



## 移動機械及吊運操作 安全

# MOBILE PLANT and LIFTING OPERATION SAFETY



日期 Date  
19.9.2024  
(星期四 Thursday)

時間 Time  
15:00 - 16:00

## 智能建築：物聯網機器安全防撞

# Smart Construction: IoT for Machine Safety & Anti-Collision

Charles Yeung  
19 September 2024

InfoSMART™  
智高.智正



InfoSMART™

1. Centralized M

2. Digitized Tra  
Powered Too

3. Digitalized P  
High-risk Act

4. Hazardous A  
Electronic Lo

5. Unsafe Acts  
For Mobile P

6. Unsafe Acts  
For Tower Cr

7. Smart Monit  
And Frontlin

8. Safety Monit  
Intelligence

9. Confined Spa

10. Safety Traini  
Technology

香港特別行政區政府  
The Government of the Hong Kong Special Administrative Region

政府總部  
發展局  
工務科

Works Branch  
Development Bureau  
Government Secretariat

18/F, West Wing,  
Central Government Offices,  
2 Tim Mei Avenue, Tamar,  
Hong Kong

Ref. : DEVB(W  
Group : 2, 8

Public Sector

27 February 2023

屋宇署  
BUILDINGS  
DEPARTMENT

YOUR REF 來函編號: BD GR/1-115/12  
OUR REF 本署檔號: 2625 4061  
FAX 圖文傳真: 2626 1515  
TEL 電話: 2626 1515  
WEBSITE 網址: www.bd.gov.hk

28 March 2024

To: All Authorized  
Registered  
Registered Inspectors  
Registered General Building Contractors  
Registered Specialist Contractors  
Registered Minor Works Contractors

Private Sector

採用「安全智慧工地」系統  
為涉及流動機械及塔式起重機的建築工程  
提供合格監督

去年3月30日發出的通告函件並呼籲各位於建築合約中採用「安全智慧工地」通告函件公布一項新強制規定，凡涉及流動機械及塔式起重機，均須採用兩項「安全智慧工地」系統，以提供合格監督。有關系統包括：流動機械及塔式起重機吊運區中不安全行為/危險情況的警報系統（流動機械及塔式起重機吊運區中不安全行為/危險情況的警報系統（塔式起重機警報系統<sup>4</sup>），以提供合格監督

實施規定

2. 由今年7月1日起，屋宇署在首次批准上蓋結構圖則或經重大修訂的上蓋結構圖則時，會根據《建築物條例》（《條例》）第17(1)條第6項的規定施加條件，規定凡預算成本超過3,000萬元並涉及使用流動機械及塔式起重機的建築工程，註冊承建商須採用流動機械警報系統及塔式起重機警報系統，以提供合格監督。獲授權簽署人、獲授權簽署人的代表和註冊承建商工作班子內適任技術人員的相關責任和職責，亦會載於條件內。詳情請參閱屋宇署網站「常見條件及規定<sup>5</sup>」所載的條件。

3. 申請人提出同意展開及進行上蓋結構工程的申請時，須根據《建築物（管理）規例》第10條，提交由認可人士就有關項目的建築工程預算成本是否超過3,000萬元作出的聲明。對於超過3,000萬元的项目，一經本署同意展開及進行有關上蓋結構工程，將會施加上文第2段所述的相同條件。根據《條例》第16(3)(b)條，若未能提交聲明，可導致相關申請被拒絕。

4S Labelling

1. Centralized Management Platform
2. Digitized Tracking System For Site Plants, Powered Tools And Ladders
3. Digitalized Permit-to-work System For High-risk Activities
4. Hazardous Areas Access Control By Electronic Lock And Key System
5. Unsafe Acts / Dangerous Situation Alert For Mobile Plant Operation Danger Zone
6. Unsafe Acts / Dangerous Situation Alert For Tower Crane Lifting Zone
7. Smart Monitoring Devices For Workers And Frontline Site Personnel
8. Safety Monitoring System Using Artificial Intelligence
9. Confined Space Monitoring System
10. Safety Training With Virtual Reality Technology

# User Needs

Different  
Plants



Much  
Mobility



Many  
People



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# User Needs

Different Plants

- Multiple IoT
- Easy Mix & Match

Much Mobility

- Simple Fixing
- Fast Removal

Many People

- Handy
- Seamless to work



# Multiple IoT, Mix & Match



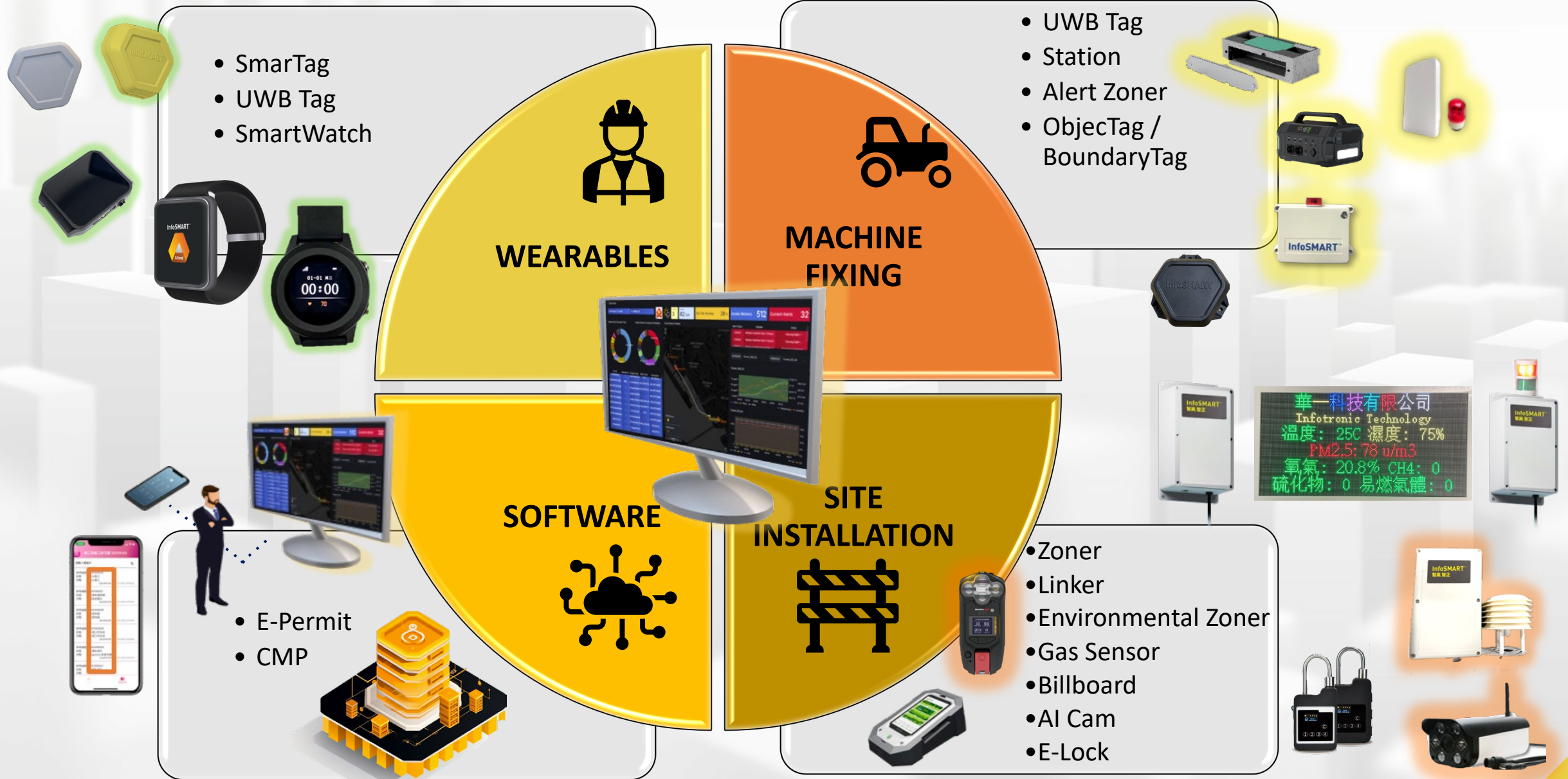
InfoSMART™

Turnstile & HR System

InfoSMART™  
Data Platform

華一科技有限公司  
Infotronic Technology  
溫度: 25C 濕度: 75%  
PM2.5: 78 u/m3  
氧氣: 20.8% CH4: 0  
硫化物: 0 易燃氣體: 0

# Mix and Match InfoSMART™ hardware to fulfill 4S regulations

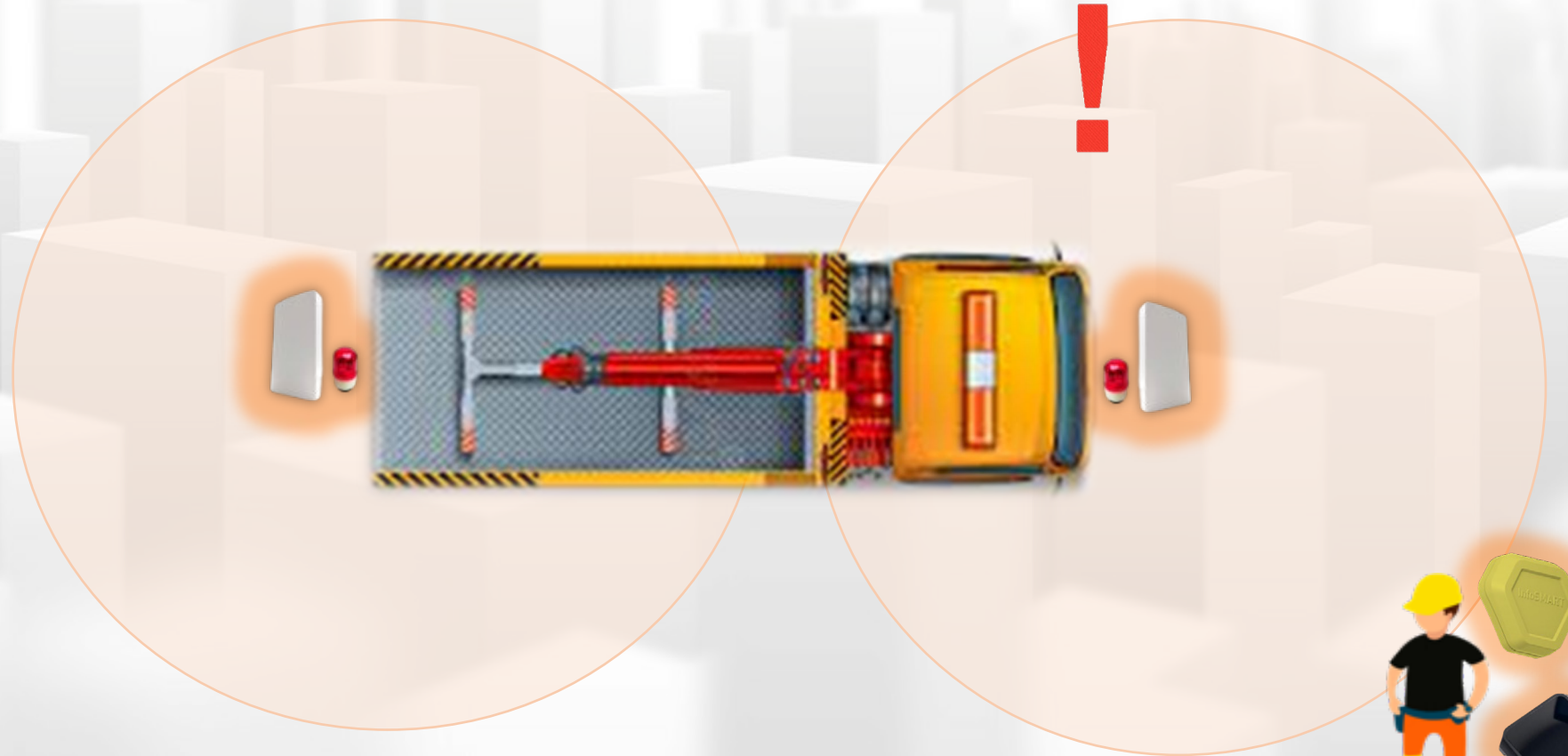




# Mobile Plant Operation Danger Zone – Machine to People

## Special Feature

- Suitable for Most Plants (cigarette outlet)
- Installation / Removal (within half an hour)
- Alert Zone 0 - 35m (subject to site condition)






KEY

-  **ObjecTag / BoundaryTag**
-  **UWB Tag**
-  **SmarTag**
-  **UWB Station**

# Mobile Plant Operation Danger Zone – Machine to People

**Zone F**  
**3:45PM**  
Model: FT-16  
Status: Moving  
Cert Exp date: 01/06/23

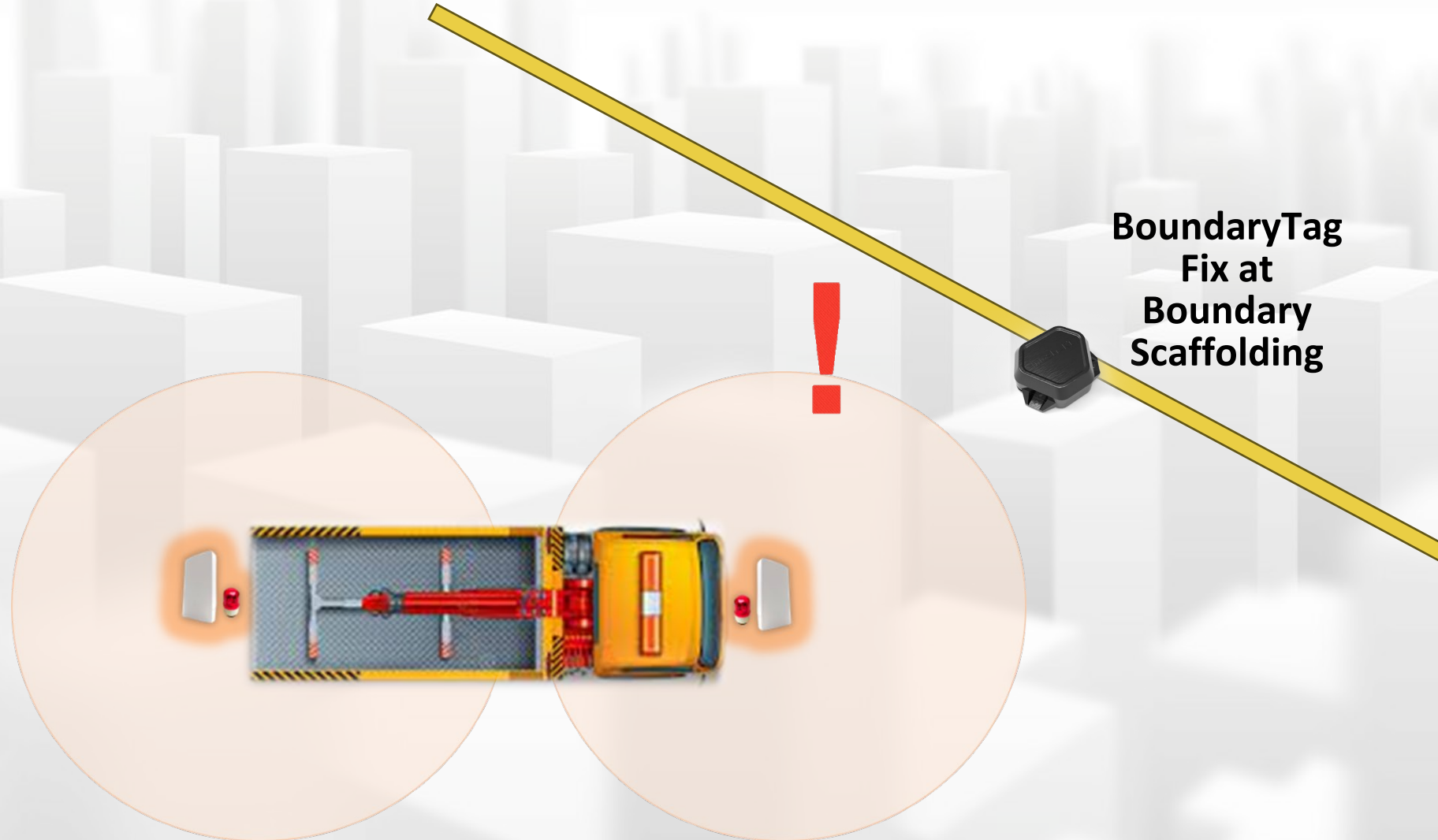




# Mobile Plant Operation Danger Zone – Machine to Boundary

## Safety Boundary

- BoundaryTag at boundary fencing / scaffolding
- Simple Installation / Removal (within 1 minute)
- Alert Zone 0 – 2m (subject to site condition)





KEY



ObjecTag /  
BoundaryTag



UWB Tag



SmarTag



UWB Station

**Zone F**  
**3:45PM**  
Model: FT-16  
Status: Moving  
Cert Exp date: 01/06/23



# Featured Case – Demolition Works (Machine to Boundary)



## Collision Detection Showcase

KEY



ObjecTag /  
BoundaryTag



UWB Tag



SmarTag



UWB Station

Zone F

3:45PM

Model: FT-16  
Status: Moving  
Cert Exp date: 01/06/23



# Featured Case – T2 Tunnel Works Machine Tracking / Authorized Operator





# Mobile Plant Operation Danger Zone – Mobile Crane Lifting

## Special Features

- Suitable for Mobile Crane
- AC Power / Portable Power (1 week)
- Installation / Removal (within 0.5 Hour)
- Alert Zone 0 – 35m (subject to site condition)



## Enhanced Features

- Add AI Cam (optional)
- Permission People in working zone

## Enhanced Features

- Authorized Plant Operator



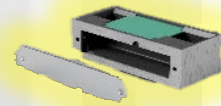


# Featured Case – Mobile Crane Lifting

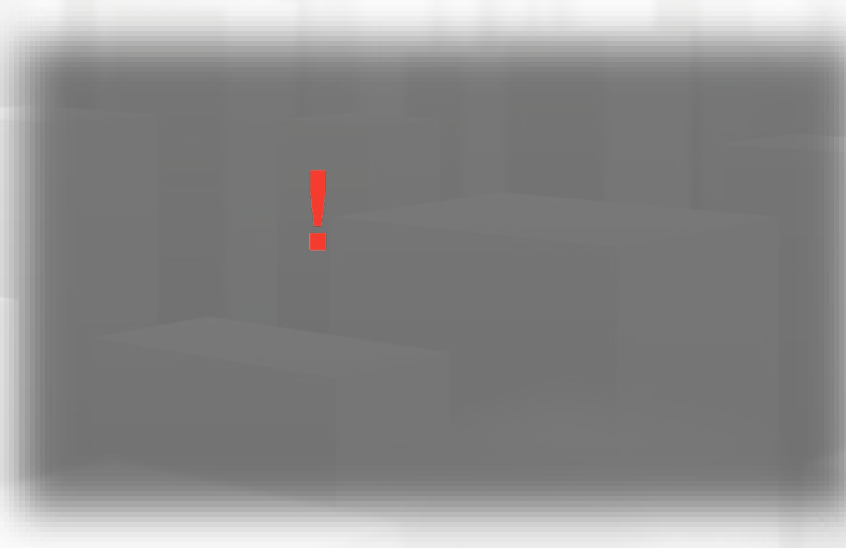


**Infotronic**  
Technology Ltd.  
華一科技有限公司

# Tower Crane Lifting Zone



# Alert for Mobile Plant Danger Zone



## KEY



UWB Tag



SmarTag



UWB Station

ID	Time ↓	Message
<a href="#">76535</a>	2024-08-01 13:05:31	Worker Entry
<a href="#">76536</a>	2024-08-01 13:05:31	Worker Entry
<a href="#">76533</a>	2024-08-01 13:05:30	Worker Entry
<a href="#">76534</a>	2024-08-01 13:05:30	Worker Entry
<a href="#">76532</a>	2024-08-01 13:05:28	Worker Entry
<a href="#">76531</a>	2024-08-01 13:05:24	Worker Entry



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Technology Ltd.  
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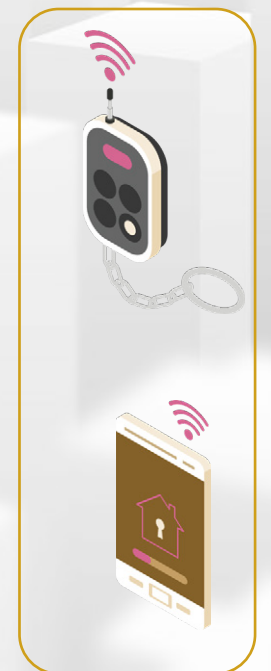
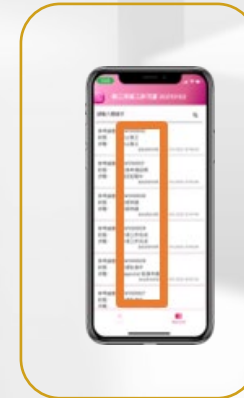
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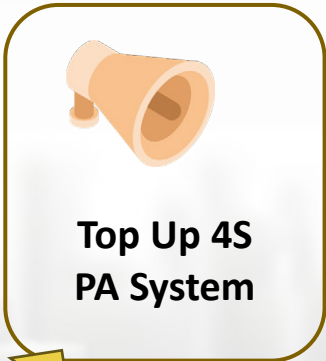
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# InfoSMART™ Ecosystem

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InfoSMART™  
Data Platform



Top Up 4S  
On-site Billboard



Top Up 4S  
Confined Space



# Robotic Confined Space Station (Fast Setup)



Centralized Management Platform

Digitized Tracking System For Site Plants, Powered Tools And Ladders

Digitalized Permit-to-work System For High Risk Activities

Smart Monitoring Devices For Workers And Frontline Site Personnel

Safety Monitoring System Using Artificial Intelligence

Hazardous Areas Access Control By Electronic Lock And Key System



# Project Reference Since 2018

## (Mix and Match of InfoSMART™ IoT to Fullfill 4S Requirements)

### Current Projects



T2 Trunk Road Harbour Tunnel



MiMEP at T2 Tunnel Service Gallery



Siu Ho Wan Depot (full 4S)



Tate's Cairn / Aberdeen Tunnel Maintenance Works



Price Edward Road West Demolition Works



HKeToll Six Tunnels Maintenance Works



Primary School Lin Cheung Road, Sham Shui Po



Tsing Ma District Maintenance Work



Anderson Road Refuse Collection & Recycling Store



Ma Chai Hang



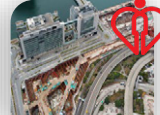
### Public/Civil Works



Tseung Kwan O - Lam Tin Tunnel



Sai Ying Pun Cable Tunnel



Kai Tak Hospital



Penny's Bay Quarantine Centre



North Lantau Hospital (HKICC)



Chinese Medicine Hospital



Kwong Wah Hospital P2



Baptist University



Pok Fu Lam S Housing Estate



Kai Tak Quarantine Centre



Hong Kong Palace Museum



TKO Desalination Plant



HK Organic Resource Centre



Highway Dept (Shatin Project)



Kowloon Tsai Swimming Pool



North District Hospital

### Building Works

#### Hong Kong



Kong Nga Po Police Training Facilities



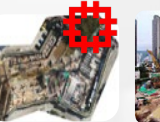
CEDD (Ngong Ping)



Kam Sheung Rd Station



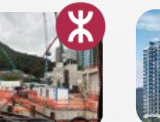
Wong Chuk Hang Site ABC



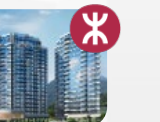
Ching Hong Road Pub. Housing



Lei Yue Mun 4 Pub. Housing



Wong Chuk Hang Site D



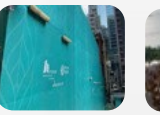
Lohas Park 10



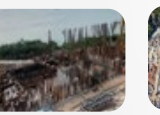
Kai Tak 6574



Kai Tak 6576



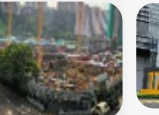
URA Central District H18



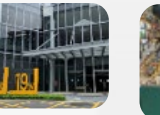
Wong Ma Kok Road



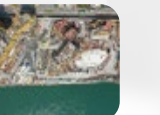
Tuen Mun Logistics Centre



Au Pui Wan St., Fo Tan



HKSTP 16W HKSTP 19W



Cheung Sha Wan Residential

#### China



Discovery Bay Ph. 18



Tai Hang Road



12 Stafford Road



Shenzhen Hotel



Shenzhen Hotel

#### Macau



Macau Galaxy



Macau EST Edu. Bldg.

#### Taiwan



New Low Density Residential

# Seamless to Workflow/ Suit Budget Cost



## CITF Pre-approved Product

HKIC SPDC CITAC ZCP BIM CISVP CITF MiC

[About CITF](#)
[Funding Scope](#)
[Pre-Approved Lists](#)
[Application](#)
[Experience / Knowledge Sharing](#)
[What's News](#)

				<p><a href="#">Video</a></p>	
<p>Sensors and IoT</p>	<p>Safety Monitoring System</p>	<p>PA23-029</p>	<p>Infotronic Technology Limited Tel: 9106 7601</p>	<p>IoT, BLE, GPS, Mobile Technology, Artificial Intelligence This product is a location-based monitoring system which worker's data such as location, conditions and attendance records are collected wirelessly. Those data would be transmitted to a remote server for analysis for safety improvement and management purposes.</p> <p>Legend 14. Locally developed innovations or products Legend 15. Safety-related Technologies Smart Site Safety System (SSSS)</p>	<p>             SmarTag              Safety Watch              Zoner              Linker              Alert Zoner         </p>





4S  
Compliance  
&  
Customization

## Awarded 4S Labelling (up-to-date)

- A) Awarded Project (4 Sites)
- B) Audit Passed (6 Sites)
- C) Pending to Audit (2 Sites)
- D) Application in Progress (9 Sites)

## Top Up Systems

Integration with Turnstile  
MiMEP Management  
Instant Billboard  
Zone Weather Warning  
External Wall Works Safety



#Building #Tunnel #Civil #Facilities #MiC





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Technology Ltd.  
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InfoSMART™



為保障自己，保障家人，  
大家一齊啟動現場安全，  
由**SmarTag**開始吧