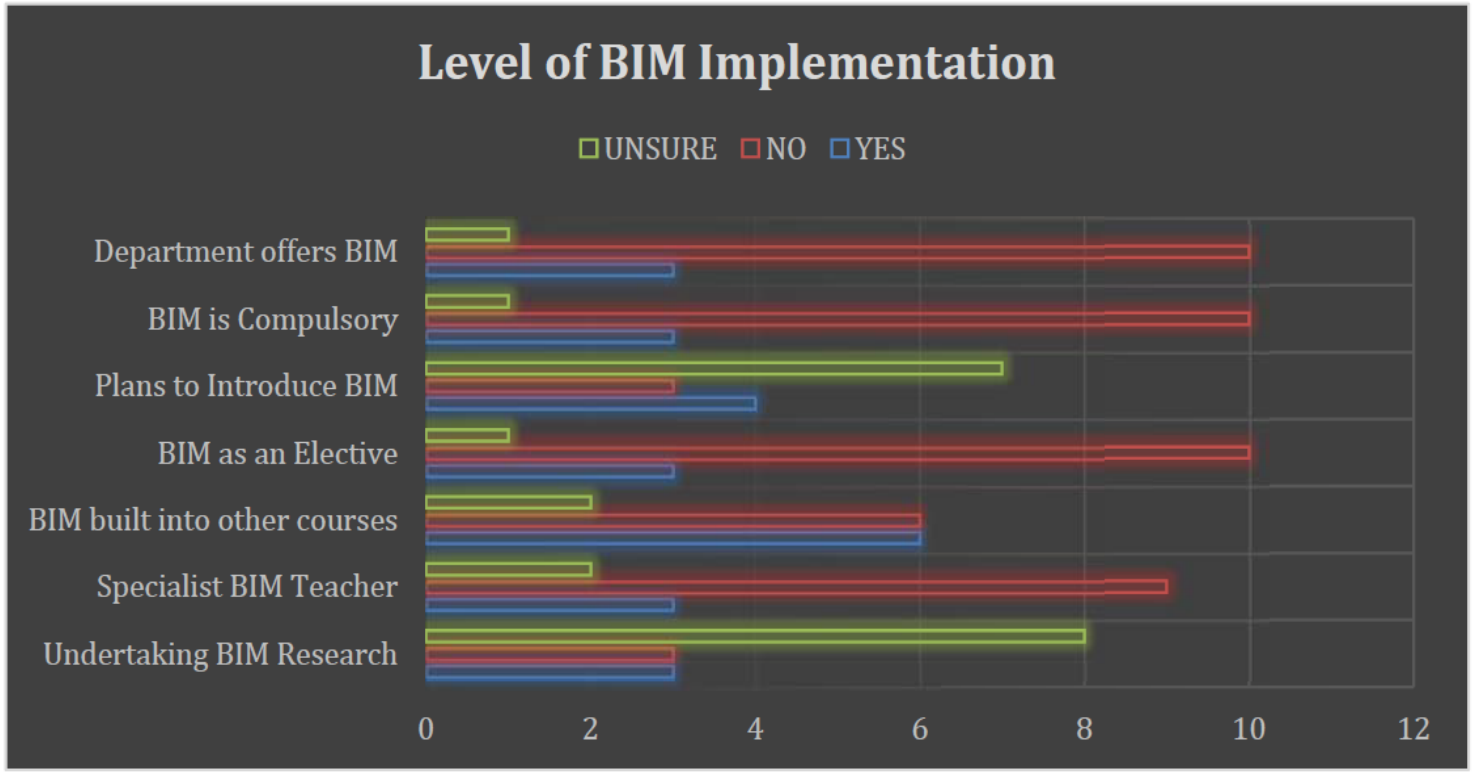
Digital Engineering at Tertiary Level

Study by University of Johannesburg

- Comparative assessment of AEC courses in SA universities vs international.
  - First world countries are already integrating DE into AEC tertiary courses.
  - These efforts are being driven by government and engineering bodies.
  - Assessment of BRICS Countries - China and Russia have national frameworks established. Brazil, India and SA do not have national frameworks.

Digital Engineering at Tertiary Level

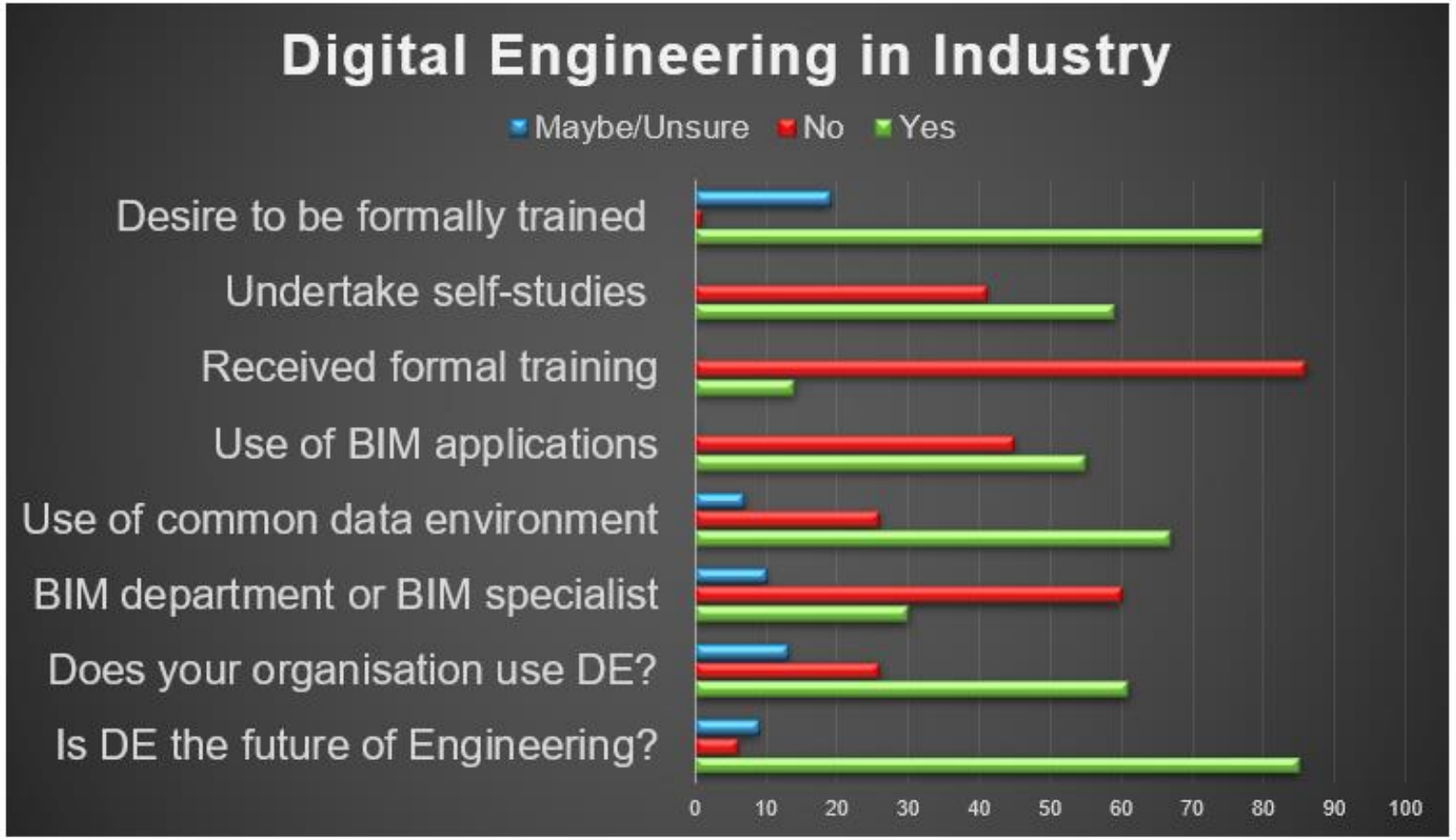
Study by University of Johannesburg



- Source: Pillay, N. Musonda, I. & Makabate, C. *Use of BIM at higher learning institutions: Evaluating the level of implementation and development of BIM at built environment schools in South Africa.*

Digital Engineering at Tertiary Level

Survey Analysis of YPs



Steps a YP can take to move into DE

Move away from traditional engineering methods and transform the way they work by focusing on innovation, efficiency and effectiveness:

- Understand the scope of DE software
- Formal DE training in BIM applications, if available & feasible
- In-house DE training by a proficient DE users
- Self-Study – Online courses, YouTube Videos
- Peer Forums
- Virtual Training
- Learn Architectural Theory

Role of ECSA and VA's

and others…

Closing

- Digital Engineering can no longer be considered futuristic or optional.
- All professionals in AEC industry need to understand what DE is and how it is applied.
- There needs to be a concerted effort in developing DE skills at tertiary level to enable YPs to adapt to DE in practice.
- Public and Private organisations need to create frameworks for progressive engineering to take place.
- ECSA and VA's are vital to our industry's development.

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Thank You!

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