

Cross Industrial IOT Application

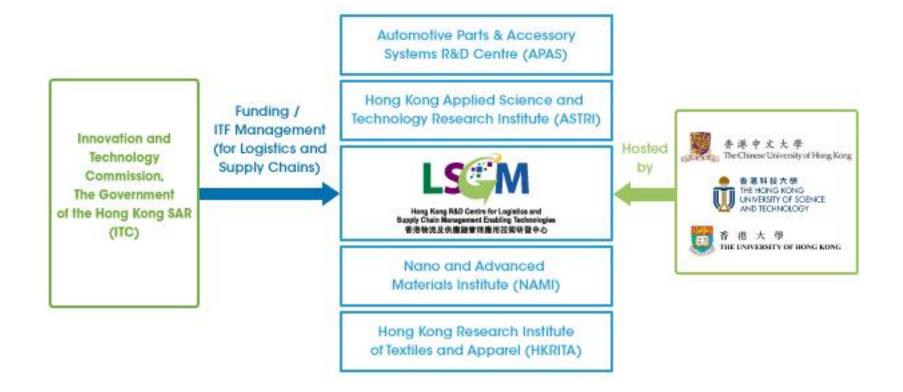
Stephen Wai – Sr. Mgr. Business Development swai@lscm.hk

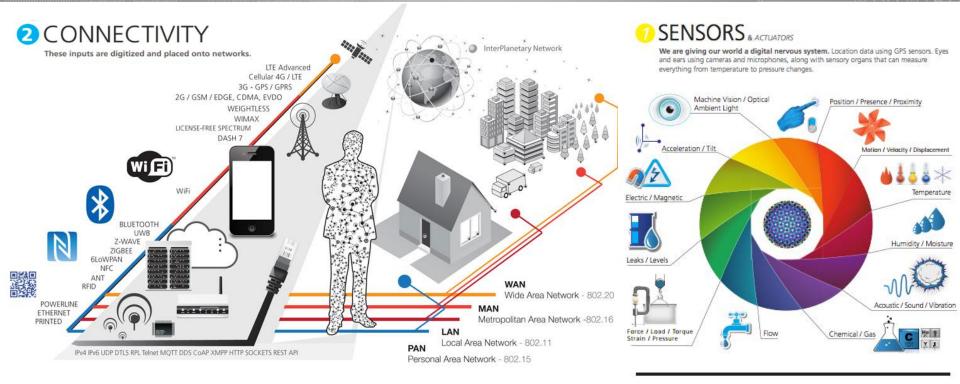


Hong Kong R&D Centre for Logistics and Supply Chain Management Enabling Technologies

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LSCM R&D Centre





3 PEOPLE & PROCESSES

These networked inputs can then be combined into bi-directional systems that integrate data, people, processes and systems for better decision making.

[Source:Postscape - https://www.postscapes.com/what-exactly-is-the-internet-of-things-infographic/



Key questions to address

What	is the object?
When	a task is completed?
Where	is the object or the incident happen?
Who	completed the task?

Key questions to address

What	really the objects are?
When	a task will complete?
Where	exactly is the object or the incident happen?
Who	will complete the task and exactly whom?

Key Challenges

- Power Supply
- Connectivity
- Accuracy
- Security & Privacy
- ROI

RFID-based Live Pig Supervision between Guangdong (GD) and Hong Kong (HK)

- Objective: To facilitate e-logistics information exchange and supply chain applications between GD and HK
- Technology: Embedded RFID ear tags, barcode and cross-boundary information service platform
- Benefits: Source tracking and monitoring, local delivery tracking







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Two-halves Binding 二分體綁定





Distribution Center 豬肉分銷中川

Six Parts 六分體



Pre-packing 預包裝





Sheung Shui Slaughter House Passageway



中一個試點項目是研究利用平台互通技術

收入會增加

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Shenzhen-Hong Kong Food Safety and Supply Chain Public **Information Platform**

- **Objective:** To provide publicly interested information ٠ related to food safety, food sources and food logistics between Shenzhen and Hong Kong
- **Technology:** Combination of RFID and barcode ٠ tagging technology at low cost, GPS and Sensors
- Benefits: Provide information service of food suppl ٠. chain to stakeholders and the public





🚰 Mobile Food Safety 🛛 🎗 🕇 🕯 🔂 🔂 Trace ID: Reprint | Del Tag

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Type:菜 Provider:優賢農場

Smart Warehouse for Wine Industry

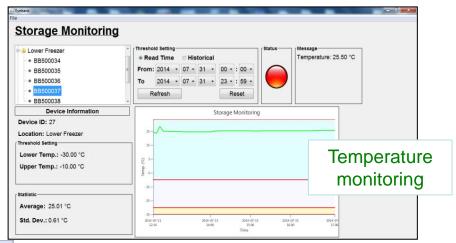
- Objective: Enhance anti-counterfeiting for high-end products
- Technology: UHF RFID reader, UHF tag design
- Benefits: Enable product authenticity check, secure private certification storage

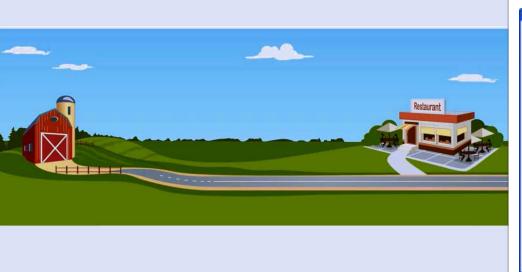


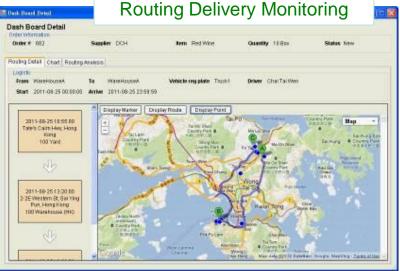


Cold Chain Management System for Perishable Produces

- **Objective:** Tracking and tracing of vegetable
- Technology: GPS, wireless sensor reader (with 3G), temperature sensor, RFID and location tracking
- Benefits: Enable tracking the processing and storage of vegetable with temperature data, enable analysis over the logistics



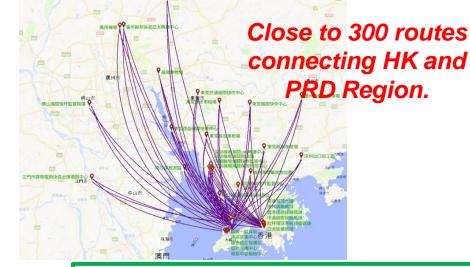




Source: SenseGeni Tempo - <u>https://www.youtube.com/watch?v=q16udBdsWWk</u>

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Intermodal Transshipment Facilitation Scheme using E-Lock Technologies



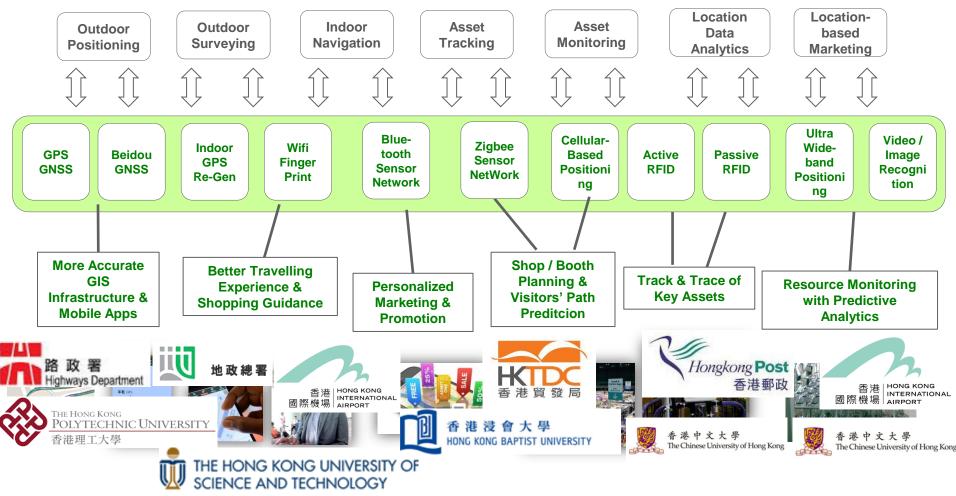


Single E-Lock ITFS launched on 28 March 2016



→ 智能未來→ Overview of HK's Research and Technological Capabilities in LBS/RTLS

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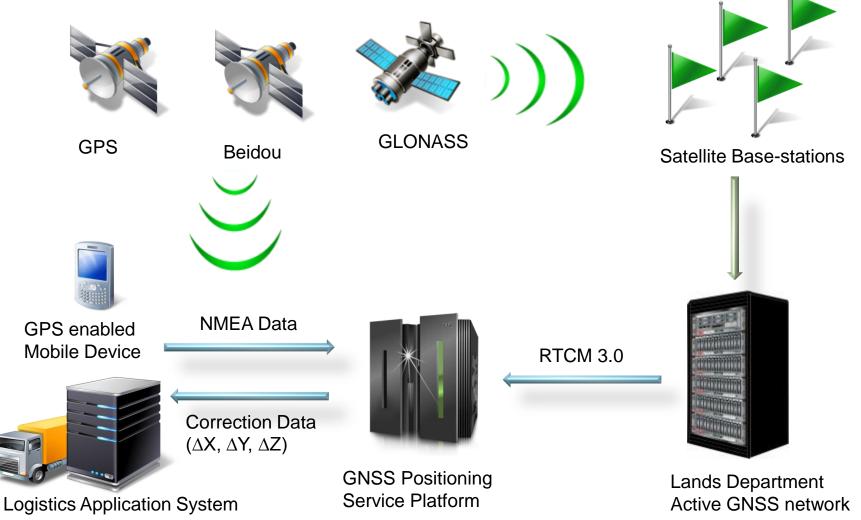
GNSS Positioning Infrastructure

18 Satellite Base-stations are setup by Lands Department.



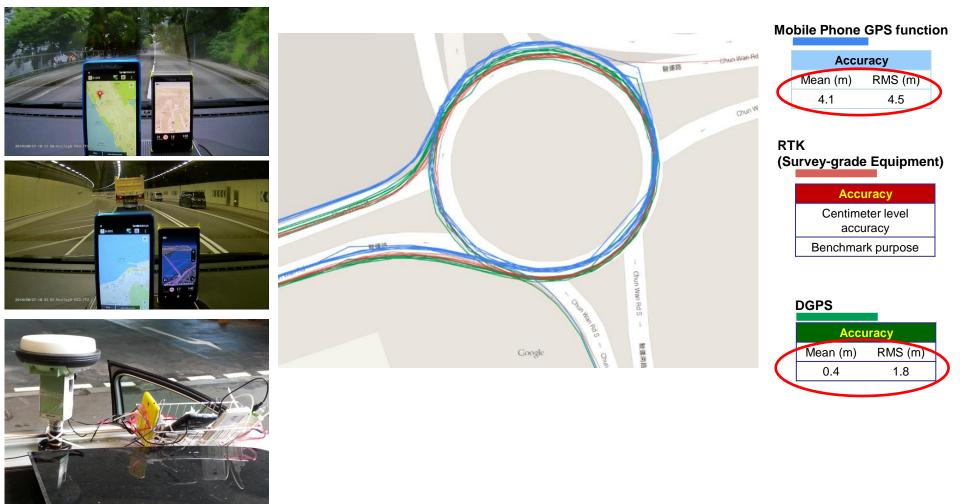
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DGPS Technology ride on GNSS Positioning Infrastructure



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DGPS corrected Data



Indoor Navigation Solution via Wi-Fi Fingerprint

- Objective: Deployment of Location-Based Services (LBS) to airport visitors and travelers
- Technology: Wifi Fingerprinting, Map matching, Inertial Measurement
- Benefits: Deployment of Indoor localization on common smartphones based on WiFi infrastructure

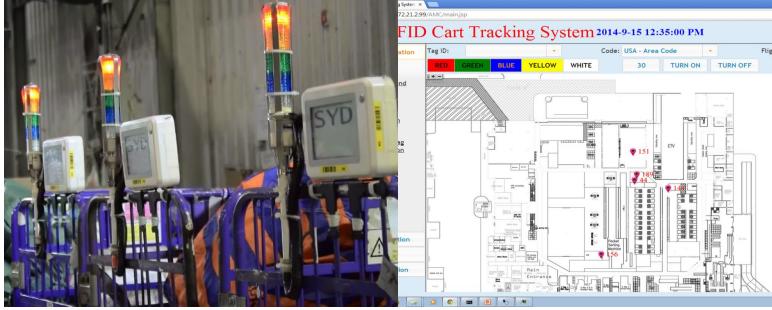




Whereami Android Application

Active RFID Real time In-door positioning







MAI I 2008

Benefits: High accuracy seamless positioning to $\mathbf{\Phi}$ support Internet-of-things and LBS can be achieved and accuracy will be about 2-5m.

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Indoor Positioning Infrastructure based on

- positioning and navigation indoor Processed GPS data Technology: Processing and conversion of outdoor 4
- Blade Server Received GPS data GPS signals for common smartphone usage Broadcast GPS data Transmitt Two ways network WIFI AP communication GPS Ref. Receiver

GPS

Phone

Transmitter

Transmitter

國 際 機 場

GPS

Signal Splitter

Transmitter

Antenna

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Video Analytics for resources planning



Do adequate trollies available in next 3 hrs?



- Objective: Enabling traveler's trolley bottleneck detection, prediction, and improve availability
- Technology: Video and sensor equipment, image analytics and sensor devices, Machine Learning, Pattern recognition
- Benefits: Timely information for requesting appropriate trolley replenishment



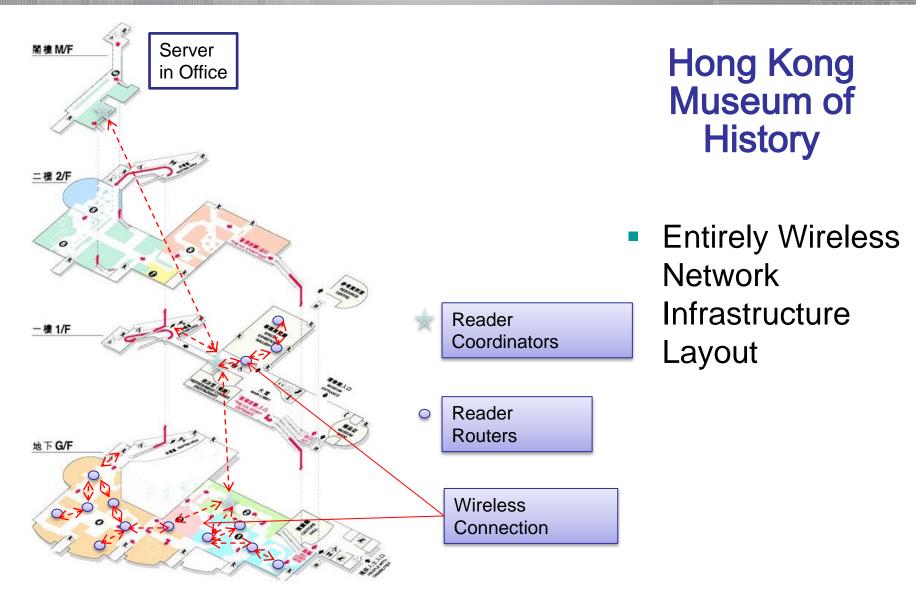
Sensing Network for Smart Warehouse

- Objective: Wireless and low cost multiple sensing network for surrounding environmental condition
- Technology: Zig-bee,
- Benefits: Interchangeable sensor, plug & play,





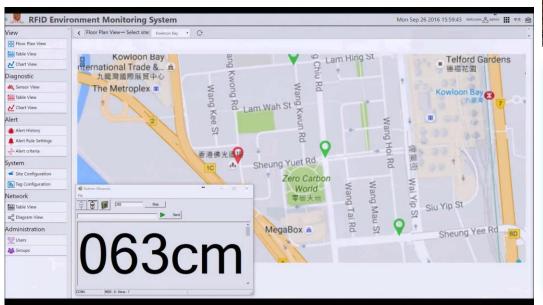




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Sensing and Ubiquitous Wireless Network for Smart Drainage System

- Objective: Real time monitoring water level, hazardous gas and illegal opening of man hole.
- Technology: RF communication, antenna network, sensors
- Benefits: preventive maintenance, real time alert

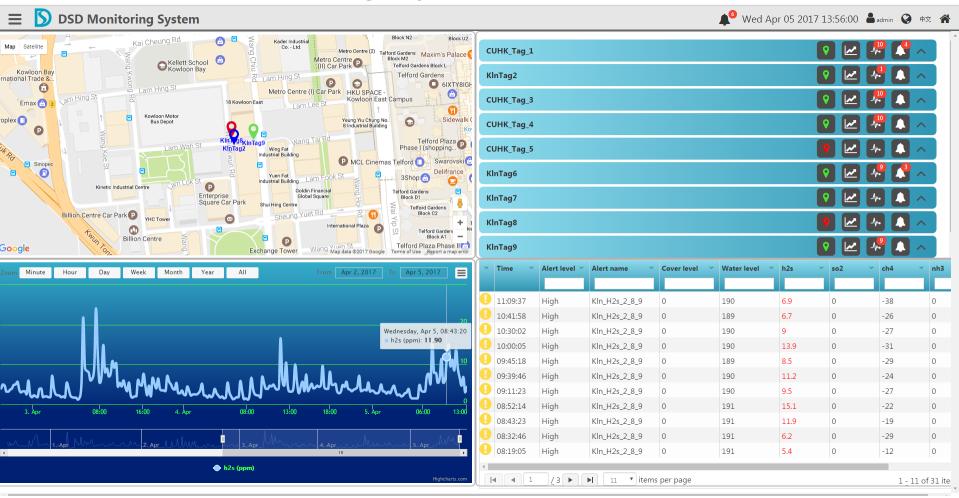




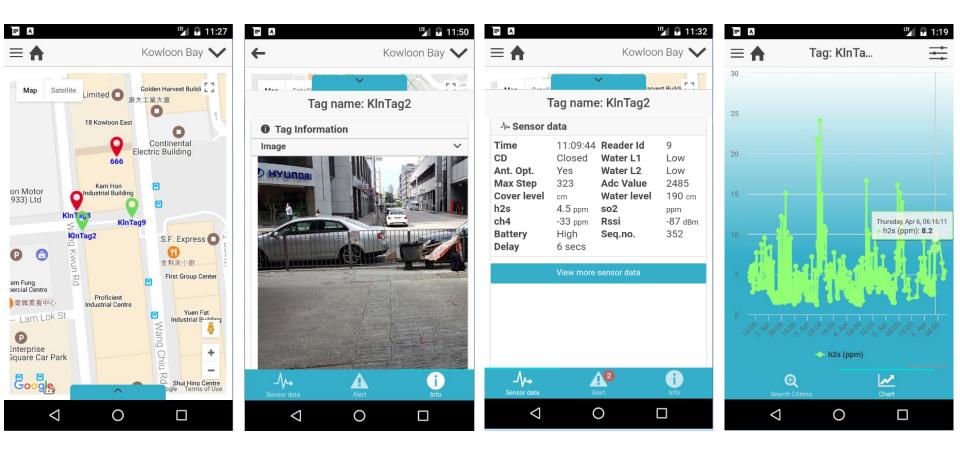


The Monitoring System – Dashboard View

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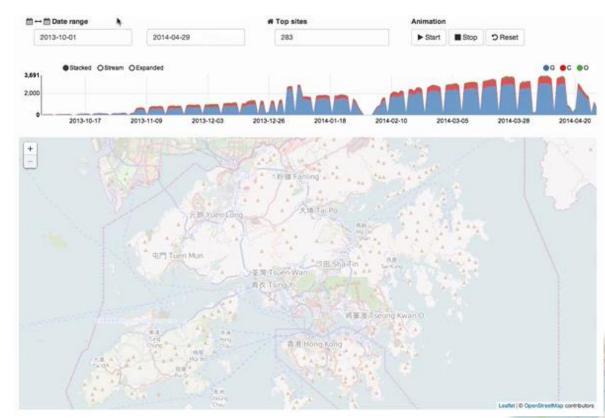


Mobile Apps Functions





Data visualization



COL INC 建

- CONSTRUCTION INDUSTRY COUNCIL 建造業議會
- Objective : Facilitates decision makers to see and understand analytical results
- Technology: Data processing, secure data communications
- Benefits: Identify relevance among variables; discover interesting relationships among workers behaviors

Space & Time domain



Thank You