Product Presentation

Applicant Name: Forthink (HK) Technology Co., Ltd.
Product Name: EverHigh Precise Positioning & Safety Management System
Specification: Precise 10cm Positioning Elaborated and Smart Management

- Core Functions:
  - Precise Worker Positioning and Management
  - Plant Positioning and Management
  - Worker Health Management
  - Anti-collision Alarming
  - Managing Rules: Stray Detection, Source of Danger, No Company, Actionless, Disappearance from Post, Overtime Stay, Crowd Gathering, Multi-card Monitoring
- Technology Used:
  Ultra-wide Band (UWB)
- Construction Process involved:
  Full cycle of construction work
- Key Improvement in Construction Process:
  - Productivity
  - Safety

Job Reference:

- Social Distance Alarming in Construction Site, England, Adoption, 2020
- Anti-collision Management, Australia, Adoption, 2019]
- N109A Smart Construction, Singapore, Adoption, 2019]
- T11 Sewage Tunnel Smart Construction, Singapore, Adoption, 2019]
- Maxnerva Smart Construction, Tsingtao, Adoption, 2019]

Innovative Features

- Core Technology:
  Ultra-wide Band (UWB), Time Different of Arrival (TDOA)
- Patent (if applicable):

Date	Organization	Patent Type	Patent Reference	Name of Patent
12th NOV 2019	國家知識產權局	發明專利	ZL 2017 1 0472445.3	一種基于震動傳感器的定位標籤及其定位工作方法
1st NOV 2019	國家知識產權局	發明專利	ZL 2017 1 0589865.X	一種基于TDOA定位的距離差處理方法及裝置
20th SEP 2019	國家知識產權局	發明專利	ZL 2017 1 0542623.5	一種系統盲區動態檢測方法
5th JUL 2019	國家知識產權局	發明專利	ZL 2017 1 0549818.2	一種基于定位系統的考勤作弊行為檢測方法

- Comparison with current practice and popular models:
  - Technology – High precision positioning with 10-30cm accuracy and ultra low anti-interference ration in compare with conventional technology like Bluetooth, Zigbee and Wifi, etc.

	Frequency Range	Standard	Max. Power Consumption	Coverage	Positioning Method	Accuracy	Pros	Cons
Wifi	2.4G/5G	IEEE802.11a/b/g/n	300mW	<20 Meters	RSSI 3 Points	3-20 Meters	Low Cost, Mobile Phone Enabled	High-Power Consumption, Poor Accuracy
Bluetooth	2.4G	IEEE802.15.1/BLE V1.0-5.0	100mW	<20 Meters	RSSI 3 Points	3-20 Meters	Low Cost, Mobile Phone Enabled	Poor Accuracy
RFID	Low-frequency	ISO14443A	N/A	<1 Meter	Zone	N/A	Low Cost, Batteryless	Non-realtime Positioning
UWB	3.1-10.6G	IEEE802.15.4-2011UWB	1mW	100 Meter	TDOA and TOF	5 - 30 Centimeters	Low-Power, High Accuracy	Medium Cost and Complexity

  - Specification

Parameter	MTBF	Wireless Standard	Frequency Range	Sensitivity	Max. Sensitivity	Typical Transmit Power	Max. Transmit Power
	≥100000h	802.15.4_2011UWB	1/2/3/4	≥-93dbm	≥-100dbm	-41.3dbm/MHz	-10dbm/MHz

  - Benefits including cost benefits (product prices vs merits)
    - Increase overall productivity by knowing and manage workforce arrangement including Workers, Site Security and Site Safety Force, etc.
    - Reduce and avoid accidents in construction site result in big savings on Human Life, Penalties and Tender Suspension.

Innovative Features

- Comparison with similar Pre-approved list products and competitors:
  - Technology – PA19-047 InfoSMART Attend is a similar product provides worker activity tracking and management system by Bluetooth BLE Beacon. Bluetooth Beacon can only track worker by zone (exists or not) and impossible to provide accurate positioning. In additions, Bluetooth Beacon only provides Presence Tracking instead of position and does not provides proximity tracking which giving excellent applications on worker safety, anit-collision and worker management, e.g. 1.5m social distancing can be applied in construction site during Epidemic Period.
  - Specification

	Frequency Range	Standard	Max. Power Consumption	Coverage	Positioning Method	Accuracy	Pros	Cons
InfoSMART	2.4G	IEEE802.15.1/BLE V1.0-5.0	100mW	<20 Meters	RSSI 3 Points	3-20 Meters	Low Cost, Mobile Phone Enabled	Poor Accuracy
EverHigh	3.1-10.6G	IEEE802.15.4-2011UWB	1mW	100 Meter	TDOA and TOF	5 - 30 Centimeters	Low-Power, High Accuracy	Medium Cost and Complexity

  - Benefits including cost benefits (product prices vs merits)

    With precise accuracy and proximity, EHIGH effectively reduce and avoid construction fatal/non-fatal accidents

- First Launch Date: First Launch at 2014, Latest Version on May 2020 (for both the very first version and the latest version of this product)
- Awards (if applicable):
  - International

Date	Organization	Products	Award
NOV 2019	中國信息產業商會人工智能分會	EHIGH 恒高智慧監獄人員定位系統	2019年度最佳創新驅動產品獎
JUL 2019	中國物聯網產業應用聯盟	EHIGH 三維高精度定位系統	IOTE 2019 金獎

  - Local

Adoption Example

- Project for Illustration: 青島雲智匯項目
- Main Contractor: China State
- Year: 2019
- Work Process: In-progress
- Use/ Function in project:
  - Precise Positioning
  - Safety Rules and Management
  - Electronic Fence

Video showing Worker Tracking on site

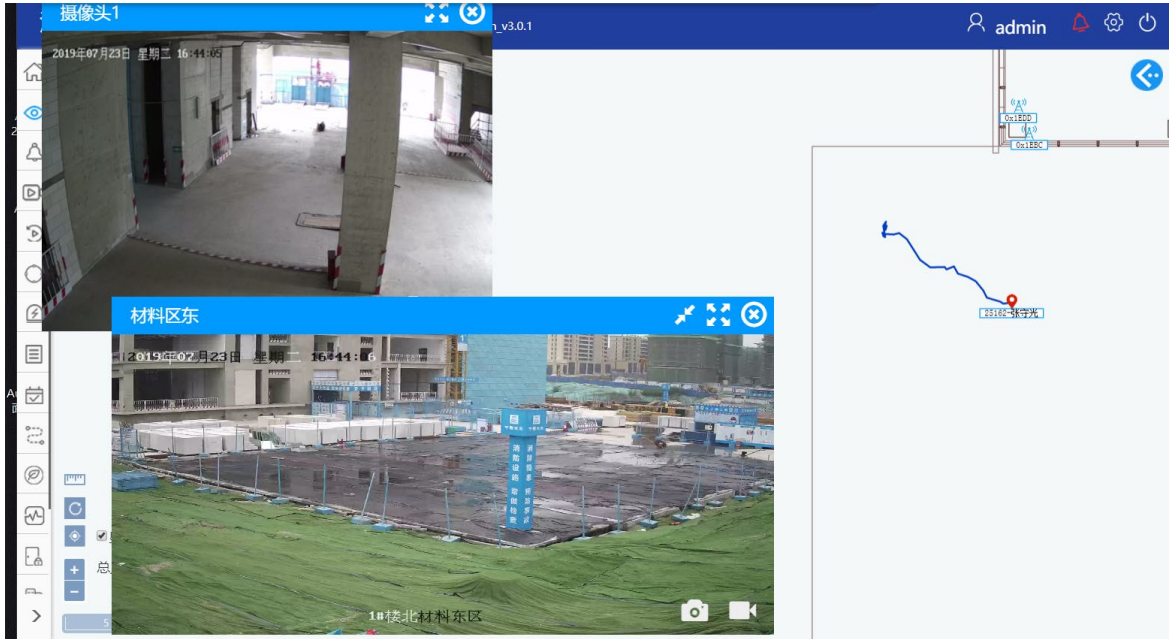
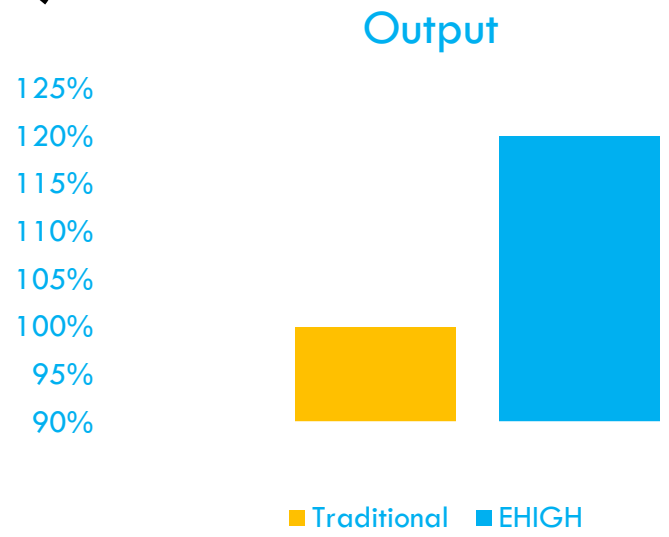


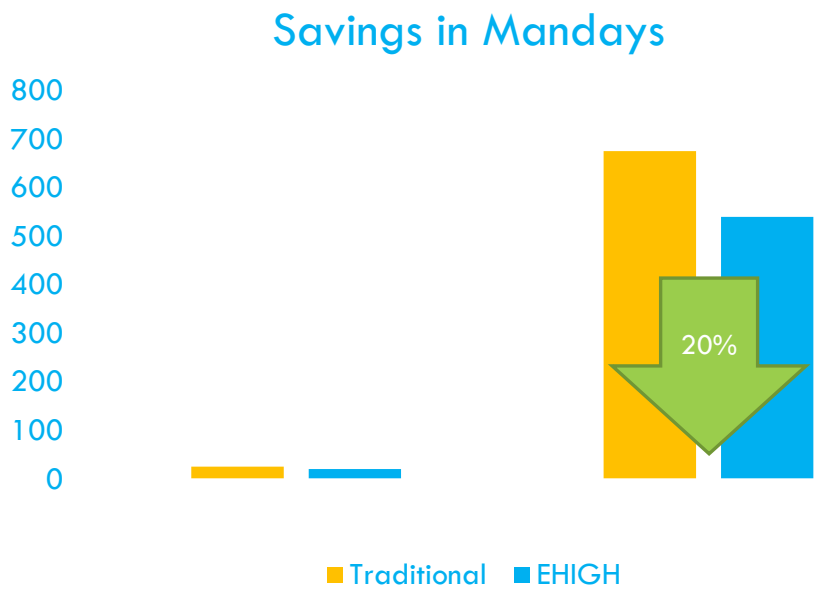
Photo showing EHIGH Management System for the project

Video showing Anti-Collision for Plant

Benefits – Productivity (if applicable)

- Improve productivity by:
  - Effective Works Arrangement
  - Auto Report Generation - Reduce Manual Entry of Site Presence]
  - Reduce Manpower in Security & Safety Aspect
- Traditional Output:
  - 1 Task/ manday
- Output by EHIGH:
  - 1.2 Task/ manday
- Total Saving in Mandays:
  - 5.2 Days/Month
    - 6 Reports x 20 mins = 120 mins = 2 hours/day
    - 2 Hours Saving x 26 Working Day = 52 hours/month
    - 52 hours / 10 hours = 5.2 days
- Total Saving in Project Period:
  - 135.2 days (Avg. Contract Period 26 Months)





Benefits – Safety (if applicable)

- Improve Safety by:
  - **Worker Tracking**
    - Know-where of the workers to avoid any misbehaved actions
    - E.g. Stray Detection, Source of Danger, No Company, Actionless, Disappearance from Post, Overtime Stay, Crowd Gathering, Multi-card Monitoring
  - **Vehicle Tracking**
    - Avoid vehicle assessing unauthorized areas
  - **Electronic Fence**
    - Prevent workers assessing danger zone
  - **Worker & Plant Anti-Collision**
    - Avoid fatal/non-fatal accidents caused by plants collision
  - **Effective Safety Checks**
    - Prioritize safety checks and frequency

Over 80% site accidents were related to site plants

Video showing the Anti-Collision Alarming effectively avoid accidents