

CONSTRUCTION SAFETY WEEK 2022 CONFERENCE

# Improving Construction Safety with MiC Construction, Safety Culture Enhancement & Smart Technology



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## MiC Construction

Preface  
MiC Construction Method  
Advantages



## Enhancing Safety Culture

Preface  
Top Management Commitment  
Standard Alignment  
Worker Involvement



## Smart Technologies

BIM Safety Simulation  
XenseGate – A.I. Access Control System  
XensePath – UWB Anti-collision System  
Hololens  
Portable Rope Monitoring Machine



# Enhancing Safety Culture

- Preface
- Top Management Commitment
- Standard Alignment
- Worker Involvement



ENHANCING SAFETY CULTURE

Preface

***ENGINEERING KNOW SAFETY  
SAFETY KNOW ENGINEERING***

***Working Together Hand by Hand***

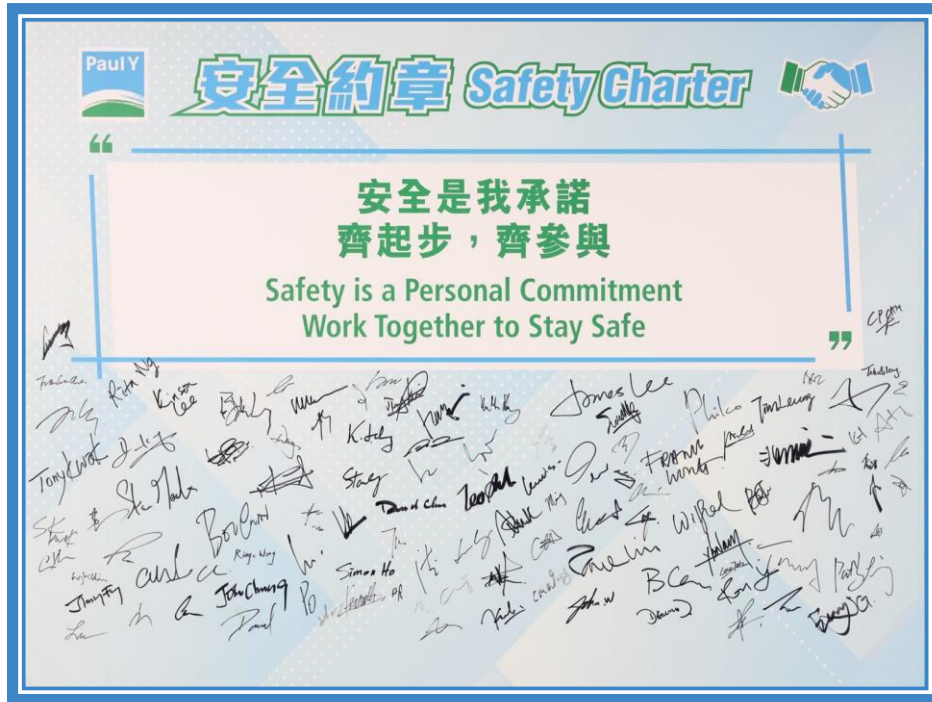


知識改變命運  
知識改變跨代貧窮  
知識亦可改變安全文化



## ENHANCING SAFETY CULTURE

### Top Management Commitment



Safety Charter cosigned and committed by  
Top Management Staff



# ENHANCING SAFETY CULTURE Top Management Commitment



*Safety Leader Banner*





ENHANCING SAFETY CULTURE

## Standard Alignment - Management Training



*Top Team Alignment  
Safety Workshop*

*Frontline Training &  
Safety Inspection  
Workshop*



# ENHANCING SAFETY CULTURE

## Standard Alignment - High-Risk Training

### Regular Webinar



### 地盤內主要高風險及臨時結構的監管項目

工序			
*1	Falsework/ Formwork 搭拆臨時支架/模板	*8	Erection, alternation & dismantling of Crane 起重機安裝,更改或拆卸
2	Loading Platform 搭拆大型負重鐵台	*9	Erection, alternation & dismantling of Tower Crane 天秤安裝,更改或拆卸
3	Excavation & Lateral Support 挖掘及裝拆橫向支撐	*10	Metal Scaffold/Bamboo Scaffold 搭拆鐵棚架/竹棚架
4	Pipe Jacking/TBM 鑽挖隧道	*11	Catch Fan 搭拆外牆斜撐
5	Hoarding 搭拆圍街板工程	12	Soil Platform on slope 搭拆斜坡泥台
6	Soil nail 泥釘	*13	Heavy Lifting Operation 大型吊運工序
*7	Confined Space works 密閉空間工作	*14	Underground Utilities & trial pit 地下設施勘查及試孔

### Frontline & Employee Involvement





## ENHANCING SAFETY CULTURE

### Safety Alignment - Top Management Walk







# ENHANCING SAFETY CULTURE

## Worker Involvement - Safe Working Cycle





## ENHANCING SAFETY CULTURE

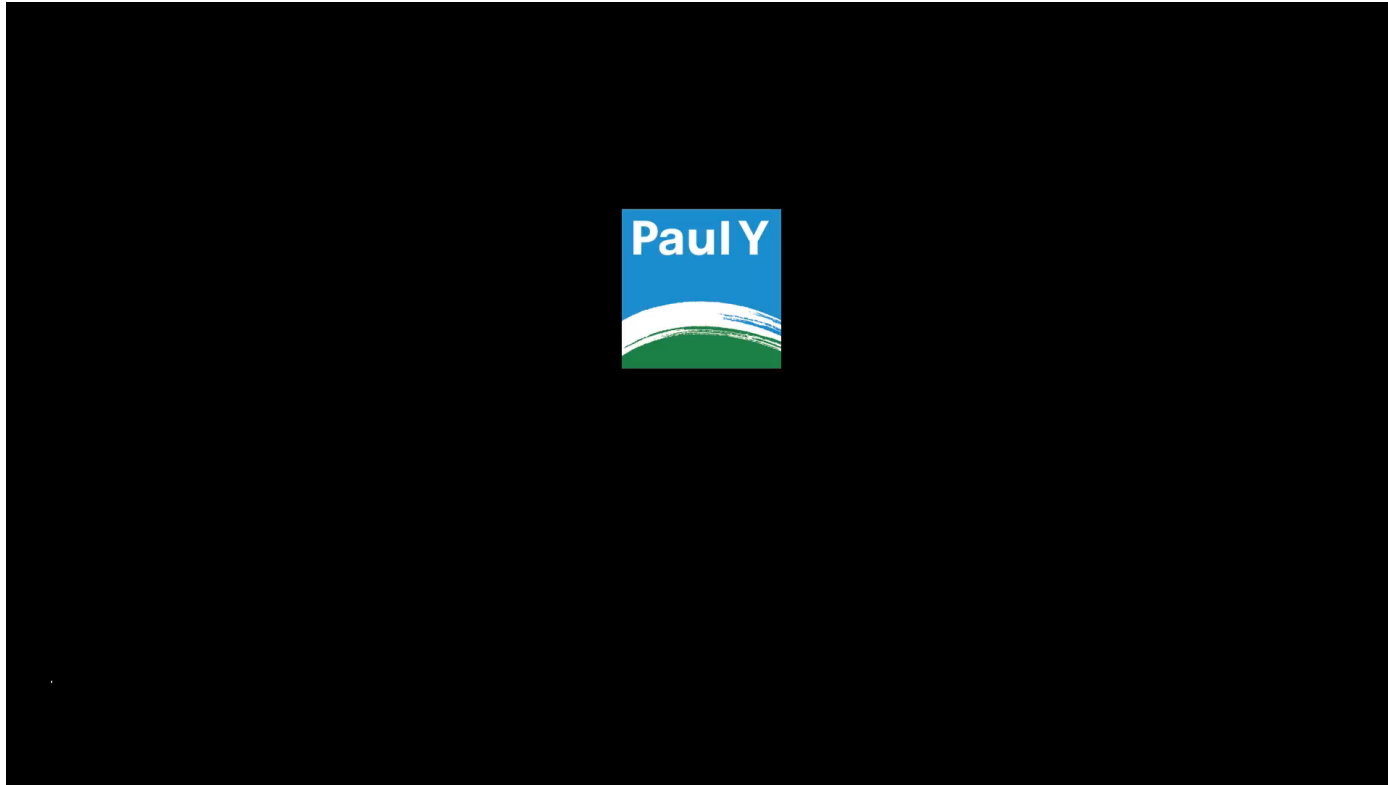
### Worker Involvement - Heat Stroke Campaign





ENHANCING SAFETY CULTURE

## Worker Involvement - Life First Campaign



# Smart Technologies

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- BIM Safety Simulation
- XenseGate - A. I. Access Control System
- XensePath - UWB Anti-collision System
- Hololens
- Portable Rope Monitoring Machine

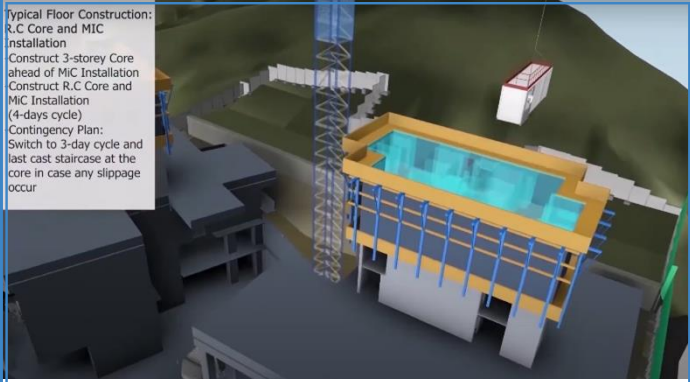




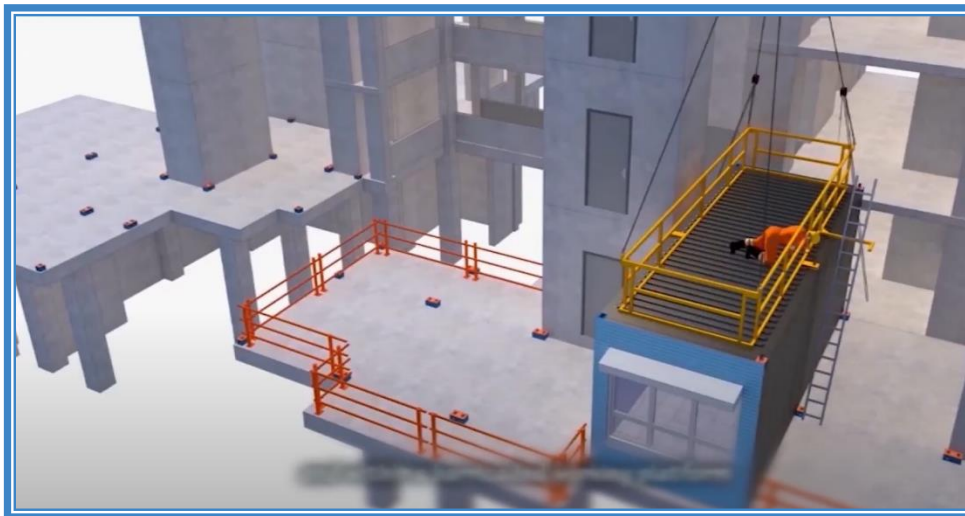
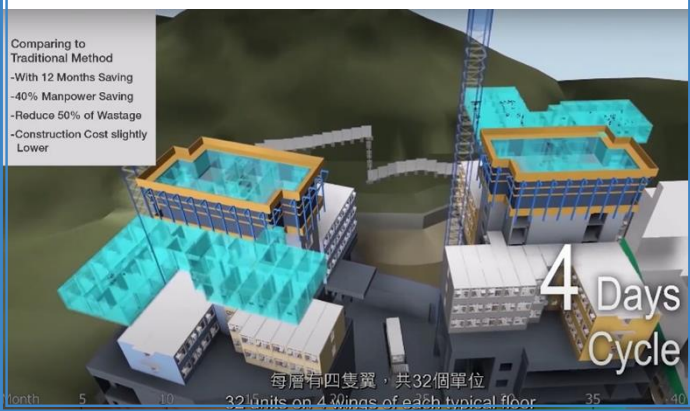
## SMART TECHNOLOGY

## BIM – Site Safety Simulation

Typical Floor Construction:  
R.C Core and MiC  
Installation  
Construct 3-storey Core  
ahead of MiC Installation  
Construct R.C Core and  
MiC Installation  
(4-days cycle)  
Contingency Plan:  
Switch to 3-day cycle and  
last cast staircase at the  
core in case any slippage  
occur



Comparing to  
Traditional Method  
-With 12 Months Saving  
-40% Manpower Saving  
-Reduce 50% of Wastage  
-Construction Cost slightly  
Lower



- Sequence of works of MiC installation is crucial.
- A simulation is generated together with the BIM models and required safety measures.

- Safety measures are incorporated to the simulation for all stakeholders having a common platform to discuss the operation.





SMART TECHNOLOGY

## XenseGate - A.I. Access Control System



Implementation of Facial recognition System at site entrance:

- ✓ Safety & Security
  - ✓ Good Personal Hygiene (No need to touch as to avoid COVID-19)
- No need to **touch**
  - No need to **take off mask**







## SMART TECHNOLOGY

## XensePath - UWB Anti-collision System

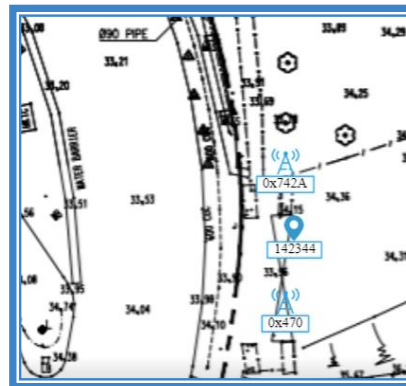


**Danger zone identification** can prevent workers entering danger zones or any restricted areas to protect life injuries by **immediate alert system**



**Real time monitoring by UWB Sensor** with Cloud Based Management Platform provides **instant alert** through SMS if abnormal readings are detected.

- 2m = **Alert Zone**, the sensor will be alerted through vibration.
- 1m = **Danger zone**, the warning alarm and light will be active.



Software Interface





## SMART TECHNOLOGY

# Real Time Remote Assistance Solution - HoloLens



Mixed reality solution provides a real-time video conferences between site and back by wearing the **"hololens"**



Supporting staff can view what the worker is viewing in **LIVE.** Playback training can be provided to workers after work to improve the **Workers Behaviors.**





## SMART TECHNOLOGY

# Real Time Remote Assistance Solution - HoloLens



Increase worker safety awareness with mixed reality visual guidance, including checklists and step-by-step instructions.

Communication between construction site staff and back-office specialist is much more **effective and efficient. The safety culture can be improved.**

Correct and clear instruction can be given to the workers instantly with visual aids and supportive documents.





# SMART TECHNOLOGY

## Portable Rope Monitoring Machine

Suitable for all kind of cranes



Real time damage detection

Axial and magnetic sensor to detect the change and records the measurements



- Generate report
- Reduce the risk of load drop
- Assists with planning for maintenance, repairs, replacement
- Spot out non-visible defects



Safety is a Personal Commitment.  
Work Together to Stay Safe.

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Thank You.

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