VUERON

Vueron LiDAR Solution

View.Two

Vueron Technology Co., Ltd.

KOREA office_ 18F, Gangnam-daero 382, Gangnam-gu, Seoul, Korea

US office_ 2665N 1st St. Suite 110, San Jose, CA 95134, US

Europe office_ 355-3F, Herzogspitalstrasse 24, 80331 Munich

sales@vueron.org

www.vueron.org

LiDAR Solution Provider

Make people safer
Make life smarter

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Read the World in 3D
The World you see in real-time,

Vueron recognizes the world in 3D.
All roads are identified by distance, width, and slope.
All spaces are identified by height, width, and depth.

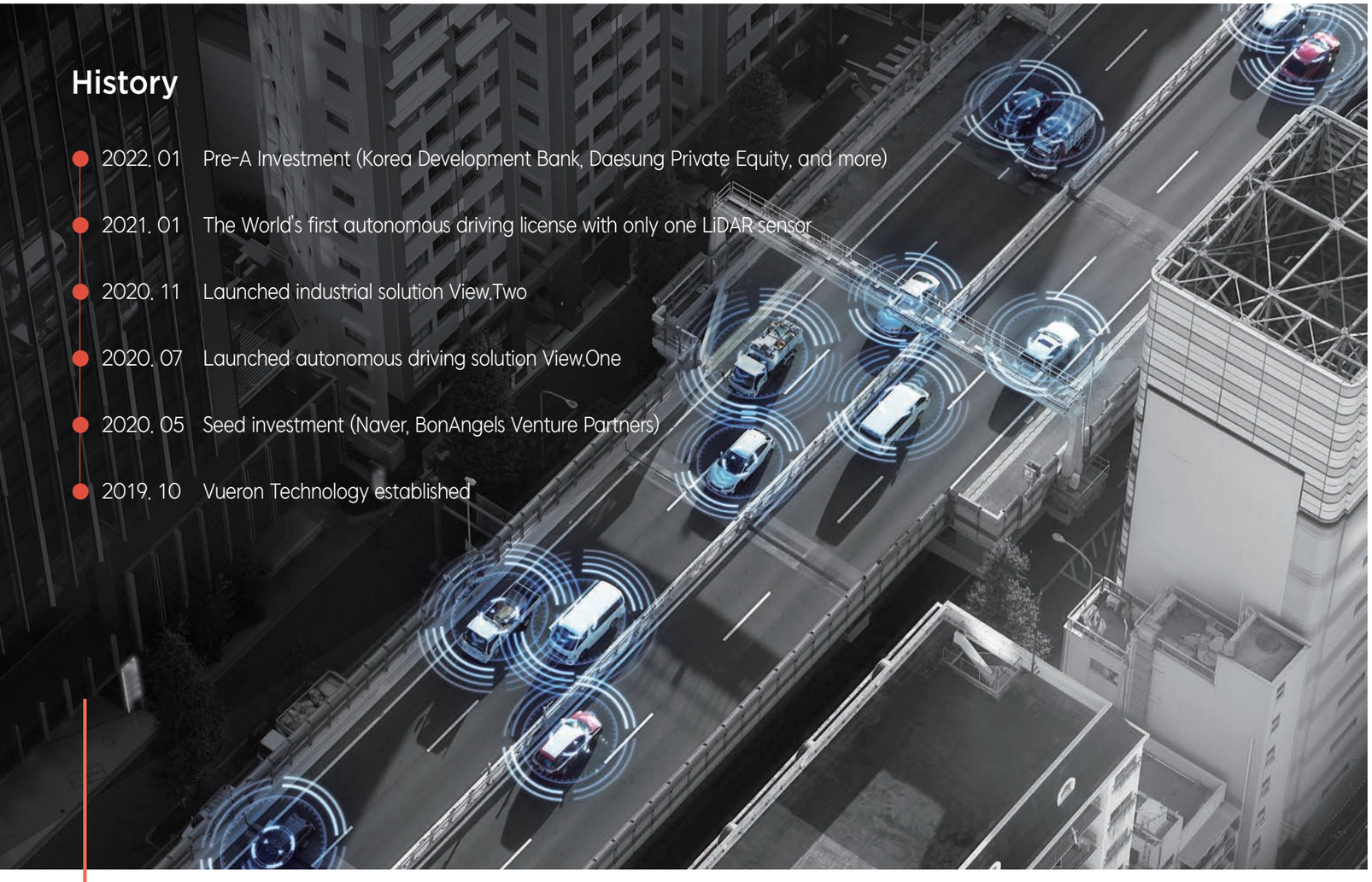
Vueron shows all information in real-time
and catches every single event.
Vueron detects the velocity of all moving objects.

When you recognize the world in 3D,
Your vision and perception become clearer.
When you identify the world in real-time,
Your decisions and actions become more precise.

In a phrase, life is safer and the world is smarter.
From our homes and lives to our industries and society,
We make life safer and smarter than ever.

From now on, Vueron will be the global standard.

Innovation of LiDAR **surprised the World** Technology of Vueron **will change the World**



History

- 2022. 01 Pre-A Investment (Korea Development Bank, Daesung Private Equity, and more)
- 2021. 01 The World's first autonomous driving license with only one LiDAR sensor
- 2020. 11 Launched industrial solution View.Two
- 2020. 07 Launched autonomous driving solution View.One
- 2020. 05 Seed investment (Naver, BonAngels Venture Partners)
- 2019. 10 Vueron Technology established

Make people safer, Make life smarter **with Vueron**

Autonomous driving LiDAR solution
View.One

Smart LiDAR solution
View.Two

Ambitious start with experts from autonomous driving industry

Vueron Technology is a tech start-up by engineers from an autonomous driving lab in a global OEM. Devoted to technological development with the core belief of creating a safe world with LiDAR solutions, Vueron has concentrated on making the perfect solution to detect all objects. Eventually, View.Two, a smart LiDAR solution, was born based on AI algorithm to maximize LiDAR usage.

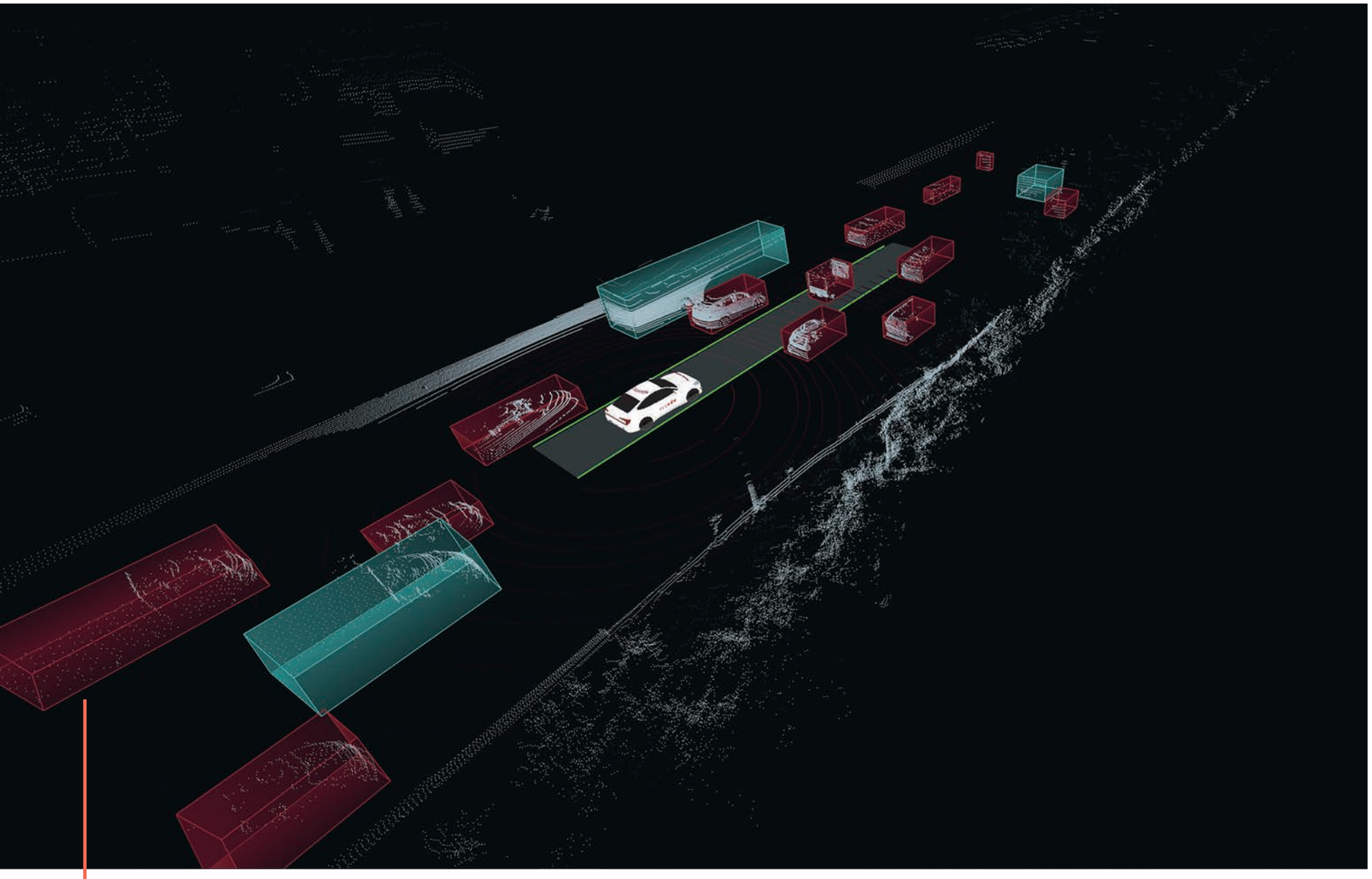
The world's first autonomous driving by using only one LiDAR

Vueron stands out for its LiDAR solutions and autonomous driving technology. Vueron received one of the few self-driving permits issued by the South Korean government, and is the only company to have received the permit by using only one LiDAR sensor. Following the receipt of the government permit, Vueron executed a fully automated, 414 kilometer, LIDAR-only drive from the capital city of Seoul to the southern port city of Busan, at a maximum speed of 100 km/h. The mandated safety driver on board did not hold the steering wheel once during the full five hours of the drive.

Essential for LiDAR application

Without Vueron solutions, LiDAR sensors just show basic information consisting of a bunch of dots. Vueron transforms these 3D dots into valuable information for customers. Vueron aims to create a safer life and a smarter world by providing LiDAR solutions that can be applied to various applications through continuous technological evolution. These solutions cover not only autonomous driving systems, but also intelligent transportation systems (ITS), smart factories, smart security, smart cities, and more.

Making smart cities a reality
Smart LiDAR solution, **View.Two**



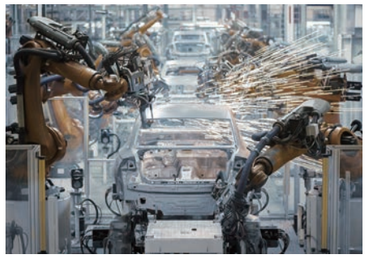
Make people safer, Make life smarter **with View.Two**

Following View.One, the autonomous driving LiDAR solution, View.Two, a smart LiDAR solution to create a smart city, was born.

View.Two helps people live in a safer world without disrupting privacy, day or night. It can detect, classify, and track physical security breaches in any environment. View.Two, in cooperation with other sensors and systems, can be applied to traffic management, energy management, intelligent infrastructure, and more in a smart city.

It will be a core technology for building the infrastructure of smart cities by connecting with various systems and services.

Across industries and companies, homes and life, The various applications of View.Two



Smart Factory

Ensuring safety between heavy machinery and workers and providing a highly efficient working environment

Financial Institution

Protect customers and assets of financial institutions with high-level, perimeter security and intrusion detection.

Port Facility

Build a high-level security system by real-time monitoring of unauthorized intruders in facilities

Research Institution

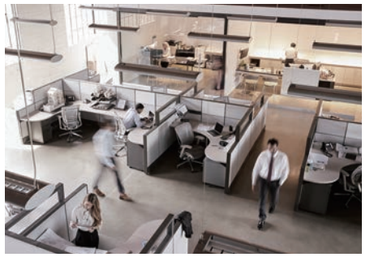
Safely protect information assets with a safety net that detects even potential threats and provides access control

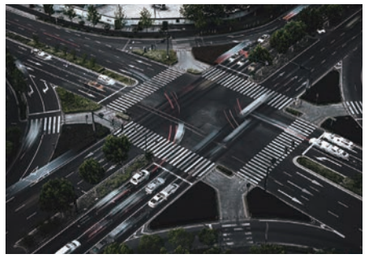
Construction Site

Detect routes and traffic at worksites to prevent incidents and design efficient routes

Building & Office

Provide a safe and secure environment that satisfies both the convenience of employees and the efficiency of companies





Road Traffic

Improve traffic flow and safety through tracking flow of vehicles, pedestrians, and monitoring real-time traffic conditions.

Residence

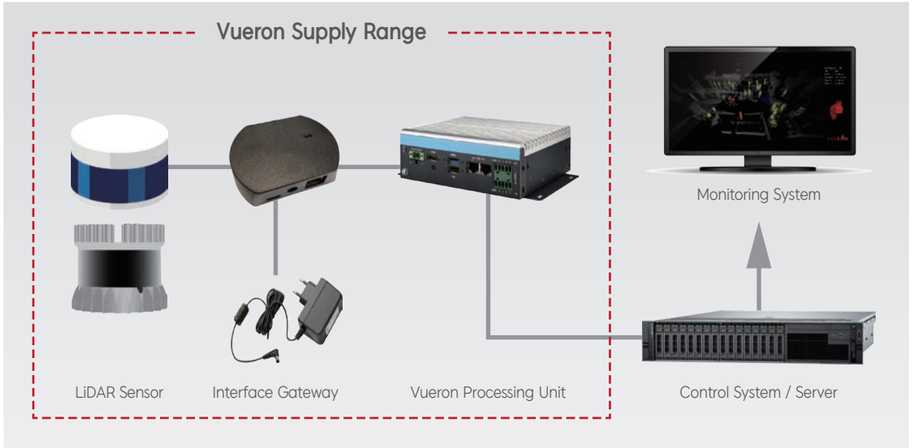
Provide an access system that can be flexibly controlled with security levels for each area

Flexibility to **connect** with various devices **Capability** becomes **optimized** the more you connect

Make people safer, Make life smarter **with View.Two**

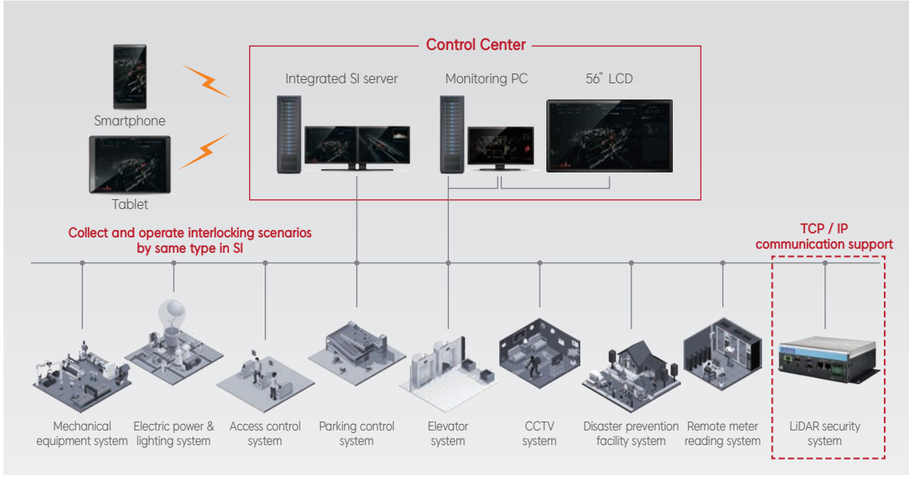
Immediately applicable as middleware to existing control systems

View.Two can be applied immediately as middleware without replacing existing control systems. This is possible because of the compatibility and flexibility of View.Two, as it can be connected to any operating system and network.



Perfect security by connecting the integrated control system

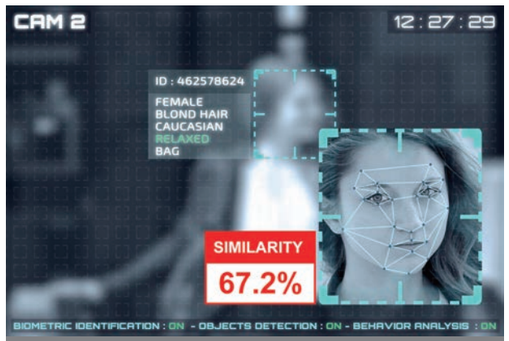
Scenarios for each situation can be managed and controlled more completely through connection with integrated control systems: security, CCTV, access control, disaster prevention facility, elevator, mechanical equipment, electric power & lighting.



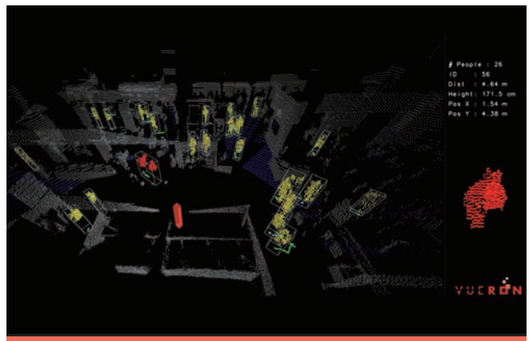
A reliable solution to **protect personal information and assets.**

Security solutions that comply with the Personal Information Protection Act

Existing CCTV exposes limitations due to the strengthened Information Protection Act. View.Two is a security solution that respects personal information by providing 3D data about the object to be observed in real time without collecting personally identifiable information.



Existing



View.Two

Control solutions for reducing the cost of increased manpower

View.Two is one of the solutions helping budget issues due to manpower increases in the control center. Previously, multiple people monitored multiple screens. However, View Two facilitates fewer people to monitor fewer screens.

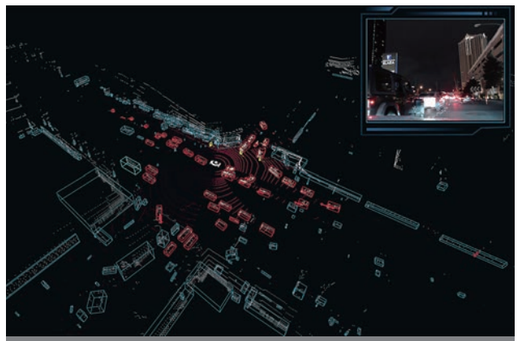
Existing

View.Two

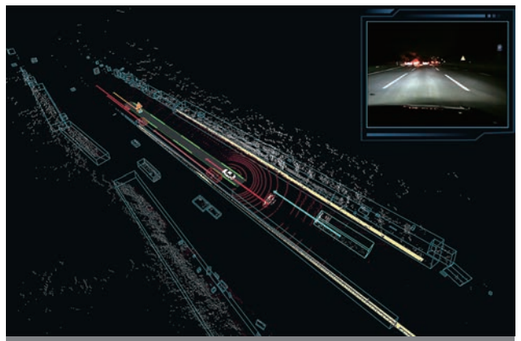
A LiDAR solution **without the limits of visibility, both day and night**

360° field of view, detect up to 150m range

View.Two is stably operated both at night and in low-light environments. It is possible because the LiDAR sensor FoV works up to 360° and the detection distance is up to a 150m range.



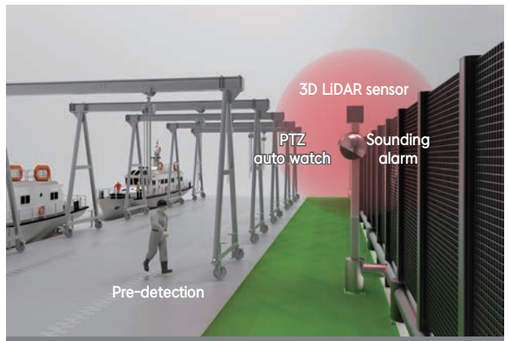
At night



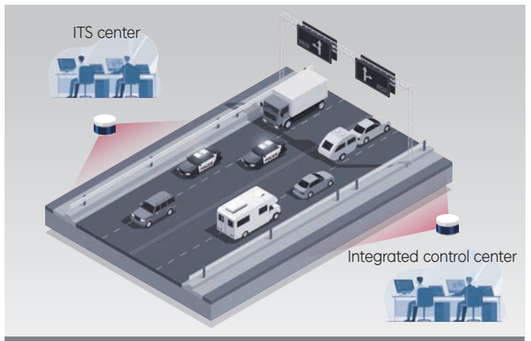
In low-light

Higher security levels by eliminating blind spots

View.Two utilizes the wide FoV of the LiDAR sensor to perfectly observe blind spots that existing monitoring systems miss. Additionally, View.Two can build a more accurate and safer security system by connecting with existing monitoring systems such as CCTV and PTZ cameras.



Blinding spots monitoring



Wide range monitoring

Make people safer, Make life smarter **with View.Two**

The starting point of smart cities,
State-of the-art technology, View.Two

Make people safer, Make life smarter **with View.Two**

View.Two is the best among all solutions to build smart cities.

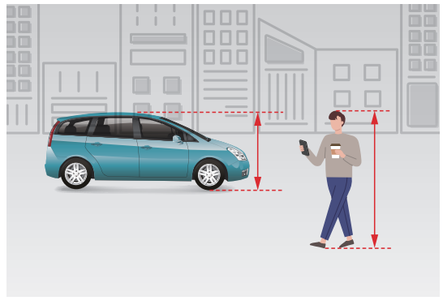
View.Two, a LiDAR solution, will be responsible for the basis of all systems operating to make people safer and make life smarter in smart cities.

In any area that constitutes smart cities: autonomous driving systems, intelligent transportation systems, smart factories, smart security, and more.

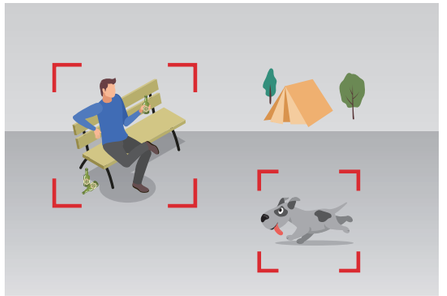
View.Two is in charge of the safety, security, efficiency, and convenience for smart cities by connecting with all applications and devices.

Intruder detection and tracking

People counting

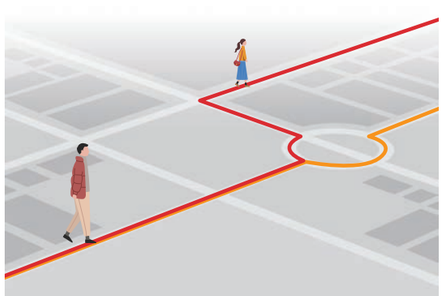


Object size measurement



Specified object tracking

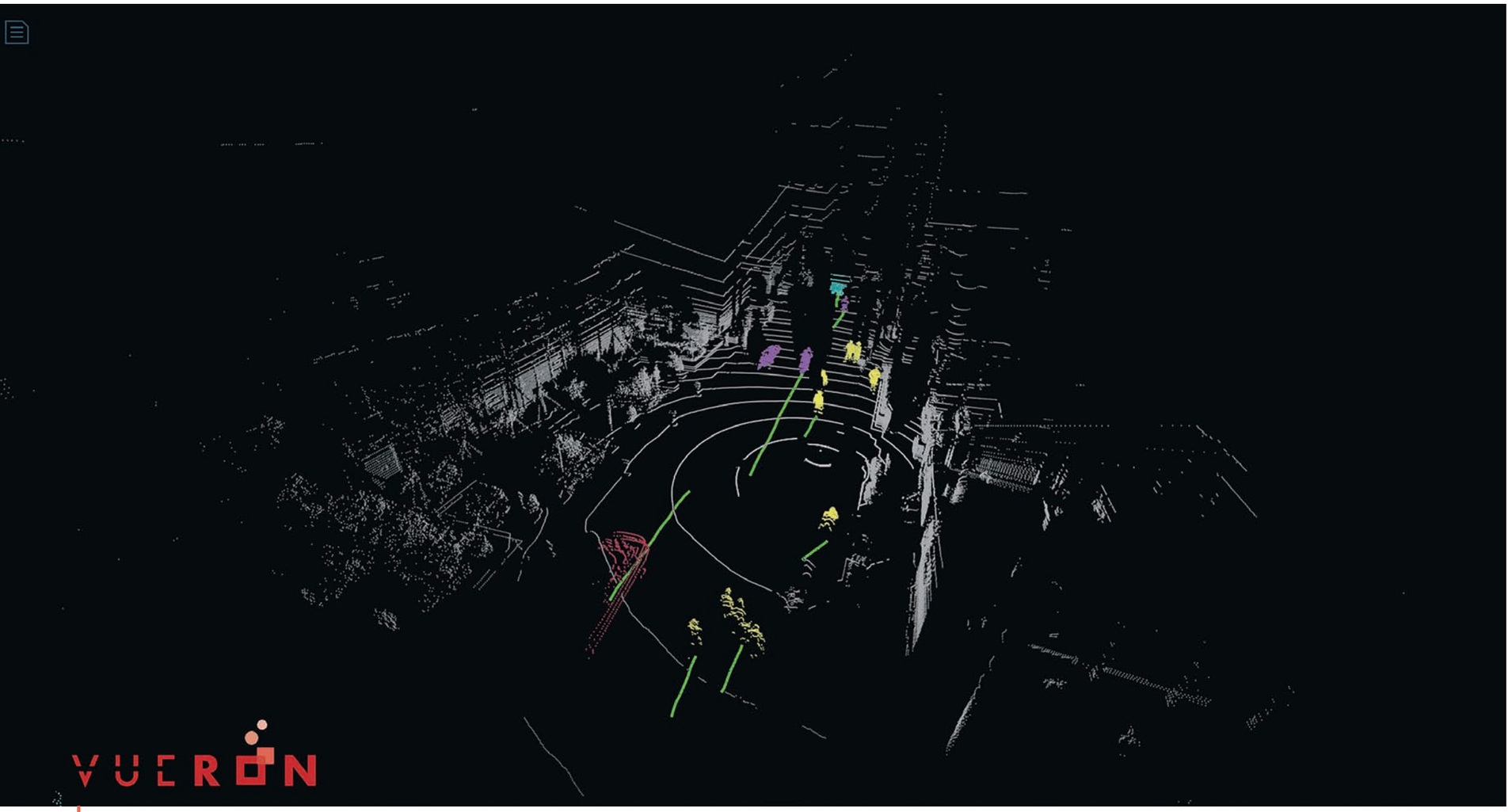
Danger zone setting and alarm



Heat map

Basic information

All objects are detected accurately and precisely, and control efficiency increases with optical and intuitive UX



All objects and targets observed can be accurately and precisely detected. One LiDAR perceives hundreds of thousands of pieces of 3D data per second, and the accuracy of detection is 2 to 3 cm.

The position, speed, direction, and trajectory of detected objects are visualized in three dimensions and converted into real-time data. In addition, View.Two provides high satisfaction concerning the various needs and projects of customers, through interlocking and connecting with various systems.

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Object Perception & Recognition

Recognizes and displays individual objects by designated types of classifications.

Detected individual objects are classified into passenger cars, commercial vehicles, cyclists, pedestrians, and unknown objects, and are displayed on the screen with a square box and an identification color.

Once recognized, speed and trajectory within the recognition area are continuously tracked and displayed. This provides immediate data necessary for traffic information systems, security systems, and control systems.

Object Indication

- Individual object : White Box
- Object type
  - Passenger car : Red
  - Pedestrian : Yellow
  - Two-wheeled vehicle : Purple
  - Commercial vehicle : Light blue

Zone setting & People counting

Possible to designate an area of requiring special monitoring
Possible to classify and count objects that have entered a zone

Areas of interest that require special monitoring within the detection area can be individually and precisely set separately. The data of moving objects in the area of interest is separately checked as the number of people entering the area, approach route, speed, and trajectory.

In the case of performance halls or galleries, zone data enables efficient visitor management. In addition, it is possible to establish effective security systems in dangerous areas of construction sites and special security areas of financial institutions.

Object Indication

- Individual object : White Box
- Object type
  - Passenger car : Red
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  - Two-wheeled vehicle : Purple
  - Commercial vehicle : Light blue

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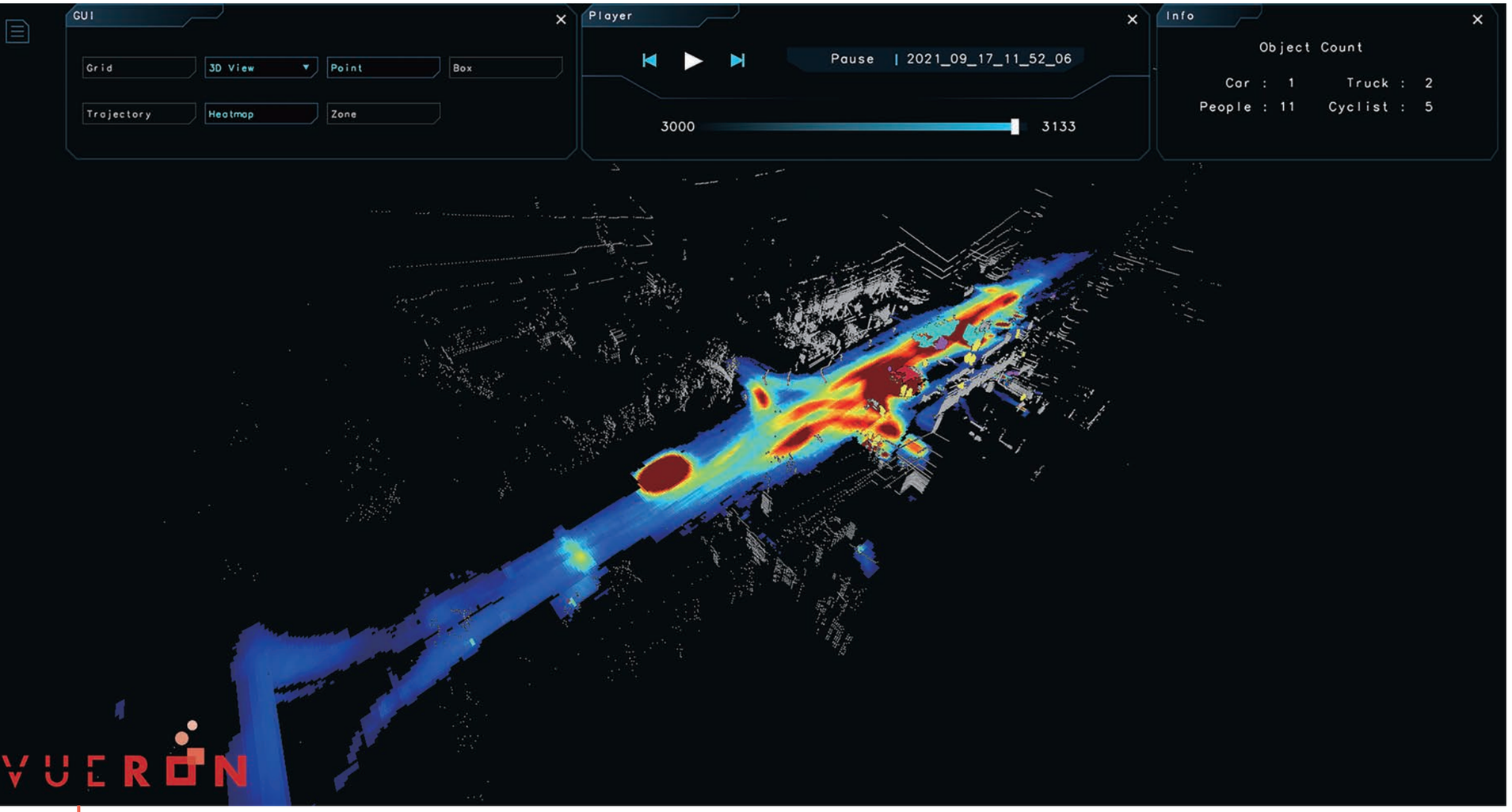
Heat map

The data tracking the continuous trajectory of an object
is also used in marketing areas such as commercial facilities



All objects detected in View.Two continuously track the trajectory and data including the residence time for each point. View.Two has already accumulated specific classification analysis of data in various fields.

In shopping malls, large marts, and department stores, heat map analysis can be used as marketing data to determine time periods, stores, and number of customers visited.

Object Indication

- Individual object : White Box
- Object type
  - Passenger car : Red
  - Pedestrian : Yellow
  - Two-wheeled vehicle : Purple
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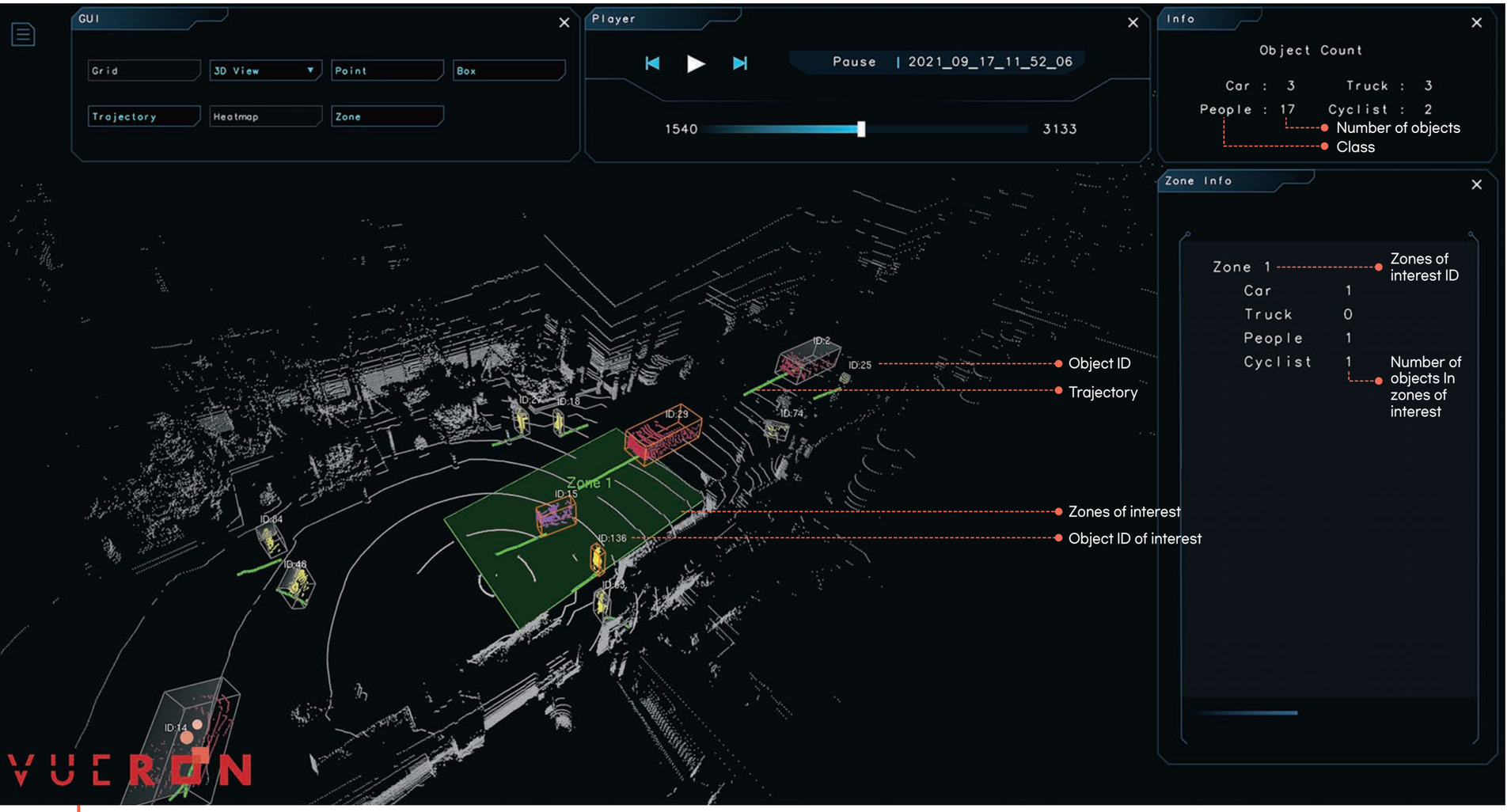
Main output data

The screen displays three-dimensional information on detected objects and zones of interest.



Detected objects information

Output data	Contents
Number of objects	The number of all objects recognized within the measurement range
Object ID	A number assigned to identify an object
Class	Types of objects classified by detected results
Trajectory	Route of moving objects

Zones of interest information

Output data	Contents
Zones of interest	Initially set zone of interest
Zones of interest ID	Unique number for each initially set zone
Number of objects In zones of interest	The number of all detected objects in zones of interest
Object ID of interest	Identification number of all detected objects existing in zones of interest

Simulation case by application LiDAR
Smart LiDAR Solution View.Two

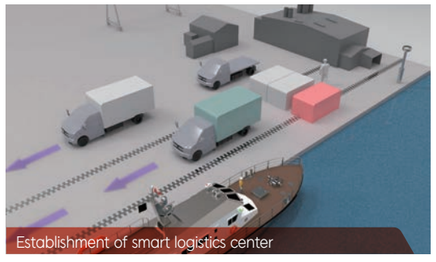

Securing safety between heavy equipment and workers


Heat map

Smart factory

Through separation of machine and worker areas, it prevents accidents and solidifies operator safety by activating an alarm when an operator's risk of collision is detected and activating an alarm for equipment shutdown.

It analyzes the heat map of the movement path of personnel and objects in the factory to find the shortest path, and maintains an efficient working state by monitoring worker activity status.


Establishment of smart logistics center


Intruder and anomaly monitoring

Port facility

View.Two analyzes movement of logistics, trajectory, size, etc., and builds a systematic and efficient logistics system in connection with the facility control system.

It blocks intruders in advance and monitors abnormal situations with accurate detected data that eliminates blind spots in the security system with a 360° viewing angle.

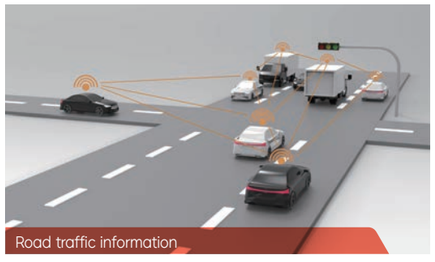

Prevention of worker accidents


3D identification of construction site

Const-ruction site

It collects distances and movement lines between operators and heavy equipment to prevent collisions in advance. Additionally, it monitors worker activity status to support smooth construction progress.

View.Two shortens construction periods and reduces budgets by analyzing completion rate based on recognition data of construction objects by time.


Road traffic information

Sharing traffic information

Road traffic

After collecting vehicle data through object detection and classification, It collects accurate road traffic information in real-time by linking with the traffic data center and control system.

View.Two prevents traffic jams and improves safety by providing real-time road congestion and accident situations to each vehicle and driver through a cloud application.

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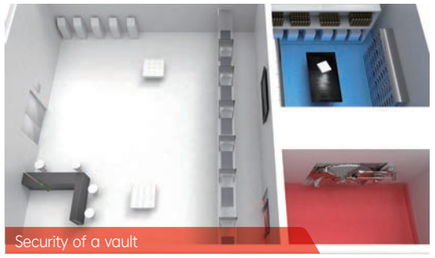
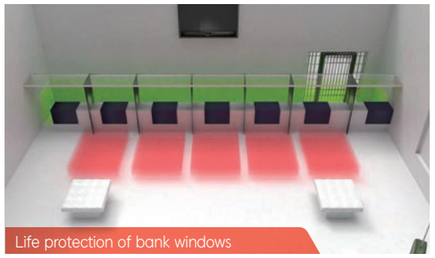
Simulation case by application LiDAR
Smart LiDAR Solution View.Two


Security of a vault


Life protection of bank windows

Financial institution

By setting a vault as a zone of security interest, if an unauthorized person enters, the alarm will be activated throughout the management office or the entire bank.

Designate the counter area as a zone of interest for the safety of customers and employees, along with the protection of assets.
By immediately activating a security guard alarm when a robber breaks into the bank window area, it limits damage to life and property.


The runway and the outskirts of airport


Individual aircraft safety

Airport facility

If the outskirts of the airport, including the runway, are set as a zone of interest, it supports the safety of many passengers and the security of strategic facilities through 24-hour real-time monitoring and the use of alarms.

By setting individual aircraft as zone of interest during take-off and landing, the safety of occupants is maintained. It supports efficient distribution and flow within the airport by identifying the number of passengers and cargo volume.

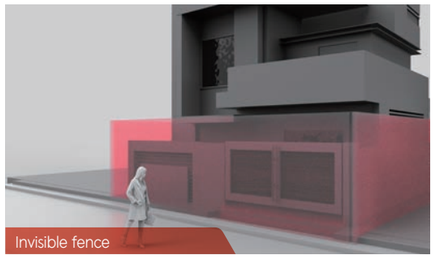

Access control system

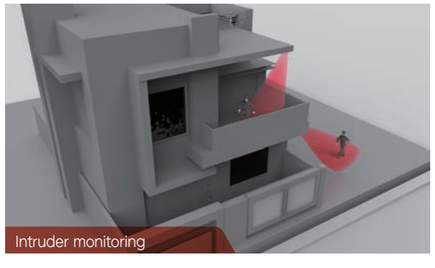

Information security zone

Building Office

Security control is possible in a way that does not infringe on privacy because it detects the access of the ID number registered with the RF card in connection with the access control system.

It tracks the trajectory of an access object and detects immediately when an unregistered object approaches the security area to block the movement of important corporate documents and information.


Invisible fence


Intruder monitoring

Resi-dence

By creating an invisible fence on the outside of the house at a certain distance, an alarm is activated to prevent intrusion from uncertain outsiders.

In the event of an unknown outsider approaching or suspicious behavior, an alarm is activated on an external speaker through connection with the monitoring equipment in the management room. It blocks even potential threats.

View.Two Product composition

Product		Specification
LiDAR Sensor		- Detection range : 0m~120m - Number of channels : 32 channels - Vertical angle : 31° (-16~15°) - Frame rate : 5Hz, 10Hz, 20Hz - Weight : 0.8kg - Size : height 76.00mm / thickness 103.0mm - Power : DC9~36V - Temperature : -20℃~65℃
Interface Gateway		- Power supply power : 24V, 1.5A / AC-DC converter 120V 60Hz Outlet Power - Protocol : Ethernet TCP/IP
Vueron Processing Unit		- Power · Supply power : 9V to 55V DC-in · Interface : 3-pin terminal - Size · 150.4mm X 106.2mm X 57.0mm · Weight : 1.3kg - Operating environment · Temperature : -40℃ to 75℃ · Humidity : 5% to 95% · Shock : IEC 60068-2-27 · Vibration : IEC 60068-2-64
Ethernet Cable		- Specification : RJ45 Standard - Protocol : Ethernet TCP/IP
Network (Communication Protocol)	TCP/IP UDP	
Supported OS (Operating System)	Windows 10(x64) Ubuntu 20.04.3 LTS	- Possible to select according to customer requirements

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Technical and purchasing inquiries

sales@vueron.org