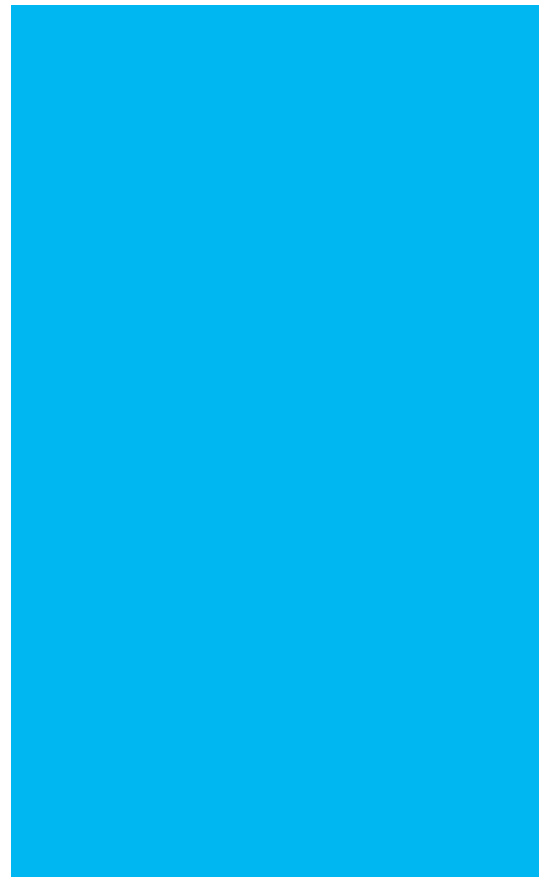# ADVANCED TECHNOLOGY FOR LAW ENFORCEMENT:

THE INTERNET OF THINGS

Police agencies are looking to the Internet of Things (IoT) to help them improve officer effectiveness and surveillance techniques. With advanced analytics and artificial intelligence (AI), volumes of data generated by cameras, sensors and other physical objects can be sifted to find meaningful patterns and actionable insights. With this information in hand, agencies can better deploy their limited resources in smarter ways while at the same time arming their officers with critical situational intelligence in the field via rugged mobile solutions.

According to Marcus Claycomb, a 30-year law enforcement veteran and National Business Development Manager for Panasonic Connect, "The job has changed. Everything officers do every day involves data. There is so much data available, yet getting to the most critical information when it's needed is a challenge."

What is the IoT?

The IoT is a network of physical objects with sensors, software and other technologies that collect and send data to connected devices via the internet or other communications networks. Today, billions of IoT

devices are in use. The number is expected to increase worldwide from 9.7 billion in 2020 to over 29 billion IoT devices in 2030.[1]

The IoT has the power to positively change law enforcement operations through effective data collection and analysis, which hinges on three things:

1. Advanced software tools that leverage AI and machine learning (ML) to collect critical data that improves officers' ability to police

2. Analytic tools that extract insights and patterns from data to help agencies solve, predict and prevent crimes

3. Mobile technology that makes information accessible to officers when, where and how they need it

Leverage the IoT to solve today's policing challenges

With the IoT on their side, agencies can look for more efficient answers to today's key policing challenges.

Situational awareness. The IoT can provide officers with real-time situational awareness and greater access to information to help them coordinate resources and make more informed decisions in the field.

1. Number of Internet of Things (IoT) connected devices worldwide from 2019 to 2021, with forecasts from 2022 to 2030. Statista (November 22, 2022)

"We have technologies that can help GPS track personnel, where historically we've been limited to vehicles. Now we can drill down to the actual officer level for better asset management," adds Claycomb.

In addition, public and private devices connected to the IoT contribute to the layers of information officers can use to maintain situational awareness, such as traffic or construction alerts and security, dash and body-worn camera feeds. Officers can also keep their eyes on their surroundings using voice-to-text software for reporting and database queries, as well as e-citation software that speeds up the ticketing process.

How law enforcement uses the IoT

- **Connected devices:** Smart speakers, security systems and cameras, as well as a growing number of other connected home devices, are all potential sources of information and evidence.

- **Wearables:** Body-worn video cameras allow officers to record and show what happened during an incident. Other devices, such as smartwatches or vest inserts, can record vitals and alert dispatch about signs of trouble. A vest insert can detect penetration or injury and send an auto alert to dispatch.

- **Mobile offices:** Squad cars, boats and motorcycles have become mobile offices. With the use of a connected device, officers can operate from wherever they are and from whichever vehicle.

- **Voice dictation:** Industry-leading voice-to-text software allows officers to dictate reports into a microphone or input voice queries to search for information. Voice commands provide faster access to the information and improve accuracy, so officers can return to policing more quickly.

- **Smart cities:** As cities become "smarter," information and communication technologies that provide data feeds to various public agencies, such as traffic light cameras, intelligent streetlights, railway switching stations and gunshot detection systems can be used by law enforcement for information sources and evidence.

- **E-citations:** Officers can perform driver's license scans and create citations in the field, reducing the time it takes to make a traffic stop.

- **Traffic reflow and routing:** Law enforcement can use data feeds about hazards, collisions, events, congestion and police activity from sources such as traffic cameras, choppers, drones and more to prioritize and reroute traffic.

- **Integrated body and dash cameras:** Law enforcement may integrate camera output with in-car equipment to enable real-time streaming, so that command can view events as they unfold and communicate remotely.

Officer wellbeing. Concerns for officer wellbeing are mounting. The Fraternal Order of Police (FOP) reports that 323 officers were shot in the line of duty in 2022 and almost 40% were shot in "ambush" style attacks.[2] Agencies can leverage IoT technology to monitor the physical/mental wellbeing of officers and take steps to help them when things seem amiss. For example, smartwatches can track officer vital signs and wearable vest inserts can detect and even identify the location of physical injury.

Civilian safety. Better information sharing through department social media, websites and even texts helps agencies connect with the community and increase civilian safety through faster and more informed response.

Recruitment and retention. Agencies today are challenged to recruit new officers and keep the ones they have. An agency that integrates advanced tech with IoT and provides efficiencies and conveniences for tech-savvy new recruits can help with recruitment and increase productivity overall.

Mobile tools are the backbone

There are many tools that can analyze and present data in meaningful ways. But information from the IoT is meaningless if it isn't accessible by officers,

> IoT devices are playing a larger role in policing, investigations and management. In 2015, Richard Dabate told police someone broke into his house and killed his wife. However, through data collected from his wife's Fitbit along with other devices in their house, police were able to identify Dabate as the culprit, not an intruder. A jury convicted him based on that evidence. This case highlights just one of many ways police can benefit from the IoT with the right connectivity in place.[3]

no matter where they are. Rugged mobile solutions are the backbone of robust information sharing in law enforcement.

Mobile solutions enable officers to access data in the field to improve productivity, enhance situational awareness and aid in more informed decision-making. Access to critical information when and where they need it improves how officers respond to calls and serves as a force multiplier to keep operational costs down.

2. Law Enforcement Officers Shot and Killed in the Line of Duty National Fraternal Order of Police (December 21, 2022)
3. A Look at How the IoT is Transforming Law Enforcement for the Better Medium.com (September 16, 2020)

"All data is good data. It's how you sort it and what you do with it that matters," says Aidan Clifford, National Sales Manager Market Solutions for Panasonic Connect.

Law enforcement requires mobile technology that meets the challenges of policing environments.

Durability. Rugged mobile devices are designed for harsh conditions and tested to meet MIL-STD-810H standards to withstand temperature, humidity, weather and vibration extremes. Devices that meet this standard are resistant to wind, rain, sand, dust, fluids, bumps and accidental drops, helping ensure they stand up to challenging law enforcement environments.

Durability is a good investment. Rugged devices have been shown to be last significantly longer in service than consumer devices. In addition, consumer tablets fail three times more often than rugged tablets.[4] Even using "ruggedized" protective cases cannot fully safeguard consumer devices (especially not the internal components), which can lead to more frequent replacements, jeopardize the agency's mobile investment and negatively impact officer effectiveness.

Security. Law enforcement also demands stringent mobile security. Devices and systems require prompt anti-virus and malware updates, the ability to encrypt data for secure transmissions and access to Criminal Justice Information Services (CJIS) databases, as well as a method to maintain a secure chain of evidence.

Reliable connectivity. Mobile devices in the field, whether in squad cars equipped with enterprise-grade equipment or in the hands of an officer on patrol, must be reliable enough to work every time and provide connectivity with powerful reach in rural areas and in urban areas where signals can be blocked or weakened by buildings.

The moments in which this data is needed are critical. Dropped connectivity or device failure can have severe consequences. Law enforcement demands mission-critical devices that work as intended.

Transform with technology

Three things are required for effective data collection and analysis.

1. **Advanced software tools that leverage AI and ML to collect critical data**

2. **Data analytic tools that extract insights and patterns from data to help agencies solve, predict and prevent crimes**

3. **Mobile technology that makes information accessible to officers when, where and how they need it**

The case for connectivity

The IoT ushers in a potential quantum leap for law enforcement; however, "connectivity is key," Clifford says. "You cannot have IoT without connected devices."

Connectivity facilitates more effective, real-time communications. For law enforcement officers on the front line, connectivity is their lifeline. They rely heavily on fast, uninterrupted access to critical applications and data to perform their duties—whether at the station, at home, in a vehicle or on foot.[5]

"Once an officer leaves the station for a call or daily patrol duties, the computer device in the squad car is the hub that provides access and connectivity to information," Clifford says. "There are a lot of IoT devices out there, like cameras, readers and more, and the officer ultimately has to use their computer to interface with them, to document reports, look up offenders and license plates, view video footage and more."

4. The Case for Deploying Rugged Devices in Your Organization. IDC (November 2021).
5. The Future of Law Enforcement Relies On Connectivity and Mobile Solutions: A Look at What 5G Means for Public Safety. Mission Critical (February 22, 2021)

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–Marcus Claycomb, National Business Development Manager, Panasonic Connect

Panasonic builds powerful antennas designed to pick up signals and provide connectivity even in remote areas and tests them in its own anechoic chambers. Some Panasonic devices, like the TOUGHBOOK® 40 rugged laptop, have nine built-in antennas to help improve connectivity. Panasonic Connect works with select partners to equip patrol vehicles with high-performance router solutions that can securely connect critical applications and mobile assets.

Panasonic Connect rugged mobile solutions

For over 25 years, Panasonic Connect has served law enforcement by offering reliable technology solutions.

We work with industry-leading software and accessory partners to provide complete mobile solutions that leverage the latest technologies like IoT, advanced analytics and ML/AI and operate with TOUGHBOOK rugged devices, including:

- Custom solutions that integrate telemetry data and operations into a single operational platform

- **Team Awareness Kit (TAK) applications** for Windows® devices (WINTAK) that support the complex communication and coordination needs of multi-jurisdictional responders, including situational awareness

- Software that expands the reach of police radios by enabling officers to communicate via smartphone with an existing two-way radio network using push-to-talk technology

Advanced Technology for Law Enforcement: The Internet of Things

Panasonic Connect can help agencies evaluate the technologies that will work best with the infrastructure in their jurisdictions, as well. "If agencies are going to take true advantage of the flow of data, they must make sure that their city and county infrastructure is ready to support it," Clifford says.

The TOUGHBOOK difference

Panasonic Connect offers a robust portfolio of rugged laptops, 2-in-1s and tablets tested to rigorous military standards and equipped with AC adaptors. The company configures and customizes these systems to handle data retrieval and analysis from multiple sources, run license plate numbers, scan photographs, write reports, and organize case details. And the systems deliver enough processing power to run several demanding software programs at the same time.

Panasonic Connect products stand out because of the features they offer and the services they include, such as:

- **Rain-sensing screens.** Water droplets are not misinterpreted as data entries, so officers can handle devices in any weather.

- **Night screen and adjustable brightness.** Digital displays that adjust to light levels throughout the day make it easier for officers to read the computer screen and reduce eyestrain. In situations where they want to avoid detection, officers also can switch to night mode, so blue lights don't give away their position.

- **Expansion packs (xPAKs).** The TOUGHBOOK 55, 40 and G2 models can be user-customized post-purchase if officers need add-on tools such as optical drives, authentication readers, IO ports and barcode readers.

- **Built-in microphones and speakers.** Panasonic TOUGHBOOK devices feature powerful microphones and speakers designed for noisy environments and exceptional voice recognition.

- **Programmable buttons.** Programmable one-touch buttons make it easy to access and switch back and forth between applications.

- **Sanitation.** Device durability ensures mobile tools can be disinfected as needed.

Panasonic Connect offers professional services that cover the life cycle of your device, including:

- **Law Enforcement Solutions.** We work with a robust ecosystem of partners to provide vetted software solutions for law enforcement applications and preferred accessories to enhance ease of use and convenience.

- **Panasonic Connect Engineering Services.** Our ProServices team provides a full suite of professional services to help agencies plan, test and deploy their technology. Our field engineers can provide hands-on, expert services starting with a deep dive into understanding your business needs and providing solution consultation, pilots, integration of devices and even IT staff augmentation.

TOUGHBOOK rugged devices are 72% more reliable than other rugged devices based on a comparison of device failure rates. In the moments that matter, you can depend on TOUGHBOOK devices to perform.[6]

6. Compares Panasonic actual data for TOUGHBOOK computers to data gathered by IDC on consumer and rugged laptops, tablets and handheld devices as reported in The Case for Deploying Rugged Devices in Your Organization IDC (November 2021)

- **Deployment services.** We also offer services to help you get TOUGHBOOK devices into the field quickly and ready to work. Our deployment services include gold disk imaging, custom BIOS, asset tagging, kitting with accessories, wireless activation, and vehicle mounting and installation.

- **Strong warranties.** Panasonic backs its industry-leading hardware with comprehensive, all-inclusive warranty offerings and services to keep law enforcement mobile fleets operating 24/7/365.

- **Panasonic Law Enforcement Advisory Council.** Our technology is strongly influenced by our customers and by the industry feedback we collect from the Council, where we work with law enforcement professionals from across the country to help continually improve our products. The expertise of the council helps Panasonic Connect improve TOUGHBOOK design and bring about better devices and solutions that cater to specific needs of law enforcement.

- **TOUGHBOOK Smart Essentials.** This cloud-based software tool provides real-time asset monitoring and device management for visibility into issues before they make an impact on your business; includes Smart Battery Monitoring.

- **CORE Asset Management.** Provided at no additional cost, CORE provides real-time management of all the assets in an agency's fleet in one place, helping agency IT departments stay ahead to minimize productivity loss due to repairs, warranties, upgrades or software roll-out.

Discover Panasonic Connect

Learn more about how Panasonic Connect is raising the bar on **law enforcement technology** to help officers work more efficiently, solve crimes faster and better protect the public and themselves.

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