

dooroo<sup>eye</sup>

# Security & Safety Robot

"doorooeye" capable of surveillance  
with autonomous driving

Autonomous  
Security + Safety  
Robot as a Service



# Robot surveillance with autonomous driving

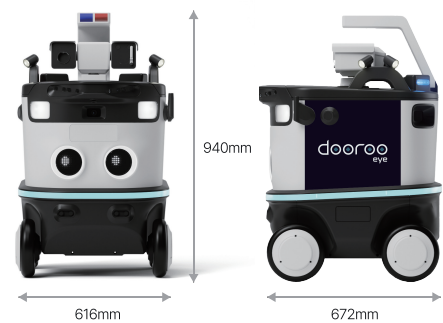
## DOOROOEYE

### Introduction

- 'doorrooeye' is specialized in ensuring security and safety based on outdoor autonomous driving.
- 'doorrooeye' drives autonomously around the perimeter of a facility to detect security and safety threats and prevent accidents in advance. Operator can check through a single service platform.
- 'doorrooeye' contributes to increasing level of security and safety of facilities by creating operational synergy with existing security personnel.



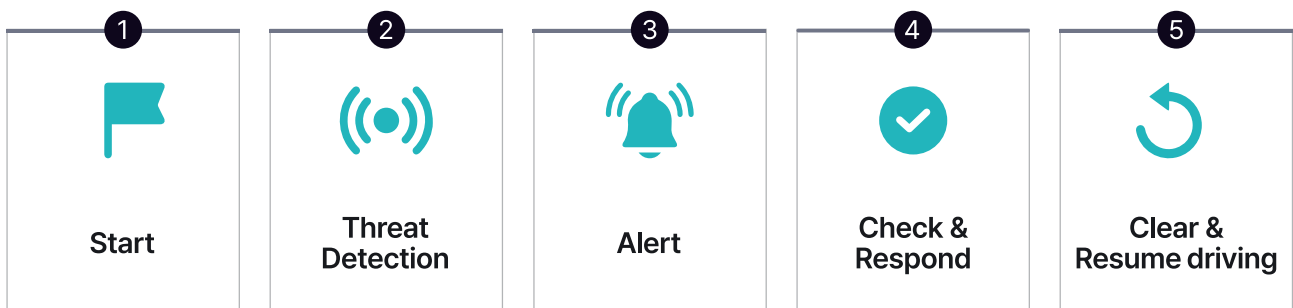
User UI



Shape and dimension

### Operation scenario

'doorrooeye' is responsible for the security and safety of facility, day or night, rain or snow.



- ① Start(standby) : Charging battery and starts autonomous driving at the set time
- ② Threat Detection : Drives and stops to detects heat sources, gases, objects above a threshold
- ③ Alert : When threat is detected, alarm is sent to the operator
- ④ Check & Respond: Send the on-site situation in real-time to assist operator check and respond to the situation
- ⑤ Clear & Resume driving : Once the abnormal situation is resolved, autonomous driving is resumed

# Autonomous Security & Safety Robot

## Description of doorooye's main function & feature

### Thermal + Optic Camera

- Detection of fire, unusual high temperature and smoke based on threshold temperature
- Expansion of shooting range with pan, tilt function of camera
- Water & dust resistant (IP67), secure clean optic screen in rainy weather with a wiper



### Warning & LED Lamp

- Warning lamp designed to recognize from the rear and high-brightness reflective tape from the front that 'doorooye' is moving



### Emergency equipment

- (Option) Throwing fire extinguisher, AED, First aid kit
- Equipped for immediate use

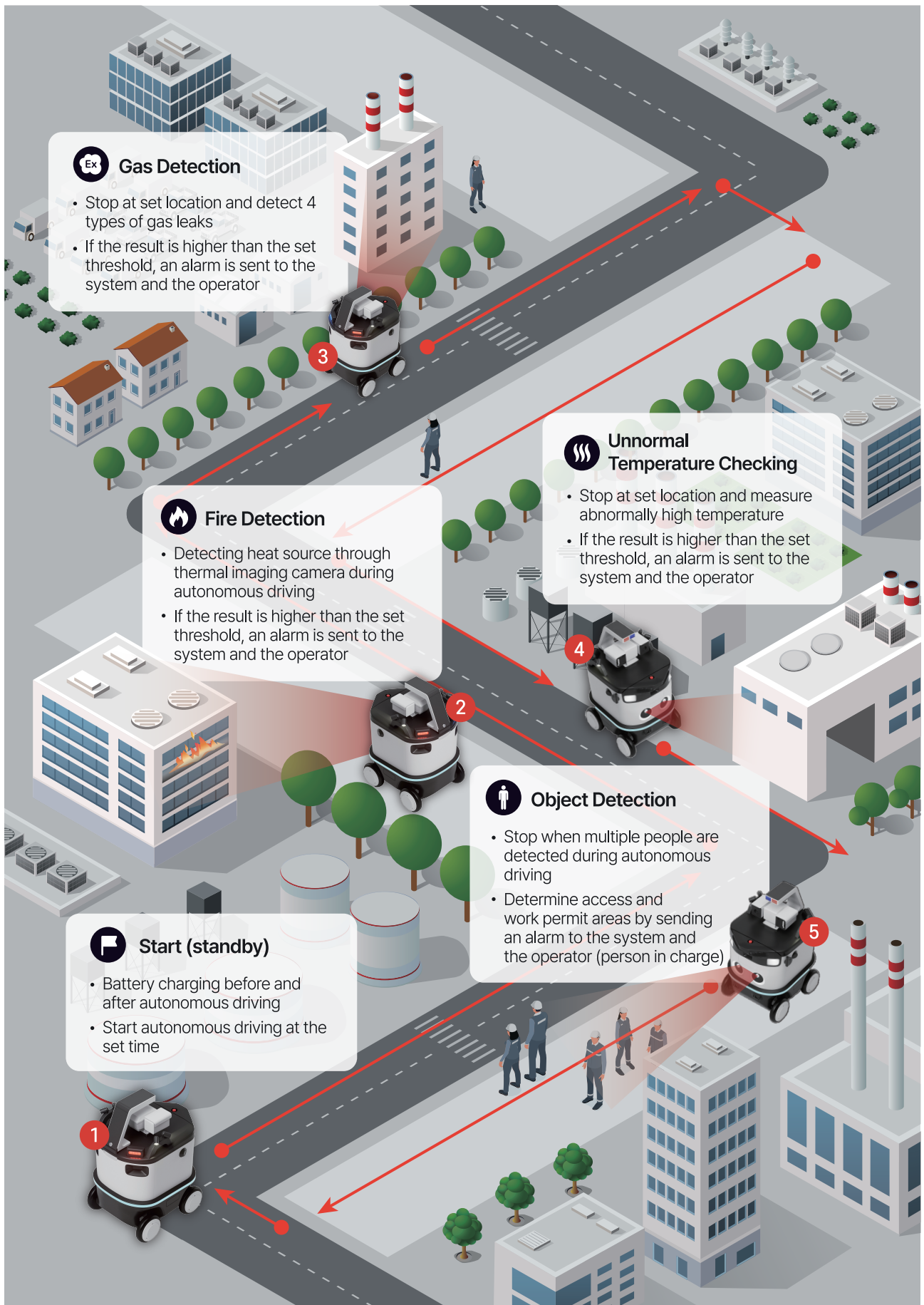


### Gas Sensor

- Suction-type gas sensor
- Equipped inside the robot to detect 4 different gases in a designated location
- Possible to combine 4 gas sensors for detection (among 30, need to discuss)



# Autonomous Security/Safety Robot Service Flowchart



## Expectation

### Strengthen security & safety threat response



- Advanced surveillance based on detection of fire, smoking, gas, object
- Send real-time alarm for immediate response by the operator
- Equipped with first aid kit for initial treatment in the event of accident

### Creating security operation synergy effects



- Possible to drive no matter the day or night, rain or snow, or vacancy
- Redeem security or safety labor shortage in industrial sites

### Intuitive System



- Secure and display fast and accurate data when an event occurs (Normal: toast alarm, Abnormal: Pop-up alarm)
- Monitor real-time driving situation, thermal imaging screen, gas data, on a single service platform

### Block human errors and data logging



- Block human errors with data-driven alarm
- Support cause analysis by providing alarm video saving and viewing function

## Product Specifications

<b>Robot Size</b>	616 × 672 × 940 (mm)	<b>Weight</b>	About 87kg
<b>Operating Speed</b>	3.6km/h	<b>Battery Capacity</b>	120Ah / 3000Wh
<b>Recommend Operation Hour</b>	about 8 hrs	<b>Recharging</b>	about 5hrs / wire (Option. wireless)
<b>Temperature Range</b>	-20°C to 550°C	<b>IR Distance</b>	Up to 30m
<b>Camera Dimension</b>	321 × 194 × 153 (mm)	<b>Pan / Tilt Range</b>	Pan: 0.5°/s to 90°/s Tilt: 0.5°/s to 40°/s

<b>Gas Detection</b>  Possible to combine 4 gas sensors for detection (need to discuss)  *Detects 4 gases by default	*CO	*O <sub>2</sub>	*H <sub>2</sub> S	*Ex (Flammable)	
	CO <sub>2</sub>	CH <sub>4</sub>	NH <sub>3</sub>	H <sub>2</sub>	CH <sub>2</sub> O
	CL <sub>2</sub>	O <sub>3</sub>	SO <sub>2</sub>	NO	NO <sub>2</sub>
	C <sub>6</sub> H <sub>6</sub>	C <sub>7</sub> H <sub>8</sub>	C <sub>8</sub> H <sub>10</sub>	C <sub>3</sub> H <sub>8</sub>	PH <sub>3</sub>
	F <sub>2</sub>	HF	CLO <sub>2</sub>	HCL	HCN
	THT	ETO	HBr	VOC	-



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