



CESA Technology and Engineering Innovation Forum (TEIF) Digitalisation Webinar

How is Digitalisation transforming the future of the engineering and built environment?

Programme:

1. Opening Remarks:

Facilitator: Sikhulile Nhassengo

CESA Technology and Engineering Forum Chairperson and Director of Maninga Engineering (Pty) Ltd

2. Presentations

Ehsan Saghatforoush, PhD

Associate Professor & School Coordinator for External Engagement, School of Construction Economics and Management, Faculty of Engineering and the Built Environment

Gift Mphefu, PhD

CESA Board Member and Founder and Managing Director of Med-TechEngineers

3. Q&A – 20 minutes

4. Closing Remarks

17 April 2024
12:00–13:30





How is digitalisation transforming the future of the built environment?

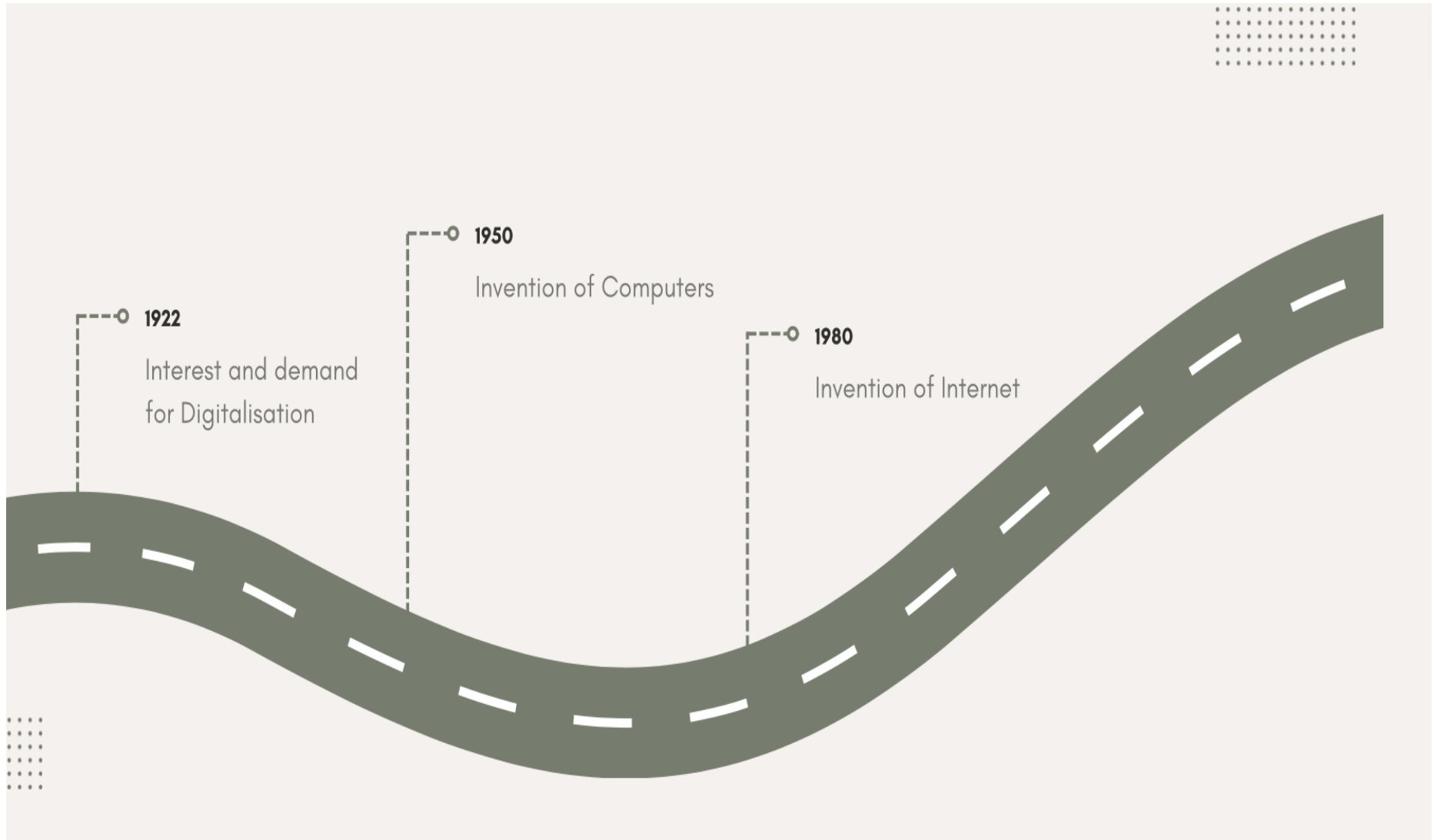
Gift Mphefu

17 April 2024



Presentation Outline

- Tracing the Origins of Digitalisation
- Definitions of Terms
- Categories of Digital Technologies
- Digital Twin
- How is Digitalisation Transforming BE?
- Digitalisation Challenges
- Conclusion



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Definitions of Terms

Digital Technologies

- Sensors
- BIM
- BMS
- IOT
- etc

Digitalisation

- Use of Digital Technologies

Digital Transformation

- Change in Digital Technology Architecture



Four Categories of Digital Technologies

- Modelling and Simulation
 - BIM, Simulation, VR, AR
- Data Processing
 - Data Mining, Blockchain, Semantic Modelling
- Decision Support Enablers
 - ML, Computer Vision
- Data Acquisition
 - IoT, Wireless Sensor Networks, Social Media



Digital Twin



Physical Twin

Digital Twin



Physical Objects

Processes



Systems



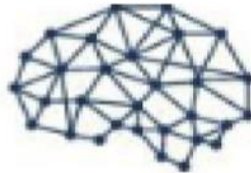
Representative Models



Data Analytics



Data Management



Information and Decision

(Source: Moshood, et al.)

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How is Digitalisation Transforming the BE?

- Buildings (more integrated)
- Flexible
- Energy-efficient
- Smart
- and Sustainable.



Digitalisation Challenges

- High initial cost
- Privacy
- Security risks associated with data breaches
- Cyber-attacks
- Lack of customer awareness
- and skilled workforce



Conclusion

- BE is undergoing a gradual process of digital innovation
- Transformation in work practices and knowledge
- Sustainable environment
- Optimises financial resources
- Need to pay attention to skills development

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Thank you