Day 2:

Smart Township Management Systems

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Surbana International Consultants is a leading consultancy that specialises in sustainable urban solutions. Headquartered in Singapore, Surbana has a deep heritage which spans over 50 years of Singapore’s national development.

Our competitive advantage lies in integrated multi disciplinary expertise across the full real estate value chain. Surbana also specialise in sectors such as urban development, building, aviation, marine & coastal, port, transport, healthcare, tourism & leisure infrastructure across Asia, Africa and the Middle East.
• Meeting the requirements for true sustainability in designed projects
• Satisfying the requirements of discerning clients globally
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About Surbana

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Smart Township Ecosystem

Community Relationship Estate Management System (CREMS)

Legend for Smart City / Township Solutions
- Green: Smart Community
- Blue: Smart Governance
- Orange: Smart Infrastructure

Smart City / Township = Sustainable Urbanization Efficiency
The modern lift invented by Elisha Graves Otis in 1853 is key to the evolution of modern commercial buildings, changing the face of urban cities across the globe.*

- Prior to lifts, buildings of more than 5 stories were regarded as impractical.
- Socially, the lift has made it possible for more high-rise buildings to be built to accommodate both home dwellers and businesses in an urban city* (like Singapore).
- Commercially, the lift has allowed developers to better utilize their land by “building up” and increasing the density of land use*

“The elevator is one of those inventions whose "ripple effect" is often overlooked. Just think of the practicality of any building over eight or ten stories without an elevator. Then imagine a modern city without buildings over ten stories!” — William S. Pretzer

Source: * Based on data from “Development and Economic Impacts of Elevators” By Sheheryar Banuri
The Need for Lift Performance Improvement

- Task was given to the lift engineers in then Electrical & Mechanical Engineering department of HDB in 1985
- Main objective was to find out ways to ensure efficient, secure and reliable lift services to HDB residents.
- Some issues encountered then are listed as follow:
  - Lifts were breaking down very frequently (once per month)
  - Lift Companies were not providing adequate information on nature of breakdowns
  - Security (e.g. intrusion to lift hoistway) was an issue
  - Spot check on lift maintenance was time consuming
  - Testing of standby equipment very laborious
Inception of a Real-time Monitoring System for public housing lifts

"If you can not measure it, you can not improve it.“ – Lord Kelvin

System Requirements
• Detect lift problems early and route cases to alert maintenance crew for quick follow up
• Analyze breakdown for lift performance & design review
• There were already existing lifts installed in the public housing estates. Need to ensure the system compatibility with these existing lifts.

• SCADA vendor could not fully program the logic required for lift fault detection as they were not familiar with the lift operations

• Scaling up the system posed new set of problems such as:
  – System overload when more alarms were transmitted back
  – Interface issues with different models of lifts
  – Disputes with maintenance companies on authenticity of alarms
Our Approach

- Pilot project kicked off with 20 lifts at Ang Mo Kio in 1982
- Installation started with 7,000 Fujitec lifts in 1984 after successful pilot trial
- Our lift engineers had to program the lift fault detection logic ourselves.
- We worked closely with the lift suppliers to fine-tune the system. It took us 10 years to stabilize the system and optimize the detection algorithms to weed out all the false alarms!
Some of 30 critical parameters tracked by LTMS

- Lift Breakdown
  - 22 different types of breakdown detectable
    - Doors related problem
    - Safety related problem
    - Power supply problem
    - Miscellaneous

- Passenger Trap Alert

- Power Failure Alert
  - Time of Failure
  - Duration of Failure

- Duration of Maintenance
  - Arrival/departure of contractor

- Frequency of monthly maintenance
System Today

Implemented to over 23,000 lifts to serve over 1 million homes
Instantaneous Detection & Rapid Rescue for Trapped Passengers

Detection in 10 sec

15:00:00
Detect

15:00:10

15:25:00*

Arrive

Deploy

The Current System
Universal Lift Tracking System for major brands and models

and more
• Start with prototype development and then go for a pilot implementation

• Be prepared to address new set of challenges as the system scales up

• Design with resilience – identify the weakest link
Thank You

Q & A

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