# Next-Generation Data Management for Public Safety Organizations

## Data Management Challenges in Public Safety

Today more than ever before, public safety organizations worldwide are challenged to deliver top levels of service with shrinking resources. The effective use of information technology can help law enforcement, criminal justice, emergency response, and other public safety organizations meet their goals efficiently. Yet many organizations still struggle to reach their most mission-critical technology goals, including:

**Enabling smarter insights, decisions, and actions.** The ability to access and analyze relevant data quickly and easily is fundamental to criminal investigations, effective situational awareness, intelligence-led policing, and crime-prevention efforts. When data is stored in multiple applications or data silos, it can be difficult or impossible to leverage this data to its full potential, hampering decision-making — particularly in time-sensitive situations.

**Increasing operational efficiency.** Many legacy public safety applications are not user-friendly. Few integrate well with other applications, and they can be difficult to change, leading to operational inefficiencies and duplication of effort and data. Operational applications should accommodate the way that users naturally want to work; ease of operations streamlines workflows and reduces errors and delays. This is especially important in public safety. Officers and first responders should spend their time in the field instead of struggling with rigid, inefficient, and nonintuitive applications.

**InterSystems®**
Creative data technology

**Increasing agility.** Public safety organizations need to be able to develop and deploy new internal-facing and public-facing services quickly; integrate services and data with other agencies' and departments' systems; and incorporate new value-adding technologies and data types (for example, smart devices, wearables, video, etc.).

**Ensuring reliable operations — especially during crises.** Mission-critical applications must operate continuously — even during power outages and the network failures associated with natural disasters, civil disorder, terrorist attacks, and other disruptive events. Data must be encrypted and synchronized across potentially thousands of geographically distributed precincts and agencies.



## InterSystems IRIS Data Platform: Next-Generation Data Management for Smarter Public Safety

InterSystems IRIS® data platform provides the full suite of functionality that public safety organizations need to make smarter decisions, increase their agility, and improve operational efficiency — with mission-critical reliability.

InterSystems IRIS provides comprehensive application integration full lifecycle API management capabilities (e.g., enterprise service bus) capabilities; real-time orchestration, monitoring, and alerting capabilities; a high-performance, multi-model database that persists all messages and supports simultaneous transactional-analytic processing at scale; a high-performance big-data analytics engine; and a natural language processing engine for analyzing unstructured text — all tightly integrated and accessed via a single, intuitive, application development environment.
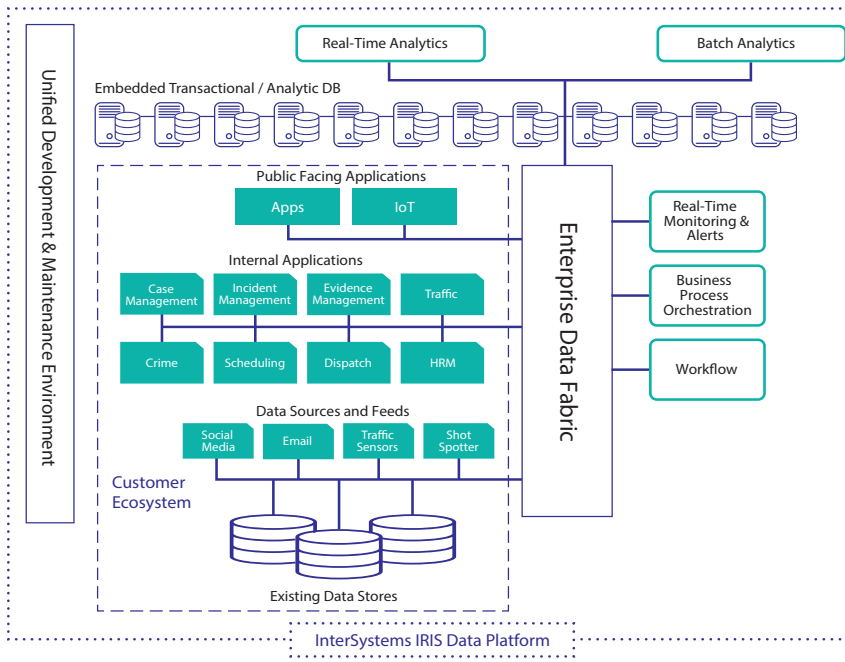
*Figure 1: InterSystems IRIS for Smarter Public Safety*

## InterSystems IRIS Data Platform: Key Benefits

### Enhances Decision-Making

- Bridges data silos to deliver an accurate "single version of the truth"
- Enables real-time insights, decisions, and actions via embedded transactional-analytic database
- Supports advanced analytics encompassing more data from more sources
- Provides natural language processing (NLP) capabilities to uncover information, patterns, and sentiment in free text fields, social media feeds, and other unstructured text data

### Improves Operational Efficiency

- Integrates existing legacy applications using a modern services-based architecture
- Enables the development of new composite applications — with modern user experience designs — from underlying legacy applications, to streamline operations and increase efficiency

### Increases Agility

- Provides a comprehensive set of functionality (including data management, integration, and analytics) with a common user experience to increase agility and speed to market
- Simplifies the creation of modern, internal-facing and citizen-facing digital applications and analytic initiatives
- Leverages existing resources and skill sets

### Ensures Reliability

- Provides highly reliable service, even in distributed public safety environments
- Delivers uninterrupted, secure operations even during network failures
- Draws from InterSystems technology that powers applications that matter for more than 10,000 customers worldwide

**INTERSYSTEMS IRIS DATA PLATFORM: KEY BENEFITS**

- •ENHANCES DECISION-MAKING
- •IMPROVES OPERATIONAL EFFICIENCY
- •INCREASES AGILITY
- •ENSURES RELIABILITY

## Data Management and Analytics

Access to accurate, complete, and current data is critical for ensuring public safety. It is required for intelligence-led and preventive policing efforts, officers' safety, preventive awareness, and a host of operational and decision-making activities. But the existence of multiple standalone applications and data sources often makes it difficult or impossible for stakeholders to access an accurate "single version of the truth."

At the core of InterSystems IRIS is a proven, enterprise-grade, distributed, transactional-analytic processing database. It can ingest and store transactional data (at very high ingest rates) while simultaneously processing high volumes of analytic workloads on the transactional — as well as other — data. This is a key capability for real-time awareness and policing — for example, to enable accurate data-driven situational awareness.

InterSystems IRIS is built on a shared-nothing, distributed architecture to support large data volumes, enabling organizations to analyze large historical data sets simultaneously with recent and transactional data. It cost-effectively supports both real-time and batch use cases with very high levels of performance.

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[1] According to Gartner, [a]ugmented transactions use various forms of augmented analytics — advanced analytics, artificial intelligence (AI) and machine learning (ML) — enabling concurrent analytical and transaction processing within a transaction or process. Hype Cycle for Data Management, 2019 31 July 2019 G00369950 Analyst(s): Donald Feinberg, Adam Ronthal

The platform includes a high-performance, multi-model database. The database is able to store all data in its native format, including relational, object, document, etc. It is ideal for working with data from applications, smart devices, video systems, free text, etc. The data is stored once and can be represented as multiple data models that are always synchronized, eliminating the need to duplicate data or provide mappings between different representations (e.g., object-to-relational mapping) for higher performance and efficiency, and to facilitate a "single version of the truth."

InterSystems IRIS includes tightly integrated analytic capabilities for both structured and unstructured data, and for real-time and batch (non-real-time) use cases. Unstructured data can be analyzed along with structured data to include the contents of free text fields in applications and reports, and to include data from social media feeds. For example, the ability to effectively analyze social media feeds can help identify a planned impending hotspot, or to discover an unexpected event as it occurs in real time.

## Application and Data Integration

InterSystems comprehensive, embedded integration capabilities enable public safety organizations to increase their operational efficiency, become more agile, and bridge application and data silos to create and maintain a real-time "single version of the truth." Its comprehensive integration platform provides application integration, data coordination, business process orchestration, composite application development, full lifecycle API management capabilities, and real-time monitoring and alerting capabilities to support the full spectrum of integration scenarios required to integrate existing legacy applications.
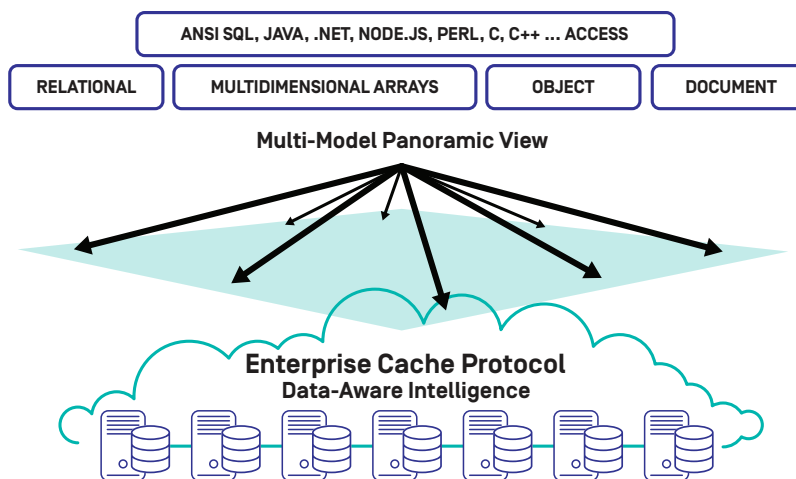
**"OUR USERS ONLY SEE A FLEXIBLE TASKING SYSTEM THAT HELPS THEM GET INFORMATION AND GET THEIR JOBS DONE FASTER. POLICE WORK IS MUCH MORE EFFICIENT NOW."**

*– Bruce Porteous, Northgate Public Services*



ANSI SQL, JAVA, .NET, NODE.JS, PERL, C, C++ ... ACCESS

RELATIONAL — MULTIDIMENSIONAL ARRAYS — OBJECT — DOCUMENT

**Multi-Model Panoramic View**

**Enterprise Cache Protocol**
**Data-Aware Intelligence**

*Figure 2: InterSystems IRIS Database*

It's also capable of integrating with systems from external departments and agencies, and of creating new composite business processes that provide a modern and efficient user experience spanning multiple underlying applications. This ability to create new composite business processes rapidly enables organizations to streamline their operations without a rip-and-replace of underlying legacy applications.

InterSystems IRIS also enables organizations to create event-driven processes; for example, to streamline internal process flows or to advise local authorities when an individual that meets specific criteria is released from prison.

## Security, Reliability, and Deployment Options

InterSystems IRIS supports multiple deployment options, including on-premises, public and private cloud, and virtualized environments. It provides out-of-the-box high-availability and disaster recovery capabilities. It does not lose data when nodes are taken offline, and it is able to operate without interruption when network connectivity is lost.

It provides strong, enterprise-level security; integration with Kerberos and LDAP protocols; role-based access control; and encryption for data both in transit and at rest. It is the technology behind more than 10,000 mission-critical production implementations worldwide.

# Customer Successes



## Northgate Public Services

Northgate Public Services is a software and outsourcing business with extensive experience in the public sector. It is headquartered in the UK and employs more than 2,300 people throughout the UK and internationally.

Northgate is using InterSystems technology at the core of its NPS CONNECT police platform. Currently servicing more than 45,000 concurrent users in police departments throughout the UK and Wales, it automates manual tasks and allows for targeted assessments of risk, freeing up resources and enabling better decision making at every stage. By holding police information in one place and to common standards, NPS CONNECT makes it available securely internally; and to victims, witnesses and the wider public via a newly developed public engagement capability. NPS CONNECT also transforms multi-agency collaboration and problem solving, with partners able to share information, identify those most at risk and ensure the right support from the right agency at the right time.

Prior to developing NPS CONNECT and implementing InterSystems, the company had many disconnected applications — including legacy applications, third party applications, and those required for new initiatives — that did not integrate well, each with their own UX. The existing applications were providing value, and a rip-and-replace approach was not desired.

In developing NPS CONNECT, Northgate exposed and extracted the business functionality and data of the original policing applications as services. Using business process orchestration and integration capabilities, Northgate created a process and workflow enabled application that provides a single user interface and data model across all of the back-end services. NPS CONNECT handles most of the core police processes, and interfaces with the external systems as needed for data search, access, and update.

Leveraging the solution's service-oriented architecture enabled Northgate to create a single XML-based data model for storing and accessing information based on a people, objects, locations, and events (POLE) schema taken from all of the hitherto separate back-end systems. This POLE database gives the police a single source of truth and one place where all of the relationships between these data objects can be maintained.

"Our users only see a flexible tasking system that helps them get information and get their jobs done faster," according to Bruce Porteous, enterprise solution architect. "Police work is much more efficient now. The GUI and search tools are consistent across the different databases and systems at the back end, so officers don't need special training to use all the separate systems they used before." As a result of the integration and POLE, just two days after NPS CONNECT launched, an arrest was made using linked and associated data that may not have been made previously.

## Belgium Federal and Local Police

InterSystems provides the core data management and application infrastructure that supports all 196 local police zones and five federal zones in Belgium. It supports 36,000 concurrent users and 32,000 connected nodes. The platform spans more than 30 different functional applications, including crime investigation, people and traffic management, and others. The applications can operate in a disconnected mode when necessary; applications are synchronized when connectivity is restored.

The platform uses a single common data model spanning all applications, with consistent, role-based security. For example, only certain users are able to see the identity of informants across all applications. Administrators control the security models so only authorized users can see the data; alerts are triggered if inappropriate users try to gain access.

Unlike Northgate, the Belgium police decided not to preserve their legacy applications. Instead, they migrated their 25-year-old database applications (with 3,000 stored procedures) to InterSystems. 99% of the stored procedures were converted automatically without any manual intervention. In addition, to date Belgium's police force has created 15 new applications. And this a transition of moving from client-server architecture to service-oriented architecture.

## Conclusion

Today, ensuring effective levels of public safety has become more challenging than ever. Public safety organizations are facing more threats and a flood of (often siloed) data with heightened expectations for analysis, situational awareness, crime prediction, and prevention — all while operating with constrained resources and budgets.

InterSystems IRIS can help organizations worldwide meet these challenges by enabling smarter decisions and actions, increasing operational efficiencies, and helping public safety teams become more agile, cost-effective, and resource-efficient.

### About InterSystems

InterSystems is the engine behind the world's most important applications. In healthcare, finance, government, and other sectors where lives and livelihoods are at stake, InterSystems is the power behind what matters. Founded in 1978, InterSystems is a privately held company headquartered in Cambridge, Massachusetts (USA), with offices worldwide, and its software products are used daily by millions of people in more than 80 countries.

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