cognizant

Reimagining a hyper-connected world

Unlocking the full potential of location-based services with relevant, refreshed and reliable golden data

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Introduction

In an increasingly interconnected world, location-based services (LBS) have transcended their foundational role to become an indispensable layer of modern technology. From navigation and ride-sharing to personalized marketing and smart city planning, LBS underpins a vast array of applications that shape our daily lives. However, the true potential of a hyper-connected world, one where services are not just available but are intuitively relevant and contextually aware, hinges on the quality of the underlying location data. This white paper explores the evolution of LBS, the critical role of big data and the paramount importance of “golden data”—primary, on-ground collected information—in delivering truly differentiated and impactful location experiences.

02

Evolution of LBS: From GPS to intelligent location services

The journey of location technology began with the global positioning system (GPS), a groundbreaking innovation that enabled precise positioning anywhere on Earth. Initially developed for military applications, GPS found its way into civilian use, primarily for navigation. However, the modern LBS paradigm extends far beyond mere coordinates.

Today, LBS integrates a multitude of technologies, including Wi-Fi, cellular networks, Bluetooth, RFID and even indoor positioning systems, to provide richer, more nuanced location intelligence. This evolution has transformed LBS from a simple "where am I?" query to complex, context-aware services that understand "what am I doing here, and what do I need next?" This shift has been driven by the proliferation of mobile devices, the Internet of Things (IoT) and the demand for highly personalized digital experiences.

2.1

The role of big data in LBS

The explosion of connected devices and digital interactions generates an unprecedented volume, velocity and variety of data. This big data is the fuel that powers advanced LBS. By analyzing vast datasets—including user movement patterns, demographic information, points of interest, traffic conditions, weather and social media activity—LBS providers can derive insights that enable:

Personalized recommendations: Suggesting nearby restaurants, shops or events based on user preferences and real-time location

Optimized logistics: Improving delivery routes, fleet management and supply chain efficiency

Smart city initiatives: Managing traffic flow, public transport and emergency services more effectively

Contextual advertising: Delivering highly targeted advertisements to consumers based on their current location and behavior

However, the sheer volume of data also presents challenges. The accuracy, recency and sophisticated algorithms can lead to erroneous or irrelevant outputs, undermining the very purpose of LBS.

03

Why golden data is key: Collecting primary on-ground data

While aggregated big data provides a broad understanding, golden data refers to the meticulously collected, primary, on-ground verified information that forms the bedrock of truly superior LBS. This data goes beyond what can be inferred from passive digital footprints; it involves active, systematic collection and validation of real-world attributes. Examples include precise street addresses, verified business operating hours, exact entrance locations, accessibility information, detailed parking availability and real-time changes in infrastructure.

Field sales tracking

Location analytics

Optimized logistics

3.1

Investing in golden data collection, a pathway to exponential returns

Collecting golden data is inherently more resource-intensive than relying solely on secondary sources or user-generated content. It requires significant investment in field operations, personnel and technology. However, this investment yields substantial returns by providing a critical differentiator in today's hyper-connected, contextual world.

Consumers no longer desire a "one-size-fits-all" approach; they demand customized and relevant services. With the rise of connected homes, autonomous vehicles and increasingly sophisticated smart devices, accurate and reliable location data has become an even more integral part of the technology and service stack. Golden data enables:

Unparalleled accuracy

Ensuring precise navigation, reliable delivery and accurate service provisioning.

Enhanced user experience

Providing highly personalized and contextually rich services that delight users.

Reduced operational costs (long-term)

Minimizing errors, rerouting and customer dissatisfaction that stem from poor data.

Competitive advantage

Differentiating services through superior data quality and unique insights.

New revenue streams

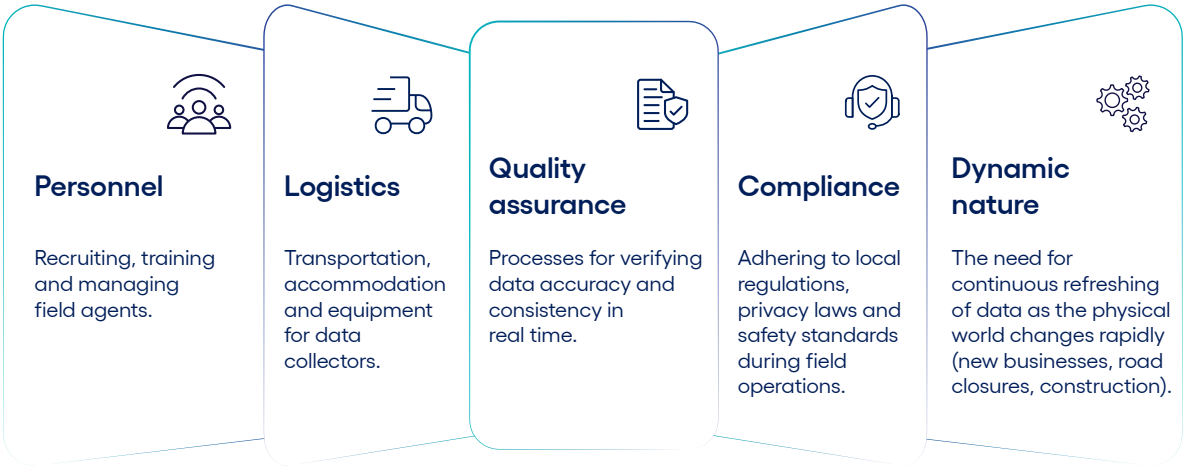
Enabling innovative LBS applications that were previously impossible due to data limitations.

The initial outlay for golden data collection is an investment in future growth and market leadership, paying dividends many times over by fostering trust, improving efficiency and unlocking new opportunities.

3.2

Most of the costs of golden data lie in the “on-field” operations

The primary cost driver for golden data collection is the "on-field" component. This includes:



Cost drivers

Managing these on-field operations efficiently, effectively and compliantly is the core challenge and opportunity in golden data acquisition.

04

The right partner for effective, efficient and compliant data collection is critical

Given the complexities and costs associated with on-field data collection, selecting the right partner is paramount. An ideal partner possesses cutting-edge technology and proven expertise to ensure maximization of coverage in the most cost-optimal manner. Such a partner typically leverages:

- **Proprietary business process as a service (BPaas):** A platform that streamlines the entire data collection workflow.
- **Gen AI-enabled routing:** Utilizing generative AI to optimize routes for field agents, minimizing travel time and maximizing data points collected per trip.
- **Automated route optimization engine**: Identify shortest path to travel—maximize target KM coverage. (Patent pending.)

- **Intelligent work allocation:** Dynamically assigning tasks to field agents based on their location, skills and workload, ensuring efficient resource utilization. Total savings estimated of $1.5M.
- **Automated expense management:** Streamlining expense reporting and approvals, reducing administrative overhead. Total savings estimated around $20M.
- **Near real-time visibility:** Providing dashboards and reporting that offer immediate insights into field operations, progress and potential issues. 10% reduction in field incident and accident.
- **Agility for on-the-fly changes:** Enabling quick adjustments to collection plans in response to unforeseen circumstances or new requirements. 100% automated planning and 5–8% increase in efficiency in resource deployment
- **Financial controllership:** Ensuring strict adherence to budget and cost efficiency throughout the data collection lifecycle.

In summary, the right partner is one with proven credentials in mastering the fine balance of the "art and science of field operations of service delivery." They combine technological innovation with practical, on-the-ground execution capabilities, ensuring that the golden data collected is not just accurate and fresh, but also acquired in the most efficient and compliant way possible.

Conclusion

The vision of a truly hyper-connected world, where location-based services deliver unparalleled relevance and personalization, hinges on the quality of its foundational data. While big data provides scale, it is the golden data - meticulously collected and verified on-ground—that unlocks the full potential of LBS, enabling customized, context-aware experiences that consumers demand. Recognizing that the majority of golden data costs lie in complex on-field operations, strategic partnerships with experts leveraging advanced technology are crucial. By investing in high-quality golden data and partnering with specialists in field operations, businesses can not only differentiate their services but also build a resilient, future-proof foundation for the next generation of location-powered innovations.

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