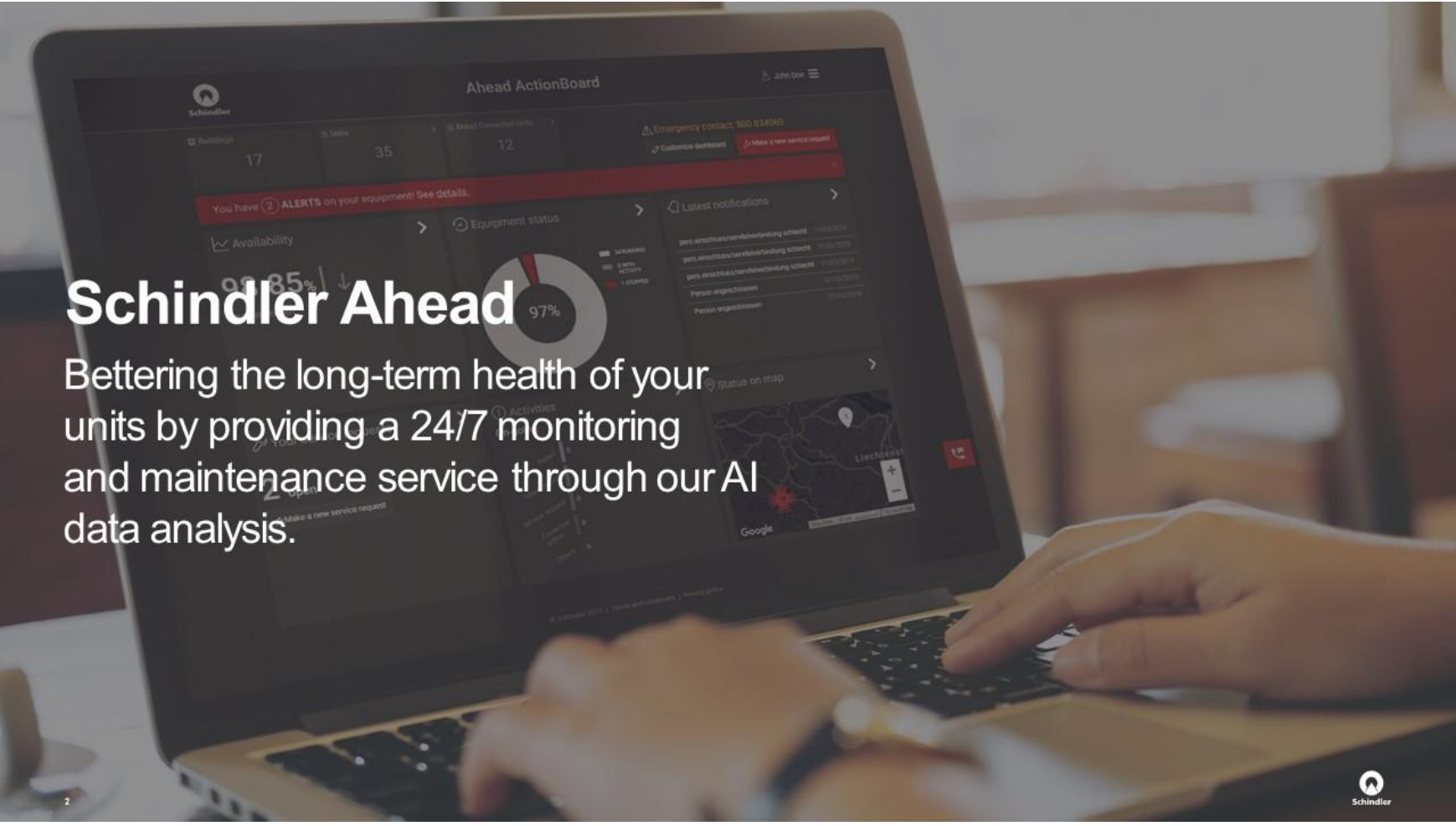
Preventive Maintenance Strategies and IoT Application in Fostering Lift Works and Public Safety

預防性保養策略及物聯網之應用以促進升降機工程及公眾安全

Xavier Fung
Digital Business
Internet of Elevators and Escalators (IoEE)

Jardine Schindler

Schindler

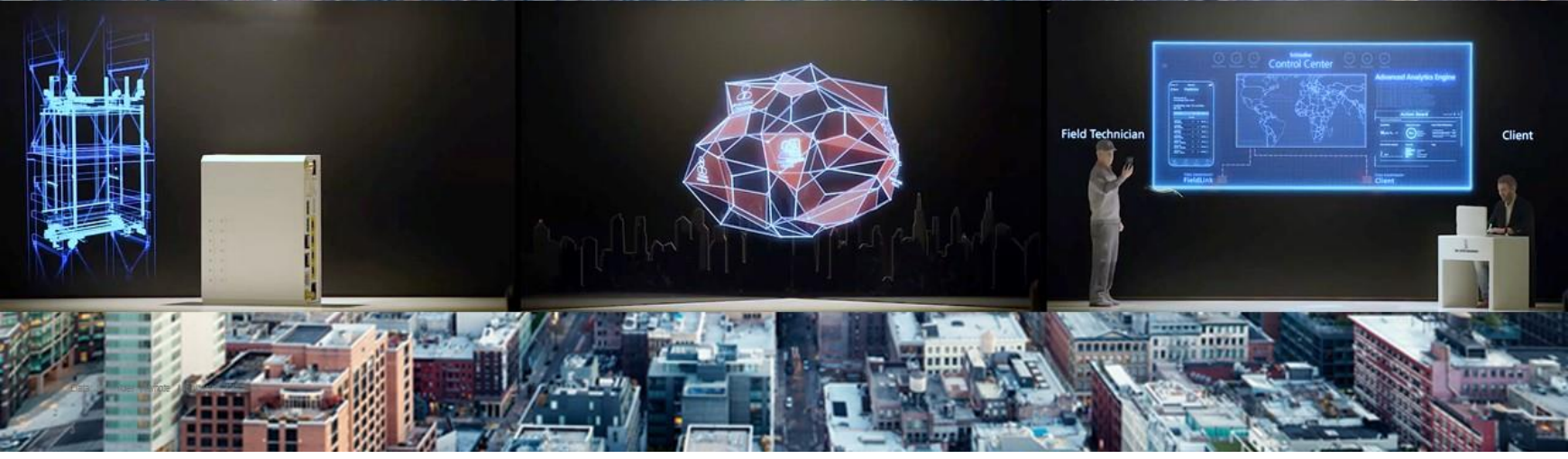


Schindler Ahead

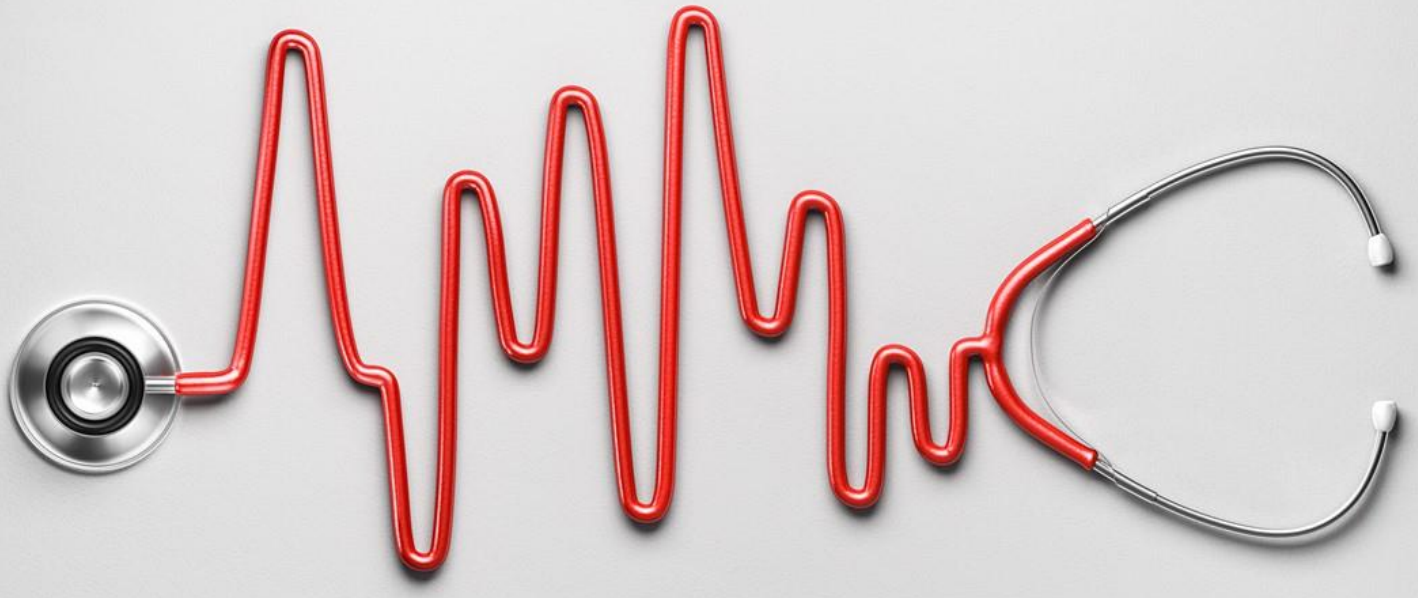
Bettering the long-term health of your units by providing a 24/7 monitoring and maintenance service through our AI data analysis.

Schindler

A closed-loop platform



Benefits of Schindler Ahead




24/7 monitoring and analysis on the health of your units to ensure that your units are under constant, consistent care.
Using machine learning to improve the insights, actions and overall quality of your maintenance and repair visits.
Bettering the long-term health of units by taking early intervention actions
Total transparency on the health and status of your units with provision of our ActionBoard

Schindler Ahead Remote Monitoring Platform

The **Diagnostic Engine** in the background of Remote Monitoring Platform (RMP) can create different symptom categories, depending on the specific messages received. For each case the diagnostic engine analyses the available data and proposes smart actions.

Health Maintenance Actions

- Sporadic door movement
- Deterioration in battery charge

- TOC Engineers can help determine if symptoms should be escalated further
- Creates a checklist for technicians in mobile platform
- Dealt with efficiently in the next service visit

- Long term unit health is improved
- We work with technicians to monitor the value of the actions
- Symptom patterns are reviewed to identify potential issues

Breakdown Intervention Actions

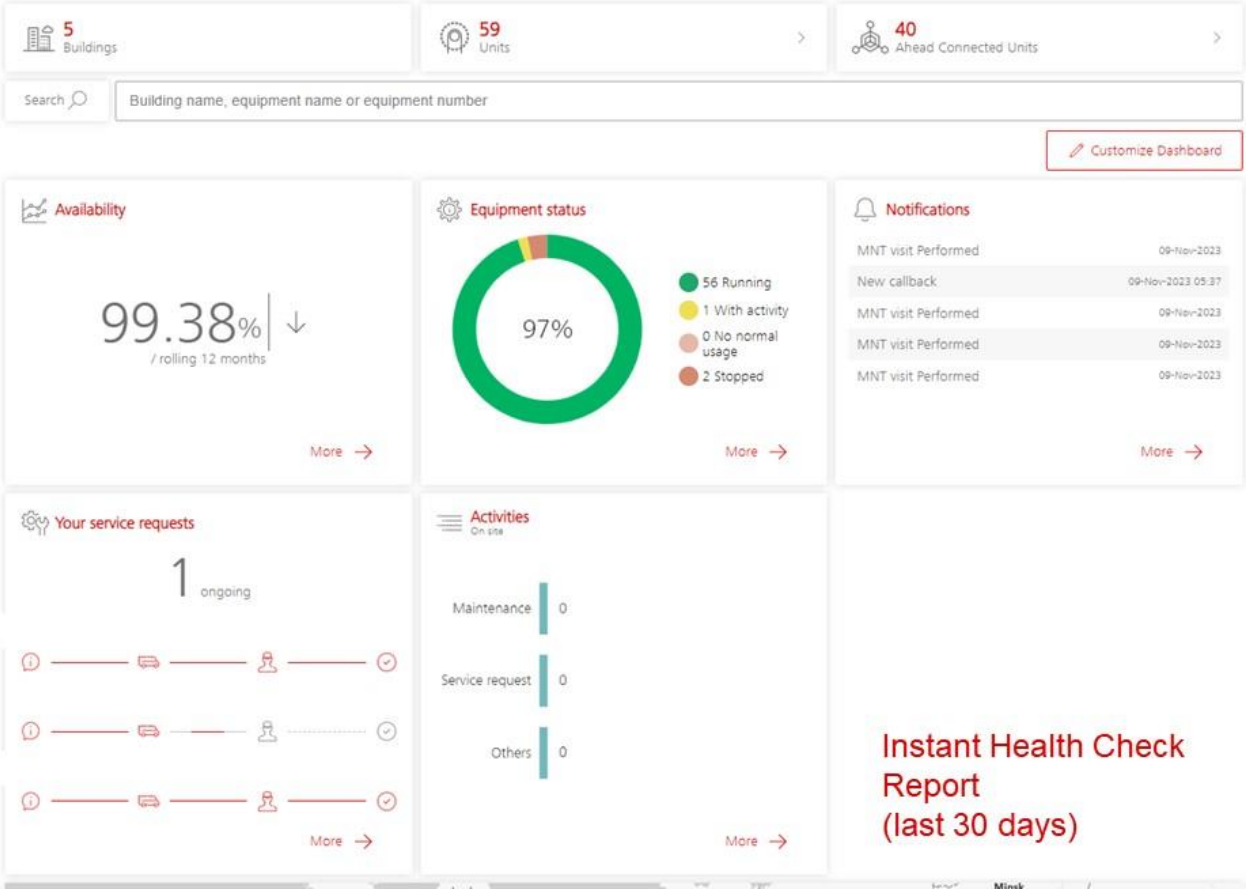
- Breakdown after short-circuit
- Trigger of safety circuit
- Blocked door
- Communication loss

- High priority callback and dispatch technicians to go on site for intervention.

Advanced Breakdown Handling

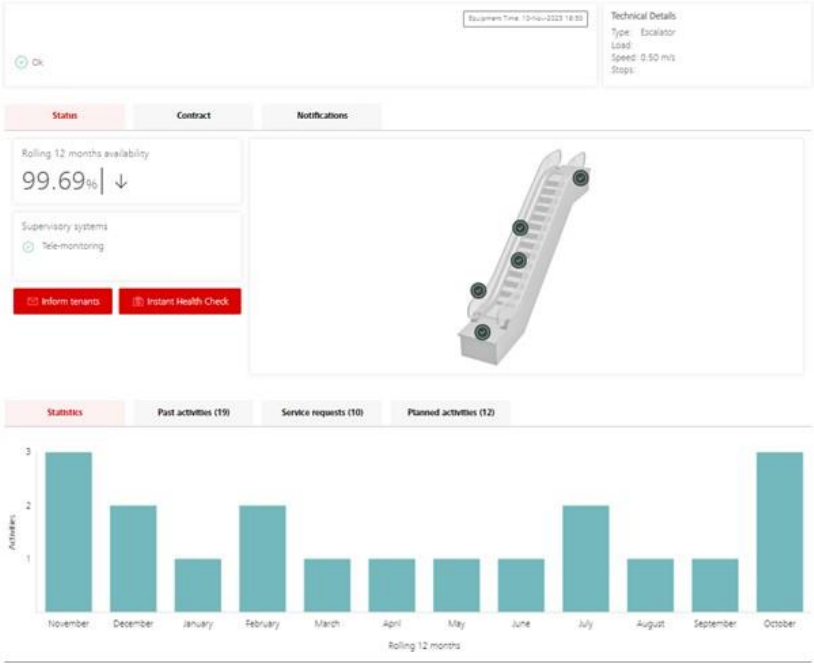
Schindler Ahead ActionBoard

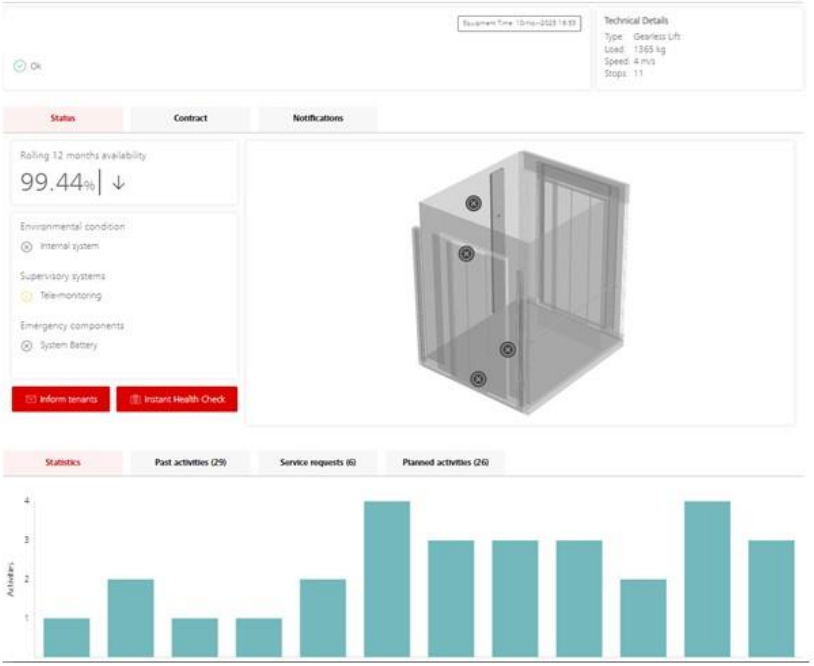
Website and Mobile (iOS and Android)



Instant Health Check Report
(last 30 days)

ActionBoard Platform – Website





Thank you for your time.

- Xavier Fung
  Manager, Service Operation & Digital Business
  Tel: 852 6285 5706
  Email: xavier.fung@schindler.com

- Rory Lonergan
  Senior Executive, IoEE
  Tel: 852 9591 8988
  Email: rory.lonergan@schindler.com

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This is a clip from the 31 July 2024 recording of the

Hong Kong Housing Authority

"Safety Forum 2024 for Works and Property Management Services"

The speaker on stage is Mr Xavier Fung

Service Operation Manager, Schindler Lifts (Hong Kong) Ltd

His topic is

"Preventive Maintenance Strategies and IoT Application in Fostering Lift Works and Public Safety"

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(00:28)

Hello everyone, distinguished guests, online viewers

and all those in the audience

First of all, on behalf of Schindler

I would like to thank the organizers, the Housing Authority

the Construction Industry Council, and Occupational Safety and Health Council for the invitation

to share and exchange ideas with all of you here today

on how Schindler deploys preventive maintenance

to enhance the maintenance quality of lifts and escalators

thereby improving passenger safety

and how we use real-time monitoring

to accurately notify technicians

about issues in lifts and escalators

This allows them to use the most efficient and convenient ways

to complete their work

reducing occupational safety and health risks they may face

In simple terms, Schindler has a product called "Schindler Ahead"

which provides continuous health monitoring

of elevators around the clock

It identifies potential issues with the elevators

allowing frontline technicians and engineers to receive recommendations

for inspections and timely maintenance

Let's take a look at the right side of the screen

For example, in a single elevator

there are many different built-in sensors already

especially in newer models

These include various sensors

such as levelling sensors and speed sensors

Essentially, by installing a small device

the data from the elevator is uploaded to the cloud

where we have an factory-built diagnostic engine

Our experts analyse big data through machine learning

identifying various rules

For example, certain conditions

may lead to specific incidents

And the system can identify this correlation

These analyses are then transmitted via the internet

to each maintenance technician's mobile phone

During real-time repairs

or maintenance of the elevators

technicians can view work orders

to understand any issues and follow-up actions are required

The system also provides them with recommendations on what needs to be addressed

On the other hand, colleagues at the hotline centre

can see what incidents have occurred with the elevators

Through the hotline centre

they proactively contact the client to inform them of the issues identified

and then arrange maintenance personnel to follow up on-site

Let me give another example

Consider a person

who might only see a doctor when they have a cold or cough

or perhaps only get a check-up once a year

and discover issues only afterward

Elevators work in a similar way

Technicians cannot constantly

monitor elevators in the machine room

or the status of escalators

They typically rely on routine maintenance

every week or every two weeks

along with annual inspections to identify problems

and follow up accordingly

Our “Schindler Ahead”

is like having a family doctor residing in your home

monitoring your health status

watching your heartbeat and blood pressure

Schindler Ahead analyses elevator data

to identify issues and follow up accordingly

Then, our big data analyses

all the information

through machine learning

to identify exactly what problems the elevators may have

At the same time, technicians provide feedback to the system
informing it of issues that need to be followed up on
This helps improve the system's accuracy
In the long run
through preventive care
We can enhance maintenance quality of the elevators
Additionally, clients can
monitor the status of the elevators online in real time
providing transparency to users
Here are some practical examples
Our diagnostic engine
primarily operates in two different ways
There is a “health maintenance action” on the right side
during routine maintenance the technicians will be
informed by big data about
any potential issues they might encounter

For example, the doors may slow down
or the battery might be running low
requiring replacement
During routine maintenance
technicians will see a checklist
that prompts them to take action
The system provides various suggestions
allowing them to accurately follow these recommendations
thereby increasing the precision of the maintenance

On the other hand, when an elevator malfunctions

we have a failure intervention action in place

Here are some examples of immediate malfunctions

For example，if there is an issue with the elevator doors

or a signal problem that causes the elevator to stop

colleagues at the hotline centre

will receive notifications

They then directly inform the technicians about the specific issues

So, before the technicians arrive on site

they already know the issues with the elevator

This allows them to be adequately prepared

to follow up in the machine room

What are the differences between using "Schindler Ahead"

and traditional process

The main distinction

lies in the grey area below which represents the traditional process

In a typical building

when passengers notice an issue with the elevator

or get trapped inside

they notify to property management

or contact the elevator hotline

to report the situation of the elevator

Only then will technicians be dispatched to follow up on-site

Upon arrival

the technicians have to identify the problem

They may need to conduct a detailed inspection

before determining the necessary parts

for replacement

Schindler Ahead essentially detects the underlying issues

We proactively inform the clients about the root cause of the problem

or the parts that need replacement

By the time the technicians arrive on site

they already know the issue

and are prepared with the necessary parts for follow-up

This is especially useful during major incidents

For example, if there's a sudden power drop

If luck is not on their side, the technicians might have

to climb ten or twenty flights of stairs, or even higher

to reach the machine room and identify the problem

They would then propose a solution to address the issue

Now they will be informed in advance about the issues, enabling them to take follow-up actions

This is a client interface

that displays the overall health status of the entire building

It also includes the health status of escalators and various elevator systems

Due to time constraints

we can offer a more detailed explanation

If you're interested , please reach out to us to make arrangements

Thank you all

Thank you for watching

(08:06)