創新科技署 Innovation and Technology Commission | INNOHK | 香港科技大學 THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY | HKCRC 香港智能建造研發中心

INNOHK HONG KONG CENTER FOR CONSTRUCTION ROBOTICS

Introduction

The InnoHK Hong Kong Center for Construction Robotics (HKCRC) is a world-leading innovation platform dedicated to advancing smart construction. Established in 2020 under the Hong Kong SAR government's InnoHK initiative, HKCRC is a collaboration between the Hong Kong University of Science and Technology (HKUST) and the University of California, Berkeley.

Led by Professor Li Zexiang from HKUST, HKCRC brings together a team of top global researchers and industry experts, focusing on three core domains: Construction Robotics, Smart Machinery, and Smart Operations and Maintenance.

HKCRC delivers breakthrough technologies that redefine productivity, safety, and sustainability, creating real-world impact across the construction ecosystem.

2020

- HKCRC Established
- Takes up Residence at Hong Kong Science Park

- First Industry Advisory Committee Formed
- First R&D Team Moves into HKCRC

2021

- The First Science and Innovation Training Camp Held

- First HKCRC-HKUST Joint Master's Program Enrolls Students

- Center Selected for InnoHK Project
- Winter Training Camp "Entrepreneurship Trainees" Launched

2022

- Organized Industry Seminar on Intelligent Construction Projects

- InnoHK Innovation Hong Kong Research Platform Launched

- Held the Summer "Dream Building Plan" Technology Innovation Training Camp
- Participated in the Construction Innovation Expo 2022

2023

- Hosted the 2023 China (Chongqing) International Intelligent Construction Industry Conference

- The SkylandX Team Won the Championship at the "Elevator Pitching Competition 2023"
- Collaborated with ROBOCON to Advance Technological Innovation

- Organized Two Training Camps
- Successfully Incubated Three Innovative Companies: SKYLAND INNOVATION, ZOEROBOT, and JBOT

无穹创新 SKYLAND INNOVATION

ZOEROBOT

2024

- Signed a MOU with the Housing Bureau

- Participated in the LEAP technology exhibition in Saudi Arabia, marking the first overseas exhibition of our products
- Awarded the Grand Prize at the Geneva International Exhibition of Inventions, the Red Dot Award, and the Hong Kong Awards for Industries

- Participated in the International Construction Robotics Day, Beijing International Construction Expo, BEX Asia in Singapore, and The Big 5 Global in Dubai, expanding influence both domestically and internationally
- Organized the Hong Kong Future Technology Summit
- Co-organized the 2nd "Future Construction with Intelligent Innovaiton" Construction Robotics Competition
- Co-organized the Winter Training Camp
- The Center was successfully renewed
- Successfully incubated two innovative companies : Insight Technology and Beaver Intelligence

ENSIGHTFUL 見地科技有限公司

河狸智造

2025

- Organized a "Martial Arts Competition" or construction robots with the Housing Bureau

- Signed cooperation agreements with Zhejiang Construction Engineering Machinery Group Co., Ltd. and other institutions
- Participated in major exhibitions including the Consumer Electronics Show (CES) in the United States, GITEX ASIA 2025 in Singapore and UK Construction Week

- Successfully organized the Smart Construction Summer Training Camp and Winter Mini Camp

- The AI Tower Crane System has Honored at CIC Innovation Award.

- Successfully incubated the innovative startup: CraneR Technology

CraneR 可越科技有限公司

To Become the Innovation Engine for Smart Construction

30+
Domestic & International Awards

40+
Patents

15+
Products

Our Team

Center Director

Prof. Zexiang LI IEEE Fellow

- Colin Yam Ko Yin Professor of Engineering, HKUST
- Professor, Department of Electronic and Computer Engineering, HKUST
- Co-founder of DJI, QKM, ePropulsion, etc.
- IEEE Robotics and Automation Award · 2019
- Founder of XbotPark
- Founder and Dean of Shenzhen InnoX Academy

Interdisciplinary Excellence

A team of experts from diverse academic and professional fields

International Background

Advanced degrees from top-tier institutions worldwide

Research-Driven Innovation

Strong R&D capabilities supported by a high proportion of technical talent

Master's
Degree holders
30%

Doctorate
Degree holders
26%

R&D Staff
85%

Xbotpark System

Incubated Companies 160+

Unicorn Companies 6

Survival Rate 80%

Tech Companies 100%

Direct Drive Tech 本体科技

HAI ROBOTICS 海柔创新

CiDi 希迪智驾

OBSBOT

SwitchBot

云鲸 NARWAL

LiberLive

AGILE·X

Homeria 霍曼·家庭智能

Home

Construction

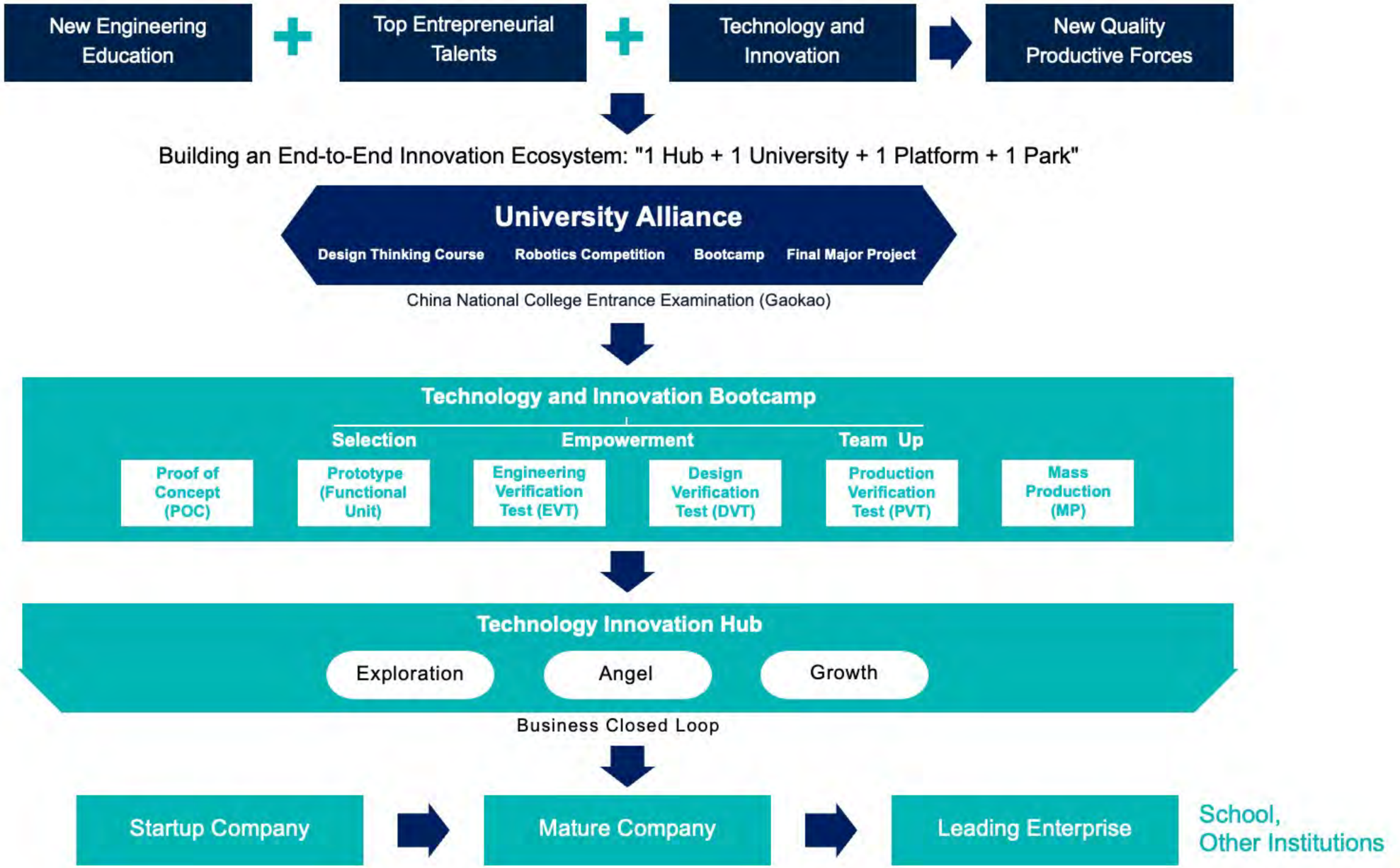
Mobility

Manufacturing

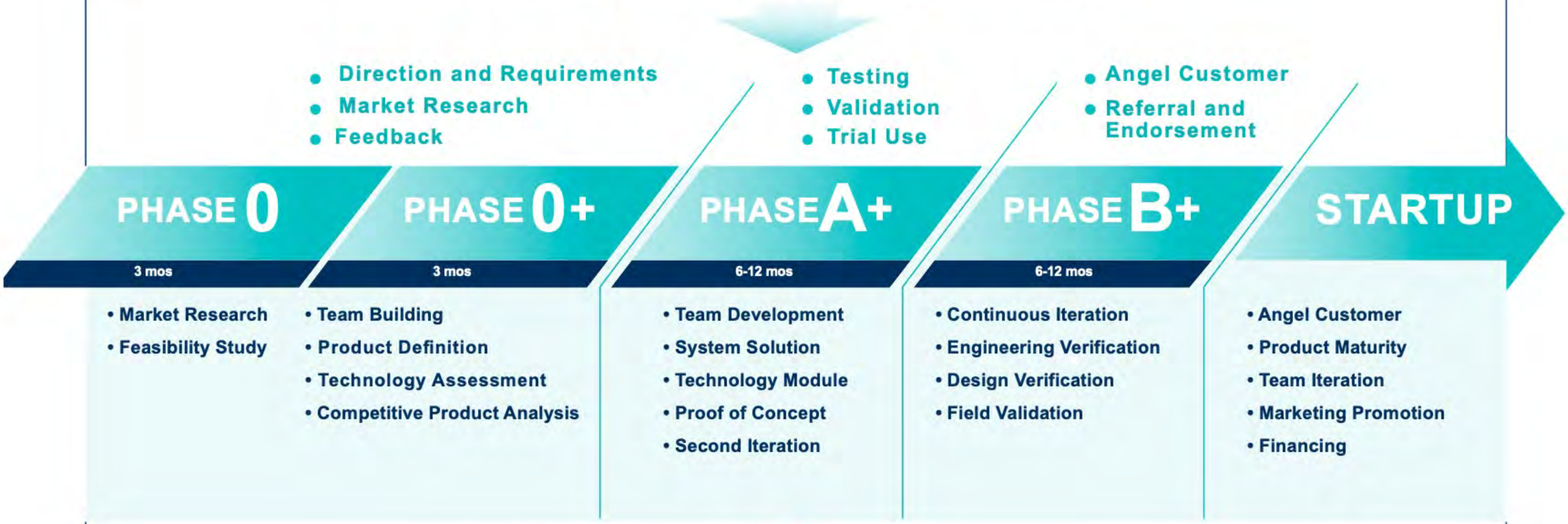
Agriculture

Health

"Education, Talent, and Technology" Mechanism and System Integration Reform



Industry Resource Empowerment



HKCRC Empowerment

- **Methodology**
  - Design Thinking
  - User Interview
  - Pain Point Discovery
  - User Journey Map
  - Product Definition
- **Research Scenarios**
- **Industry Users**

- **Team Formation**
  - Talent Matching
- **R&D Support**
  - Technical Support
- **Supply Chain Support**
  - Shared Factory
- **Testing Site**

- **Angel Users**
  - Data Collection, Testing, Feedback
- **Brand Promotion**
  - Promotional Materials, Media Exposure
- **Marketing Promotion**
  - Exhibition Debut, Industry Resources

- **Company Registration**
- **Business Plan**
- **Angel Fund**
- **Financing Matchmaking**
- **Preferential Policies**

Product Portfolio

Construction Robotics

- Rebar Tying Robot RBTS1
- Construction Material Transportation Robot
- ALC Panel Installation Robot
- Deepening Design System
- Construction Inspection Robot
- Water Tank Cleaning Robot

Smart Operation and Maintenance

- Compact Handheld 3D Laser Scanner)
- AI Stereo Vision Measurement Device
- Close-Range AI Stereo Camera
- IoT Smart Flatness Meter
- IoT Smart Inclinometer
- Drone-Based Intelligent Inspection System
- AI-Powered Home Renovation Service

Smart Machinery

- AI Tower Crane System
- Autonomous Solutions for Construction Machinery

USA

UAE

Chinese Mainland

Hong Kong SAR (China)

Malaysia

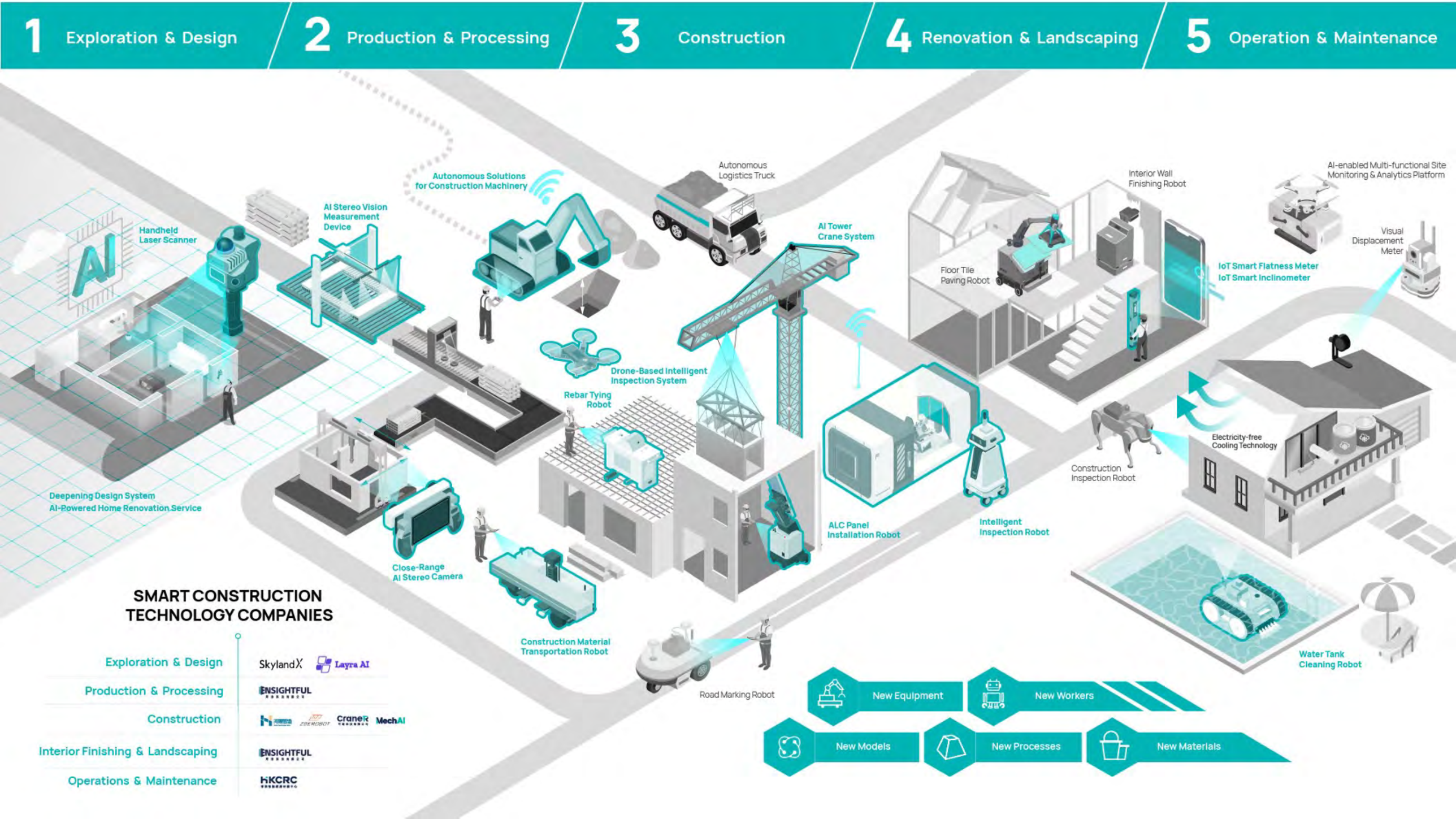
Singapore

300+

PROJECTS

100+

PARTNERS


1 Exploration & Design
2 Production & Processing
3 Construction
4 Renovation & Landscaping
5 Operation & Maintenance
Handheld Laser Scanner
AI Stereo Vision Measurement Device
Autonomous Solutions for Construction Machinery
Autonomous Logistics Truck
AI Tower Crane System
Drone-Based Intelligent Inspection System
Rebar Tying Robot
Deepening Design System
AI-Powered Home Renovation Service
Close-Range AI Stereo Camera
Construction Material Transportation Robot
Road Marking Robot
ALC Panel Installation Robot
Intelligent Inspection Robot
Floor Tile Paving Robot
Interior Wall Finishing Robot
AI-enabled Multi-functional Site Monitoring & Analytics Platform
IoT Smart Flatness Meter
IoT Smart Inclinometer
Visual Displacement Meter
Electricity-free Cooling Technology
Construction Inspection Robot
Water Tank Cleaning Robot
SMART CONSTRUCTION TECHNOLOGY COMPANIES
Exploration & Design
Production & Processing
Construction
Interior Finishing & Landscaping
Operations & Maintenance
SkylandX
Layra AI
ENSIGHTFUL
CraneR
MechAI
HKCRC
New Equipment
New Workers
New Models
New Processes
New Materials

河狸智造
Castor Construction Robotics
Spin-off Company

Rebar Tying Robot RBTS1

The Rebar Tying Robot RBTS1 is specifically designed for various flat rebar-tying applications across multiple construction sectors. This robot excels in residential construction projects, infrastructure development (including roads, bridges, and tunnels), commercial complexes, medical facilities, dam construction, and industrial plants. Equipped with an autonomous recognition and positioning system, automatic obstacle avoidance, and intelligent track-switching technology, it efficiently completes large-scale rebar-tying tasks in the central areas of reinforcement grids.

Official Site
https://www.castorobot.com/

The 49th International Exhibition of Inventions of Geneva: Gold Medal with Congratulations of the Jury

Rebar Tying Robot RBTS1

Features

Automatic Tying

Automatic Identification

Automatic Obstacle Avoidance

Automatic Obstacle Avoidance

Scope of Application

- Residential Construction Projects
- Roads, Bridges, Tunnels
- High-Speed Railway Box Girder Precast Plants Underground Facilities
- Hydropower and Water Conservancy Engineering
- Marine / Offshore Engineering
- Grain Storage Structure Construction

Product Parameters

Weight	39kg	Battery Life	8h
Size	730*330(800)*570mm	Adapted Rebar Spacing	100-300mm
Efficiency	500 nodes/h	Adapted Rebar Size	6-32mm

Application

ZOEROBOT
Spin-off Company

Construction Material Transportation Robot

Developed by ZOEROBOT, an HKCRC-incubated company, the Construction Material Transportation Robot enables horizontal transfer of building components and supports vertical transportation via construction elevators, offering intelligent solutions that reduce labor intensity and improve operational flexibility.

Official Site https://www.zoerobot.com/

Features

- Obstacle Crossing
- Wi-Fi Remote Control
- Integrated Safety Protections

Product Parameters

Weight	1200kg
Size	1600*1200*1800 mm
Maximum Load	600 kg
Applicable wall panle sizes	3-6(m)
Battery Life	8h

WEBSITE

ZOEROBOT
Spin-off Company

ALC Panel Installation Robot

The ALC Panel Installation Robot handles multi-hundred-kilogram panels through intelligent pickup, positioning, and alignment processes, enabling single-operator installation of 3-6m prefabricated interior walls with minimized crew requirements and a 60% streamlined workflow.

Official Site https://www.zoerobot.com/

Features

- **Automatic Grabbing**
- **Wi-Fi Remote Control**
- **Flexible and Stable**

Product Parameters

Weight	880kg
Size	880*989*1360mm
Maximum Load	300 kg
Applicable wall panle sizes	2-3.2(m)
Battery Life	8h

WEBSITE

Deepening Design System

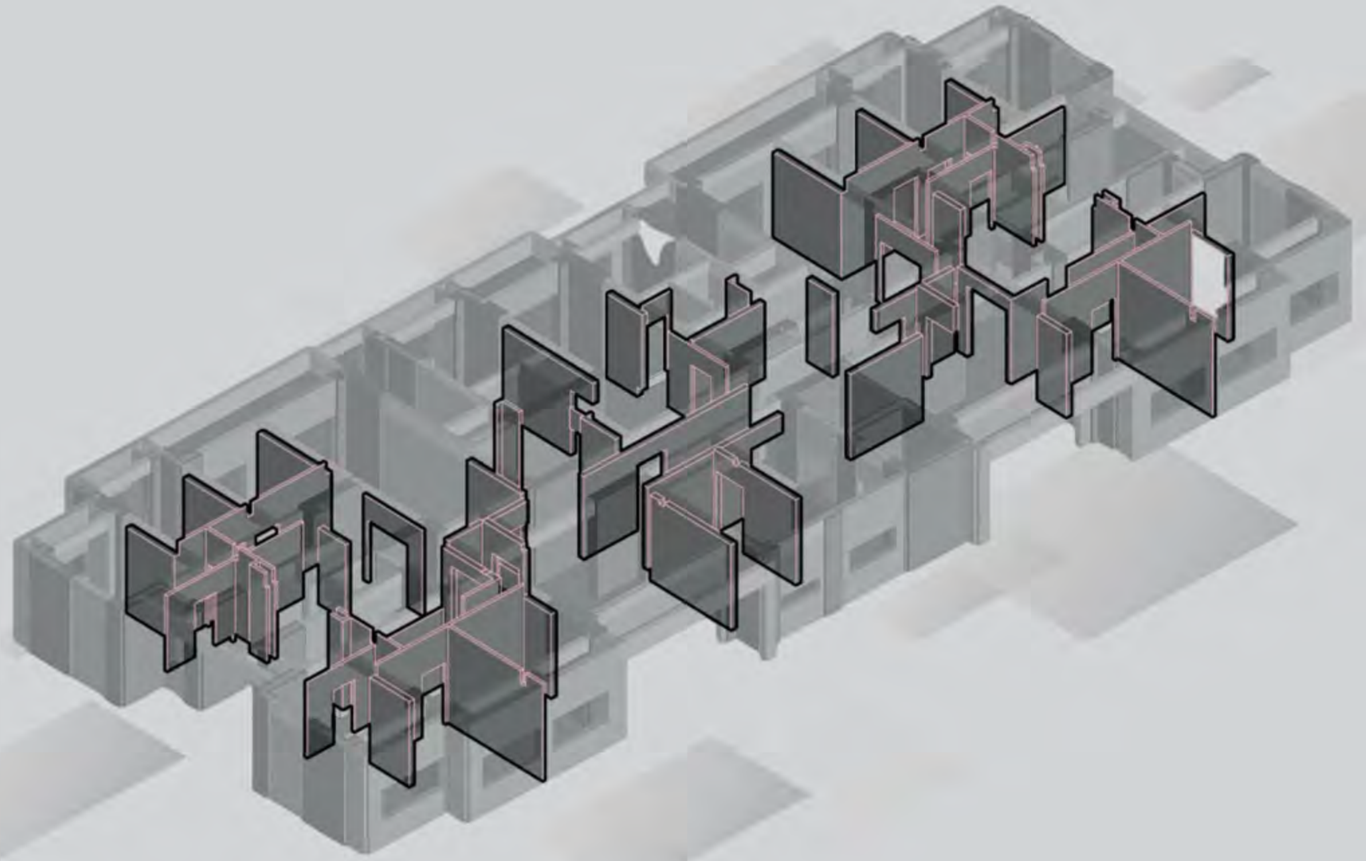
The Deepening Design System is capable of automatically performing tasks such as CAD drawing recognition, structural information analysis, detailed drawing generation, lightweight 3D model creation, production data import, and construction plan generation. Compared to traditional manual detailing, this system significantly improves design efficiency and precision through its independently developed intelligent algorithm.

Features

Design, segmentation, drawing, and quantity takeoff for every 1,000 wall panels takes only 5 minutes.

Drawing recognition accuracy exceeds 99%.

Simultaneous output of floor plans, elevation views, quantity takeoff lists, 3D models, and construction planning.



Construction Inspection Robot

The Construction Inspection Robot is an advanced, AI-powered solution designed to enhance the inspection and verification processes in modern building environments. Equipped with intelligent detection capabilites, the robot autonomously identifies and assesses building services (BS), and indoor air quality (IAQ).

Functions

- AI-Powered Detection
- Indoor Air Quality (IAQ) Monitoring
- Tablet-Controlled Task Assignment
- Autonomous Navigation
- Remote Control Capability
- Automatic Obstacle Avoidance
- Slope Climbing Ability (up to 10°)
- 3D Point Cloud Reconstruction
- IAQ Reports and Building Services Reports

Water Tank Cleaning Robot

The Water Tank Cleaning Robot is specifically designed for cleaning water storage tank, it replaces workers who would enter confined spaces to perform cleaning tasks. The robot features AI for contamination detection, autonomous navigation, brushing, suction, high-pressure rinsing, and disinfection. It enhances occupational safety and health level, reduces manpower, costs, and improves operational efficiency.

Functions

- Cleaning Function
- Dirt Suction Function
- Spraying Function
- Obstacle Avoidance Function
- Monitoring Function
- Dirt identification & Work Recording
- Return to Start Point
- Lighting Function
- Robot status display
- Parameter Settings
- Remote control mode
- Automatic Mode

The 51th International Exhibition of Inventions of Geneva:

Gold Medal

AI Tower Crane System

The AI Tower Crane System can be applied in various fields such as construction, ports, logistics, and industrial manufacturing. It features core functionalities such as remote control lifting, AI stable hook, AI-based safety monitoring, and AI-assisted route planning. By integrating embodied intelligence and artificial intelligence technologies, it constructs a comprehensive environmental perception and autonomous decision-making system, achieving a breakthrough upgrade in Tower Crane operations.

Reports on related News

無綫新聞

news.gov.hk 政府新聞網

星島頭條

大公文匯

hket 香港經濟日報

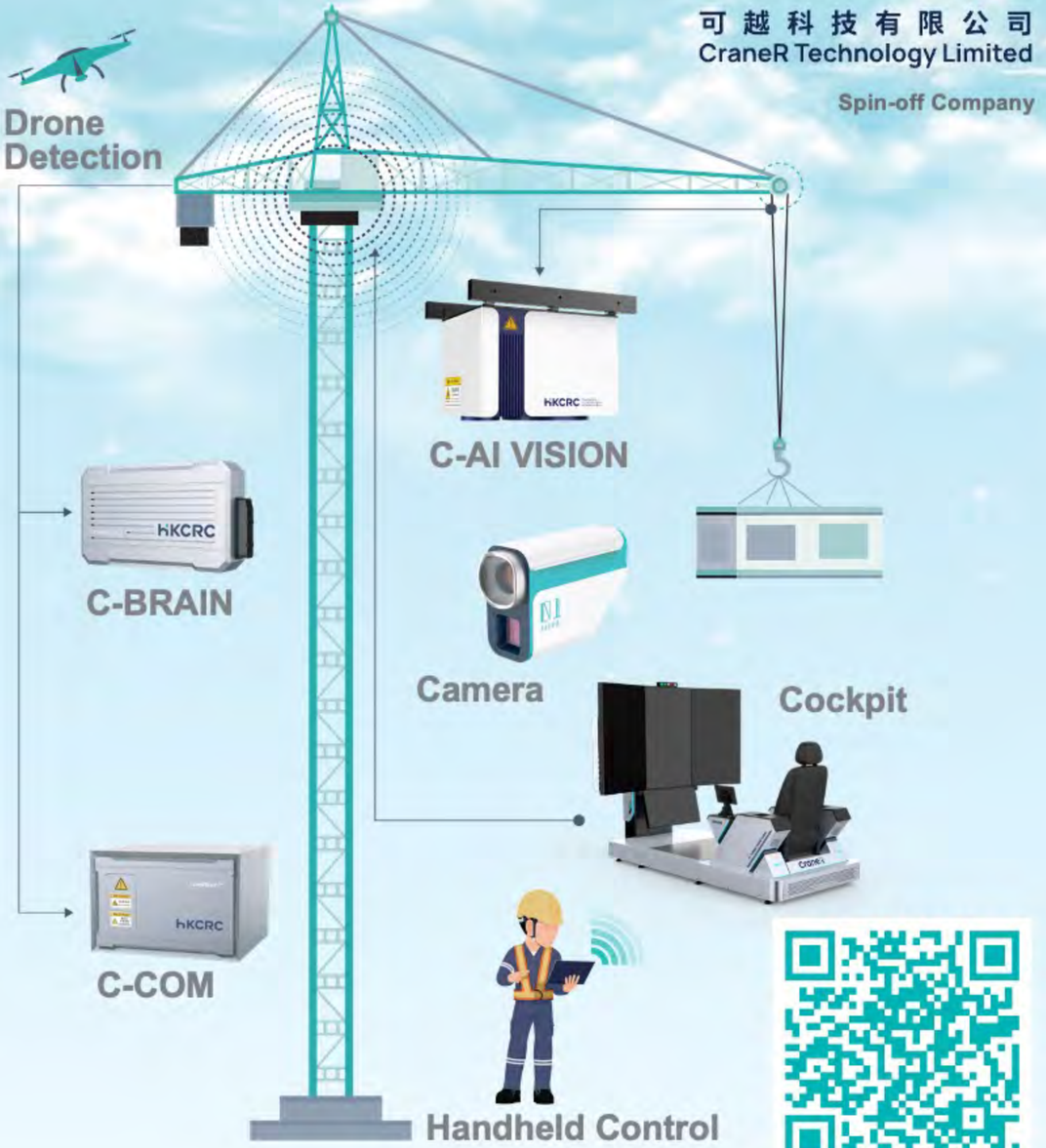
The 49th International Exhibition of Inventions of Geneva: Gold Medal

CIC Innovation Award 2025 the Second Prize in the "Local Construction Safety" category

CraneR
可越科技有限公司
CraneR Technology Limited
Spin-off Company

Advantages

- Operational Safety
- Labor Optimization
- Efficiency Improvement
- Smart Data Management



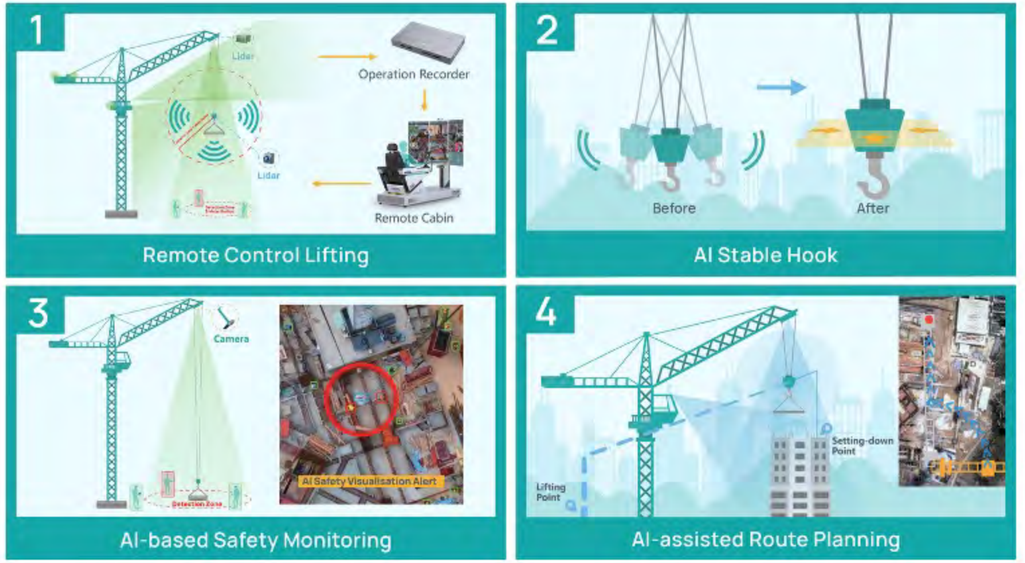
AI Tower Crane System

Remote Cockpit

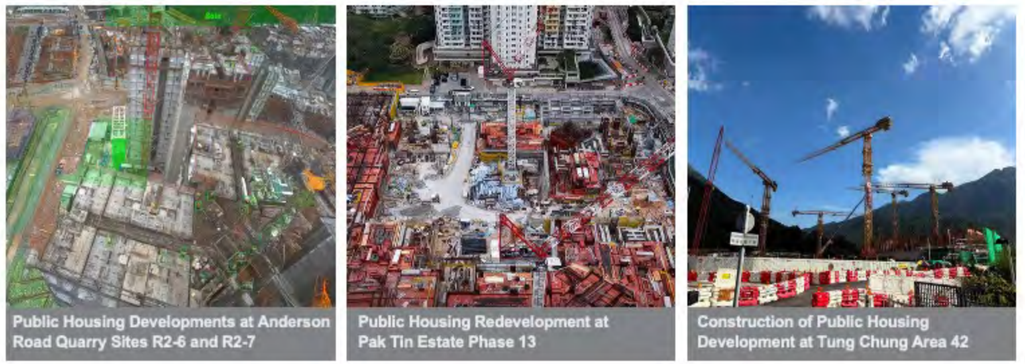
Operating Device

CMP (Central Management Platform)

Functions



Application Cases



Public Housing Developments at Anderson Road Quarry Sites R2-6 and R2-7

Public Housing Redevelopment at Pak Tin Estate Phase 13

Construction of Public Housing Development at Tung Chung Area 42

Autonomous Solutions for Construction Machinery

MechAI's mission is to transform traditional construction machinery into Intelligent Unmanned Systems, addressing critical challenges in mining, civil engineering, and related industries.

1. Remote Control

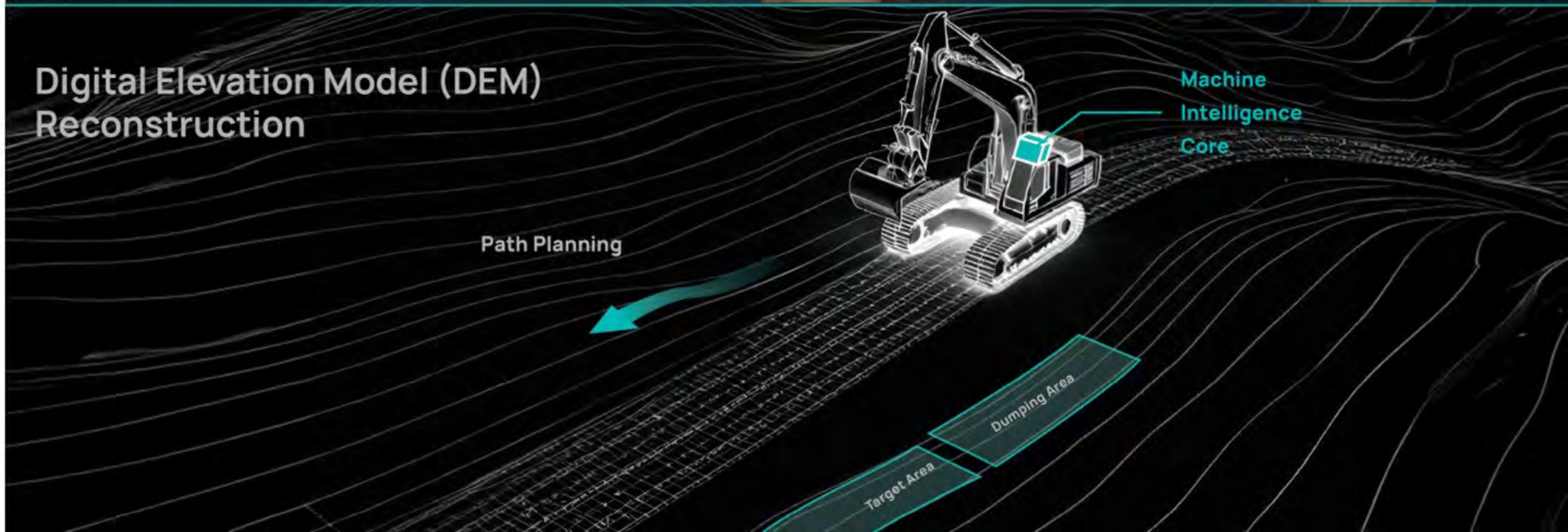
Quickly transforms construction machinery into a remotely controllable unit, equipped with a sophisticated video transmission system that allows operators to understand the site conditions in real-time, ensuring safe and efficient operation.

2. Autonomous Driving

The intelligent controller can receive commands from operators and interact using schematics to automatically complete designated tasks, significantly enhancing work efficiency and reducing human errors.

3. Guidance System

MechAI's guidance system assists operators in accurately understanding the current position, state, and excavation depth, enabling them to precisely complete their tasks and improve operation accuracy.



Autonomous Solutions for Construction Machinery

Scope of Application

Hazardous Zone Operations

Mining

Construction

Emergency Rescue

SkylandX
Spin-off Company

Metacam Air

The Metacam Air is a compact handheld 3D laser scanner developed by Skyland Innovation, an HKCRC-incubated company. The device seamlessly integrates two high-resolution color cameras, 360°Lidar and RTK. It delivers real-time preview and generation of centimeter-level precision color point clouds, enhancing scanning efficiency. Engineered with an aircraft-grade aluminum shell and a Magsafe design, Metacam Air guarantees heightened stability and convenience during operation.

Features

High Integration
(Weighing only 680g)

Scanning like capturing a 3D video

Exquisite design for efficient capture

User-friendly interaction and convenient operation

Applications

WEBSITE

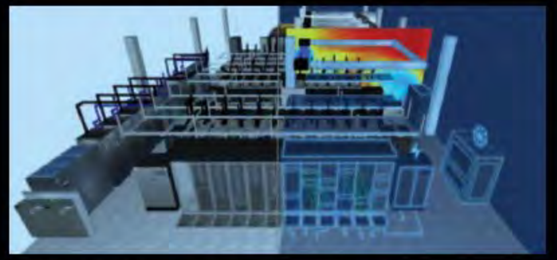
Metacam Air

Point Cloud Visualization

Scope of Application

Geo-information surveying and mapping

Architectural engineering and construction (AEC)



Digital twins

Virtual tourism and entertainment

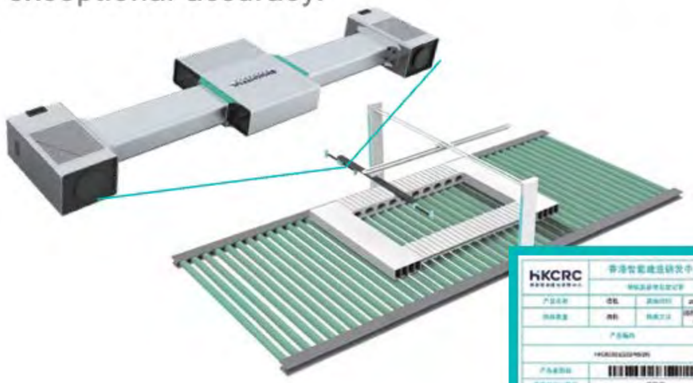
Product Parameters

Weight	680g(Without battery) 1010g(With battery)
Size	298*105*104mm (With battery)
	133*105*104mm (Main Scanner)
Battery Capacity	3150mAh
RTK Accuracy	Flat 0.8cm+1ppm
Elevation	1.5cm+1ppm
Point Cloud Format	.las
Point Cloud Density	200,000/s

ENSIGHTFUL
見地科技有限公司
Spin-off Company

AI Stereo Vision Measurement Device

The AI Stereo Vision Measurement Device is a high-precision device designed specifically for modular construction (MiC) factories. Through advanced stereo visual inspection technology and multi-sensor fusion, it automatically identifies the object under inspection and swiftly detects critical parameters such as flatness, parallelism, and dimensional deviations with exceptional accuracy.



Full Inspection and Archiving

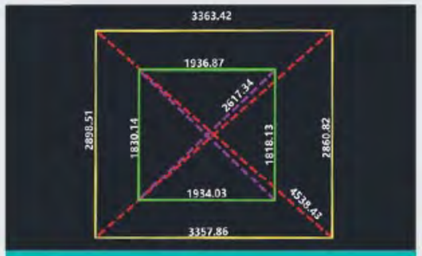
Automatic Inspection
Export Tables and Print

AI Stereo Vision Measurement Device

Usage Process

1 Import Data

2 Automatic Capture



3 Automatic Recognition

4 CAD Comparison

5 Automatic Inspection

序号	检查项目	检查结果	检查差值	合格标准及允许偏差
1	构件高度	1929.58	1.37	(0, 5)
2	构件宽度	1824.83	1.37	(0, 5)
3	构件对角线	2.79	2.79	△≤5.0
4	构件面积	2441.23	1.37	(0, 5)
5	孔洞直径	2295.24	1.37	(0, 5)
6	外墙是否平行		是	

6 Print Results

Application

Product Parameters

Measuring Length (Single Device)	0-4.5m	Working Capture Distance	4m
Measurement Accuracy	±2mm	Lateral Resolution (at 4m Working Distance)	0.7mm
Product Weight	4.6kg	Product Dimensions	1000*1600*90mm

Close-Range AI Stereo Camera

The Close-Range AI Stereo Camera, a high-precision visual device optimized for handheld operation. Featuring a lightweight design, it integrates compact-baseline stereo vision and edge AI technology, condensing the detection capabilities of a professional laboratory into the palm of your hand. It delivers effortless, high-precision measurements directly on the factory floor or construction site.

Front

Back

ENSIGHTFUL
見地科技有限公司
Spin-off Company

IoT Smart Flatness Meter

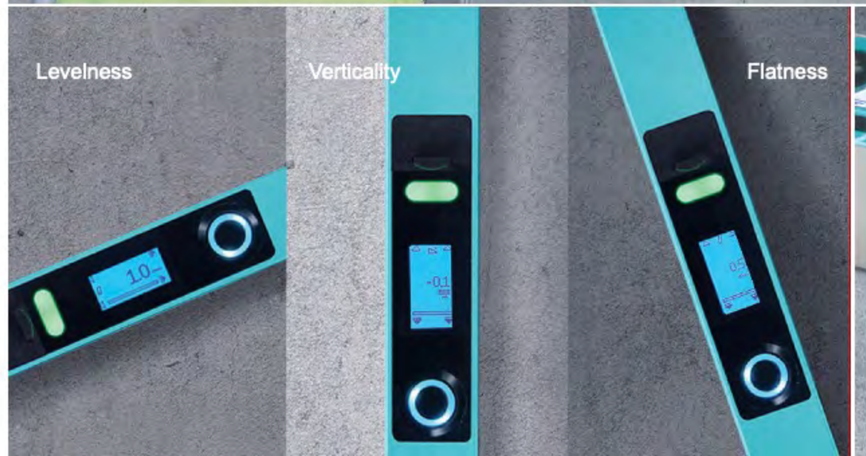
The IoT Smart Flatness Meter has the function of measuring flatness, levelness and verticality. Through multi-sensor fusion technology, it measures flatness with high efficiency and high precision. With APP data management system, it can record data and export tables with one click, and the whole process does not require handwriting.

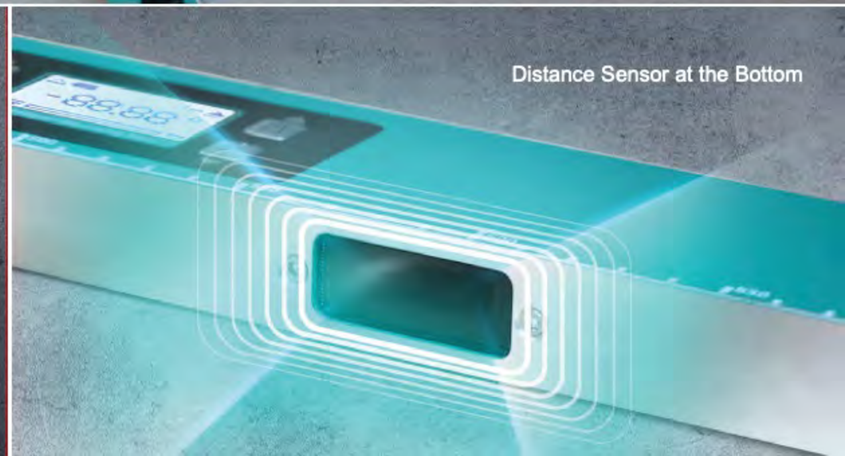
reddot
Red Dot Award:
Design Concept

ENSIGHTFUL
見地科技有限公司
Spin-off Company

Features

- Flatness, Levelness, and Verticality in Single Measurement
- No Feeler Gauge Required Efficiency Improved by 55%
- Hands-free Note Taking
- 5,200 times Measurement when fully charged
- APP data management





IoT Smart Inclinometer

Through self-developed algorithms, IoT Smart Inclinometer can measure the angle and slope. It has dual sided digital screen. Cooperating with the APP data management system, you can record data and export tables quickly, and handwriting is not required.

ENSIGHTFUL
見地科技有限公司
Spin-off Company

Features

- Read Data Conveniently with Digital Screen
- Hands-free Note Taking Recording
- 5,200 times Measurement When Fully Charged

APP data management

ENSIGHTFUL
見地科技有限公司
Spin-off Company

Drone-Based Intelligent Inspection System

The Drone-Based Intelligent Inspection System enables efficient and accurate detection of facade defects. Equipped with high-resolution visual modules and AI recognition algorithms, the system automatically identifies cracks, water leakage, and hollowing, significantly reducing manual labor while enhancing inspection efficiency and safety. It is ideal for high-rise buildings, aging residential blocks, and complex curtain walls—paving the way for digital and intelligent building maintenance.

Features

High Accuracy
Utilizes AI-powered recognition to accurately detect

Enhanced Safety
Minimizes the need for manual inspection at heights

Operational Efficiency
Automates the inspection process

Wide Applicability
Adaptable to various building types

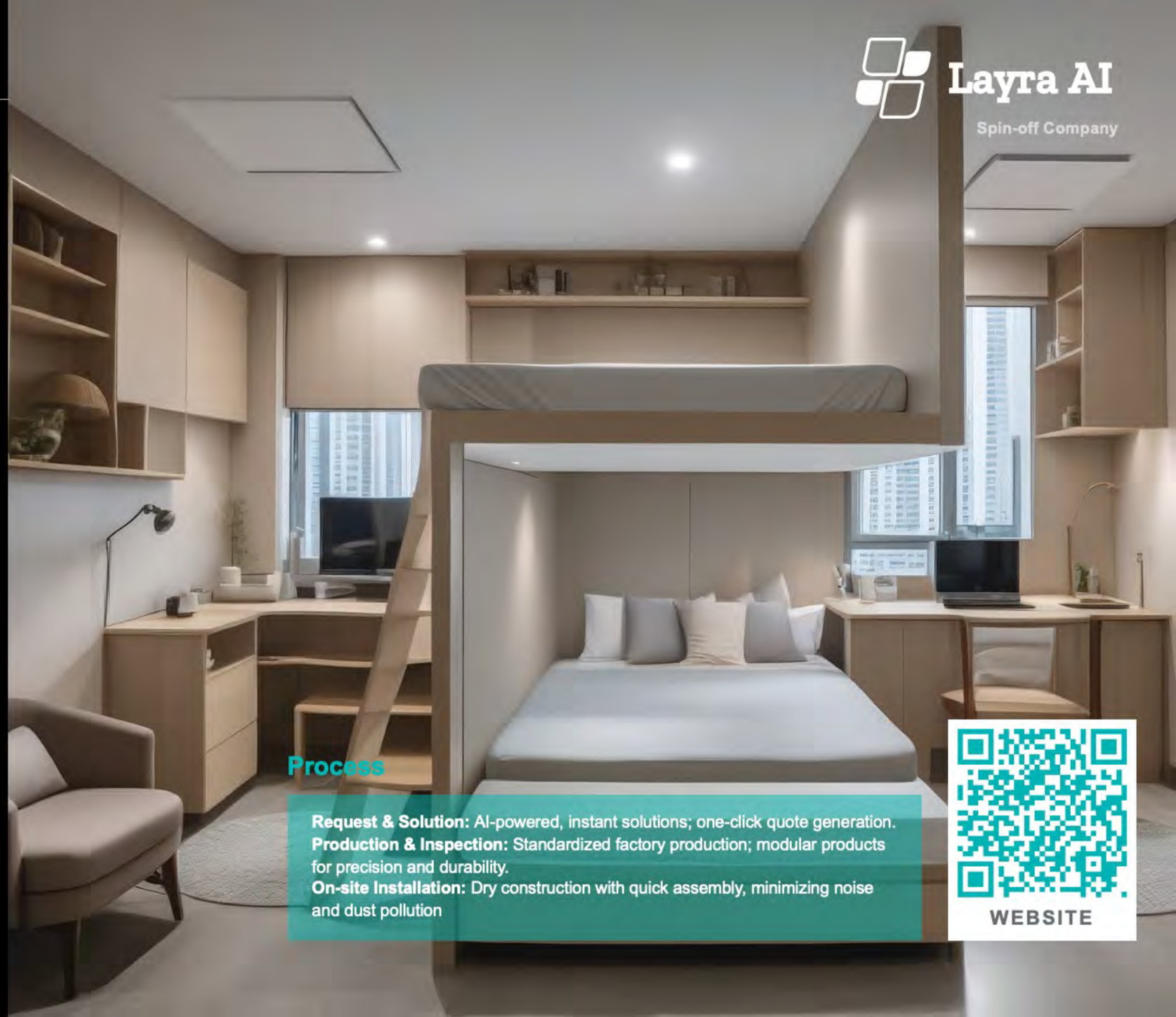
Layra AI

Layra is an all-in-one AI-powered home renovation service that covers every stage from design to construction. Leveraging generative AI technology, Layra delivers modular home solutions with fully automated workflows. This approach ensures more personalized interior designs, easier future modifications, and a more environmentally friendly process overall.

Official Site Layra AI - Leading AI Interior Design Platform

Features

- AI-optimized Layout Furniture arrangement boosts perceived space by 50%
- Rule-based AI Algorithm Generates multiple plans in 30 seconds
- Modular Design Replacement for maintenance or style updates
- Dry Construction Assembly reduces cutting, waste, noise, and dust



Layra AI

Spin-off Company

Process

Request & Solution: AI-powered, instant solutions; one-click quote generation.
Production & Inspection: Standardized factory production; modular products for precision and durability.
On-site Installation: Dry construction with quick assembly, minimizing noise and dust pollution

WEBSITE

Modes of Collaboration & Partners

Technology Licensing
- Intellectual property and patent licensing
- Technology Transfer

Customized Development
- On-demand solution design and development
- Design-to-Delivery Project Support

Collaborative Research Projects
- Cross-Country and Regional Cooperation ? in University Research Projects
- Data Analysis and Experimental Validation

Training and Consulting
- New engineering education and training
- Technology Innovation Bootcamp cooperation

Housing Bureau
The Government of the Hong Kong Special Administrative Region of the People's Republic of China

建築署
Architectural Services Department

機電工程署
EMSD

CONSTRUCTION INDUSTRY COUNCIL
建造業議會

香港科技大學
THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

UC Berkeley

中國建築國際集團有限公司
CHINA STATE CONSTRUCTION INTERNATIONAL HOLDINGS LIMITED
(於開曼群島註冊成立之有限公司)
(Incorporated in the Cayman Islands with limited liability)

華營建築有限公司
CR CONSTRUCTION COMPANY LIMITED
浙建集團

瑞安建業
SOCAM DEVELOPMENT

上海浦东发展〔集团〕有限公司
SHANGHAI PUDONG DEVELOPMENT (GROUP) CO.,LTD.

新鴻基地產
Sun Hung Kai Properties

vanke 万科

Spin-off Companies

SkylandX

ZOEROBOT

河狸智造
Castor Construction Robotics

ENSIGHTFUL
見地科技有限公司

CraneR
可越科技有限公司

MechAI

Layra AI

HKCRC Hong Kong Center for Construction Robotics 香港智能建造研發中心

Hong Kong SAR, (China)	Nickl Lyu	nicklyuu@ust.hk	+852 6880 9321
Chinese Mainland	Yonggang Li	lyg@ust.hk	+86 13805420963
Other Contacts	infohkcrc@ust.hk	+852 2356 3132	+852 2356 3133
Address	Units 808 to 813 and 815, 8/F, Building 17W, Hong Kong Science Park Pak Shek Kok, New Territories, Hong Kong