New standard of smart building under New Normal

Digital Transformation
Sustainability & Resilience

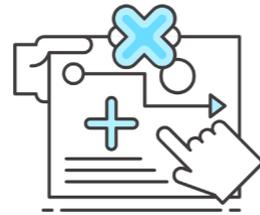*Multiply Negawatt effect in 5th Generation Revolution*

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Current issues with existing building

Why cannot building be smart ?
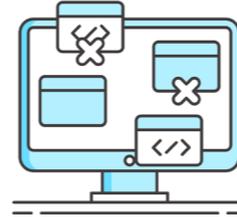
Complicated and Disconnected systems

Lack of record of Operation and Maintenance

Poor data quality for analysis

Lack of Expertise

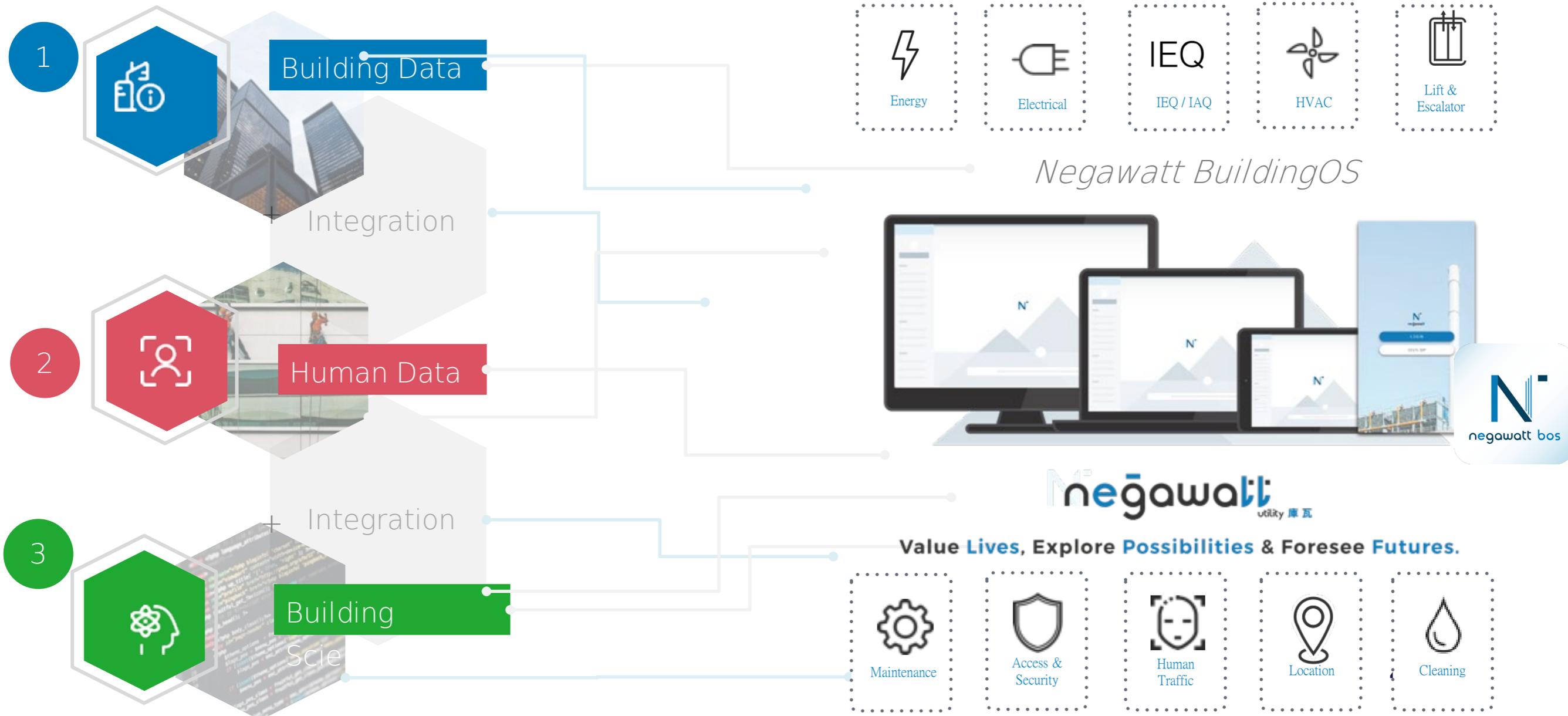High Investment Cost

$ 500

$ 5,000

*Limited Function
Low Scalability on Function
No Integration*
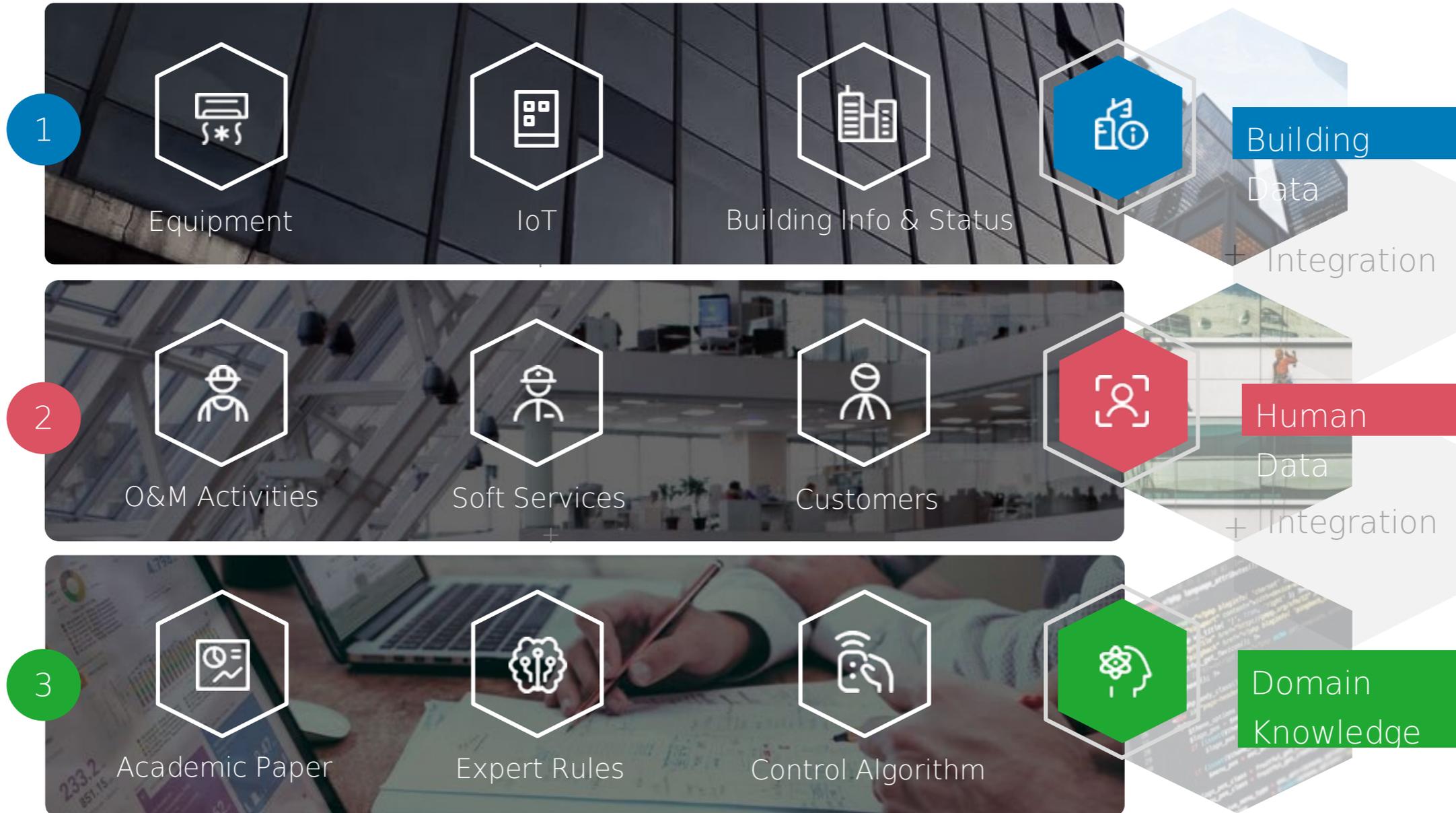
*Multi Function
Scalability
Integration
Cross Applications*

BuildingOS to Help You Manage **Daily Building Operation**

Simplifying all complicated operation systems, all in one and less is more.

1 Building Data

Integration

2 Human Data

Integration

3 Building Scie

| Energy | Electrical | IEQ IEQ / IAQ | HVAC | Lift & Escalator |

Negawatt BuildingOS

negawatt utility 庫瓦

Value Lives, Explore Possibilities & Foresee Futures.

| Maintenance | Access & Security | Human Traffic | Location | Cleaning |

negawatt bos

All in One, One for All

Integration as a Service (IaaS) to Enhance Building Performance

1

Equipment

IoT

Building Info & Status

Building Data

+ Integration

2

O&M Activities

Soft Services

Customers

Human Data

+ Integration

3

Academic Paper

Expert Rules

Control Algorithm

Domain Knowledge

What do we do?

IoT company with Artificial Intelligence for property digital transformation

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negawatt utility 負瓦
Value Lives, Explore Possibilities & Foresee Futures.

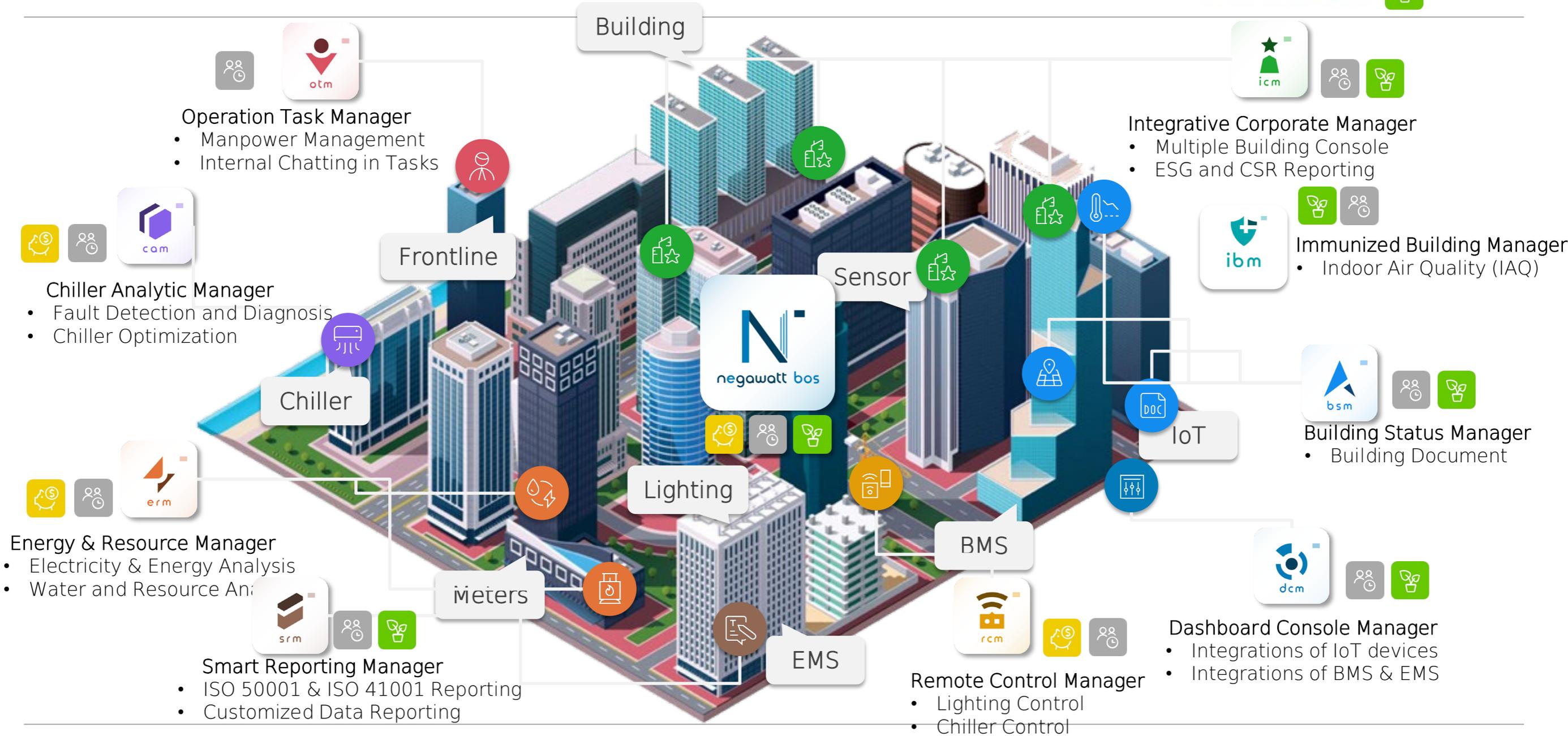| cam	ibm	otm	bsm	rcm	dcm	icm
Chiller Plant RCx With AI & Automation	COVID Airborne Risk Management with IAQ	Frontline Taskforce Management	Building Maintenance Record	Equipment Remote Control	IoT & Smart Meters Integration & Visualization	Integrated Portfolio Management

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Negawatt Building Operating System (Negawatt BuildingOS)

"Increase Asset Value by Saving Time, Energy and Resource though Digital Transformation"

ESG
- Save Money
- Save Time
- Save Resource

Building

Operation Task Manager
- Manpower Management
- Internal Chatting in Tasks

Integrative Corporate Manager
- Multiple Building Console
- ESG and CSR Reporting

Frontline

Chiller Analytic Manager
- Fault Detection and Diagnosis
- Chiller Optimization

Immunized Building Manager
- Indoor Air Quality (IAQ)

Sensor

Chiller

negawatt bos

Building Status Manager
- Building Document

IoT

Lighting

Energy & Resource Manager
- Electricity & Energy Analysis
- Water and Resource Ana...

Meters

BMS

EMS

Dashboard Console Manager
- Integrations of IoT devices
- Integrations of BMS & EMS

Smart Reporting Manager
- ISO 50001 & ISO 41001 Reporting
- Customized Data Reporting

Remote Control Manager
- Lighting Control
- Chiller Control

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Company Highlight

30+ years
RnD / Industry Experiences in Building / Facility Service

Started from 2016
Series Pre-A
20+ Staff

Developed	Developed
1	**9**
Cloud Platform	Modules
100+	**1,000**
No. of buildings deployed	Daily Active Users

55,000,000 ft2
Floor area managed

240,000,000 kWh
Yearly energy managed

Managing
~85.5 Bn
Data / year

300%+
FY18-20 YoY Growth

Headquarters
Other Markets

HK office: Room 702, 7/F, Block B, Sea View Estate, 4-6 Watson Road, North Point, Hong Kong
Tel: (+852) 3188 3103

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Negawatt Customers (Hong Kong)

Within 3 years of marketing, Negawatt has wide range of customer bases, covering various sectors, including developers, building owners, hotels, government, school, data center etc.
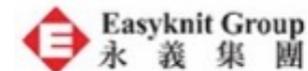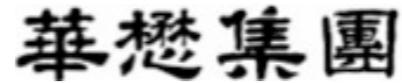
Strategic Partners

Well-performed Algorithm to Achieve Chiller Plant Energy Saving

Chiller Analytic Manager (CAM)

Features

- Chiller Optimization via A.I./ Big Data Analysis
- A.I. self-learning to identify energy saving opportunities automatically
- Equipment Fault Detection and Diagnosis

Benefits

- Saves 10%-20% energy on Chiller Plant
- Chiller Plant Signature
- Reduce energy engineering data crunch time
- Avoid human error based on experience
- Preventive Maintenance
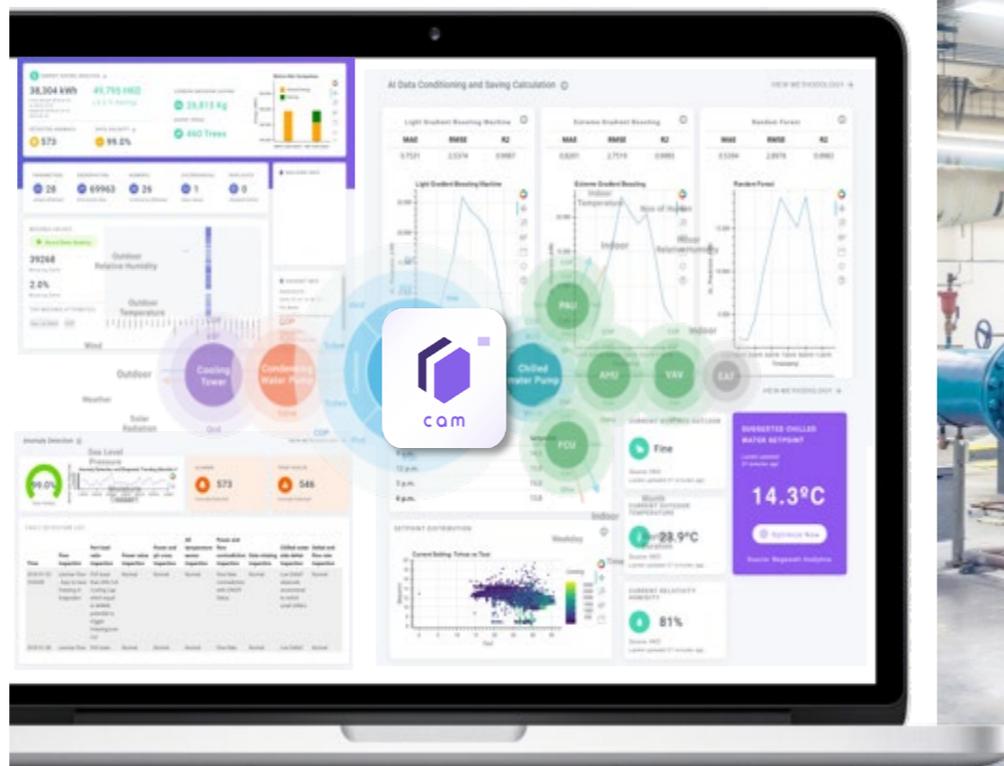
Fault Detection Optimization

Optimization

Predictive / Preventive Maintenance

Process of Applying AI on HVAC

Data Collection
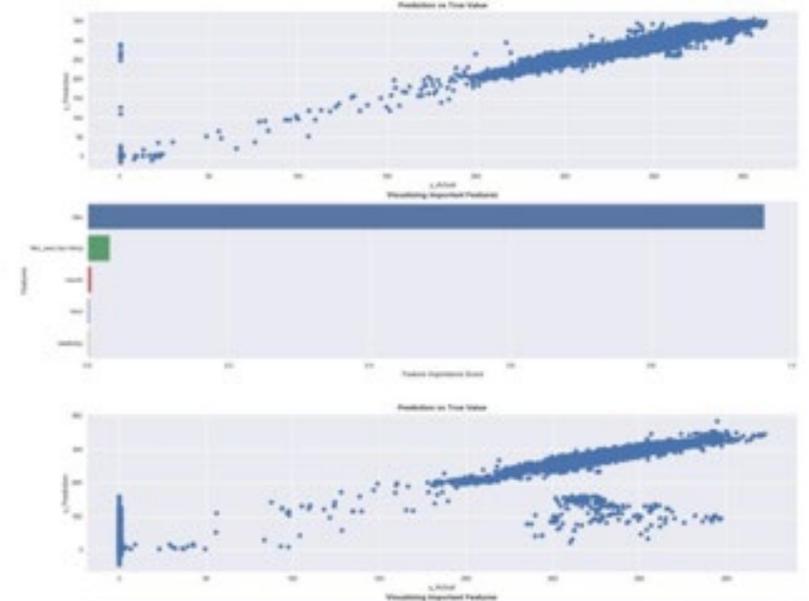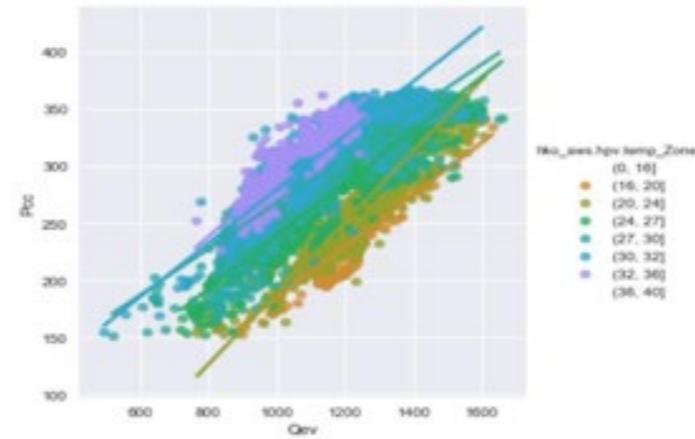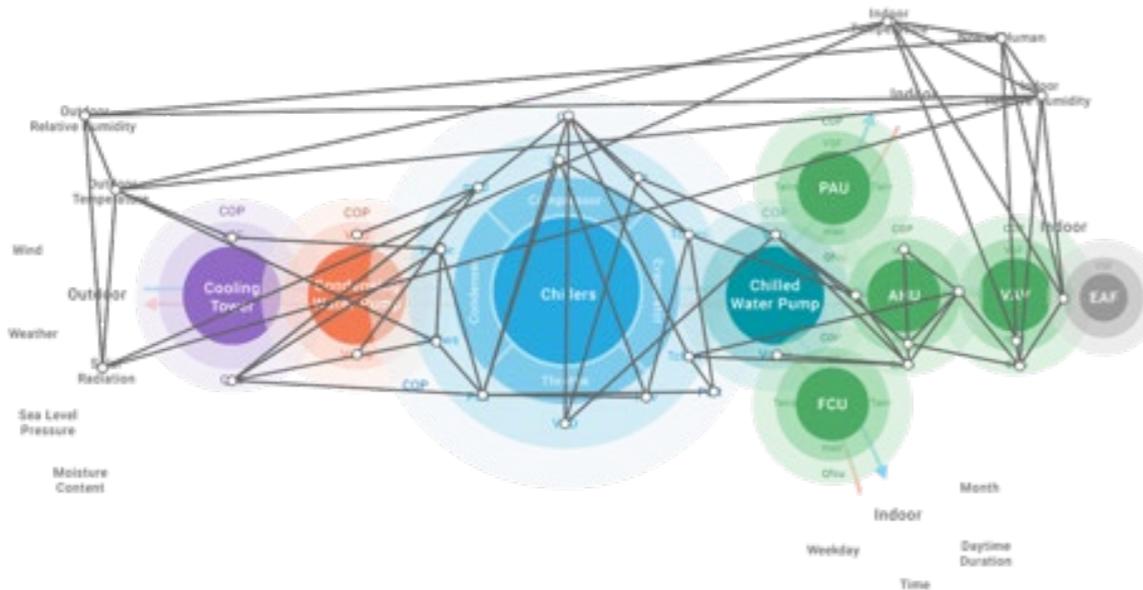1. BMS
2. IoT
3. Weather patterns
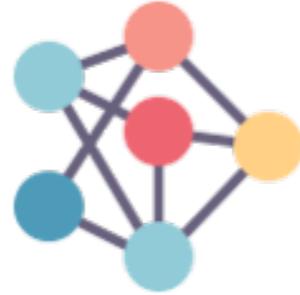
Machine Learning with A.I Models
1. Outdoor parameters
2. Indoor parameters
3. Equipment performance

Detect, Predict, Control
1. Fault Detection
2. Prediction for capacity
3. Automate Process

EMSD Hanson's Competition

機電工程署
EMSD

2018 EMSD Hanson's Competition
3 Merit Awards

Announced on 2020-07-31

2019 EMSD Hanson's Competition
2 Outstanding Awards, 5 Merit Awards

2019

Hanson Grand RCx (Implementation) Award	Electric Tower
Outstanding RCx (Implementation) Award	One Island East
	One, Two & Three Exchange Square and the Forum
	Pacific Place
Outstanding RCx (Proposal) Award	✓ Gateway II
	Great Eagle Centre
	✓ Towngas Headquarters Building
RCx Continuous Enhancement Merit	✓ Lippo Centre
RCx Special Challenge Merit	✓ Delilios Public School
RCx Technical Approach Merit	Three Garden Road
RCx Merit Award	Cathay City
	Mikiki
	✓ Ocean Centre
	✓ Ocean Terminal Extension
	✓ Sun Hung Kai Centre

47% (7/15)

Awarded buildings Implementing
Negawatt BuildingOS

SHK Group Job Reference

- Improve IEQ, Energy and Equipment Efficiency
- Building Information and Documentations Upkeep
- Save Operation and Engineering Hours
- Multiple Certification & Awards

Case Study

Converting Successful Cases to Group Deals

New Era of Property Services

AI and Digital Transformation of Technical Services

Local efforts are important for a carbon-less & smart city.

Since September 2019, Sino Group has engaged Negawatt, a local prop-tech company specializing in smart building solutions, to further continue its digital transformation process for technical services and to drive sustainability initiative by reducing energy consumption.

With the efforts of property management team and Negawatt's big data, IoT technology and AI analysis, Exchange Tower is able to reduce 12%+ of its chiller plant energy consumption while maintaining same indoor comfort level under same comparable conditions. Echoing with EMSD's promotion of retro-commissioning (RCx), Sino Group is able to take it a step further to perform continuous retro-commissioning work with Negawatt's smart building platform.

Reduce

12%+

of its chiller plant energy consumption

Case Study

Exchange Tower
2 months after using Negawatt BOS

Office Space	Shopping Mall
55,741m²	9,290m²

Since Sep 2019

2020 SINO Smart City New Blueprint

Sino Group addresses the importance of on-going retro-commissioning work. Retro-commissioning is one of the key initiatives to promote energy saving for existing buildings. With Negawatt's professional domain expertise in building operational & systematic process, followed by a comprehensive on-site measurement testing and massive data analysis, the Negawatt's smart building platform can help to identify energy saving and in-turn lower energy bills.

A greener, cleaner, livable, sustainable, resilient and competitive city

Selected Sites for Future Deployment

tmtplaza

Omega Plaza

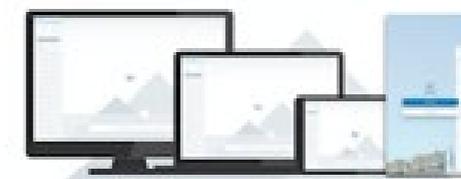Cameron Plaza

Ocean Building

Ginza Square

12% Saving in energy

48,865kg CO2e savings

610,000+ Data collected & analyze

14 Families Electricity use for 1 year saved

HKD108,365 90,490 kWh saved

negawatt

Users are able to monitor data anytime anywhere on any digital devices.

$4,200,000
savings per year

Customer Success Stories

Multiple testimonials and recommendations from world class customers

華懋集團
Chinachem Group

"我對它的效能"非常有信心！"

Mr. Donald Choi
CEO of Chinachem Group

Scientific way to monitor and control indoor air quality to fight COVID 19
Immunized Building Manager (IBM)

Real Time IAQ Monitoring & Control

Virus Propagation Risk Management

Indoor Wellness

HK office: Room 702, 7/F, Block B, Sea View Estate, 4-6 Watson Road, North Point, Hong Kong
Tel: (+852) 3188 3103

Anti-COVID Risk Management

How it Works

Collect Data w/ IoT

People Data

Building Environment Data

Research

Effective IAQ Management to meet **New Normal Standards**

- Email Alert System
- Disinfect Technologies Control
- Ventilation Control
- Report on measured data

Alert & Control

安心空間

Analysis Visualization Report

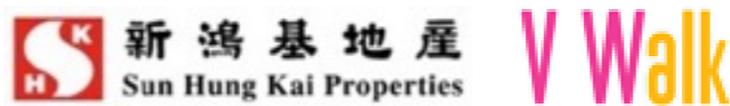Low — Medium — High

Virus Propagation Risk

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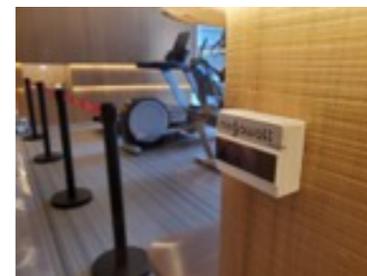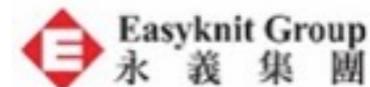# Anti-COVID Risk Management

Project Case in Buildings

Office

Shopping Mall

Residential
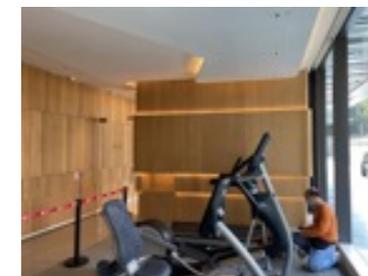
Sustainable Building Under New Normal = Green and Healthy

Energy Optimization

Safety

Make your sustainable building work for you

Address: Room 702, 7/F, Block B, Sea View Estate, No.4-6

Watson Road, North Point, Hong Kong

Tel: 6377 9234

Fax: 3188 3372

Email: david.chan@negawatt.co, info@negawatt.co

Website: www.negawatt.co