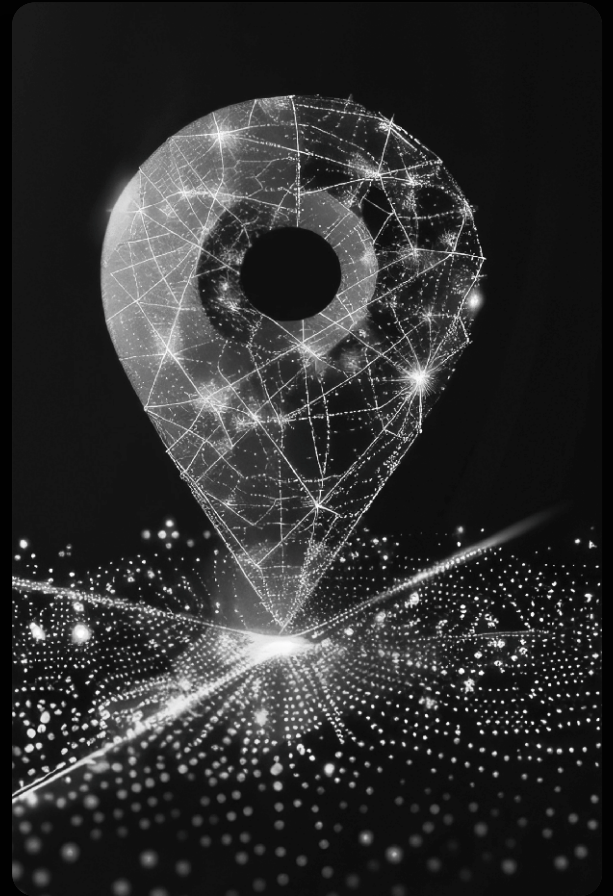


CASE STUDY

UP112 STRENGTHENS EMERGENCY RESPONSE WITH PERTSOL'S LOCATION INTELLIGENCE PLATFORM POWERED BY ANDROID EMERGENCY LOCATION SERVICE (ELS)



INTRODUCTION

UP112 is the unified emergency response system of the Uttar Pradesh Police, built to provide 24x7 assistance across police, fire, & medical emergencies through a single helpline. Operating at a statewide scale, it serves a population of over 230 million across urban centers, highways, and remote rural regions, acting as the central coordination layer between command centers and field responders.

UP112 handles approximately 45 lakh pre IVR calls every day, making it one of the largest emergency response infrastructures in India. This response ecosystem is supported by a fleet of 6000 vehicles – including two-wheelers and four-wheelers – deployed across the state to ensure broad reach and rapid on-ground support.

PertSol's iLocator strengthens UP112's response by unifying multiple location sources, including Android Emergency Location Service (ELS) into a near real-time location intelligence layer for dispatch and field operations.

CHALLENGES

What wasn't working? What critical problems existed?

UP112 operates at extreme scale across diverse geographies & telecom conditions – creating a set of challenges that directly impact emergency dispatch, speed and accuracy:

01 Caller Context and Communication Constraints

✓ Unclear caller location & address variability:

In many emergencies, callers cannot describe their location reliably – especially on highways, in dense urban pockets, or in rural regions without formal addressing – leading to delays in pinpointing the incident site.

✓ Language diversity during time-critical calls:

Multiple languages and regional dialects can limit clarity during high-stress interactions, increasing the dependence on non-verbal, system-driven location identification.

✓ Public gatherings and transient populations:

During major events (e.g., Kumbh Mela, Dussehra), high crowd density & visitors unfamiliar with local areas make self-reported location even less dependable, raising the risk of delayed or misdirected response.

02 Limitations in traditional location and identity inputs

✓ Inaccuracy of legacy network-based location methods:

Traditional cell-tower/triangulation approaches can be off by large margins, especially in complex terrain or high-density areas – resulting in misrouting and extended time-to-reach.

✓ Inconsistent availability of subscriber identity details:

During live emergency interactions, key subscriber information (e.g., name, registered address) is not always consistently available across networks/devices – creating gaps in identification and verification workflows.

03 Multi-channel and multi-operator operational complexity

✓ Multiple access modes to handle:

Emergency requests may arrive via voice calls, SMS, missed calls, and PSTN – requiring consistent location retrieval across different initiation modes.

✓ Multi-operator interoperability requirements:

Location retrieval must work seamlessly across telecom operators, independent of MNP status or operator-side dependencies (e.g., GMLC availability).

✓ High-volume, real-time performance demands:

With millions of interactions daily, the system needs highly reliable, near-real-time location retrieval at scale, without degradation during peak loads.

✓ Need for continuous location updates:

In many incidents, victims and responders are mobile – requiring location updates over time until assistance reaches the scene.

SOLUTION

PertSol deployed iLocator, a carrier-grade location intelligence platform purpose-built for law enforcement and emergency response, to enable rapid, accurate, and reliable caller location identification at statewide scale. The platform provides real-time location and essential caller context to support faster decision-making, improved dispatch accuracy, and more coordinated on-ground responses, especially when callers are unable to clearly communicate their whereabouts.

HOW IT INTEGRATED INTO UP112 OPERATIONS

iLocator was integrated into UP112's operational ecosystem to ensure location and caller context is available end-to-end – from call initiation through dispatch and field response:

- ✔ **Computer-Aided Dispatch (CAD)** systems used by command centers
- ✔ **Command and control infrastructure** for coordination and monitoring
- ✔ **Mobile Data Terminals (MDTs)** used by field responders

WHAT IT ENABLED

- ✔ **Unified location availability (ELS + network LBS):**
Combines Android Emergency Location Service (ELS) with network-based location to maximize location availability across devices, networks, and operating conditions.
- ✔ **Multi-source location fusion:**
Consolidates network-based location, subscriber/context records, and ELS-derived GPS-grade signals (where available on Android devices) to improve availability and accuracy in real-world scenarios.
- ✔ **Continuous tracking for distress caller:**
On special departmental approval, provides location updates to CAD operator consoles, supporting dynamic scenarios until incident closure.
- ✔ **Location parity across inbound and outbound interactions:**
Ensures responders retain location visibility during callbacks, follow-ups, and coordination actions.

WHY IT WORKED ON A SCALE

- ✔ **Multi-operator interoperability + MNP compliance:**
Ensures accurate operator/network resolution for ported numbers, supporting reliable location retrieval in a multi-operator environment.
- ✔ **Telecom operator integrations for subscriber context:**
Integrates with Telecom Service Providers (TSPs) to retrieve Subscriber Detail Records (SDR) (e.g., subscriber name and billing address), supporting PSAP identification and verification workflows.
- ✔ **Carrier-grade query methods supported:**
 - GMLC-based location queries
 - HLR-based queries over SIGTRAN
 - SDR-based support for landline caller context/location (where applicable)
- ✔ **Built for peak-scale performance:**
Engineered for high-throughput, real-time operations to support UP112's high-volume demand without performance degradation.
- ✔ **Security and governance:**
Implements role-based access controls and audit trails aligned with law-enforcement data governance and accountability requirements

RESULTS

The deployment of PertSol's iLocator delivered measurable improvements across UP112's emergency response workflows – strengthening location clarity, dispatch readiness, and field coordination at statewide scale.

- ✔ **Improved location precision at population scale**
GPS-grade caller location (often 5–10 meters where Android ELS is available) delivered a major step-change versus legacy network-only methods across urban, rural, and high-mobility scenarios.

- ✓ **High-volume, real-time performance**
Engineered to handle UP112's peak statewide volumes with reliable, real-time location processing.
- ✓ **Faster dispatch initiation**
Location availability within seconds enabled quicker police, fire, and medical dispatch, reducing dependence on caller-provided directions.
- ✓ **Continuity during call drops**
Coordinates captured at call initiation (in case of Android emergency location solution) if passed through CAD to iLocator which allowed response actions to continue even when calls disconnected.
- ✓ **Consistent coverage across environments**
Reliable location availability across highways, rural areas, multi-storey buildings, and large public gatherings improved response effectiveness statewide.
- ✓ **Better field navigation and coordination**
Real-time location feeds passed to CAD improved responder navigation to the incident point.
- ✓ **Rapid rollout**
Operationalized within 1–2 days of departmental authorization, including secure IP whitelisting and integration across participating all telecom operators.

KEY HIGHLIGHTS

Problem	Solution	Impact
Callers unable to describe exact location	Deployed PertSol iLocator with multi-source location detection	Caller location available within seconds
Low precision from legacy network-only methods	PertSol iLocator integrated Android ELS with network-based location	GPS-grade accuracy (often 5–10 m where ELS is available)
Multi-operator environment with MNP	Implemented operator-agnostic, MNP-aware location retrieval (GMLC/HLR/SDR where applicable)	Consistent location retrieval across networks
Dropped/disconnected calls during emergencies	Auto-captured location at call initiation	Response continues even if the call drops
Need for live tracking of victims/responders	Enabled continuous location updates to CAD	Faster coordination and safer field response
Statewide scale and peak loads	Deployed carrier-grade, high-throughput architecture	Reliable performance at statewide peak volumes

“In an emergency, callers may not always know where they are or be able to explain it. Accurate caller location removes that uncertainty, enabling faster dispatch and more effective emergency response.”