



## PROJECT SUMMARY

<b>Ref No.:</b> MRIC-PoIGS-21-02	<b>Title:</b> The application of artificial intelligence (AI) and internet of things (IoT) for the improvement of the construction industry
<b>Hosting Institution:</b> Pro-Design Engineering Consultants Ltd/Prodesign Innovation Ltd (Subsidiary of PDEC)	
<b>Collaborating Companies/Institutions:</b>	
<ol style="list-style-type: none"> <li>1. Huawei Technologies (Mauritius) Ltd</li> <li>2. Polytechnics Mauritius Ltd</li> <li>3. Prodesign Software Ltd</li> </ol>	
<b>Innovation Leader</b>	
Mr Vikramsing Bhujun	Pro-Design Engineering Consultants Ltd/ Prodesign Innovation Ltd
<b>Collaborators</b>	
<b>Name</b>	<b>Organisation</b>
Mr Arvish Ramseebaluck	Pro-Design Engineering Consultants Ltd
Mrs Farahnaz Bibi Sairally	Pro-Design Engineering Consultants Ltd
Mr Neelesh Ramseebaluck	Pro-Design Engineering Consultants Ltd
Miss Sarah Marappa-Naiken	Pro-Design Engineering Consultants Ltd
Mr Ian J Valentine	Huawei Technologies (Mauritius) Ltd
Mr Ashish Ramsurrun	Huawei Technologies (Mauritius) Ltd
Miss Nishtee Gopee	Polytechnics Mauritius Ltd
Mr Yamal Matabudul	Polytechnics Mauritius Ltd
Mrs Delvina Mootosamy	Prodesign Software Ltd
Mr Chetanandsingh Chumun	Prodesign Software Ltd

## TECHNICAL ABSTRACT

The Pole's aim is to allow research and development in technological solutions like AI and IoT for the improvement of the construction industry. The concept of Construction 4.0 (digitisation of construction) is becoming more tangible globally and the significance of the Pole will be to investigate how to implement this concept locally based on the methods of procurement and project processes in place in Mauritius. Concepts like AI and IoT in the field of construction is still novel and for their successful application to the sector locally, extensive research will be required, which will be the main role of the Pole. The expected outcomes of the research activities by the Pole will be the implementation of digital tools and innovative approaches when it comes to construction in Mauritius. These will be several benefits to the property developer/owner and all the stakeholders throughout the whole project lifecycle. The application of these emerging technologies has the potential to significantly improve the construction sector, in the understanding of the infrastructure to be built, cost management, effective use of resources, cost and time savings and a more sustainable built environment. Through research and exchange of know-how with established bodies, the Pole will spur innovation among local players which will positively impact the Mauritian construction industry.

The Pole's aim is to allow research and development to improve the performance of the construction industry by using novel digital tools/technologies, mainly Artificial Intelligence (AI) and Internet of Things (IoT).

The main objectives of the Pole shall include:

1. Improving the design of construction projects which will reduce costs, time and improve energy efficiency
2. Reduce construction waste by allowing right first-time installations.
3. Improve construction operations and maintenance by reducing failures and downtime through predictive maintenance practices.

The objectives shall be met by developing a digital twin of an existing building. Outcome and insights of the data analytics from the digital twin shall be used to develop and improve new design methods and standards, energy efficiency benchmarks, construction visualisation and implementation methods and O&M best practices to improve the overall performance of the construction industry.

The activities and findings of the Pole will benefit the whole construction industry, from architects, project managers, designer, contractors, property developers, building owners and their clients. Digitalisation of the various processes mentioned will impact positively the whole value chain. We also aim to create customised software/platform which can interact with commonly available software through the development of APIs so that we can propose a tool that fits the processes of the local construction sector. We are therefore



not only proposing products off the shelf but a solution proper to the local sector and focused on delivering the exact objectives mentioned above.

**Key Words:** Artificial intelligence, internet of things, construction industry