



Case Study: Reimagining Road Safety Throughout the Philippines

eBiZolution teams up with local authorities to track unlawful vehicles and enhance traffic monitoring across the archipelago

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CASE STUDY: REIMAGINING ROAD SAFETY THROUGHOUT THE PHILIPPINES

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MVRES sites monitor vehicle traffic at key locations throughout the Philippines.

With the rapid growth of vehicles on the road, local authorities in the Philippines faced an increasingly demanding responsibility to keep the roads safe.

The government agency responsible for road safety oversees:

- Vehicle registration and driver licensing
- Traffic law enforcement
- Vehicle road-worthiness inspection
- Record maintenance and road safety education

Following the 2017 *Build Build Build* infrastructure development project, the Philippines' government established its command center in Manila as the nerve

center for traffic law enforcement. Its mission: to monitor, enforce, and coordinate traffic law compliance.

Officially operational since September 2021, the agency planned to address challenges in identifying vehicles involved in incidents—whether stolen, improperly registered, tampered with, or used in criminal activities.

BUILDING THE BACKBONE: THE CREATION OF MVRES

To address these challenges, the government developed the *Motor Vehicle Registration and Enforcement System*

Case Study: Reimagining Road Safety Throughout the Philippines



Each IDF substation is equipped with IP cameras and RFID readers.

(MVRES) using modern control technology. Key requirements included:

- **Data collection**—Sensors, cameras, and radio frequency identification (RFID) antennas to capture vehicle data, including license plate numbers and RFID tags
- **Real-time analysis**—Ability to compare collected data with the agency's database to identify vehicles and potential violations
- **Communication to central command center**—Continuous data flow and the ability to monitor and track vehicles on a digital map to coordinate with local traffic and law enforcement
- **Reliability monitoring**—Environmental and operational data to ensure safe operating conditions for the control substations

The MVRES system design was put out to bid, and eBiZolution, a leading systems integrator and certified [Opto 22 OptoPartner](#) in the Philippines, was chosen to support the government's initiative.



THE TECH BEHIND TRAFFIC MONITORING

eBiZolution developed and deployed substations in key locations throughout the Philippines to support the government's new vehicle monitoring efforts. Each

substation, known as an Intermediate Distribution Frame (IDF), is equipped as follows:

- **Integrated data collection and analysis**—RFID readers and IP cameras enabled by industrial PCs and switches gather vehicle data, which is processed using video analytics software.
- **Data transmission**—Dual SIM-based modems provide reliable LTE communication with the central command center. As Nathaniel Marquez, CEO of eBiZolution, notes: "Lists of hot [stolen] vehicles are processed and then transmitted to the IDFs for improved tracking and analytics."

- **Power management**—Each IDF includes local power sources, backup batteries, a generator, and solar panels to ensure continuous operation.

RELIABILITY WITH RIO

While the IDFs are designed to enhance traffic safety, their own security and reliability demanded a robust solution to ensure continuous, mission-critical operation—because protecting the protectors is just as essential.

"We chose [Opto 22] *groov RIO*® because it's a compact universal I/O unit, software configurable, easy to add, and it has open architecture," says Marquez. "The agency can use it confidently, knowing it will work smoothly with other devices, both now and in the future."

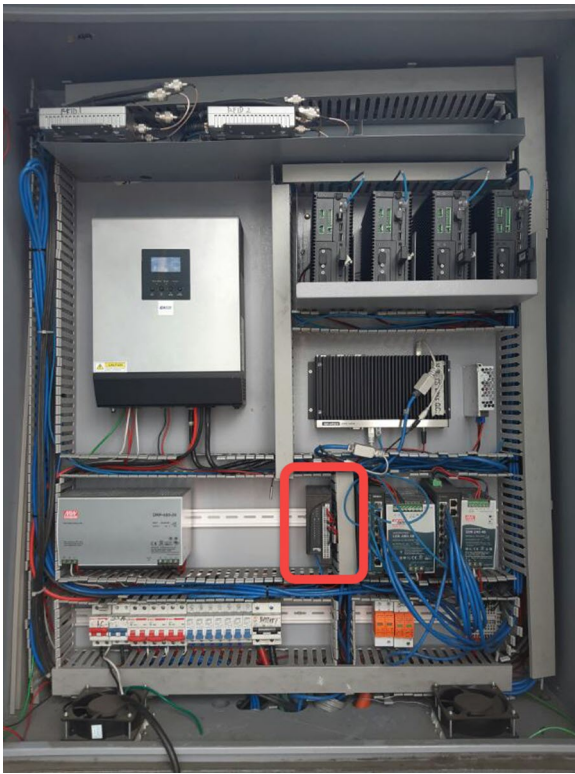
groov RIO, which plays a pivotal role in maintaining the IDFs' functionality and stability, offers key features such as:

- **Infrastructure monitoring**—Critical components such as inverters and batteries are integrated and monitored to ensure a stable and uninterrupted power supply.

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groov RIOs are installed in each electrical panel at the IDF substations.

- **Security oversight**—Real-time data on physical access and surge protection enhances security and resilience from unauthorized intrusions or power disruptions.
- **Environmental stability**—Environmental variables like temperature and humidity within the IDFs are tracked to maintain optimal operating conditions.
- **Continuous communication**—Alerts are sent via a real-time monitoring dashboard within the central command center, located in the agency's head office.

The *groov* RIO ensures that the IDFs operate securely and efficiently, enabling the broader traffic safety system to perform reliably and effectively.

Marquez explains, “*groov* RIO simplified our deployment process and provided the flexibility we needed to meet the diverse requirements of this project—its ruggedness and ease of use were crucial in ensuring the success of installations across multiple locations.”

ROAD TO RESULTS

The implementation of the *Motor Vehicle Registration and Enforcement System* (MVRES) has led to several key improvements:

- **Better vehicle tracking**—The enhanced ability to identify and track vehicles has made it easier to detect unregistered, stolen, or tampered vehicles.
- **Digitally enabled law enforcement**—Faster and more efficient enforcement of traffic laws through real-time data and centralized processing has led to quicker violation responses.
- **Enhanced public safety**—The improved ability to monitor and enforce laws has contributed to better road safety by identifying vehicles involved in crimes or those unsafe for the road.
- **Efficient operations**—The digital system provided by MVRES has streamlined the agency's operations, reducing manual work and improving efficiency in handling vehicle data.

Overall, eBiZolution has modernized the government agency's operations and enhanced the safety and security



groov RIO and network switch inside the MVRES electrical panel

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of transportation in the Philippines. Modern video surveillance and machine vision technology lead the way, while the Opto 22 *groov* RIOs, now installed at key locations across the Philippines, ensure the MVRES system's reliability and continuous operation.

By integrating modern technology with reliable infrastructure, eBiZolution and Opto 22 have strengthened the Philippines' road safety, ensuring that critical operations run smoothly and securely across the archipelago.

ABOUT EBIZOLUTION

eBiZolution, based in the Philippines, has provided system integration services for government and private sectors since 2008. They specialize in areas such as business recovery, cybersecurity, emergency management systems, and custom solutions architecture. Their expertise spans multiple industries, including finance, government, and telecommunications. Known for their collaborative approach, eBiZolution is also a [certified IIoT OptoPartner](#) of Opto 22, bringing tailored, industry-specific solutions to their clients.

For more information, please visit:
<https://www.ebizolution.com>

ABOUT OPTO 22

Opto 22 was started in 1974 by a co-inventor of the solid-state relay (SSR), who discovered a way to make SSRs more reliable.

Opto 22 has consistently built products on open standards rather than on proprietary technologies. The company developed the red-white-yellow-black color-coding system for input/output (I/O) modules and the open Optomux® protocol, and pioneered Ethernet-based I/O.

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Famous worldwide for its reliable industrial I/O, the company in 2018 introduced *groov EPIC*® (edge programmable industrial controller). EPIC has an open-source Linux® OS and provides connectivity to PLCs, software, and online services, plus data handling and visualization, in addition to real-time control.

groov RIO Ethernet-based edge I/O modules, introduced in 2020, include I/O and IIoT software in a compact industrial package that goes anywhere.

All Opto 22 products are manufactured and supported in the U.S.A. Most solid-state SSRs and I/O modules are guaranteed for life.



The company is especially trusted for its continuing policy of providing free product support, free online training, and free pre-sales engineering assistance.

For more information, visit opto22.com or contact **Opto 22 Pre-Sales Engineering:**

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