

## Technological Innovation in Policing: Need for Strengthening the Law Enforcement in India

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### Abstract

The current era is characterized by significant technological advancements, with technology playing a prominent role in every aspect of life. As the nature of crime is becoming more complicated and technologically driven, the need for smart policing becomes more pressing, and the integration of technology with law enforcement is a proactive step towards preparing for the future. Several technological innovations have emerged as game-changers in the field of policing. These include the installation of CCTV cameras in prisons and police stations, the use of body cameras, online filing of First Information Reports (FIRs), biometric handheld fingerprint scanners for criminal identification, facial recognition technology and online grievance redressal mechanisms implemented by certain state police departments. The implementation of these advancements in policing has a dual impact. On one hand, it has facilitated the police in maintaining law and order effectively, while on the other hand, it has reduced human rights abuses by enhancing transparency, accountability, and adherence to the rule of law. This research article makes a thorough investigation on the kinds of technology that could be implemented by the police to enhance the concept of policing and to meet the requirement of the present time.

**Keywords:** Policing, Law Enforcement, Technology

### INTRODUCTION

*“You cannot fight today’s battle with Yesterday solutions”*

The aforementioned statement remains relevant when considering the modern-day police force and its approach to policing. We currently reside in an era characterized by technological advancements, where every facet of life is being driven by technology. The landscape of criminal activities has also become increasingly intricate as technology continues to expand. Therefore, for the police to maintain their effectiveness in this technologically innovative era, it is imperative that they embrace new solutions and strategies.

Since the inception of the telephone, automobile, and two-way radio, a symbiotic relationship between technology and law enforcement has emerged. The proliferation of portable and wireless technology, robust computers, audio and visual advancements, analytical tools, and other technological breakthroughs indicates an exponential progression in technology. Policing heavily relies on technology, with its application often viewed as indispensable for achieving success and enhancing efficiency. Technology plays a pivotal role in security-related tasks, such as tracking and surveillance, while also serving as a vital tool during investigative processes, including forensics.<sup>1</sup> The integration of novel technological tools by law enforcement can significantly influence their behavior, encompassing their interaction with the public, adherence to civil liberties, and accountability mechanisms.

Technology has had a profound impact on every aspect of society, including law enforcement, where the police have embraced its benefits. From crime prevention and detection to the maintenance of law and order, technology plays a vital role in the daily operations of police officers. As we transition into an era of proactive policing, it becomes imperative for law enforcement to possess the necessary technological skills. While batons, whistles, rattles, and telegraphs served as tools in the past, the present-day police force has access to advanced technologies like wireless communication systems, global positioning systems, state-of-the-art batons, forensic testing, and bulletproof jackets. Police officers face various challenges in their line of work on a daily basis.

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<sup>1</sup> DR. NIKHIL GUPTA, COMPENDIUM OF POLICE POWER AND DUTIES 44 (Asia Law House 2019)

One of the most challenging aspects in dealing with materialistic matters is understanding and becoming acquainted with technology. Policing is a demanding profession that involves risks, complexity, physical and mental strain, and often lacks recognition.<sup>2</sup> The range of responsibilities varies greatly, encompassing tasks as diverse as safely guiding schoolchildren across roads, monitoring high-speed pursuits, conducting scientific accident investigations to locate hit-and-run drivers, engaging in welfare discussions with various organizations, curbing the activities of pickpockets and prostitutes, and providing vital first aid during critical incidents. In order to streamline these tasks, it becomes essential to harness the power of technology.

#### **CONCEPTUALIZATION OF THE TERMS TECHNOLOGY AND POLICING:**

Technology can be defined as the application of information within a specific field. It involves employing technological processes, methods, or knowledge to accomplish tasks. At its core, technology represents the integration of scientific advancements into everyday life. On the other hand, policing encompasses the range of activities undertaken by law enforcement personnel to prevent and detect crime while upholding the rule of law. Police and policing are two interrelated components of the same concept. The police serve as a governmental agency responsible for safeguarding citizens and their possessions by enforcing the law, preventing acts of violence, and identifying and addressing them when they occur. Policing refers to the operational execution of these duties by the police.<sup>3</sup> Thus, policing is a subset of the broader concept of the police, which holds the formal responsibility for maintaining social order.

The police extensively utilize technology in various aspects of their operations. It assumes a vital role, particularly in addressing globally significant challenges such as identifying organized crime and combating terrorism.<sup>4</sup> However, the most significant challenge faced by police organizations is implementing technology in a constrained budgetary environment. The adoption of new technologies necessitates substantial resources, both in terms of financial investment and infrastructure requirements.

#### **TECHNOLOGY WHICH ARE USED FOR THE PURPOSE OF POLICING**

##### **RFID (Radio Frequency Identification)**

In recent times, there has been a growing popularity of automatic identification techniques across various services. These techniques provide valuable information about individuals, objects, and items. Specifically, a mechanism has emerged wherein information is transmitted from an active chip or label attached to an item, using radio waves, and scanned to identify and track the movement of materials on a national scale. Police officials utilize this technique to verify transportation networks and prevent the transfer of illegal goods that may pose a threat to public safety. The data stored digitally on the tag plays a significant role in collecting and providing information about the precise location of police officers. This system proves to be an invaluable tool in delivering police services by ensuring that officers are positioned exactly where they are needed.

##### **Electronic Breath Alcohol Test**

One of the most crucial technologies widely utilized in the modern world is aimed at preventing reckless and irresponsible driving. The task of apprehending individuals driving under the influence during nighttime is assigned to the Home Guards and traffic police, who are usually stationed along highways and at other locations prone to accidents.

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<sup>2</sup> M.B CHANDE, THE POLICE IN INDIA 88 (Atlantic Publishers, 2020)

<sup>3</sup> MICHAEL ROWE, POLICING THE POLICE: CHALLENGES OF DEMOCRACY AND ACCOUNTABILITY 87 (Policy Press 2020)

<sup>4</sup> Julian Laufs, *Technological Innovation in Policing and Crime Prevention*, 24 SAGE JOUR. 23, 23-24 (2021)

### **Body-worn cameras**

One of the extensively debated technological advancements in contemporary policing revolves around the use of body-worn cameras (BWCs) by law enforcement officers. These cameras document interactions between the police and the public, generating a permanent high-definition video record of such encounters. Body-worn cameras (BWCs) have garnered significant acclaim for enhancing police oversight, and the progress in communication and information technologies holds the unique potential to reshape power dynamics between the general public and law enforcement personnel.

Video footage possesses the potential to capture genuine interactions between individuals and law enforcement officers. In the Indian context, body-worn cameras are strongly recommended by numerous academics and legal experts to prevent attacks, inappropriate behavior, misconduct, and disputes involving or involving the police. This practice is also extensively employed by police forces in the United States, ensuring that every action is documented and can be presented as evidence in court proceedings. These incidents are particularly relevant in the context of traffic policing. In an effort to enhance public trust and motivate traffic control authorities to act in a socially desirable manner, the Hyderabad Traffic Police in India has implemented Body-Worn Cameras (BWCs) for all frontline traffic police personnel.

The initiative includes the following characteristics:

- The use of BWCs during enforcement has been mandated for all traffic enforcement employees.
- Utilizing their PS systems, the police can transfer the data they have collected to the network.
- The Traffic Command Center keeps an eye on the cops who don't use the BWC.
- The Traffic Command Center regularly reviews the tape and examines the cop's behavioral patterns.
- Regular training sessions on people-friendly policing are provided to all members of the law enforcement community. Hence, control may be brought to both the general population and the police by using these gadgets.

### **Mobile Application for First Information Report**

Smartphones have become valuable tools in the hands of the general public, enabling them to accomplish a wide range of tasks with ease. Software companies have developed numerous applications, commonly known as "apps," that are increasingly providing support for smart policing. State police departments have created apps that allow individuals to promptly report crimes using their smartphones. A notable example is the Rajasthan Police, which recently launched an enhanced version of their app called "Raj Cop Citizen." This app aims to provide people with access to police officers for various purposes, including reporting crimes, verifying employees, searching for stolen vehicles, and verifying occupants. The software facilitates users in seeking police assistance when needed.

The Delhi Police created a similar app called "One Touch Away" that allows the public to access all police-related app interfaces with a single tap. In order to revive popular use, it is created for mobile platforms. Also, the needs of the neighborhood and the local police force were taken into consideration during planning. Individuals might not be aware of the government's current apps and websites, therefore this app gives them a platform to voice their concerns.

For the security and protection of women, the government of Odisha released the "MO SAATHI" smartphone app in Cuttack and Bhubaneswar. The purpose of this app is to provide women who are in imminent danger with access to police aid. Several kinds of features are incorporated to make this application user friendly and such that it can be accessed during the time of crisis. Few quick features are added such as power button alters and single key sums to enable that women struck in emergency situation could reach the police without any efforts.

In a similar vein, the Delhi Police Department has released the Smartphone application "Himmat," which aims to ensure the safety of women traveling alone in Delhi/NCR. The general public benefits greatly from these mobile apps because they may now access police assistance with only a few clicks.

## **CCTV Camera**

CCTV, short for closed-circuit television, is a surveillance system that records data for surveillance and security purposes without broadcasting it to the general public. It relies on strategically placed cameras that capture video footage, which is then privately viewed on monitors. The term "closed-circuit" is used because the cameras, displays, and/or video recorders are interconnected through specialized coaxial cables or wireless transmission links. This setup restricts data accessibility, ensuring that the recorded information remains confined and limited to authorized personnel only.

In the past, black and white displays with low resolution and no interactive features were utilized in CCTV systems. A current CCTV administrator may be able to zoom in on a picture or follow an event on a colour reproduction monitor (or someone).<sup>5</sup> Voice CCTV enables the administrator to communicate with those nearby the connected speaker of the camera. CCTV is frequently employed for a number of uses, such as:

- i. Keeping a check on the suspicious individuals.
- ii. Maintaining safety
- iii. Keeping proof of the events and incidents so that it could referred in future
- iv. Security reasons

With the advancement of capturing and storage technology as well as applications like video analytics, CCTV surveillance systems have transformed into investigative instruments that are employed to collect evidence after an incident has occurred. However, a new application of CCTV is becoming more and more popular: aiding security personnel in detecting and avoiding security problems as they occur, or even prior to they do. This is due to the ease with which tracking, alarm, and access control devices are attached with CCTV surveillance systems. Visual surveillance algorithms, like complex motion sensors, can spot odd walking patterns and warn a guard to keep an eye on a certain camera screen. A suitcase or other dubious thing that has been left somewhere it shouldn't be can also be recognized by object-recognition techniques, as can a person who may just be idling. Once more, the technology can send a warning to a guard who is watching to enable proper action.

Face recognition represents the most sophisticated intelligent video algorithm. The majority of specialists concur that it will still be a few years before this technique is used effectively in the commercial sector. Intelligent video algorithms are typically embedded in a computer system in a security office that receives video from a number of CCTV cameras. But in the near future, camera makers will create devices that can execute the intelligent video algorithm internally. Another innovation that is showing up more frequently on Surveillance cameras is extended frequency range. When there are many light and dark areas in a scene, cameras with wide dynamic range can still capture intricate details. Normal cameras are unable to achieve it.

## **Biometrics**

In the present era, the biometric system has experienced significant technological advancements and has become fully automated. This system is capable of swiftly identifying individuals based on their fingerprint or iris scan within a fraction of a second.<sup>6</sup> The integration of artificial intelligence has further propelled the sophistication of biometric systems. These systems can range from simple ones that recognize one or two specific biometric data to complex ones that can identify a diverse array of traits or biometric information. Depending on the purpose of data collection, this information, commonly known as biometric data, is selected as one of many paradigms to establish a person's identity.

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<sup>5</sup> Ira Kumar, *Privacy and surveillance: A constitutional conundrum of essence of right and justification*, 3 INTER JOUR OF LAW, MANAG. & HUMA 13, 14-16 (2020)

<sup>6</sup> SMYTH SARA, *BIOMETRIC, SURVEILLANCE AND THE LAW* 120-140 (Taylor & Francis Ltd 2019)

The act of validating a person's biometric information to verify his authenticity to the profile currently present in a system in order to grant him accessibility to any paper or area or use for any additional objectives, such as a governmental ID card, is known as identity verification and identification. In general, there are two methods that the system operates: physical authentication and remote authentication. The use of current biometric technologies, such as fingerprint scanners, facial recognition software, iris scanners, and others, for physical authenticating and recognition requires that the person be physically available and have his or her biometrics scanned at the appropriate time.

This could be done to provide him accessibility to something right now. Using a fingerprint sensor to protect a computer is one instance. Distance authentication is frequently used to recognize a profile, gather and check information, for instance, a bank may request a biometric identification card or pin to confirm that the individual is actually the rightful owner of their personal information. In the modern world, biometrics and identification are widely employed mechanism.

### **Global Positioning System (GPS)**

A satellite-based navigation system that can be used to determine current location and current time in any environment. As a result, the police are better equipped to trace offenders using their mobile devices, find where they are, perform raids—an important aspect of police investigations—and even carry out sting operations.<sup>7</sup> The growing use of GPS System by the police has made it easy for them to control crime and make proper investigation but however there are few incidents that reveal the misuse of it by the police department.

### **Wireless Internet**

The wireless internet, which allows for the transmission of messages and info, is one extremely helpful ICT tool. It can be utilized at any moment and anywhere to identify cases and conduct pertinent information searches on relevant subjects. As a result, it plays a crucial role in assisting the police in performing their duties related to general oversight and crime prevention. Portable Mobile printers are a very helpful Technology because they enable the printing of preliminary images at the scene of the crime and also enable quick wireless sharing of information and other images.

### **Drones**

Drones have become so popular and common in present time. It is being used in several fields for several purposes. From the wedding photography to blogging, the use of drones is increasing day by day. One of the primary reasons for the increase in the use of drone is that it can capture the entire view which a normal camera cannot do. However drones have an important part to play in the mechanism of the law enforcement. First of all it is crucial to understand the different aspects relating to the drone. The another term which is used for the drones is “unmanned aerial vehicles”. The present day drones has the high powered zoom camera installed in it which has the extremely well range of capturing images and videos.

Drones have huge implication in law enforcement. The primary use of it by the police authority is to capture the aerial view of the crime scenes. The aerial view gives better understanding about the commission of the crime and every facet comes forward clearly. The other use of drones is found in the case of rescue operation, public monitoring etc.

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<sup>7</sup> Ajay Kumar Yadav, *Transformation in Police Function: Indian Perspective of Community policing*, 17 INTER. JOUR. OF APPLIED BUSINESS AND ECO. RESEARCH 1, 1-3 (2019)

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### **Real-time Information Access**

It essentially combines two techniques, the Geospatial Information System (GIS) and the Global Positioning System (GPS) (GIS). As was already said, tracking positioning and geographic coordinates is done using GPS and GIS. Police use the information they've gathered to carry out raids and find suspects and offenders who have fled. Videos are produced by GPS and GIS in addition to data. Along with improving tracking, reporting, and response, the information also helps the police better organize all of the actions. Due to their increased responsiveness and the speed at which complaints are received, police officers are able to respond proactively with the use of technology. This system has proved as one of the most productive technological reform in present time for police officers.

### **Intelligent Sensors**

Another Technology that offers real-time data is intelligent sensors. It primarily serves to improve traffic control. These detectors include a camera setup that aids in capturing footage of events. It is a reasonably affordable device that aids in preventing crime and is used by police officers.

### **Crime Mapping**

Crime mapping aids in identifying trends in criminal behavior. Several locations on a map that have experienced an emergency are marked with colored stick pins. It may be tailored to a particular crime, for instance, with different colors denoting various offenses.<sup>8</sup> This strategy could come out as unimaginative and crude, yet it has a lot of advantages. That made it possible for the police to locate the genuine trouble spots.

Nonetheless, there is a challenge with crime mapping. Because maps are three-dimensional, it can occasionally be difficult to identify the precise locations of crimes owing to pin overload, particularly when only small crimes are being committed. India and the US both employed this technique. Unfortunately, its application is incredibly restricted in India, and the idea behind it is still somewhat new.

## **TECHNICAL POLICE REFORM REQUIRED IN INDIA FOR SMART AND EFFECTIVE POLICING**

Indian police organizations must upgrade their control rooms and urgently acquire new technologies. Reforms in technology would therefore require control room upgrading. Only new technology can be implemented into policing methods according the organizations like the "*Crime and Criminal Tracking Network and System (CCTNS) and National Intelligence Grid (NATGRID)*."

The police force must keep up with the shifting nature of crime behaviors. It has been noted that since the internet's invention, more new crimes are occurring. There is an increase in cybercrime. Hence, police must upgrade their expertise and technology in so that they can stay apprised of such crimes. The need for control room modernizing is unavoidable since cyber security, cyber terrorism, and insurgency can only be stopped by the police using cutting-edge technology that goes against the technology used by the criminals.

Hence, substantial cash is needed to accomplish the aforementioned. The expense of technological upgrades would be high because much of it is imported and because after the technology upgradation, the police who would use it might need training.

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<sup>8</sup> Dr. C.P Gupta, *Role of Police in Criminal Justice System: An Analytical Study on Indian Perspective* , 03 GLS LAW JOUR. 59, 60-61 (2021)

A distinct and coordinated emergency number is required for the police control rooms. There are already 100 and 112 (a single helpline number) in India (direct contact to police). Yet, it is generally recognized that such systems are insufficiently successful because the majority of individuals are either unaware that the emergency line exists or the complaints never reach the intended party. Technical errors most certainly cause this.

It is advised that a proper “*National Emergency Response System (NERS)*”, which is a division of the Ministry of Home Affairs, be established in order to close this communication problems. For instance, a few "DIAL 100" Call Centers were constructed in Madhya Pradesh. The police will be able to interact with complains and identify emergency situations much more quickly with the aid of a quick communication protocol.

Investigations that are departmentally focused occasionally fail to take a whole picture into account, according to observation. Moreover, there may be a breakdown in communication between police stations. This may be advantageous for a suspect or criminal who flees the scene. As a result, excellent communication between various police organizations or stations is once again required.

Only approved Central personnel (from the IB, RAW, CBI, DRI, and ED, etc.) should have accessibility to the unified database that has been constructed. These databases must contain organized data on tax evasion, criminal activity, visa records that have been cleared, minor offenders, geolocation data, etc. With the use of such a matrix, investigators will be greatly assisted in obtaining a thorough profile of either a potential suspect or even a persistent criminal.

In India, crime mapping must become a reality. For instance, press sources mentioned a possible partnership between the Delhi Police and the Indian Space Research Organization, or ISRO. They were working together to develop cutting-edge crime mapping technologies that would support proactive policing techniques.

The above mentioned reform is multidimensional and is sure to bring advancement in the police with regards to the application of the technology. These reforms if implemented correctly will help the law enforcement agencies to integrate technology in the prevention and the management of crime. Looking at the present day technological advancement and the complex nature of the crime it is essential that technology should be made a part to policing to take crime management platform to next level.

#### **4.4 MEASURES FOR TECH SAVVY POLICING IN INDIA**

Technology is revolutionizing a number of fields. In an effort to stop crimes from being committed, it has also caused a fundamental shift in policing tactics. It must be remembered that the incorporation of technologies into policing techniques is geared more toward preventing crime than criminal conviction. Geolocation gps trackers are used for conducting raids and find the coordinates of a suspected or prospective criminal. Forensic technology is employed to support in the examination of collected evidences. There are certain actions that can be taken.

- A distinct cybercrime division which would solely handle offenses terms of technology or the internet. A group of police could be specially trained to deal with cybercrime organizations.
- It is necessary to establish a Cyber Forensic Laboratory with modern equipment and technology in every city in order to identify different facets of evidences more accurately and prissily.
- More training for police officers is required by Indian police organizations if they want them to operate cutting-edge equipment.

Technology is utilized to decrease the burden on police and help in police investigations or preventing crime, which would improve the connection between the police and the general population. Nonetheless, it is frequently observed that almost all senior police officers avoid using technology because they find it uncomfortable. So, thorough instruction in how to use such technology would be extremely helpful for the aforementioned goal. The police departments must seriously adopt the newest technologies. Several tiny police departments don't make efficient use of either new or existing technologies. To perform their tasks properly, they must overcome their sluggishness.

## **CONCLUSION**

The country faces numerous challenges in maintaining public safety and security, and traditional methods of policing are becoming increasingly inadequate in addressing these complex issues. By embracing technological advancements, law enforcement agencies can significantly enhance their capabilities, improve operational efficiency, and stay ahead of evolving criminal activities. Technological innovation in policing offers a range of benefits that can revolutionize law enforcement practices. Advanced data collection, analysis, and sharing systems enable law enforcement agencies to gather valuable intelligence and make informed decisions. Real-time monitoring and surveillance technologies allow for proactive crime detection and prevention, enabling law enforcement to respond swiftly and effectively. Moreover, sophisticated forensic technologies aid in evidence collection, analysis, and the resolution of complex cases, enhancing the chances of successful prosecutions. Additionally, technology streamlines administrative processes, automates routine tasks, and reduces paperwork, enabling police personnel to focus more on core law enforcement activities. This includes proactive community engagement, crime prevention initiatives, and strengthening relationships between law enforcement agencies and the public. Technology also facilitates seamless information sharing and coordination between different law enforcement bodies, improving interagency collaboration and optimizing resource allocation.

However, for technological innovation in policing to be truly effective, certain considerations need to be addressed. First and foremost, the development and implementation of robust legal frameworks and policies are essential to govern the use of technology in law enforcement. These frameworks should strike a balance between harnessing the benefits of technology and protecting individual privacy rights and civil liberties.

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