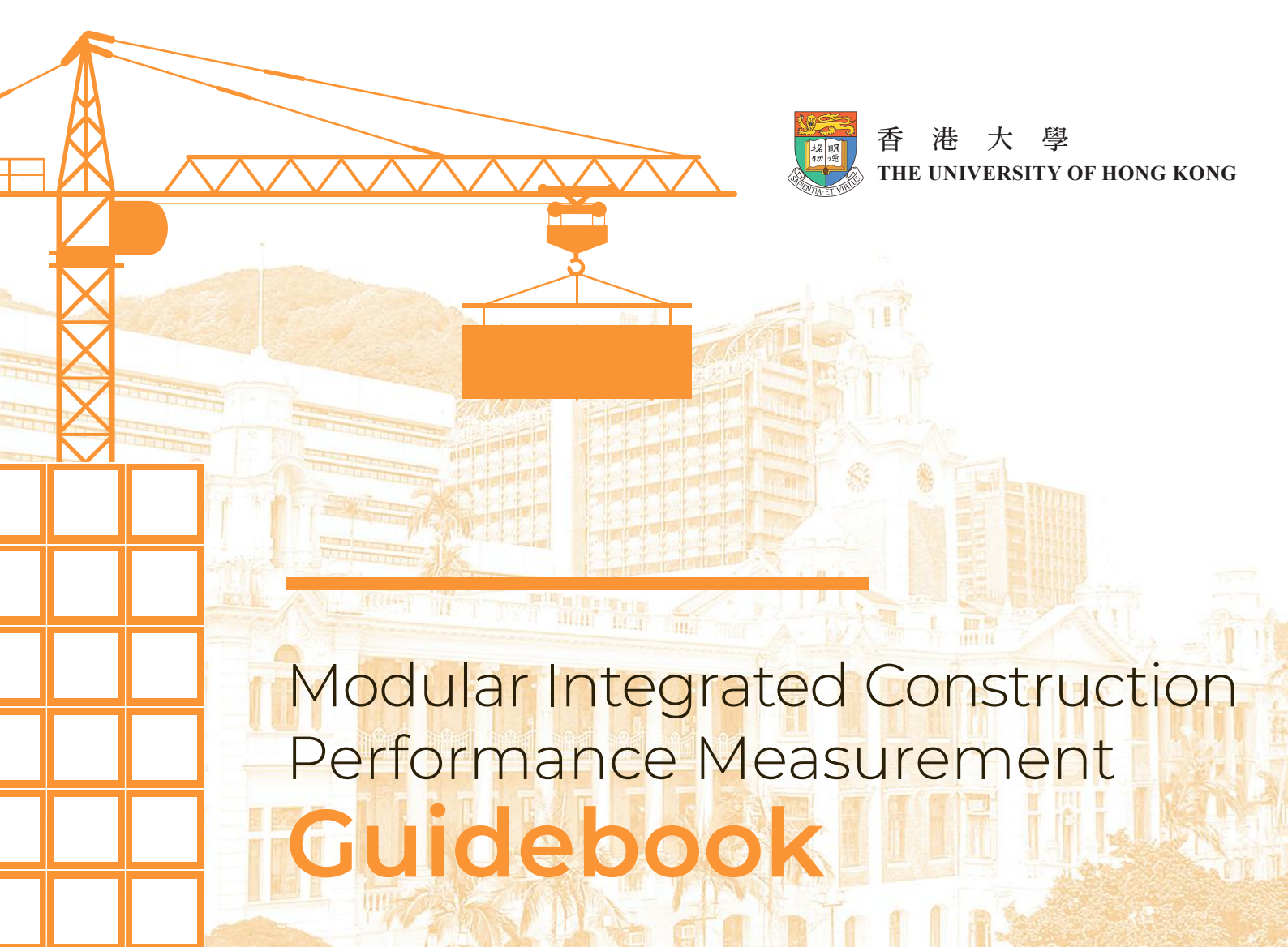




香港大學  
THE UNIVERSITY OF HONG KONG



# Modular Integrated Construction Performance Measurement **Guidebook**



**Wei Pan**

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# Modular Integrated Construction Performance Measurement Guidebook

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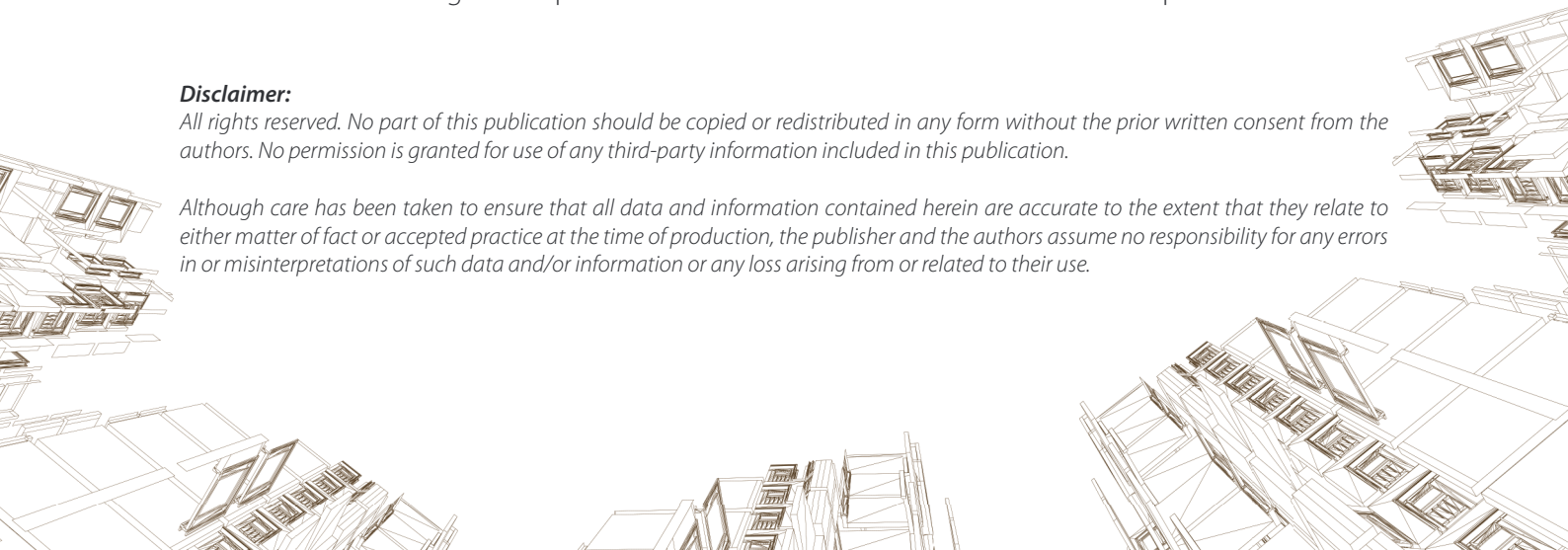
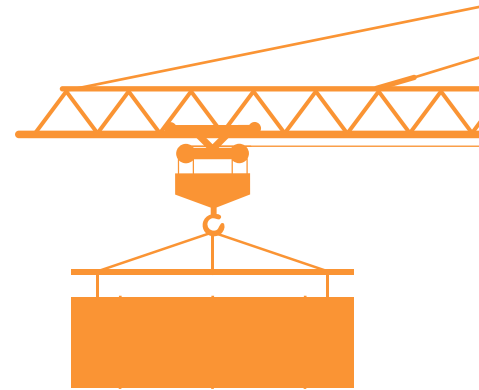
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CICID was established in 2002 and aims to achieve excellence and innovation in construction and infrastructure research. The research topics addressed include modular integrated construction, automation and robotics, industry development, zero carbon building, life cycle assessment, building information modelling, procurement innovations and management, etc. It seeks to continuously drive innovative strategies and practices in construction and infrastructure development.

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# Foreword

It is well recognised that industrialisation can help to improve performance of the construction industry in many areas, including safety, environment, quality, time and cost. Modular Integrated Construction (MiC) is the most advanced form of construction industrialisation. Its application is particularly suitable in Hong Kong where our labour cost is high and labour resource is scarce.

The Construction Industry Council supports the Government's commitment, as announced in the 2018 Policy Address that it will adopt MiC technology in government funded projects wherever feasible.

I commend the Centre for Innovation in Construction and Infrastructure Development (CICID) of The University of Hong Kong for making an effort to compile the MiC Performance Measurement Guidebook, at a time when several pilot MiC projects are being completed in Hong Kong.

The construction industry will benefit for being able to compare systematically the performance in the social, environmental and economic aspects of these pilot projects, against those built by conventional methods. The exercise will provide evidence-based statistics for future improvements.

I am confident that through joint effort of the industry, academia and government, MiC will bring the Hong Kong construction industry to a new height.

**Mr CHAN Ka-kui, SBS, JP**

Chairman  
Construction Industry Council



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# Preface

The construction industries in several developed economies face significant challenges such as labour shortages, an ageing workforce and cost escalation. These challenges hamper the improvement of productivity and sustainability in the construction industry and the built environment. The modular construction approach has been widely adopted worldwide to address these challenges and enhance productivity and sustainability.

In Hong Kong, a new concept ‘Modular Integrated Construction (MiC)’ was based on collaboration between the Centre for Innovation in Construction and Infrastructure Development (CICID) of The University of Hong Kong and the Development Bureau (DEVB) of the HKSAR Government. MiC builds on the modular construction approach but emphasises the integration of advanced manufacturing and production technologies into reengineered building and construction processes. Modularisation carried out with the MiC approach offers a promising opportunity to unleash productive forces, shape production relationships and enhance construction productivity, quality, safety and sustainability.

The concept of MiC was adopted in the Policy Address 2017 of the HKSAR Government as a means for construction innovation. The Policy Address 2018 further promoted the wide adoption of MiC in Hong Kong, and a number of MiC pilot projects have been initiated. Because MiC disrupts the project delivery process compared with conventional construction practices, it is important to systematically understand the performance of projects that adopt MiC. There is thus a need to develop an MiC performance measurement guidebook for project stakeholders to comprehensively measure and effectively benchmark the social, environmental and economic performance of MiC projects to facilitate the wide adoption of modular construction.

This Guidebook draws on a study conducted by the CICID and supported by the DEVB. Also acknowledged are the Project Strategy and Governance Office (PSGO) of the DEVB, Architectural Services Department, Hong Kong Science and Technology Parks Corporation, Yau Lee Construction Company Limited, Hip Hing Construction Company Limited, and individuals for their support and/or participation in the study, as well as China State Construction Engineering (Hong Kong) Limited and Tide Construction for permission to use the included images. We also acknowledge Prof CK Mak and Prof Sam Chan for their advice and Dr Wenting Zhan for assistance with the literature review.

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